



2011-2014 Electricity Standing Contract – Wholesale Cost Investigation

*Determination of Special Circumstances, Statement of Reasons &
Draft Standing Contract (Further Variation) Price Variation*

AGL submission to the Essential Services Commission

Date: 15 November 2012





Table of Contents

Executive Summary	2
1. General Comments	5
2. Special circumstances	6
3. WEC allowance components 2012/13 and 2013/14	12
3.1 EPC-based approach	12
3.2 Stand-alone LRM C	24
3.3 LRET	28
3.4 SRES	29
4. Miscellaneous items	30
4.1 Headroom allowance	30
4.2 Retail operating margin	31
4.3 Solar feed-in tariff	32
Annexure 1	33
Annexure 2	34
Annexure 3	35
Annexure 4	39



Executive Summary

On 2 October 2012, the Essential Services Commission of South Australia (**ESCOSA**) published its *Determination of Special Circumstances, Statement of Reasons and Draft Standing Contract (Further Variation) Price Determination (Draft Determination)* as part of its *2011-2014 Electricity Standing Contract Price Determination, Wholesale Electricity Cost Investigation*.

AGL Energy Ltd (**AGL**) welcomes this opportunity to provide comments on the Draft Determination which proposes to:

- 1) determine that "special circumstances" exist that entitle ESCOSA to seek to vary the current pricing determination; and
- 2) reduce the wholesale electricity component (**WEC**) of the electricity standing contract prices in South Australia for the period from 1 January 2013 to 30 June 2014.

First and foremost, AGL strongly believes that the 'special circumstances', as determined by ESCOSA, do not exist in South Australia at the present time.

AGL bases this view on several points of concern surrounding both the legal process for determining that 'special circumstances' exist and the factual evidence used in this process. With regard to the process, AGL understands that ESCOSA has:

- misapplied the statutory language and in doing so, has undertaken the wrong statutory exercise; and
- failed to have proper regard to a number of considerations to which it ought to have had regard as well as improperly had regard to other matters.

As a result of these missteps, ESCOSA has concluded that special circumstances exist because carbon emission policy uncertainties have been resolved through the enactment of the *Clean Energy Act 2011* and that liquidity in the South Australian forward electricity contract market has increased significantly since the Original Price Determination.

Both these conclusions are incorrect and indeed at odds with facts put before ESCOSA:

- 1) it is well documented that carbon emission policy uncertainty remains in full as the Federal Opposition has stated its resolve to repeal the *Clean Energy Act 2011* in the event it is elected to government; and
- 2) AGL and other stakeholders have made it abundantly clear that there has been no material increase in the level of liquidity in the South Australian forward electricity contract market since the Original Price Determination. In fact, AGL's analysis demonstrates that the South Australian forward electricity contract market is not liquid when considered against any relevant measure.

Given these conclusions are in error, 'special circumstances' does not apply.

Secondly, although AGL cannot reconcile how ESCOSA's finding that special circumstances exist with the evidence before it, in the event that ESCOSA remains of this view, AGL would contend that ESCOSA has not fully complied with its statutory obligations in the determination of the WEC.

In short, AGL believes that ESCOSA has not adequately considered all the relevant aspects of the statutory framework, including the particular circumstances of the industry in question, in selecting and applying its chosen methodology (the EPC approach) and in adopting the outcome of that process as the WEC.



The statutory framework requires ESCOSA to consider electricity supply costs in the particular circumstances of the industry, not just use some limited proxy for costs (d-cypha data) based on which data is most readily available. If the statutory framework is properly applied and the particular circumstances of the industry are considered, it becomes apparent that ESCOSA have erred in the following matters:

- Choosing an EPC approach over LRMC as a matter of principle;
- Determining that it was appropriate to apply the EPC approach in the current circumstances;
- Deciding to rely solely on exchange-traded futures data to apply the EPC approach; and
- Calculating the EPC using the 'marked to market' approach without proper consideration of the circumstances of the industry.

ESCOSA has selected its EPC approach without due consideration of the circumstances of the industry.

Thirdly, after selecting an EPC approach for the purposes of this Draft Determination, ESCOSA has then chosen to adopt a 'marked to market' approach to determining forward contract prices.

AGL has consistently disagreed with Frontier Economics' assertion that a 'marked to market' approach is appropriate for a regulated load and believes that the flaws in such an approach are incontestable.

Furthermore, the acute lack of liquidity in the South Australian contract market has made estimating forward contract prices unreliable for the purpose of determining an energy purchase cost. AGL would suggest that using a 'marked to market' approach for estimating forward contract prices in such an illiquid market is nonsensical when the energy purchase cost, and consequently Standing Contract Prices, may end up being derived based on a handful of minor market trades on a single day.

Lastly, but certainly not least,, while reviewing the modelling data provided by ESCOSA, AGL has discovered many issues with both the data and how it was used by Frontier Economics in its modelling that were not easily explained. For example:

- the Frontier Economics load factors are higher (ie the loads are flatter) than expected when compared to actual data over the last three years;
- in several periods of the Frontier Economics pool price forecasts, off-peak pool prices are consistently higher (95% of the time) than the peak pool price;
- that the lack of liquidity or more appropriately, the absence of any market trades in certain periods (even if ignored by ESCOSA's finding in respect of 'special circumstances') makes the calculation of contract prices completely unreliable for the purpose of determining an energy purchase cost;
- that the modelled contracting strategy is not the most conservative although it is stated to be so in the Draft Determination; and
- that the contracting strategy is not realistic nor reasonable as it is modelled short over summer so that 30% of load is actually exposed to pool prices which would significantly under price the contracting strategy and represents real risk for a retailer.

AGL believes that the mistakes inherent within the data and modelling are so fundamental that if ESCOSA was to continue with this process, it would need to address these issues prior to any Final Determination being made.

Aside from the issues relating to the existence of a special circumstance and liquidity, ESCOSA has also understated and wrongly calculated the headroom allowance.



In summary, AGL believes that ESCOSA needs to reconsider its finding that 'special circumstances' exist based on its statutory obligations and the extensive information provided by AGL and other stakeholders which clearly illustrates that:

- carbon emission policy uncertainties have not been resolved; and
- there is no liquidity in the South Australian forward electricity contract market.

If ESCOSA improbably deems 'special circumstances' to continue to exist, AGL would expect that ESCOSA, at a minimum, review its decision to simply select an EPC approach and instead consider an appropriate methodology that would estimate electricity supply costs given the particular circumstances of the South Australian electricity industry.



1. General Comments

AGL Energy Ltd (**AGL**) welcomes the opportunity to provide comments to the Essential Services Commission of South Australia (**ESCOSA**) on the *2011-2014 Electricity Standing Contract Price Determination, Wholesale Electricity Cost Investigation, Determination of Special Circumstances Statement of Reasons & Draft Standing contract (Further variation) Price Determination, October 2012 (Draft Determination)*.

AGL is well placed to comment on issues in the South Australian electricity industry. AGL South Australia Pty Ltd (**AGL SA**) is the declared standing contract retailer for electricity under section 36AA(1) of the *Electricity Act 1996 (SA)*. Under the Electricity Act, a deemed licence condition is imposed on AGL SA that requires AGL SA to sell electricity to a small customer in South Australia at the standing contract price.

AGL also operates in other States across the energy supply chain and has investments in coal-fired, gas-fired, renewable and embedded electricity generation. AGL is Australia's largest private owner, operator and developer of renewable generation in Australia, and is also a significant retailer of energy with more than 3 million electricity and gas customers.

AGL has reviewed the Draft Determination and in this submission has detailed its many concerns using the following structure:

- Section 2 addresses whether 'special circumstances' does exist but also whether ESCOSA's selection of the energy purchase cost method is valid;
- Section 3 highlights practical and theoretical concerns with the methodology used to calculate the WEC for 2012/13 and 2013/14, as well as errors identified in the Frontier Economics' modelling; and
- Section 4 discusses other issues within the Draft Determination.

Four annexure have also been included with this submission which provide detailed examinations of:

- ESCOSA's decisions on special circumstances and price methodology selection;
- The forward electricity contracts market in South Australia and AGL's approach to managing wholesale risk;
- Calculation of the Weighted Average Cost of Capital (WACC) used in Frontier Economics' modelling; and
- An analysis of selected inputs and assumptions of the WACC by SFG Consulting.



2. Special circumstances

On 14 December 2010, ESCOSA made a price determination, under Part 3 of the *Essential Services Commission Act 2002* (SA) ("**ESC Act**") and as authorised by ss 35A and 36AA of the *Electricity Act 1996* (SA) ("**Electricity Act**"), fixing the electricity standing contract price to apply from 1 January 2011 to 30 June 2014 (**Original Price Determination**).

AGL is very firmly of the view that ESCOSA has erred in concluding that due to the existence of 'special circumstances' it has the power to reopen the Original Price Determination in the manner it purports to do in its Draft Determination. For the reasons set out below and in Annexure 1, AGL contends that 'special circumstances, do not exist as required by the legislation. Consequentially, ESCOSA does not in fact have the power to vary the Original Price Determination.

AGL's view is that:

- ESCOSA has misdirected itself as to the meaning of "special circumstances". First, it has misapplied the statutory language and, secondly, it has undertaken the wrong statutory exercise;
- in considering whether, and purporting to determine that, special circumstances exist, ESCOSA has failed properly to have regard to a number of considerations to which it ought to have had regard and has improperly had regard to other matters; and
- special circumstances do not, in fact, exist in South Australia at the present time. First, carbon policy uncertainty persists and, secondly, the South Australian forward electricity contracts market remains illiquid.

The first two of these points are the product of significant legal analysis, and are best explained in Annexure 1 rather than attempting to excise points for the purpose of a summary here.

The third proposition is however both simple, and AGL contends, clearly established by the examination of facts outlined below – all information which has been provided to ESCOSA previously. These matters are explored in further depth in Annexure 1 and 2. Annexure 2 is a confidential report prepared by AGL's Energy Portfolio Management Division (**Confidential EPM Report**).

Special circumstances do not exist in South Australia at the present time

Special circumstances do not in fact exist in South Australia to empower ESCOSA to vary the Original Price Determination. ESCOSA has predicated its finding of special circumstances on the erroneous conclusion that:

- (a) carbon emission policy uncertainties have been resolved through the enactment of the *Clean Energy Act 2011* (Cth) ("**Clean Energy Act**"); and
- (b) liquidity in the South Australian forward electricity contract market has increased significantly since the Original Price Determination and following the removal of the above policy uncertainties.



Carbon policy uncertainty persists

ESCOSA's finding that there is now 'carbon policy certainty' is at odds with well documented and reported fact. It cannot be seriously contended that the passage of the *Clean Energy Act* has resolved that uncertainty, given the stated position of the Federal Opposition to the policy, and its stated resolve to repeal the legislation in the event it is elected to government. As has been explained to ESCOSA previously, this erodes any certainty that flowed from the initial passage of the legislation in the following manner:

- Exchange traded contracts do not have an "uplift" mechanism for the carbon price. Accordingly, the strike price of an exchange traded contract will include a carbon component. However, if the carbon price does not apply at the time of settlement (eg if the legislation is repealed in the interim), then the purchaser of the exchange traded contract (ie the retailer) will still have paid for that carbon component, and will need to absorb that additional cost. The carbon risk associated with exchange traded contracts can be contrasted with OTC contracts where carbon price liability is priced and settled when the contract settles, and not upfront (as is the case under exchange traded contracts). The principal reason OTC traded contracts do not incorporate carbon in the price of the contract (and have a separate price variation clause) is due to the policy uncertainty in relation to future carbon pricing. This approach removes risk because a retailer does not have to pay a carbon price which may not exist at the time when the contract settles; and
- As a result, attempting to buy or sell electricity into the future using exchange traded contracts becomes increasingly risky if (as is currently the case) the state of carbon legislation is uncertain. This has had a highly material impact on the level of liquidity in the market, including in respect of South Australia. As was previously explained to ESCOSA (by way of a meeting on 28 August 2012 and a letter dated 28 August 2012) since 2010 AGL has bought only a very limited number of exchange traded contracts to hedge any consumer market retail load in the NEM.

Liquidity in the South Australian forward electricity contract market has not increased significantly since the Original Price Determination

ESCOSA's finding in respect of liquidity is even more mystifying, given the information provided by AGL and other stakeholders which make clear that there has not been any material increase in the level of liquidity in the South Australian forward electricity contract market since the Original Price Determination.

AGL's analysis demonstrates that the South Australian forward electricity contract market is not liquid on any relevant measure, and further the proposition that liquidity has improved cannot be supported through any rational analysis. "Liquidity" is the degree to which a financial product can be bought or sold in the market without affecting its price. Liquidity is characterised by a high level of trading activity. AGL is firmly of the view that the appropriate measure of liquidity for the purpose at hand is that of "open interest" rather than "volume of trades":

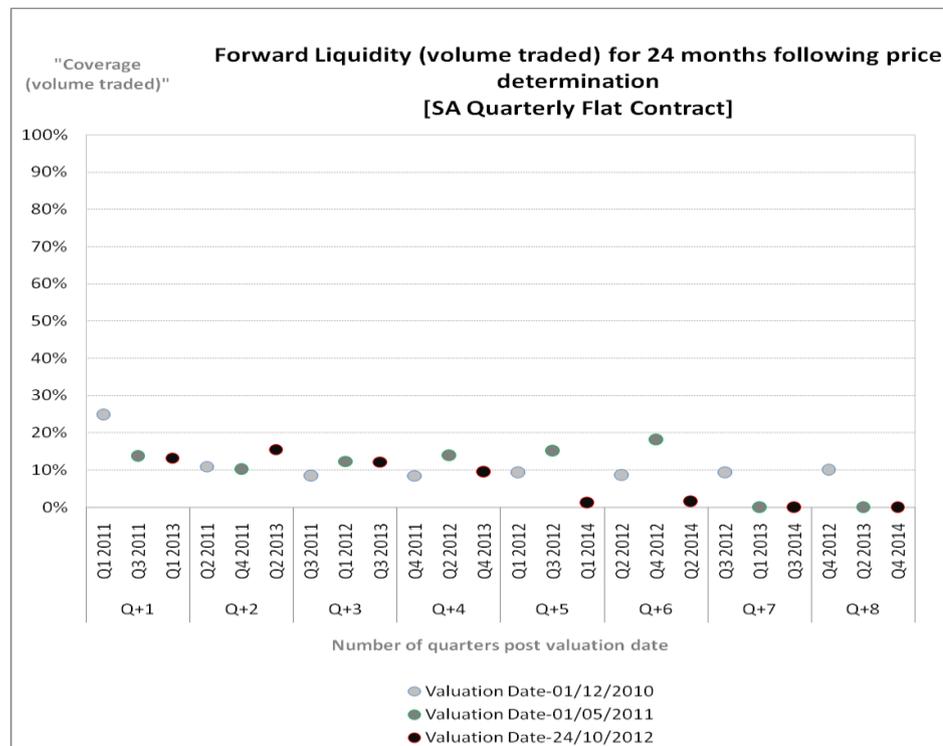
- It is appropriate and preferable when determining liquidity to use an "open interest" approach because it identifies the depth of a market for NEM participants (such as the prudent and efficient retailer) that intend to carry the contract to settlement and are seeking to hedge a physical exposure to the NEM pool price (and not merely speculating on market movements); and
- In using a "volume of trades" approach to assess market liquidity, ESCOSA has significantly overstated the true position in relation to the liquidity of the South Australian exchange-traded market for the purposes of parties seeking to hedge physical exposure to the NEM.

Notwithstanding that open interest is the correct measure to use, the graphs below illustrate the change in South Australian liquidity, both in terms of volume traded and open interest, in base contracts since Q1 2011. In these graphs, "Coverage (volume traded)" and "Coverage (open interest)" refer to the percentage of physical market demand that has been traded in futures contracts in terms of volume traded and open interest measures respectively. For physical market demand, actual values have been used for historical quarters while Forecast Physical Market Demand has been used for future quarters.

These graphs clearly show that:

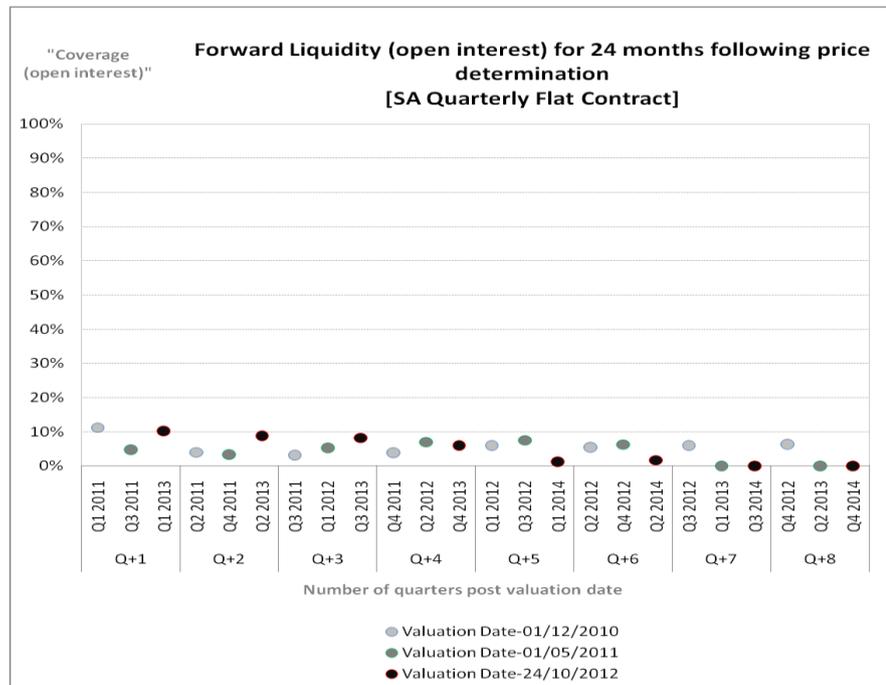
- when ESCOSA made its determination in December 2010, liquidity in the fifth and sixth quarters ahead was approximately 9% in terms of "volume traded" and approximately 6% in terms of "open interest";
- in the equivalent quarters currently (as at 24 October 2012), liquidity is less than 2% both in terms of "volume traded" and "open interest" (or approximately one sixth and one fourth of the equivalent December 2010 quarters, respectively); and
- accordingly, liquidity in South Australia is now worse than when ESCOSA made its original price determination.

Figure 1: Forward Liquidity (volume traded) for 24 months following price determination



Source: AGL

Figure 2: Forward Liquidity (open interest) for 24 months following price determination



Source: AGL

This data unequivocally contradicts ESCOSA's view that there has been an improvement in market liquidity. ESCOSA cannot reasonably determine that the South Australian forward electricity contracts market is sufficiently liquid, or that there has been any material change in liquidity since the Original Price Determination, to support any 'special circumstances'. On that basis, ESCOSA cannot rely on liquidity or any change in liquidity as a basis for exercising any power to vary the Original Price Determination.

AGL notes that the lack of liquidity not only impugns ESCOSA's finding in respect of 'special circumstances', but renders any attempt to use data from the futures market to estimate the WEC completely unreliable. For example, Frontier Economics' calculation of the WEC relies on a prudent retailer using peak futures contracts in South Australia. To date **only 1MW of peak contract in only one quarter covered by the price variation period has been traded on the futures market**. By any definition, a market where no contracts have traded cannot be described as liquid. The impact of this lack of liquidity on the veracity of the energy purchase cost (EPC) in determining the wholesale energy cost (WEC) is addressed further below in Section 3 and Annexure 1.

Response to ESCOSA'S price methodology

In the advent that ESCOSA remains of the view that there are in fact some 'special circumstances', AGL would contend that even if ESCOSA does have the power, it has not complied with its legislative obligations determination of the WEC.

AGL believes that ESCOSA did not comply with statutory framework in determining that it was appropriate to apply the EPC approach to calculate the WEC. A detailed discussion of the following issues is also provided in Annexure 1 and the Confidential EPM Report (Annexure 2), but, in short, AGL argues that:



- ESCOSA has focused on the long-term interest of South Australian customers (its primary objective), substantially to the exclusion of other aspects of the statutory framework in selecting and applying its chosen methodology (the EPC approach), and in adopting the outcome of that process as the WEC;
- The statutory framework requires ESCOSA to consider electricity supply costs in the particular circumstances of the industry, not some limited proxy for costs (d-cypha data) based on which data is most readily available;
- ESCOSA should have had regard to a number of other relevant factors, including (but not limited to) the following 'particular circumstances of the industry':
 - The standing contract retailer is obliged, at the request of a small customer, supply that small customer with electricity at the standing price determined by ESCOSA;
 - As the standing contract retailer, AGL does, and a prudent and efficient retailer supplying the standing customers would, hedge the exposure to the NEM pool prices using a variety of risk management measures. These include ownership and management of generation assets, entering into Power Purchase Agreements, acquiring OTC and exchange traded hedging contracts, and buying insurance products;
 - AGL has, and ESCOSA acknowledges that an efficient and prudent retailer would have, built its contract book 2 to 3 years in advance of the contract period. Accordingly, AGL has already "locked in" a significant proportion of its contract cover for the contract period, and the price of acquiring that cover forms part of its costs of buying electricity to supply to standing contract customers during the contract period;
 - The 'costs of generation', namely LRMC, is relevant in two ways – it is a relevant proxy for the cost that a generator will seek to recover through PPAs, or it is the cost borne by a vertically integrated retailer. Entry into PPAs and vertical integration are substitutable for each other for a retailer seeking to cover a load;
 - As noted above, and in previous correspondence with ESCOSA, there is significant uncertainty about the future of the Clean Energy Act, and this uncertainty significantly limits the extent to which retailers are prepared to trade futures contracts; and
 - The lack of liquidity in exchange traded contracts means that any reliance on data depending on the trade of these contracts is not reliable, and cannot be used for the purpose of assessing a WEC.
- Once the statutory framework is properly applied and the particular circumstances of the industry are considered, it becomes apparent that ESCOSA have erred in the following matters:
 - **Choice of the EPC approach over LRMC as a matter of principle** – ESCOSA should have inquired whether the benefits of the EPC would be realised in practice when it was applied in the particular circumstances of the electricity industry, specifically whether the EPC would produce an estimate consistent with the costs of a standard retailer and whether the particular outcome the EPC would achieve would be in consumers' long-term interest;
 - **Determining that it was appropriate to apply the EPC in the current circumstances** - ESCOSA should have inquired whether, even if the previous carbon policy uncertainties and limited liquidity had resolved, the EPC was appropriate having regard to the particular current circumstances of the electricity industry;



- **Applying the EPC** - ESCOSA does not appear to have applied the statutory framework in deciding to rely on solely exchange-traded hedging contract data to apply the EPC. The statutory framework requires ESCOSA to consider electricity supply costs in the particular circumstances of the industry, not simply some limited proxy for costs (D-cypha data) based on which data is most readily available; and
- **Calculating the EPC** - ESCOSA should at least have considered whether the price determination and each component of it produced by its application of the EPC was appropriate, having regard to the specific factors set out in the statutory framework. A proper consideration of the circumstances of the industry would make clear that the 'marked to market' approach is in no way appropriate in calculating the EPC.

Consequentially, ESCOSA has:

- wrongly excluded consideration of electricity generation costs from its analysis, and wrongly rejected the use of the LRMC approach on that basis;
- wrongly determined that the EPC approach could be applied, in the particular circumstances of the electricity industry, to provide a meaningful estimate of the WEC faced by the standing contract retailer; and
- failed to identify that in the particular circumstances of the electricity industry, the best proxy for the wholesale electricity costs faced by a retailer is the LRMC of electricity generation.



3. WEC allowance components 2012/13 and 2013/14

Upon review of the modelling data provided by ESCOSA on its website, AGL found many issues with both the data and how it was used by Frontier Economics (**Frontier**) in its modelling that were not readily explained. Consequently, AGL raised many of its concerns in a letter to ESCOSA on 5 November 2012. These issues are described in further detail in this section.

AGL is of the view that the mistakes inherent within the data and modelling are so fundamental that they must be addressed with stakeholders to their reasonable satisfaction prior to any Final Determination being made by ESCOSA. It is unreasonable for ESCOSA to proceed directly to a Final Determination given the fundamental errors in the modelling. AGL is concerned that these errors are such that they preclude stakeholders from having any confidence in the results, and from the ability to comment on their validity in the absence of further consultation.

AGL believes that if ESCOSA hold to the view they have the power to re-open the Original Price Determination then it is imperative to the credibility of the process that there is further consultation on the Frontier modelling.

3.1 EPC-based approach

In the Draft Determination, ESCOSA has sought the advice of ACIL Tasman on an appropriate methodology to estimate the energy purchase cost (EPC) that a prudent retailer in South Australia would face when supplying small retail customers.

ACIL Tasman has recommended an approach which relies on the use of three components:

- forecasts of wholesale electricity spot prices;
- a prudent retailer contracting strategy; and
- forward contract prices.

ESCOSA then has relied on Frontier to determine the components identified above and to model the energy purchase costs for 2012/13 and 2013/14. Frontier has used a three-staged modelling approach which makes use of its three inter-related electricity market models, namely: WHIRLYGIG, SPARK and STRIKE¹ to estimate the energy purchase cost. It has outlined the results in its report *Wholesale energy cost estimates for 2012/13 and 2013/14: Draft Report prepared for ESCOSA* (**Frontier Draft Report**).

On the 22 October 2012, ESCOSA released the following data in order for stakeholders to more effectively review the modelling of Frontier:

¹ WHIRLYGIG optimises total generation cost in the electricity market, calculating the least cost mix of existing plant and new plant options to meet load. SPARK uses game theory techniques to identify optimal and sustainable bidding behaviour by generators in the electricity market. STRIKE uses portfolio theory to identify the optimal portfolio of available electricity purchasing options to meet a given load shape under a given spot price forecast.



- the Load data for the three scenarios used by Frontier, namely the PoE10, PoE50 and PoE90 load shapes for 2012/13 and 2013/14;
- the Pool price forecasts, in the form of half hourly traces, for the PoE10, PoE50 and PoE90 loads for 2012/13 and 2013/14; and
- the optimal contract position used with swap strikes and cap premiums by quarter and by peak/off-peak for 2012/13 and 2013-14.

Frontier has also provided detail on the three methodologies used for estimating forward contract prices:

- Market snapshot;
- Rolling average; and
- Volume weighted average.

AGL has reviewed Frontier's modelling as well as the datasets used for its Draft Report and is of the view that:

- First, there are manifest errors in the data used including the regulated load forecasts, the spot price forecasts, the forward contract prices and the hedging strategy. In short, the Frontier Draft Report results in a hedging strategy that is not representative of the hedging strategy adopted by a prudent retailer (whereby a position is taken that exposes the retailer to the spot price in the very volatile summer months) and it is not possible to have confidence in an energy purchase cost derived on this basis; and
- Secondly, Frontier's use of a 'Market snapshot' or 'point in time' determination of contract prices is fundamentally flawed with the lack of liquidity in the South Australian contract market exacerbating the situation and making its use nonsensical.

These issues are detailed below.

3.1.1 Forecast SA regulated loads

The forecast load shapes are extremely important to the calculation of the EPC because if the load shapes are not reflective of the South Australian regulated load then the EPC will not be reflective of the costs incurred by a retailer in supplying regulated customers.

The Draft Report explains the methodology used by Frontier in constructing the regulated load shapes. The methodology includes the use of:

- 9 years of historical AEMO data;
- a Monte Carlo simulation process to create 5000 synthetic load shapes;
- a load factor calculation of average load/average demand of top 100 hours to select the relevant POE10, POE 50 and POE90 load shapes; and
- the recent downward trend in load factor, as a result of higher air conditioning and solar PV penetration, to scale these shapes accordingly.

Despite this complex methodology, AGL is of the view that the Frontier load shapes underestimate the peakiness of the standing contract load and include data discontinuities that may be driving abnormalities in pool price forecast produced by SPARK.

Load Factor

The tables below highlight the load factors of the Frontier load shapes compared to the actual mass market load of AGL in South Australia using both the standard load factor and the Frontier load factor derived from the top 100 demands.



Table 1: Frontier Load Factors 2012/13 Data

Frontier Load Factors	PoE10	PoE50	PoE90
Load Factor	35%	37%	41%
Load Factor (using Top 100 demands)	44%	46%	48%

Table 2: Actual Load Factors for mass-market 2009 to 2011

Actual AGL Mass-market Load	Cal 09	Cal 10	Cal 11
Load Factor	35.0%	35.4%	31.5%
Load Factor (using Top 100 demands)	40.4%	43.3%	45.1%

It is apparent that the Frontier load factors are higher (ie the loads are flatter) than expected when compared to actual data over the last three years, especially for PoE10 and PoE50. This is particularly surprising given that Frontier has tried to incorporate the recent downward trend in its methodology. Rather than incorporating a lower (peakier) load factor, the Frontier analysis appears to be assuming the load becomes less peaky.

As well as testing the robustness of the Frontier load factors against recent actual data, AGL has reviewed the maximum demands produced by the Frontier modelling. It shows that the forecast PoE 50 shape has a maximum demand of 306 MW while the POE 10 has a maximum demand of 330.7 MW in 2012-13. This represents an 8.07% increase. However, the AEMO National Electricity Forecasting Report shows that at a System demand level, the corresponding increase is from 2,990 MW to 3,271 MW, which indicates a 9.4% increase.

The regulated mass market load is a subset of the system load, and is much peakier than the entire system load. The electricity consumption of mass market consumers is much more sensitive to weather than the commercial and industrial loads (**C&I loads**), which comprise the remaining portion of system demand. The mass market load will have a much greater response to a particularly hot year when the use of air conditioning drives a significant spike in demand, giving the mass market load a 'peaky' profile. C&I loads are much more constant, giving them a very 'flat' profile.

Therefore AGL would expect to see a significantly greater percentage variation in forecast maximum demand between a PoE 10 year and a PoE 50 in the stand alone mass market forecast, than in the system demand (where the C&I load would dilute the percentage variation). This suggests that the maximum demand for the PoE 10 is understated and may explain the higher load factors that have been produced by Frontier.

Also interestingly, Frontier forecast that the maximum demand of regulated customers will fall on a Saturday in each year of its modelling. Whilst AGL accepts that this could occur (and indeed did occur last year), AGL is sceptical as to the realistic probability of this occurring three years in succession. This has the impact of reducing the requirement for hedge contracts in the very expensive weekday peak periods in summer, thereby reducing the EPC allowance. Whilst this is reasonable, if indeed maximum demand does occur on a Saturday, this scenario has a low probability of occurrence for the duration of the price path.

Coupled with this, the Frontier load forecasts fail to take into consideration growth in maximum demand from one year to the next. The 50 POE maximum demand in 2012/13 is 306MW, and 309MW in 2013/14 representing growth of less than 1%. AEMO in its National Electricity Forecasting Report forecasts maximum demand in South Australia at a system level will increase by 1.8% for the PoE 50 scenario from 2012/13 to 2013/14. As articulated above, the majority of this growth will be specific to the residential demand,



and as such one would expect that the regulated customer demand forecast would grow by more than 1.8% to be consistent with AEMO's projections.

In addition, the total energy Frontier is forecasting that will be consumed by regulated customers is 1,000,000 MWh in each and every scenario for each year of its EPC calculation. It is nonsensical to suggest that under three separate weather conditions over two years, the amount of electricity that will be consumed by regulated customers will be the same. AEMO forecast growth in South Australian total consumption of 1.5% from 2012/13 to 2013/14. It is reasonable to expect similar growth in the subset of regulated customer consumption over the same period.

Correlation between days

AGL understands that the use of a Monte Carlo process to construct a 'Synthetic annual load shape' requires the selection of each day in the year to be based on randomly drawing a day in the corresponding month from the 9 years of historical AEMO data.

The issue with this approach is that the selection of each day in the synthetic year is independent of each other day, and it is highly likely to produce load traces that have significant discontinuities across days (ie the loads at either side of midnight can vary significantly).

AGL has identified several such discontinuities in the load traces. For example, on the 13/10/2012 in the PoE 50, load increases from 108 MW to 153 MW at midnight with a correlated pool price increase from \$127/MWh to \$7800/MWh.

AGL is concerned that these discontinuities are reflected in the pool price forecasts (ie high prices at midnight) and would have significant implications when Frontier is attempting to identify the 'most efficient' contracting strategy and settle out against that strategy.

3.1.2 Spot price forecasts

AGL has analysed the pool price forecasts provided by Frontier and identified several reasons for concern.

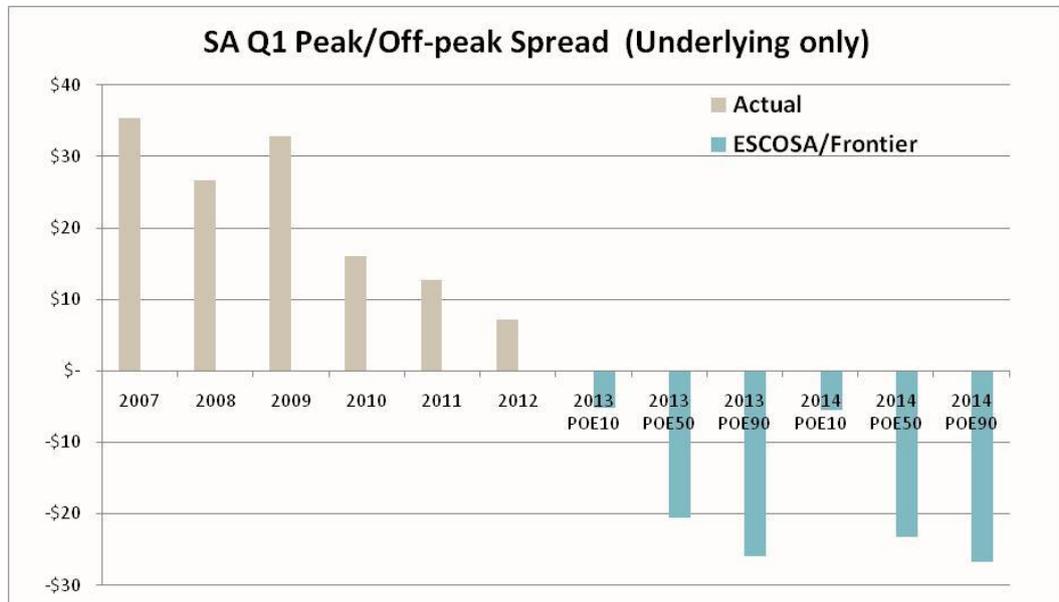
Off-peak price greater than peak prices

On cursory examination, the average peak pool price is higher than the average off-peak price in Frontier's 2012-13 and 2013-14 pool price forecasts which is as you would expect.

However, the average peak pool prices in Quarter 1 for both 2013 and 2014 are actually being driven by a few high price peak events. This is demonstrated by Figure 3 which shows the differential between underlying peak and off-peak prices historically and for the pool price forecasts for Frontier's PoE 10, 50 and 90 scenarios. Note the underlying spread is calculated by capping all pool prices at \$300/MWh.

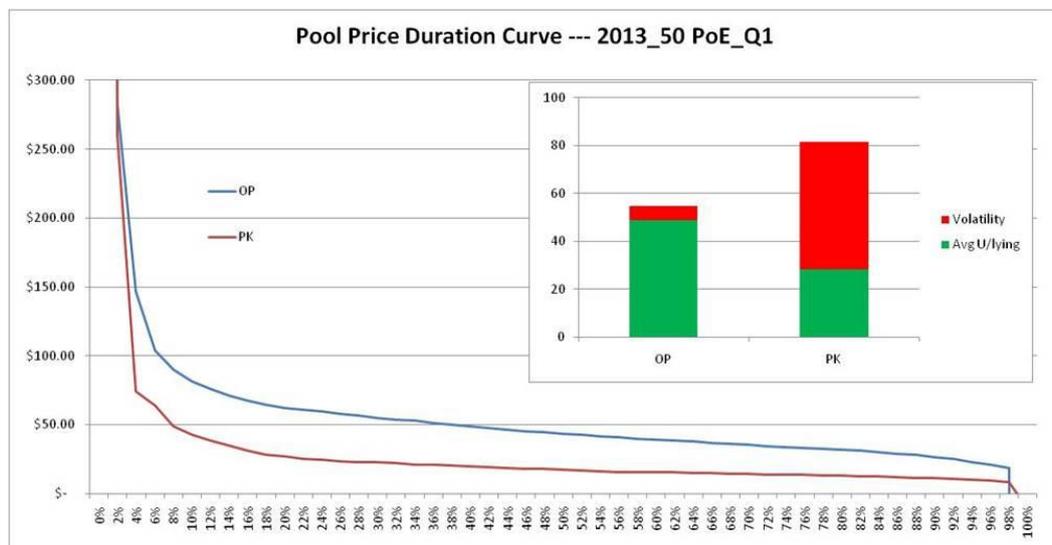
It is clearly evident that the negative differential between peak and off-peak prices in the Quarter 1 pool price forecasts are completely unrealistic. AGL notes that peak and off-peak loads are very similar and queries whether this is driving this perverse outcome.

Figure 3: Peak/Off Peak Spreads for Frontier Pool Price Forecasts



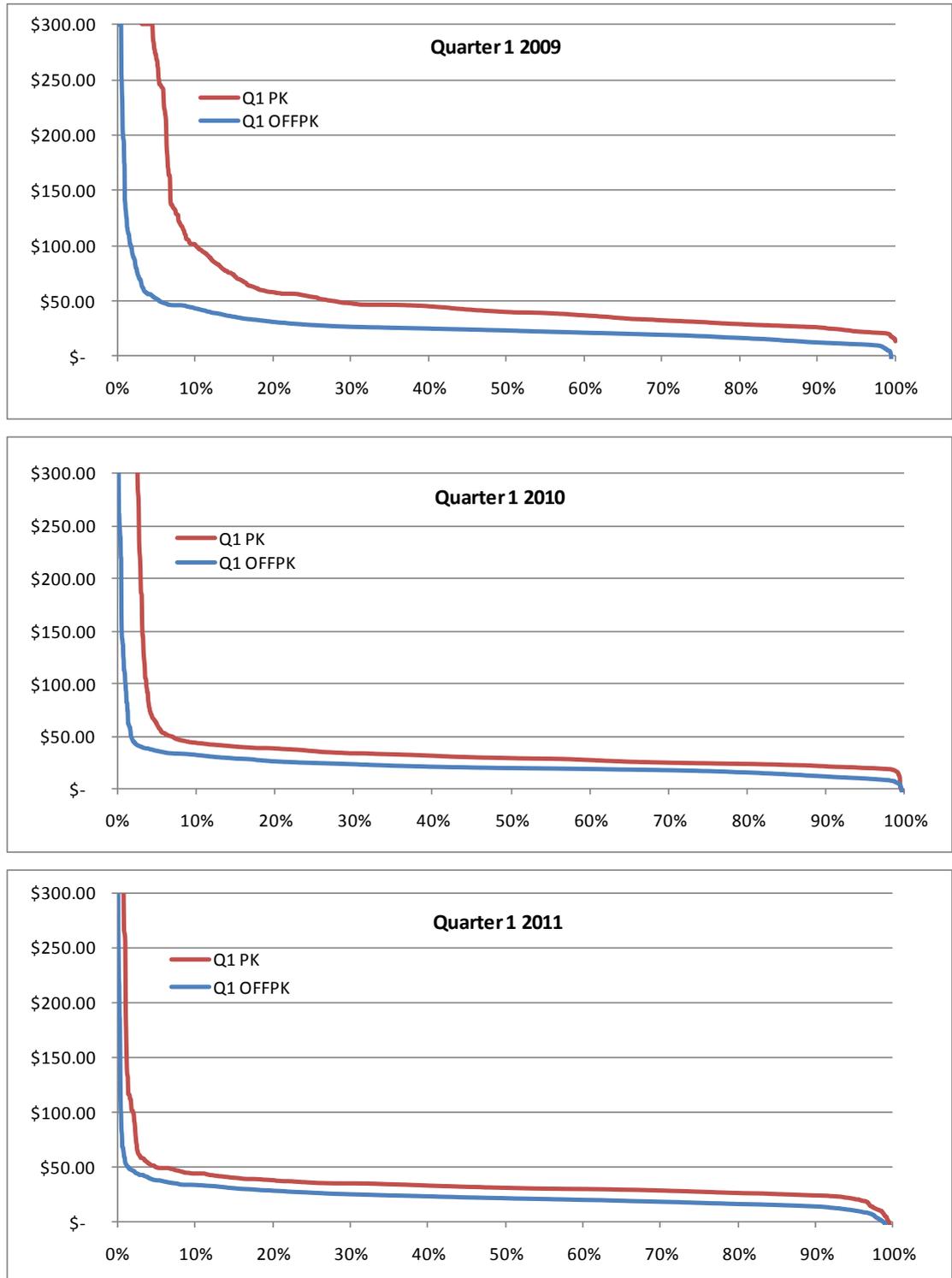
This issue is also clearly shown in Figure 4, the Pool Price Duration curve for the PoE50 scenario in Quarter 1 of 2013. It highlights that off-peak pool prices are consistently higher (95% of the time) than the peak pool price.

Figure 4: Pool Price Duration Curve – PoE50, Quarter 1 2013.



This is clearly not representative of what one would expect to see in reality, and historical analysis clearly demonstrates peak pool prices are in excess of off peak pool prices nearly all of the time and mostly by a considerable margin, which is illustrated in Figure 5 below. This analysis demonstrates the questionable nature of Frontier’s pool price forecast.

Figure 5: Pool Price Duration Curves for Quarter 1, 2009 to 2011





High prices occurring at unusual times

AGL has also observed that there are some occasions in Frontier’s half hourly pool price forecasts where very high prices occur on public holidays (e.g. 1/1/2013 is classified in Frontier modelling as a Peak period) or around midnight (as indicated previously). These are obviously unrealistic and would have a significant impact on the EPC calculation depending on the hedge contacting positions.

Future events

AGL seeks confirmation that Frontier has incorporated recent information on future generation into its pool price modelling. For example, the Northern Power Plant is only going to run for half of a year in summer while Tarong and Yallourn are mothballing generation units in Queensland and Victoria.

Frontier spot price forecast vs ACIL spot price forecasts

Given the issues identified above, AGL has little confidence in the Frontier spot price forecasts and has compared them with the recent spot price forecasts produced for ESCOSA by ACIL Tasman as part of the review of the Solar Feed-in tariff.

The ACIL Tasman modelling, in this instance, was based on a NSLP load-weighted spot price using its proprietary spot price model *Powermark* to project spot prices from 2011 to 2014. ACIL’s time-weighted spot prices are compared to Frontier’s time-weighted annual average spot price in Table 3.

Table 3: Time Weighted RRP, nominal, including carbon, \$/MWh

	ACIL Tasman	Frontier PoE50	Change (%)
2012-13	\$65.87	\$63.01	-4.3%
2013-14	\$72.24	\$60.89	-15.7%

Frontier spot price forecasts are demonstrably lower, especially in 2013-14, than those produced by ACIL Tasman.

ACIL Tasman highlighted that:

"the recovery in prices is primarily driven by the trend of NEM prices from current depressed levels toward new entrant levels' (i.e. the level sufficient to support investment in new plant). This trend reflects the fact that recent entry of new plant (particularly wind farms in NSW, VIC and SA) has tended to suppress prices below the new entrant level. Ongoing demand growth in SA and other NEM regions tends to cause prices to rise towards this new entrant level over time... Accordingly, we anticipate rising prices over this period as the supply-demand balance in the market tightens."

Frontier is forecasting spot prices to trend down in 2013-14 in contrast to ACIL Tasman’s expectations of rising pool prices. AGL cannot discern what further information has been taken into account by Frontier that would readily explain such a large discrepancy in spot price forecast.



3.1.3 Forward contract prices

AGL has clearly highlighted the lack of market liquidity in Section 2, Annexure 1 and the Confidential EPM Report (Annexure 2), but this concern is also highly relevant when considering the reliability of Frontier's calculations of the contract prices used in its energy purchase cost calculation.

AGL has repeatedly asserted that the lack of market liquidity or to be more specific, the absence of any market trades in certain quarters (in particular Peak and Off-Peak trades), renders the calculation of contract prices unreliable for the purpose of determining an EPC.

AGL's attempt to replicate Frontier's analysis of contract prices using its Trade Weighted or Rolling Average approaches make it apparent that no reliable analysis can be performed due to the lack of traded prices available.

In essence, AGL cannot determine how Frontier has derived contract prices for periods when there have been no traded volumes or prices. For example:

- **Rolling average approach** - For a Q3 2013 contract, the method requires 20 per cent of the price to be derived from the average contract price six months prior to the start of Q3 2013. As of October 2012, a contract price between 1 Jan 2013 and 30 June 2013 simply does not exist; and
- **Trade Weighted Average** - Given that there is no trade of Off Peak contracts, AGL assumes that Frontier has derived an implied Off Peak price using the Peak and Base contract prices. However, there was no volume traded for Q1 2013 Peak contracts as at 16 August 2012 so a traded weighted price for the Q1 2013 Peak contract does not exist. Therefore, the spread required to calculate the Q1 2014 Peak contract price would also not exist. Furthermore, there was no volume traded for the Q2 2013 Peak contract, Q1 2014 Base contract, Q1 2014 Cap contract and Q2 2014 Cap contract as at 16 August 2012.

In response to query regarding this issue, AGL has received further advice from ESCOSA that Frontier has utilised contract prices based on the daily settlement price (DSP) published by d-cyphaTrade - which can be based on an actual trade, a bid/offer received by the exchange or in the absence of either, the previous days DSP.

This would explain how the Rolling Average approach has been derived, despite there being long periods with no actual trades.

However, AGL understood from the Frontier report that when modelling the Trade Weighted Average, the lack of any off-peak contract trades required Frontier to infer peak and off peak prices from base prices in 2013/14 using the premium between peak, off-peak and base prices in 2012/13.

The recent advice from ESCOSA states that all prices, including peak and off-peak, are taken directly from d-cyphaTrade data but this contradicts Frontier's earlier explanation.

3.1.4 Hedging Strategy and Contracting Position

Conservative Point of Efficient Frontier

ESCOSA claim in its Draft Determination that Frontier Economics has taken the most conservative risk position in determining its hedging strategy and that this would, if anything, over-estimate the energy purchase cost.

AGL has not been able to determine from the Draft Report whether Frontier has:

- determined separate optimal contract strategies for each POE pool price/load mix (ie 3 optimal strategies) and selected the most conservative option;

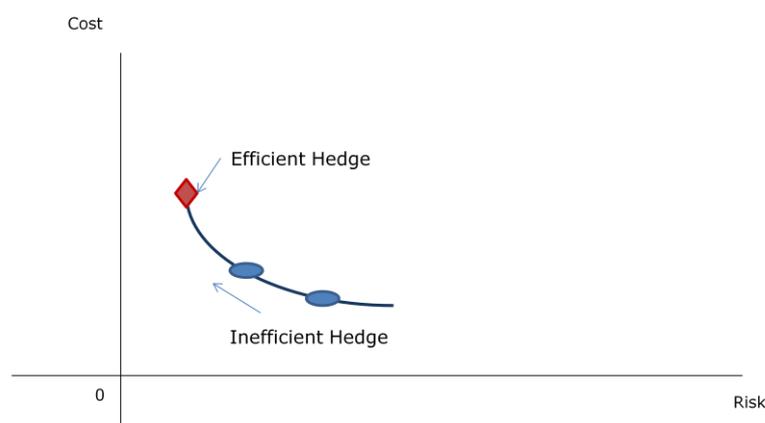
- optimised a single contract strategy based on the probability of these three POE price/load scenarios occurring; or
- taken a conservative position and determined the optimal contracting strategy for the PoE 10 pool price/load mix.

Irrespective of the optimisation method Frontier has used, AGL has been able to determine that the contracting strategy, as modelled, is not the most conservative for any of the POE scenarios.

If the contracting strategy was the most conservative on the efficient frontier (as shown in Figure 6) then any change to hedging position (remaining on or even to the left of the efficiency frontier) would not be able to reduce a retailer's risk.

Figure 6: Conservative Point on Efficient Frontier

Frontier Data analysis – Efficient Hedge Concept



AGL has tested the current contract position by modelling a one percent change in pool price and measuring the change in energy purchase cost for all PoE scenarios. Table 4 highlights the sensitivity of energy purchase cost to pool price change using Frontier's optimal contracting position.

Table 4: Sensitivity of Frontier's Efficient Contract Position to Spot Price Change

	POE10	POE50	POE90
Marked to Market	0.17%	0.10%	0.08%
Rolling Average	0.17%	0.10%	0.08%
Trade Weighted	0.18%	0.11%	0.08%

AGL has then conducted the same sensitivity analysis but for a contracting position with a minor increase in swap volumes (10 MW) and corresponding reduction in cap volumes (10 MW). The results are shown in Table 5 and highlight that this adjustment to the contracting position significantly decreases the sensitivity of the energy purchase cost to pool price. That is, a slightly altered contract position will be considerably more conservative than the current Frontier position for all POE scenarios.

Table 5: Sensitivity of Adjusted Contract Position to Spot Price Change

	POE10	POE50	POE90
Marked to Market	0.11%	0.04%	0.01%
Rolling Average	0.11%	0.04%	0.01%
Trade Weighted	0.12%	0.05%	0.01%

This clearly suggests that the modelled contracting strategy is not the most efficient or the most conservative (as stated in the Draft Report).

Contracting strategy adopted patently unsatisfactory

While AGL does not understand the methodology used to determine the contracting strategy, AGL has reviewed the contracting strategy that is used and concluded that it does not represent a realistic nor reasonable contracting strategy.

Firstly, as shown in Figures 7 and 8 below, the swap and total contracting coverage is significantly higher for off-peak than peak in all quarters. This suggests that a retailer covering the regulated load would acquire more cover for off-peak periods (ie when the price is more likely to be low) than in peak periods (when the pool price is more likely to be high).

Second, a prudent retailer covering the peaky, regulated load in South Australia would be most concerned to ensure it was covered for the peak summer period (Q1). However, according to the Frontier hedging strategy, the hedge position adopted for Q1 2013 is:

- Swaps to 40% of average demand; and
- Swaps and caps amount to contract coverage of only 70% of maximum demand.

Figure 7: Frontier’s Contracting Position - Swap Coverage

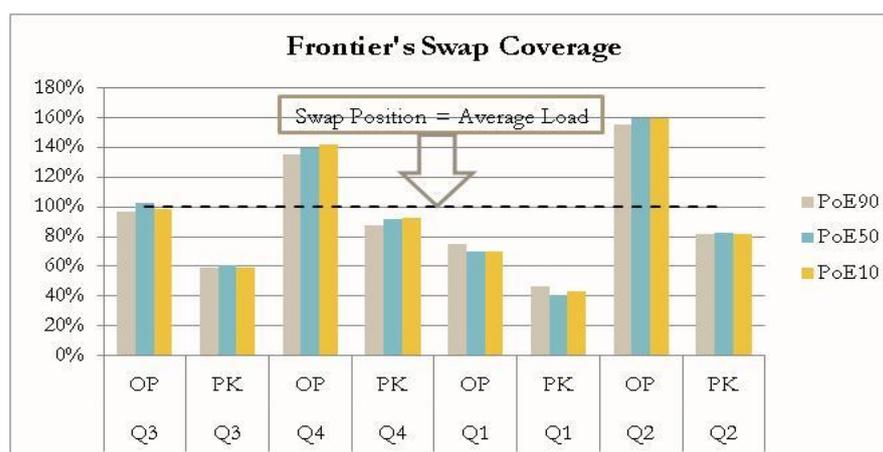
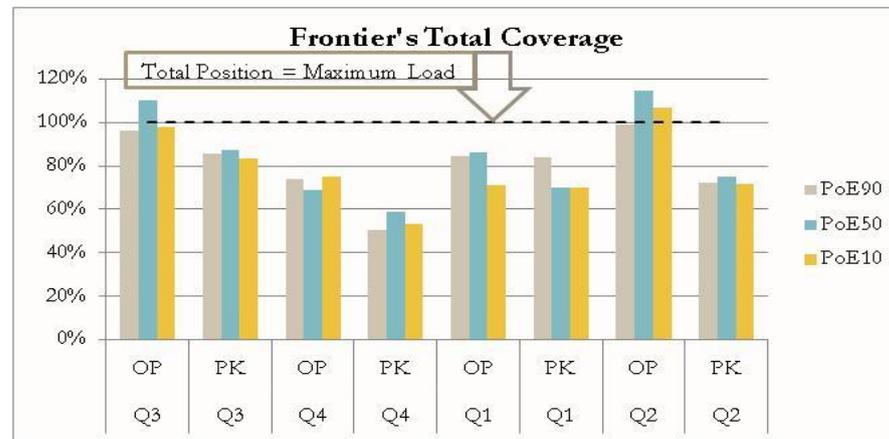


Figure 8: Frontier's Contracting Position – Swap/Cap Coverage



Third, the retailer's load is only fully contracted for off-peak periods.

In essence, Frontier has left the contracting position short over Summer (ie 30% of POE50 and POE10 load is exposed to pool prices) which would significantly under price the contracting strategy and also represents excessive risk for a retailer.

AGL suspects that these counter-intuitive results are being driven by a combination of the errors in the load shapes, errors in the pool price trace (ie the off peak prices being higher than the peak prices) and the artificially low contract prices.

In short, when Frontier 'optimise' the contract position using the flawed input data it creates an inadequate, even perverse, hedging position. Frontier need to remedy these issues in their modelling as a matter of urgency.

It would appear that the model 'optimises' the contracting strategy based on having perfect foresight of the pool price and seeks to create a contracting strategy around this pool price. This contracting strategy would produce vastly different results under various pool price outcomes and AGL considers this approach understates the costs that would be incurred by a prudent retailer executing a contract strategy to hedge regulated demand.

A more realistic strategy would be to contract with swap contracts to the average quarterly peak and off peak demand and then to hedge the remaining demand up to the maximum in peak period with cap contracts. It is AGL's view that this provides a more robust analysis of the contracting strategy that a retailer would likely adopt and thus, a better estimate of the EPC.

3.1.5 Marked to Market approach – Forward Contracts

One of the methodologies used by Frontier in assessing the cost of forward contracts paid by the retailer is using the contract prices from a recent particular day, or definitive point in time, rather than considering the cost that a retailer would have accrued in layering hedges over several years.

AGL notes that in its advice to ESCOSA, ACIL Tasman has highlighted that with regard to the contracting strategy:

an efficient retailer's risk management strategy would result in contracts being entered into progressive over a two or three year period.



For the purposes of this Draft Determination, ESCOSA has chosen to adopt such a 'marked to market' approach to determining forward contract prices and in doing so, chosen to ignore:

- Retailers' submissions highlighting the fundamental flaws in such an approach;
- ACIL Tasman's advice on the matter; and
- its own support for a Rolling Average approach in the past.

AGL understands that Frontier supports this approach on the basis that a retailer should be marking their hedge book to market in making economic decisions.

This analysis could only ever be considered relevant if it was an economic decision as to whether to supply a discrete, avoidable load. For example, a retailer deciding whether to enter into a sale arrangement with a large customer has a choice and the opportunity cost of the wholesale market will govern the retailer's pricing decision. This is emphatically not the situation faced by a Standard Retailer, supplying regulated the small customer load.

The Commission's purpose is to identify the costs incurred by a Standard Retailer in supplying a regulated load, and a prudent retailer will layer in its hedges over time. The 'marked to market' approach pre-supposes the retailer has an option to 'sell out' its position, rather than an obligation to supply a regulated customer base. In adopting a 'marked to market' approach for selecting applicable contract prices, Frontier Economics is ignoring the very real cost incurred by retailers in managing its load in a prudent manner.

The idea that a retailer should 'mark to market' their hedge book when hedging for its regulated customer base is not realistic or practical for the following reasons:

- **Retailer's Risk management policies**

Prudent retailers' risk management policies oblige them to procure hedges over time, leading up to the period of each contract. This has been clearly recognised by regulators in other jurisdictions. Retailers are exposed to the full range of contract price movements for a substantial time leading up to the period of the contract and do not realistically have the alternative of referring to the output of a model when deciding whether to procure hedges.

- **Standard Retailers have an obligation to supply**

A retailer servicing a regulated mass market load does not have any "economic decision" to make – it is obliged to supply those customers. A Standard Retailer does not have the option of not supplying regulated customers, new move-ins and new premises within their supply area. It cannot choose, for example, to not supply its regulated customers in favour of clearing the hedge through some other means, such as through the wholesale market or by selling to other customers.

- **Ignores Time Lags**

Business operational delays and lags in customer transfers in reality prevent any day-to-day changes in economic decisions. The decision to acquire or retain customers occurs months in advance, and these decisions cannot simply be changed because the contract market may have moved on a particular day.

Similarly, the lags in the customer transfer process between retailers are one to three months from the time a customer signs a contract to that customer becoming the responsibility of a new retailer. Any "economic decision" based on day-to-day movements in the contract market is a fallacy because retailers obligations to customers are ever changing.



- **Ignores Transaction costs**

The concept of making economic decisions on the basis of a day-to-day market valuation of a hedge book completely ignores the significant transaction costs of acquiring (or disposing) of customers. All regulators have acknowledged the material costs associated with customer acquisition but these costs are ignored if the theoretical mark to market approach is used.

- **Lack of Liquidity**

AGL has consistently disagreed with Frontier Economic's assertion that a 'marked to market' approach is appropriate for a regulated load and believes that the flaws in such an approach are incontestable.

Furthermore, AGL accepts that the acute lack of liquidity in the South Australian contract market (as highlighted previously in this submission) has made estimating forward contract prices using a Rolling Average or Trade Weighted approach unreliable for the purpose of determining an energy purchase cost.

ESCOSA's decision to use a 'marked to market' approach will not resolve these issues.

AGL does not believe it is at all credible to derive the EPC, and consequently the WEC and the Standing Contract Prices from one, or at most, a few market trades.

3.2 Stand-alone LRMC

AGL is concerned that a number of assumptions and inputs have been used in the calculation of the 2012/13 and 2013/14 LRMC of generation which are not consistent with the statutory requirements that ESCOSA must have regard to.

3.2.1 Input Assumptions

New entrant generation plant

AGL is concerned that a number of input assumptions proposed by AEMO, and adopted by ESCOSA, do not represent what would be faced by a new entrant generator entering the market in South Australia.

AGL is particularly concerned that the fuel costs assumed for a CCGT and OCGT plant appear to be based on short-term spot price projections. It is well-understood in the industry that a generator will seek to minimise price risk on its key inputs (i.e. fuel) by entering into longer-term agreements i.e. 10 year gas supply agreement. Given Frontier's lack of consideration of a long term gas price, AGL believes Frontier have under estimated the gas price used in the LRMC modelling by a material amount. AGL have considered the data sources available to Frontier from AEMO and proposed a more suitable fuel cost based on the same data sources used by Frontier.

The gas cost used by Frontier (\$5.51/GJ \$2012/13) is taken from the AEMO 2012 NTNDP and is described as the "average new entrant CCGT gas price in South Australia".² AEMO have recently consolidated the data inputs and assumptions used for their 'planning' functions under a section of their website called "2012 Planning Assumptions". The page describes that the "...2012 assumptions and inputs used for AEMO's National Transmission Network Development Plan (NTNDP), Gas Statement of Opportunities (GSOO), Electricity Statement of Opportunities (ESOO), Victorian Annual Planning Report (VAPR) and South

² Frontier Economics, Wholesale energy cost estimates for 2012/13 and 2013/14. A Draft Report prepared for ESCOSA, October 2012. Page 17.



Australian Advisory Function reports are provided below”.³ Numerous supporting documents and spreadsheets which set out the detailed assumptions and inputs used as part of the NTNDP and other studies are provided.

Frontier’s reference to “AEMO 2012 NTNDP” as the source of their fuel cost data appears to refer to “Consolidated 2012 plant technical data” and the spreadsheet attached to this link is *2012 Planning Studies - Technical Generator Data Summary*.⁴ Table 8. Fuel Costs for New Plant - Planning Scenario (2012/13 \$/GJ) of this spreadsheet provides fuel costs for new generation plant in each region of the NEM. The Frontier fuel cost can be attained by taking the numerical average of the ‘1213’ fuel costs for ‘NEW_CCGT’ for the NSA, ADE and SESA regions i.e. all SA regions (Cells D26:D28). The spreadsheet supports the report *Cost of Construction, New Generation Technology – 101010-00676 – Report (10 July 2012)* by Worley Parsons (under ‘Generation capacities and capabilities’ on the ‘2012 Planning Assumptions’ page). Worley Parsons describe that they employed ACIL Tasman to provide fuel cost estimates for use as part of their report.⁵

Under the ‘Fuel related information’ section of the ‘2012 Planning Assumptions’ page, the ‘fuel cost estimates’ by ACIL Tasman are provided in the form of a report: *Fuel cost projections, updated natural gas and coal outlook for AEMO modelling. Prepared for AEMO. 28 June 2012*⁶; and a spreadsheet: *Wholesale fuel cost projections: ACIL Tasman final results to support AEMO NTNDP modelling. Thursday, 28 June 2012*⁷. The fuel cost for new generation plant used by Worley Parsons, and subsequently Frontier, is taken from ‘Worksheet: Scenario 3’, ‘Spot price projections (Real 2012-13 \$/GJ)’ Sensitivity 4 (U78:AL100) in the ACIL Tasman spreadsheet i.e. NSA, ADE and SESA regions (Cells AH81:AJ81).

The ACIL Tasman report and spreadsheet not only include the spot price projections used by Worley Parsons it also provides a 10-year levelised price projection for each scenario/sensitivity across all NEM regions. ACIL Tasman recommend using levelised prices for modelling of generation:

*a 10 year levelised price, would be more reflective of long-term contract prices available....ACIL Tasman would recommend using this series for new entrant fuel costs as it better mimics the long-term fuel contracting approach associated with new generation developments.*⁸

AGL agrees with the recommendation of ACIL Tasman that a levelised price would be more reflective of costs available for a new entrant generator in South Australia and therefore

³ AEMO website (<http://www.aemo.com.au/Electricity/Planning/Related-Information/2012-Planning-Assumptions>). Accessed 12 November 2012.

⁴ AEMO website ([http://www.aemo.com.au/Electricity/Planning/Related-Information/~media/Files/Other/planning/Technical Generator Data Summary 2012%20xlsx.ashx](http://www.aemo.com.au/Electricity/Planning/Related-Information/~media/Files/Other/planning/Technical%20Generator%20Data%20Summary%202012%20xlsx.ashx)) . Accessed 12 November 2012.

⁵ Worley Parsons, Cost of Construction, New Generation Technology – 101010-00676 – Report (10 July 2012). Page 3.

⁶ AEMO website ([http://www.aemo.com.au/Electricity/Planning/Related-Information/~media/Files/Other/planning/ACIL Tasman Fuel Cost %20Projections 2012.ashx](http://www.aemo.com.au/Electricity/Planning/Related-Information/~media/Files/Other/planning/ACIL%20Tasman%20Fuel%20Cost%20Projections%202012.ashx)). Accessed 12 Novmeber 2012.

⁷ AEMO website ([http://www.aemo.com.au/Electricity/Planning/Related-Information/~media/Files/Other/planning/ACIL Tasman Wholesale Fuel Cost Projections%20xlsx.ashx](http://www.aemo.com.au/Electricity/Planning/Related-Information/~media/Files/Other/planning/ACIL%20Tasman%20Wholesale%20Fuel%20Cost%20Projections%20xlsx.ashx)). Accessed 12 Nobmver 2012.

⁸ ACIL Tasman, Fuel cost projections, Updated natural gas and coal outlook or AEMO modelling, Prepared for AEMO. 28 June 2012. Page 6.



these costs should be used. The numerical average of SA NEM regions levelised price for 2012/13 is \$6.42/GJ (\$2012/13).

Load

In calculating the LRMC of generation for 2012/13 and 2013/14 Frontier have used the POE50 load developed for the EPC approach. As discussed in Section 3.1.1., AGL is concerned that the Frontier load shapes underestimate the peakiness of the standard contract load in South Australia. This has the effect of underestimating the LRMC of generation because the generation mix modelled has a greater weighting toward lower cost baseload generation. AGL believes Frontier needs to review its methodology to understand why its forecast load shapes are inconsistent with market expectations to ensure that its revised forecasts reflect recent historical data and present a more realistic forecast of 10, 50 and 90 POE regulated loads in SA.

Discount rate

AGL is concerned that the discount rate used to calculate the stand-alone LRMC is not appropriate for calculating the least cost mix of generation to meet the load in question. Specifically, the discount rate does not reflect a reasonable estimate of the return on electricity generation assets that would be expected in the electricity industry. The result of this is that the 2012/13 and 2013/14 LRMC values in the Frontier Report underestimate the LRMC of meeting the relevant load.

The discount rate is a pre-tax, real discount rate of 7.1% which is based on the generation weighted average cost of capital (WACC) adopted by IPART in its annual review of 2012/13 regulated retail electricity prices in NSW.⁹ IPART's approach to setting the WACC used to discount future values as part of their LRMC calculation was set in 2010 as part of the *Review of regulated retail tariffs and charges for electricity 2010 – 2013, Electricity – Final report, March 2010*. AGL has provided numerous submissions to IPART since this WACC methodology was established in 2010. These submissions addressed the different assumptions and inputs used to calculate the initial WACC and update it each year as part of the annual review of regulated retail prices.¹⁰

In IPART's *Changes in regulated electricity retail prices from 1 July 2012, Electricity – Final Report, June 2012* a discussion is provided on how the 'market-based parameters' of the WACC are updated annually as part of IPART's annual review of regulated electricity retail prices. IPART acknowledge that stakeholders had expressed concerns related to various input assumptions used and the manner in which only selected inputs were updated on an annual basis i.e. update of risk-free rate and not the MRP results in a disparity between using short-term averages of market data for some parameters and long-term averages for others.¹¹ IPART suggest that they were limited in their ability to update all the WACC parameters because the framework of the WACC methodology was set as part of the 2010 determination.¹² In order to address this concern IPART provide an estimate of a 'Long-term average' WACC calculation for comparison with the 'Final decision'. AGL does not agree that the input assumptions and resulting WACC proposed as

⁹ IPART, *Changes in regulated electricity retail prices from 1 July 2012, Electricity – Final Report, June 2012*. Page 101.

¹⁰ AGL Energy Ltd. *AGL Response to the Independent Pricing and regulatory tribunal, review of regulated retail tariffs and charges for electricity 2010 -2013, Draft Determination (Date: 08 February 2010)*

¹¹ IPART, *Changes in regulated electricity retail prices from 1 July 2012, Electricity – Final Report, June 2012*. Page 102.

¹² *Ibid.* Page 101.



a 'Long term average' appropriately represent the basis for determining the LRMC of generation.

On this basis, AGL is very concerned that the current discount rate does not represent a reasonable assumption for the rate of return required for investors in new generation in South Australia. Therefore, ESCOSA should adopt an updated estimate of the discount rate to more accurately account for current conditions in the South Australian context instead of relying upon an historical decision made by IPART.

A key assumption in developing a WACC to be used as a discount rate in the calculation of the LRMC is the type of firm under consideration in the modelling exercise and how will the funding structure of the firm impact their cost of capital? AGL considers that in calculating the LRMC of generation for a specified load two types of firms could be considered: 'Integrated Utility' or 'Independent Power Producer'.

In Table # below, AGL has provided the WACC (and the relevant inputs used by IPART) adopted by ESCOSA in the Draft Report and compared this against AGL's view of the appropriate input values and the resulting WACC for a 'Integrated Utility' and 'Independent Power Producer'. AGL suggest that the WACC adopted by ESCOSA should be within the range of 9.3% - 9.7% (pre-tax real).

Table 6: WACC Parameters

WACC parameters	ESCOSA Draft Report¹³	Integrated Utility	Independent Power Producer
Nominal risk free rate	3.7%	3.2%	3.2%
Inflation adjustment	2.8%	2.5%	2.5%
Market risk premium	5.5% to 6.5%	8.0%	8.0%
Debt margin	2.1% to 3.6%	3.1%	4.5%
Debt to total assets	50%	30%	60%
Gamma	0.5 to 0.3	0.25	0.25
Tax rate	30%	30%	30%
Equity beta	0.9 to 1.1	1.0	1.5
WACC (pre-tax real)	7.1%	9.3%	9.7%

In Annexure 3 AGL has provided a detailed discussion of the individual inputs and assumptions proposed as part of the WACC calculations.

AGL also note that the WACC/discount rate proposed by Frontier is significantly lower than the WACC used to calculate the LRMC of generation in previous retail electricity price

¹³ The WACC Parameters used in the ESCOSA Draft Report are documented in IPART's Changes in regulated electricity retail prices from 1 July 2012, Electricity – Final Report, June 2012. Table B.1. Final decision – Generation.



determinations made by ESCOSA. Table # shows a comparison of WACC values used in modelling for previous ESCOSA price determinations compared to Frontier’s assumption.

Table 7: WACC values used by ESCOSA in previous price determinations

ESCOSA retail electricity price determination input	WACC (pre-tax real %)	Frontier WACC (pre-tax real %)
ACIL Tasman (2010) – Generation cost modelling ¹⁴	8.79%	7.1%
ESIPC (2007)- Estimates of the long run marginal cost of supplying electricity to small customers in 2008 ¹⁵	8.49%	
ESIPC (2004)- Estimates of the long run marginal cost of supplying electricity to small customers in 2008 ¹⁶	9.6%	

This comparison serves to highlight the inappropriateness of the WACC assumption used by ESCOSA in the Draft Determination, and that the WACC assumption should be amended.

AGL also notes that the proposed discount rate of 7.1% is clearly too low when compared with the discount rates that have been applied by the AER in the current determinations of electricity distribution prices in all the NEM regions. Converted to an equivalent pre-tax real basis from the vanilla WACC used by the AER, the discount rates applied to set the regulated distribution prices range from 9% to 11%. This would suggest that electricity distribution businesses are significantly more risky than power generation – a proposition which is obviously wrong.

3.3 LRET

AGL supports the use of a LRMC methodology for assessing the compliance costs associated with the LRET. AGL believes this is the most appropriate methodology given retailers of scale servicing a small customer load will invariably source a significant portion of their LGCs through long term PPAs with new entrant build renewable generation.

AGL is concerned that the using an incremental multi-year LRMC approach provides a result below what we would expect for the LRMC of meeting the LRET compliance requirement for a retailer. AGL believes that the most appropriate method of setting the LRMC allowance would be to use the current LRMC of a renewable energy generator (most

¹⁴ ACIL Tasman provided advice to AGL on the calculation of the LRMC of generation put forward in AGL’s Regulated Pricing Proposal 1 January 2011 to 30 June 2014

¹⁵ Electricity Supply Industry Planning Council, Information Paper prepared for the Essential Services Commission of SA, Estimates of the long run marginal cost of supplying electricity to small customers in 2008, 16 August 2007. Table 4.6 Page 23.

¹⁶ Electricity Supply Industry Planning Council, Information Paper prepared for the Essential Services Commission of SA, Estimates of the long run marginal cost of supplying electricity to small customers in 2005, 31 August 2004. Table 4.5 Page 24.



likely to be deployed for LRET compliance) in the NEM and then deduct the expected 'black price' that the generator would receive. This is the approach that was adopted in the original price path and AGL believes that it remains the most appropriate methodology.

3.4 SRES

AGL broadly agrees with the methodology proposed by Frontier to calculate the cost of compliance with the SRES for 2012/13 and 2013/14. However, AGL notes that on the 19 October 2012 the Clean Energy Regulator has published updated non-binding STP estimates for 2013 and 2014 (i.e. 18.76% and 7.69% respectively). These updated estimates should be incorporated into any calculation of the WEC.

4. Miscellaneous items

4.1 Headroom allowance

Need for a headroom allowance

ESCOSA has concluded that the inclusion of a headroom allowance is in the long term interests of consumers. It is important to keep in mind that the standing contract price effectively forms a price cap in the market. AGL supports the Commission's objective to "encourage the continued transition to a fully competitive market."

The Commission has adopted the view that the allowance for headroom as an incentive for standing contract customers to move off the standing contract and to take up a more competitive market offer. This view considers the headroom as a penalty. AGL does not agree that this is the driving purpose of 'headroom'. It must also be appreciated that standing contract customers are not committed to AGL for any period of time. They can move or switch at any time (at the next meter read). As a standard retailer, AGL is obliged to supply a customer who is unable to obtain a market contract from another retailer. The additional cost for standing contracts could be considered, from AGL's perspective, as the cost of managing an uncertain load or from the customer's perspective, a value for optionality.

AGL's view is that market contract prices tend to reflect efficient costs amongst other things. The great benefit of competition is that it allows a diversity of retailers with different business models to make a range of offers to customers from time to time. This provides customers with the opportunity to save if they choose to at the right time, as in any dynamic competitive market. It is also possible that from time to time, retailers may provide discounts which are unsustainable in the long term for strategic and market entry reasons, and these discounts can provide significant value to customers. However, retailers have to be in the market in the first place to be able to offer these discounts. Significant investment and time is required to establish a retail business. The standard contract price, being the regulated price in a competitive environment, sets the reference price or cap which other retailers discount off. Without sufficient headroom to develop attractive price based offers, it will be difficult for retailers to build and expand a retail business.

As the Queensland Competition Authority has correctly pointed out, customers can avoid this headroom by taking up a market offer.

Effective discount

ACIL Tasman has advised that the minimum discount offered on market contract is the best indicator of how much headroom is required to promote competition. This is incorrect – it is not the minimum discount that is important but the effective discount that will encourage customers to switch or sign up. Since the lowest discount offer in the market is unlikely to attract any customer switching, it is irrelevant. It is also reasonable to expect that the highest discount offers will be successful. Therefore, the effective discount, as an indicator of headroom, will be more likely to be at the upper end of the range rather than the low end.

In addition, there is a multitude of product offers which not only include the discount but sign on credit, free vouchers, magazine subscriptions and other free products. This means that assessing the range of offers from retailers is more complex than just the headline discount rate.



In ACIL Tasman Briefing Note, dated 12 September 2012, on “Wholesale electricity cost investigation – impact on the competitiveness of the retail electricity market,” ACIL Tasman concluded that a headroom allowance of between 3% and 7% may be sufficient to promote competition with the mid-point of 5% being reasonable based on an analysis of the Citipower region in Victoria.

AGL has expanded the analysis based on market offers offered by the three largest retailers available at 24 October 2012 in the five regions in Victoria. The discounts relative to the standing offers by the former franchise retailers in each region are presented in the table below (former franchise retailer in each region is shaded):

Table 8: Market offers relative to standing offers at 24 October 2012

	AGL	Origin	Energy Australia
Jemena	15.4%	16.5%	11.2%
United Energy	15.8%	12.9%	9.9%
Citipower	10.6%	15.4%	6.5%
Powercor	16.2%	15.2%	12.1%
SP AusNet	11.7%	11.7%	5.9%

As shown in the table, the levels of discount are much higher than the 3% to 7% calculated by ACIL Tasman – the discounts ranging over 16%. Therefore the 5% recommended by ACIL Tasman significantly understates the level of headroom.

Error in headroom allowance set by ESCOSA

It is clear that the discounts relate to the total price. In calculating the headroom allowance to promote competition, the Commission made an error in calculating the headroom as 5% of the POE50 estimate of the EPC or \$3.74/MWh. This represents a headroom allowance of only 1.2%. As the 5% headroom should relate to the total retail price of over \$300/MWh, the headroom allowance should be over \$15/MWh. With a 10% headroom, the allowance should be over \$30/MWh.

Current level of discounts

The Commission has referred to discounts currently available of up to 13.8% on a typical bill. It is important to note that not all retailers offer this level of discounts nor can it be assumed that these levels of discount are sustainable. Market offers have conditions such as direct debit, pay on time and duel fuel which affect the level of discounts.

4.2 Retail operating margin

AGL note that ESCOSA have highlighted comments made by AGL in our previous submission related to the question of whether other components of retailers costs in the standing contract price should be reviewed if a change to the WEC allowance is made.¹⁷

¹⁷ AGL Energy Ltd. Electricity Standing Contract – Wholesale Cost Investigation, Discussion Paper. AGL submission to ESCOSA (Date: 19 July 2012). Page 16.



AGL remains of the view that where regulators demonstrate a willingness to intervene in previously determined pricing decisions that this results in additional risks for retailers.

4.3 Solar feed-in tariff

As discussed in Section 3, AGL has serious reservations about the efficacy of the spot price modelling completed by Frontier Economics and their suitability for use in changing the standing contract price. AGL suggest that if any change in the current solar FiT price path is under consideration by ESCOSA then this should be consulted upon with relevant stakeholders.



Annexure 1

PART A – RESPONSE TO ESCOSA'S PURPORTED SPECIAL CIRCUMSTANCES DETERMINATION

1. EXECUTIVE SUMMARY

1.1 ESCOSA has failed to properly make a special circumstances determination. This is because:

- (a) ESCOSA has misdirected itself as to the meaning of "special circumstances". First, it has misapplied the statutory language and, secondly, it has misdirected itself in undertaking the exercise of the statutory discretion;
- (b) in considering whether, and purporting to determine that, special circumstances exist, ESCOSA has failed properly to have regard to a number of considerations to which it ought to have had regard and has improperly had regard to other matters; and
- (c) special circumstances do not, in fact, exist in South Australia at the present time. First, carbon policy uncertainty persists and, secondly, the South Australian forward electricity contracts market remains illiquid.

1.2 Accordingly, ESCOSA is not empowered to vary the Original Price Determination.

1.3 Even if special circumstances do exist and ESCOSA has properly exercised its power in considering whether, and determining that, special circumstances exist (with which AGL does not agree), a proper exercise of ESCOSA's discretion requires that it not vary the existing price path. This is so given the residual carbon policy uncertainty and limited liquidity that persists in the South Australian forward electricity contracts market.

2. BACKGROUND

2.1 On 2 October 2012 the Essential Services Commission of South Australia ("**ESCOSA**") published its *Determination of Special Circumstances, Statement of Reasons and Draft Standing Contract (Further Variation) Price Determination ("**Draft Price Determination**")*, proposing to reduce the wholesale electricity component ("**WEC**") of the electricity standing contract price in South Australia for the period from 1 January 2013 to 30 June 2014.

2.2 The Draft Price Determination, among other things, contains a purported determination by ESCOSA that "special circumstances" exist that entitle ESCOSA to seek to vary the current pricing determination.

ESCOSA's original price determination

2.3 On 14 December 2010, ESCOSA made a price determination, under Part 3 of the *Essential Services Commission Act 2002 (SA) ("**ESC Act**")* and as authorised by ss 35A and 36AA of the *Electricity Act 1996 (SA) ("**Electricity Act**")*, fixing the electricity standing contract price to apply from 1 January 2011 to 30 June 2014 ("**Original Price Determination**").

2.4 In the Original Price Determination, the WEC of the retail cost that makes up the standard contract price was determined based on an estimate of Long Run Marginal Cost ("**LRMC**") of electricity generation in South Australia ("**LRMC approach**"), as opposed to a market-based assessment of wholesale electricity costs.

2.5 According to ESCOSA, the WEC represents the total costs incurred by a prudent and efficient retailer in purchasing electricity to cover the anticipated consumption of standing contract customers. ESCOSA estimates the WEC by considering the likely costs of a prudent and efficient retailer operating under an optimum hedging strategy in the National

Electricity Market ("**NEM**") over the period of the price determination ("**Price Path Period**").

2.6 In the Original Price Determination, ESCOSA stated that¹:

...lack of liquidity in the trading market is such that a pure market-based approach is unreliable for this current review.

...

The Commission acknowledges that should an event occur during the next regulatory period that leads to a material change in wholesale electricity costs, a special circumstances review may be triggered. In this event, the Commission would be required to make a new standing contract price determination...

If the WEC decision were re-opened during the regulatory period, the methodology for re-determining WEC could be decided at that time, having regard to the circumstances of the market...

2.7 The alternative to the LRMC approach in determining the WEC allowance would be to consider the electricity purchase cost ("**EPC**") that a prudent and efficient retailer would be expected to incur (the "**EPC approach**", also called the "**market-based approach**"). To rely on the EPC approach, the forward market for wholesale electricity in South Australia must be sufficiently liquid to provide a reliable forecast of the energy purchase costs for standing contract customers.

2.8 In the Draft Price Determination, ESCOSA purports to have determined that "special circumstances" exist such that it is empowered to vary the Original Price Determination.

Proposed variation of the Original Price Determination

2.9 On 15 June 2012, ESCOSA announced that it had decided to commence an investigation of the WEC of the retail costs that make up the standing contract price.

2.10 On 20 June 2012, ESCOSA published a Discussion Paper setting out the central issues precipitating its decision to commence an investigation into the WEC component of the standing contract price ("**Discussion Paper**").

2.11 In the Discussion Paper ESCOSA set out its "Prima Facie Evidence of Market Changes", relevantly stating²:

Through this ongoing monitoring, the Commission has identified that liquidity in the electricity futures contracts market has improved and it appears that more reliable evidence of forward wholesale electricity prices has become available.

2.12 ESCOSA also referred to the fact that the possibility of changing from a LRMC to an EPC approach had been foreshadowed in the Original Price Determination in the event that a material change in wholesale market conditions occurred³.

¹ ESCOSA, Original Price Determination, pp 67-68

² ESCOSA, Discussion Paper, p 7

³ ESCOSA, Discussion Paper, p 6

3. **ESCOSA HAS MISDIRECTED ITSELF AS TO THE MEANING OF "SPECIAL CIRCUMSTANCES"**

ESCOSA's power to vary a standing contact price determination

3.1 Under section 36AA of the Electricity Act, a standing contract price determination made by ESCOSA must remain in place for at least 3 years (as set out in the determination), unless ESCOSA has determined that "special circumstances" exist.

3.2 If ESCOSA determines that special circumstances exist, ESCOSA may make a determination which varies an existing price determination for the remainder of the existing determination period or make a new determination which must apply for at least 3 years.

ESCOSA's determination that special circumstances exist

3.3 In its Draft Pricing Determination, ESCOSA purports to determine that "special circumstances" exist such that it is empowered to vary the Original Price Determination.

3.4 The manner in which ESCOSA purports, in the Draft Pricing Determination, to have satisfied itself that special circumstances exist, is summarised by ESCOSA as follows⁴:

...the central question in determining whether or not there are special circumstances is: have events occurred which disturb the fundamental basis of the existing Price Determination so much as to require a new determination to be made?

Having regard to the fact that:

- *the Commission stated in the [Original Price Determination] it would consider reverting to an EPC-based approach if market uncertainties due to carbon emissions pricing policies changed during the period of the [Original Price Determination]; and*
- *use of the EPC-based approach for setting the WEC allowance for the purposes of the [Original Price Determination] is appropriate, best reflects the costs that drive prices within competitive markets and best satisfies the Commission's primary objective under the ESC Act;*

the Commission has formed the view that the following are special circumstances and has determined them to be so for the purposes of section 36AA(4a) of the Electricity Act:

- *the relevant policy uncertainties have been resolved through the enactment of the Clean Energy Act; and*
- *liquidity in the South Australian forward electricity contract market has increased significantly since the [Original Price Determination] and following the removal of the relevant policy uncertainties, enabling a reversion to the use of the EPC-based approach for the setting of the WEC allowance for the purposes of the [Original Price Determination].*

3.5 The reference to "relevant policy uncertainties" are to the uncertainty surrounding the Federal Government policy regarding the pricing of carbon emissions.

⁴ ESCOSA, Draft Price Determination, pp 54-55

ESCOSA's test for determining whether special circumstances exist

3.6 Neither the ESC Act nor the Electricity Act define the term "special circumstances". Nor is there any identified legislative criteria to which ESCOSA is directed in determining whether special circumstances exist.

3.7 In the Draft Price Determination ESCOSA relevantly stated that⁵:

From the time that the special circumstances provisions were introduced into the Electricity Act in 2004, the Commission has publicly stated its position that special circumstances will be those which are:

...events of a magnitude such as to disturb the fundamental basis of an existing Price Determination so much as to require a new determination to be made.

3.8 When the special circumstances provisions were introduced into the Electricity Act, the Minister for Energy made the following comments regarding the meaning of "special circumstances" during his second reading speech⁶:

...if an unexpected event occurs which can be shown to have a material impact on the credibility of the existing price path determination, a review would be initiated pursuant to the 'special circumstances' provisions of the Acts to confirm or deny the existence of special circumstances. If the event was unable to be predicted, planned or reasonably insured against, then 'special circumstances' exist.

ESCOSA has misapplied the statutory language

3.9 In the Draft Price Determination, uncontroversially, ESCOSA notes that neither the Electricity Act nor the ESC Act defines the term "special circumstances"⁷.

3.10 ESCOSA goes on to state the following⁸:

...The Commission has generally taken a view, therefore, that it has a broad discretion in the determination of whether or not special circumstances exist. That said, the overriding consideration in exercising that discretion is the Commission's paramount statutory objective as set out in section 6 of the ESC Act...

3.11 There is a distinction, however, between the meaning to be given to a term (upon which the absence of a definition may bear) and the scope of the discretion available to a decision-maker in satisfying itself that matters exist sufficient to predicate the exercise of a statutory discretion.

3.12 The proposition that ESCOSA has a broad discretion as to whether any particular state of affairs answers the description "special circumstances", is different from the proposition that it has a broad discretion in determining what the term "special circumstances" means.

3.13 There are two concerns with the manner in which ESCOSA has proceeded:

- (a) ESCOSA has mistakenly proceeded on the basis that a broad discretion as to whether any particular state of affairs answers the description "special circumstances" necessarily follows from the absence of a legislative definition of

⁵ ESCOSA, Draft Price Determination, p 19 (footnote omitted).

⁶ *Statutes Amendment (Electricity and Gas – Price Determination Periods) Amendment Act 2010*, second reading speech.

⁷ ESCOSA, Draft Price Determination, p 18

⁸ ESCOSA, Draft Price Determination, p 18

"special circumstances". This is clear from ESCOSA's use of the term "therefore" in the quote at paragraph 3.10 above; and

- (b) whether a particular circumstance is a "special circumstance" is a question of fact. While ESCOSA must, in the absence of a legislative definition, form a view as to what "special circumstances" means in determining whether something constitutes "special circumstances", ESCOSA does not have a "broad discretion" to determine what "special circumstances" means. The meaning and construction of an expression in a statutory instrument is a question of law.

3.14 As noted above, in the Draft Price Determination, ESCOSA states that it understands "special circumstances" to mean⁹:

*...events of a magnitude such as to disturb the fundamental basis of an existing price Determination much as to **require** a new determination to be made.* (emphasis added)

3.15 The above quote points to another important respect in which ESCOSA has misconstrued the special circumstances test. Section 36AA(4a)(f) confers a discretion on ESCOSA in the following terms:

*If the Commission has determined that special circumstances exist – the Commission **may** make a determination that takes effect as a variation of the existing determination (with effect for the balance of the term of the existing determination (unless another variation is subsequently made)).* (emphasis added)

3.16 Clearly, use of the word "may" in s 36AA(4a)(f) imports a discretion. This means that ESCOSA may vary a price determination if satisfied that special circumstances exist, and must be satisfied before it can do so, but it need not vary a price determination even if so satisfied.

3.17 ESCOSA has erred in suggesting that special circumstances are events of such a magnitude as to "require" a new determination to be made. The consequence of ESCOSA's erroneous construction is that it proceeds immediately from a purported determination of "special circumstances" to an analysis of what changes ought to be made to the WEC allowance and the standing contract price. ESCOSA does not consider whether, notwithstanding that special circumstances exist, it is nevertheless an appropriate exercise of ESCOSA's discretion to seek to vary the Original Price Determination.

3.18 This error is carried over by ESCOSA from the error it made in its Original Price Determination, when it said the following¹⁰:

*The Commission acknowledges that should an event occur during the next regulatory period that leads to a material change in wholesale electricity costs, a special circumstances review may be triggered. In this event, the Commission would be **required** to make a new standing contract price determination...* (emphasis added)

⁹ ESCOSA, Draft Price Determination, p 19

¹⁰ ESCOSA, Original Price Determination, pp 67-68

ESCOSA has misdirected itself in undertaking the exercise of the statutory discretion

3.19 ESCOSA has misdirected itself in undertaking the exercise of the statutory discretion, in the following two ways.

An improper 'binary' approach

3.20 ESCOSA's purported special circumstances determination is contained in Part A of the Draft Price Determination.

3.21 As part of that purported determination, ESCOSA in substance determined that:

- (a) the use of the EPC approach for setting the WEC allowance is appropriate, best reflects the costs that drive prices within competitive markets and best satisfies ESCOSA's primary objective under the ESC Act. Therefore, ESCOSA decided to revert to a market-based approach to estimate the WEC allowance; and
- (b) having reviewed market-based electricity forward contract data, a reduction in the WEC allowance underpinning the standing contract price is appropriate.

3.22 In its Discussion Paper, on the basis that there existed prima facie evidence of a material change in wholesale market conditions since the Original Price Determination in 2010, namely, increased liquidity in the South Australian forward electricity contract market, ESCOSA suggested that if there was a material cost differential between the LRMC estimate used in the Original Price Determination and the best available evidence, it may be appropriate to revert to ESCOSA's standard, market-based regulatory approach for WEC (that is, EPC)¹¹.

3.23 However, this is not the exercise in which ESCOSA ought to be engaged in in determining whether "special circumstances" exist, even as that test is posited by ESCOSA itself. This is because the question posed posits a false dichotomy between an LRMC approach and an EPC approach.

3.24 ESCOSA appears to present the choice faced when estimating the WEC allowance as binary – between LRMC or EPC. This is not the case. The choice is in fact scalar – there are various alternatives or possible combinations of regulatory approaches, including hybrid LRMC-EPC approaches, all of which are relevant to the statutory exercise of determining whether special circumstances exist.

3.25 ESCOSA's error in this regard in its Discussion Paper is repeated and exemplified in the Draft Price Determination. For example, in the Draft Price Determination, ESCOSA states¹²:

...the relevant question to ask is: is the liquidity of the South Australian market sufficient to enable the use of an EPC-based approach?

3.26 This is not the relevant question for ESCOSA to have asked in seeking to answer whether "special circumstances" exist. The posing of such a question highlights the incorrect focus by ESCOSA on finding justification for the use of an EPC-based approach as the (assumed, only) alternative to an LRMC approach.

3.27 In adopting an improper binary approach to replacing LRMC with EPC, ESCOSA has in the circumstances of the Draft Price Determination misdirected itself in undertaking the

¹¹ ESCOSA, Discussion Paper, p 6

¹² ESCOSA, Draft Price Determination, p 43

exercise of its statutory discretion by not having proper regard to the possibility of alternatives other than a LRMC or EPC approach.

Failure to consider the actual position of AGL

- 3.28 Section 36AA(1) of the Electricity Act provides that the section applies to an electricity entity holding a licence authorising the retailing of electricity that is declared by the Governor under that section to be an electricity entity to which the section applies. Only one electricity entity answers the statutory description within s 36AA: AGL.
- 3.29 Section 36AA(4a) provides that sub-sections (a) to (f) apply in relation to the fixing by the Commission of a standing contract for an entity for the purposes of s 36AA. Section 36AA(4a)(f) provides that, if the Commission has determined that special circumstances exist, it may make a determination that takes effect as a variation of the existing determination.
- 3.30 The notion of "special circumstances" within s 36AA(4a)(d) and (f) must take its content from its statutory context, that is, from the subject-matter, purpose and scope of the legislation. In the current circumstances, that statutory context includes s 25(4) of the ESC Act. This in turn directs attention to matters including: the particular circumstances of the regulated industry and the goods for which the determination is being made (s 25(4)(a)), the costs of making, producing or supplying the goods (s 25(4)(b)), the return on assets in the regulated industry (s 25(4)(d)), and the financial implications of the determination (s 25(4)(f)).
- 3.31 The Commission, in making a special circumstances determination, as a precondition to engaging a discretion to vary an existing price determination under s 36AA(4a)(f), is directed by this statutory context to consider, amongst other things, an entity answering the description within s 36AA(1). That entity is, and would always necessarily be, a determinate corporate entity, conducting its business within a current and historical context. That context will reflect matters of the kind to which the Commission must have regard by force of s 25(4) of the ESC Act.
- 3.32 The Draft Price Determination, however, fails to attend with sufficient or any particularity to the circumstances in which AGL, as the default retailer, finds itself. For example, the Draft Price Determination places particular emphasis upon an asserted increased liquidity of the electricity futures contract market without regard to the unique position of AGL as the default supplier, which was necessarily required at the outset of the term of the original price determination to ensure sufficient supply for the anticipated demand over the term of that determination and which, inevitably, undertook arrangements on the basis of a price determination extending over that period. For further information on the considerations to which ESCOSA ought to have had regard in considering the circumstances in which AGL finds itself, as the default retailer, in exercising its "special circumstances" discretion, see paragraphs 4.10 and 4.11 below.
- 3.33 Instead, in the Draft Price Determination, ESCOSA focuses its enquiry upon a prudent and efficient retailer, in abstraction from the particularity of AGL as the entity answering the description in s 36AA(1) of the Electricity Act. In so doing, ESCOSA has misdirected itself.

4. **RELEVANT AND IRRELEVANT CONSIDERATIONS**

Matters relevant to draft price variation determined as part of special circumstances determination

- 4.1 One particular aspect of ESCOSA's approach in both the Discussion Paper and the Draft Price Determination must be noted. In each document, ESCOSA discusses the appropriateness of using an EPC-based approach to determine the WEC allowance as part of its consideration of "special circumstances".

- 4.2 That is, matters which are ultimately relevant to the making of a price variation by ESCOSA are considered as part of ESCOSA's special circumstances determination. This is because, as AGL understands it, the approach adopted by ESCOSA is that as part of determining whether special circumstances exist, ESCOSA must consider whether there has been a material change in (relevantly) WEC. This necessarily involves ESCOSA selecting and applying its chosen methodology, EPC, in order to determine whether the identified "unexpected event" has caused a material change in WEC, such as to qualify as a "special circumstance". That same methodology is then applied to, in fact, make the variation to the price determination.
- 4.3 In particular, the matters to which ESCOSA must have regard in making a price determination (including in any variation), including those outlined in sections 6 and 25(4) of the ESC Act, reflect back on the nature of the special circumstances determination and the considerations relevant to it.
- 4.4 Indeed, in Part B of its Draft Price Determination dealing with variation of the standing contract price, ESCOSA expressly adopts its reasoning in relation to "special circumstances" as to why it should revert to the EPC-based approach in determining the WEC allowance as part of the standing contract price.
- 4.5 This means that any error identified in relation to ESCOSA's substantive variation process (currently in draft), which attends on ESCOSA's choice and application of methodology for measuring the WEC allowance, will necessarily have infected the analysis required to answer the anterior question as to whether "special circumstances" exist.
- 4.6 In Part B of this submission, AGL sets out its detailed response to ESCOSA's price methodology with respect to its power to determine, and proposal to vary, the standing contract price. Those responses apply equally to ESCOSA's purported special circumstances determination and, for the avoidance of doubt, are adopted by AGL to the extent that ESCOSA conducted the analysis the subject of those responses as part of its purported special circumstances determination.
- 4.7 Accordingly, AGL does not here repeat each of those submissions set out in Part B below. Rather, set out below is a summary of the relevant considerations ESCOSA has failed to take into account and the irrelevant considerations ESCOSA has taken into account in purporting to make its special circumstances determination.

Summary of relevant and irrelevant considerations

- 4.8 ESCOSA has failed to properly exercise its discretion to determine special circumstances by failing to consider various aspects of the actual position of AGL as the standing contract retailer. This has involved ESCOSA failing properly to have regard to a number of relevant considerations and improperly having regard to other irrelevant considerations.
- 4.9 In particular:
- (a) **(obligation of the standing contract retailer)** ESCOSA has failed to have regard to the mandatory nature of the standing contract retailer's supply obligations – the standing contract retailer does not have any choice or flexibility about whether, at what price or on what terms to serve its standing contract customers. ESCOSA mistakenly proceeds on the basis that there is no relevant difference in this regard between the competitive retailer and the standing contract retailer;
 - (b) **(variety of hedging costs incurred by prudent and efficient retailer)** ESCOSA has failed to have regard to the variety of ways in which a prudent and efficient retailer will hedge its exposure to the NEM pool price – such a retailer

would use a variety of risk management measures, including ownership and management of generation assets, entering into power purchase agreements, acquiring over the counter ("**OTC**") and exchange traded hedging contracts and buying insurance products (see Annexed Confidential Report, paragraphs 2.31 and 2.32).

However, ESCOSA relies only on data concerning trading in South Australian futures contracts on the ASX platform for exchange-related electricity contracts, in order to assess the costs that an efficient and prudent retailer would bear in obtaining hedge coverage associated with its wholesale acquisition of electricity. In so doing, ESCOSA has failed to properly consider other costs incurred by the prudent and efficient retailer serving standing contract customers in Australia. ESCOSA mistakenly proceeds on the basis that a prudent and efficient retailer would and could hedge all (or as much as is desirable) of its exposure in the South Australian exchange traded futures market (on a given day) and does not consider the costs of any alternatives (see Annexed Confidential Report, paragraphs 3.81 to 3.88).

AGL's wholesale electricity supply costs for the period between 1 January 2013 and 30 June 2014 comprise a mix of short-term contracts (such as OTC contracts and, to a lesser extent, futures contracts) and long-term commitments (power purchase agreements and investment in generation). As the standing contract retailer in South Australia, AGL does not obtain 100% of its coverage through futures contracts and its wholesale electricity costs are not limited only to short term futures contracts as pre-supposed by ESCOSA's approach of focussing only on futures prices (see Annexed Confidential Report, paragraphs 2.17, 2.31 and 2.32).

- (c) **(time period over which hedging arrangements made)** ESCOSA has failed to have regard to the time period over which a prudent and efficient retailer will make arrangements to hedge its exposure to the NEM pool price – such a retailer would, and AGL does, make hedging arrangements, and therefore incur costs, about two to three years in advance of the supply period for contracts and obviously even longer for investments in generation assets. This is particularly important in managing risks in such a highly illiquid market as South Australia. (As to the time period over which hedging arrangements are entered into, see Annexed Confidential Report, paragraph 3.12; as to the illiquidity in the South Australian market, see Annexed Confidential Report, paragraphs 3.13 to 3.66).

ESCOSA mistakenly proceeds on the basis that the standing contract retailer could hedge shortly before the supply period and that such a time period includes the contract year. This would create an unacceptable risk for any prudent and efficient retailer (see Annexed Confidential Report, paragraph 3.12 and 3.22 to 3.28).

- (d) **(some costs have already been incurred)** ESCOSA ignores the fact that the costs incurred by a prudent and efficient retailer during the proposed price determination period (1 January 2013 to 30 June 2014) will include costs that have already been incurred. That is, ESCOSA mistakenly assumes that all costs for the relevant price determination period are *estimated* future costs and fails to have any regard whatsoever to historic costs.

For example, in its Discussion Paper ESCOSA states that¹³:

WEC represents the total costs incurred by a prudent and efficient retailer in purchasing electricity to cover the anticipated consumption of standing contract customers. Importantly, these costs are always forward

¹³ ESCOSA, Discussion Paper, p 3

estimates as, at the time of any price determination, they are yet to be incurred.

Rather, to the extent that AGL's contracts are long term, those costs are committed; that is, fixed. To the extent that AGL's contracts are short term:

- (i) AGL's costs for the 2013 calendar year are all (or almost all) now fixed; and
- (ii) AGL's costs for the 2014 calendar year are now partially fixed.

ESCOSA's approach fails to recognise that, once a price determination has been made (eg. the Original Price Determination), the standing contract retailer relies on that determination in planning its forward looking risk arrangements, such that at any time during the 3 year Price Path Period, aspects of that portfolio will be fixed or partially fixed, and hence neither forward-looking nor flexible. As set out further below, AGL does not believe liquidity in South Australia has improved. However, it would have been extremely imprudent of AGL not to already have hedged its regulatory customers in the hope that liquidity would improve at some future time. (As to as to the lack of improvement in liquidity in the South Australian market, see Annexed Confidential Report, paragraphs 3.29 to 3.34; as to the imprudence of failing to enter into hedging arrangements in advance, see Annexed Confidential Report, paragraph 3.12)

- (e) **(focus on short-term factors when seeking to ascertain long-term interests of consumers)** ESCOSA identifies its statutory enquiry as being focussed on the long term interests of consumers. However, its purported long term focus is belied by its actual focus upon ostensibly short-term concerns.

In the Draft Price Determination¹⁴, ESCOSA directs its focus at replicating the way in which prices are determined in competitive markets (namely, the short run marginal cost of the marginal supplier), even if "some retailers are locked into fixed prices". It also states that these costs best reflect how prices are set in competitive markets, and that this is in the long-term interests of consumers.

However, ESCOSA has failed to properly consider the impact of the focus on short run marginal cost, and the concomitant failure to capture the long term costs of supply, on removing incentives for the prudent and efficient standing retailer to continue to make long term investment in the South Australian electricity market and the risk that such a removal of incentives may compromise the quality and reliability of supply.

- (f) **(whether EPC in fact serves long term interests of consumers)** ESCOSA has failed to ask whether applying the EPC approach would in fact produce an estimate consistent with the costs that drive a competitive market and whether the EPC approach would in fact achieve an outcome in consumers' long term interests;
- (g) **(focus only on costs of supply, not production)** ESCOSA has focussed only on a limited measure of the costs of supplying electricity without enquiring whether the costs of making or producing electricity are relevant to its adoption of the EPC approach. For further information in this regard, refer to paragraphs 9.4 to 9.13 of Part B of this submission;
- (h) **(continuing carbon policy uncertainty)** ESCOSA has failed to have regard to the impact of uncertainty about the future of the carbon price on market participants' hedging activities. ESCOSA fails to properly consider the current

¹⁴ ESCOSA, Draft Price Determination, pp 30, 31 and 39

uncertainties about whether the *Clean Energy Act* 2011 would be repealed and the impact of such continuing uncertainty on the trading of exchange-traded futures contracts (see Annexed Confidential Report, paragraph 3.83(d) and Schedule 2 to Annexed Confidential Report, paragraphs 2.11 to 2.15 and 3.54 to 3.72).

The enactment of the *Clean Energy Act* has not eliminated uncertainty, but has instead only temporarily limited that uncertainty. In particular, once the Federal Opposition made it clear that it would seek to repeal the carbon legislation, this limited the effect of the enactment of the legislation and re-introduced some uncertainty because carbon is presently being priced into the futures price for electricity. Retailers are avoiding using exchange-traded contracts because, if the carbon legislation is repealed, this is likely to leave the retailer facing significantly higher (carbon inclusive) costs (which will not fall when the legislation is repealed). AGL considers that this continuing uncertainty has led to very limited or no futures trading beyond calendar year 2013 (see Annexed Confidential Report, paragraph 3.83(d)).

ESCOSA itself acknowledges that some residual uncertainty over carbon emissions pricing policy exists. However, ESCOSA also states that such uncertainty is about whether or not the relevant policy will be abandoned and, if it is, wholesale electricity prices will, if anything fall. On that basis, ESCOSA appears to dismiss the significance of the residual uncertainty.

This, however, is not the correct analysis and whether wholesale electricity prices will ultimately rise or fall is irrelevant. The relevant consideration is whether carbon policy uncertainty has been resolved, as this is the integer said to constitute the "special circumstance" and that which is said to bear on liquidity.

- (i) **(carbon certainty not the only factor in determining liquidity)** ESCOSA proceeds on the erroneous basis that carbon emission policy certainty is the only determinant of liquidity in the South Australian futures market. ESCOSA fails, however, to consider whether there are any factors other than carbon policy uncertainty, relevant to the determination of liquidity or illiquidity in the South Australian futures market.

In the Draft Price Determination, ESCOSA notes that:

- (i) liquidity in the South Australia forward electricity contract market has increased "following the removal of the relevant [carbon] policy uncertainties"¹⁵;
- (ii) the removal of policy uncertainty has resulted in a more liquid forward electricity contract market¹⁶; and
- (iii) the liquidity concern in 2010 stemmed from, and reflected, the carbon emissions policy uncertainty¹⁷.

The principal factor affecting the liquidity of forward contracting in electricity in South Australia is the "peakiness" of retail demand, particularly the demand of consumer market customers (which includes standing customers). This situation arises largely because of the unpredictability of, and increased exposure to, extreme weather events in South Australia, relative to other Australian States (see Annexed Confidential Report, paragraphs 2.27 and 2.28).

¹⁵ ESCOSA, Draft Price Determination, p 9

¹⁶ ESCOSA, Draft Price Determination, p 26

¹⁷ ESCOSA, Draft Price Determination, p 51

One way of managing risk for retailers exposed to the "peakiness" of South Australian demand is to rely to a lesser extent on futures contracting, that is, to trade only a relatively small volume on the futures exchange, and otherwise manage exposure in South Australia through longer term commitments, such as power purchase agreements and investment in generation.

Another factor is the margining requirements of the futures contracts. Futures contracts create, through margining, significant cash flow risks for both the generation and retail sector significantly limiting their use by physical market participants in the NEM. The ESAA's submission on the Corporations Legislation Amendment (Derivative Transactions) Bill 2012 dated 3 October 2012 highlights the industry's concerns with margining hedging contracts in the NEM. (As to margining requirements, see Annexed Confidential Report, paragraph 3.83(b) and Schedule 2 to Annexed Confidential Report, paragraph 2.31 to 2.36).

Accordingly, carbon emission policy is one factor that influences liquidity, but not the only such factor. However, ESCOSA has failed to consider any other such factors and the potential impact of them.

- (j) **(continuing illiquidity in the South Australian market)** ESCOSA has failed to have regard to the fact that the standing contract retailer in South Australia is a physical market participant who will seek to buy and hold futures contracts for the purpose of hedging exposure, not speculation. ESCOSA has failed to properly consider the level of "open interest" in the South Australian forward electricity contract market; rather, it has mistakenly focussed solely on "volume traded" even though such a measure of liquidity is irrelevant to a standing contract retailer (see Annexed Confidential Report, paragraphs 3.13 to 3.21).

ESCOSA relies on d-cypha Trade data in relation to "volume traded" to underpin its assertion of increased liquidity and stronger forward trading in the South Australia wholesale electricity market. In so doing, ESCOSA fails to properly consider whether "open interest" is a better measure of liquidity, relevant to the position of the standing contract retailer.

In order to measure whether the South Australian exchange-traded market is a liquid market in which AGL can acquire futures contracts to carry to settlement, and thus hedge its retail exposure to the NEM pool price, the question ESCOSA ought to have asked is "how many contracts were available for AGL to buy and hold, ie. were there sufficiently many that a change in the volume of contracts bought would not influence the price of the contract?" If the answer to this question is "yes" then the market is liquid given the definition of "liquidity" is the degree to which a financial product can be bought or sold in the market without affecting its price.

The approach to the degree of liquidity on which ESCOSA relies necessarily takes only an isolated snapshot of the South Australian market. ESCOSA's approach appears to rely on there being sufficient liquidity for futures prices (on a particular day) to appropriately reflect the forward costs of wholesale electricity but it does not consider whether there is sufficient volume of electricity being traded on the particular day to allow the prudent and efficient standing contract retailer to cover the entire standing customer load. That is, the market may be considered to be liquid for buyers of contracts in relation to 5 MWhs but may not be liquid for buyers seeking contracts for 150 MWhs.

- (k) **("volume traded" measure is overstated)** The measure of liquidity on which ESCOSA relies, namely, "volume traded" includes all contracts traded up to and including the coverage period. However, such an approach significantly overstates

the number of trades which are opportunities for the retailer to obtain hedge cover for a particular period (see Annexed Confidential Report, paragraphs 3.13 to 3.28).

As ESCOSA acknowledges, retailers typically buy contract coverage during a period beginning two to three years before the time at which they need that coverage to apply. Accordingly, a retailer buying contract coverage for electricity to be supplied during calendar year 2016, for example, would begin buying contracts from 2013 onwards.

Any retailer buying contract cover after the start of the coverage period has been imprudently speculating on price outcomes, rather than engaging in an optimum hedging strategy. Such an activity ought not form part of ESCOSA's consideration.

Accordingly, trades made within the contract period are irrelevant to an assessment of market liquidity for the purposes of the prudent and efficient standing contract retailer and the measure of "volume traded" on which ESCOSA has relied is therefore entirely unreliable (see Annexed Confidential Report, paragraphs 3.12, 3.22 to 3.26, 3.65 and 3.66).

4.10 For AGL's detailed response to ESCOSA's price methodology with respect to its power to determine, and proposal to vary, the standing contract price, refer to Part B of this submission.

5. **NO SPECIAL CIRCUMSTANCES EXIST IN SOUTH AUSTRALIA**

5.1 Special circumstances do not in fact exist in South Australia to empower ESCOSA to vary the Original Price Determination.

5.2 On the basis of unreliable factual material, ESCOSA has erroneously determined that two such special circumstances exist:

(a) carbon emission policy uncertainties have been resolved through the enactment of the *Clean Energy Act*; and

(b) liquidity in the South Australian forward electricity contract market has increased significantly since the Original Price Determination and following the removal of the above policy uncertainties.

5.3 For the reasons set out below, neither proposition is correct and cannot support any purported special circumstances determination and consequential variation to the Original Price Determination.

Carbon policy uncertainty persists

5.4 There remains substantial policy uncertainty in relation to the pricing regime for carbon emissions in the future. Contrary to ESCOSA's assertions, the passage of the *Clean Energy Act* has not resolved that uncertainty.

5.5 Generators and vertically integrated retailers continue to face "carbon price risk", that is, uncertainty surrounding the impact of carbon on electricity prices, including in South Australia. This includes risk that the *Clean Energy Act* will be repealed or altered if the Coalition wins Government at the next Federal election (due in 2013).

5.6 Exchange traded contracts do not have an "uplift" mechanism for the carbon price. Accordingly, the strike price of an exchange traded contract will include a carbon component. However, if the carbon price does not apply at the time of settlement (eg if the legislation is repealed in the interim), then the purchaser of the exchange traded contract will still have paid for that carbon component, and will absorb that cost.

- 5.7 As a result, attempting to buy or sell electricity into the future using exchange traded contracts becomes increasingly risky if (as is currently the case) the state of carbon legislation is uncertain. For this reason, since 2010 AGL has bought only a very limited number of exchange traded contracts to hedge any consumer market retail load in the NEM.
- 5.8 The carbon risk associated with exchange traded contracts can be contrasted with OTC contracts where carbon price liability is priced and settled when the contract settles, and not upfront (as is the case under exchange traded contracts). This approach removes risk because a retailer does not have to pay a carbon price which may not exist at the time when the contract settles.
- 5.9 Refer to paragraph 3.83(d) of Annexed Confidential Report and paragraphs 2.11 to 2.15 and 3.54 to 3.72 of Schedule 2 to Annexed Confidential Report to this submission for further information on carbon policy uncertainty.
- 5.10 Put simply, in such circumstances, the special circumstance said to arise, namely, the resolution of carbon emission policy uncertainty, does not arise and cannot properly form the basis of any purported exercise by ESCOSA of its power to vary the Original Price Determination.

Liquidity in the South Australian forward electricity contract market has not increased significantly since the Original Price Determination

- 5.11 There has not been any material increase in the level of liquidity in the South Australian forward electricity contract market since the Original Price Determination to establish any "special circumstance" sufficient to warrant disturbing the standing contract price part-way through the Price Path Period.
- 5.12 AGL's analysis demonstrates that the South Australian forward electricity contract market is not liquid on any relevant measure.
- What is liquidity and why is it relevant?*
- 5.13 "Liquidity" is the degree to which a financial product can be bought or sold in the market without affecting its price. Liquidity is characterised by a high level of trading activity.
- 5.14 An EPC-based approach uses data from the futures market to estimate the actual cost to the standing contract retailer of acquiring contract cover in the market. However, an EPC-based approach which relies on exchange traded contract prices can only produce commercially meaningful results where there is a liquid market for trading the relevant futures contracts. That is, AGL (or any prudent and efficient standing contract retailer) can only rely on financial markets for managing risk through hedging if that financial market is liquid.
- 5.15 The greater the volume of contracts that can be bought or sold without influencing the market price, the greater the liquidity of the market. The prices determined by a liquid market can be taken as a reliable estimate of the cost of purchasing exchange-traded contracts, because the price determined is the price at which additional trades would occur. However, if a market is not liquid, and a small change in the volume of contracts traded would change the market price, then the market price is not a reliable input for the EPC¹⁸.
- 5.16 Refer to paragraphs 3.7 to 3.11 of Annexed Confidential Report to this submission for further information on the meaning and relevance of liquidity.

¹⁸ It should be noted that due to the carbon risk associated with the futures contract AGL does not believe the futures market is appropriate for the purpose of the EPC

What is the appropriate measure of liquidity?

- 5.17 ESCOSA relied on "volume of trade" as the appropriate measure of liquidity in the South Australian forward electricity contract market. This is not the correct measure of liquidity. Rather, the correct measure of liquidity is "open interest" in the market.
- 5.18 Under an "open interest" approach, liquidity is measured having regard to the number of contracts available to be traded in a particular time period. Under a "volume of trade" approach, liquidity is measured having regard to the number of trades which occur in a particular time period.
- 5.19 For the reasons outlined in paragraphs 3.13 to 3.26 of Annexed Confidential Report to this submission, it is not appropriate for ESCOSA to use a "volume of trade" approach to measure liquidity in the South Australian exchange traded contracts market. In summary, the "volume of trade" approach:
- (a) identifies the number of trades, without regard to the number of products traded;
 - (b) overstates the liquidity of the market for exchange-traded electricity contracts (in which AGL acquires hedge cover);
 - (c) does not take account of the fact that when AGL transacts in the exchange-traded market in order to hedge physical exposure to the NEM, it does so to "buy" price certainty – to realise that price certainty, AGL must carry the contract to settlement;
 - (d) does not take account of the fact that a financial intermediary or other speculative trader rarely carries the contract to settlement, particularly in South Australia, and will close out (on sell) their position before settlement of the contract – accordingly, the same underlying physical exposure to the NEM pool price may be traded several times; and
 - (e) accordingly, overstates the extent to which exchange traded contracts are used to manage underlying physical exposure to the NEM pool price.
- 5.20 By using a "volume of trades" approach to assess market liquidity, ESCOSA has significantly overstated the true position in relation to the liquidity of the South Australian exchange-traded market for the purposes of parties seeking to hedge physical exposure to the NEM.
- 5.21 It is appropriate and preferable when determining liquidity to use an "open interest" approach because it identifies the depth of a market for NEM participants (such as the prudent and efficient retailer) that intend to carry the contract to settlement and are seeking to hedge a physical exposure to the NEM pool price (and not merely speculating on market movements).
- 5.22 Accordingly, having relied on a "volume of trades" approach, ESCOSA has failed to conduct a proper enquiry into the liquidity of the market in South Australia and does not have a proper basis on which to conclude that liquidity in the South Australian forward electricity contracts market has increased.
- 5.1 Refer to paragraphs 3.13 to 3.26 of Annexed Confidential Report to this submission for further information on the appropriate measure of liquidity.

Is the market sufficiently liquid to found any "special circumstance"?

- 5.2 Empirical analysis of liquidity in the South Australian forward electricity contracts market demonstrates that this market is, in fact, not liquid and no more liquid than it was at the time ESCOSA made the Original Price Determination and determined the existing WEC

using the LRMC approach. This is the case irrespective of whether liquidity is measured using the correct "open interest" approach or ESCOSA's flawed "volume of trades" approach.

- 5.3 AGL's analysis suggests that the South Australian forward electricity contracts market has the following characteristics, each of which are inconsistent with a liquid market:
- (a) trades are relatively infrequent;
 - (b) there are often days on which there were no trades and there were no bids or offers to sell contract coverage;
 - (c) there are often days on which there are no offers, and accordingly there were no opportunities (at any price) for AGL to acquire contract coverage for its retail business in on those days;
 - (d) there is often a large spread between the closing bid and offer prices, which suggests that prices will move significantly in order to enter a trade;
 - (e) many trades (both in terms of number of trades and as a proportion of the total trades) occur during the contract coverage period – these trades are not relevant to assessing the liquidity of the contract market so far as a retailer is concerned, because it is simply too late for a retailer to be acquiring contract cover; and
 - (f) there is almost no trading in contracts more than 12 months in advance of the contract period, let alone 2 to 3 years in advance (as a prudent and efficient retailer would seek to do).
- 5.4 It should be noted that Frontier Economics' calculation of the WEC relies on a prudent retailer using peak futures contracts in South Australia. To date only 1MW of peak contract in only one quarter covered by the price variation period has been traded on the futures market. By any definition, a market where no contracts have traded cannot be described as liquid.
- 5.5 There are significantly fewer trades and trading opportunities for South Australian exchange-traded products than for equivalent products in other regions of the NEM.
- 5.6 Even adopting ESCOSA's flawed "volume of trades" approach, the empirical evidence demonstrates the lack of liquidity in the South Australian futures market. Equivalent empirical analysis using the correct "open interest" approach demonstrates that liquidity in the South Australian market is even lower.
- 5.7 By way of example, forward liquidity (for 24 months, 18 of which will be the period of the proposed variation to the Original Price Determination) in the trade of South Australian quarterly flat contracts, viewed as at the dates of ESCOSA's Draft Price Determination and the Original Price Determination (when it determined that the market in South Australia was not sufficiently liquid), indicate that:
- (a) regardless of whether liquidity is measured on a "volume traded" or an "open interest" basis, the market liquidity for South Australian quarterly flat contracts over the period to be covered by ESCOSA's Draft Price Determination has not markedly or consistently improved compared to the position at the time of ESCOSA's Original Price Determination;
 - (b) whether on a "volume of trades" or "open interest" basis, there is virtually no liquidity in forward markets in 2014, two quarters of which will fall within the period covered by the Draft Price Determination; and

- (c) whether on a "volume of trades" or "open interest" basis, forward liquidity during the equivalent period relevant to the Original Price Determination was, in fact, much higher, yet ESCOSA formed the view on that occasion that the market was not sufficiently liquid.
- 5.8 Put another way, the above data indicates that for four of the coming eight quarters, including two quarters to be covered by ESCOSA's Draft Price Determination, forward market liquidity is forecast to be worse than it was when ESCOSA determined that there was insufficient market liquidity to be able to apply the EPC approach.
- 5.9 Refer to paragraphs 3.29 to 3.64 of Annexed Confidential Report to this submission for further information on the empirical analysis which demonstrates that the South Australian forward electricity contracts market is not liquid and that there has been no material change in liquidity since the Original Price Determination.
- 5.10 AGL's data unequivocally contradicts ESCOSA's view that there has been a sufficient improvement in market liquidity to warrant departing from the LRMC approach.
- 5.11 In light of the above, ESCOSA cannot reasonably determine that the South Australian forward electricity contracts market is sufficiently liquid, or that there has been any material change in liquidity since the Original Price Determination, to found any special circumstance. On that basis, ESCOSA cannot rely on liquidity or any change in liquidity as a basis for exercising any power to vary the Original Price Determination.
- 6. PROPER EXERCISE OF ESCOSA'S DISCRETION**
- 6.1 ESCOSA's discretion under s 36AA(4a)(f) of the Electricity Act ought properly be exercised by refraining to interrupt the existing Price Path Period.
- 6.2 Even if special circumstances do exist and ESCOSA has properly exercised its power in considering whether, and determining that, special circumstances exist (with which AGL does not agree), a proper exercise of ESCOSA's discretion requires that it not vary the existing price path.
- 6.3 ESCOSA should form the view that the discretion conferred upon it by s 36AA(4a)(f) is better exercised by refraining to make a variation of the Original Price Determination because:
- (a) the relevant materials before it as to whether an unexpected event has occurred (whether that be a change in liquidity, carbon policy uncertainty or otherwise), which is of such significance as to cause a material change in WEC and so as to disturb the credibility of the existing Price Path Period, and whether as a result ESCOSA should move away from the LRMC-based approach are evenly balanced; and/or
- (b) the matters that initially indicated to ESCOSA the existence of special circumstances, namely, increased and sufficient liquidity in the South Australia forward electricity contracts market are in fact attended by significant doubt and/or uncertainty.
- 6.4 For example, even ESCOSA itself acknowledges in the Draft Price Determination that "residual uncertainty" over carbon emissions pricing policy may exist¹⁹.

¹⁹ ESCOSA, Draft Price Determination, p 54

- 6.5 Accordingly, given the residual uncertainty that exists with respect to carbon emission policy and the limited liquidity that persists in the South Australian market, ESCOSA should not vary the Original Price Determination.

PART B – RESPONSE TO ESCOSA'S PRICE METHODOLOGY

7. EXECUTIVE SUMMARY

- 7.1 ESCOSA'S Draft Price Determination did not correctly apply the statutory framework established by the Electricity Act and the ESC Act.
- 7.2 In particular, ESCOSA failed to have regard to the particular circumstances of the electricity industry, including, in particular, the mandatory nature of the standing contract retailer's supply obligations, the manner in which such a retailer will hedge its exposure to the NEM pool price, and the impact of uncertainty about the future of the carbon price on market participants' hedging activities.
- 7.3 As a result of the matters outlined above, ESCOSA wrongly:
- (a) rejected the approach of using the LRMC of electricity generation; and
 - (b) adopted the use of the EPC approach,
- to determine the WEC component of the standing contract price.
- 7.4 In the particular circumstances of the electricity industry – and in particular, in the absence of liquid hedging markets – the best approach for determining the wholesale electricity costs faced by a retailer is the LRMC approach, applied having regard to the LRMC of generating the electricity to be supplied by the standing contract retailer pursuant to its standing contract obligations.

8. ESCOSA'S POWERS WHEN MAKING A STANDING PRICE DETERMINATION

The statutory framework

- 8.1 ESCOSA is making a price determination under s 25 of the ESC Act, as authorised by the Electricity Act – specifically, a determination of the type referred to in 36AA(4a)(f) of the Electricity Act, made under s 35A of the Electricity Act, that, following the determination of special circumstances, "takes effect as a variation of the existing determination ...". (If ESCOSA's special circumstances determination is not valid, then there is no power for ESCOSA to make a determination under s36AA(4a)(f)).
- 8.2 Section 36AA of the Electricity Act provides that ESCOSA "may fix the [standing contract] price by a determination of a kind referred to in s 35A(1) [of the Electricity Act]".
- 8.3 Section 35A of the Electricity Act provides that:
- (1) *The Commission may make a determination under the Essential Services Commission Act 2002 regulating prices, conditions relating to prices and price-fixing factors for –*

(a) the sale and supply of electricity to small customers.

8.4 Under the ESC Act and Electricity Act, the price determination "may regulate prices, conditions relating to prices or price-fixing factors in a regulated industry in any manner the Commission considers appropriate", and in making the determination ESCOSA must:

- (a) Ensure that (s 25(5) ESC Act):
 - (i) wherever possible the costs of regulation do not exceed the benefits; and*
 - (ii) the decision takes into account and clearly articulates any trade-off between costs and service standards.*
- (b) Have regard to the following factors (s 25(4) ESC Act):
 - (a) the particular circumstances of the regulated industry and the goods and services for which the determination is being made;*
 - (b) the costs of making, producing or supplying the goods or services;*
 - (c) the costs of complying with laws or regulatory requirements;*
 - (d) the return on assets in the regulated industry;*
 - (e) any relevant interstate and international benchmarks for prices, costs, and return on assets in comparable industries;*
 - (f) the financial implications of the determination;*
 - (g) any factors specified by a relevant industry regulation Act or by regulation under this Act;*
 - (h) any other factors that the Commission considers relevant.*
- (c) And in addition, have regard to the "general factors" specified in Part 2 of the ESC Act – including having as its primary objective protecting long term interests of South Australian consumers with respect to the price, quality and reliability of essential services (s 6 ESC Act), and, at the same time, the need to:
 - (i) promote competitive and fair market conduct; and*
 - (ii) prevent misuse of monopoly or market power; and*
 - (iii) facilitate entry into relevant markets; and*
 - (iv) promote economic efficiency; and*
 - (v) ensure consumers benefit from competition and efficiency; and*
 - (vi) facilitate maintenance of the financial viability of regulated industries and the incentive for long term investment; and*
 - (vii) promote consistency in regulation with other jurisdictions.*

(Sections 6A(4) of the Electricity Act and 35A(2a) do not appear to be relevant in this context.)

What the statutory framework required ESCOSA to do

- 8.5 ESCOSA was making a variation to a price determination for the purpose of varying the WEC component of the standing contract price.
- 8.6 The above framework required that, in making that variation – including in selecting and applying its chosen methodology (the EPC approach), and in adopting the outcome of that process as the WEC – ESCOSA:
- (a) ensure (relevantly) that where possible costs of regulation do not exceed benefits; and
 - (b) act with the paramount objective of promoting the long term interests of South Australian consumers while at the same time having regard to the other matters prescribed by the statutory framework, relevantly including the particular circumstances of the electricity industry, and the cost of supplying electricity under the standing contract.

9. CONCERNS WITH ESCOSA'S APPROACH

ESCOSA's focus on the paramount objective meant that it did not correctly apply other elements of the statutory framework

- 9.1 ESCOSA focussed on the long-term interest of South Australian consumers (its primary objective), substantially to the exclusion of other aspects of the statutory framework.
- 9.2 This analysis is misconceived – the paramount objective operates in addition to, not in substitution of, the other prescriptive requirements of the statute. Specifically, the statute requires ESCOSA to make its determination having regard to each of the factors outlined above (including the specific factors identified in relation to the price determination power, the primary objective and the other enumerated objectives in s 6 of the ESC Act).

What "particular circumstances" should ESCOSA have had regard to?

- 9.3 At a minimum, ESCOSA should have had regard to the following, non-exhaustive, list of the "particular circumstances" of the electricity industry in South Australia:
- (a) the standing contract retailer must, at the request of a small customer, supply that small customer with electricity at the standing price determined by ESCOSA, and on standing contract terms (s 36AA(2) Electricity Act) – accordingly, the standing contract retailer does not have choice or flexibility about whether, at what price, or on what terms to serve its standing contract customers;
 - (b) AGL is the standing contract retailer, as a result of the fact it acquired almost 100% of the regulated customer base in South Australia through its acquisition, in 2000, of the retail business of the Electricity Trust of South Australia;
 - (c) AGL does, and a prudent and efficient retailer would, hedge the exposure to the NEM pool prices that it faces as a result of the need to fulfil its standing contract obligation to small customers, using a variety of risk management measures, including ownership and management of generation assets, entering into Power Purchase Agreements, acquiring OTC and exchange traded hedging contracts, and buying insurance products (see Annexed Confidential Report, paragraphs 2.31 and 2.32);
 - (d) AGL does, and a prudent retailer would, make arrangements to hedge its exposure to the NEM pool price for a particular period in which it supplies standing contract customers two to three years in advance of that period (ie it would begin hedging

its exposure for 2013 supply in 2010); accordingly, a retailer would incur (and AGL has already incurred) costs concerning its supply of electricity to standing contract customers during the period covered by the Draft Price Determination significantly in advance of that period, and before the time at which ESCOSA has varied the standing contract price for that period (see Annexed Confidential Report, paragraph 3.12);

- (e) there is currently very significant uncertainty about the future of the Clean Energy Policy, including whether the legislation imposing the carbon price will be repealed or significantly amended; this uncertainty currently significantly affects retailers' and generators' contracting behaviour (see Annexed Confidential Report, paragraph 3.83(d)) – in particular:
 - (i) it significantly limits the extent to which retailers are prepared to trade futures contracts (because those contracts require retailers to pay a carbon inclusive price now, when they may not be able to recover that price from customers if the carbon price is repealed in future); and
 - (ii) as a result of this uncertainty, AGL currently does not use futures contracts to build its hedge position concerning the exposure to the NEM pool price which arises from its supply of electricity to consumer customers;
- (f) there are two key types of participants in the market for exchange-traded futures (see Annexed Confidential Report, paragraph 3.18):
 - (i) physical market participants – parties involved in activities associated with the generation and supply of electricity, who participate in the market to hedge their exposure to the NEM pool price, and seek to buy and hold futures contracts for that purpose; and
 - (ii) speculative participants – parties who trade electricity futures for purposes unrelated to the physical supply or acquisition of electricity, and generally seek to buy but not hold (ie are likely to on-trade) futures contracts.

What "costs" should ESCOSA have had regard to?

9.4 In making its draft determination, ESCOSA's focus was to assess the WEC – the "costs of purchasing wholesale electricity and purchase-related costs"²⁰ – for the purpose of using the WEC to calculate the standing contract price.

9.5 The WEC is part of the pricing methodology ESCOSA has developed and applies when making price determinations – it is not specifically prescribed by the statutory framework. However, ESCOSA must of course comply with the statutory framework when determining the WEC. In particular, ESCOSA must relevantly have regard to two of the specific factors in s 25(4) of the ESC Act:

- (a) *the particular circumstances of the regulated industry and the goods and services for which the determination is being made;*
- (b) *the costs of making, producing or supplying the goods or services;*

²⁰ ESCOSA, Draft Price Determination, p 6

- 9.6 These statutory provisions require ESCOSA to consider the costs to a retailer of making, producing or supplying electricity to standing contract customers in the particular circumstances of the South Australian electricity industry.
- 9.7 However, ESCOSA did not undertake this consideration, and, as a result, failed to apply the statutory framework correctly.
- 9.8 ESCOSA noted that s 35A of the Electricity Act refers to the "sale and supply of electricity to small customers" (ESCOSA's emphasis), and that s 25(4)(b) of the ESC Act requires ESCOSA to have regard to "the costs of making, producing or supplying the goods or services". ESCOSA concluded, based on these sections, that:²¹
- (a) the phrase "sale and supply of electricity to small customers" in s 35A of the Electricity Act means that "the Commission's fundamental task is to set a standing contract price which relates to the retailing of electricity, rather than the generation of electricity";
 - (b) the phrase "costs of making, producing or supplying the goods or services" in s 25(4)(b) of the ESC Act "does not require the Commission to have regard to each of the costs listed ... the disjunctive nature of the clause (the use of "or") requires the Commission to have regard to the particular form of costs relevant to the determination it is making"; and
 - (c) "these sections of the two Acts intersect, with the result that in making the determination the Commission must consider the costs that a prudent and efficient retailer would incur in retailing electricity to standing contract customers".
- 9.9 ESCOSA's analysis incorrectly applies the statutory framework.
- (a) It is correct that ESCOSA's task is, as stated in 9.8(a) above, to determine a standing price that relates to the retailing of electricity – that is, a price to be paid by small customers for the retail supply of electricity under the standing contract terms. Clearly the task at hand is not for ESCOSA to set a standing price for the generation of electricity. However the fact that ESCOSA's task is to set a price for the retail supply of electricity does not mean that consideration of the costs of generation of electricity is irrelevant, and s 35A does not support any suggestion that the costs of electricity generation should be excluded from ESCOSA's analysis when setting the standing contract price.
 - (b) It is also correct that the use of the disjunctive in the phrase "making, producing or supplying" has the effect that ESCOSA is not necessarily required, every time s 25(4)(b) applies, to have regard to the costs of making, producing and supplying electricity.
 - (c) However ESCOSA is wrong to conclude that, because of the use of "or" in s 25(4)(b), ESCOSA may simply look at the costs of "supplying" electricity, without inquiring whether the costs of "making" or "producing" electricity are relevant to its determination, having regard to the particular circumstances of the electricity industry. Section 25 of the ESC Act governs "determinations regulating prices, conditions relating to prices and price-fixing factors for goods and services in a regulated industry" (s 25(1) ESC Act), and accordingly applies to a range of essential service industries (not only electricity). The phrase "making, producing or supplying" provides for ESCOSA to have regard to the costs associated with whichever of "making, producing or supplying" is or are relevant in relation to the particular goods or services at hand, having regard to the particular circumstances

²¹ ESCOSA, Draft Price Determination, p 24

of the applicable industry. This phrase prevents the situation which would arise if ESCOSA was required to consider all three of "making", "producing" and "supplying" in circumstances where one or more of those terms was clearly irrelevant to the industry at hand. However, it is a misconstruction of s 25(4)(b) to suggest that, where more than one of these terms is relevant to ESCOSA's price determination, having regard to the particular circumstances of the industry at hand, the Act merely requires ESCOSA to "pick one" of the three terms, and ignore the others.

- 9.10 Accordingly, in relying on s 35A of the Electricity Act and s 25(4)(b) of the ESC Act to determine that the costs of electricity generation should form no part of its analysis, ESCOSA has failed to apply the statutory framework correctly. In order to apply the statutory framework correctly, ESCOSA should have asked: "What are the wholesale electricity costs to a retailer of selling and supplying electricity to small customers under the standing contract, having regard to the costs of making (if applicable), producing (if applicable) or supplying (if applicable) electricity in the particular circumstances of the electricity industry?"
- 9.11 Instead, ESCOSA incorrectly reasoned that costs associated with "making" or "producing" electricity were irrelevant to its statutory task, and excluded them from its subsequent formulation and application of the EPC approach.
- 9.12 Had ESCOSA conducted the correct inquiry, it would have identified that, in the particular circumstances of the electricity industry:
- (a) the wholesale costs of electricity borne by a retailer supplying standing contract customers include the cost of acquiring electricity, having regard to the arrangements the retailer has in place to hedge its exposure to the NEM pool price;
 - (b) a retailer is likely to have a variety of arrangements in place to hedge their pool price exposure, including:
 - (i) purchasing OTC contracts;
 - (ii) to a lesser extent, purchasing futures contracts;
 - (iii) ownership of generation assets (ie vertical integration of their retail business with a generation business);
 - (iv) entering into power purchase agreements ("**PPAs**") which provide the retailer with the right to bid and dispatch the generation asset's available capacity into the NEM (effectively, vertical integration by contract rather than by ownership); and
 - (v) purchasing insurance products.

- 9.13 Accordingly, when determining the wholesale electricity costs a retailer incurs in supplying standing contract customers in the particular circumstances of the electricity industry, the statutory framework in fact requires ESCOSA to have regard to the costs identified in 9.12(b) above, including generation costs. Put another way: in the particular circumstances of the electricity industry, a retailer's wholesale electricity costs include costs associated with both making/producing and supplying electricity for the purpose of s 25(4)(b), and ESCOSA is wrong to ignore those costs.

ESCOSA did not comply with statutory framework in determining that it was appropriate to apply the EPC to calculate the WEC

Choice of the EPC approach over the LRMC approach as a matter of principle

- 9.14 ESCOSA recited its 2002 conclusion that in determining the WEC, it would best meet its statutory objectives by using the EPC approach "which uses market-based data to estimate the wholesale costs that a prudent and efficient retailer would incur in serving standing contract customers during the regulatory period under consideration".²² ESCOSA's reasoning was that:
- (a) setting a WEC using the EPC approach produces an estimate which is consistent with "the costs that drive prices within competitive markets"; and
 - (b) competitive market outcomes are in consumers' long-term interests, since effective competition will ultimately provide the best protection and pricing outcomes for consumers.
 - (c) Therefore setting a WEC using EPC is in consumers' long-term interests.
- 9.15 ESCOSA also observed that its "position on the appropriateness of utilising an EPC-based approach has, in the past at least, received broad – although not unanimous – industry endorsement."²³ This observation is (and ESCOSA ought to have treated it as being) irrelevant to ESCOSA's current statutory task.
- 9.16 ESCOSA did not comply with the statutory framework when selecting the EPC. Instead of simply reciting the virtues of the EPC approach as a matter of principle, it should have inquired whether the benefits of the EPC approach would be realised in practice when it was applied in the particular circumstances of the electricity industry – specifically it did not ask whether:
- (a) applying the EPC approach to the data and in the manner ESCOSA proposed would in fact produce an estimate consistent with the costs that would drive price in a competitive market (if not, ESCOSA's conclusion about the EPC approach and the long term interests of South Australian consumers does not hold) – AGL's analysis suggests that the WEC estimate produced by the EPC approach on the basis of d-cypha Trade data would not necessarily bear any relationship to the outcome in a liquid/competitive market (and is not generated by one) (see Annexed Confidential Report, paragraphs 3.29 to 3.88);
 - (b) whatever the particular outcome the EPC would achieve (ie whether or not it replicated the costs which would occur in a competitive market) would be in consumers' long-term interest having regard to the relevant statutory criteria – ESCOSA does not address this point, it simply "does the maths" after selecting its methodology.

²² ESCOSA, Draft Price Determination, p 23

²³ ESCOSA, Draft Price Determination, p 28

- 9.17 ESCOSA's analysis of why the use of the EPC approach was appropriate rather than use of the LRMC approach was inevitably infected by its incorrect application of the statutory framework, as outlined above, and in particular its conclusion that consideration of the costs of generation played no part in its statutory task.
- 9.18 Had ESCOSA inquired into the particular circumstances of the electricity industry in considering whether to adopt the EPC approach or use the LRMC, it would have identified that:
- (a) a standing contract retailer will use a variety of approaches to hedge their exposure to the NEM pool price, including OTC and exchange-traded contracts, vertical integration and PPAs, and insurance products (see Annexed Confidential Report, paragraphs 2.31 and 2.32);
 - (b) the use of exchange-traded futures is only one of many such approaches;
 - (c) retailers at present use exchange-traded futures to a very limited extent, due to the uncertainty around the future of the carbon price (see Annexed Confidential Report, paragraphs 3.83(d) and Schedule 2 to Annexed Confidential Report, paragraphs 3.54 to 3.72);
 - (d) accordingly, applying the EPC approach to the price determined by the exchange-traded futures market is not likely to produce a reliable estimate of the actual wholesale cost borne by the retailer in acquiring electricity;
 - (e) the LRMC is a more accurate proxy for the cost retailers bear in acquiring electricity, because it reflects both:
 - (i) the LRMC to the standing retailer's generation business of producing electricity; and
 - (ii) the cost that generators who supply electricity to the retailer will seek to recover when selling electricity to retailers (ie whether entering into OTC contracts, or trading futures).
- 9.19 Accordingly, ESCOSA was wrong to interpret the statutory framework as suggesting that it should not adopt the LRMC approach, and wrong to identify that the EPC approach was the preferable approach having regard to the particular circumstances of the industry. In order to comply with the statutory framework, ESCOSA should have had regard to the particular circumstances listed above, and determined that, in those particular circumstances, the retention of the LRMC approach was preferable to the adoption of the EPC approach.

Determining that it was appropriate to apply the EPC approach in the current circumstances

- 9.20 ESCOSA reasoned that the policy uncertainty that caused it to use LRMC previously (because it was not feasible to apply the EPC approach in those circumstances) was "removed", therefore the use of the EPC approach was appropriate – that is, ESCOSA reasoned that: "EPC was previously appropriate; circumstances changed so that EPC was not appropriate; those changed circumstances have been sufficiently removed, so EPC is now appropriate again".
- 9.21 This analysis does not comply with the statutory framework: ESCOSA should at least have inquired whether, even if the previous carbon policy uncertainties and limited liquidity had resolved, the EPC approach was appropriate having regard to the particular current circumstances of the electricity industry. ESCOSA should have asked whether there were now any factors, which may not have existed when it previously applied the EPC approach, which made use of the EPC approach inappropriate. For example, while

ESCOSA found that the enactment of the *Clean Energy Act* removed previous uncertainties about whether/in what form that Act would be passed, ESCOSA did not address current uncertainties about whether that Act would be repealed (which also affect liquidity in trading of exchange traded futures ("**ETF**") products, and the price of those ETF products).

- 9.22 Further, ESCOSA's approach to identifying that liquidity had increased sufficiently to warrant applying the EPC also failed to comply with the statutory framework – specifically:
- (a) ESCOSA adopted a "volume traded" rather than "open interest" approach, without having regard to the particular circumstances of the industry – ie that speculative trading does not constitute liquidity from the perspective of a prudent standing contract retailer seeking to buy contract coverage, and that if AGL hedged the entire standing customer hedge book using exchange-traded futures, it would significantly move the market (see Annexed Confidential Report, paragraphs 3.13 to 3.21 and 3.83(c)); and
 - (b) in considering the liquidity in exchange-traded futures trading, ESCOSA looked at trading over a time period which included the contract year (ie the year covered by the futures contract being traded) – this ignores the particular circumstances of the industry: that a prudent retailer would not buy contract cover for Q1 2013 in Q1 2013, and that, as a result, evidence of trades in Q1 2013 is irrelevant to assessing liquidity for contracts covering Q1 2013 in the particular circumstances of the industry (see Annexed Confidential Report, paragraphs 3.12, 3.22 to 3.26, 3.65 and 3.66).

Applying the EPC

- 9.23 ESCOSA did not comply with statutory framework in applying the EPC.
- 9.24 In making its price determination, ESCOSA must relevantly have regard to (at least) "the costs of ... supplying" electricity, and the "particular circumstances" of the industry.
- 9.25 The errors in ESCOSA's construction of this provision are addressed in paragraphs 9.8 to 9.13 above.
- 9.26 ESCOSA chose to use ETF data to apply the EPC approach, largely on the basis of ESCOSA's view that data on ETF trading is readily available and data on other forms of electricity purchase, eg OTC contracts, is not. ESCOSA does not appear to have applied the statutory framework in deciding to rely on solely ETF data to apply the EPC approach:
- (a) The statutory framework requires ESCOSA to consider electricity supply costs in the particular circumstances of the industry, not simply the costs as determined by the market in which data is most readily available.
 - (b) In the particular circumstances of the electricity industry, the actual costs of supplying electricity reflect the fact that retailers use a range of products when hedging their exposure to the NEM pool price, and do not solely rely on ETF products. ESCOSA did not seek to take the price of these alternatives into account, or measure whether its EPC approach produced a price which was comparable to the price paid for contract coverage under OTC contracts, the costs of power purchase agreements or the cost of controlled generation.
 - (i) ESCOSA stated that it was considering the costs of a prudent and efficient retailer satisfying the standing customer load. However in fact it did not apply this test. It did not consider whether it would be prudent for that retailer to obtain 100% of its coverage through ETF products (as it assumed); had it asked this question, it would have found out that AGL currently relies on ETF to a very limited extent, given the associated carbon

risk (being the risk that the carbon price legislation may be repealed), and does not rely on these products at all when hedging the NEM pool price exposure arising from its supply of electricity to consumer customers.

- (ii) ESCOSA justified its reliance on ETF data on the basis that this data was the most up to date information available on contracting costs. However ESCOSA should have considered the "particular circumstance" that the South Australian futures market goes for days and weeks at a time without a trade occurring – as a result, and given the availability of alternative contract options, the most up to date information on the wholesale cost of electricity (as distinct from ETFs) may come from a source other than ETF data, or, at least, a combination of ETF data with other sources.
- (c) ESCOSA's methodology further ignored the particular circumstances of the electricity industry concerning the types of ETFs a retailer would use. In particular:
- (i) ESCOSA accepted d-cypha Trade's submission that in the absence of any liquidity in peak futures contracts during the Q1 2013-Q2 2014 period, retailers should be able to manage physical market price risk through the use of base futures contracts and options. However, AGL's analysis demonstrates that this approach underestimates both the "peakiness" of the standing contract customer load shape and the potential risks associated with being under or over contracted in the South Australian region.
 - (ii) Further (and contrary to the approach described immediately above), ESCOSA relied on modelling by Frontier Economics, which determined that an "optimal contract strategy" could only be achieved by having the ability to trade peak contracts.²⁴ Such a strategy would require the ability to trade peak contracts in the relevant region, but this would not be possible in the particular circumstances of the South Australian electricity industry – in fact, only 1MW has been traded in peak futures contracts in South Australia for the period to be covered by the Draft Determination.

(See Annexed Confidential Report, paragraphs 3.57 and 3.84 to 3.88).

- (d) ESCOSA's EPC test is forward looking – it seeks to determine the costs during the period to be covered by the standing price determination. However, in determining those costs it relies solely on current costs – ie it sets the WEC by looking at the current (16 August 2012) price of obtaining an ETF which covers the period in which the price determination will apply. This is illogical, and, at least, ignores the "particular circumstance" of the electricity industry that the costs the prudent and efficient retailer actually incurs in supplying electricity during the price determination period will include costs which it has already incurred, and which it incurred before the single date chosen for selection of the ETF data used to apply the EPC approach (see Annexed Confidential Report, paragraphs 3.12 and 3.67 to 3.80).
- (e) Specifically: AGL has, and ESCOSA acknowledges that an efficient and prudent retailer would have, built its contract book 2 to 3 years in advance of the contract period. Accordingly, AGL has already "locked in" a significant proportion of its contract cover for the contract period, and the price of acquiring that cover forms part of its costs of buying electricity to supply to standing contract customers during the contract period. The actual costs of a prudent and efficient standing retailer during the period covered by the price determination necessarily include

²⁴ Data for ESCOSA WEC Draft Determination – Frontier Economics, <http://www.escosa.sa.gov.au/projects/178/electricity-standing-contract-wholesale-electricity-costs.aspx#stage-list=4>

costs already incurred, not just the price that the retailer would have paid if it had, imprudently, acquired its entire coverage on the one day nominated by ESCOSA. Failing to take into account historic cost ignores ESCOSA's obligation to have regard to supply costs in the particular circumstances of the electricity industry. It may be appropriate, if a rigorous methodology is applied to reliable data, to rely on futures data to determine current prices; it is not appropriate to determine the WEC solely on the basis of that data, without evidence of known historical costs which will also contribute to the costs of supplying retail standing customers during the price determination period.

- (f) ESCOSA's selection of the "marked-to-market" approach did not comply with the statutory framework.
 - (i) ESCOSA relied on the "in principle" merits of the marked-to-market approach; it should have, but did not, consider whether these merits would exist when the approach was applied in the particular circumstances at hand – specifically, whether the marked-to-market approach was a reliable means of estimating the cost of acquiring contract coverage (as distinct from the market's current estimate of the price of acquiring an ETF on 16 August 2012 which covered the period covered by the price determination). (See paragraphs 3.67 to 3.80 of Annexed Confidential Report to this submission for empirical analysis which demonstrates the unreliability of the "marked-to-market" approach).
 - (ii) The economic analysis ESCOSA quoted and relied on to adopt the marked-to-market approach does not apply ESCOSA's EPC test, which ESCOSA states considers the wholesale costs that a "prudent and efficient retailer would incur in serving standing contract customers during the regulatory period under consideration".²⁵
- (g) In particular, Frontier Economics' justification of the marked-to-market approach states that the marked-to-market approach:

... best captures the way in which an efficient retailer operating in a competitive retail market would approach its pricing to serve the standing contract load. This is because in a competitive retail market, the historic price paid for contracts should have no bearing on the price at which an efficient retailer would be willing to serve an additional customer.

...

Both the rolling average and trade-weighted approaches are deviations from the approach an efficient retailer would be expected to follow in a competitive retail market. This is since both these approaches imply that an efficient retailer would consider historical sunk contracting decisions when deciding, on the margin, at what price to serve the standing contract load. In a competitive market this situation would not be sustainable.

(Emphasis added; footnotes omitted.)

Frontier's analysis does not determine the costs of a prudent and efficient retailer satisfying the standing customer load, rather, it determines the price at which an efficient retailer would be willing to serve an additional customer (ignoring sunk costs). Consequently the Frontier analysis ignores the "particular circumstances" requirement of the statute:

²⁵ ESCOSA, Draft Price Determination, p 23

- (i) It looks at "an efficient retailer" which is determining the price at which it *would be willing to serve an additional customer*, not an efficient retailer that is supplying the entire standing contract customer load (as the EPC test requires, and is consistent with the "particular circumstances" requirement).
- (ii) It considers an imagined "competitive retail market", in which *an efficient retailer would be willing to serve an additional customer*, being circumstances in which the hypothetical competitive retailer has a choice about whether and on what terms it supplies customers into the future in contrast to a retailer who is obliged to supply the standing contract customer load (as the EPC test requires, which requirement is consistent with the "particular circumstances" requirement).

These are critical distinctions: an efficient retailer in a competitive market can manage the cost risks associated with its customer load by choosing who to supply (and when not to supply), and setting the price at which it supplies them; AGL/a standing contract retailer can do neither of those things. So, for example, whereas an efficient retailer might increase prices to customers or stop increasing customer numbers if the costs of supplying those customers became too high, AGL/a standing contract retailer does not have this option, and must continue incurring the higher costs for all standing customers, without a price increase, in order to fulfil its obligation to supply those customers.

- (h) ESCOSA's EPC test is concerned with competition and competitive markets, but not in the way Frontier's analysis suggests. Specifically, as set out above, ESCOSA applies the "efficient and prudent retailer" test to set the WEC in order to produce an estimate which is consistent with "the costs that drive prices within competitive markets". Application of the efficient and prudent standard to the standing contract retailer means that the cost estimate is consistent with the costs that would be incurred in a competitive market – ie, a market where the discipline of competition ensured that firms, including the standing contract retailer, were efficient and prudent, and did not incur inefficient costs. The EPC test does not ask "what are the costs of an efficient and prudent firm in a competitive market?" It asks "what are the costs of an efficient and prudent standing contract retailer?", because it considers that efficient and prudent costs are what drive prices in a competitive market, and competitive market outcomes are in consumers' long-term interests.
- (i) It is no answer to the concerns about the marked-to-market approach that ESCOSA considered that each of the three forward price weightings it considered would produce similar results – the concerns outlined above about ESCOSA's selection of data and Frontier's misdirected analysis apply equally to all three methods.

Calculating the EPC

- 9.27 ESCOSA should at least have considered whether the price determination and each component of it produced by its application of the EPC was appropriate, having regard to the specific factors set out in the statutory framework outlined above (including the particular circumstances of the industry, the actual supply costs in the electricity industry, and the financial implications of the decision). For example, ESCOSA could have but with limited exception did not benchmark the final price and relevant components against prevailing market estimates of costs/prices as a "reality check" against the particular circumstances of the market. Comparing the new standing price to the previous higher standing price does not discharge ESCOSA's obligation to have regard to the particular circumstances of the electricity industry.

10. **CONCLUSION**

10.1 ESCOSA made serious errors in its application of the statutory framework to the determination of the WEC.

10.2 In particular, ESCOSA:

- (a) misconstrued the nature of the costs to which it is required to have regard under s 25(4)(a) of the ESC Act; and
- (b) failed to have regard to the particular circumstances of the South Australian electricity industry.

10.3 As a result of the matters in paragraph 10.2, ESCOSA:

- (a) wrongly excluded consideration of electricity generation costs from its analysis, and wrongly rejected the use of the LRMC approach on that basis;
- (b) wrongly determined that the EPC approach could be applied, in the particular circumstances of the electricity industry, to provide a meaningful estimate of the WEC faced by the standing contract retailer; and
- (c) failed to identify that in the particular circumstances of the electricity industry, the best proxy for the wholesale electricity costs faced by a retailer is the LRMC of electricity generation.



Annexure 2

CONFIDENTIAL EPM REPORT



Annexure 3

Frontier Economics Discount Rate (Weighted Average Cost of Capital)

Frontier Economics have adopted a pre-tax, real discount rate of 7.1% which is based on the generation weighted average cost of capital (WACC) adopted by IPART in its annual review of 2012/13 regulated retail electricity prices in NSW.¹⁸ For this reason, AGL will focus the discussion in this section on the approach taken by IPART (which has been subsequently adopted by ESCOSA).

AGL has provided numerous submissions to IPART since the WACC methodology (adopted by ESCOSA) was established in 2010. Submissions addressed the different assumptions and inputs used to calculate the initial WACC and update it each year as part of the annual review of regulated retail prices.¹⁹ AGL will make reference to previous arguments made to IPART as appropriate. AGL has also attached a report, as part of this Annexure, on specific assumptions made by IPART.

A key assumption in developing a WACC to be used as a discount rate in the calculation of the LRMC is the type of firm under consideration in the modelling exercise and how will the funding structure of the firm impact their cost of capital? AGL considers that in calculating the LRMC of generation for a specified load two types of firms could be considered: 'Integrated Utility' or 'Independent Power Producer'.

Nominal risk free rate

IPART used a risk free rate of 3.7% in 2012/13. The risk-free rate was calculated based on the 20-day average of the yield on 10-year nominal Commonwealth Government bonds.

AGL expressed concerns to IPART that because they used a significantly lower risk free rate in 2012 by comparison to long-run averages, while the equity beta and Market Risk Premium (MRP) remained constant, they implied a drop in the cost of equity. This drop in the cost of equity implied that a virtual wall of cheap equity capital market funding existed – when it is known in practice that exactly the opposite applies.

On this basis, ESCOSA should consider, whether the WACC should be calculated based upon:

- a long term risk-free rate and MRP; or
- a short-term risk-free rate (as current used) with an MRP which reflects current market conditions i.e. there is no evidence to suggest that the rate of return has changed significantly for investors.

AGL suggest that in this instance the cost of equity should be based upon a nominal risk free rate which is updated using the same approach used by IPART (i.e. 10 year Commonwealth Government Bond 20 day average yield) and a MRP which reflects current market conditions. AGL has calculated the updated nominal risk free rate at 3.2%. The relevant value for the MRP is discussed below.

¹⁸ Frontier Economics, Wholesale energy cost estimates for 2012/13 and 2013/14. A Draft Report prepared for ESCOSA, October 2012. Page 6.

¹⁹ AGL Energy Ltd., Draft Report on regulated Retail Electricity Prices 2012-13, AGL submission to the Independent Pricing and regulatory Tribunal. Date: 11 May 2012. Page 6.



Inflation adjustment

IPART used an inflation adjustment of 2.8% in 2012/13. IPART derived the value from the 20-day average inflation swap market data.

AGL has estimated an inflation adjustment of 2.5% based upon September 2012 Consumer Price Index data and current inflation swap market data.

Market risk premium

IPART defined the market risk premium (MRP) as “the expected return over the risk free rate that investors would require for investing in a well diversified portfolio of risky assets”.²⁰ As noted earlier, the MRP should be set so that the cost of equity represents a reasonable estimation of the expected return of investors in the electricity generation sector. The SFG Report highlights that if the risk-free rate is updated so should the MRP such that it reflects the change in market conditions i.e. conditional MRP estimate. SFG suggested that an MRP estimate could be derived by establishing a reasonable MRP range and comparing recent values of three MRP conditioning variables (i.e. option implied volatility, debt yield spread and dividend yield) to their average value to determine the MRP value chosen within the range. Based on the value at May 2012 of the variables compared with their average SFG suggested that an appropriate estimate of the MRP is in excess of 7%.²¹ AGL has assumed an MRP of 8% for both the ‘Integrated Utility’ and the ‘Independent Power Producer’.

Debt margin

IPART used a debt margin range of 2.1% to 3.6% in 2012/13. This range is based upon the yields of a sample of Australian corporate bonds with a BBB/BBB+ credit rating and at least 2 years to maturity. The sample also includes the Bloomberg 7-year BBB fair value curve. The debt margin also includes an allowance of 12.5 basis points for debt raising costs.

AGL has previously expressed concern to IPART as to whether the assumption of that the debt margin should be calculated based upon a company with a BBB/BBB+ credit rating.²² This credit rating is not considered representative of the range of companies currently developing and/or operating power generation plants in the NEM.

AGL is also concerned that the debt margin underestimates the costs likely to be experienced by both an ‘Integrated Utility’ and an ‘Independent Power Producer’ investing in a generation project which typically operate for 25 years because the corporate bonds sampled by IPART range in maturity up to 2 years. AGL is of the view that the debt margin should be calculated to estimate the margin on a longer-term debt instrument than 2 years i.e. 10 years. If corporate bond data is not easily available then a useful proxy is the Bloomberg BBB 7-year fair value curve plus an adjustment to ensure this price is equivalent to a 10 year debt instrument.

AGL has calculated the spread over the Bloomberg 7 year BBB fair value 20 day average yield (C3567Y Index) and the 7 year Commonwealth Bond 20 day average yield (2.826%)

²⁰ IPART, Review of regulated retail tariffs and charges for electricity 2010-2013. Electricity – Final Report (March 2010). Page 241.

²¹ SFG Consulting, The weighted-average cost of capital for electricity generation. Report for AGL. 10 May 2012. Page 20.

²² AGL Energy, AGL Response to the Independent Pricing and Regulatory Tribunal, Changes in regulated electricity retail prices from 1 July 2011, Draft Report (Date: 13 May 2011). Page 9.



at 13 November 2012. The 7 year bond has been used instead of the 10 year Commonwealth Bond, since the term structure of the 10 year bond is inconsistent with the Bloomberg fair value curve. The debt margin includes an allowance for debt raising costs based on IPART's original allowance.

Debt to total assets

The capital structure assumptions (i.e. gearing) used in the WACC calculation is intended to reflect the ratio of debt to equity in the financial structures operated by the business in question.

The WACC adopted by ESCOSA (proposed by IPART) assumes that:

- a power company finances the project by issuing corporate bonds;
- credit spreads for the bonds have been priced by IPART at investment-grade, that is, the bond spreads used by IPART are based on a credit rating of BBB/BBB+; and
- the power company has a capital structure of 50:50 bonds and equity.

These assumptions are incompatible and in particular, the latter two assumptions simply cannot co-exist in theory, or in practice.

In order for an electricity generation firm to obtain an investment grade credit rating of BBB or BBB+ from the relevant ratings agencies (i.e. Standard & Poor's, Moody's, Fitch) the key financial metric or threshold that the power company would need to meet is:

- Funds From Operations (FFO) to Interest Expense (I).

Ratings agencies clearly require an FFO/I Ratio of at least 5x to provide an investment grade credit rating. Modelling of a benchmark stand-alone generator demonstrates that the feasibility of achieving a 5x FFO/I ratio is simply not possible unless unit prices are 'sustained' dramatically higher than the LRMC of the plant – which is of course an unreasonable proposition in a competitive market environment.

To provide some context, even vertically integrated merchant utilities such as Origin Energy and AGL Energy face at least a FFO/I Ratio of 5x when dealing with the ratings agencies on their respective BBB+/BBB credit ratings. Neither Origin Energy nor AGL Energy carry more than 30% debt in their capital structures, otherwise they would be in violation of one of the key metrics used in credit assessment (i.e. FFO/I at 5x or greater).

In order to address this error, AGL suggest that if the existing approach to issuing long-dated investment grade corporate bonds is retained, then the implied debt levels in the capital structure to reflect BBB/BBB+ credit metrics, which will have the effect of reducing debt levels down to at least 25-30%.

For the purpose of calculating the WACC of an 'Independent Power Producer' AGL has adopted a 60% debt to asset ratio.

Gamma

In the Capital Asset Pricing Model (CAPM), the value of the imputation tax credits for investors is represented by 'gamma'. IPART described the inclusion of gamma in the CAPM as necessary because "if investors are receiving a tax credit from their investment, they would accept an investment with a lower return than if there were no tax credits attached to this investment".²³ IPART set a gamma range of 0.3 to 0.5 in the 2010

²³ IPART, Review of regulated retail tariffs and charges for electricity 2010-2013. Electricity – Final Report (March 2010). Page 243.



Determination. Since that time, as detailed in the attached SFG Report, the Australian Competition Tribunal (ACT) has ruled that 0.25 is the most appropriate estimate of gamma given currently available information.

AGL suggests that ESCOSA should adopt the most up to date estimate of gamma, in line with other recent Australian regulatory decisions.

Equity beta

IPART describe the equity beta as the following:

The equity beta value is a business specific parameter that measures the extent to which the return of a particular security varies in line with the overall return of the market. It represents the systematic or market wide risk of an asset that cannot be avoided by holding it as part of a diversified portfolio. It is important to note that the equity beta does not take into account business specific or non-systematic risks.²⁴

In the proposed WACC, ESCOSA have adopted an equity beta of 0.9-1.1 to represent the systematic risks involved with electricity generation. AGL has argued previously that this equity beta range does not sufficiently represent the risks involved with electricity generation, and particularly based on the gearing levels assumed i.e. an increase in gearing results in more prior ranking debt, thereby increasing the risk of residual equity.²⁵ AGL previously proposed that an equity beta for an electricity generator should range from 0.9 – 1.4.²⁶ However, AGL note that in other WACC estimates for the electricity generation sector the equity beta of an independent power producer has been estimated as high as 1.75.²⁷ In order to determine the proposed WACC, AGL has chosen an equity beta in line with these published values.

²⁴ Ibid. Page 237.

²⁵ AGL Energy, AGL Response to the Independent Pricing and Regulatory Tribunal, Changes in regulated electricity retail prices from 1 July 2011, Draft Report (Date: 13 May 2011). Page 9

²⁶ AGL Energy Ltd. AGL Response to the Independent Pricing and regulatory tribunal, review of regulated retail tariffs and charges for electricity 2010 -2013, Draft Determination (Date: 08 February 2010). Annexure C – Report by KPMG, Weighted Average Cost of Capital, IPART Review of regulated retail tariffs for Electricity – 1 July 2010 to 30 June 2013

²⁷ ACIL Tasman, Calculation of energy costs for the 2011-12 BRCI. Prepared for the Queensland Competition Authority. 30 May 2011. Page 23.



Annexure 4

The weighted-average cost of capital for electricity generation

Report for AGL

10 May 2012

SFG CONSULTING

Level 1, South Bank House
Cnr. Ernest and Little Stanley St
South Bank, QLD 4101

PO Box 29
South Bank, QLD 4101

Email: s.gray@sfgconsulting.com.au
Office: +61 7 3844 0684
Phone: +61 419 752 260

Contents

1.	EXECUTIVE SUMMARY	1
	Background and context	1
	Summary of conclusions	1
2.	EFFECT OF CHANGES TO PARAMETER VALUES IN CURRENT REVIEW.....	3
	Changes applied in current review	3
	Other changes to consider.....	3
3.	GAMMA	5
	Overview.....	5
	Background and context to Tribunal review.....	5
	Issues and Tribunal findings.....	6
	Implications.....	8
4.	RISK-FREE RATE AND MARKET RISK PREMIUM	9
	Government bond yields at historical lows	9
	The relationship between government bond yields and financial risk premiums.....	9
	Application of the CAPM.....	10
	Regulatory precedent	11
	Implications for the current decision.....	12
5.	CURRENT CONDITIONS IN FINANCIAL MARKETS	13
	Do risk premiums in financial markets remain at elevated levels?	13
	Option implied volatilities	13
	Yield spreads in debt markets	15
	Dividend yields	16
	Summary of empirical evidence.....	17
	Effect on estimate of MRP.....	17
	Conditional MRP estimate.....	18
	Range of MRP estimates.....	19
	Application to current conditions in the market for funds.....	19
	Final conclusions	20
	REFERENCES	21

1. Executive summary

Background and context

1. SFG Consulting (**SFG**) has been engaged by AGL to consider the approach to estimating the weighted-average cost of capital (**WACC**) for electricity generation assets that has been adopted by the Independent Pricing and Regulatory Tribunal (**the Tribunal**) in its Draft Report on Changes in regulated electricity retail prices from 1 July 2012 (**Draft Report**).
2. We note that, in its 2010 Report on Retail Electricity Pricing, the Tribunal implied that it would update only the risk-free rate and debt risk premium parameter estimates in its annual reviews. We conclude that this approach is likely to produce unreasonable estimates of WACC in the current (unusual) conditions in financial markets. We propose that either:
 - a) Adjustments to some other parameters should also be made as part of this review; or
 - b) The parameters that can be changed, be estimated in a manner that is more consistent with the values that are fixed for other parameters.

Summary of conclusions

3. Our primary conclusions are:
 - a) Adopting a gamma value that is inconsistent with recent decisions of other regulators, and a recent decision of the Tribunal itself, can result in allocative inefficiencies. That is, the resulting regulated retail electricity price will be different from what it would have been if the Tribunal had adopted a value of gamma that was consistent with other recent regulatory decisions and with the view of the Australian Competition Tribunal.
 - b) Government bond yields tend to be at historically low levels when market risk premiums are at historically high levels. If the required return on equity is estimated by adding a fixed risk premium to the current government bond yield, the implication is that equity is cheapest precisely when financial risk premiums are at their highest. The Australian Competition Tribunal has held that such an approach will not produce appropriate regulatory estimates of WACC. Consequently, either:
 - i) The estimate of risk-free rate should not be based on the current yield on government bonds; or
 - ii) The estimate of market risk premium should reflect the current conditions in financial markets.
 - c) In relation to current estimates of market risk premium:
 - i) Indicators of conditions in financial markets establish that risk premiums clearly remain at elevated levels (option implied volatilities, dividend yields and yield spreads in debt markets all remain well above long-run averages);
 - ii) Risk premiums in financial markets have not eased to pre-GFC levels; and

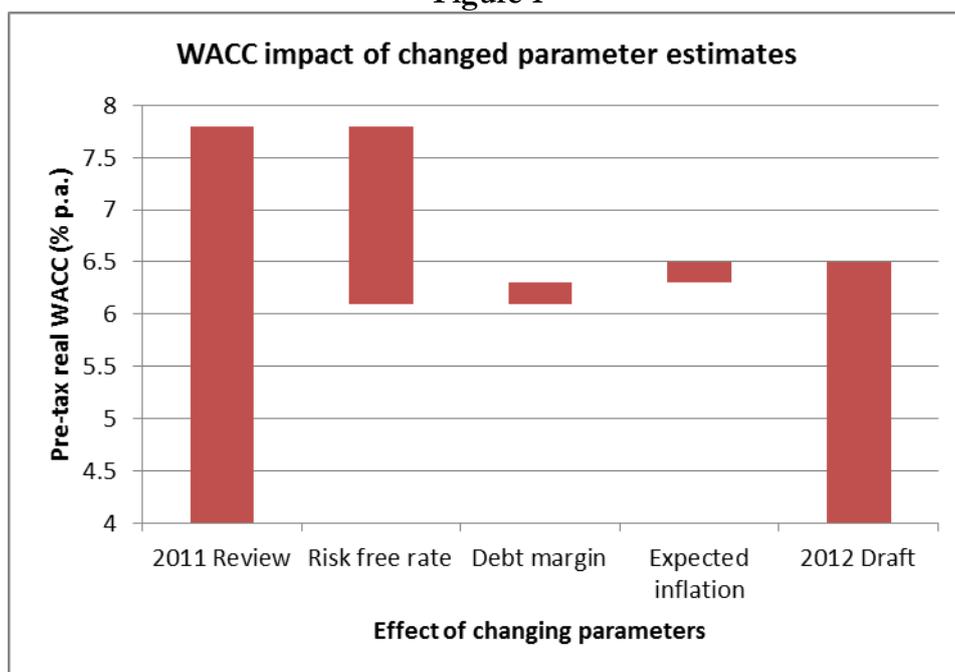
- iii) If one considers a range of 4% – 8% to be appropriate for estimates of MRP, an appropriate estimate conditional on current values of option implied volatilities, debt yield spreads and dividend yields, is in excess of 7%.

2. Effect of changes to parameter values in current review

Changes applied in current review

4. The 2012 Draft Report notes that IPART updates a subset of WACC parameter estimates during its annual review of the total energy cost allowance. Specifically, Schedule 2, Clause 3 of the 2010 Determination sets out the components to be updated as part of the annual review.¹
5. In its current review, IPART has made changes to three parameters that affect the estimate of pre-tax real WACC:
 - a) Risk free rate (5.4% to 3.8%);
 - b) Debt margin (1.7-3.8% to 2.4-3.9%); and
 - c) Expected inflation (3% to 2.8%)
6. The impact that each of these changes has on the estimate of pre-tax real WACC is summarised in Figure 1 below.

Figure 1



Source: Draft Report, SFG calculations.

Other changes to consider

7. In the balance of this report, we set out recommendations for changes to other WACC parameters that the Tribunal may consider as part of the current review or in its next substantive review of WACC parameters. For some parameters, we present particular reasons for considering changes to parameter values in the current review where either:

¹ Draft Report, p. 26.

- a) It has become standard for regulators (including the Tribunal) to adopt an updated estimate of a particular parameter that is different from the estimate adopted by the Tribunal in 2010;
or
- b) There are multi-parameter considerations whereby a change to one parameter might imply a consequential change to another parameter.

3. Gamma

Overview

8. In its 2010 Review, the Tribunal adopted a range of 0.3 to 0.5 for the gamma parameter. Since that time, the Australian Competition Tribunal (ACT) has ruled that 0.25 is the most appropriate estimate of gamma given the currently available information. The Tribunal's estimate of 0.25 has been adopted in every subsequent Australian regulatory decision, including IPART's recent decision in relation to the Sydney Desalination Plant.

Background and context to Tribunal review

9. Prior to the AER's last WACC Review, the long-standing regulatory precedent was to set gamma equal to 0.5, or to use a range that contained 0.5. In its WACC Review Final Decision in May 2009, the AER defined gamma to be the product of two components:

$$\gamma = F \times \theta$$

where F is the distribution ratio (the proportion of created imputation credits that are distributed to shareholders) and θ is the value of a distributed credit. Imputation credits are created whenever a firm pays a dollar of Australian corporate tax. But to distribute all of the imputation credits it creates, a firm would have to distribute 100% of its (Australian) profits as dividends. The average firm does not do this, because it retains some profits to finance future capital expenditure.

10. The AER then set gamma to 0.65. This estimate was based on:
- a) Setting F to 100%. The AER's consultant on this issue proposed that F should be set on the basis of theoretical assumption rather than market evidence; and
 - b) Setting θ to 0.65 as the mid-point of two estimates:
 - i) A dividend drop-off estimate of 0.57 whereby one compares the prices of shares immediately before the ex-dividend date with the prices of the same shares immediately after, as a means of inferring the implied value of dividends and the tax credits that are attached to them²; and
 - ii) An estimate based on ATO tax statistics about the proportion of imputation credits that are redeemed.³
11. The first three business to be regulated under the AER's SoRI estimate of 0.65 were ENERGEX, Ergon Energy and ETSA Utilities, all of whom sought a review by the ACT. This review took place under the National Electricity (Distribution) Rules and has become known as the *Gamma Case*.

² Beggs, D.J., and C.L. Skeels, 2006. "Market arbitrage of cash dividends and franking credits," *The Economic Record*, 82 (258), 239 – 252.

³ Handley, J.C., and K. Maheswaran, 2008. "A measure of the efficacy of the Australian imputation tax system," *The Economic Record*, 84 (264), 82 – 94.

Issues and Tribunal findings

Estimating the distribution rate

12. The distribution rate (F) is the ratio of (a) the total amount of franking credits distributed to shareholders in a given year, to (b) the total amount of franking credits created in a given year. In the Gamma Case, the AER abandoned its contention that F should be set to 100% even before the Tribunal hearing. In its submissions to the Tribunal prior to the hearing, the AER then acknowledged that an estimate above 0.7 was unsupported and therefore that the distribution rate should be set to 0.7. In summarising the AER's position on this issue, the Tribunal stated that:

The AER accepts that on the material presently before the Tribunal, there is no empirical data that is capable of supporting an estimated distribution ratio higher than 0.7. The AER therefore accepts that it is open to the Tribunal to adopt a substitute distribution ratio of 0.7.⁴

13. The Tribunal then concluded and ordered that:

In light of these submissions and the material before the Tribunal, the Tribunal concludes that the distribution ratio is 0.7 for the calculation of gamma.⁵

Estimating Theta

14. Having made a determination in relation to the distribution rate, the Tribunal then turned to the estimation of the other component of gamma, the value of distributed credits, theta. In particular, the theta parameter estimates the value, to the relevant shareholder, of a dollar of franking credits that has been distributed to them. Different shareholders will place a different value on the franking credits that are distributed to them. Resident shareholders can use franking credits to reduce their personal tax obligations, whereas non-resident shareholders obtain no benefit from franking credits. Theta represents the extent to which trading among all market participants results in some value in relation to franking credits being impounded into the stock price.
15. Two techniques for empirically estimating theta were considered by the Tribunal:
- a) Tax statistics about the proportion of distributed imputation tax credits that had been redeemed by shareholders, obtained from the Australian Taxation Office; and
 - b) Dividend drop-off analysis, whereby the implied value of imputation tax credits is inferred from the price change that occurs over ex-dividend days.
16. The Tribunal held that the ATO tax statistics did not represent an estimate of market value and that the AER was wrong to have used them for that purpose.
17. This left the Tribunal with dividend drop-off analysis. On this point, the AER had sought to rely entirely on a single study by Beggs and Skeels (2006). The Tribunal held that the AER was wrong to rely on an out-dated and methodologically unsound dividend drop-off study. The Tribunal then

⁴ Australian Competition Tribunal [2010] ACompT 9, Paragraph 2.

⁵ Australian Competition Tribunal [2010] ACompT 9, Paragraph 4.

directed that SFG should conduct a “state-of-the-art” dividend drop-off study to assist the Tribunal.⁶ The Tribunal also directed that the dividend drop-off study to be performed by SFG “should employ the approach that is agreed upon by SFG and the AER as best in the circumstances.”⁷

18. After a number of meetings and telephone conferences and circulation of several draft versions of proposed Terms of Reference, agreement on several matters could not be reached. This required a further hearing before the Tribunal on those matters that were in dispute. At the completion of this hearing, the Tribunal made an immediate ruling, finding against the AER on all issues.
19. SFG then conducted the state-of-the-art dividend drop-off study and circulated a draft report to all parties. The AER and the regulated businesses provided comments on the draft report and these were taken into account in a revised report that was provided to all parties and to the Tribunal.
20. At the final hearing, the AER submitted that the SFG study had departed from the Terms of Reference, could be criticised on numerous other grounds, and should therefore be afforded little weight. The Tribunal rejected these submissions entirely concluding that:

It is not necessary to set out the details of the eight issues, since they raise no important or significant questions of principle...Calling them “major compliance issues” is unnecessarily pejorative.

Whether or not the terms of reference have been departed from, what is important is whether the concerns raised by the AER with the construction of the database cast doubt on the value of SFG’s analysis, requiring the Tribunal to give it less weight than it otherwise would. In the Tribunal’s view, they do not.

The Tribunal is satisfied that the procedures used to select and filter the data were appropriate and do not give rise to any significant bias in the results obtained from the analysis. Nor was that suggested by the AER.⁸

21. The Tribunal then accepted the estimates from the SFG state-of-the-art study:

In respect of the model specification and estimation procedure, the Tribunal is persuaded by SFG’s reasoning in reaching its conclusions. Indeed, the careful scrutiny to which SFG’s report has been subjected, and SFG’s comprehensive response, gives the Tribunal confidence in those conclusions.⁹

22. The Tribunal went on to conclude that:

The Tribunal is satisfied that SFG’s March 2011 report is the best dividend drop-off study currently available for the purpose of estimating gamma in terms of the Rules.¹⁰

and

The Tribunal finds itself in a position where it has one estimate of theta before it (the SFG’s March 2011 report value of 0.35) in which it has confidence, given the dividend

⁶ Australian Competition Tribunal [2010] ACompT 7, Paragraph 146.

⁷ Australian Competition Tribunal [2010] ACompT 7, Paragraph 147.

⁸ Australian Competition Tribunal [2011] ACompT 9, Paragraphs 18-19.

⁹ Australian Competition Tribunal [2011] ACompT 9, Paragraph 22.

¹⁰ Australian Competition Tribunal [2011] ACompT 9, Paragraph 29.

drop-off methodology. No other dividend drop-off study estimate has any claims to be given weight vis-à-vis the SFG report value.¹¹

Final estimate of Gamma

23. Having determined that the appropriate distribution rate is 70% and that the best dividend drop-off estimate of theta is 0.35, the Tribunal had no more work to do other than to multiply these two estimates together to obtain a gamma estimate of 0.25:

Taking the values of the distribution ratio and of theta that the tribunal has concluded should be used, viz 0.7 and 0.35, respectively, the Tribunal determines that the value of gamma is 0.25.¹²

Implications

24. As noted above, in its 2010 Review, the Tribunal adopted a range of 0.3 to 0.5 for the gamma parameter. Since that time, the Australian Competition Tribunal (**ACT**) has ruled that 0.25 is the most appropriate estimate of gamma given the currently available information. The Tribunal's estimate of 0.25 has been adopted in every subsequent Australian regulatory decision, including IPART's recent decision in relation to the Sydney Desalination Plant.
25. Adopting a gamma value that is inconsistent with recent decisions of other regulators, and a recent decision of the Tribunal itself, can result in allocative inefficiencies. That is, the resulting regulated retail electricity price will be different from what it would have been if the Tribunal had adopted a value of gamma that was consistent with other recent regulatory decisions and with the view of the Australian Competition Tribunal.

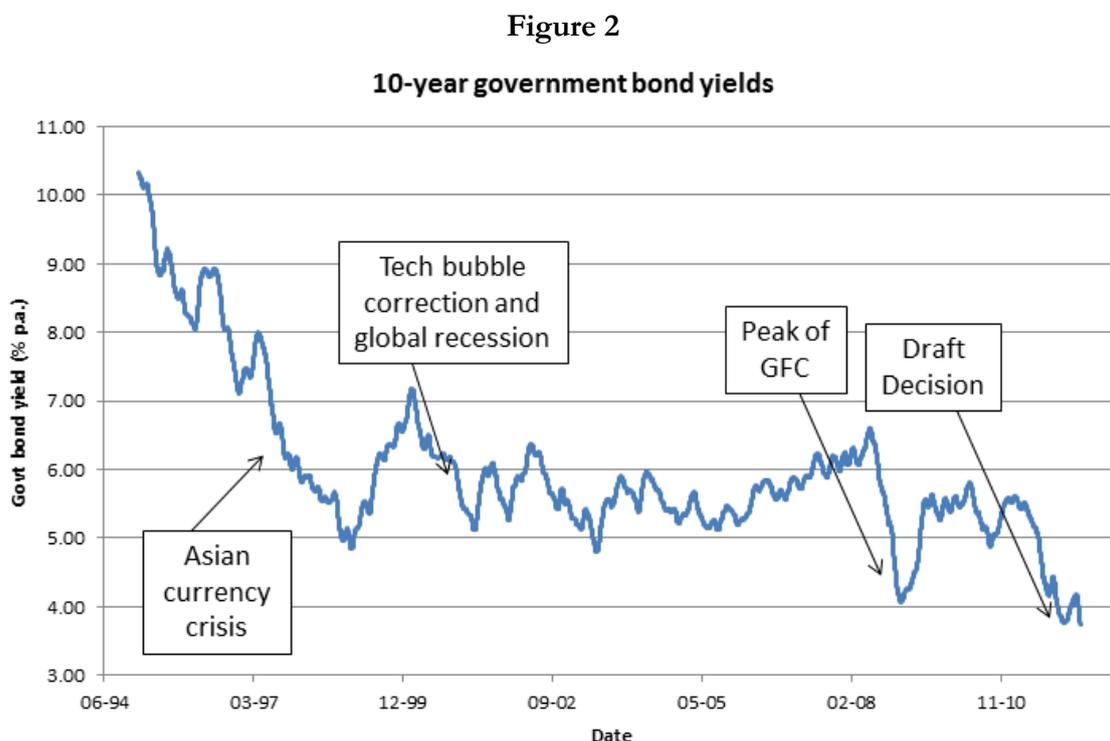
¹¹ Australian Competition Tribunal [2011] ACompT 9, Paragraph 38.

¹² Australian Competition Tribunal [2011] ACompT 9, Paragraph 42.

4. Risk-free rate and market risk premium

Government bond yields at historical lows

26. The Draft Decision adopts an estimate of the risk-free rate that is based on a 20-day average of the yield on 10-year Commonwealth Government bonds. In recent times, the yield on 10-year government bonds has been at historical lows. Figure 2 below shows the time series of 20-day moving average of the yield on 10-year Commonwealth Government bonds.



Source: Reserve Bank of Australia.

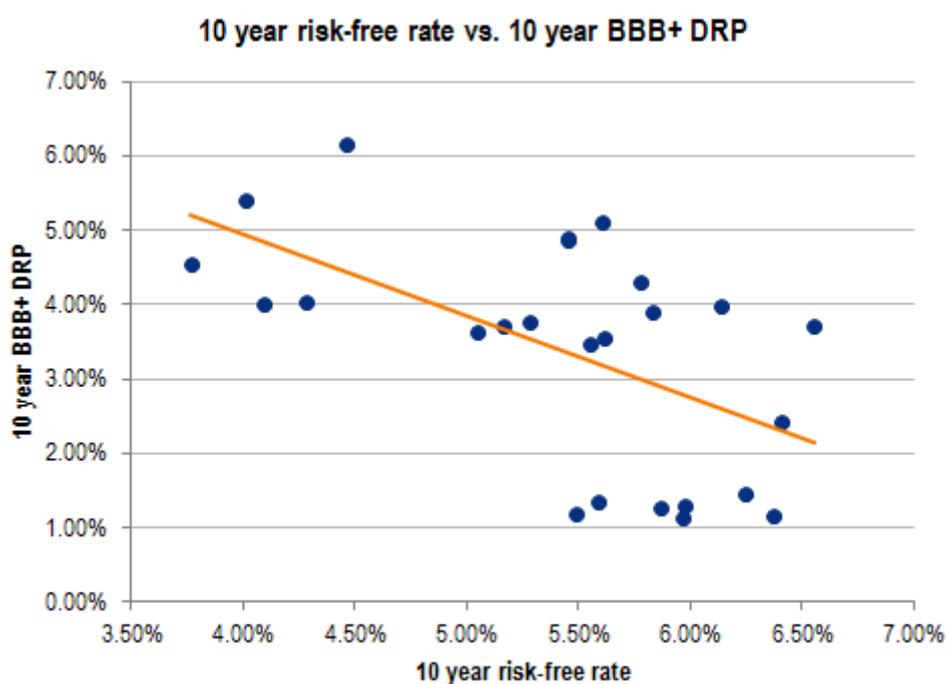
27. It is clear in Figure 2 that the yield on 10-year Commonwealth Government bonds was at, or close to its historical low over the last 15 years at the time of the Draft Decision and remains at that historically low level today.

The relationship between government bond yields and financial risk premiums

28. It is well-known, and generally accepted by finance academics and financial market professionals, that periods of historically low government bond yields are caused by a phenomenon known as a “flight to quality.” During periods of market turmoil and uncertainty, many investors are willing to pay a premium for “safe haven” assets such as government bonds in developed economies. That is, many investors sell out of higher-risk investments and “park” funds in government bonds. This bids up the price of government bonds and pushes yields down to very low levels.
29. The flight-to-quality effect implies that government bond yields are likely to be at their historical lows at precisely the same time that risk premiums are at their historical highs. Figure 2 above shows that government bond yields were driven down sharply during the Asian currency crisis in 1997 and during the bursting of the tech bubble and global recession in early 2001.

30. The previous record low for Australian 10-year government bond yields was during the height of the Global Financial Crisis, but even that low has been surpassed in recent times due to developments in the European debt crisis. Recent election results in France and Greece have further heightened risk premiums, sending stock markets sharply lower and government bond yields to their lowest ever levels.
31. Queensland Treasury Corporation have also examined the relationship between 10-year Commonwealth Government bond yields and risk premiums in financial markets. Figure 3 below shows the relationship between 10-year government bond yields and estimates of the 10-year debt risk premium. That figure shows that debt risk premiums are heightened when government bond yields are very low. That is, at times when investors are requiring high premiums for bearing risk, government bond yields tend to be very low – consistent with a flight-to-quality effect.

Figure 3



Source: Queensland Treasury Corporation.

Application of the CAPM

32. The Draft Decision estimates the required return on equity using the Capital Asset Pricing Model:

$$r_e = r_f + \beta_e \times MRP.$$

33. The beta and market risk premium parameters are effectively fixed for a period, and historically only the estimate of the risk-free rate that is updated in the annual reviews. Consequently, the required return on equity has been estimated by adding a fixed premium (currently 6%) to the estimate of the risk-free rate at the time of the annual review.
34. The design of this approach is likely to have contemplated periods of market stability, when government bond yields are stable and close to their long-run average level. However, during

extreme periods, when government bond yields are lower than they have ever been, estimating the required return on equity by adding a fixed margin to government bond yields will produce nonsensical outcomes. In particular, that approach implies that the required return on equity is low when government bond yields are low – that the cheapest equity finance ever available was at the peak of the GFC and at the current time. This is because fixing the estimate of MRP prevents the Tribunal from recognising that government bond yields, now and at the peak of the GFC, were at historical lows precisely because risk premiums are at historical highs.

Regulatory precedent

35. The relationship between government bond yields and market risk premium has been addressed by the Australian Competition Tribunal in the TransGrid Case.¹³ The relevant facts of that case are almost identical to the present case. TransGrid was regulated under Chapter 6A of the National Electricity Rules, which required the risk-free rate to be estimated using appropriate market data, whereas estimates of beta and market risk premium were fixed.
36. TransGrid submitted that there was a clear relationship between government bond yields and risk premiums in financial markets and that adding a long-run average estimate of MRP to an historically low estimate of the risk-free rate would produce a nonsensical outcome – it would imply that equity finance was cheaper than it had ever been, right at the peak of the GFC.
37. Because the Rules required a fixed long-run average estimate of MRP to be used, TransGrid proposed to use a long-run average estimate of the risk-free rate – so that the two parameters were estimated consistently in order to produce a sensible estimate of the required return on equity. The Australian Energy Regulator insisted on estimating the risk-free rate as the yield on government bonds at the time of the determination – and then adding the fixed long-run average estimate of MRP.
38. The Australian Competition Tribunal noted that:

The Applicants submitted that these facts demonstrated that basing a risk free rate on the AER's specified averaging periods would not achieve the objective of an unbiased rate of return consistent with market conditions at the date of the final decision. They appealed to expert opinion that the market risk premium was far higher than its deemed value while the risk free rate was abnormally low, so that the return required by investors was much higher than the AER's specified averaging period would generate.¹⁴

and concluded that:

The Tribunal considers that an averaging period during which interest rates were at historically low levels is unlikely to produce a rate of return appropriate for the regulatory period.

39. The Australian Competition Tribunal allowed TransGrid to use an estimate of the risk-free rate that was closer to the long-run average, to be consistent with the long-run average estimate of MRP that was required under the Rules.

¹³ [2009] ACompT 8.

¹⁴ [2009] ACompT 8, Paragraph 112.

Implications for the current decision

40. The Draft Decision is based on a fixed estimate of 6% for MRP. This is a long-run average estimate of MRP. If this estimate cannot be changed for the current annual review, mixing a long-run average estimate of MRP with the current lowest-on-record government bond yield, would be “unlikely to produce a rate of return appropriate for the regulatory period.” Rather, a long-run average estimate of risk-free rate together with a long-run average estimate of market risk premium is likely to produce a more sensible estimate of the required return on equity.¹⁵
41. The average yield on 10-year Commonwealth Government bonds from 1995 to the present (graphed in Figure 2 above) is 6.00%. Consequently, conditional on maintaining the long-run average 6% estimate of MRP, the Tribunal might consider two alternative approaches for adopting an estimate of the risk-free rate that is likely to produce more reasonable estimates of the required return on equity:
 - a) Adopting a long-run average risk-free rate of 6%; or
 - b) Maintaining the current estimate of the risk-free rate (from the decision for the 2011-12 period) of 5.4%.
42. An alternative approach would be to update the estimate of MRP to reflect current market conditions, as set out in the following section of this report.

¹⁵ In our view, this is still not a best estimate, but under the constraint of having to apply the fixed estimate of MRP, it will produce a more sensible estimate than that produced by using current government bond yields.

5. Current conditions in financial markets

Do risk premiums in financial markets remain at elevated levels?

43. To determine whether financial market risk premiums remain at elevated levels, the standard approach is to examine a time series of variables that have been shown in the finance literature to be related to market risk premiums. The variables that are examined include the level of government bond yields, as set out above, and:
- a) Option implied volatilities – higher implied volatilities indicate higher levels of market risk and consequently higher risk premiums;
 - b) The spread between the yields on highly-rated bonds and lower-rated bonds – a greater spread indicates that risk premiums are high in financial markets generally; and
 - c) Dividend yields – a higher dividend yield indicates that prices are low relative to dividends, which is consistent with dividends being discounted back to present value using a higher discount rate, which is in turn consistent with higher risk premiums.
44. Fama and French (1988), Fama and French (1989) and Keim and Stambaugh (1986) demonstrate that dividend yields and default spreads are positively associated with future equity market returns relative to Treasury bill rates. This does not imply that equity market returns can be forecast with absolute precision or that these variables provide investors with a trading strategy which generates abnormally high returns. What the academic research shows is that the bond and equity market prices appear to be affected by similar risk considerations. This means that low equity prices (relative to trailing dividends) and low corporate bond prices (relative to promised repayments) reflect investors' expectations for risk and therefore their required return for bearing that risk, in both the equity and debt markets.
45. In the remainder of this section, we examine a time series of each of these variables in turn.

Option implied volatilities

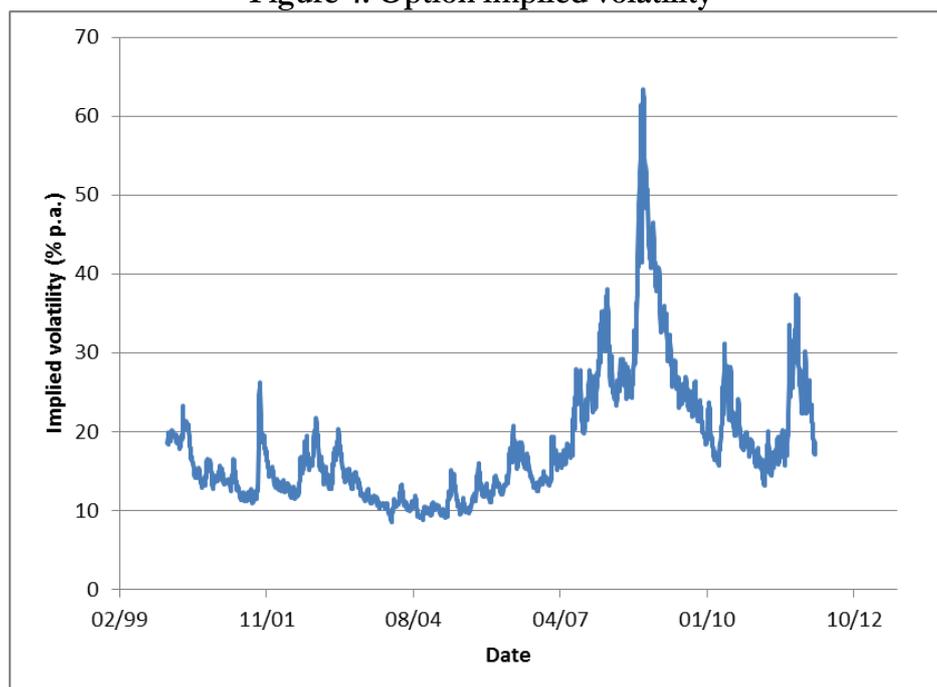
46. In the Australian market, it is most common to estimate the implied volatility of the broad market using options on the ASX 200 index. These implied volatilities are computed by determining the volatility estimate that would have to be inserted into the Black-Scholes option pricing formula in order to reconcile the model price with actual traded market prices.¹⁶ Prices for relatively short-term at-the-money call and put options are usually used for this purpose.
47. This series measures the market's perception of the forward-looking volatility of the ASX 200 index. It is therefore a measure of the *amount* of risk that market participants perceive. This is not a perfect measure of the Capital Asset Pricing Model (**CAPM**) MRP for two reasons:
- a) It is based on options with a relatively short (3 month) time horizon¹⁷; and

¹⁶ The Black-Scholes model is the industry standard model for valuing stock options. The framework was developed by Fisher Black, Myron Scholes and Robert Merton. Scholes and Merton were awarded the Nobel Prize in Economics in relation to this work in 1997 (Black died in 1995 and the Nobel Prize is not awarded posthumously).

¹⁷ Officer and Bishop (2009) have also examined the implied volatility of 12-month options on the S&P/ASX 200 index. However, there is less historical data available for 12-month options than for shorter-dated instruments (one month and three month options).

- b) It reflects only the *amount* of risk, whereas the CAPM MRP also reflects the *price* of risk – the return that investors require for bearing each unit of risk. Both of these components, and hence the MRP, can vary over time.
48. It is clear and well-accepted that there is a positive relationship between implied volatilities and the forward-looking MRP. Higher implied volatilities are indicative of higher risk and consequently higher risk premiums. That is, when implied volatilities are materially above their long-run average level, risk premiums will also be above their long-run average levels.
49. Since implied volatilities provide an indication of the market's view about volatility over the life of the option, they provide a forward-looking view of stock market volatility. This is relevant to the estimation of MRP in that volatility is a measure of the *quantity* of risk that is associated with an equity investment – a greater amount of risk would logically require a greater premium as compensation for bearing it.
50. Although it is difficult to precisely quantify this relationship, the directional effect is well accepted.
51. Figure 4 below contains data from the beginning of 2000 to the end of January 2012. In recent times the implied volatility from option prices is higher than its average value, even where that average has been computed over the period that contains the material period of extreme values associated with the GFC. This is consistent with the proposition that the effects of the GFC have not completely washed through the system, that risk premiums remain at elevated levels, and that an MRP estimate above the long-run average estimate of 6% would be appropriate in the current circumstances. In particular, the most recent observation of implied volatility is 18.66%, which is greater than 62% of the observations since 1 January 2000. If data from the GFC period (post July 2007) is omitted from the sample, the current value of implied volatility is more than 1.2 standard deviations above the mean and is greater than 88% of the observations in the sample. We report these ex-GFC results, as the use of the full sample involves an implicit assumption that a GFC-like event occurs once every decade.

Figure 4. Option implied volatility



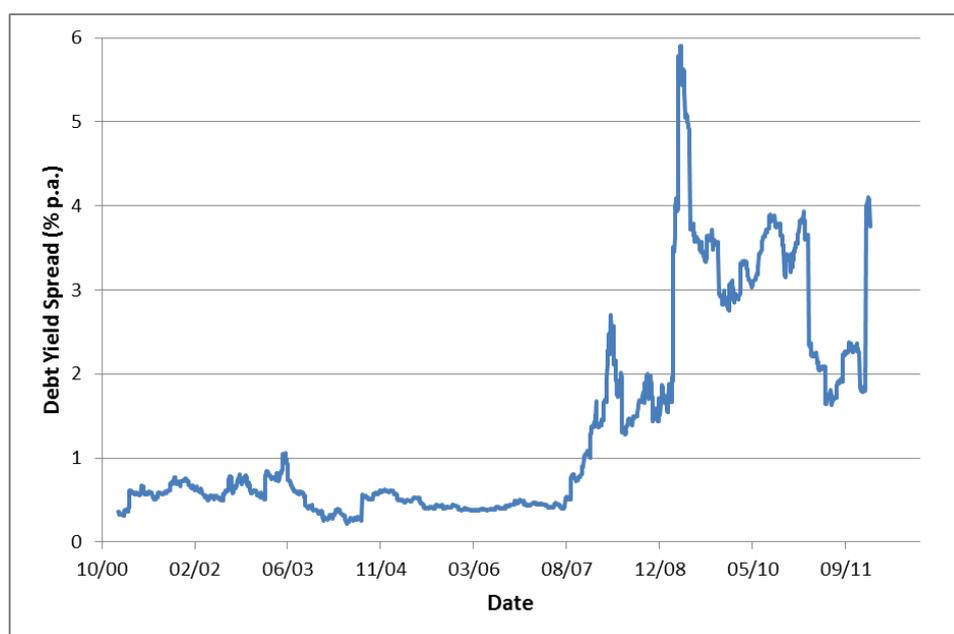
Source: Citibank ASX 200 implied volatility series, Bloomberg

Yield spreads in debt markets

52. The *default spread* is measured as the difference between an index of the yield to maturity on BBB-rated bonds and a corresponding index of AAA-rated bonds. This spread proxies for credit or default risk. During economic expansions, the spread between the yields on higher- and lower-rated bonds tends to be low as risk premiums are also low. During recessions, however, the spread widens, commensurate with an increase in risk premiums generally.¹⁸
53. Figure 5 below plots the spread between the DataStream AAA and BBB yield estimates. This figure is based on redemption yields for Australian corporate bonds with approximately 3-years to maturity supplied by Merrill Lynch Bank of America. It is based on data from the beginning of 2001 to the end of January 2012. This figure shows that risk premiums in debt markets have reduced since the peak of the GFC, but remain at levels much higher than before the GFC. In particular, the most recent observation of the yield spread is 3.755%, which is greater than 95% of the observations and more than 1.94 standard deviations above the mean since 1 January 2001. If data from the GFC period (post July 2007) is omitted from the sample, the current value of the yield spread is more than 22 standard deviations above the mean and is greater than all of the observations in the sample. As noted above, we report these ex-GFC results, as the use of the full sample involves an implicit assumption that a GFC-like event occurs once every decade.
54. In my view, this is evidence supporting the proposition that risk premiums in equity markets are also likely to remain at elevated levels and not to have reduced to pre-GFC levels. In particular, it would be highly unlikely that investors would currently require materially higher than average risk premiums when investing in a firm's bonds, but not when investing in the same firms' shares.

¹⁸ See, for example, Fama and French (1988), Fama and French (1989) and Keim and Stambaugh (1986).

Figure 5. Spread between AAA and BBB bonds



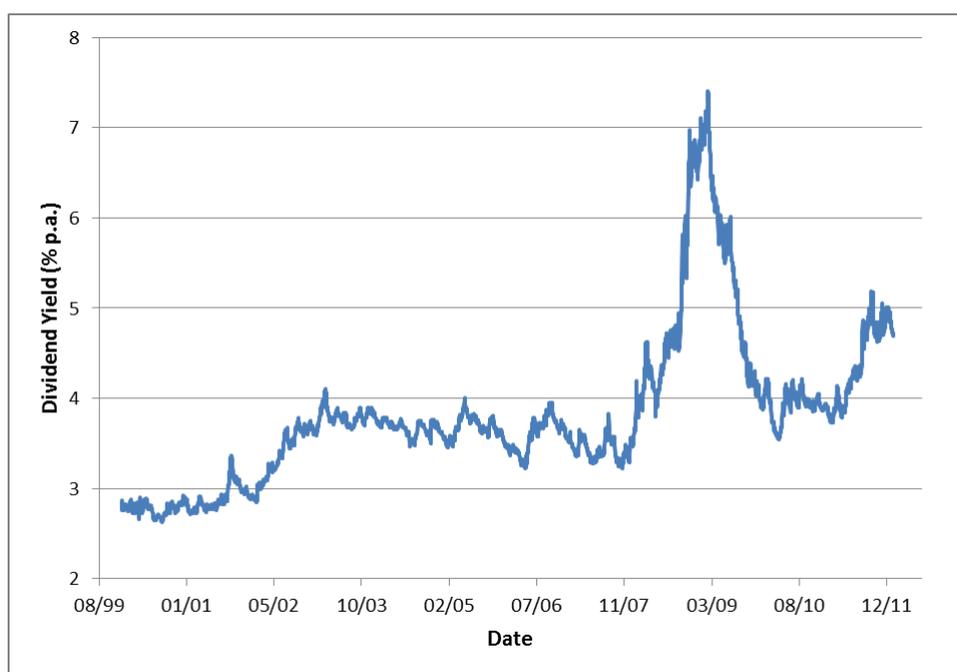
Source: Datastream

Dividend yields

55. The dividend yield is the ratio of the cash flow to shareholders by way of dividends (including payments of a return of capital and payments in relation to loan notes) to the price of the stock. When dividend yields are high, a given set of cash flows is being discounted at a higher rate, indicative of higher equity risk premiums.¹⁹
56. Figure 6 shows a time series of dividend yields from the beginning of January 2000 to the end of January 2012. There was a clear and dramatic increase in dividend yields during the height of the GFC. Yields have since fallen, but remain above the pre-GFC levels. The current dividend yield is 4.69%, which is larger than 87% of the observations and more than 1.02 standard deviations above the mean since 1 January 2000. If data from the GFC period (post July 2007) is omitted from the sample, the current value of the dividend yield is more than 3.3 standard deviations above the mean and is greater than all of the observations in the sample. As noted above, we report these ex-GFC results, as the use of the full sample involves an implicit assumption that a GFC-like event occurs once every decade.

¹⁹ See, for example, Fama and French (1988), Fama and French (1989) and Keim and Stambaugh (1986).

Figure 6. Dividend yield on ASX 200 index



Source: Datastream

57. Many papers in the empirical finance literature (including Fama and French, 1988; Fama and French, 1989; and Keim and Stambaugh, 1986) demonstrate that dividend yields are strongly correlated with future excess stock returns. Consequently, the fact that dividend yields are currently at historically high levels indicates that market risk premiums remain at elevated levels.

Summary of empirical evidence

58. The conclusions that can be drawn from the analysis set out above are:
- a) The GFC had a pronounced effect on market risk premiums during the height of the crisis;
 - b) All indicators suggest that this effect has diminished since the peak of the GFC; and
 - c) These indicators remain materially above their pre-GFC levels.
59. In our view, the available financial market data supports the conclusion that the effects of the GFC have reduced, but they continue to affect risk premiums in financial markets. The available financial market data does not support the conclusion that investors view the amount of risk involved in holding a broad portfolio of equities and the price of risk (the additional return that is required in relation to each unit of risk) as now being the same as before the GFC. In our view, the turmoil in financial markets surrounding the GFC continues to have a clear effect on risk premiums in financial markets.

Effect on estimate of MRP

60. This section demonstrates how the information from relevant conditioning variables might be used to select a point estimate for the conditional MRP – one that is consistent with the prevailing conditions in the market for funds. That is, the conditioning variables are used in selecting an

estimate of MRP because they have been shown to be informative about the prevailing conditions in the market.

61. At a simple level, the approach is as follows:

- a) We select a range for the regulatory estimate of MRP. We interpret this as a range of the conditional mean estimates that a particular regulator might adopt from time to time. The mid-point is interpreted as a regulatory estimate of the unconditional mean, and the range is interpreted as consisting of a standard 95% confidence interval around this mid-point;
- b) We note that the current values of the conditioning variables are (on average) more than one standard deviation above their long-run means; and
- c) We therefore conclude that the conditional mean estimate that is consistent with the prevailing conditions in the market (as measured by the relative values of the conditioning variables) is also more than one standard deviation above *its* mean.

Conditional MRP estimate

62. As set out above, the empirical finance literature notes that a number of variables are strongly predictive of future excess returns. Consequently, the best estimate of future excess returns is one that is conditional on these predictive variables. That is, we may be able to use these variables to determine the circumstances in which it would be appropriate to adopt an estimate of MRP above (or below) the long-run average unconditional estimate, which regulatory precedent sets to 6%.

63. The use of CAPM parameter estimates that are conditional on the relevant information that is available at the time (i.e., conditional on the prevailing conditions in the market for funds) is consistent with the framework adopted by regulators. For example, in a recent report for the AER, Davis (2011) concludes that:

█ The AER approach could, I suggest, be viewed as an “implicit conditional CAPM” approach in which there is regular review of beta, the risk free rate and the MRP.²⁰

and

█ there is some support for a “conditional” CAPM in which forward looking expected returns depend on some stochastic factor(s) additional to the expected Market Risk Premium (which itself may be variable).²¹

64. The AER accepts this interpretation of the framework it uses to estimate the required return on equity:

█ As noted by Professor Davis, the AER is using an ‘implicit conditional CAPM’ approach.²²

²⁰ Davis (2011, p. 9).

²¹ Davis (2011, p. 11).

²² Envestra Final Decision, p. 41.

65. Within this framework, there is a long-run unconditional mean estimate of MRP (which is 6% under regulatory precedent) and a conditional mean estimate that varies above and below the long-run mean unconditional mean over time. The conditional estimate is based on (statistically speaking, it is “conditional” on) all relevant information that is available at the time.
66. To date, the AER and other regulators have adopted an *implicit* conditional CAPM approach. In this report, we describe a simple approach for explicitly selecting an estimate of the conditional MRP from within a range – a point is selected from within a range according to the current values of the conditioning variables relative to their average values. If the conditioning variables are currently above their average levels, this would indicate that the conditional MRP (that is commensurate with current conditions) is proportionately above its average level, and vice versa.

Range of MRP estimates

67. By way of illustrating this approach, we consider a range of regulatory MRP estimates of 4% – 8%. We have selected the mid-point of this range to coincide with the regulatory unconditional mean estimate of 6%. The width of the range is interpreted as a 95% confidence interval for the conditional MRP.
68. A number of different techniques (such as regime-switching models and dividend growth models, for example) can be used to provide information about the range of conditional MRP estimates. A regulator may have regard to a range of econometric techniques and other considerations in determining the range of conditional MRP estimates that it may adopt from time to time. In this report we consider the case where the regulator has adopted a range of 4% – 8% in order to illustrate how information from the conditioning variables can be used.

Application to current conditions in the market for funds

69. Table 1 below shows the current values of the three conditioning variables, relative to their long-run means. All three variables are well above their long-run means and take current values that are higher than the vast majority of post-2000 observations. This is clear evidence that risk premiums in financial markets are currently at elevated levels.

Table 1. Current and relative value of MRP conditioning variables

Conditioning variable	Mean since 2000	Current observation	Percentile rank of current observation	Number of standard deviations above mean
Option implied volatility	18.29%	18.66%	62%	0.05
(Omitting GFC period)	13.90%	18.66%	88%	1.22
Debt yield spread	1.35%	3.76%	95%	1.95
(Omitting GFC period)	0.51%	3.76%	>100%	22
Dividend yield	3.82%	4.69%	88%	1.02
(Omitting GFC period)	13.90%	3.39%	>100%	3.30

Source: Datastream, Bloomberg, SFG calculations.

Implied volatility figures are from the beginning of January 2000 to the end of January 2012.

Debt yield spread figures are from the beginning of January 2001 to the end of January 2012.

Dividend yield figures are from the beginning of January 2000 to the end of January 2012.

70. Next, we note that the current values of the three conditioning variables are, on average, more than one standard deviation above their means (and materially more than this if the GFC period is omitted from the sample). That is, Table 1 suggests that it would be conservative to conclude that the current levels of the conditioning variables are, on average, more than one standard deviation above their long-run usual levels.
71. Finally, recall that the regulatory range of 4% – 8% is interpreted as a 95% confidence interval – with two standard errors above and below the regulatory mid-point estimate of 6%. Consequently, since the conditioning variables are more than one standard deviation above their means, we consider an estimate of the conditional mean MRP that is also more than one standard deviation above its mean. This yields a current point estimate of the conditional MRP in excess of 7%.

Final conclusions

72. Our main conclusions are:
- a) Indicators of conditions in financial markets establish that risk premiums clearly remain at elevated levels (option implied volatilities, dividend yields and yield spreads in debt markets all remain well above long-run averages);
 - b) Risk premiums in financial markets have not eased to pre-GFC levels; and
 - c) For the reasons set out above, if one considers a range of 4% – 8% to be appropriate for estimates of MRP, an appropriate estimate conditional on current values of option implied volatilities, debt yield spreads and dividend yields, is in excess of 7%.

References

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