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23 September 2009

Mr Jim Cox
Acting Chairperson
Independent Pricing and Regulatory Tribunal
PO Box Q290
QVB Post Office NSW 1230

Dear Mr Cox

IPART's Review of Regulated Electricity Tariffs 2010 - 2013

In response to the draft methodology paper, Country Energy provides the following:

- Submission titled *Country Energy's submission to 2010 - 2013 retail tariff review draft methodology*

Country Energy looks forward to providing additional information and clarification to the IPART and its Officers.

Yours sincerely

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Country Energy's submission to 2010-2013 retail tariff review draft methodology

September 2009

Submission to IPART *Review of regulated retail tariffs and charges for electricity 2010-2013*, Draft Methodology Paper August 2009
September 09

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1. EXECUTIVE SUMMARY

Country Energy is pleased to provide this response to the Independent Pricing and Regulatory Tribunal ("IPART") Draft Methodology paper for the Review of Regulated Electricity Tariffs 2010 – 2013 ("the Review"). The Draft Methodology paper provides an opportunity for NSW Standard Retailers and other stakeholders to identify areas where the methodology may be modified and improved so that Review outcomes are consistent with IPART and NSW Government objectives for electricity retail price regulation in NSW.

Country Energy recognises the additional challenges in setting cost-reflective, regulated tariffs for the 2010-2013 Review period. These include uncertainty around the effect of climate change-related policies for retailer costs, and hence a future cost-reflective retail price path.

Country Energy agrees that, against this background, flexibility needs to be built into the regulatory package so that regulated tariffs can be adjusted in the event efficient actual retailer costs vary significantly from the *ex ante* forecast. Accordingly, Country Energy welcomes the proposal to modify the periodic adjustment mechanism used in 2007-2010.

Country Energy notes an important change relative to 2007-2010 is that the reference point for price setting is the electricity supply costs an efficient Standard Retailer will incur over the price control period supplying small retail customers on regulated tariffs. This is a welcome change from the previous reference point which was a hypothetical, mass-market, new entrant retailer that lacked a pre-existing customer base, or pre-existing forward electricity purchase and other contractual commitments.

Country Energy suggests that the new benchmark makes *ex ante* price setting much more tractable, as it suggests the methodology should focus on the following questions:

- To the extent a Standard Retailer's forward supply costs are already known and certain for a portion of its expected retail electricity sales, are these costs reasonable and efficient?
- On what basis should forecasts for the unhedged portion (hence with uncertain supply costs) of expected electricity sales be made?
- What is the quantity of capital a stand-alone retailer would need to fund its opening customer base and to meet its commitments, including minimum capital requirements to enter into long term forward electricity purchase commitments that underpin existing and new generation investment?
- If, over the course of the price control period, the actual supply cost for the unhedged portion of expected load varies materially from the forecast, how should the variance be quantified?
- What is an appropriate threshold for considering a variation in retail prices using a periodic adjustment mechanism and how, and at what level should the variation trigger be set?
- Specifically, what consequential changes to other components of the regulatory package, notably the allowable retail margin, are required to maintain the cost reflectivity of regulated retail prices?

Country Energy Energy's key proposals are that IPART consider modifying and enhancing the draft methodology so that:

1) The price path reflects actual forward retailer costs, rather than simulated costs, for the portion of expected load where the cost is known and hedged, *ex ante*. This would be subject to tests that forward costs are efficient and the product of genuine arm's length price discovery.
2) To the extent the price path relies on estimates of forward costs for the portion of load that is not known and hedged, these estimates are based on:
    a) the equivalent hedged forward cost (from (1) above);
    b) publicly observable market quotes for equivalent forward costs; and
    c) simulations of market outcomes for equivalent forward costs.

3) The retail operating margin (ROM) component of the regulated price path should incorporate an adequate allowance for the quantity of capital required by an efficient standard retailer, including an allowance for wholesale energy capital adequacy, or a 'volatility allowance'.

4) The ROM should also include adequate allowances for the capital costs of customer acquisition, alongside the allowance for customer acquisition and retention costs (CARC) within the retail operating cost (ROC).

5) The trigger for a periodic review of the *ex ante* price path should be set relative to the wholesale energy capital component of the allowed margin.

6) The periodic review should be retailer not regulator initiated and the process should be modelled on the Voluntary Transitional Pricing Arrangements (VTPA) Special Circumstances Provisions as applied by IPART for regulated retail gas prices offered by Standard Gas Retailers.

In Country Energy's view, the modifications outlined above are necessary conditions for achieving the NSW Government's objectives with respect to the review, including:

- Cost reflective retail prices (CRRP);
- Development of retail competition;
- Reduced reliance on regulated retail tariffs; and
- Preservation of the financial viability of retailers with Standard Retailer obligations.

Country Energy considers that the proposal in the Draft Methodology to continue to rely on simulations of forward supply costs under hypothetical market conditions may not produce CRRP, reduced reliance on regulated prices and development of retail competition. Moreover, it could place the future financial viability of Standard Retailers at risk.

This view is based on the available evidence on outcomes since the 2007 Determination was put in place. The regulated price path based on simulated supply costs was well below cost-reflective levels for the two year period until the price adjustment made earlier in 2009. The delay in adjusting the price path over an extended period inhibited competition and increased reliance on regulated prices.

Moreover, but for the extension of the Electricity Tariff Equalisation Fund (ETEF) arrangement that obliges generators to "top-up" shortfalls between regulated and market wholesale prices, the viability of Standard Retailers may have been at considerable risk over the 2007-2010 Review period.

By its very nature, the proposed simulated approach does not refer to the actual forward supply cost commitments a prudent retailer enters into for its expected retail sales commitments, for the price control period – and beyond. In normal circumstances, a very large portion of these costs are known and certain well in advance of the price control period because forward contractual commitments have already been entered into.

Country Energy acknowledges that forward contracts are purchased at a premium to forecast equivalent spot purchase costs. A stand-alone retailer, with a modest allowed mark up on each unit of electricity sold, has little option but to pay this premium and it is efficient within the confines of the regulatory package. Given that forward contracting of any description would not occur in the hypothetical world posited by portfolio theory, the theory does not offer any useful insights as to an efficient or allowable premium. Country Energy therefore suggests IPART should reconsider its proposed approach on this matter so that it is consistent with CRRP.

Regulated retail prices set without reference to actual supply costs are inherently at risk of not being cost-reflective.

Country Energy recognises that forecasts need to be made for the cost of new forward supply contracts for the portion of expected forward sales not already covered by existing forward supply contracts. Accordingly, a simulated approach, along with reference to forward quotes, has a valid role in *ex ante* price setting.

Country Energy also recognises that the 2010-2013 Review period presents unique challenges in that, at the time of the draft Determination, Standard Retailers may only be part way through or beginning the process of securing forward supply commitments to replace the ETEF. Well before the ETEF arrangements begin to roll-off, however, Standard Retailers may be entering into forward supply commitments and hence forward market price discovery. This provides an opportunity for further regulatory disclosure that mean IPART's Determination, and future periodic reviews, could rely on forward market cost data, rather than simulated estimates, in respect of the hedged portion of forward supply costs.

An inertia principle should apply under which, for a given forward period, the hedged forward contract price is used as the baseline for forecasting the cost of purchasing new contracts for that forward period. In the absence of strong evidence to the contrary, the cost for existing equivalent contracts would be used to forecast the cost for new equivalent contracts.

Forward supply commitments, and hence forward prices, can apply equally to "black" and "green" energy. For 2010-2013, this includes the carbon price impacts under the Carbon Pollution Reduction Scheme (CPRS), once the regulatory parameters have been finalised. Again, this is currently expected before the final Determination and thus forward market prices may be available.

As new supply commitments for both "black" and "green" energy are entered into after the final Determination, it will be possible to quantify whether there is a variance between the forecast and actual cost of these commitments. This enables a threshold for a periodic review of the price path to be set depending on the extent such variances are catered for in the allowed ROM.

This ensures that the review trigger is set so that it is consistent both internally within the regulatory package and with the objective of maintaining the financial viability of Standard Retailers. Extension of a 10 per cent threshold as a trigger for periodic review would therefore imply a significant additional increment in the allowed ROM.

The proposal for a verifiable review trigger eliminates the possibility of a repeat of the 2008 regulator initiated periodic price review where the supply cost variance was measured by reference to updated market simulations, not to variances between forecast and actual supply costs.

Country Energy recognises that its proposed approach relies on non-public market data, both for *ex ante* price setting and periodic review purposes. While this has drawbacks in terms of transparency, these are outweighed by the clear advantages in terms of achieving 2010 Review objectives. Country Energy notes that the VTPA governing retail regulation of gas in NSW refers to actual rather than simulated costs, with respect to the Special Purposes provisions.

Country Energy suggests that a retailer initiated periodic review, described as "model 2" in the Australian Energy Market Commission (AEMC) June 2009 Second Interim Report[1], is consistent with Review objectives. The Special Circumstances provisions in the VTPA governing gas retail regulation appear to provide an existing model that provides timely IPART review of any retailer initiated proposals for periodic review.

While Country Energy is broadly comfortable with the "triangular" approach to setting the allowed ROM, it notes there are limitations with "top down" approaches. Such approaches calculate the allowed ROM as a mark-up on the Cost of Goods Sold (COGS).[2] This means there is a risk that, as was the case under the 2007-2010 methodology, if COGS is under-estimated, so too is the required ROM.

This highlights the importance of applying a truly "bottom up" approach as a cross check for "top down" approaches. Under a bottom up approach, consideration needs to be given to the quantity of capital a

[1] See page 56 of the AEMC 2nd Interim Report – Review of Energy Market Frameworks in light of Climate Change Policies dated 30 June 2009

[2] The Cost of Goods Sold (COGS) refers to both the 'N' and the "R' components in the price setting formula, but only to the "R' components other than a stand-alone retailers' own operating and capital costs. It therefore includes all energy purchases, both "green" and "black".

retailer requires, including fixed assets, adequate wholesale energy capital, and working capital. In addition, the capital base should reflect the value of the existing customer base, consistent with recognition of CARC in allowable operating costs.

A substantial portion of required ROM is sensitive to changes in COGS. This includes working capital and wholesale energy capital. Accordingly, the scope of the retailer initiated periodic adjustment mechanism should extend to the allowed ROM. This is a pre-requisite for maintenance of CRRP in the event supply costs materially change.

The proposed discount rate does not take into account Capital Asset Pricing Model (CAPM) parameter estimation error and CAPM model error. Given the asymmetric social costs of error in estimation of the cost of equity, a significant increase in the discount rate is required. Rather than the midpoint of the range identified, a point above this should be selected. Then an additional margin should be introduced in recognition of CAPM model error.

KEY RECOMMENDATIONS

This submission details Country Energy's position on key issues outlined in the draft methodology paper. A summary of the key recommendations contained within the paper is provided below.

Section	Key Recommendations
2. Effectiveness of methodology since 2007	• The available evidence presented by Country Energy and many other informed observers demonstrates that the current simulated approach to forecasting a retailer's energy purchase costs has not produced outcomes that are consistent with the NSW Government's objective for the Review. Outcomes are not consistent with CRRP, reduced reliance on regulated retail prices; development of retail competition; and the ongoing financial viability of Standard Retailers absent ETEF. Accordingly, Country Energy recommends that the draft methodology needs to be modified and enhanced.
3. Required enhancements to methodology	• The draft methodology proposes retaining an approach whereby energy purchase costs are derived from simulations of wholesale market prices, but not actual market prices. An enhanced approach would rely on actual market prices for hedged forward supply costs that apply to the bulk of expected sales over the price control period. • The proposed enhanced approach relies on observable but not public data. This is consistent with the practice that has been applied in the setting of NSW gas regulated retail tariffs, albeit under limited circumstances. • A simulated approach could apply to the uncertain portion of forward supply commitments. In forecasting the cost for this uncertain portion of future expected load, reference should also be made to public market quotes and verifiable transaction prices. • An inertia principle should apply under which, for a given forward period, the hedged forward contract price is used as the baseline for forecasting the cost of purchasing new contracts for that forward period. In the absence of strong evidence to the contrary, the cost for existing equivalent contracts would be used to forecast the cost for new equivalent contracts. • It is recognised that allowed actual forward contract costs need to be verifiable and judged to be efficient. They must also be the outcome of genuine arm's length transactions. While optimisation of the actual forward purchase cost should be provided for in the price setting process, Country Energy notes this should be limited, consistent with the objective of maintaining viability.
4. Establishing the energy purchase cost allowance	• It is acknowledged that the deferral of the start of the ETEF roll off commencing 1 July 2010 presents a complication for the market based methodology outlined above. However, well before the ETEF starts rolls off, forward contact volumes may be in place and negotiations for remaining volumes consistent with achieving a neutral portfolio will be advanced. This market price discovery process should represent the foundation for setting the Energy Purchase Cost Allowance (EPCA).

Section	Key Recommendations
5. Review and periodic adjustment	• The methodology paper provides no reasons to conclude that retailer initiated periodic reviews as described by the AEMC are inconsistent with the Review objectives or otherwise undesirable. • A similar mechanism is already in place under the VTPA that apply to retail gas prices offered by standard NSW gas retailers. IPART should use the special circumstances provisions of the gas VTPA as the starting point for the design of a periodic review. • Consistent with the reference to actual forward hedge costs in setting the *ex ante* EPCA, the periodic review should be based on quantifying the difference between expected and actual forward hedge costs, rather than relying on a re-run of pricing simulations. The hedged portion should be based on the market price discovery process or actual market prices. • The threshold trigger for the review should be set relative to the energy trading risk capital or 'volatility allowance' discussed under the retail margin in section 7. This means that, the lower the capital base on which the margin is calculated, the lower the threshold for a retailer initiated periodic review. It also means the method for estimating the level of trading risk capital needs to be transparent and should relate to the financial impacts of movements in the cost of new contracts relative to the retail margin.
6. Establishing the retail cost allowance	• There are a number of developments that are more likely to result in upward rather than downward movement in the future required ROC allowance. These include the cumulative effect of climate change policies and a possible decision to proceed with smart metering in 2012. Accordingly, it is proposed that the price path should allow for real increases in ROC per customer or cost to serve. • While it is important to avoid double counting, CARC has a capital as well as an ongoing operating cost component. This suggests the methodology for calculating CARC should be applied both to ROC and to ROM.
7. Establishing the retail margin	• Benchmark ROMs need to be calculated against realistic and evidence-based estimates of COGS. If COGs has been under-estimated, so too is the required margin. • The expected returns approach is valid and useful. However, as the starting point is a given regulated retail price, there remains a risk that under-estimation of COGS elsewhere in the methodology results in an underestimation of the margin. • The bottom up estimate should be based on an assessment of the capital base required of a standard retailer on a stand-alone basis post-ETEF. Accordingly, provision should be made for fixed and working capital. Importantly, provision should also be made for energy risk capital underpinning the current "volatility allowance". • Provision should also be made for the key retailer asset – the customer base. In this respect the 2007 and earlier electricity retail price decisions made by Essential Services Commission of South Australia (ESCOSA) are relevant in that they included an allowance for the value of the existing customer base. • The bottom up estimate of required capital should be sufficiently transparent so that it can be linked to the trigger for a retailer initiated periodic review.

Section	Key Recommendations
8. Discount rate assumption	• The proposed discount rate does not take into account CAPM parameter estimation error and CAPM model error. Given the asymmetric social costs of error in estimation of the cost of equity, a significant increase in the discount rate is required. Rather than the midpoint of the range identified, a point above this should be selected. Then an additional margin should be introduced in recognition of CAPM model error. .

2. EFFECTIVENESS OF METHODOLOGY SINCE 2007

Country Energy suggests the proposed methodology outlined in the draft discussion paper represents an extension of the methodology applied during the current Determination. Its key feature is that the regulated retail price path rests on simulations of forward wholesale electricity market prices.

A significant difference between the current and proposed methodology is the indication that changes could be made to the periodic reviews of the EPCA. Country Energy welcomes this possibility and discusses the merits of retailer initiated reviews later in this submission.

In order to assess the suitability of the proposed methodology going forward, it is useful and indeed necessary to start with an assessment of actual outcomes since the draft methodology was implemented in 2007, compared with the criteria for the present Review. If the methodology were fit for its intended purpose, then the experience since 2007 would have included significant and measurable progress toward the following objectives, as articulated in the Terms of Reference for the present Review:

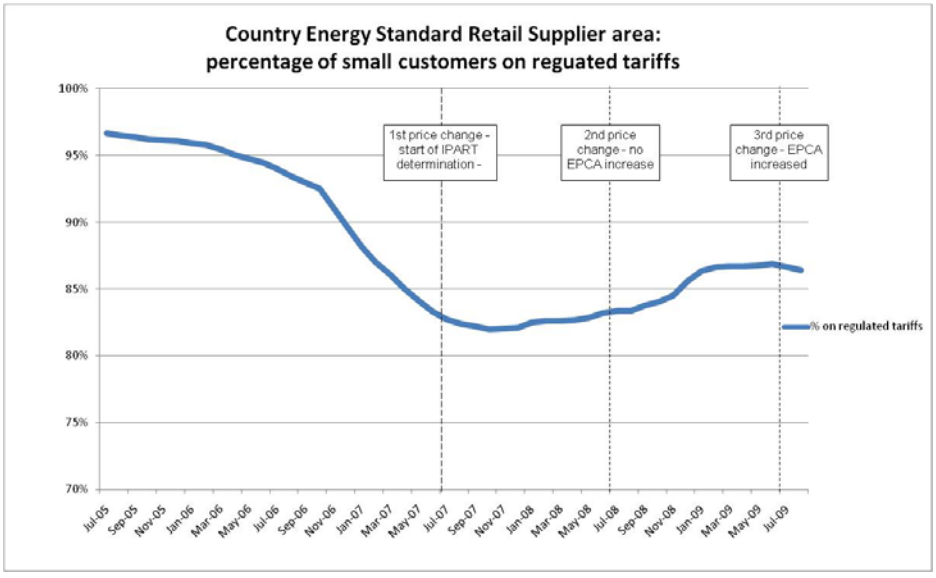
- Customers would reduce their reliance on regulated retail tariffs;
- Retail competition would continue to develop;
- Regulated retail prices over the period would be fully cost reflective; and
- The viability of Standard Retailers would be sustained.

The remainder of this section compares these objectives with observed outcomes.

Reliance on regulated retail tariffs

Figure 1 below illustrates the proportion of consumers electing regulated tariffs versus negotiated tariffs in Country Energy's Standard Retail supplier area.

Figure 1 Changes in proportion of regulated and non-regulated customers in Country Energy's Standard Retail supplier area



These data demonstrate that, since the 2007 Determination, reliance on regulated tariffs in Country Energy's area has increased rather than decreased.

Development of retail competition

While there are many indicators of retail competition, one indicator is the proportion of the mass market customer base that has moved to new entrant retailers.

Figure 2 below shows the total number of mass market retail consumers in the Country Energy Standard Retail supplier area between mid 2006 and mid 2009. It demonstrates that, since mid 2007, the regulated customer base has grown faster than the overall customer base.

Figure 2 Numbers of small customers on regulated tariffs, negotiated tariffs with Country Energy and on negotiated tariffs with other retailers.

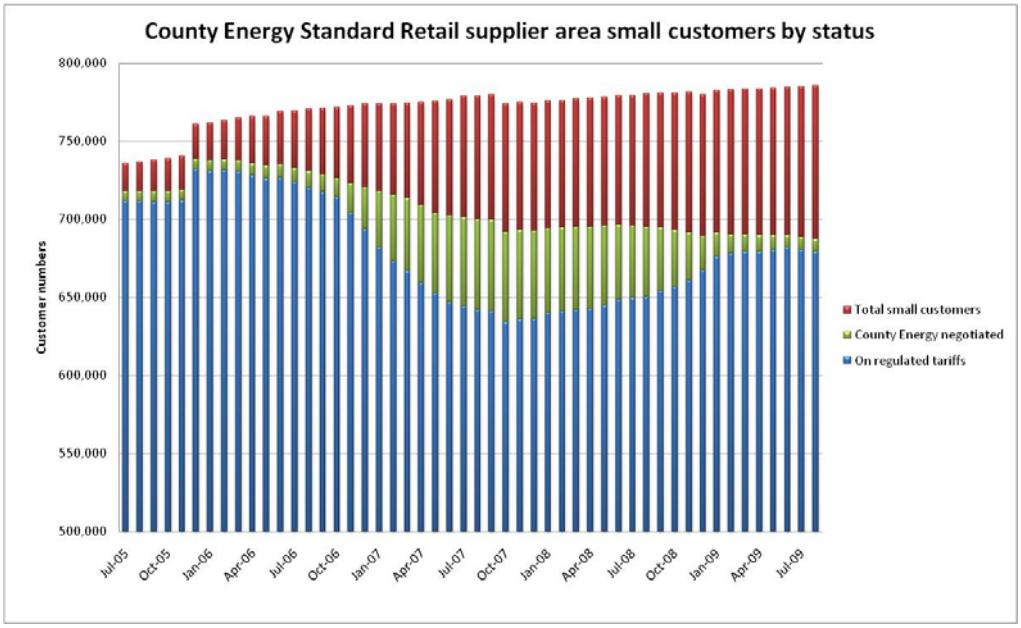
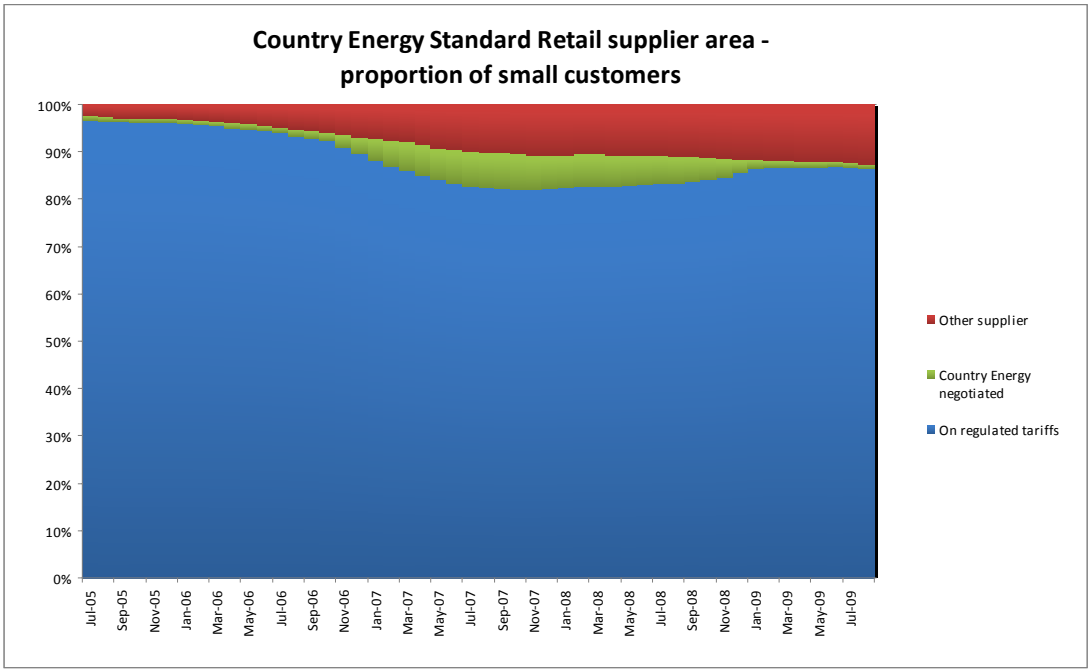


Figure 3 below provides data shown in Figure 2 above on a percentage basis. This demonstrates that the proportion of the total mass market customer base on regulated tariffs has increased since 2007.

Figure 3 Changes in proportion of regulated and non-regulated customers in Country Energy's Standard Retail supplier area

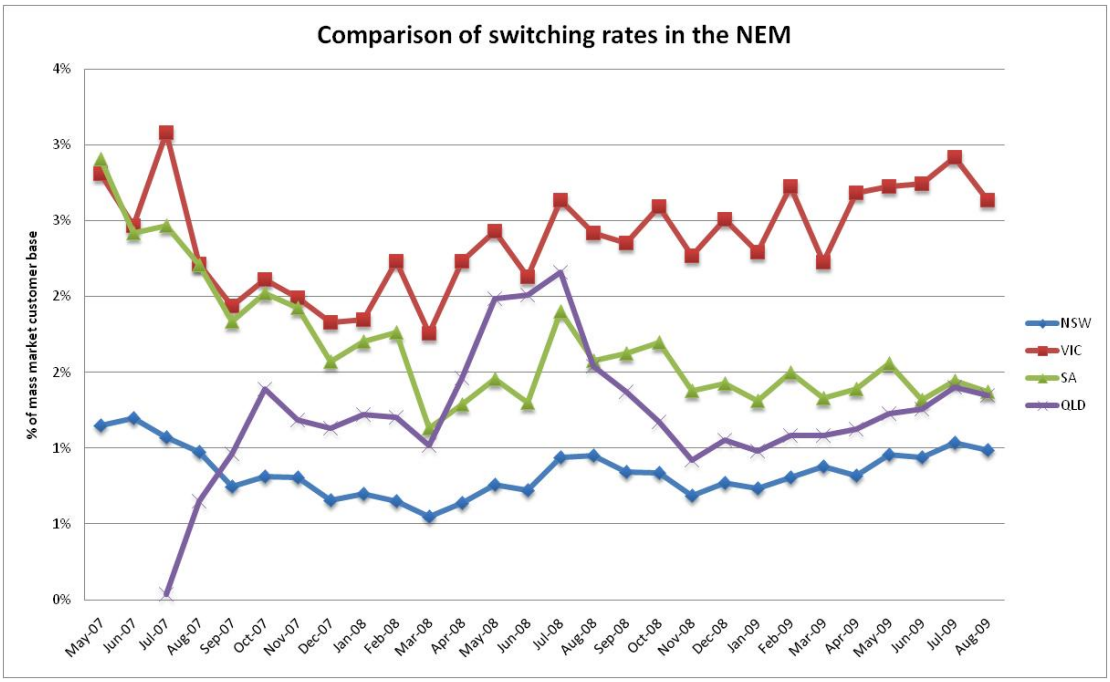


Country Energy notes the Australian Energy Market Operator (AEMO) data suggest that new entrants have steadily increased their share of the Country Energy Standard Retail supplier area customer base. In Country Energy's view, this may reflect decisions by some retailers to "buy" customers by offering discounts against the regulated price. Country Energy is unable to match offers with negative margins, which explains the decline in the green area of the graph.

Country Energy acknowledges that retail competition is relatively muted in its Standard Retail supplier area. This reflects a number of factors including the relatively dispersed nature of much of the customer base. The available AEMO data suggest that customers in NSW, overall, are less likely to exercise the option to switch retailers and there has been little or no improvement since 2007. Figure 4 below compares customer switching rates in NSW with other states in the National Electricity Market (NEM) that have opened their retail markets.[3]

[3] Tasmania is the only NEM jurisdiction that has yet to open its retail markets.

Figure 4 Comparison of switching activity in major NEM markets



Source: AEMO retail transfer Statistical Data

NSW has languished in terms of switching rates throughout the period since shortly before the 2007 Determination. The period covered by the above switching data includes the step change in wholesale electricity prices in 2007 in response to the drought, and reductions in available generation capacity and output. These switching data indicate that, while retail market activity might have reduced in 2007 across the NEM, NSW has consistently exhibited lower levels of retail market activity.

Note that NSW data also includes the ACT which is not subject to IPART retail price regulation. It is possible that, excluding the ACT, NSW data may indicate switching rates that are lower than indicated above.

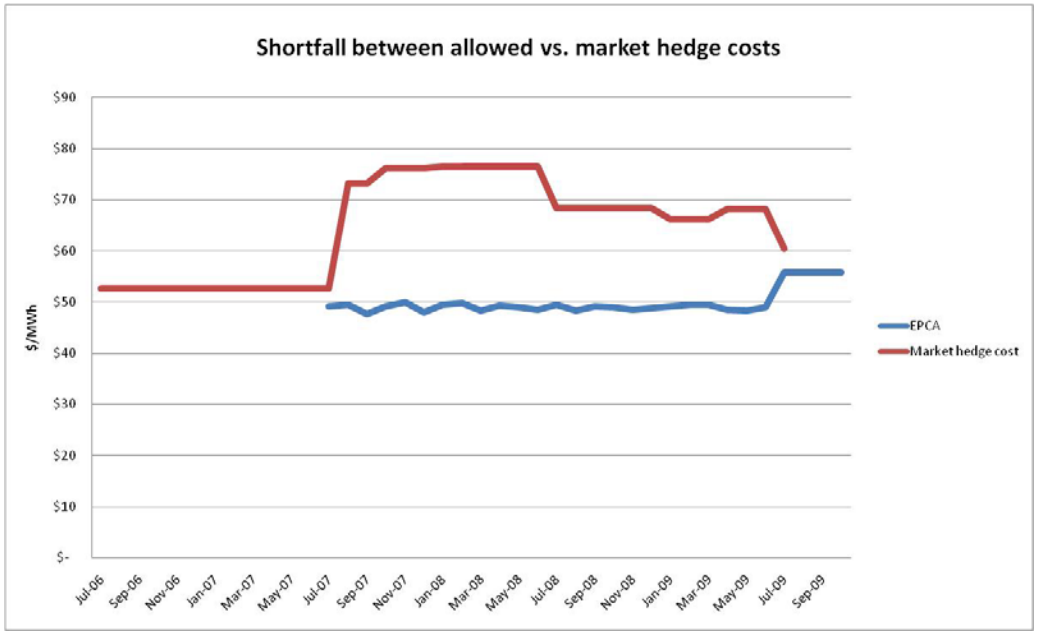
Cost reflective regulated retail prices

Against a background where the bulk of the customer base in NSW remains on regulated tariffs, the difference between regulated retail prices and cost reflective prices is unlikely to be observable. This is because a below cost regulated price tends to "crowd out" any higher cost reflective retail prices offered on the open market. For example, Country Energy ceased to offer non-regulated retail contracts following the 2007 decision because it could not obtain supply contracts at or below the EPCA.

Switching data summarised above showing movements back onto regulated tariffs and relatively low levels of switching activity, strongly suggest that other retailers were also unable to match the EPCA and hence regulated retail tariffs were below cost-reflective levels.

Figure 5 below plots the EPCA against the purchase cost of new forward contracts for the Country Energy Net System Load Profile (NSLP) for the period covering 2007 to mid 2009. This highlights the fact the EPCA based on simulated market prices was set substantially below actual market prices for the period since the 2007 Determination.

Figure 5 Comparison of the EPCA and the wholesale cost of retail offerings through the 2007 - 2010 determination period



The review and subsequent adjustment to the EPCA earlier in 2009 resulted in some convergence between the allowed and forward market supply cost.[4] Nevertheless, these data suggest IPART's 2007 Determination did not achieve the stated objective of achieving cost reflective retail prices.

Financial viability of Standard Retailers

The difference between the average allowed and average market unit cost of purchasing energy to meet the Country Energy NSLP since July 2007 is substantial, as indicated by Figure 5 above. In addition, the volume of electricity sold under regulated tariffs over the period since July 2007 is also substantial. Accordingly, the overall shortfall between the regulated allowance and the market hedge cost is likely to have been large relative to Country Energy's allowed retail margin for the period.

For example, a $5 per MWh average adverse difference between the allowed and actual electricity purchase cost is equivalent to around $26 million per annum for 2009-2010. This compares with current allowed retail margins for Country Energy of approximately $51 million per annum.

This suggests that, but for the deferral of the start of the phased roll-off of ETEF to mid 2010, Standard Retailers would have substantially under-recovered the actual costs of meeting their standard retailer obligations. This clearly shows that in the absence of the extension of ETEF, the 2007 Determination has not been consistent with the objective of maintaining the viability of retailers.

Finally, it should be noted that, to the extent generators were obliged to make up the shortfall in regulated retail prices via the ETEF arrangement, this was a disincentive to new generation investment, the necessity for which was signalled by the rise in wholesale prices. This highlights the point that non-cost reflective prices in

[4] Note that Country Energy is not suggesting the EPCA should have been set at the red line. It does suggest the EPCA and adjustment processes should have reflected the red line to the extent new forward contracts at higher prices were reasonable and efficient relative to a pre-existing forward contract portfolio. This is explained in the following sections.

the period 2007-2010 may be placing upward pressure on wholesale prices for the period 2010-2013. This is another potential source of error in relying on a hypothetical, simulated approach.

Implications of retail market rigidities, such as inappropriate retail regulation

Against this background, the AEMC's observations in its Second Interim Report for its Review of Energy Market Frameworks in light of Climate Change Policies (henceforth the Second Interim Report) are relevant:

> *'for competition to be effective retailers must be able to charge cost reflective prices to end use customers. If regulated retail prices are kept too low, development of competition will be hampered.'*[5]

The AEMC made the following comment in the context of any failure of regulated retail prices to reflect higher input costs following the implementation of new climate change policies:

> *'A cost/price squeeze of this type, if sustained and significant, could potentially cause a retailer to face financial distress. Further, if prices are restrained below real costs by regulation the effect will be to dampen competition in a market. Other retailers will not be able to match the regulated price and will either exit the market or fail to enter it. Neither outcome is desirable for the development of vibrant, competitive, efficient markets.'*[6]

Taking all of the points above, Country Energy concludes that the draft methodology needs to be modified to meet the objective for the present Review. Accordingly, IPART should consider options to enhance and modify the draft methodology. Country Energy proposes enhancements to the methodology are required. These proposals are discussed in the sections below.

[5] See AEMC 2nd Interim Report – Review of Energy Market Frameworks in light of Climate Change Policies at page 50.

[6] Ibid.

3. REQUIRED ENHANCEMENTS TO METHODOLOGY

As discussed in section 2 above, the outcomes since 2007 indicate that Government and IPART objectives have not been achieved. Country Energy therefore wishes to describe an effective and practical set of *enhancements* to the draft methodology for the setting of future regulated retail prices. The following key enhancements are proposed:

1. The price path reflects actual forward retailer costs, rather than simulated costs, for the portion of expected load where the cost is known and hedged, *ex ante*. This would be subject to tests that forward costs are efficient and the product of genuine arms' length price discovery.
2. To the extent the price path relies on estimates of the forward costs for the portion of load that is not known and hedged, these estimates are based on:
    a. the equivalent hedged forward cost (from (1) above);
    b. publicly observable market quotes for equivalent forward costs; and
3. Simulations of market outcomes for equivalent forward costs. Proposed enhancements to the EPCA are outlined in general in the remainder of this section below. They are then discussed in detail in the following sections.

Assessment of approaches identified in methodology paper

The methodology paper suggests there are two main approaches available for setting the forward EPCA *ex ante*. It can rest either on:

a) Simulated forecasts of forward energy purchase costs, based on a series of assumptions and predictions about the future state of wholesale markets over the price control period; or

b) Observable market data published by the d-cypha Trade of the traded and quoted value of certain forward hedge instruments.[7]

The methodology paper observes that the second option does not provide an accurate indication of forward wholesale prices over the price path period.

Futures contracts such as those traded on d-cypha Trade offer a limited avenue for hedging forward supply cost risk and forward price discovery. The price of a futures contract at any point in time reflects the collective view of participants in the market and, if there is sufficient liquidity, it offers a ready way to adjust small risk positions. The prices discovered in the futures market are likely to reflect underlying fundamental trends even though the day by day prices capture swings in expectations.

There are some shortcomings with futures contracts, including, the d-cypha Trade contracts, where an electricity retailer seeks to substantially hedge their load. The commencement dates for exchange traded futures contracts are fixed. Parties trading futures contracts are required to meet cash deposits and margin calls. Prices can move readily and volumes are small compared with Country Energy's load so they are unsuitable for anything other than adjusting an existing hedge position.

Country Energy's mass market annual load is in excess of 6,000 giga Watt hours (GWh). This creates a very large exposure to future electricity spot prices that can vary between -$1,000 and $10,000 (soon to be

[7] See details of this public information at: http://www.d-cyphatrade.com.au/market_futures

$12,500) per mega Watt hour (MWh). The value at risk from such exposures can easily exceed retailer margins per unit of electricity sold, which may be less than $15 per MWh.

For a stand-alone retailer (without direct access to generation), with a modest mark up on each unit of electricity sold, the only realistic approach to manage their forward supply cost risk is to enter over time into a series of forward contracts, usually with generators. These contracts lock in the forward price for predetermined volumes of future electricity purchases for each trading interval within a defined period.[8]

In aggregate, forward contracts or "hedges" lock in the forward price of electricity purchase costs, thereby providing a level of certainty over future supply costs provided there are no significant load shape and volume variations.

Country Energy suggests that a stand-alone retailer with Standard Retail obligations is required to enter into forward contracts that fit its load shape and location, are priced competitively with a secure counterparty and consistent with approved risk limits. These requirements are likely to result in bilaterally negotiated contracts rather than large volumes of contracts purchased over d-cypha Trade. Accordingly, Country Energy agrees that d-cypha Trade data has limited usefulness for the purposes of the present Review.

The methodology paper concludes that the proposed simulated approach is the only remaining alternative. Under this approach, there is no reference to actual market data.[9] Country Energy suggests there are also shortcomings with the simulated approach.

- As noted earlier, the simulated methodology as implemented in the periodic adjustment mechanism in 2008 did not produce CRRP. Specifically, the simulated methodology did not account for the step change in wholesale and retail prices associated with the drought and generation outages.
- The simulated approach assumes a retailer's hedge book is empty at the start of a price control period and is fully hedged for the full duration of the determination period at one time. This is unrealistic and therefore results in mis-pricing of actual hedge costs because:
    - A retailer's actual hedge costs for a given period relate to rolling hedge costs from hedge contracts entered into, often many years earlier;
    - The approach fails to account for dynamics and uncertainties being priced into the market at the time hedges are entered into; and
    - In the event where the whole book is hedged at one time (e.g. in anticipation of the phased ETEF roll off) the volume involved is of such scale that the only reliable price is the price available in the market at the time (this is addressed further in Section 4 below).
- The limitations of simulated approaches to pricing, especially in relation to derivatives or forward contracts, have been revealed by a series of bankruptcies and bail outs of major financial institutions in recent times.[10]

Country Energy suggests that, if the purpose of the methodology is to derive cost-reflective prices then, in order to be fit for purpose, it must refer to the prices contained in forward supply contracts. The methodology

[8] Accordingly, these contracts are often referred to as 'hedges' in that they protect the counterparties from the uncertainty in corresponding physical or spot prices. This highlights that in entering into forward contracts, an efficient electricity retailer is not attempting to arbitrage forward spot prices.

[9] See the descriptions of model inputs in the supporting reports by the IPART's consultants, which make no reference to observable market prices.

[10] See 'How did economists get it so wrong?' which includes a discussion of the shortcomings of financial models such as the Capital Asset Pricing Model – an article by Nobel prize winning economist Paul Krugman available at http://www.nytimes.com/2009/09/06/magazine/06Economic-t.html. Similarly, approaches that rely on the Efficient Market Hypothesis have also been implicated in major bankruptcies. See for example a recent article in the Economist Magazine entitled: "*Efficiency and beyond*", dated July 16th 2009 and available at: http://www.economist.com/displaystory.cfm?story_id=14030296

paper suggests the only available options are reliance on public market data or simulated market outcomes. Country Energy suggests this is a false dichotomy and that there is a third option. Moreover, this third option is superior to the two alternatives canvassed by the IPART from the perspective of NSW Government and IPART objectives for the Review.

Third option for consideration by the IPART

The third option is to refer to observable, non-public data for actual forward hedge costs over the price path period. This option can be illustrated by a simplified example of a retailer forward contract book below. This highlights that the cost of the bulk of forward purchases over a three year period is observable because hedged instruments are in place.

Figure 6 below is a diagrammatic representation of the proposed market-based approach which shows the portion of forecast load with contracted hedge cover out for three years.[11] For illustration, the forecast retail load is 100 per cent hedged in the first year (T1) 2/3 hedged in the second year (T2) and 1/3 hedged in the third year (T3).

Figure 6 Stylised picture of a standard retailer's forward hedge position

The price for T1 can be based on the price for committed forward prices. The price in T2 is a combination of committed forward prices and forecasts of forward prices that will prevail when those hedges are entered into.

The central point is that an efficient standard retailer will have committed forward hedges in place for a significant proportion of its forecast hedged sales. The unhedged balance reflects uncertainty over the future level of regulated customers and hence regulated loads.

The purpose of hedging is to avoid the exposures associated with future rises in wholesale hedge or pool price exposures relative to a retailer's hedged sales. A prudent retailer will have a risk management policy that prescribes the limits within which it must hedge. In most cases this will extend out to the last year the retailer has commitments in place (whether these are on the supply or the buy side of the hedge book).

For a Standard Retailer of Country Energy's size, a five dollar or approximately 10 per cent adverse movement in total forward hedge costs for a single year for the small customer base would result in reduction in the ROM

[11] Note this illustration is highly stylized. For example, the neutral position is likely to have a higher proportion of hedged load than depicted here. It is likely a prudent retailer would hold forward hedge contracts whose duration extends beyond three years. It is also possible that a small portion of the forecast load for period T1 may still be unhedged at the start of that period. See discussion on the last point below.

of around $26 million.[12] This compares with an allowed ROM of around $51 million, implying the actual margin would be only 54 percent of the allowed margin.

Other things being equal, therefore, a $5 per MWh increase in the forward electricity supply cost would result in a $25 million revenue shortfall. While this may be sustainable for a single period, if repeated, it would be detrimental to a retailer's financial viability. It may be unable fully to meet its commitments to its suppliers, including suppliers of debt and equity capital.

Risks and uncertainties with hedging

Figure 9 shows the effect of matching or hedging the total volume in T1. That volume is made up of energy including any other obligations such as, Extended Renewable Energy Target (scheme) (ERET), Energy Savings Scheme (ESS) and in future CPRS related instruments.

Even if a standard efficient retailer establishes what appears to be a fully hedged position for the year ahead in terms of total volume, there will be imperfections in that position leading to some residual price risk to the extent the position is not exactly matched half hour by half hour.

The only truly fully hedged position is where a retailer purchases a whole of meter or load following contract. With that hedge the retailer pays a fixed price for the metered volume. Unsurprisingly a hedge with that flexibility and where all volume risk remains with the generator is very expensive.

Hedges otherwise tend to be fixed volume, fixed price contracts. Any retailer will have optimised the contracts available, their price, the match with their load shape and location, and a view as to the tolerability of the residual risk that remains.

There are two key residual risks:

- actual load is significantly higher or lower than forecast load against which hedges were purchased. This is the result of significant demand shifts or net customer switching; and
- the shape of the load varies significantly from the shape of the hedges purchased.

Where actual load varies from the levels hedged or load patterns do not match the shape of the actual hedge book the retailer faces, the spot price in those trading periods and the risk can be significant. This risk is the reason why the use of caps has developed.

At the time a retailer enters into a forward contract there will be a premium in the price of the forward contract over the equivalent forecast of spot prices. This premium is the cost of replacing a floating price with a fixed price. The seller requires a premium for absorbing that risk. The amount of the premium will vary depending on the probability of spot (floating) prices rising - i.e. the premium is not a constant and it may defy modelling because it may simply reflect the perception of spot price volatility held by generators at any one time.

The premium and the variability of the size of the premium do not detract from the imperative for a stand-alone retailer to hedge. As long as the contract offers certainty and the retailer can achieve the margin required, then payment of that premium is efficient. The residual risk from managing a mass market retail load is discussed in later sections but for the purpose of this section, the level of hedging will be driven by the merit of reducing exposure to possible spot price volatility. Spot price risk is asymmetric (i.e. prices can vary between -$1,000 and $10,000 (soon to be $12,500) per MWh) so retailers may tend to over hedge rather than under hedge.

As discussed earlier, in the case of a stand-alone retailer (without access to generation), with modest allowable mark ups on each unit of electricity sold, Country Energy submits the efficient and indeed only reasonable option is to reduce exposure to levels consistent with the allowed mark up, even if this is more

[12] This assumes a 5 percent allowed ROM on total revenue of around $1 billion and total sales of around 5,264Gwh. For reference purposes, following IPART's 2009 review of EPCA for 2009/2010, a 10 percent increase relative to the EPCA is around $5.50 per MWh.

costly than potential alternative approaches. The IPART Draft Methodology refers to portfolio theory or the CAPM as a basis for discriminating between allowable and non-allowable forward contract premia. Country Energy notes the market imperfections that require forward contracting in currencies, interest rates and electricity hedges are assumed not to exist in the CAPM, as the risks against which hedges are entered into are diversifiable.

This means *any* incremental expenditure to manage future electricity purchase uncertainty is value destructive under the hypothetical construct posited by the CAPM. Accordingly, portfolio theory cannot offer any insights in terms of determining a prudent level of forward hedging against future purchase price uncertainty.

Country Energy submits that the EPCA should reflect the necessity of a conservative approach toward managing exposures to forward supply costs. To adopt alternative approaches based on hypothetical constructs is unlikely to result in CRRP.

For the reasons explained above, an efficient Standard Retailer will seek to put in place a hedge portfolio whose overall duration is *neutral* with respect to movements in forward hedge prices.[13] The risk of having to sell at lower prices due to competition or to buy hedges at higher prices as a result of cost pressures always exists. The retailer will seek to avoid speculating on future increases or decreases in hedge prices, typically setting their hedge book up to reduce their exposure as much as possible. This usually means locking in a significant proportion of forward hedge costs on a rolling basis. Conservative retailers tend to buy forward hedge contracts with a series of expiration dates so their exposure to movements in forward hedge contract prices is reduced. Having a book made up of contracts with different durations also reduces the exposure to having to hedge large volumes at one time.

The concept of a retailer facing future hedge contract costs during the determination period would always apply where a retailer has anything other than a fully hedged book across the next three years notwithstanding the imperfections discussed above. In the case of IPART's 2010 – 2013 Determination this exposure is especially acute as the market waits to learn of the exact form that the CPRS will take. Hedge prices may be quite volatile as the market comes to understand the effect of the CPRS and take account of it in their forward prices.

From the discussion above, IPART's two approaches should apply only to the uncontracted portion of the forecast load. Country Energy agrees that both the simulated and the public market data approaches are relevant to *ex ante* forecasting of the future cost of the currently uncontracted portion of the forward retail book. It is likely that CPRS related instruments could be quite volatile. It is also likely that the interaction between the CPRS instruments and "black" energy could result in some unanticipated developments. This makes the provisions for periodic adjustment especially critical for this Review.

County Energy would caution IPART itself from speculating on whether new forward contract costs in future will rise or fall, relative to the equivalent actual forward contract price. This suggests that, in the absence of strong evidence to the contrary, a principle of inertia should apply. Under this, forecast new forward hedge costs for period T2 (see Figure 6 above) would be based on the corresponding actual forward hedge cost for period T2. What happens by the time T3 rolls around may be the subject of review.

Ongoing contracting requirements

To the extent that the later years of the hedge book are not fully hedged, an efficient Standard Retailer would have an ongoing hedging program. As hedges are entered into, the unhedged part of the book covered by the

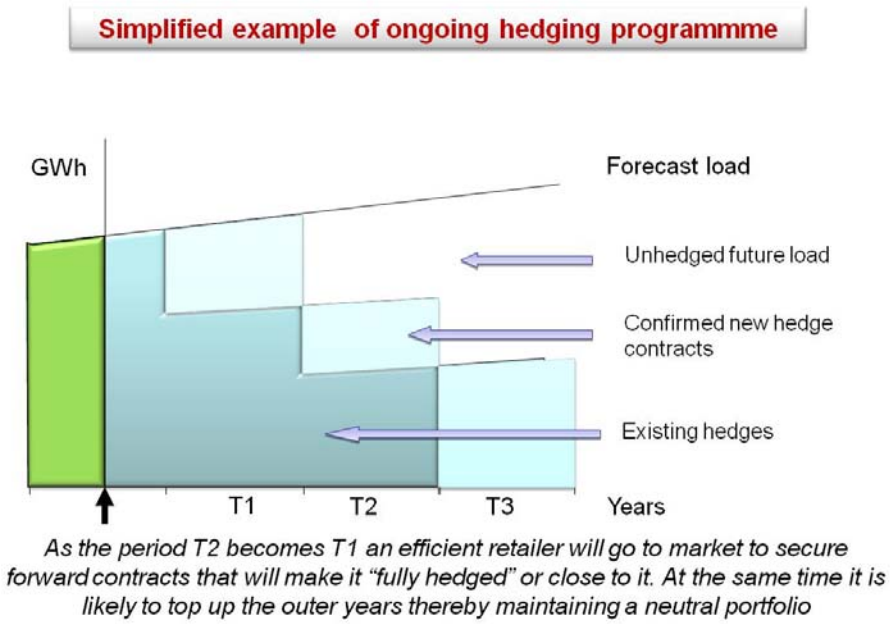
[13] A neutral position at a given point of time refers to the average *duration* of a range of potential forward contract portfolios which share a common feature, which is that they do not constitute speculation on whether future contract prices will increase or decrease relative to market contract prices at the given point in time. A neutral portfolio can be contrasted with a "long" portfolio which may be reasonable if it were known that future contract prices would increase, or a "short" portfolio which may be reasonable if it were known that future contract prices would decrease. A neutral portfolio may therefore reasonable in a state of uncertain knowledge over future market conditions and forward contract price changes.

determination period reduces.[14] The possibility remains that *forecast* forward hedge prices and actual forward hedge prices entered to in the future could diverge. This reflects:

- the effect on costs and retail prices of new regulatory measures (especially CPRS as discussed above); and
- movements in forward retail and hedge prices for the period between the decision around March 2010 and June 2013.

The process of refreshing the hedge book to maintain the risk position is illustrated in Figure 7 below.

Figure 7 illustrating the effect of pre-existing hedges versus hedges being acquired in the current market and future contracting required



As the period T2 becomes T1 an efficient retailer will go to market to secure forward contracts that will make it "fully hedged" or close to it. At the same time it is likely to top up the outer years thereby maintaining a neutral portfolio

The stylised chart shows the effect of the retailer seeking substantial new hedges for T2 as that period approaches and becomes the new T1. At the point where firm quotes are received for T1 the situation is as follows:

- The hedge price of the whole book for T1 will be a combination of price of pre-existing and new hedges.
- The price for T2 will be a combination of the price for pre-existing and new hedges, and to the extent there remains any unhedged portion, forecasts for forward prices at the time that load needs to be hedged consistent with the risk policy.

[14] The term 'actual forward' is used to refer to committed or actual forward prices of hedges for a given period in the future – for example period T2. The term 'forecast forward' is used to refer to forecast hedge prices for period T2. Finally, the term 'new forward' is used to refer to actual future hedge prices for period T2. From this it may be seen that, even though all forward hedge prices relate to period T2, there are potentially three forward hedge prices in relation to that time. Indeed, given that prudent retailers have rolling hedge portfolios, retailers actual hedge costs for period T2 will be a weighted average of numerous hedge prices.

Availability and reliability of forward price data

Under the proposed third approach, Country Energy recognises that judgments are necessary in determining whether actual forward hedge costs are efficient. The key considerations in judging whether actual forward hedge costs are efficient include whether the:

- rolling forward contract portfolio represents a neutral position with respect to future wholesale market conditions;
- the portfolio is constructed against competent forecasts of future customer numbers, taking into account reasonable expectations of net losses or gains from switching;
- load shape of the hedge portfolio is consistent with competent forecasts of load shapes over the period, taking into account industry norms for load forecasting accuracy; and
- prices of hedge contracts entered into represent the outcome of genuine arm's length purchases.

In judging the efficiency of forward hedging costs, some optimisation is possible in the event there is evidence that, for example:

- Hedging diverged materially from a neutral position;
- Hedging did not reflect net customer transfers; or
- There is a substantial shortfall or excess relative to the forecast load shape.

Country Energy suggests the onus for "optimising" standard retailer hedge and other input costs (i.e. not allowing for their full recovery in regulated tariffs) should be set high in recognition that:

- Retail market competition provides a remedy for inefficient hedging; and
- To the extent optimisation results in non-recovery of hedged purchases, there is an adverse outcome in terms of retailer viability.

Section 5 below discusses the threshold for a retailer initiated periodic adjustment.

Evaluation of proposed market based approach relative to Review objectives

The central concept underpinning the proposed enhancement to the draft methodology is to incorporate observable and hence verifiable market data into the methodology. These data relate to the actual or unavoidable costs of forward contracts incurred by a prudent retailer in relation to a given period within the overall price control period.

Country Energy submits that the ex ante EPCA has to be based on actual forward market data, if the EPCA (and hence the price path itself) is to be set on a cost reflective basis. Reference to actual hedge costs substantially reduces mis-pricing risk and increases the reliability and predictability of regulated price outcomes relative to market price outcomes over the price control period. Conversely, reliance on simulated market outcomes as a substitute for actual retailer costs inherently conflicts with the objective of CRRP.

Country Energy agrees that references to simulated market data may be relevant for the un-contracted portion of forecast load. However, it cautions against regulatory decisions that are equivalent to speculating that the cost of new hedges for the ex ante unhedged portion of forecast load will increase or decrease.

The same approach would apply to a review of prices within the determination period. This suggests an inertia principle may be applicable, in which case the cost of new hedge costs would be extrapolated from the costs of corresponding existing forward hedge contracts.

While it acknowledges reference to non-public data in setting the EPCA may be criticised on the grounds of reduced transparency, Country Energy suggests these disadvantages are outweighed by the advantages when viewed against IPART's objectives.

If IPART were concerned that it did not wish to undertake the role of verifying non-public market data, a possible alternative would be to create an expert panel. The panel would be tasked with establishing what prices generators would sell hedges at in reality given the market circumstances, the uncertainties at the time and the volumes of sales to be hedged.

The proposed methodology is consistent with the terms of reference for this Review. Further, Country Energy suggests that it will be significantly superior to the proposed methodology in terms of the key objectives of achieving CRRP, facilitating competition and reducing reliance on regulated retail tariffs, while preserving the financial viability of Standard Retailers.

Precedent for reference to actual cost data in gas retail pricing

Country Energy notes there is a precedent for an approach that relies on actual rather than simulated energy costs under the VTPA that apply to retail gas tariffs offered by standard gas suppliers in NSW. On 5 May 2008 Country Energy submitted a proposal for increases to regulated gas tariffs effective from 1 June 2008, under special circumstances provisions. Under these provisions the retailer is obliged to give IPART four months notice of price increases. However, IPART agreed to undertake an expedited review of Country Energy's proposals.

In considering Country Energy's proposal IPART relied on commercially sensitive non-public information supplied by Country Energy and did not conduct public consultation. It sought advice with respect to the following issues:

- Verifying the claim that Country Energy would not be able to meet its forecast maximum demand over winter in the absence of securing additional gas supply and transportation contracts;
- Assessment of the costs of the winter gas, including examining whether as a prudent and efficient retailer, Country Energy sought the most competitive gas supply contracts;
- Assessment of the increased transportation charges, including examining whether as a prudent and efficient retailer, Country Energy sought the most competitive gas transportation contracts;
- Whether the methodology used to calculate cost-reflective tariffs is reasonable; and
- The allocation of the increased costs for winter 2008 between the tariff and contract markets.

In response to a similar proposal for increasing regulated gas tariffs from AGL Energy (Submission to IPART 17 January 2008) IPART also assessed the costs of securing new supplies in making its decision.[15]

The key point for present purposes is that in the case of considering a proposal to increase future gas retail tariffs, it appears reference to simulated gas costs and gas retail prices was not attempted in response to either Country energy or AGL Energy's claims. Instead, IPART relied on verifiable but non-public market data relating to actual forward energy costs.

15 IPART Regulated gas retail tariffs Financial Decision and statement of reasons, March 2008

4. ESTABLISHING THE ENERGY PURCHASE COST ALLOWANCE

In section 3 above, Country Energy set out a proposed modification to IPART's proposed approach to setting the *ex ante* EPCA for a prudent retailer at both the point of the original Determination and as the basis for any review. Country Energy acknowledges that the roll-off of ETEF to commence from 1 July 2010 introduces a complication to this approach for the 2010 – 2013 Determination.

Country Energy also acknowledges that the methodology outlined in section 3 did not attempt to address the realities of acquiring reliable data on the forward costs of hedging Standard Retailer's exposures with respect to the CPRS, ERETS and ESS.

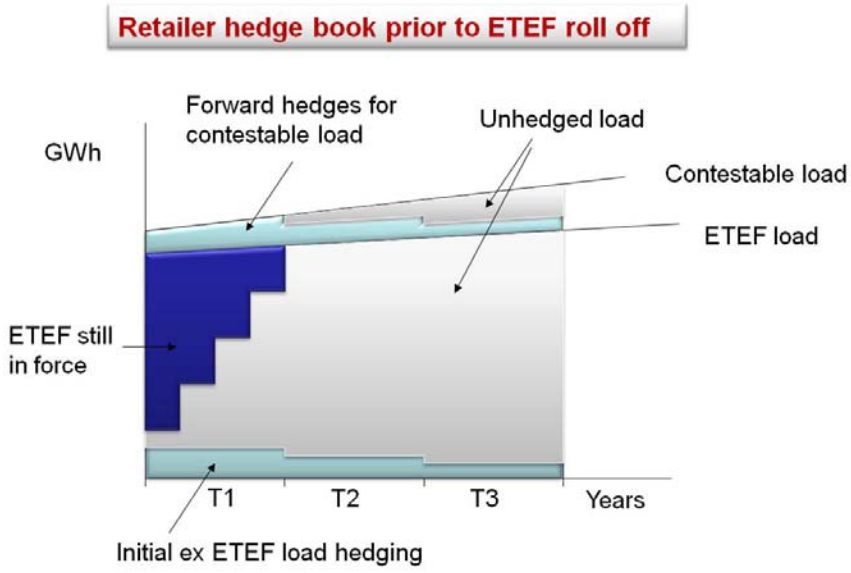
In this section Country Energy sets out practical proposals for price setting, given that:

- Data on actual hedge costs post-ETEF will have to reflect procurement of a substantial hedge position to achieve a neutral hedge book; and
- Data on actual costs of meeting ERET and CPRS costs will be limited due to regulatory uncertainty.

ETEF transition

The ETEF transition is depicted in Figure 8 below. This illustrates that at some point well before ETEF rolls off; it is possible a substantial portion of the post-ETEF load is not covered by committed forward hedge contracts. Hedging the ex ETEF load for three years is not an insignificant prospect. The market data approach outlined in section 3 above only deals with situations where there are pre existing hedges so it would require modification for the 2010 – 2013 Determination.

Figure 8 ETEF transition



Forward wholesale electricity prices covering the ex ETEF load for the majority of the price control period will be observable and verifiable at the time decisions on the regulated price path are taken by IPART. Put simply when ETEF starts to roll off from 1 July 2010, Standard Retailers are likely to have commenced to secure forward contracts to meet internal risk limits.

Well before the ETEF begins to roll off on 1 July 2010, and hence before IPART's 2010 Determination, a standard retailer may have advanced the process of securing hedge contracts to a point where IPART will be

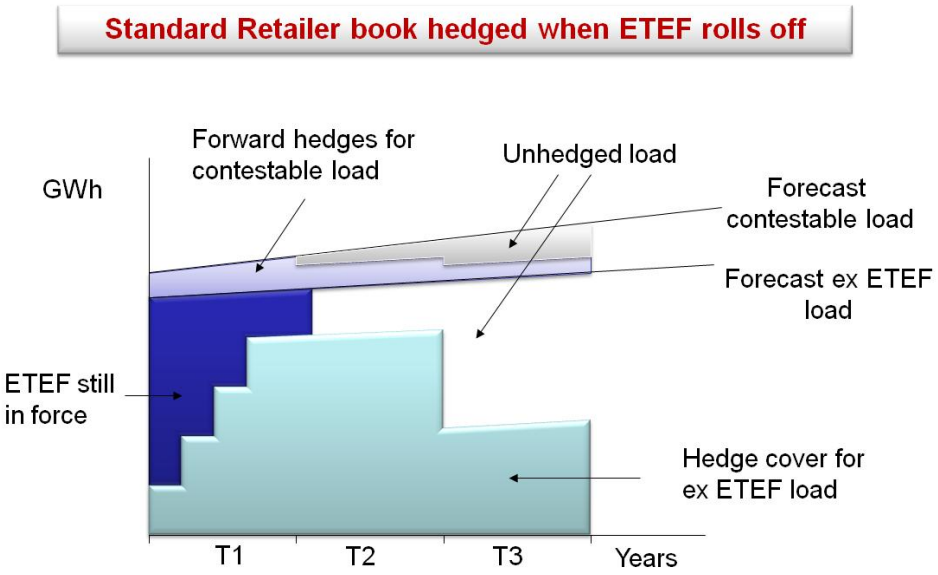
able to rely on these prices rather than simulated prices. Those prices will take into account the size of the load, uncertainties in the market, the shape of the load versus the generation availability and any other market dynamics. Thus the methodology set out in Section 3 could be applied using the same principles with an approach that specifically addresses the situation in 2010.

Given the scale of the task the process for covering such a large load may commence with an expression of interest from generators that would provide some early price indications. While these prices would not be binding they would arguably have as much veracity as a simulated approach and may be available before the draft Determination.

With respect to the remaining unhedged portion of the forward book, under Country Energy's proposed enhanced approach, simulated hedge costs could be developed as a means of testing forward market based prices.

This situation is illustrated in the following stylised diagram:

Figure 9 Stylised picture of a hedge book some time before ETEF roll-off



Hedge cover shown here as ex ETEF load would be hedged in one contract or a small number of contracts. This stylised illustration does not necessarily reflect a neutral position in T2 and T3

Country Energy submits that the enhanced methodology proposed in sections 3 and 4 will produce a better result than the two potential approaches canvassed by IPART. This is because the methodology would set the EPCA with direct reference to actual costs not simulated costs. Reference to actual costs will better achieve the objective of cost-reflectivity.

5. REVIEW AND PERIODIC ADJUSTMENT

IPART's options for periodic adjustment

Country Energy agrees with IPART that a mechanism for periodic adjustments to the regulated price path is essential to the achievement of Review objectives. A well designed, adjustment process minimises the costs and risks of rigidities in retail regulation.

As discussed in section 3 this is especially important for the 2010 – 2013 Determination with the introduction of CPRS in that period. As noted by the AEMC:

> *"The level of new wholesale prices will depend on the future carbon price and the emissions intensity of the marginal plant. These impacts are likely to be mitigated to some extent or at least delayed, as a result of the slower start to the CPRS and with the fixed permit price for the first year."*[16]

This uncertainty will flow directly through to hedge contract prices and, in turn, is of direct relevance in the assessment of a cost reflective EPCA. Depending on when the CPRS legislation and supporting regulations are finalised, some discovery of CPRS related costs may be possible before the final determination. However, new markets can often exhibit higher levels of volatility than mature markets and this is likely for CPRS impacts on retail electricity pricing.

The methodology paper suggests there are two alternatives for periodic adjustments of the regulated price path:

a) A retailer initiated periodic adjustment as outlined by the AEMC[17] . This is represented as a Retailer determined price change which is reviewed by IPART only at the end of a price control period.

b) A regulator initiated review. Under the methodology as currently proposed, Country Energy understands this means the *ex ante* simulation of future forward hedge costs would be replaced with an updated simulation of future forward hedge costs.

IPART points out there are difficulties with a variation from the AEMC's retailer initiated option where there is a significant delay between the price adjustment and the review of the price adjustment by the regulator. On this basis, IPART suggests a regulator initiated review is preferable.

Country Energy's proposed third option for periodic adjustment

There is another option supported by Country Energy, one that also appears to be favoured by the AEMC – a retailer initiated adjustment with timely regulator review.

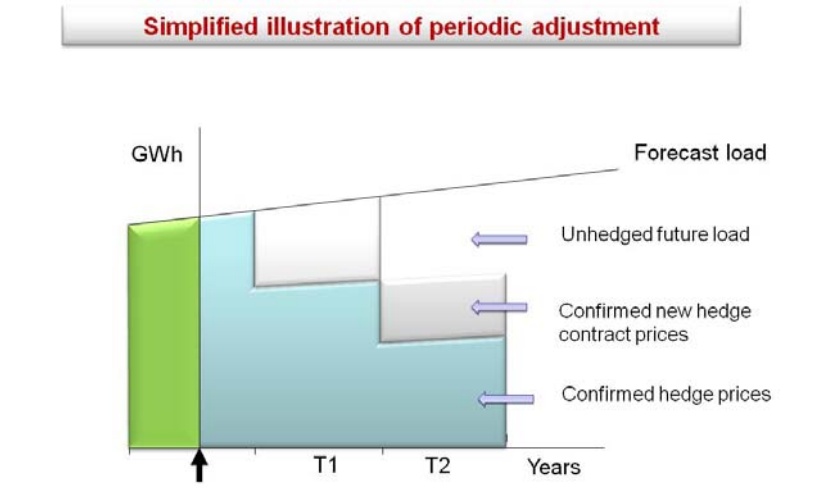
As noted in section 3 above, this option has already been provided for and indeed implemented under the VTPA that apply in gas. Country Energy believes the approach used in NSW gas retail price regulation under the VTPA special circumstances provisions could be equally applicable to the process for periodic adjustments of electricity retail tariffs.

In reality, retailers will have hedged future forward contracts in place for some period in advance of the time when any increase in the cost of new hedge commitments results in a material increase that would need to be recovered from customers in the form of higher retail prices. This is illustrated below.

16 See AEMC 2nd Interim Report – Review of Energy Market Frameworks in light of Climate Change Policies. 30 June 2009 page 9.

17 AEMC Op. Cit. The AEMC reports it is of a mind to recommend to the MCE that all jurisdictions retaining retail price regulation should have developed an adjustment mechanism for energy and carbon related costs which "optimally can be initiated by retailers where costs are rising."

Figure 10 Stylised picture of trigger for retailer initiated periodic adjustment



As the period T2 becomes T1 the retailer will be able to confirm the actual cost of the hedges for T1 and verify whether the threshold is triggered. For T2 there will be three possible hedge prices: previously confirmed hedge prices, confirmation of new hedge contracts for T2 and forecasts of the cost for hedging the remainder.

In this case the evidence that a breach of the threshold for a periodic review is observable data for both T1 and T2 (assuming a retailer initiated review falls within the first year of a three year determination period).

In the July Issues paper, Country Energy agreed the periodic adjustment should be symmetrical. This means if prices are set appropriately *ex ante*, there is approximately an equal chance for the regulated price path to increase or decrease.

Threshold for retailer initiated periodic review

The simplified illustration highlights that the proposed market based methodology substantially increases the predictability of the threshold for the EPCA component of the periodic adjustment. The only price uncertainty would relate to the portion of load in T2 that would remain unhedged. The trigger for a review could account for this by being quantified in terms of the variance between forecast hedge costs and future forward hedge costs for the tranche of hedges in question. With respect to "black energy", there would be two main components:

- the percentage or $ per MWh variance; and
- the volume (MWh or $million) variance assuming maintenance of a neutral hedge position.

The impact of these changes would be diluted by the pre-existing forward contacts taken into account in the *ex ante* price path. Hence, the reset retrigger would relate to the incremental effect of new forward contracts on the aggregate forward contract portfolio.

Given that some lead time is available, before the new forward contracts affect forward supply costs for a given period, the retailer could inform IPART, well in advance of the point at which it would seek to modify retail prices, that the threshold for a periodic adjustment had been triggered. The Retailer could present the following information:

- the percentage or $ per MWh variance;
- the volume (MWh or $million) variance while maintaining a neutral hedge position;
- the value of variances between forecast and contracted "green" energy purchase costs;
- the incremental impact on aggregate forward contract costs;

- the consequential change required to retail margin (see section 7 below);
- the proposed change in the regulated retail price; and
- the date from which the proposed change would apply.

Accordingly, IPART would be able to identify any queries or concerns it had with the retailer's proposals. If necessary, it could issue an instruction to the retailer to vary its proposals.

In the event that regulated retail prices for some customers were raised by the retailer before it received any instruction from IPART to implement a variation to the price change, this could be implemented promptly in the following billing cycle. Consequently, the cause for IPART's concerns regarding elapsed time would not arise.

Summary of Country Energy's proposals for periodic review

As new supply commitments for both "black" and "green" energy are entered into after the final Determination, it will be possible to reliably quantify whether there is a variance between the forecast and actual cost of these commitments. This enables a threshold for a periodic review of the price path to be set depending on the extent such variances are catered for in the allowed ROM.

This implies that, for every $1 increase in the allowed margin above a minimum base-level, there would be a $1 unit increase in the trigger for a periodic review. This ensures that the review trigger is set so that it is consistent both internally within the regulatory package and with the objective of maintaining the viability of Standard Retailers. Extension of a 10 per cent threshold as a trigger for periodic review would therefore imply a significant additional increment in the allowed ROM.

The proposal for a verifiable review trigger eliminates the possibility of a repeat of the 2008 regulator initiated periodic price review where the supply cost variance was measured by reference to updated market simulations, not to variances between forecast and actual supply costs.

Country Energy recognises that its proposed approach relies on non-public market data, both for *ex ante* price setting and periodic review purposes. While this has drawbacks in terms of transparency, these are outweighed by the clear advantages in terms of achieving 2010 Review objectives. Country Energy notes that the VTPA governing retail regulation of gas in NSW refers to actual rather than simulated costs, with respect to the Special Purposes provisions.

Country Energy suggests there is no sound basis for concluding that a retailer initiated periodic review, described as "model 2" in the AEMC June 2009 Second Interim Report[18], is inconsistent with Review objectives, or otherwise undesirable. The Special Circumstances provisions in the VTPA governing gas retail regulation appear to provide an existing model that provides timely IPART review of any retailer initiated proposals for periodic review.

Country Energy suggests that the proposed approach is consistent with and indeed advances the NSW Government's objectives for the present review. It will ensure that forward retail prices will continue to be cost reflective and move predictably in line with significant movements in underlying costs.

[18] See page 56 of the AEMC 2nd Interim Report – Review of Energy Market Frameworks in light of Climate Change Policies dated 30 June 2009

6. ESTABLISHING THE RETAIL COST ALLOWANCE

Country Energy notes the draft methodology proposes to apply both benchmark and bottom up approaches to estimating retail cost allowances. These allowances would cover both ROC and CARC. IPART's proposed approach is to base its bottom up cost estimates on forecast costs and customer numbers provided by Standard Retailers, taking into account the fact some costs are fixed while others are variable.

Country Energy notes that a significant portion of a Standard Retailer's cost base is effectively fixed for the duration of the price control period. Accordingly, IPART's proposed approach of taking the existing cost base into account is reasonable. Country Energy notes this approach is similar to the market based approach Country Energy has proposed for the estimation of the EPCA.

Country Energy wishes to make three main points in relation to the ROC.

Outlook for level of required ROC

IPART considers the only material uncertainties associated with forecasting ROC over the 2010 price control period relate to the management of bad debt. Country Energy agrees there is a significant uncertainty on this point, which reflects uncertainty over the price path due to regulatory and related changes that are likely to occur over the period. In this respect, Country Energy suggests it may be appropriate to develop a formula for setting the allowance for bad debts. This would be consistent with efficient debtor management but would reflect changes in the value and possibly incidence of bad debts in response to any substantial increases in retail prices in response to climate change policies.

The Utilities Industry Work Group (UIWG) has developed a methodology for estimating efficient benchmarks for utilities, covering 14 Australian utilities operating mainly in water and energy sectors. A key benchmark indicator developed by the UIWG is bad debt as a percentage of total billings for small customers. Country Energy suggests that such an indicator could be incorporated into the regulatory package.

Country Energy suggests that the combined effect of expected regulatory changes intended to address climate change could have significant implications for the scope of standard retailer functions and hence cost to serve per customer (C2S).[19] Some of these costs are capital in nature and will be addressed in the following section.

Changes likely to result in upward pressure on C2S include:

- the cost of developing and implementing systems for managing CPRS, Mandatory Renewable Energy Targets (MRETS) and the ESS;
- the retail component of trials of smart metering technology and tariffs in the lead up to the expected final NSW Government decision on smart metering in 2012;
- depending on decisions taken in 2012, the cost of developing and implementing systems for the introduction of smart metering and associated time sensitive tariffs, including critical peak prices, and
- the cost of developing and implementing systems and processes to meet new or changed obligations under the National Energy Consumer Framework (NECF).

On the assumption that future regulated tariffs are consistent with Review objectives, it is reasonable to expect there will be significant levels of switching away from regulated tariffs. It is also reasonable to expect

19 C2S is derived by dividing ROC relating to mass market customers by the number of mass market customers. This enables C2S comparisons to be drawn for benchmarking purposes.

that a significant portion of switching will be to other retailers. Accordingly, Country Energy's regulated customer base can be expected to decline over the 2010 price control period. Given that a significant portion of ROC is fixed for the price control period, this is likely to create further upward pressure on C2S.

In light of the potential regulatory and other changes outlined, and the consequent upward pressure on C2S, Country Energy suggests that IPART reconsider its initial conclusion that ROC will largely be fixed in real terms for the duration of the 2010 price control period. Consistent with the Review objectives, IPART could consider:

- Building in a real increase in the *ex ante* C2S allowance; *or*
- Incorporating an additional component in the *ex ante* Retail Operating Margin Allowance to reflect C2S upward risks; *or*
- Extending scope of the retailer initiated periodic adjustment to incorporate movements in C2S.

Country Energy looks forward to working with IPART to ensure that appropriate adjustments can be made for both ROC and CARC which are consistent with the Review objectives.

7. ESTABLISHING THE RETAIL MARGIN

Section 2 of this submission demonstrated that the simulated approach to assessing the key component in COGS in the draft methodology has resulted in a regulated price path that has not adequately reflected a Standard Retailer's efficient costs. Country Energy suggests that the draft methodology for estimating the ROM also contributes to regulated retail prices that are below cost. Accordingly, enhancements to the ROM component of the methodology are required alongside the other changes articulated earlier in this submission.

The draft methodology proposes retaining the 2007 methodology which applies three approaches to setting the forward ROM:

- An expected returns approach which estimates the expected cashflows that a retailer will earn inclusive of an allowance for systematic risk;
- A bottom up approach which starts from an assumed investment base to which a capital charge is applied using a weighted average cost of capital (WACC); and
- A benchmarking approach based on the reported margins for listed energy utilities in Australia and elsewhere.

Top down approaches

The expected returns and benchmarking approaches can both be characterised as top down approaches. There is no reference to the quantity and cost of capital inputs.

Country Energy agrees top down approaches are valid and relevant. However, it considers there are risks with these approaches and that a bottom up approach is likely to be superior in the present context.

In the 2007 decision, the retail margin was determined to be 5 per cent of allowed Earnings Before Interest, Tax, Depreciation and Amortisation (EBITDA) and included in the "R" values in the weighted average price control formula as a fixed real dollar amount for each year of the determination period. There was no provision for this amount to be reviewed or updated, for example as part of the periodic adjustment mechanism.

Earlier sections of this submission demonstrated that the 2007 methodology resulted in substantial under-estimation of retailers' COGS, and in particular the EPCA. Because COGS forms the bulk of the denominator for the margin calculation, the estimated required ROM based on the benchmarking approach will also be under-estimated.[20] While Country Energy agrees the benchmarking approach is valid, it emphasises the risk with over-reliance on this approach in the context of potentially inaccurate estimates of COGS.

Similarly, Country Energy recognises that an expected returns approach has merit, it is concerned that this method is also reliant on the potentially inaccurate estimates of COGS. This is because the modelling of expected cash-flows takes as its starting point a given price.[21] Accordingly, there is a risk that the expected returns approach could amplify any inaccuracies in the estimates of COGS.

[20] Allowed COGS is equal to allowed ROM minus allowed ROC. Alternately, the allowed ROM is equal to allowed revenue at forecast sales volumes for the weighted average price basket, minus COGS plus ROC.

[21] See SFE Op Cit at page 12. Country assumes that in this context the term "price" refers to a retail price.

Bottom up approach

Country Energy's concerns with the two top down methods for calculating the ROM highlight the importance of using a bottom up approach that reflects efficient input costs. In principle the bottom up approach uses the same building block method applied to network regulation. This implies estimating the value of an efficient asset base and then applying an estimated WACC to derive a capital charge or 'cost of capital'.

This highlights the point that the purpose of the retail margin allowance is to compensate for the opportunity cost of capital an efficient and prudent retailer requires in order to meet its retail commitments. Country Energy suggests that, for the retail margin to be cost reflective, it needs to address the quantity of capital as well as the WACC.

While the draft methodology and supporting consultant reports include an extensive discussion of the risks a retailer faces, there is less discussion of the quantity of capital a prudent, efficient retailer requires. The consultant report on ROM refers to the possibility of estimating the quantity of capital a retailer requires by applying a market value using benchmark customer, volume and book value multiples.[22]

Country Energy agrees that reference to recent transactions may provide indications of market views as to the expected value of future earnings per customer or unit of sales volume. It considers this approach is relevant to the top down approaches discussed earlier. However, it does not appear to constitute a bottom up approach as this requires an estimation of cost inputs, in this case capital inputs. In respect of the 2010 Review, these cost inputs relate to a retailer with Standard Retailer obligations, rather than a theoretical mass market new entrant.

Country Energy notes that its proposals to quantify the asset base are consistent with the methodology applied by ESCOSA in its 2007 Determination. In that Determination, an asset base was calculated for the purpose of estimating a bottom up required margin, alongside the top down or benchmarked estimate.

Country Energy also notes its proposals regarding the asset base are consistent with IPART's intention not to include "headroom" in the regulated price path. It agrees the allowed ROM should be limited to compensation for efficient capital costs.

Unlike a generation or network owner, a retailer's capital cost represents a relatively small portion of their overall input costs. Country Energy therefore suggests that the degree of effort to estimate the capital base should be proportional to its contribution to the overall cost base. Nevertheless, the bottom up approach should be applied with adequate rigour, consistency and attention to relevant data.

The first step in a bottom up approach is to identify the categories of the assets that need to be financed by offsetting debt and equity capital. Country Energy suggests asset categories include the items set out in the table below.

[22] See SFE Op Cit at page 15 where there is a discussion of estimating the asset base using multiples of customers, book value, and volume.

Asset type	Details	Comment
Fixed assets	Depreciated value of plant, property & equipment	For a typical retailer, information technology systems are likely to make up the bulk of fixed assets
Intangible assets	Depreciated value of the existing customer base	This represents the capital investment to acquire the existing capital base (not already accounted for in operating CARC)
	Depreciated value of the retail brand	This represents the capital invested to create the retail brand, for example advertising campaigns (but not already accounted for in operating CARC)
Energy trading risk capital	The minimum capital required relative to a retailer's forward energy trading risk exposures	The 2007 methodology incorporates a volatility allowance but does not quantify minimum energy trading risk exposures
Working capital	This reflects the lag between payments to suppliers and income from customers	Given a 3 monthly billing cycle under manual meter reading this is significant and also relevant in the context of smart metering

Dynamics affecting capital base over determination period

Country Energy notes that substantial investments in new information systems are likely to be required over the 2010 price control period, in order to comply with new regulations relating to carbon emissions, renewable energy, energy savings obligations and the NECF. It is also likely significant new expanded systems will be required as a result of a move to market settlement using interval rather than accumulation meter data, starting from 2012. Accordingly, IPART will need to form a view about future IT investment levels.

Country Energy suggests that, consistent with the inclusion of CARC in ROC, an allowance for CARC should also be included in ROM. A substantial component of CARC is capital rather than operating in nature. If the capital component of CARC is omitted, then CRRP may not be achieved and new entrant retailers may not be able to compete.

This reflects the fact that a retailer's customer base is its major asset. Just as forward retention and acquisition costs are allowable, so too should the historical cost of customer acquisition.

Country Energy acknowledges that it is important to avoid double counting. Accordingly, previous operating CARC adequately compensated for in previous ROC allowances should not be included in the forward allowed ROM.

Country Energy notes that ESCOSA, most recently in its 2007 Determination, accepted the principle that CARC be allowed in both ROC and ROM estimates.[23] This principle was also applied in earlier determinations.

23 See page A67 of the Commission's 2007 Review of Retail Electricity Price Path Final Inquiry Report and Price Determination, dated November 2007, available at http://www.escosa.sa.gov.au/webdata/resources/files/071130-AGLStdgContract_FinalDecision_Part_A_Public.pdf and page 4 of an August 2007 public (redacted) report to ESCOSA prepared by LECG entitled "SA Standard Contract Electricity Prices: Price Path Review and Inquiry; Summary report on efficient and prudent: Retail Operating Costs and Retail Operating Margin" available at http://www.escosa.sa.gov.au/webdata/resources/files/070824-R-PricePathReviewSummaryReport-LECG.pdf

In the final version of the 2007 methodology, IPART introduced the concept of a volatility allowance which formed a component of the EPCA. This is intended to reflect the "working capital" required to manage non-diversifiable energy trading risk.

However, the method by which the volatility allowance is estimated is not transparent. Country Energy suggests that, in the interests of transparency, the method by which the volatility allowance is calculated should be published, including the quantification of the underlying capital underpinning forward contracting and spot price trading activities. Country Energy suggests this method would be based on energy trading exposures for the uncontracted portion of forecast load, and hence would reflect any step changes in the EPCA over the price control period.

Country Energy emphasises that the balance sheets of existing Standard Retailers should not be relied upon as an indicator of the quantity of energy trading capital required over the 2010 price control period. This is because existing retail balance sheets were formed against the background first of vesting contracts and then the ETEF arrangement. Accordingly, existing balance sheets are unlikely to incorporate the minimum level of capital required by a Standard Retailer.

Working capital reflects a substantial portion of Country Energy's required capital base. Given expected substantial increases in future regulated price paths, reflecting higher energy, network and environmental costs, the working capital requirement will also increase substantially. Given the materiality of this matter, Country Energy notes the draft methodology does not address working capital and trusts this matter will be addressed in the draft and final decisions.

Re-estimation of ROM in retailer initiated periodic adjustment mechanism

The description of the bottom up approach outlined above highlights the point that the quantity of capital required by an efficient retailer is sensitive to the level of the allowance for COGS. In the event the threshold for a retailer initiated periodic adjustment is triggered over the determination period, then two of the four high level asset categories outlined above would need to be reviewed and adjusted in line with the change to the EPCA:

- Energy trading risk capital (or the "volatility" allowance); and
- Working capital.

To sum up, while Country Energy is broadly comfortable with the "triangular" approach to setting the allowed ROM, it notes there are limitations with "top down" approaches. Such approaches calculate the allowed ROM as a mark-up on the COGS.[24] This means there is a risk that, as was the case under the 2007 methodology, if COGS is under-estimated, so too is the required ROM.

This highlights the importance of applying a truly "bottom up" approach as a cross check for "top down" approaches. Under a bottom up approach, consideration needs to be given to the quantity of capital a retailer requires, including fixed assets, adequate wholesale energy capital, and working capital. In addition, the capital base should reflect the value of the existing customer base, consistent with recognition of CARC in allowable operating costs.

A substantial portion of required ROM is sensitive to changes in COGS. This includes working capital and wholesale energy capital. Accordingly, the scope of the retailer initiated periodic adjustment mechanism should extend to the allowed ROM. This is a pre-requisite for maintenance of CRRP in the event supply costs materially change.

24 The Cost of Goods Sold (COGS) refers to both the 'N' and the "R' components in the price setting formula, but only to the "R' components other than a stand-alone retailers' own operating and capital costs. It therefore includes all energy purchases costs, both "green" and "black", other than the cost of energy capital recovered via ROM.

8. DISCOUNT RATE ASSUMPTION

The draft methodology paper includes an appendix with a brief discussion of the discount rate assumption to be used. This sets our IPART's preliminary view that the commercial WACC for electricity retailers is 8.7 per cent.

In this section Country Energy takes the opportunity to comment on issues relating to the discount rate assumption used in calculating the required retail margin. It also comments on the limitations of the CAPM with respect to IPART decisions on the efficient level of forward electricity contracting.

An estimate of the cost of equity by use of the CAPM is subject to two sources of error – parameter error and model error. The possibility of these errors is important as estimates as the social cost[25] of underestimating a regulated firm's cost of capital is likely to be significant and greater than the social cost of overestimating it.

IPART estimates the parameters of the CAPM as a range of values and thus, by implication, recognises the uncertainty surrounding estimates of WACC by use of the CAPM and thus the possibility of parameter error.

The CAPM reflects the benefits of diversification and thus has intuitive appeal. It is commonly used by companies, analysts, and regulators. A model such as the CAPM is an abstraction from reality that is intended to be analytically tractable and yet capture the key features of the world it attempts to describe. While the CAPM is accepted as being the best available model for estimation of the cost of equity, there is growing evidence in the finance literature that the CAPM does not fully capture the true costs facing a company when making investment decisions. That is, use of the CAPM may result in model error as in the real world there are significant departures from the assumptions of the CAPM that are likely to result in understatement of the true cost of equity. The significant departures are:

- Market frictions;
- Timing flexibilities; and
- Firm resource constraints.

Market frictions

Real world market frictions can take a variety of forms including funding constraints, financial distress costs, information asymmetries, and regulation. They impose additional costs and constraints on the raising of capital that are not accounted for in the assumptions underlying the CAPM and thus the WACC calculation. Overall, market frictions do not affect the rate of return required by the market on a particular investment, but they do affect the value of the firm's other projects and growth opportunities, which needs to be reflected in the cost of capital employed by the new project above its direct costs.

Market frictions may impact on the overall cost of capital for the company. When a firm raises capital to invest in a project, especially if the quantum is large relative to the size of the firm, or the risk of the investment is high, this tends to influence the opportunities and cost of capital for the rest of the firm. One example of this is that a firm's debt rating may fall due to the adoption of a particular project and thereby increase the cost of debt for other future projects that the firm may undertake.

Timing flexibilities

When a project commences the firm incurs an additional opportunity cost: the sacrifice of the opportunity (or option) to begin the project at some date in the future. However, the CAPM implicitly assumes that projects are either fully reversible or unable to be delayed. When commencing a project the opportunity cost of the option that is sacrificed is assumed to be zero. But many projects are at least partly irreversible (i.e. have sunk costs) and most can be delayed. For irreversible investments, the ability to delay is valuable because it

25 Social cost is the sum of private and external costs.

allows the firm to gather more information about the project's viability, thereby minimizing the potential for losses and maximizing the potential for profits. When a project begins, however, the opportunity for further delay disappears. This loss of flexibility is an additional capital cost of the project, the size of which is increasing in the specific risk of the project. This additional capital cost manifests itself not through additional capital expenditure on the project, but rather as a reduction in the value of the firm (through loss of the option). Firms require compensation to offset this loss.

Firm resource constraints

The CAPM assumes that firms have unlimited resources. By contrast, Jagannathan and Meier (2002)[26] point out that profitable firms frequently face rationing of managerial talent and organisational capital, simply because they have more desirable projects in the pipeline than they have resources available to execute them. Consequently, commencing a project today may entail sacrificing the option on another project in the future, and this foregone opportunity is an additional capital cost of the current project. Again, the more uncertainty there is about the future project's prospects, the more valuable is the firm's option on it, and hence the greater is this additional cost.

Evidence

There is ample evidence that competitive firms require a significant margin for exposure to risk other than market (systematic) risk and therefore require a minimum-acceptable expected rate of return on investments that exceeds their WACC as based on the CAPM.

The survey literature shows that in capital budgeting decisions, firms employ hurdle rates that are well in excess of WACC. The literature also shows that the CAPM is the dominant basis for estimation of WACC and the reported hurdle rates are thus well in excess of CAPM-based estimates of WACC. Summers (1987)[27] finds that the average hurdle rate used by Fortune 500 firms in the mid-1980s was approximately double the maximum WACC possible for the average firm. Poterba and Summers (1995)[28] report similar findings for Fortune 1000 firms: an average real hurdle rate of 12.2 per cent versus a maximum-possible WACC of 7 per cent. The results reported in Arnold and Hatzopoulos (2000)[29] for a 1997 UK survey suggest an average nominal hurdle rate of 14.6 per cent. The recent study by Meier and Tarhan (2007)30 reports that the hurdle rates used by their sample firms exceed the WACC rates by 5.3 to 7.5 per cent depending on the assumption made on the market risk premium.

The evidence thus supports the view that the return that firms regard (at least ex ante) as commercially realistic is in excess of the CAPM-based estimate of WACC. The size of the margin is uncertain but regulation that assumes it is zero is likely to result in underinvestment in the regulated business as firms will direct their investment expenditure to other areas where anticipated returns reflect a margin over the CAPM-based estimate of WACC.

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26 Jagannathan, R. and I. Meier, 2002, Do we need CAPM for capital budgeting?, Financial Management, vol 31, 55-77.

27 Summers, L., 1987, Investment incentives and the discounting of depreciation allowances, in The Effects of Taxation on Capital Accumulation, ed. Martin Feldstein, Chicago: University of Chicago Press.

28 Poterba, J. and L. Summers, 1995, A CEO survey of US companies' time horizons and hurdle rates, Sloan Management Review, 43-53.

29 Arnold, G. and P. Hatzopoulos, 2000, The Theory-Practice Gap in Capital Budgeting: Evidence from the United Kingdom, Journal of Business Accounting & Finance, 603-626.

30 Meier, I. and V. Tarhan, 2007, Corporate Investment Decision Practices and the Hurdle Rate Premium Puzzle, working paper (available from SSRN), January, 59pp.

Of course, it is possible that behaviour of this sort simply reflects an internal mechanism for controlling overly optimistic cash flow forecasts by managers, or the firm's acceptance of projects riskier than its average. This seems unlikely to be important for at least two reasons.

First, direct evidence suggests otherwise. The margin is likely to be in response to the factors discussed above in relation to incompleteness of the CAPM-based estimate of WACC. There are a number of studies that support that view. Mukherjee and Hingorani (1999)[31] report that the most common reasons for senior management to employ high discount rates are high unsystematic risk, project irreversibility, and valuable future investment opportunities. The first and third of these are consistent with concern about market frictions and future financing costs; the second is consistent with the recognition of timing options. Similarly, Graham and Harvey (2001)[32] find that more than a third of firms adjust their discount rate upwards in response to project-specific risks, and also to non-market macro risks such as interest rates, GDP, and unexpected inflation. Keck, Levengood and Longfield (1998)[33] report that such behaviour is even more prevalent in the firms of smaller countries that are less integrated into global capital markets. Bruner *et al*[34] find firms adjust their hurdle rates for investment-specific risks. Over half of the respondent firms in their survey do, or sometimes do, make adjustments to reflect the risk of individual investment opportunities in their hurdle rates.[35] Froot (1999)[36] examined eight possible reasons for the high implicit discount rates used in the catastrophe insurance industry and concluded that capital market frictions were the most likely reasons. Meier and Tarhan (2007) suggest that unsystematic risk and resource constraints may explain the margin over WACC. Finally, Chirinko and Schaller (2009)[37] go beyond survey research and fit a model of optimal investment to data from a large sample of firms and find that the estimated WACC-plus premium ranges from 1.1 to 7.3 percentage points when firms face only one source of unsystematic risk, and from 13.6 to 33.1 percentage points when there are three unsystematic risk sources.

Second, internal control procedures cannot explain other common firm responses to project-specific risks, the most notable of which is hedging. Electricity retailers engage in hedging but they are not alone. Companies engage in many kinds of hedging including currency and interest rate risks. But hedging cannot be rationalised in a pure CAPM world as the firm would be expending resources on activities that investors could undertake themselves. Hedging only makes sense as a response to frictions in the capital markets.

Adjustment to WACC

As noted above, IPART makes a range estimate for WACC. However, it then selects the midpoint of the resulting range as its point estimate of WACC. Given the asymmetry of the consequences of error it would seem advisable to instead select a point at the high end of the range.

Allowance clearly needs to be made for model error but the challenge in allowing a margin over the estimate of WACC as determined by application of the CAPM is that that the magnitude of the margin cannot be conclusively demonstrated. Analytical finance does not indicate the size of the margin and survey evidence is

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[31] Mukherjee, T. and V. Hingorani, 1999, Capital-rationing decisions of Fortune 500 Firms, *Financial Practice and Education*, 7-15.

[32] Graham, J. and C. Harvey, 2001, The theory and practice of corporate finance: evidence from the field, *Journal of Financial Economics*, 187-243.

[33] Keck,T., Levengood, E. and A. Longfield, 1998, Using discounted cash flow analysis in an international setting: A survey of issues in modelling the cost of capital, *Journal of Applied Corporate Finance*, 82-99.

[34] Bruner, R., Eades, K., Harris, R. and R. Higgins, 1998, Best practices in Estimating the Cost of Capital: Survey and Synthesis, *Financial Practice and Education*, 13-28.

[35] Bruner *et al*, p.18.

[36] Froot, K., Ed., 1999. *The financing of catastrophe risk*. University of Chicago Press.

[37] Chirinko, R., and H. Schaller. 2009. The Irreversibility Premium. *Journal of Monetary Economics* 56: 390–408.

neither extensive nor conclusive. The size of the margin is highly uncertain but a margin of 2 per cent would seem appropriate.

These considerations suggest the proposed WACC is unlikely to be consistent with Review objectives with respect to CRRP. Accordingly, Country Energy suggests that IPART reconsider its initial WACC estimate with a view to better recognising remedying the opportunity cost of capital.