Independent Market Operator

IMO position paper on The Allen Consulting Group's Review of the Weighted Average Cost of Capital

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1. INTRODUCTION

This paper discusses the IMO's response to recommendations made by The Allen Consulting Group, who were commissioned by the IMO to provide advice on the determination of the Weighted Average Cost of Capital (WACC) for the Maximum Reserve Capacity Price.

The review of the WACC resulted in a number of recommendations made by The Allen Consulting Group. This paper discusses those recommendations in light of the more general review of the Maximum Reserve Capacity Price being conducted by the IMO. A number of the recommendations made by The Allen Consulting Group have already been implemented by the IMO when determining the Maximum Reserve Capacity Price for the 2008 Reserve Capacity Cycle. Other recommendations will be accepted and implemented by the IMO as part of the overall review of the Maximum Reserve Capacity Price determination methodology. Discussion is also provided on a small number of recommendations that will not be included as part of the review.

The Allen Consulting Group report can be found on the IMO website.

2. RECOMMENDATIONS BY THE ALLEN CONSULTING GROUP

The following section presents the recommendations provided by The Allen Consulting Group in their final report. In response to the issues raised by The Allen Consulting Group, the IMO has made comments, outlined in Blue text font. Many of the recommendations made by The Allen Consulting Group have been accepted by the IMO. There are some issues not endorsed by the IMO. These are also identified and discussed.

2.1 *Recommendations and Response*

It is recommended that the IMO calculate WACC values by use of the capital asset pricing model (CAPM) to estimate the cost of equity.

It is recommended that the context for the application of the WACC implies that it should be expressed in real terms, consistency with which implies that all forecasts of cash flows should be presented in real terms.

The IMO proposes to use the capital asset pricing model to determine real WACC as recommended by the Allen Consulting Group.

The Allen Consulting Group is of the view that it is appropriate and preferable to use a post-tax WACC when determining regulated revenues and prices. This approach would determine regulated revenues and prices with a cost of taxation that is closer to that which would actually be incurred by an efficient provider of an open cycle gas turbine (OCGT) peaking plant.

However, Western Australia's Economic Regulation Authority (the ERA) must approve the Maximum Reserve Capacity Price. Consequently, the IMO may consider that maintaining consistency with the regulatory precedent, established by the ERA's determinations with respect to energy (electricity and gas) transmission and distribution, and rail access, warrants adopting a pre-tax WACC.

The Allen Consulting Group considers that the treatment of taxation is ultimately a matter for the IMO to determine taking into account these factors. Accordingly, both post-tax and pre-tax WACC values are presented in this report.

The IMO considers that on balance, it is most appropriate for a pre-tax WACC to be used within the Maximum Reserve Capacity Price determination. This decision is considered appropriate because the project contemplated within the Maximum Reserve Capacity Price methodology is notional in nature and the increased complexity required to determine the tax-related aspects of such a project is not warranted, particularly given the great diversity that could be expected within real projects.

CAPM and WACC parameters

Recommended values of CAPM and WACC parameters are set out in Table 1.1 [of the Allen Consulting Group Report] together with calculated returns on equity and

WACC values. Of these parameters, the market variables of the nominal risk free rate of return and debt margins should be updated at the time that the IMO finally calculates the Maximum Reserve Capacity Price for a prospective capacity year.

Note that in calculating the WACC, the Allen Consulting Group has excluded the recommended debt issuance cost allowance of 12.5 basis points. This is because the calculation of the Maximum Reserve Capacity Price includes a margin to cover, amongst other things, financing costs. While regulatory precedent in Australia is to include these costs in the WACC, to do so here would double count these costs.

In terms of the annual calculation of the Maximum Reserve Capacity Price, the Allen Consulting Group recommends that:

- the nominal risk free rate of return, debt margin and forecast of inflation be updated each year – note that we recommend against using inflation-linked bonds as a means of providing a direct estimate of the real risk free rate or to establish a market-based forecast of inflation; and

- the remaining variables (market risk premium, equity beta, corporate tax rate, franking credit value, and the gearing level) be fixed for a period of time, say five years.

The second group of variables are likely to remain stable over longer periods of time, and fixing the values of these parameters would minimise the administrative complexity, burden and cost of the recommended approach. This approach is also consistent with that taken in establishing the WACC for electricity transmission networks covered by the National Electricity Rules.

The IMO accepts the use of the WACC parameters proposed by The Allen Consulting Group with estimation of the nominal risk free rate of return, debt margin and forecast of inflation being determined yearly as part of the annual Maximum Reserve Capacity Price determination and review. The second group of variables referred to by the Allen Consulting Group shall be reviewed as part of a more structural review process to be established by the IMO.

The insurance premium of 12.5 basis points will be included within the WACC and removed from the remaining methodology.

The parameter "D"

The parameter "D", which is the real interest rate on debt, is used in the formula for CAPCOST[t] in Appendix 4 of the Market Rules to allow for the financing costs incurred during construction. It is erroneous to include an allowance for debt costs – the financing costs incurred include the opportunity cost incurred by equity providers and so the WACC is the appropriate rate to use.

The Allen Consulting Group recommends that the parameter "D" be replaced by the WACC (calculated on the basis outlined above).

The IMO accepts the proposed method to use the WACC in place of the current parameter "D" and has included this approach in the associated Maximum Reserve Capacity Price Market Rule Changes.

Accounting for inflation between the calculation of the price and its application

While outside the current scope of the works, the Allen Consulting Group notes that there is no allowance in the costs included in CAPCOST[t] and PRICECAP[t] for the effects of inflation between the time the Maximum Reserve Capacity Price is established, and the Capacity Year in which it will apply.

The Allen Consulting Group considers that the Maximum Reserve Capacity Price should reflect the nominal cost that would be incurred by an OCGT peaking plant in a Capacity Year; this requires that costs are adjusted to reflect the impact of actual or forecast inflation.

The IMO does not consider it necessary to account for the effects of inflation in the two years between when the Reserve Capacity Auction takes place and the year in which the capacity will be delivered because it is likely that many of the contractual components will be in real terms ("dollars of the day"). These major components are likely to include the transmission cost estimation, OCGT component costs, land acquisition costs and engineering, design and construction costs.

It is acknowledged that some components will be subject to inflationary increases (or decreases) in the timeframe considered, but these are likely to be minor in nature in the overall calculation of costs. In the scenario considered, it is not expected that the project proponent would have signed contracts, but it could reasonably be expected that the proponent would have obtained quotes for the major project components in order to ensure financial viability of the project.

Therefore, the IMO supports the retention of the existing methodology, which takes account of costs experienced in the year in which the Reserve Capacity Auction takes place.

The parameter "k"

The Allen Consulting Group recommends that the parameter "k" in the formula for PRICECAP[t] in Appendix 4 of the Market Rules be calculated using the model in the separate spreadsheet provided to the IMO.

- Based on its preceding analysis, the Allen Consulting Group observes that there are a number of inconsistencies in the current model:
    - the payment stream resulting from the annuity formula is a fixed constant dollar payment stream (real WACC applied to the asset base) — and the NPV can be calculated by discounting the payment stream by the real WACC;
    - the payment stream under the Long Term Special Price Arrangement is a nominal payment stream — the NPV should be calculated using the

nominal WACC (not the real WACC as occurs in the current model); and

- the inflation rate implied in the real WACC, while not explicitly specified, likely differs from the inflation rate used to escalate the stream of payments under the Long Term Special Price Arrangement.

- The payment stream under a Long Term Special Price Arrangement would be escalated annually after the first year (that is, the first year of the two payment streams should originally be the same under the model before being adjusted by "k") — the current model escalates payments monthly (including the first payment).

- The real WACC (and nominal WACC) should be converted to monthly rates so that the compounded monthly rate is equivalent to the calculated WACC.

The MRCP calculated for the 2007 Reserve Capacity Cycle used the methodology recommended by The Allen Consulting Group. Further comments are provided on the application of the parameter k below.

In response to other issues raised by The Allen Consulting Group in respect of the parameter k, the IMO has proposed to remove the parameter k from the Maximum Reserve Capacity Price methodology. The removal of this term is coupled with changes to the inflation mechanism used within the Long Term Special Price Arrangements rules.

The Allen Consulting Group comments that:

> "…effect of the variable "k" is to "un-do" the "– 1 per cent" component of the "CPI – 1 per cent" escalation factor by inflating the escalated payment stream to fully compensate the investor for inflation." (p.52)

This method is appropriate for Capacity Credits that are subject to a Long Term Special Price Arrangement. However, applying the parameter k in this way also affects the price of all other Capacity Credits that are settled through the Wholesale Electricity Market (i.e. uncontracted Capacity Credits). Including the parameter k in this case leads to an inefficient price outcome for the Reserve Capacity Mechanism because the "scaling up" by the k parameter is not balanced by the "scaling down" effect of the "CPI minus 1%" term as in the case of Long Term Special Price Arrangements.

To address this inefficiency, the IMO has proposed to remove both the parameter k and the "minus 1%" term within the provisions concerning Long Term Special Price Arrangement.

Other potential issues with the regime

As noted previously, while addressing the matters discussed above, The Allen Consulting Group discovered a number of broader issues with the regime surrounding the Maximum Reserve Capacity Price which should be analysed further. These are set out below, separated into the issues that arise when the Maximum Reserve Capacity Price is being used as an input into setting the administered price for non-auctioned capacity and when it is being used as the price cap for an auction.

Maximum Reserve Capacity Price – non-auctioned capacity

- WACC – the cost of capital associated with capacity that enters commercially may be higher than that procured through an auction because the former is not underwritten by a long-term contract. This could lead to the administered price not being sufficiently high to attract commercial entry (and hence place greater reliance on the use of a Reserve Capacity Auction).

  This may be a relevant issue but is beyond the scope of the current review. It may be argued that applying for Capacity Credits through the bilateral trade declaration mechanism, rather than electing to enter the Reserve Capacity Auction formally indicates an intention to bilaterally trade, and that a higher rate of return should be part of any bilateral contracting arrangements between the contract parties.

- Limit on the price – the fact that the maximum administered price for non-auctioned capacity is 85 per cent of the Maximum Reserve Capacity Price may lead to the administered price not being sufficiently high to attract commercial entry (and hence place greater reliance on the use of a Reserve Capacity Auction).

  - We note that the fact that the Maximum Reserve Capacity Price is calculated on the assumption that the life of the OCGT peaking plant is only 15 years may offset this (that is, if the true economic life exceeds 15 years) – in this context, we understand that an operational life of 30 years is assumed in calculating fixed operating and maintenance costs.

  The above points highlight the complexity of the process in determining the Maximum Reserve Capacity Price. The current mechanism reduces the administered price of uncontracted Capacity Credits in the case where the Reserve Capacity Auction is cancelled. However, as noted above, the Reserve Capacity Mechanism is based on cost recovery over 15 years, where the operational life of the asset is much longer. These two issues will, to some degree compensate for each other.

  It should be remembered that the purpose of the Maximum Reserve Capacity Price is to allow a proponent to recover all reasonable costs when progressing through the Reserve Capacity Auction process.

It is further noted that as part of the wider review the IMO has proposed to increase the contingency margin to 15%.

- Implicit indexation – a new entrant will only recover its costs if the Maximum Reserve Capacity Price is escalated for inflation in each year. This is because the Maximum Reserve Capacity Price is calculated on the basis that it is an indexed annuity. However, the escalation that is applied implicitly to the Maximum Reserve Capacity Price is the change in the input prices. This is because the Maximum Reserve Capacity Price is recalculated each year on the basis of new input prices. Hence, and ignoring the 85 per cent rule above, a new entrant will fail to recover costs if input prices do not keep pace with output price inflation, and make a windfall if input prices rise at a faster rate than inflation.

The IMO considers that it may be possible that a new project proponent will over, or under recover project costs if the project proponent does not take advantage of the Long Term Special Price Arrangements that may be available through the Reserve Capacity Auction process. However, a project proponent submitting a Bilateral Trade Declaration who indicates its intent to bilaterally trade Capacity Credits increases its chance of being assigned Capacity Credits and inherently accepts to be a price taker for the purposes of the Reserve Capacity Mechanism. The IMO considers that no action is necessary in regard to this issue.

Maximum Reserve Capacity Price – auctioned capacity

- Term – the fact that the Long Term Price Arrangement is only for 10 years – after which time the generator would get paid the administered price (which in turn is set at a maximum of 85 per cent of the Maximum Reserve Capacity Price) leaves open the possibility that a generator may not be able to recover its total cost.
    - Again, we note that the fact that the Maximum Reserve Capacity Price is calculated on the assumption that the life of the OCGT peaking plant is only 15 years may offset this (that is, if the true economic life exceeds 15 years) – again, we understand that an operational life of 30 years is assumed in calculating fixed operating and maintenance costs.

No evidence has been presented by The Allen Consulting Group, or others, that this condition would lead to a positive or negative net outcome. This is beyond the scope of the issue currently considered by the IMO and no action is deemed necessary.

Other issues

- Calculation of annual fixed operating and maintenance costs (FIXED_O&M[t]) — there appear to be similarities between these costs and capital costs as in both cases a present value is established in the current

year. However, rather than an annuity, the Allen Consulting Group understands that the present value of FIXED_O&M costs (based on the first 15 years of these costs) is divided by the number of years (that is, 15) and the size of the OCGT peaking plant (160 MW) to derive an annual cost.

The IMO accepts that calculating annualised Fixed O&M costs may be more appropriate that by dividing the total costs by 15. For the 2007 Maximum Reserve Capacity Price, the IMO used the annualisation process in preference to the simple arithmetic divisor. As part of the overall review of the Maximum Reserve Capacity Price, the IMO has endorsed the view presented by The Allen Consulting Group and proposes the use of an annualisation process.

- Economic life — as noted above, the technical report underpinning the estimate of fixed annual OCGT peaking plant operating and maintenance costs indicates the assumed operating life of an OCGT peaking plant is 30-years. If the economic life of the plant were equal to the operating life (or at least greater than 15 years), this would be expected to result in a price (revenue) that unambiguously over recovers costs.

  The IMO acknowledges that under the current Market Rule, it may be possible that the revenue stream for notional projects associated with the Maximum Reserve Capacity Price may over recover actual costs. However, other than The Allen Consulting Group, no Market Participants have raised this as an issue in the Reserve Capacity Mechanism, and is therefore beyond the scope of the current review.

3. CONCLUSION

The IMO retained The Allen Consulting Group to conduct a review of the Weighted Average Cost of Capital as used in the determination of the Maximum Reserve Capacity Price. Having conducted the review, the Allen Consulting Group made a number of recommendations including:

- The use of the Caital Asset Pricing Model (CAPM) was proposed together with appropriate WACC parameters;
- Replacement of the parameter “D” by the WACC;
- Accounting for inflation between the calculation of the price and its application was proposed;
- Details surrounding the application of the parameter “k”;
- Other potential issues in relation to both auctioned and non-auctioned capacity; and

- A number of other issues with regard to the calculation of annual fixed operating and maintenance costs and the economic life of the project considered as part of the Maximum Reserve Capacity Price.

The IMO has endorsed and accepted a number of the recommendations made by The Allen Consulting Group. Some of these recommendations have already been implemented, and some are the subject of current rule change proposals. The IMO has also discussed a small number of the recommendations made by the Allen Consulting Group which have not been accepted by the IMO.