19 December 2012

Mr Greg Ruthven
Manager, System Capacity
Independent Market Operator
PO Box 7096, Cloisters Square
Perth WA 6850

Sent by email: imo@imowa.com.au

RE: DRAFT REPORT: MAXIMUM RESERVE CAPACITY PRICE FOR THE 2015/16 CAPACITY YEAR

Dear Greg,

Thank you for the opportunity to provide comments on the Draft Maximum Reserve Capacity Price (MRCP) 2015-16 Report released in November 2012. Perth Energy (PE) would like to reiterate our concerns over the MRCP determination formulae and inputs used in its calculation.

The current situation in the capacity market is dysfunctional and we found ourselves having to repeat that the IMO needs to target the true causes of "excess capacity" rather than pursuing wholesale changes to the MRCP/RCP formulae to get the market back on track to encourage future investment.

It is difficult to comment on the MRCP without commenting on the Reserve Capacity Market and the Reserve Capacity Mechanism surrounding the MRCP. We will lay out the issues in turn.

Our main concerns are summarised below, with the attachment on WACC issues providing more detailed information.

- **RCM** - From our own experience of providing capacity in the WEM, PE believes that investment capital will not be attracted to providing peaking plant (within a 2-3 year capacity cycle) unless the price for capacity is relatively predictable. It is unlikely that investors will commit to 20 year investment decisions based on the low WACC and inherent uncertainty and lack of commercial rationale in MRCP/RCP determination. Our view is the current situation will likely jeopardise the provision of new generation capacity in the future. As a retailer this is of significant worry to us as it could reconcentrate the supply side to the detriment of consumers.

- PE acknowledges the IMO's concern over the current excess capacity in the WEM but we have submitted before that this has resulted from once-off factors like the Vesting Contract and an oversupply of 'quasi-capacity' rather than 'true' capacity:

  o The awarding of Capacity Credits that are misaligned with the plant's potential contribution to mitigate peak demand, eg. intermittent plant (which the IMO has dealt with) and Demand Side Management (DSM), which the IMO has yet to deal with;

  o Ineffective use of the IMO's discretion to not certify or partially reduce the certified capacity of plant that have clearly and consistently failed reliability benchmark in the Market Rules; and

  o Forecasting of the Reserve Capacity Requirement (RCR) based on overestimated load forecast in recent years due to the mining boom, and so contributes to a widening of the reserve margin, which in turn is seen as part of excess supply although the total cost of that supply to the market has remained unchanged in absolute terms and would have been absorbed had actual demand matched forecast demand.

- Consequently, PE's suggestions for the RCM are for the IMO to urgently review its DSM policy, apply Market Rules discipline to unreliable capacity and to improve forecasting of the RCR to better reflect actual demand load. These tasks will ensure a more efficient allocation of Capacity Credits

by the IMO to 'true' capacity plant and more accurate system demand forecast in future. We urge the IMO to focus on:

- o Better forecasting could involve requiring discrete loads of greater than 1% of total system demand to have acquired their own bilateral contracted supply for at least 4 years before being allowed to enter the SWIS. The 4-year time frame is to enable the WEM to commercially absorb such loads over time.

- o The pricing of Capacity Credits should be retained as is in structure, with the existing adjustment factor for excess capacity that provides adequate signals to participants. This approach ensures continued predictability of returns for investors to supply peaking capacity to the WEM and also utilisation of existing market mechanisms to more efficiently award Capacity Credits to existing and planned plant that provide 'true' peaking capacity.

- o Making DSM loads equal in operational standards with peaking capacity by requiring them to be part of the merit order of dispatch. It is a breach of Market Objectives to discriminate in favour of DSM, with these loads offered favourable treatment compared to peaking capacity while paying them the full RCP. The RCP is designed specifically for peaking capacity payment in the Market Rules. There is no rationale for System Management to rank DSM loads last to call after exhausting all capacity in the system, or to accord them a 2-hour notice period instead of the standard 15 minute period imposed on peaking plant.

- o Retention of unreliable generation plant distorts the market given that the receipt of Capacity Credits for such plant contributes to them remaining in service. In its Discussion Paper on the WEM Report of November 2012, the ERA has identified plant that has had as low as 50% availability for a number of years, and yet the IMO has not exercised any discipline on them in terms of certifiable level. If Capacity Credits were better related to plant availability, the number of credits allocated to this type of plant would reduce and so influence the economic decision to decommission.

- Dealing promptly and effectively with the above shortcomings would lead to a more balanced and efficient capacity market and take away the pressure on the IMO to constantly change the MRCP/RCP methodology to deal with the perceived excess capacity situation.

- **Maximum Reserve Capacity Price (MRCP)** - PE restates its concerns[1] around many of the inputs used in MRCP determination, especially now that MRCP compilation drivers are formulated to provide a Minimum, not Maximum, Reserve Capacity Price, and unrealistically low network connection costs and Weighted Average Cost of Capital (WACC):

  - o As the MRCP is now pitched at the low end of cost estimation, it is critical that the automatic 15% discount to MRCP to derive the RCP should be eliminated. There is unanimous agreement among market participants and IMO that this discount has no basis;

  - o The current WACC methodology is inconsistent with investors' expectations of the risks involved in building and operating generation plant – we have attached a paper dealing comprehensively with issues associated with WACC determination and hope the IMO ill be considering it appropriately; and

  - o Transmission network connection costs continue to be unpredictable, depending mainly on the location a new project happens to be, and a significant contributor to the overall level of the MRCP. By using an average cost over the last 6 years this major input by definition is not a maximum. It would be better for IMO to take an average of the likely locations for generation capacity development as provided by Western Power (WP). At least this is forward looking, with WP recommending where the lowest cost locations are for a nominal peaking plant to connect to the Grid.

- PE would prefer to see a transmission connection cost methodology that reflects the location (and degree of constraint present) of the connection on the network and the type of load to be supplied. Such a change would see the connection costs charged to those users servicing the market as a whole being 'use of system' charges while those servicing special discrete loads would be charged on more of a user-pays, deeper connection, cost.

- **Ancillary service payment for dual fuel generators** – The Varanus incident in 2008 highlighted the importance of fuel security in the supply of electricity in WA. In particular, on that occasion, a significant contributing factor to the continuation of supply in the SWIS was the ability to switch to distillate fuel at dual fired gas/distillate generators. Without that ability, more severe electricity supply restrictions and extended periods of high and volatile wholesale pricing may have been experienced. On the other hand, when supply constraint is caused by factors other than gas supply, continued use of gas at dual fuel peaking plant helps maintain lower than otherwise energy

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[1] These concerns have previously been outlined in PE's submissions to the ERA and IMO.

prices. Therefore, the ability of a generator to offer dual fuel plant helps with overall system supply security and lower costs to consumers. However, designing and maintaining a dual fuel facility increases both initial capital costs (eg. certain gas turbine type or feature and additional fuel infrastructure) and ongoing operating costs (eg. needing to maintain gas transportation contract).

The current Market Rules do not adequately compensate for the costs of providing dual fuel capabilities. PE proposes an ancillary service payment for the provision of dual fuel capability. Facilities that qualify for dual fuel status, as per the current criteria contained in the Market Rules, would be eligible to be paid the dual fuel ancillary service fee from System Management.

Please do not hesitate to contact us should you have any queries.

Yours sincerely,

Ky Cao
Managing Director

APPENDIX A – Examination of WACC Parameters and Related Matters in MRCP Calculation

Contents

1 Executive Summary

The Independent Market Operator (IMO) is required to determine the Maximum Revenue Capacity Price (MRCP) for the Wholesale Electricity Market (WEM) on an annual basis in accordance with the Market Procedure: *Maximum Reserve Capacity Price*.

The MRCP is used to determine an administered Revenue Capacity Price in the absence of a Reserve Capacity Auction, or the maximum bid price in an Auction.

The IMO recently published its Draft Determination of the MRCP (Draft Determination) for the 2013 Revenue Capacity Cycle, which will be effective for the year 1 October 2015 to 1 October 2016, and is seeking submissions on its Draft Determination.

Additionally, the Economic Regulation Authority (ERA) is required to report to the Minister for Energy at least annually, on the effectiveness of the WEM in meeting the Wholesale Market Objectives. To assist this process, the ERA has recently published a Discussion Paper to assist stakeholders make submissions on matters that include the effectiveness of the process used to set the Reserve Capacity Price (Discussion Point 3 of the Discussion Paper).

The paper sets out Perth Energy (PE)'s submission on a number of issues that are relevant to both the IMO's Draft Determination and the ERA's Discussion Paper; principally

- the effectiveness of the Reserve Capacity Price set using the administrative formula in the Market Rules with reference to the MRCP and the Excess Capacity Adjustment; and

- the IMO's approach to calculation of WACC and the incentives that it delivers for investment in reserve capacity and hence the implications for achieving Market Objectives.

This paper explains the basis of PE's view that the effectiveness of the Reserve Capacity Price set using the administrative formula in the Market Rules is impaired by the approach adopted by the IMO to calculating WACC for the MRCP. The Capital Asset Pricing Model used by the IMO, if applied appropriately and calibrated against wider evidence, has the potential to be effective. However the approach currently adopted by the IMO does not meet Market Objectives of:

- promoting the economically efficient, safe and reliable production and supply of electricity and electricity related services in the SWIS; and

- encouraging competition among generators and retailers in the SWIS, including by facilitating efficient entry of new competitors;

because the WACC and MRCP that result from the IMO's approach:

- does not result in an economically efficient price for the efficient, safe and reliable production and supply of electricity services in the SWIS; and

- consequently does not provide pricing that facilitates efficient market entry and hence competition in the generation sector.

The IMO's approach to setting a Reserve Capacity Price includes applying a weighted average cost of capital (WACC) to a benchmark asset base. The WACC is a critical component of the MRCP, profitability for generators providing reserve capacity and hence incentive for generators to participate in and provide an efficient wholesale market.

The IMO uses the capital asset pricing model (CAPM) to determine WACC. This is a widely accepted model for determining benchmark rates of return for both commercial and regulatory purposes. It provides a reasoned transparent approach, but its calculation requires commercial judgment to determine a number of its critical parameters, and it is by no means an exclusive means of determining returns. It can be complemented and corroborated by comparisons and financial analysis such as financability testing. These further methods are briefly described later in this summary.

A key intent of the CAPM is to identify returns that match the risk characteristics and investor expectations of different kinds of businesses. The different parameters that feed into the CAPM account for different risk characteristics. The provision of reserve generation capacity requires investors to bear risks particular to

that activity. Not all of those risks and hence CAPM parameters will be necessarily unique to the provision of reserve generation capacity, but there are a number of characteristics and risks that strongly distinguish such a business from others.

In applying the CAPM approach to determining the WACC for the MRCP, the IMO has relied on and narrowly referred to, precedents and parameters set by regulators of monopoly businesses.

The IMO's approach of following regulatory precedent may not be unreasonable, but the rationale for its approach of apparently so rigidly and restrictively following a relatively narrow band of regulatory precedent using the parameters of network business and the Western Australian electricity network sector in particular, is unclear. Generation may share some risks by virtue of participating in the same market as network assets, but it is not reasonable or realistic for the IMO to assume that the risks are identical and to exclude from consideration a wider body of regulatory and pricing precedent. The consequences are that the IMO:

- has developed WACC for the MRCP by including parameters and risks that are not relevant to the provision of generation capacity, which inevitably leads to distortions in both pricing and signals for efficient investment;

- does not seem to have followed an internally consistent approach to applying the CAPM to the MRCP; and

- has not in its Draft Determination cross checked the outcomes of its assumptions and approach to determining WACC to other availability data or undertaken financial analysis to test the business impact of its Draft Determination.

Examples of these consequences are summarised below.

Inappropriate WACC parameters

Section 2 of this paper explains that there is a wide range of information and regulatory precedent that is more relevant to the derivation of WACC parameters for generation businesses, than the narrower precedents to which the IMO has referred. Section 3 illustrates how this has led to the IMO's WACC being significantly misstated. For example, Section 2 illustrates that the IMO's approach appears to have materially misstated:

- the risk free rate;

- equity beta;

- the debt risk premium;

- gearing; and

- gamma.

The IMO sought advice from PriceWaterhouseCoopers[2] (PwC) to inform its determination of WACC parameters. However, the terms of reference for advice it provided to PwC restricted the research to three WACC parameters[3] and to regulatory decisions made by regulators subject to merit reviews[4]. Accordingly, PwC was obliged to ignore regulatory decisions made by other economic regulators which may be appropriate to consider in the context of the decision on the MRCP. It seems important that the IMO should consider all information to ensure that the decision making approach is appropriate for the MRCP.

Internally inconsistent WACC parameters

The IMO approach includes parameter values carried over from previous reviews as well as parameters that are recalculated annually. Although, perhaps inconsistently with this approach, one of these "fixed" parameters, the gamma, was reviewed by PwC in its report due to a recent Australian Competition Tribunal (ACT) decision, which changed the value used by other Australian regulators.

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[2] PwC, 19th October 2012, Summary of regulatory decisions related to the WACC used in the Maximum Reserve Capacity Price
[3] The risk free rate, the debt risk premium and the gamma.
[4] Such as the Australian Energy Regulator and the Economic Regulation Authority of Western Australia.

In particular, members of certain pairs of WACC parameters are interrelated. One member of the pair does not operate independently of the other. However, for two of the pairs, the IMO's approach holds the risk of internal inconsistency in its calculation of WACC because one member of a pair is updated and the other is not:

- the risk free rate (updated annually by IMO) and the market risk premium (updated by IMO every five years); and

- the debt risk premium (updated annually by IMO) and debt issuance costs (updated by IMO every five years);

In general, the IMO has followed network business precedent for WACC parameters - except for the gearing rations which are more akin but still in excess of available data for, generation businesses.

Absence of calibration of the of outcomes of the IMO's approach

The IMO's approach focuses heavily on the WACC parameters, but not on the resulting WACC. WACC parameters are an input to a pricing outcome, not the outcome itself. The resulting WACC should be calibrated against expectations of industry norms and the objectives of the pricing regime, to help check test all the parameters are appropriate.

For example, regulators in the United Kingdom and IPART commonly use financeability tests to determine whether the rate of return outcomes from the CAPM are consistent with regulators' obligations to balance the interest of investors and customers and to maintain the financial viability of regulated businesses. A financeability test examines the future cash flows that result from rate of return decisions and tests whether they enable a business to meet the regulator's assumed or target credit ratings and key financial ratios that measure financial viability and health. IPART has recently reaffirmed its commitment to using these tests as part of its approach to regulation going forward[5].

PE has compared:

- the results of the IMO's draft WACC determination and its own illustrative calculation of an appropriate WACC, using more apt parameters which are explained and justified in this paper; against

- comparable WACC's for generators and energy retailers, which unlike the network businesses on which the IMO has based its WACC, participate in the wholesale energy market.

The results, which are set out in Sections 3 and 4 of this paper show that:

- the IMO's Draft Determination produces a WACC that is significantly below the level of WACC indicated by:
  - market evidence for generation businesses;
  - regulatory precedent for retail businesses, which would appear significantly closer in their risk profile to generation than the network precedent on which the IMO has relied; and
  - the use of more appropriate WACC parameters indicated by Section 2 of this paper.

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[5] For example see IPART, September 2012, Financeability test in price regulation, www.ipart.nsw.gov.au

2   The IMO's calculation of WACC

2.1   The IMO's approach to calculating WACC

The 2015/16 MRCP has been reduced from the previous 2014/15 determination by 6.8 per cent, with the largest single factor attributed to changes in WACC.[6]

The IMO has applied the Capital Asset Pricing Model (CAPM) to calculate the WACC for the MRCP.

The CAPM is a widely accepted technique for calculating a benchmark rate of return for a business. While it is commonly used by access regulators to calculate regulated rates of return for monopoly businesses, there is no constraint on the use of CAPM for such businesses.

The calculation of a WACC under the CAPM requires a range of specific input parameters to the CAPM to be determined.

However, in deriving the input parameters for the WACC for the MRCP, the IMO has:

- referred to regulatory precedents that apply to access regulated monopoly industries and services; and

- drawn heavily on parameters and precedents applicable to network businesses.

This does not appear appropriate or rational because:

- reserve capacity is provided by the generation sector which normally operates in competitive markets. Precedents provided by commercial and market practice, not regulatory practice would be applicable; and

- the operational and investment risks of generation businesses are significantly different to network businesses and revenue capped network businesses in particular. For example, generation businesses are subject to fuel price and supply risk and risks of competition and significantly greater volatility in demand and price.

2.2   Calculating WACC

The IMO's Draft Report: Maximum Reserve Capacity Price for the 2015/16 Capacity Year - November 2012, included the following Real and Nominal Pre-tax WACCs and associated parameters.

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[6] IMO, November 2012, Draft Report: Maximum Reserve Capacity Price for the 2015/16 Capacity Year.

Table 2-1 – Capital Asset Pricing Model parameters

Paper Ref	CAPM Parameter	Notation/ Determination	Review Frequency	Value set or TBD	IMO Draft (y=0.5)	IMO Draft (y=0.25)
2.4	Nominal risk free rate of return (%)	Rf	Annual	TBD	3.13%	3.13%
2.5	Expected inflation (%)	i	Annual	TBD	2.57%	2.57%
2.4	Real risk free rate of return (%)	Rfr	Annual	TBD	0.55%	0.55%
2.6	Market risk premium (%)	MRP	5-Yearly	6.00	6.00%	6.00%
2.7	Asset beta	βa	5-Yearly	0.5	0.5	0.5
3.7	Equity beta	Be	5-Yearly	0.83	0.83	0.83
2.8	Debt risk premium (%)	DRP	Annual	TBD	2.94	2.94
2.9	Debt issuance costs (%)	d	5-Yearly	0.125	0.125	0.125
	Corporate tax rate (%)	t	Annual	TBD	30%	30%
2.10	Franking credit value	γ	5-Yearly	0.5	0.5	0.25
2.11	Debt to total assets ratio (%)	D/V	5-Yearly	40	40%	40%
3.11	Equity to total assets ratio (%)	E/V	5-Yearly	60	60%	60%
	Nominal pre-tax cost of debt				6.20%	6.20%
	Nominal Post-tax cost of equity				8.11%	8.11%
	WACC (Nominal Pre-tax)				**8.20%**	**8.76%**
	WACC (Real Pre-tax)				**5.49%**	**6.03%**

Note: The IMO determined in its discussion paper that the values for some parameters would be set and some would be determined based on current observations.

The difference between the two IMO versions is Gamma, which is highlighted.

Source – IMO spreadsheets http://www.imowa.com.au/mrcp, as referred to in the IMO Draft Report

2.3   WACC Parameters

PE provides commentary on the specific WACC parameters employed by the IMO, below.

PE also notes that the IMO engaged PwC to provide with information and commentary on regulatory precedents for on certain WACC parameters[7], namely:

- the risk free rate;

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[7] PwC, 19 October 2012, Summary of regulatory decisions related to the WACC used in the Maximum Resource Capacity Price.

- the debt risk premium; and

- gamma.

However, the terms of reference provided by the IMO to PwC (and noted by PwC as a constraint) were limited to these three parameters only and required PwC to only identify precedents that were applied from determinations that are subject to a merits review process. This effectively limited PwC's research to decisions made by the Australian Energy Regulator (AER) and the Economic Regulation Authority of Western Australia (ERA). It is assumed that this requirement was implemented to ensure that the regulatory precedents used as part of this review process would be more robust. However, the rationale for this is open to question.

This requirement limits the number of precedents available for the IMO to consider as part of this review, which may reduce the IMO's ability to achieve a regulatory outcome consistent with its objectives given the specific nature of the service being provided. In particular, regulators not subject to merit reviews are subject to other arrangements which ensure the quality of their decisions such as:

- legislative requirements – requirements in the legislative framework may dictate the process used by the regulator in forming its decisions. Where regulators do not meet these requirements, they may be bound in breach of these requirements; and

- terms of reference for the review – where terms of reference are drafted by Government at the commencement of the pricing review, these terms may provide instructions on the approach to be used to make decisions, limiting the ability of the regulator to make decisions or use methods outside the terms of reference.

Importantly, it is not clear that any other Australian regulator has included this restriction in its approach to evaluating regulatory precedents. In fact, regulators such as the AER consider approaches taken by state based regulators such as IPART and the QCA when making pricing decisions.[8]

The ERA in recent pricing decisions has taken a particularly aggressive stance to price regulation, providing atypical results.[9] By placing undue weight on precedent set by the ERA, it is likely that the IMO will determine a MRCP, with similarly atypical results.

In addition, the IMO sets the price of generation capacity, not transmission and distribution network services. The MRCP prices a fundamentally different service. Given the nature of the prices being regulated by the IMO, there may be some benefit in considering a wider pool of regulatory precedents in evaluating the appropriate level of the MRCP. For example, the IMO does not appear to have considered taking into account regulatory precedents for WACC for retailers, for regulated retail tariffs whose participation in wholesale electricity markets would indicate a risk profile closer to a generation business, than a network business. Examples include IPART's review of retail electricity tariffs in 2010 where it considered WACC for a retailer and a generator, and market observations on some WACC parameters for listed companies in Australia operating in the generation sector. Section 4 of this paper illustrates these precedents.

2.4   Risk free rate

The risk free rate is the rate of return an investor receives from holding an asset with guaranteed payments.

The risk free rate is used as a direct input into the CAPM to determine the required return on equity. It is also used as an input into the calculation of the required cost of debt.

Given that no asset is truly 'risk free', a proxy is used to determine the risk free rate. Common regulatory practice is to use government bonds. In Australia, this generally refers to the yields from Commonwealth

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[8] For example, the AER in its 2009 review of WACC parameters (*Electricity transmission and distribution network service providers – Review of the weighted average cost of capital (WACC) parameters*), considered examples for the equity betas and gamma from state jurisdictional regulators such as IPART, the QCA, ESCOSA and others.

[9] Due to a variety of reasons, the WACC included in the most recent ERA decision, *Final decision on proposed revisions to the Access Arrangement for the Western Power Network*, a lower WACC than recent decisions made by other Australian regulators.

Government Securities (CGS). Perth Energy understands that the IMO has calculated this following regulatory precedents, on the basis of current yields on Commonwealth Government bonds.

However, the IMO has noted that its stakeholders consider that the current depressed values for the risk free rate is more a product of market characteristics (a flight to safety) than an appropriate estimate of the risk free rate that should be applied in the calculation of the WACC. PE considers there to be considerable support for a more long term approach to estimating the risk free rate under current market conditions. This support includes precedent and a recent Australian Competition Tribunal (ACT) decision , *Application by EnergyAustralia and Others (No 2) [2009] ACompT9*.

In the ACT's decision, EnergyAustralia proposed an averaging period for determining the risk free rate that '*is closest to the regulatory control period prior to the emergence of the marked acceleration of the global financial crisis in September 2008'*. This period was proposed on the basis that:

- the AER's specified averaging period for observing key financial data is highly likely to include data that has been impacted by this supervening critical event; and

- *'an averaging period affected by the current abnormal financial market conditions will provide an estimate of the rate of return … which is materially biased below the rate of return required by investors in a similar commercial business'*.

The ACT upheld EnergyAustralia's appeal, and the averaging period proposed by EnergyAustralia was used in its final determination.

Referring to Figure 1 of the IMO's Draft Determination, PE estimates that if the principles set out in the ACT Decision were applied to bond rates immediately prior to the impact of the Euro currency crisis in mid 2011 that has skewed the markets below long term averages, an appropriate risk free rate would be of the order of 5.0 per cent to 5.5 per cent (nominal).

A further precedent for calculating the risk free rate which addresses this volatility is provided by SA Water in its recent pricing proposal[10], which proposed a 180 day observation period to average out the outliers and extend the sample size. In particular, SA Water mentioned that:

- actual financing costs may differ significantly from those estimated under a 20 day averaging period; and

- the 20 day averaging period does not take into account the potential variability in debt market conditions over the regulatory period.

In the SA Water example, a 180 day averaging period to 1 June 2012 for a 10 year Commonwealth Government Bond provided a nominal risk free rate of 3.93 per cent.[11]

Perth Energy submits that the risk free rate for the MRCP (to be applied in 2015 and 2016) should be consistent with the ACT's views and not be distorted below long term averages. Accordingly, a nominal risk free rate of the order of 4 per cent to 5 per cent or more, appears appropriate and significantly less likely to result in distorted pricing than the atypical rate of just over 3 per cent (nominal) included in the IMO's Draft Determination.

2.5 Inflation

Perth Energy notes that the inflation is set at 2.57 per cent which is close to the mid point in the Reserve Bank of Australia target range of 2 per cent to 3 per cent. This is likely to be close to the outturn inflation rate due to the Reserve Bank's actions on adjusting interest rates. The forecast inflation rate is consistent with generally accepted economic forecasts.

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[10] 10 SA Water business proposal to ESCOSA http://www.escosa.sa.gov.au/library/121012-SAWaterRegulatoryBusinessProposal_2013.pdf

[11] Using the SA Water example – 180 days observed up to 1 June 2012 on 10 year Commonwealth Government Bonds

2.6 Market risk premium

The market risk premium (MRP) is the expected return over the risk free rate that equity investors would require in order to invest in a well-diversified portfolio of risky assets. It represents the risk premium that investors can expect to earn for bearing only non-diversifiable or systemic risk.

Estimating a forward-looking market risk premium, commensurate with the current market, generally involves having regard to historical estimates on the basis that investors' forward-looking expectations will be based on past experience. Current regulatory practice in Australia is to estimate the market risk premium using historical data on equity premia.

In the past, Australian regulators consistently applied a market risk premium of 6 per cent. However, in its 2009 review of WACC parameters, the AER concluded that the market risk premium should be increased to 6.5 per cent on the basis of market conditions at the time. Nevertheless in its final decision on Envestra's access arrangement proposal for the South Australian gas network, released in February 2011, the AER used a market risk premium of 6 per cent for the gas business.

In the ElectraNet draft decision[12] (November 2012), the market risk premium was set at 6.5 per cent, consistent with the AER WACC review of May 2009[13], and consistent with ElectraNet's proposal. Murraylink, a single asset transmission interconnector also received a draft decision in November 2012 with an MRP of 6.5 per cent. This is consistent with 6.5 per cent allowed for ETSA Utilities more than two years ago in 2010. These decisions reflect the regulators view that current market conditions remain inconsistent with normal, longer term market conditions and that a higher MRP is warranted.

PE submits that the MRP should represent that component that, when applied in a CAPM, offers sufficient incentive for an investor to make efficient investment in new generation capacity in the WEM. Whilst PE acknowledges that the MRP is not business dependent, it seems difficult to understand how a more risky business operating in more difficult times might be fairly treated by an MRP which was less than that applied in a network business.

PE suggests that the MRP of 6.5 per cent should be considered particularly in light of its concerns about the capacity of the other WACC parameters determined by the IMO, to adequately deal with generator risks.

2.7 Equity beta[14]

The equity beta measures the standardised correlation between the returns on an individual risky asset or business with that of the overall market. That is, it represents the riskiness or volatility of the business' returns relative to the diversified market position as a whole.

Under CAPM, it is assumed that investors can diversify away business-specific risk and therefore only require compensation for bearing non-diversifiable or systemic risk (that is, risk associated with movements in the market as a whole).

An equity beta of one implies that the business' returns have the same level of systemic risk as the overall market. An equity beta of less than one implies that the business' returns are less sensitive to systemic risk, while an equity beta of more than one implies that the business' returns are more sensitive.

In its 2009 WACC Review[15] (for network businesses), the AER changed its previously held position on the value of the equity beta for electricity distribution and transmission businesses from 1.0 to 0.8.

Because the AER WACC review sets some parameters for a period until the next WACC review, the equity beta applied in the recent ElectraNet draft decision was 0.8 (November 2012). This was applied to a

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[12] AER Draft decision on South Australian electricity transmission revenues available at:
http://www.aer.gov.au/sites/default/files/ElectraNet%202013%20-%20AER%20-%20draft%20decision%20-%2030%20November%202012.pdf
[13] AER, Statement of the revised WACC parameters (transmission), May 2009, page 6.
[14] This section does not explicitly discuss the asset beta, since this is a derivative of the equity beta.
[15] AER 'Electricity transmission and network service providers – review of the WACC parameters,' Final Decision, May 2009

business with approximately $2 billion in assets, operating a monopoly transmission business under a revenue cap approach. This is therefore a significantly less risky business with more stable revenue streams than a generation business supply reserve capacity.

The question of whether it is appropriate to use the equity beta applied to distribution and transmission businesses in a process to determine an MRCP in WA depends on an assessment of whether there is a difference in the systemic risk faced by network monopolies as compared to generation businesses. Reasons for any differences are primarily due to the nature of activities undertaken by the businesses and the costs incurred. A summary of some of the key differences is set out below.

Table 2-2 – Differences in risk (Generation v Network)

Factor	WA Generation	Australian Electricity Transmission Network business
Beta	0.83 (IMO draft)	0.80 (ElectraNet draft)
Business Revenues	Subject to price bids and competition	Revenue cap – mostly guaranteed
Market Volumes	Subject to weather conditions, government policy, customer demand changes, technology, innovation	Revenue cap – prices adjusted to recover required revenue
Operating costs	Subject to fuel, labour and material variances	Subject to labour and materials variances
Competition	At risk of new entrant exploiting new technologies before end of life	Monopoly licence area

There are further risks specific to the provision of generation capacity that are not considered in any way in a beta derived for a network business and seem very unlikely to be accommodated together with the other risks outlined above, in a differential beta of only 0.03. For example:

- construction delays can place at risk investors' security deposits provided when IMO approved the project and allocated capacity credits to that project. The security is 25 per cent of one year's capacity payment, a substantial sum to put up at the start of the construction process. It is common to have project delays and funders are aware of this and have priced in this risk as power plants cannot pass on additional costs to contract counterparties;

- delay in delivering the plan can lead to capacity refunds. This penalty in the summer period can be as high as six times the revenue received. Accordingly, an entire year's capacity payment could be lost in two months of down time, or if construction delay creeps past the end of the year in which capacity is intended to come on line. Again, such delays and refund penalties have been incurred by most projects;

- a business can be at risk of distress by losing much less than a year's revenue. Losing say 20 per cent of a year's revenue would be enough to lock up equity or cash in a project. It is not clear whether the IMO has considered practical project financing risks that businesses face to provide generation capacity; and

- exposure of investment in generation capacity to forced outages that are beyond the control of a generator.

PE notes that:

- the generators offering reserve capacity for the SWIS do not have a natural monopoly as there are currently 29[16] generation plants operated by 15 generation businesses in the SWIS; and

- the notional 160MW generator used by the IMO in calculating the MRCP represents less than 3 per cent[17] of the WEM, and therefore will not have market power.

PE observes that the Beta of 0.83 is only a fraction above the 0.80 allowed for network businesses. This does not reflect the commercial and market risks of a WA generator when compared to a monopoly network business, and a WACC that recognises this low beta fails to offer sufficient financial incentive to invest in new generation when compared to a regulated network business in the National Electricity Market.

There are listed Australian generators for which a beta can be measured from empirical evidence. (There are other listed generators but arguably other business interests such as energy retailing mask the

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[16] 29 Generators of 10MW capacity or more as listed in the Energy Supply Association of Australia annual report

[17] Based on 6,000 MW as listed by the Energy Supply Association of Australia annual report

generation beta.) The five year average beta observed for three Australian Generators (Energy Developments Ltd, Energy World Corp Ltd and Pacific Energy Ltd) is slightly more than 1.0.

PE submits that a beta of 1.0 would be a conservative reflection of the business specific risks associated with generation in the WEM, and offers the minimum financial incentives required for investment in generation capacity.

2.8   Debt risk premium

The debt risk premium is the additional return over the risk free rate required by investors to hold debt that is not risk free (that is, where there is a risk of default). The purpose of including the debt risk premium within the expected cost of debt is to compensate for the benchmark cost of debt capital.

In its Draft Determination, the IMO "has applied the value that represents a strict application of the ERA's approach in the WA Gas Network final revised decision, utilising bands with credit ratings of BBB and BBB+, with a term to maturity of at least two years."[18]

The regulatory approaches reviewed by PwC for the IMO[19] consider the debt risk premium for network businesses. This is not appropriate for the MRCP because it is required to reflect the cost of providing reserve generation capacity rather than a monopoly network system. Differences between the two types of assets may impact:

- the credit rating associated with the business. Generators typically operate in a more competitive market unlike networks, and may be considered riskier assets as a result (see section 2.5 above);

- network businesses can be order of magnitude greater in terms of capital value, than generation businesses and this too will lead to a reasonable expectation that a provider of reserve capacity might expect to experience a higher cost of debt than a network business; and

- the time to maturity of debt financing, and the relevant gearing levels may differ between generation and network businesses.

In addition, the IMO's Draft Determination notes that stakeholders have suggested that they are more likely to access bank financing rather than corporate debt market financing. In network price regulation, debt market financing is used because it is assumed that the regulated businesses have access to these markets. It would be reasonable to assume that network businesses would have access to debt markets. However, it may not be axiomatic that this is also true for a less capital intensive business such as a benchmark provider of Reserve Capacity. There are regulatory precedents for this, which appear more relevant than the large network business precedents on which the IMO has drawn. It would be appropriate for the IMO to consider this matter and its impact on the debt risk premium.

For example, in the case of price regulation of smaller transport firms, IPART considered the costs of bank related financing[20], notwithstanding

The IMO has outlined a range of complex and esoteric, large scale network based precedents to support a debt risk premium of 2.94 per cent in its Draft Determination.

However Perth Energy observes that:

- the premia represented by the differential between the five year Australian Government Bonds (GACGB5) and the BBB Corporate Bonds (C356Y) as at 30 June 2012 are:

    A.1 when measured on a 20 day average to 30 June: 3.69 per cent;

    A.2 when measured on a 40 day average to 30 June: 3.69 per cent; and

    A.3 when measured on a 180 day average to 30 June: 3.61 per cent

- the IMO's Draft Determination does not recognise that the risks of a generation business differ significantly from network businesses' risks on which it has based its debt risk premium; and

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[18] IMO, November 2012, Draft Report: Maximum Reserve Capacity Price for the 2015/16 Capacity Year, p 22.

[19] PwC, 19th October 2012, Summary of regulatory decisions related to the WACC used in the Maximum Reserve Capacity Price

[20] IPART, Review of fares for private ferry services and the Stockton ferry service for 2012 - December 2011, page 31, available at www.ipart.nsw.gov.au

- the IMO's Draft Determination does not recognise that a generation business is less likely to be able to access bond markets and achieve a BBB credit rating.

Because of these reasons, Perth Energy submits that a debt risk premium of *at least* 3.6 per cent would be more appropriate to the calculation of WACC for the MRCP.

2.9 Debt issuance costs

While using a consistent level for some parameters over time is a well accepted approach to price regulation (for example, the market risk premium is often kept stable over time by regulators), it seems reasonable to question whether debt issuance costs should be left fixed while the debt risk premium is calculated annually. In times of uncertainty, the costs of issuing debt can vary. This may coincide with large changes in the debt risk premium. Given the potential for debt issuance costs to vary, there may be a benefit in calculating the debt.

2.10 Gamma

A full imputation tax system for companies has been adopted in Australia since 1 July 1987. Under the tax system of dividend imputation, a franking credit is received by Australian resident shareholders, when determining their personal income taxation liabilities, for corporate taxation paid at the company level. In a dividend imputation tax system, the proportion of company tax that can be fully rebated (credited) against personal tax liabilities may be best viewed as personal income tax collected at the company level. With the full tax imputation system in Australia, the company tax is effectively eliminated if all the franking values are used as credits against personal income tax liabilities.

The actual value of franking credits, represented in the WACC by the parameter 'gamma', depends on the proportion of:

- the franking credits that are created by the firm through the payment of Australian company tax and most importantly the value of credits that are distributed; and

- the value that the investor attaches to the credit, which depends on the investor's tax circumstances (that is, their marginal tax rate and whether they can use the franking credits).

As these factors will differ across investors, the value of imputation credits may be between nil and the full value of franking credits (i.e. a gamma value between zero and one).

There has been and continues to be significant debate concerning the appropriate value to ascribe to imputation credits.

PE submits that the move from a gamma of 0.5 to 0.25 recognises that there are different investors participating in the market and that international investors and others do not value franking credits in the same way as an Australian resident taxpayer. The adoption of a gamma of 0.25 in the Australian Competition Tribunal decision recognises the reduction in value of franking credits attributed to a mix of equity providers. It is noted that there are many instances of Australian generation businesses with foreign ownership to support the notion that franking credits should be valued at the lower end of the scale. Australian generators with foreign ownership apart from PE include:

- Alinta Energy;

- Meridian Energy;

- ATCO Australia;

- TruEnergy;

- IPR-GDF SUEZ Australia;

- Intergen (Australia);

- Mitsui; and

- Transalta.

Given that the generation sector is more likely to need foreign investment to satisfy the equity needs for a new generation project, the gamma should be zero, or at least approach zero to offer sufficient incentive to maintain access to the necessary capital and provide benefits of competition in the WA generation market.

2.11   Gearing

Gearing is defined as the ratio of the value of debt to total capital (that is, debt over debt plus equity). For regulatory purposes, the benchmark gearing ratio is usually considered to be the capital structure of a benchmark efficient business. This is intended to provide companies with an incentive to manage the costs associated with debt and equity efficiently.

Regulated network businesses have typically received gearing levels in regulatory decisions of 60 per cent debt and 40 per cent equity. This is evidenced in regulatory decisions such as the recent ElectraNet decision in November 2012.

PE notes that the gearing in the IMO Draft Determination provides gearing with 40 per cent debt. This is lower gearing than for network businesses for example and is more consistent with the typical structures of generation businesses.

Our research into listed Australian generators (Energy Developments Ltd, Energy World Corp Ltd and Pacific Energy Ltd) identified an average debt of 27 per cent and 28 per cent for two year average and five year average observations.

Therefore:

- the debt to equity ratio assumed by the IMO appears more consistent with the generation sector, albeit with a higher debt ratio than is experienced in the sector; and

- the IMO's approach of recognising the distinguishing characteristics of the generation sector in this WACC parameter, but not in others, appears to be mutually inconsistent and supports PE's view that the WACC for the MRCP should be based on relevant generation sector business characteristics.

3 An illustrative appropriate WACC for the MRCP

The discussion in the previous chapter demonstrates views on the WACC parameters that recognise

- more appropriate market conditions and observations;
- the fact that this decision is for the generation sector and not a monopoly network sector; and
- the need to drive appropriate incentives to attract generation investment in the SWIS.

Section 4 overleaf demonstrates that the illustrated WACC above is more closely aligned with market outcomes and relevant WACC determinations than the IMO's Draft Determination.

The following table compares the IMO Draft Determination with the WACC that more appropriate WACC parameters provides. It illustrates that the IMO Draft Determination appears to have materially understated WACC.

Table 3-1 – Capital Asset Pricing Model parameters

CAPM Parameter	Notation/ Determination	IMO Draft (y=0.5)	IMO Draft (y=0.25)	Illustrative
Nominal risk free rate of return (%)	R_f	3.13%	3.13%	5.00%
Expected inflation (%)	i	2.57%	2.57%	2.57%
Real risk free rate of return (%)	R_{fr}	0.55%	0.55%	
Market risk premium (%)	MRP	6.00%	6.00%	6.00%
Asset beta	β_a	0.5	0.5	-
Equity beta	B_e	0.83	0.83	1.00
Debt risk premium (%)	DRP	2.94%	2.94%	3.60%
Debt issuance costs (%)	d	0.125	0.125	0.125
Corporate tax rate (%)	t	30%	30%	30%
Franking credit value	γ	0.5	0.25	0.00
Debt to total assets ratio (%)	D/V	40%	40%	35%
Equity to total assets ratio (%)	E/V	60%	60%	65%
Nominal pre-tax cost of debt		6.20%	6.20%	8.73%
Nominal Post-tax cost of equity		8.11%	8.11%	11.00%
WACC (Nominal Pre-tax)		**8.20%**	**8.76%**	**13.27%**
WACC (Real Pre-tax)		**5.49%**	**6.03%**	**10.43%**

Note: The IMO determined in its discussion papers that the values for some parameters would be set and some would be determined based on current observations.

Source – IMO spreadsheets http://www.imowa.com.au/mrcp.

4 Comparative WACCs observed in other decisions and in the market

The IMO's calculation of WACC has failed to recognise other regulatory decisions and market observations and instead has relied on network based regulatory precedent and assumptions. The IMO has therefore presented a view which is not representative of market conditions.

The following table compares the IMO WACC (with a gamma of 0.25) with:

- recent WACC determinations by IPART[21] for the retail and generation sectors; and
- WACC in the generation and retail sectors calculated based on:
  - 5 years' market observations of beta and gearing for five Australian businesses for which data is available;
  - assumptions for the risk free rate, debt margin, debt issuance costs, and market risk premium consistent with the illustrative example used in section 3; and
 - gamma which is set at 0.25 to recognise the fact that the examples are Australian listed corporations.

Table 4-1 – Capital Asset Pricing Model parameters

CAPM Parameter	IMO Draft (y=0.25)	Regulatory Decision		Market observations of Beta and Gearing				
		IPART March 2010 Retail	IPART March 2010 Generation	Energy Developments	Energy World Corporation Energy World Corp	Pacific Energy	Origin Energy	AGL Energy
Nominal risk free rate of return (%)	3.13%	5.50%	5.50%	5.00%	5.00%	5.00%	5.00%	5.00%
Expected inflation (%)	2.57%	3.00%	3.00%	2.57%	2.57%	2.57%	2.57%	2.57%
Real risk free rate of return (%)	0.55%							
Market risk premium (%)	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%
Asset beta	0.5							
Equity beta	0.83	1.00	1.00	0.63	1.49	0.93	0.65	0.57
Debt risk premium (%)	2.94%	2.85%	2.85%	3.60%	3.60%	3.60%	3.60%	3.60%
Debt issuance costs (%)	0.125%	0.00%	0.00%	0.125%	0.125%	0.125%	0.125%	0.125%
Corporate tax rate (%)	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%
Franking credit value	0.25	0.40	0.40	0.25	0.25	0.25	0.25	0.25

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[21] IPART, March 2010, Review of regulated retail tariffs and charges for electricity 2010-2013, Electricity – Final Report

Debt to total assets ratio (%)	40%	30.00%	50.00%	47.00%	15.00%	24.00%	18.00%	17.00%
Equity to total assets ratio (%)	60%	70.00%	50.00%	53.00%	85.00%	76.00%	82.00%	83.00%
Nominal pre-tax cost of debt	6.20%	8.35%	8.35%	8.73%	8.73%	8.73%	8.73%	8.73%
Nominal Post-tax cost of equity	8.11%	11.50%	11.50%	8.78%	13.94%	10.58%	8.90%	8.42%
WACC (Nominal Pre-tax)	**8.76%**	**12.32%**	**11.19%**	10.11%	16.60%	12.47%	10.99%	10.50%
WACC (Real Pre-tax)	**6.03%**	**9.05%**	**7.95%**	7.35%	13.68%	9.65%	8.21%	7.73%

The comparison, which is shown graphically overleaf, illustrates that the IMO's WACC is significantly less than independent derived comparatives for generators and other participants in wholesale electricity markets.

Comparison of Pre-tax WACC (IMO Draft calculations and other decisions and observed data)
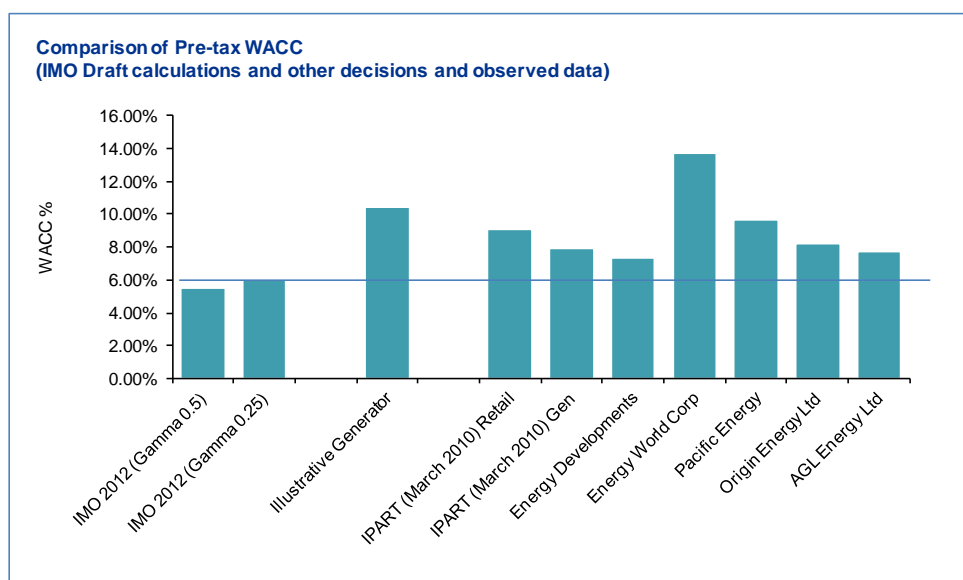
What is most relevant in this comparison are the facts that:

- IPART chose to apply an equity beta of 1.00 for both retail and generation in the assessment of electricity pricing[22], clearly well above a beta of 0.80 as chosen by IMO.

- The market observations for beta in the Australian listed companies with generation interests show a range of 0.57 to 1.49, with an average of 0.85. Even with some data points with lower betas, the average is higher than that allowed by the IMO, and the range extends to 1.47.

- The market observations also show gearing levels of 15 per cent to 47 per cent with an average of 24 per cent. The gearing for these energy companies is quite low. The IMO has adopted a gearing of 40 per cent debt which whilst lower than a regulatory assumption for networks of 60 per cent, does not reflect the market observations for generators. The IMO has therefore overestimated the gearing in its calculation of WACC for the MRCP.

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[22] IPART – Review of regulated retail tariffs and charges for electricity 2010-2013, Electricity – Final Report dated March 2010