# The cost of capital financing for

# Advanced Metering Infrastructure

## A response to the DPI Discussion Paper

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# Executive summary

The DPI has been requested by the Victorian electricity distribution businesses (DBs) to increase the weighted average cost of capital (WACC) applying to the costs for proposed enhanced interval metering (IMA) rollout by 200 basis points above the WACC awarded by the ESCoV in its Electricity Distribution Pricing Determination for the period 2006-10 (EDPD). The work proposed for the IMA roll out is to be legislated under an order in council (OIC).

CUAC has engaged Headberry Partners P/L to review the claims by the DBs for increased rewards and the DPI assessment of these claims.

The request for an increase in the WACC was supported by eight identified increases in risks which have been qualitatively described, but have no quantitative assessment using independent data to support the quantum increase requested.

The DPI has reviewed the qualitative assessment provided by the DBs addressing each identified risk in turn. The DPI is of the view that none of these claims has validity. Headberry Partners can find no reason to disagree with the DPI assessments.

However a number of compensating benefits have been identified as a part of this review; neither the DBs nor DPI have addressed these compensating benefits. The analysis of these compensating benefits implies that there is ultimately little or no additional risk to the DBs that was not covered in the EDPD by the ESCoV. This would support the DPI conclusions.

Examination of the development of the WACC awarded to the DBs under the EDPD shows that:-

- The WACC awarded is derived from a market sectoral analysis and not for individual elements of the activities of the DBs. As the work under the OIC is typical of the activities within a sector, it must be assumed that the WACC already includes for risks such as are identified by the DBs.
- The DBs are already receiving a WACC superior to their interstate equivalents, and therefore can be assumed to be rewarded for any higher risk profile the OIC entails.
- The Victorian DBs are already being rewarded above the market trends, thereby providing no justification for an increase in WACC.
- The addition of 200 basis points would move the risk of the work from an equity beta of 1.0 to 1.84; ie into the speculative range of investments. The work entailed by the OIC does not fall into this category.

# 1. The Task

In 2004, the Essential Services Commission of Victoria (ESCoV) mandated the roll out of interval metering for all consumers. Prior to this Interval Metering had been applied solely to large consumers of electricity, and quantities used by small users were calculated based on accumulation meters read quarterly and a deemed profile of usage.

After investigation by Government, the Victorian electricity distribution businesses (DBs) and electricity retailers, the ESCoV mandated roll out included in the EDPD, is to be enhanced via an Order in Council (OIC) to:-

- Include two-way communications with each meter to permit remote meter reading and connection/reconnection, and
- Speed up the schedule of the roll out.

In discussions with Government the DBs have argued that the weighted average cost of capital (WACC) awarded to them for the ESCoV initiated roll out, is insufficient for the increased risks they face under the OIC established advanced meter roll out program. The DBs have advised that the post tax WACC of 5.9% set by ESCoV needs to be increased to 7.9% (ie an increase of 200 basis points) for the IMA roll out. The DBs advised that the additional risks they face are:-

1. OIC sustainability risk
2. Optimization risk
3. Timing risk

DBs assess that these risks contribute 1.5% to the risk premium sought

4. Capex overspend risk
5. Opex overspend risk
6. Competition risk
7. Exchange rate risk
8. Business reputation risk

DBs assess these risks contribute 0.5% to the risk premium sought

Other than these broad allocations, the application by the DBs does not quantify a risk premium applicable to each identified risk, but considers that in combination they all combine to increase their risk profile which they consider would be covered by the addition of a premium of 2% on the WACC set in the EDPD.

The DBs have provided a description and substantiation of each of these risks but fail to quantify any element of the change in risk profile from that they face as part of their normal business activities as determined under the EDPD.

The purpose of this report is to provide a view as to the legitimacy of the DPI assessment and to provide additional views from a consumer viewpoint of the basis of the application from the DBs for an increase in WACC to provide for the work covered by the OIC.

In particular the report attempts to put the application by the DBs for an increased return on capital for undertaking the IMA rather than the IM roll out determined by the ESCoV into a context which examines the current recognition of the risks faced by the DBs in the provision of regulated electricity distribution services.

The report provides:-

- A view on the DPI assessment.
- An assessment putting the development of the WACC by ESCoV into context of the OIC.
- An indication of what an increase in 2% on the WACC would mean to the WACC inputs.
- Information on recent market movements which might impact on a WACC specifically developed for the EDPD and by extension the OIC, and
- A listing of offsetting risk reductions that should be considered as part of the OIC.

# 2. The DPI assessment

The DPI has assessed that there is no substantive increase in risk profile above that set in the EDPD for the DBs as a result of the IMA roll out. The DPI assesses that the DBs are not faced with any increased risks due to:-

- The risk nominated being "… a market-wide, nondiversifiable event that would justify a higher beta (and cost of capital)". (Risks 1, 2, 3, 7, and 8)
- A future regulator being more likely than not to approve capex and opex involved in a project which is government authorised. (Risk 1)
- A future regulator being more likely not to optimize down the value of the assets involved, as ESCoV practice has been not to involve optimization. [This report adds that the recent AEMC decision on transmission reaffirms this approach.] (Risk 2)
- DBs having had input into the funding approach and project timing. (Risks 3, 4 and 5).
- DBs being able to directly manage the risks (Risks 3, 4, 5, 6 and 8)
- There being an incentive program which is symmetrical between rewards and penalties, which provides an incentive to perform (Risks 4 and 5)
- A regulator being more likely to overstate capex and opex requirements (Risks 4 and 5)
- The OIC providing some protection for stranded meters (Risk 6)
- Exchange rate variation being symmetrical (Risk 7)

The DPI has addressed the application from the DBs for an increased WACC for this activity in detail. It has taken each increased risk element and addressed it in turn. A review of the DPI assessment provides a well reasoned argument for the conclusions reached by DPI. As a result the DPI arguments and conclusion are supported as far as they go.

What the DPI assessment fails to do is provide an indication of the magnitude of the problem and then address the each of the risks identified in terms of an increased requirement above the determination by the ESCoV.

It is important to note that many of the risks identified by the DBs have already been, in the most part, reviewed and assessed in the EDPD. A review on this basis shows that there is only a marginal change in the fundamentals behind the IMA roll out which might add to the risk profile assessed in the metering element of the EDPD. This is because much of the costs and risk of the IMA are already incorporated into the EDPD IM roll out program.

At the most basic level, the DBs are in error in claiming that all of the IMA roll out program should be subjected to the increased risk assessment. At most, only the

increased costs associated with remote reading and an accelerated timetable should be subject to a review for any increase in the risk profile of the DBs.

The DPI assessment fails to address what the impact of this increase in WACC constitutes, on what basis the WACC is developed and where this increase in WACC arises relative to the approach in setting the WACC.

In addition the DPI also does not fully address what risks faced by the DBs might be reduced by changes in the regulatory environment and as a result of the OIC being implemented.

These aspects are developed in later sections of the report.

# 3. What is the basis of the WACC for DBs

**A global view**

The DBs allege that as a result of the OIC they face increased risks to modify the IM roll out program established by the EDPD in order to comply with the IMA program initiated by the OIC. To accommodate this increased risk, they require the WACC to be increased by 200 basis points.

As a first step it is important to identify why a WACC is used in a regulatory decision and how it is derived. A business operating in a commercial environment, sells its products and services in competition with other businesses. The revenue the business gains from its sales determines its profits and ultimately the reward earned by its owners. A monopoly has no competition to ensure that its prices for its products and services are appropriate. To replicate this competitive pressure, a regulator determines what is considered to be a reasonable reward for the business owners by sourcing data from the competitive sector. Market data is sorted into a series of sectors; from the market as a whole and from individual sectors, the regulator develops a typical reward that would result if the monopoly were subjected to competition.

The second step is to identify what risk level (and reward) the monopoly faces so that the regulator can equate a risk/reward level from the market to apply to the monopoly business. The market does not analyse specific activities of each business independently – it analyses a sector, covering all of the elements comprising that sector. For the DBs to allege that they are entitled to a reward based on their sector performance, yet require a higher reward for one element only of their activity is entirely at odds with the way the market works. The risk/reward equation for each sector is very broad and does not address specific elements included in the range of activities undertaken by a regulated business.

The EDPD addressed these matters in some detail and the ESCoV implies by their Determination (by setting the WACC the same for both regulated services and IM roll out) that the DBs effectively face the same risk profile with the IM roll out included in the range of services provided by the DB, as without the IM roll out being included. This is eminently sensible as a requirement of a DB must be to include some form of metering in the range of activities it must perform.

**The WACC decision of 2005**

The final decision of the ESCoV in the EDPD determined that the weighted average cost of capital appropriate to the activities of the DBs was 5.9% real. This was derived from a WACC developed from the Capital Asset Pricing Model (CAPM) using the following inputs.

**Table 9.1: Weighted average cost of capital and input parameters**

| | |
|---|---|
| **Risk free rate (real) (Rf)** | 2.64% |
| **Rural risk adjustment** | 0 |
| **Debt premium (Rd)** | 1.425% |
| **Equity (market risk) premium (Rm – Rf)** | 6.00% |
| **Equity beta (βe)** | 1.00 |
| **Franking credit value (γ)** | 0.50 |
| **Gearing (debt/assets)** | 60% |
| **Inflation** | 2.56% |
| **Real after-tax 'vanilla' WACC** | 5.90% |

It is important to note that in the determination of ESCoV there was extensive discussion as to why it considered these inputs to be appropriate. ESCoV accepts that many of these inputs vary with time, and that there is argument that these inputs might be on the high side of appropriate and constitute a bias towards the DBs. The ESCoV accepts that a bias (if there is one) must be towards the benefit and needs of the DBs, as this would be in the long term interests of consumers as it would encourage greater investment rather than deter investment if the bias was against the DBs.

Additionally, it is worth noting the recent decision[1] of Australian Energy markets Commission (AEMC) that investment in electricity transmission networks is to be encouraged and one approach to ensure this (as the AEMC actually did) was by erring on the side of increasing the WACC to be used for a regulated business. Implicitly this would result in a higher WACC than might be absolutely reflective of market conditions or competition if this was possible.

There is concern (particularly of consumers) that the CAPM inputs used by ESCoV to derive the WACC for the electricity DBs, potentially incorporates a bias in favour of the DBs. With this in mind, there is a sound basis for ESCoV not increasing the WACC for the metering portion of the DB revenue despite the DBs alleging that this element of work has a higher risk profile than the other elements of their activities.

It should be noted that the CAPM inputs are assessed across a sector which is inclusive of a range of risks for the various elements that comprise the activities carried out by each of the companies comprising the sector. It must be accepted that the sector risk is an all encompassing assessment of risk, and not derived from calculating a total estimate of risk applying to each specific element of the sector.

For the DBs to cite that one relatively small element of their revenue might be subject to a higher risk profile than other elements is quite understandable. However for them to cite that because one element of their risk/reward profile

[1] The AEMC review of transmission revenue and pricing carried out at the request of MCE.

needs to be adjusted upward as they perceive a greater risk in this one area, denies the very basis that the market assesses risk/reward over the entire gamut of the sectoral activities. To identify that one element should be assessed for risk differently to all other activities included in the same sector, is flawed reasoning. For this argument to be taken to its conclusion, the DBs would have to provide market data of the risk profile for each element of its activities and relate this to their overall market risk. There is no such market data available for this depth of analysis. Therefore as metering is expected of a DB then the sector market data must be seen to include for metering.

It is also appropriate to put into context the amount of revenue that was subject to this claim for the increase in WACC for metering.

**Prescribed services revenue, all distributors, 2006-10, $million, real $'04[2]**

| Total revenue requirement | AGLE | CitiPower | Powercor | SP AusNet | United Energy | Total |
|---|---|---|---|---|---|---|
| Metering | 43.6 | 46.4 | 122.6 | 128.9 | 71.9 | 413.4 |
| Services | 691.3 | 890.9 | 1788.4 | 1585.8 | 1326.3 | 6282.7 |

This shows that in the EDPD, the metering component of revenue is 6% of the total revenue set by the ESCoV. To decide exactly that the WACC for this proportion of the revenue (ie metering) should be increased by 200 basis points due to the increased risks, results in the need to assess with the same degree of exactness, the risk profiles for each of the many other elements that comprise the services elements of the regulated business.

If the DBs and regulator can be so certain of the risk profiles (and therefore the WACC) of each element of the DB activities, then this would reduce to absurdity the regulatory approach used to set the inputs in the CAPM. The EDPD assesses the risk profile of the business as a whole and compares this to the market as a whole. There is clearly no ability for a DB or regulator to assess the WACC development for one element of activity in isolation.

Therefore for such a small part of the decision to be identified as not being included with the whole of the decision, belies the principles behind the CAPM approach which only looks at the risk profile of the business as a whole.

The decision of ESCoV in the development of the WACC for the DBs, results in the risk profile of the DBs being assessed as having an asset beta of 0.4 based on gearing of 150% debt/equity. This is significantly above the asset beta for this sector – CommSec assesses the asset beta between 0.2 and 0.4 combined with a higher dividend than almost every other sector. A comparison of asset betas can be seen in appendix 1 which shows the dividends and betas for all sectors in

[2] ESCoV EDPD 2005

the ASX over each of the last 6 month periods.

A regulatory decision is intended to provide a surrogate for competition. The regulator sets the WACC based on the market sector averages, accepting that the market sector used most closely matches the activities of the regulated business. Provision and reading of meters is a normal activity of companies in the Utilities sector and therefore it would seem to be impossible for the DBs to identify that one of the core elements is set incorrectly.

# 4. What is the impact on inputs of a 2% increase?

The WACC developed for the EDPD and the roll out of metering is derived from the CAPM based on inputs developed from market observations. The following inputs were used by ESCoV to develop the WACC of 5.90% real after tax vanilla WACC.

**Table 9.1: Weighted average cost of capital and input parameters**

| | |
|---|---|
| **Risk free rate (real) (Rf)** | 2.64% |
| **Rural risk adjustment** | 0 |
| **Debt premium (Rd)** | 1.425% |
| **Equity (market risk) premium (Rm – Rf)** | 6.00% |
| **Equity beta (βe)** | 1.00 |
| **Franking credit value (γ)** | 0.50 |
| **Gearing (debt/assets)** | 60% |
| **Inflation** | 2.56% |
| **Real after-tax 'vanilla' WACC** | 5.90% |

The following formulae were used to calculate the WACC[3].

$$WACC = R_e \frac{E}{V} + R_d \frac{D}{V}$$ **and** $$R_e = R_f + \beta_e (R_m - R_f)$$

**Using the ESCoV inputs, $R_e$ calculates to be 8.64%, and $R_d$ becomes 4.065%. Based on a gearing of 60% debt, real WACC calculates to 5.895%.**

If, as the DBs requested, 200 basis points were to be added to WACC, then equity beta (as the only element of the calculation that represents risk) would have to be set at 1.84 (rather than 1.0) as MRP remains constant and debt premium remains constant.

Equity beta and asset beta are related by the formula[4]

$$\beta_E = \frac{E+D}{E}\beta_A = \left[1+\frac{D}{E}\right]\beta_A$$

As the Utilities sector has a gearing of 102% (see appendix 1) this implies that the asset beta associated with an equity beta of 1.84 for the Utilities sector would therefore be 0.91.

[3] See EDPD 2005
[4] Sloan School of Management Finance Theory II (15.402) – Spring 2003 – Dirk Jenter

For what is perceived to be a low risk business, this compares badly with asset betas for most other stocks – an asset beta of this size is comparable to a risk profile similar to stocks in the retailing area, auto industry, transportation, and computer hardware as shown in appendix 1.

Conversely, the equity beta associated with the “All Ords” (the market average) is 1.39, based on the gearing (debt/equity) of 36%. Thus an equity beta of 1.84 suggested by the DBs greatly exceeds the market average by a considerable margin.

An equity beta of such a magnitude for such activities is patently grossly overstated.

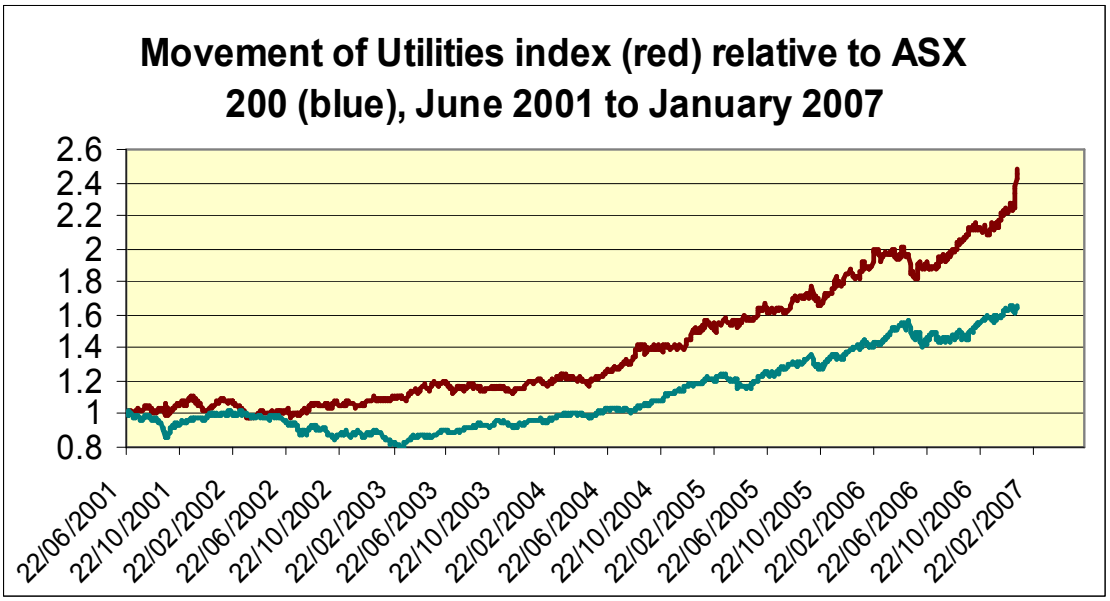
# 5. Market trends impacting WACC

**The market as a whole**

Analysis of the financial performance trends of network service providers is by use of the Utilities index of the ASX. Since mid 2001, the ASX has developed this index representing energy infrastructure assets which is dominated by energy transport assets – gas and electricity distribution and transmission.

The Utilities index comprises predominantly publicly listed energy network owners including DUET, Hastings, Alinta Infrastructure, APT, Envestra, AGL, Alinta, Babcock & Brown Infrastructure, Mariner Pipeline, SP AusNet, and Spark Infrastructure. These companies comprise over 90% of the Utilities index. All other network owners are Government owned or Government dominated as in the case of ElectraNet SA.

Analysis of the financial performance of Utilities compared to the market average shows that Utilities have significantly out performed the market (as typified by the ASX 200). In fact, the Utilities index has increased at twice the rate of the ASX 200 over the five years of its existence. Based on five year trend lines the performance of the Utilities index implies a market risk premium (MRP) of 11.26% using the equity beta of 1.0 as used by ESCoV, whereas the ASX 200 shows an MRP of 4.5% at an equity beta of 1.36 derived from an asset beta of 1.0 and gearing of 36%[5].




**Source: CommSec data**

[5] See appendix 1 showing gearing of the "All Ords" as D/E = 36%

Interestingly the Utilities index shows a spike of more than 18% just after the AEMC released its decision on electricity transmission revenue – this decision enshrines the MRP and equity beta levels used by ESCoV, eliminates optimization risks, automatically rolls in actually incurred capex (regardless of its prudency) and effectively eliminates stranding risks.

It would seem that the market does not agree with the DBs that Utilities are being required to undertake any risky activities.

**The impact of gearing assumptions**

There is a basic assumption that the gearing of these DBs is a notional 60% debt, and 40% equity. The WACC is developed on this basis. A review of the most recent financial statements of Spark Infrastructure (owners of CitiPower and Powercor), Duet (66% owners of United Energy), SP AusNet and AGL/Alinta shows that this assumption is somewhat understated. In fact the average gearing across the five DBs is significantly higher than 60% debt, as the lowest geared entities (SP AusNet and Alinta) show gearing at about the notional level. However the other three DBs have gearing between 80-90% debt including significant contributions to equity through the inclusion of sizable valuations of intangible assets (such as being the holder of an electricity distribution licence). If these intangible are reduced to zero, this implies that gearing might be considered to be greater than 100% debt.

Thus there is a basic error implicitly made by ESCoV, in that the actual gearing of the businesses is well above the notional level assumed. That the DBs can and do trade profitably at a higher gearing than 60% implies that the conservative assumption of 60% debt provides the DBs with a WACC higher than is necessary for this class of asset. That the DBs do trade well at these higher levels of debt than has been assumed, is evidenced by the continuing positive divergence of the Utilities sector from the market average as assessed by ASX 200 index.

The market has assessed that the DBs are secure assets, despite their high levels of gearing. If the ESCoV had used actual gearing (say an average of 70%) as the basis for the WACC calculation, then the WACC set by the ESCoV would have been lower than that awarded in the EDPD and would be 5.4%.

**Market trends in gearing and equity beta**

The Utilities index shows a gearing (debt/equity) for the Utilities sector of 102%[6]. The sector asset beta is currently calculated by CommSec as 0.37, after being 0.31 a year ago and ranging through 0.23 6 months ago.

Using an equity beta of 1.0 as used by ESCoV, and the sector gearing of 102%, this implies that the current asset beta for the Utilities index would be 0.5. This is

[6] See appendix 1

significantly higher that the asset beta movement calculated by CommSec of a low of 0.23 to the current 0.37 over the past 12 months.

This shows that the WACC provided by ESCoV for the DBs is overstated already and to increase the WACC would provide further inflation of an already high WACC.

**Other regulatory decisions on WACC**

Generally all Australian regulators (including ESCoV) have used the same inputs used in the CAPM to derive the WACC, except in the case of equity beta. Equity betas as low as 0.75 have been applied to regulated water businesses, and 0.8 to regulated electricity distribution businesses (although on appeal this figure was revised to 0.9). Attached as appendix 2 is the view of the South Australian Treasurer as to why he considers an equity beta of 0.8 should apply to the South Australian electricity distribution business ETSA Utilities[7].

ESCoV cites in the EDPD that it believes an equity beta of 1.0 should apply to the Victorian electricity distribution businesses. In using this value, ESCoV has been supported by the AER. In direct opposition to this value, in their latest decisions, jurisdictional regulators (ICRC, IPART, QCA and ESCoSA)[8] have all reached the conclusion that a lower level of equity beta should apply – the median value being 0.9.

Other evidence provided by ESCoV in the EDPD[9] also supports that a lower equity beta is appropriate. Notwithstanding this movement by other regulators and equity betas derived from overseas Utilities, the ESCoV decided that the higher level was to be used.

ESCoV implies that in its view, the lower levels of historic equity betas are likely to be influenced by the "boom and bust" in the equities markets resulting from the impact of technology stocks of the late 1990s. Whilst accepting that this "boom and bust" might have impacted assessment of equity betas in the early part of this century, five years of recent market data supports that the impact of this "boom and bust" might well have been grossly overstated, as equity betas derived from post "boom and bust" still maintain the similar levels many years later.

This report is not intended to point out potential errors in the EDPD, but more to highlight that the Victorian DBs have been awarded a WACC higher than their interstate rivals (all other inputs being the same), and that there is potential that the WACC awarded by ESCoV is perhaps overstated.

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[7] An equity beta of 0.8 relevered using the gearing of 102% provided by CommSec for the Utilities sector results in an asset beta of 0.40, still above the range calculated by CommSec over the past 12 months (see appendix 1)

[8] See table 9.6 in EDPD

[9] See table 9.5 of EDPD

## Conclusion

With these recent market trends in mind, it is quite obvious that the WACC used by ESCoV is overstated, and that there is little basis for increasing the WACC on IMA roll out, when the WACC already being used can be seen to err significantly in favour of the Victorian DBs.

# 5. There are offsetting reductions in risk

The DPI discussion paper notes that the causes alleged by the DBs to increase the risk profile are:-

1. OIC sustainability risk
2. Optimization risk
3. Timing risk

DBs assess that these risks contribute 1.5% to the risk premium sought

4. Capex overspend risk
5. Opex overspend risk
6. Competition risk
7. Exchange rate risk
8. Business reputation risk

DBs assess these risks contribute 0.5% to the risk premium sought.

The Discussion Paper provided by DPI provides very good arguments as to why these identified risks do not in practice result in an increased risk profile for the DBs above the that risk profile assessed by ESCoV in its EDPD.

What the DPI Discussion Paper neglects to address is that there are a number of aspects of the OIC which will lead to risk reductions for the DBs.

In its EDPD, the ESCoV provides a cogent argument why the IM roll out will not increase DB risks. It states at page 550:-

> "With the exception of United Energy, the distributors in their initial price-service proposals had assumed that the WACC for the metering price control was the same as the WACC for the DUoS price control. In contrast, United Energy assumed a WACC of 9.5 per cent when setting the metering service charges to recover its revenue. This was significantly different from the WACC of 6.7 per cent that it applied to its regulatory asset base for DUoS. The rationale offered by United Energy was that, as the distributor does not have exclusive responsibility for the provision of metering, there is an elevated risk of asset stranding.
>
> The Commission noted in its Draft Decision that it has classified metering services for which the distributor is exclusively responsible as a prescribed service to reduce the stranded asset risk to distributors. As a principle, the Commission does not strand prescribed service assets that distributors have been required to install.

> Consequently, the Commission signalled that it would apply the same WACC as that decided for the DUoS price control (see Chapter 9).
>
> In response to the Draft Decision, United Energy (2005l, pp. 33-36) submitted further statements with respect to the allocation of risk to interval metering and the need to be adequately compensated for bearing this risk.
>
> …
>
> *For simplicity, UED has added one per cent to the cost of capital and has applied 7.5 per cent as its return".*

Thus in the initial discussions with the DBs, most saw that there was no need to increase the WACC for the ESCoV mandated roll out, and only United Energy requested an increase for this activity and that was an increase of 1%.

The ESCoV determined that the WACC for metering should be the same for other regulated services. Most of the DBs did not request an increase in WACC for the mandated IM rollout services, although they did not provide any reasons why this was the case. Suffice to say that perhaps the DBs recognised that there were a number of benefits they would attain as a result of the roll out, compensating for any supposed increase in risks.

This report sees that there is logic in this initial approach by most of the DBs and accordingly identifies a number of aspects of risk management which would imply there might be less risk than alleged by the DBs in their response to the OIC.

**Implied risk reduction from AEMC decision on transmission revenue**

It is important to assess the ESCoV EDPD and DPI discussion paper in the context of decisions made recently and which provide an indication of future regulatory approaches.

In November 2006, the AEMC after nearly 12 months of review concluded that the Transmission Revenue and Pricing element of the National Electricity Rules (NER) should be changed. This review was at the instigation of the MCE, and is based on the principle that encouragement is required for investment by transmission businesses. There is little doubt that there is a strong potential for the changes made by the AEMC to flow into electricity distribution and into gas transport. Many of the decisions made by AEMC were derived from reviews and reports[10] which either in full or in part were directly applicable to the gas transport industry and the electricity distribution.

[10] Such reviews include the Productivity Commission review of the Gas Access Regime, the Expert Panel review, and the ERIG review.

The AEMC decisions effectively reduce the risks faced by TNSPs and maintain or increase their rewards.

Amongst other things, the AEMC decision provides for:-

- Locking in of the WACC inputs of MRP = 6%, equity beta = 1.0 and debt premium being based on a credit rating of BBB+. In its decision on EDPD, ESCoV used these same inputs and noted that they might be conservative (eg see EDPD page 367).
- Actual capex incurred being rolled into the RAB without any review of its prudency or efficiency – this is a feature of the EDPD as well.
- There should be no subsequent optimization of assets once installed (again as used in the EDPD)
- There should be no stranding risk, except where the TNSP does not attempt to negotiate a prudent discount and the value of the asset involved exceeds $10m in value. Regardless of these constraints, the risk exposure to a TNSP is a maximum of 30% of the asset value stranded. (Stranded assets under the EDPD are not excised either).
- The regulator is to take greater recognizance of the capex and opex claims by the TNSPs

The import of these changes if applied to distribution reviews by AER (including any review of the IMA program), is that they would eliminate a number of the risks perceived by the DBs. In particular, they would remove the risks of:-

1. OIC risk
2. Optimization risk
4. Capex overspend risk
6. Competition risk, and
7. Exchange rate risk

Generally under the EDPD, Victorian DBs are already benefiting from all of these enhancements. The fact that these benefits are being incorporated into the national arrangements clearly implies that these risks alleged by the DBs have little basis and that there is a strong indication that many of the risks noted by the DBs probably have little foundation based on what is most likely to be expected of a future regulator.

**Reduced risk to DBs from IM rollout**

Currently charges for use of the network by small consumers are based on quarterly readings of accumulation meters. These readings are then modified by a deemed usage profile. This has a number of side risks for DBs.

Firstly there is significant risk that the outcomes from charging are either overstated or understated, impacting on the revenue to DBs as they are exposed to the price cap approach used for electricity distribution. This creates significant risk for the DBs, although it must be acknowledged that the recent EDPD provided evidence that the DBs actually over recover revenue as a result of the price cap model used.

Secondly, the DBs have an exposure to the volume risk of the electricity used in their region. If the accumulation meter coupled with the deemed profile under-recovers the amount of electricity used by consumers, the DBs have to find the causes behind why they may have under-measured at the consumption points compared to the total energy injected into their region.

Thirdly there is a risk inherent in the manual reading of meters that currently applies. Remote reading will lessen this risk as it can be automated.

The IM rollout with remote reading will reduce these risks faced by DBs. That the DBs (except United Energy) did not seek an increase in WACC for the IM roll out element of the EDPD, implies that they see they will either benefit by the IM roll out to counter to any potential risk increase, or that they are indifferent to any risk profile change.

**Countervailing reductions in risks to those identified by DBs**

The DBs provided arguments as to why they fear increased risks associated with the OIC. What they failed to do was to assess the reduction of direct risks inherent in the OIC program and identified by the DBs.

- **Costs are a replacement of existing programs.** Costs of the program are offset against the costs of maintaining existing accumulation meters, installing new accumulation meters and the manual meter reading associated with accumulation and non-remotely read meters. Thus the net increase in cost is less than that implied by the seeking of an increased WACC on all costs for IMA.

- **Much of the cost for IMA is already in EDPD.** A large part of the IMA program cost is already incorporated in the EDPD, such as the supply of meters themselves and their installation at points of connection with consumers. This means that the only elements of the OIC where the DBs might be exposed are those which are additive above the EDPD roll out provisions, such as the accelerated program and the installation of the remote reading features. This reduces the overall risk exposure of the OIC dramatically.

- **Spanning two regulatory periods minimises exposure.** Up to 60% of the project[11] will occur after the next regulatory review (where future capex and opex will be set). If the future regulator does not support the program, there will be less exposure to un-recovered costs than if the entire program was to be completed, minimising the exposure of the program costs to the DBs. Equally, if the new regulator supports the program then the risks identified by the DBs will be eliminated, as the new regulator would recognise the actual costs incurred for the program.

- **Capex over-run exposure is minimised.** Over-run on IMA capex could well be rolled into the RAB as occurs in transmission and under the EDPD (see above), but the incentive program allows the DBs to retain any benefits from under-run on capex. This then changes the capex risk profile to be non-symmetrical in favour of the DBs

- **Timing risk is predicated on penalties being applied.** For the timing risk to have legitimacy it assumes that a future government or regulator will apply penalties (if any) regardless if there are well founded reasons outside the control of the DB which caused the over-run on time. Having sound reasons outside the control of the DB for a time over run provides a reduced risk of penalties ever being enforced. Only where actions of a DB itself caused the time over-run is there a certainty of penalties being applied.

- **DBs contributed to setting the costs and timing.** As DBs have had substantial input into timing for the program, opex and capex, there is an expectation that the costs and times provided are overstated rather than understated, implying some contingency has been built into the program costs and times. Inclusion of this contingency reduces the risk exposure to the DBs. If the DBs had had no input, then the risks to them would be higher.

- **IT and communications feature rapid cost reductions.** Costs are based on today's prices. The IMRO and IMA activities are closely related to IT, electronics and communications. History associated with these shows that costs have actually rapidly reduced with time, often with an increasing functionality. The five year window permitted for the program should see a massive cost reduction in these sectors. There has been no acknowledgement of this by the DBs, despite the EDPD implying that there is potential for cost savings due to the magnitude of the IM roll out.

[11] The OIC program requires 40% of the program to be completed by the end of year three. The end of year three coincides with the end of calendar 2010. The program requires 60% of the roll out to be carried out in years 2011 and 2012, both of which are in the next regulatory review period.

> "The Commission also notes that the unit cost of meters has not increased in nominal terms over a long period of time. This implies that the real cost of meters has fallen during the same period. It is reasonable to assume that this trend will continue throughout the next regulatory period. With the higher volume of meters forecast for the 2006-10 regulatory period, the Commission expects that the costs may in fact decline in nominal terms. As a result, the Commission expects that the forecast unit costs are conservative." (page 524 EDPD)

- **Stranding is not likely.** Competition from retailers is likely to be small. Stranding would require a retailer to either have a consumer pay for a new meter or absorb the costs itself. Neither of these outcomes is more likely than retaining an existing meter if it has the minimum required functionality. Additionally both the EDPD and new AEMC Rules on transmission imply that stranding is not a real risk.

- **Short depreciation times allow faster recovery of capital.** As the OIC allows a depreciation period over 15 years, this reduces the program risk compared to depreciation allowed in the EDPD. EDPD implies a weighted average life for IM of 22 years so the OIC allows 6% of capital recovery each year compared to the 4.5% allowed under the EDPD.

- **Exchange rate risk is not symmetrical.** Exchange rate risk is significantly reduced if actual capex incurred is rolled into the RAB, thereby converting a symmetrical risk into one in favour of the DBs. DBs benefit from an increasing $A value and retain the benefits of this. A falling $A effectively increases capex, and actual capex incurred is rolled into the RAB, thus exposing the DB for an initially limited time only from any capex over-run, but no risk in the medium to long term.

# 6. Conclusions

It is quite clear that there is little substantiation for the DBs to be granted any increase in the WACC for the IMA roll out. This is supported by a number of different approaches to the issue that all coincide with this conclusion.

The supporting arguments for the conclusion are:-

1. The DPI approach to identifying that each of the risks identified by the DBs have no foundation to warrant an increase in WACC
2. The WACC already awarded to the DBs is based on a sectoral approach which includes aspects such as metering. As the sector includes all risks typical of the sector, to excise one element and apply a different WACC is inconsistent with the derivation of the WACC and the inputs used.
3. The DBs imply that they consider there is a future risk of the next regulator not accepting the OIC requirements. The approaches by all regulators to date have been to recognise previous regulatory assessments. In particular the recent decisions of AEMC have now enshrined in the Electricity Transmission Rules many of the issues of concern to the DBs. This effectively eliminates many of the risks identified by the DBs.
4. The WACC awarded by the ESCoV already errs in favour of the DBs, thereby giving the DBs an overall sectoral benefit, rather than just a benefit for one sector
5. An increase in 200 basis points in the WACC for this element of work would result is an equity beta significantly above the market average and into the realms of speculative investments. This element of the DB business is not speculative at all.
6. Market trends confirm that the WACC awarded by the ESCoV already errs in favour of the DBs. The performance of the Utilities sector over 5 years clearly demonstrates this. Some assumptions used by ESCoV are not replicated by the owners of the DBs, where much higher gearing actually applies, increasing the rewards the DBS are securing.
7. All other jurisdictional regulators have used for electricity distribution, equity betas lower than the ESCoV applied to the Victorian DBs, supporting the view that the Victorian DBs have a better reward than the equivalent businesses in other states.
8. Analysis of the actuality of the IMA roll out shows that there are a number of compensating matters which reduce the risks to DBs.

Against this listing of issues supporting the view there is no basis for increasing the WACC for the IMA rollout, the DBs have not been able to provide any substantiation as to the premium that should apply to the WACC. A review of the basis of the development of the WACC shows that for the DBs to do so, is impossible. If these risks cannot be independently quantified, then there can be no basis for the claim of 200 basis points.

# Appendix 1

| **Data sourced from Commonwealth Securities Web site** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | ASX code of typical company in sector | Beta | | | Sector div yield | | | sector gearing D/E % 30 Jan 07 |
| | | 27-Feb-06 | 23-Aug-06 | 30-Jan-07 | 27-Feb-06 | 23-Aug-06 | 30-Jan-07 | |
| **All ords** | | **1.08** | **1.04** | **1.02** | **4.3** | **4.3** | **3** | **36** |
| **Consumer discretionary** | | | | | | | | |
| Automobiles and components | BOS | 1.02 | 0.86 | 1.45 | 6.2 | 6.2 | 0.8 | |
| consumer durables and apparel | GUD | 1.75 | 1.39 | 1.42 | 5.3 | 5.2 | 5.3 | 44 |
| consumer services | TAH | 0.93 | 1.19 | 0.96 | 4.3 | 3.9 | 3.3 | 38 |
| Media | PBL | 1.51 | 1.39 | 1.03 | 4.5 | 4.4 | 3.9 | 21 |
| Retailing | HVN | 1.18 | 0.99 | 0.98 | 4.6 | 4.7 | 3.2 | 32 |
| **Consumer staples** | | | | | | | | |
| Food and drug retailing | WOW | 0.62 | 0.64 | 0.64 | 3.8 | 3 | 3 | 75 |
| Food beverage and tobacco | LNN | 0.58 | 0.51 | 0.6 | 4.3 | 3.9 | 3.1 | 46 |
| **Energy** | | **0.96** | **1.04** | **1.21** | **3** | **2.8** | **2.8** | |
| Energy Equipment and services | HZN | | | | | | | |
| Oil and Gas | ORG | | | | | | | |
| **Financials ex property** | | | | | | | | |
| Banks | CBA | 0.86 | 0.68 | 0.82 | 4.3 | 4.1 | 4.4 | |
| Diversified financials - resources | BNB | 1.19 | 1.16 | 1.17 | 3.5 | 3.7 | 3.6 | |
| Diversified financials - holdings | SOL | 1.19 | 1.16 | | 3.5 | 3.7 | | |
| Insurance | AMP | 1.58 | 1.54 | 1.44 | 4.2 | 4 | 3 | |
| **Property Trusts** | | **1** | **1.04** | **1** | **6.9** | **6.9** | **3.8** | |
| Investment trusts | WDC | | | | | | | |
| management and development | CEQ | | | | | | | |
| **Health Care** | | | | | | | | |
| Equipment and services | SHL | 1.19 | 1.09 | 1.01 | 2.8 | 3 | 2.7 | 7.2 |
| Pharma & Biotech | SIP | 1.81 | 1.52 | 1.01 | 2.3 | 2.9 | 2.7 | 7.2 |

| Data sourced from Commonwealth Securities Web site | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | ASX code of typical company in sector | Beta | | | Sector div yield | | | sector gearing D/E % 30 Jan 07 |
| | | 27-Feb-06 | 23-Aug-06 | 30-Jan-07 | 27-Feb-06 | 23-Aug-06 | 30-Jan-07 | |
| **Industrials** | | | | | | | | |
| Capital goods | COA | 1.11 | 1.12 | 1.04 | 4 | 4.1 | 3.6 | 34 |
| Commercial services and supplies | BXB | 1.11 | 1.19 | 1.27 | 4 | 3.9 | 3.4 | 28 |
| Transportation | ADZ | 0.9 | 0.99 | 0.96 | 4.7 | 4.9 | 3.4 | 40 |
| **Info Tech** | | | | | | | | |
| Software and services | CPU | 1.82 | 1.61 | 1.34 | 4.6 | 4.6 | 3.4 | 54 |
| hardware and equipment | KYC | 1.15 | 1.02 | 0.89 | 4.4 | 3.9 | 2.7 | 0.7 |
| Semiconductors | LGD | 1.15 | 1.02 | 0.89 | 0 | 0 | 0 | 58 |
| **Materials** | | **1.39** | **1.15** | **1.22** | **3.1** | **3.2** | **3.1** | |
| Chemicals | ORI | | | | | | | |
| Construction materials | ABC | | | | | | | |
| Containers and packaging | AMC | | | | | | | |
| Aluminium | AWC | | | | | | | |
| Diversified metals and mining | BHP | | | | | | | |
| Gold | NCM | | | | | | | |
| Precious metals and minerals | ERA | | | | | | | |
| Steel | BSL | | | | | | | |
| paper and forest products | PPX | | | | | | | |
| **Telecomms** | | **0.44** | **0.29** | **0.37** | **5.7** | **6.2** | **3** | **15** |
| Diversified | ENG | | | | | | | |
| Wireless | HTA | | | | | | | |
| **Utilities** | | **0.31** | **0.23** | **0.37** | **5.2** | **5** | **4.1** | **102** |
| Electric | HDF | | | | | | | |
| gas | ALN | | | | | | | |
| Multi | SPN | | | | | | | |
| **Unclassified** | BQF | **1** | **0.98** | | **6.9** | **6.9** | | |

# Appendix 2

The following is an extract from the

Submission of the Treasurer of South Australia
Review of the Essential Services Commission of SA
Electricity Distribution Price Determination

## 4. Equity beta

### 4.1 Introduction

The Government considers that the equity beta of 0.8 adopted by ESCOSA in the Final Determination is within the expected range, given current market estimates of betas and after appropriate consideration of the effect of the Final Determination in mitigating almost all of the systematic risk faced by ETSA Utilities.

To assist ESCOSA in considering the Review Application from ETSA Utilities, this submission includes an independent expert's review of the appropriate equity beta, authored by Associate Professor Dr Martin Lally.

Dr Lally has used a detailed analysis to calculate an appropriate asset beta for ETSA Utilities, before using the agreed gearing formula to calculate an equity beta of 0.75. It is noted that Dr Lally's approach provides a more reliable result as it draws upon a larger data set than that relied upon by Professors Gray and Officer, which compares a total of four Australian firms.

In addition, Dr Lally has reviewed the analysis of Professors Gray and Officer and has concluded that, after the removal of the flawed Blume adjustment (that has been uniformly rejected in other Australian regulatory decisions), their own data points to an equity beta of 0.82.

The following sections (4.2 – 4.5) deal with the detailed analysis of the appropriate equity beta for ETSA Utilities and draws heavily upon the independent expert's report provided by Dr Lally.

### 4.2 Analysis of appropriate equity beta

A key issue to be considered when attempting to estimate equity betas is the quality of the data set being manipulated.

As noted by ESCOSA, the number of Australian firms upon which an estimate of an equity beta can be based is six. Dr Lally notes that this is far too small a set to place any

great reliance upon. Professors Gray and Officer attempt to rely on this set, but in order to achieve statistically significant results, must use inappropriate data manipulation processes, such as the Blume transformation, as discussed at section 4.4.

Accordingly, Dr Lally's analysis widens the data set to include US electricity and gas distributors, which are subject to a regulatory regime that gives rise to a similar systematic risk faced by ETSA Utilities. Further, Dr Lally's analysis considers beta estimates drawn from a number of sources and over a number of time periods, to minimise estimation error. The results of this analysis are tabulated on page 13 of Dr Lally's report.

The median asset beta for the firms and time periods considered is 0.26. However, Dr Lally has noted that some of the results from 1998-2001 are unusually low, possibly due to the technology bubble. If an appropriate adjustment is made to account for this, the result is a median asset beta of 0.30.

After applying the transformation for different tax regimes and the assumed gearing ratio for ETSA Utilities, the resultant equity beta estimate for ETSA Utilties is 0.75.

It is noted that Dr Lally's approach differs somewhat from the approach of ESCOSA, however, the results from the two processes yield very similar results.

## 4.3 Analysis of Professors Gray and Officer

The ETSA Utilities Review Application draws heavily upon material presented by Professors Gray and Officer which points to an equity beta of not less than one.

However, as noted in section 4.4, the data used by Professors Gray and Officer has been subjected to the Blume transformation which has been widely considered by regulators to be inappropriate. Further, perceived "outliers" have been removed from the data set to "eliminate a small number of observations that are so extreme and influential as to bias the beta estimate."

However, as shown by Dr Lally, assuming a normal distribution, the percentage of observations removed would be 32%, 13% and 5% following removal of outliers outside of 1, 1.5 and 2 standard deviations respectively. The removal of 32% or 13% of observations is hard to reconcile with the objective of removing a "small number" of outliers.

Professors Gray and Officer also remove all data from the "technology bubble" period of July 1998 to June 2001. Whilst Dr Lally proves that this produces an upward bias in the estimate of the equity beta, the resulting size of the bias is unknown.

To assist ESCOSA in considering the Review Application, Dr Lally has reconstructed the beta estimate undertaken by Professors Gray and Officer, by:

- removing observations outside of 2 standard deviations (or 5% of the observations), consistent with removal of a small number of outliers as described in the Gray/Officer report; and
- removing the Blume transformation bias.

Following these corrections, the estimated equity beta, using the data presented by Professors Gray and Officer, is 0.82. It should be noted that no adjustment has been made for the removal of the "technology bubble." Accordingly, the estimate of 0.82 is likely to be upwardly biased according to Dr Lally.

## 4.4 The Blume Transformation

The analysis of Dr Lally identifies three clear problems with the Blume transformation process, as used in the analysis performed by Professors Gray and Officer.

Firstly, the Blume transformation essentially captures the relevant data set and forces any outlying betas towards 1.0. Dr Lally notes that whilst this could represent the movements of true US betas from 1926 to 1968, the movement towards 1.0 would have no necessary relevance to ETSA Utilities or Australian firms in general at the present time.

Secondly, even if one were to assume that the shift towards 1.0 observed by Blume were representative of the shift in Australian firms' betas at present, this is not representative of a single entity like ETSA Utilities, whose beta cannot be altered via diversification.

Thirdly, even if the conclusion of Professors Gray and Officer that the Blume process is a manifestation of estimation error only was accepted, the Blume process forces beta estimates towards 1.0, rather than towards the industry average. For example, if the estimated beta for a firm was 0.5 and the industry average from which this firm was drawn was also 0.5, the Blume transformation would still seek to move the estimated beta for the average firm towards 1.0.

Clearly, the Blume transformation process is biased towards one and is inappropriate for use in this context.

This position is supported by the Victorian Essential Services Commission (ESC) in their Draft Decision with regard to the Review of the Gas Access Arrangements. In their Draft Decision, they state (note that this decision was maintained in their Final Determination):

*"With respect to the first of these reasons for the Blume adjustment, it is noted that taking an average (or weighted average) of a group of firms that are considered to be sufficiently comparable – as the Commission has undertaken in this Draft Decision – is an alternative means of reducing the statistical uncertainty associated with individual beta estimates. The Commission considers that, given its careful selection of comparable entities and the use of an average from the group, the application of the Blume adjustment is unnecessary, and indeed, may introduce bias in the resulting estimates."*

This view accords with the position put forward by Dr Lally. Accordingly, the Victorian ESC had regard only for raw beta estimates in making their Final Determination.

As noted above, after the removal of the biasing effect of the Blume transformation process on the Officer/Gray estimate, the resultant equity beta is 0.82, providing further evidence that the estimate adopted by ESCOSA is accurate and appropriate.

## 4.5 Removal of Systematic Risk

One of the key points of ESCOSA's Final Determination was the adoption of a "Q" factor adjustment. Essentially, if actual energy sales are different from forecast sales, 85% of the revenue variation is removed (i.e. only 15% of the forecast error is retained or recovered by ETSA Utilities).

As noted by Dr Lally, the regulatory regime, in particular the "Q" factor, has the effect of essentially eliminating ETSA Utilities' systematic risk, manifested in the form of both volume and cost shocks.

However, ETSA Utilities has claimed that this mitigation of systematic risk has little influence on the appropriate estimation of beta.

In response to this claim, it is instructive to note the comments of the QCA on the same claims made by Queensland distributors:

*"The Authority disagrees with the DNSPs' claim that the impact of a revenue cap on systematic risk is ambiguous. The DNSPs argued that, while the revenue cap would be expected to reduce the co-movement in the returns of the relevant entity compared to a price capped firm, the volatility of total returns would be higher so the impact on systematic risk would be ambiguous.*

*The Authority believes that a revenue cap (as opposed to a price cap) implies that there will be a reduction in the covariance between returns to the asset and returns to the market, which is the relevant matter for beta risk."*

Accordingly, it is appropriate for ESCOSA to consider the level of systematic risk faced by ETSA Utilities when considering an appropriate beta. As the systematic risk faced has been significantly ameliorated, an equity beta of significantly less than 1.0 would be appropriate.

Clearly, there exists a strong interconnectivity between the equity beta and the systematic risk faced by ETSA Utilities. Accordingly, this provides further evidence that it is not appropriate to consider single components of the WACC in isolation from other input components.

Indeed, there is a substantial body of work that suggests that the MRP adopted by ESCOSA is an overestimate of the future MRP faced by ETSA Utilities.

For instance, declines in the real interest rate and the introduction of dividend imputation in 1987 have produced capital gains which could not have been anticipated. Together they have boosted excess returns by about 1 percentage point over the 30 years to 2003. Taking these biases into account, the MRP over the last 30 years would appear to lie in the range 4½ to 5 percent, rather than the 6 assumed by ESCOSA.

## 4.6 Regulatory Precedent

It is important to note that an equity beta of less than 1.0 has been adopted in regulatory decisions in other jurisdictions. In 1999 and 2004, the NSW IPART adopted ranges of 0.78 to 1.14 and 0.78 to 1.11 respectively.

In 2001, the QCA included an equity beta of 0.71.

It is acknowledged that the ACCC adopted an equity beta of 1.0 in its Decision on the Statement of Principles for the Regulation of Electricity Transmission Revenues. However, the Government also notes the comments of the ACCC in the Discussion Paper that,

*"the Commission has regularly indicated that an [equity beta] of one or above is most likely too high for the regulated TNSPs, the Commission has provided an [equity beta] biased towards the TNSPs and has not set an [equity beta] below one in any revenue cap decisions. Other regulators have set an [equity beta] of less than one for some electricity distribution networks."*

The Government does not consider that it is appropriate for ESCOSA to provide an equity beta that is biased towards the regulated entity, as it would be if an equity beta of 1.0 or higher were to be adopted. Such an approach would be inconsistent with the primary directive of ESCOSA, as discussed in section 2.1, to protect the long term interests of consumers.

In addition, the Allen Consulting Group's Report on the Empirical Evidence on Proxy Beta Values for Regulated Gas Transmission Activities highlighted that:

*"...this report has demonstrated that no implication can be drawn from current market evidence that the proxy betas that Australian regulators have adopted are likely to understate the 'true' beta – rather, as noted above, the current evidence suggests that regulators systematically have erred in the favour of the regulated entities."*

Again, the statutory guidance to ESCOSA is clear. It does not have the discretion to err in favour of the regulated entities. It is incumbent on ESCOSA to develop an estimate of beta that is in the long term interests of consumers.

A value of 0.8 for the equity beta is not outside the range of regulatory decisions on this issue. It is also consistent with many comments of other regulators that a value of 1.0 errs in the favour of the regulated business.

## 4.7 Conclusion on equity beta

Dr Martin Lally has presented a very detailed analysis of the appropriate estimate of an equity beta for ETSA Utilities. On the basis of Dr Lally's own analysis, the appropriate equity beta is 0.75.

However, it is also instructive to consider the re-adjustment results of amending the Officer/Gray data to remove the bias caused by the Blume transformation. This yields an equity beta of 0.82.

Thirdly, ESCOSA has conducted its own analysis based on data from the Allen Consulting Group, with a resulting equity beta estimate of 0.8.

Therefore, there is very strong evidence that the correct equity beta estimate for ETSA Utilities lies somewhere in the range from 0.75 to 0.82, with ESCOSA's estimate of 0.8 representing a reasonable mid-point.

Accordingly, it is recommended that ESCOSA maintain its view that the correct equity beta estimate for ETSA Utilities is 0.8.