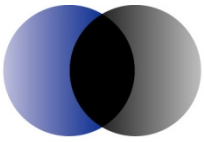
Estimated energy costs for use in 2013-14 electricity retail tariffs

This is a preliminary draft report for use in consultation with stakeholders in the lead up to the Draft Determination on Queensland's retail electricity tariffs for 2013-14

December 2012



ACIL Tasman

Economics Policy Strategy

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1 Introduction

This report sets out ACIL Tasman's proposed approach to estimate energy costs for use by the Queensland Competition Authority (the Authority) in developing retail electricity tariffs for 2013-14. The objective of this report is to provide background material for a workshop and consultation with stakeholders prior to the preparation of the estimates and associated report for use by the Authority in its Draft Determination of regulated retail electricity prices for 2013-14.

The report also considers the submissions made by various parties to the Authority's Interim Consultation Paper, *Regulated Retail Electricity Prices 2013-14* (September 2012) where those submissions refer to the cost of energy in regulated retail electricity prices.

Retail prices generically consist of three components: network costs, energy costs and the costs associated with retailing to end users. This report is concerned with the energy costs component only. In accordance with the Ministerial Delegation (the Delegation) which is attached as Appendix A and the Consultancy Terms of Reference (TOR) provided by the Authority and which is attached as Appendix B, the methodology developed by ACIL Tasman provides an estimate of energy costs to be incurred by a retailer to supply customers on notified prices for 2013-14; i.e. non-market customers. Energy costs comprise wholesale energy costs and other energy costs associated with renewable energy incentives, market fees and ancillary services charges.

1.1 Context

1.1.1 Ministerial Delegation

The Delegation requires the Authority to determine the prices that a retail entity may charge its non-market customers for customer retail services for the three tariff years from 1 July 2013 to 30 June 2016. The Ministerial Delegation as issued to the Authority states:

> I, Mark McArdle, the Minister for Energy and Water Supply, in accordance with the power of delegation in section 90AA(1) of the ***Electricity Act 1994*** (the Act), delegate to the Queensland Competition Authority (QCA) the function under section 90 (1) of the Act of deciding the prices that a retail entity may charge its non-market customers for customer retail services for the tariff years from 1 July 2013 to 30 June 2016[1].

[1] Ministerial Delegation - 5 September 2012 Retrieved 18 October 2012 from: http:--www.qca.org.au-files-ER-NEP1213-QLDGovtDME-Deleg-0912.PDF, p.1.

The Electricity Act 1994 (Act) defines *customer retail services* as,

> *… for premises, means the sale of electricity to the premises.*[2]

The Delegation provides a Terms of Reference to the Authority for the purposes of the Price Determination to be made by the Authority. In particular, item 3 of the Terms of Reference provided by the Delegation states:

> *In accordance with section 90(5)(a) of the Act, in making a price determination for each tariff year QCA must have regard to all of the following:*
>
> *(a) the actual costs of making, producing or supplying the goods or services;*
>
> *(b) the effect of the price determination on competition in the Queensland retail electricity market; and*
>
> *(c) the matters set out in paragraph 5 of these Terms of Reference.*

ACIL Tasman understands that the "goods or services" referred to are customer retail services meaning the sale of electricity to the premises of non-market customers.

1.1.2 Authority's consultant Terms of Reference (TOR)

In accordance with the TOR, ACIL Tasman is required to produce expert advice on energy costs to be incurred by a retailer to supply customers on notified prices for 2013-14. Consistent with the Act and the Delegation, the TOR states that ACIL Tasman must have regard to the actual costs of making, producing or supplying the goods or services. The TOR requires 2013-14 estimates for:

> *(a) wholesale energy costs;*
>
> *(b) the costs of complying with state and federal government policies such as the Queensland Gas Scheme, the Enhanced Renewable Energy Target Scheme and the carbon tax;*
>
> *(c) NEM fees and ancillary services charges; and*
>
> *(d) losses in the transmission and distribution of electricity to customers.*[3]

The words in the TOR, "must have regard to the actual costs of making, producing or supplying the goods or service." are the same as point 3(a) of the Delegation's Terms of Reference, and also are in effect the same as section 90(5)(a) of the Act. As stated in Section 1.1.1 goods and services are understood by ACIL Tasman to be customer retail services for non-market customers or, as it is defined in the Act, sale of electricity to customers.

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[2] Electricity Act 1994 (Reprinted as in force on 23 November 2012), Reprint No. 9E Retrieved 3 December 2012 from http:--www.legislation.qld.gov.au-legisltn-current-e-electrica94.pdf , Schedule 5, p. 418.

[3] TOR, p.1.

The Act and the Delegation require that the QCA, in making the price determination, must have regard to the actual cost of making, producing or supplying the goods or services as well as the effect of the price determination on competition in the Queensland retail market and any other matter required by the Delegation. ACIL Tasman notes that it is tasked with providing expert advice to the QCA on the energy costs to be incurred by a retailer to supply non-market customers. As ACIL Tasman is not making the price determination, it is not required to specifically consider competition in the Queensland retail market or any of the matters set out in section 5 of the Delegation.

1.2 ACIL Tasman's approach to the TOR

ACIL Tasman considers that its task is to provide to the QCA, our best estimate of wholesale energy costs that will be incurred by a retailer to supply customers on notified prices for 2013-14. In establishing the most appropriate methodology for undertaking this task, we have identified and considered a range of approaches which might be used to estimate wholesale energy costs to be incurred by a retailer supplying customers on notified prices for 2013-14.

For the purposes of clarity in undertaking the task, ACIL Tasman is not required *inter alia* to provide expert advice on:

- the effect that the price determination might have on competition in the Queensland retail market
- Queensland Government uniform tariff policy
- time of use pricing
- transitional arrangements.

ACIL Tasman understands that these matters will be considered by the Authority when making the price determination. In particular, this means that ACIL Tasman is required to provide its best estimate of the wholesale energy costs to be incurred by retailers which by definition does not include a margin to ensure that competition is not stymied.

The question as to what constitutes the actual cost of making, producing or supplying customer retail services in the context of customers supplied on notified prices, is left for ACIL Tasman to determine in providing its expert advice.

2 NEM background

This section discusses electricity retailing in the National Electricity Market (NEM) and in particular the price formation process and risk management.

2.1 NEM pool

The NEM is a competitive gross pool market with generators competing to be dispatched and the price set in advance of each five minute dispatch period, in almost all circumstances by the highest priced generator or generators issued with instructions to dispatch[4]. The Australian Energy Market Operator (AEMO) operates the market and the pool price set in each pricing region in each dispatch period reflects the equilibrium or competitive price in each dispatch interval. The spot price received by each generator and paid by each market customer is the price set in each 30 minute trading period, which is the average of the prices in each of the corresponding five minute dispatch intervals.

All NEM generators must sell all of their output to the pool and all customers (including retailers acting on behalf of consumers) must purchase all of their electricity requirements from the pool[5].

Pool price formation is a complex process being dependent on a host of factors including:

- balance between supply and demand
- extent and timing of plant outages (incl. transmission)
- transmission constraints
- generation costs
- weather conditions
- load growth

Uncertainties due mainly to electricity load to be supplied and unplanned outages of plant can cause the pool price to exhibit considerable volatility at

[4] The price in each region is set as the price of supplying one additional MWh of electrical energy. As many of the key constraints formulated in the NEM are a complex combination of generation and demand terms, at times the marginal MWh would be supplied by a combination of generators and hence the price is set as a combination of generator offers to supply.

[5] There are exceptions for embedded generators which are generally small and connected to the distribution network and for generators that are connected directly to end-users. However the vast majority of electricity is traded through the NEM.

times. Managing this pool price volatility is a critical aspect of retailing electricity supplied through the NEM.

2.2 Hedging and other arrangements

Apart from a very small quantity of energy supplied by embedded and non-market generators, retailers operating in the NEM must purchase their energy requirements from the electricity pool. However, as pool prices exhibit significant volatility and retailers are generally required to supply customers at stable prices, NEM retailers face significant price risk. At times, the level of volatility could mean significantly more cash flow required to fund NEM purchases than is received under electricity supply contracts to customers on stable prices.

While this risk could be managed by larger amounts of working capital, holding large working capital reserves that may be used relatively infrequently is expensive. In practice, a better alternative is to hedge the price risk through taking on physical exposure to the electricity pool or by entering into derivative agreements indexed against the electricity pool spot price. As it happens, generators have the opposite price risk profile to retailers as they face pool price exposure on revenues. In general this allows retailers to enter into a wide range of physical and derivative arrangements to manage price risk.

These arrangements typically include:

- acquiring and using own generation
- power purchase agreements (PPAs) or tolling agreements with third party generators
- bilateral arrangements between retailers and generators
- broker arranged over the counter (OTC) contracts (may include a wide range of contract forms)
- exchange traded swap and cap contracts available in the futures market.

Many of these instruments are traded at fixed volumes. Consumer demand for electricity varies across the day, week, season and annually with the variation determined in part by daily usage patterns linked to consumer behaviour, lifestyle and preferences. In addition weather is a significant factor in these variations (heating in winter, air conditioning in summer etc.). Hence electricity retailers also face volume risk. It is unlikely that it is ever cost effective to completely hedge the combination of price and volume risk. In general retailers seek to manage the combination of price and volume risk to an acceptable level of variation (could be measured in terms of revenues at risk, cash flow at risk, or earnings at risk). The residual risk is managed by maintaining appropriate levels of working capital within the business or by having access to short term borrowings which may be accessed rapidly when required.

The prices offered and bid for OTC contracts and exchange traded contracts will be governed by a host of considerations but paramount is the expected pool or market price which the counterparties collectively perceive will prevail for the energy being contracted (volume, shape and tenor). This is because the pool price is the prevailing price available to retailers and generators so and it would make little logical sense to offer and bid prices which are markedly different from the expected pool price level. Contracts, however, may trade at a premium over the expected pool price reflecting a risk premium for price certainty compared with relying on the spot price.

Importantly, given that the prices for the exchange traded contracts and to a lesser extent OTC prices are in the public domain, all NEM participants (including retailers) are able to observe and trade at these prices. ACIL Tasman has periodically compared OTC contract prices with similar exchange traded contracts and found the prices to be generally consistent. This is not unexpected as it would appear logical for participants to give preference to the lower priced instrument where the prices were materially different.

ACIL Tasman acknowledges that price comparisons across instruments are not always simple especially given that the contract product specifications could well be different. For example the exchange traded products are set as quarterly products backed by the futures exchange whereas OTC contracts tend to have a variety of terms, credit quality and more exotic instruments may also provide for collars, and average rate options.

The effective price in the case of a PPA or Tolling Agreement, written to underwrite a new power station, would be expected to be related to the underlying cost of the plant including development costs. Where the process for investing in the plant is subject to competition, the effective price would also be expected to be related to the long run marginal cost (LRMC) of an increment in supply equivalent to the size of the generator. However, the price in these types of contracts would also be expected to be consistent with expected pool-hedge price outcomes over the life of the contract, otherwise entering them would make little sense given that energy would be available out of the market at the prevailing pool-hedge price. The costs involved in investing directly in generation would be expected to face the same disciplines.

The prices found in PPAs, Tolling Agreements and those implied by direct investment in generation provide limited utility in establishing the actual wholesale costs of energy incurred in supplying customer retail services for non-market customers. By their nature these prices or implied prices are long term averages and do not necessarily represent the costs that would be expected to be incurred in any particular year – on some occasions they would likely be well above the expected costs and in other years well below.

3 Retailing in the NEM

3.1 Cost of energy for customer retail services

Apart from minor supplies from embedded and non market generators, retailers operating in the NEM are compulsorily required to acquire all electricity from the electricity pool operated by AEMO. All electricity so supplied is paid for at the pool or spot price. Pool prices can exhibit large degrees of volatility. Hence, these electricity purchases would be expected to be hedged to various degrees[6] through electricity contracts of various forms and tenors or through physical generators owned by the retail entity or controlled through a PPA or Tolling Agreement.

Where a retail entity owns or controls generation, it must be sold through the NEM electricity pool for which it will receive the prevailing spot price. The retailer owned or controlled generators compete with all other generators to be dispatched in each dispatch period, and in this regard they are indistinguishable from all other generators.

The mix of instruments used to cover the pool price and volume risk faced by retailers will vary from retailer to retailer. Larger vertically integrated retailers are likely to rely to varying extents on their own generation while standalone retailers will be reliant on the other instruments including OTC contracts, bilateral arrangements, exchange traded swap contracts and cap contracts and perhaps PPAs to hedge the pool price risk and keep revenue-at-risk at an acceptable level.

The option of using observably priced market instruments to manage pool price risk is available to all retailers whether vertically integrated or standalone. It means that the vertically integrated retailer, if acting rationally in building its vertically integrated portfolio, should have an advantage in that the cost of its own generation would be expected to be no more than the cost of the market instruments. This suggests that the cost faced by a standalone retailer to hedge pool price risk by using market instruments is an appropriate and reasonable methodology for assessing the cost of energy to be incurred by retail entities supplying customer retail services at notified prices. This methodology ensures that the standalone retailer is secure and the vertically integrated retailer is not disadvantaged as it has access to all the same risk hedging instruments as the standalone retailer. In this sense the vertically integrated retailer can be

[6] The degree of hedging depends upon the risk appetite of each participant.

considered to have made a choice to vertically integrate presumably to improve its cost position *vis-a-vis* standalone retailers.

As discussed earlier, retailers would be expected to hedge volatile spot prices through contracts and agreements of various forms and tenors. However, contracts and agreements running over multiple years are typically struck at average prices and do not necessarily reflect the actual cost of hedging in the particular year in question. The forward and futures contract information appears to provide the most unbiased observable estimate of actual hedging costs.

ACIL Tasman understands that retailer risk management policies are likely to require them to build their hedge contract portfolios for a particular year over a period of a few years, depending on the availability of hedge contracts. Hence considering variations in observable hedge contract prices over the period that they actively trade appears to be a reasonable inclusion in the methodology for estimating wholesale energy costs.

3.1.1 Vertically integrated retailers

It follows that where the investment costs of a retailer owned or controlled generator are not competitive with other existing and new entrant generators, either now and/or in the future, the retailer would not expect to achieve an adequate return on the investment, PPA or Tolling Agreement over the life of the asset or agreement, through dispatch into the pool, the sale of hedges or avoiding purchasing alternative hedges and sales to consumers. As is the case for all investors in generation, retailer generation investment decisions are largely irreversible or sunk once committed and the value of the investment will be determined by outcomes in the market over the life of the investment.

Prices within PPAs or Tolling agreements are generally set as averages over the life of the agreements and may include some form of price escalation (generally linked to the consumer or producer price indices) to maintain real returns in each year. Costs may include separate charges for fixed and variable costs. Annualised costs for generator investments also usually reflect the averaging of cost structures over the life of the investment (subject to discounting and price escalation). As discussed above, these long run averaged costs are unlikely to accurately reflect the actual energy costs as incurred through spot and forward markets except as a matter of coincidence.

3.2 Energy costs for customer retail services

This section of the report considers various methods for estimating the actual costs of making, producing or supplying customer retail services (being the sale of electricity to non-market customer premises) in Queensland for 2013-14.

Several methodologies for estimating energy costs for the purposes of setting regulated retail electricity have been assessed by ACIL Tasman, the Authority and stakeholders over the past three years. These methodologies have broadly included:

- market based approaches considering expected future spot prices, forward contract prices or some combination of both
- approaches based on LRMC of generation
- approaches based on the historical costs of generation, PPA or Tolling Agreements
- some combination of the above

In selecting the most suitable methodology, the timeframe over which the determination applies is relevant. The Determination applies for the single year commencing 1 July 2013 and concluding on 30 June 2014.

For the purposes of estimating the actual costs of making, producing or supplying customer retail services, insofar as those costs relate to the wholesale energy costs in a particular year, ACIL Tasman favours a market based approach incorporating observable cost data specifically related to the year for which the determination is to apply.

LRMC as a concept applies in the long run, which is may typically be 25 to 40 years in the context of an electricity generator investment-divestment cycle. LRMC by definition does not reflect the actual energy costs associated with supplying retail electricity services for a one year period only.

The historical generation costs or prices set within PPA or Tolling Agreements to the costs of energy for the purposes of supplying retail electricity services are generally not reflective of the costs that would be expected to be incurred in supplying customer electricity services in any particular year. The return on such investment decisions, which are largely irreversible or sunk, will be determined by outcomes in the market over time. These historical costs or prices are typically based on long run averaged costs and are unlikely to reflect the actual energy costs associated with supplying retail electricity services over a one year period except as a matter of coincidence.

In seeking to establish a methodology that is transparent and that reflects underlying market conditions, a market based approach based on credible expectations about future spot prices and observable electricity forward contract prices for the one year period in question appears to be the most appropriate method to use.

Based on these observations ACIL Tasman believes that a market based approach provides a reasonable estimate for the actual costs of making,

producing or supplying customer retail services (being the sale of electricity to the non-market customer premises) in Queensland for 2013-14.

4 Submissions to the Interim Consultation Paper

ACIL Tasman has considered the submissions to the Interim Consultation Paper, Regulated Retail Electricity Prices 2013-14, September 2012.

As we would expect, given their exposure to the energy cost estimates, the key issues for estimation of energy purchase costs were raised by retailers in their submissions. Customer submissions tended to concentrate on tariff structures, maintenance of uniform pricing and transitional issues.

The main themes in the retailer submissions with respect to energy costs have not changed noticeably since the consultation for the 2012-13 Final Determination and could be summarised as:

- wholesale energy costs should not be lower that LRMC of generation
- pool modelling processes and assumptions should be transparent
- costs of PPA and other hedging instruments should be incorporated
- methodology should provide greater pricing certainty
- need to be sure energy cost estimates are not low.

In general retailers still considered the use of LRMC as their preferred approach to estimating or, at least, providing a floor to wholesale energy costs although none specified how the LRMC should be calculated. As discussed at all stages of the 2012-13 notified tariff review, ACIL Tasman does not regard LRMC as an appropriate approach to estimating wholesale energy cost. In any case, because of an expected oversupply of generation in 2013-14 in Queensland, the LRMC to supply any additional load in 2013-14 would equal the marginal cost of the lowest cost of an existing generator. Being an existing plant, this LRMC would not include fixed or capital and can be expected to be noticeably lower than market based methodology being proposed by ACIL Tasman.

In the interests of transparency for the 2013-14 review, ACIL Tasman will be releasing details of the key assumptions used in its NEM modelling. The *PowerMark* model however is a proprietary product which contains formula and other mechanisms dealing with the construction and transformation of generator offer curves involving an iterative learning process which ACIL Tasman will not be releasing publicly. The *PowerMark* model is regularly calibrated to ensure its settings produce results which are consistent with actual market dispatch and price outcomes.

PPAs and Tolling Arrangements and other similar instruments have not been included in the calculation of the wholesale energy cost because of the

reasoning set out in Section 2.2. Furthermore, information on these arrangements is not in the public domain and as such ACIL Tasman does not have access to such information. Finally, because such information is commercially sensitive, its use would result in a non-transparent outcome.

Pricing certainty year to year is not a feature of the electricity market and as such the market based methodology proposed by ACIL Tasman will exhibit some movement both upwards and downwards in line with the competitive NEM market fundamentals. However, apart from the affect of movements in carbon pricing, over time we would not generally expect to see large upward movements in wholesale energy costs year on year particularly in the immediate three to five years given the subdued forecast of load growth and the current amount of excess plant capacity during that time.

ACIL Tasman understands that there is a degree of uncertainty in its market based approach and there may be some small risk that the actual market costs are higher than its estimate. On this basis ACIL Tasman proposes to use the 95th percentile of hedged prices for the energy cost estimate rather than the median used for the 2012-13 analysis.

5 Market based approach methodology

The proposed market based approach methodology is set out in this section of the report.

5.1 Wholesale energy cost

The proposed methodology is similar to that used for the Final Determination for 2012-13 except that the revised approach incorporates load forecast and other uncertainties in order to minimise any residual price and volume risks in the final energy cost estimates. This means modelling and weighting a variety of load forecast possibilities and using the 95th percentile rather than the median of the resultant hedged prices as the estimate of energy costs. ACIL Tasman has been engaged to provide advice on, and best estimates of, energy costs faced by retailers in Queensland. Consideration of the likely impact of the energy cost estimates and any associated uncertainties on retail competition is specifically excluded from the consultant TOR but, of course, still remains a matter to be addressed by the Authority mainly through its headroom allowance.

The approach is designed to simulate the wholesale energy market from a retailing perspective, where retailers hedge the pool price risk by entering into electricity futures contracts. It involves passing hourly pool prices and load profiles for 462 simulations of 2013-14, estimated using ACIL Tasman's electricity market simulator, *PowerMark,* through a retailer contracting model to estimate wholesale energy costs.

The approach is a simplification of the actual contract market in that it is based on observable prices for base, peak and cap contracts only. It does not include other instruments available to retailers, and about which ACIL does not have sufficient information to use to estimate energy costs, such as purchase of predetermined load profiles and use of own generation. The effects of these simplifications are not able to be estimated, but we consider that a retailer's rationale for entering into more complex hedging arrangements would be because such arrangements would result in lower overall energy costs than the estimates from the simplified contract model – otherwise the retailer would be expected to prefer the simplified contract model.

The approach involves estimating energy costs both before and after carbon pricing. This means that the 11 step process outlined below will be undertaken both with and without carbon pricing.

The market based approach includes the following steps:

Step 1. **Extract actual load traces for three years 2009-10 to 2011-12:** The load traces are extracted from the AEMO published data and include the NEM regional totals, the NSLP and controlled loads in the Energex area and the NSLP in the Ergon area. The Energex NSLP is used to estimate the wholesale energy costs for <100MWh customers for Queensland and unmetered load in the Energex area and the Ergon Energy NLSP is used to estimate the wholesale energy costs applying to unmetered load and >100MWh customers in the Ergon Energy area. The Authority is currently considering the approach to very large non-market customers in Ergon Energy's area which may require extraction of further load profiles.

Step 2. **Develop 42 simulated load traces each representing 2011-12:** Construct 39 simulated load traces (using weather data for 1970-71 to 2008-09) for each NEM region and settlement class (i.e. the Energex NSLP and controlled tariffs and the Ergon Energy NSLP). These simulated load traces are constructed by selecting daily load profiles from three years of actual load data (2009-10 to 2011-12). This is done for each day of the 39 weather data sets by adopting the daily loads (from 2009-10 to 2011-12) associated with the best matching daily temperature profile (given the season and day type) across the NEM. The actual load data (2009-10 to 2011-12) is normalised to the 2011-12 demand levels prior to the matching process being undertaken and these three traces are also used to give a total of 42 load traces representing 2011-12.

Step 3. **The resultant regional load traces are then adjusted to the 2013-14 level by adjusting them to match the 2013-14 demand and energy forecasts from the AEMO 2012 National electricity Forecast Report (NEFR).** The adjustment to match the load forecast for 2013-14 is applied simultaneously across the 42 simulated load traces. Total energy under the aggregate 42 simulated load traces is scaled to equal 42 times the forecast annual energy in each NEM region and peak demand for the 42 simulated load traces is scaled to match the 10 percent probability of exceedence (POE) summer demand forecasts in each region. Similarly, the median of the annual peak demands from the 42 simulated load traces is scaled to the 50 percent probability of exceedence (POE) summer demand forecasts in each region. And, the minimum of the annual peak demands from the 42 simulated load traces is scaled to the 90 percent probability of exceedence (POE) summer demand forecasts in each region. The hot weather experienced early in December 2012 resulted in a Queensland demand of 8,453MW which is well below the AEMO 50% POE medium growth forecast of 9,007MW which may suggest that the medium growth forecast has a lower probability of being actually achieved. AEMO is to release a revised economic forecast later in early 2013 and ACIL Tasman will

examine it see whether a more appropriate load forecast might be applicable for 2013-14. Another approach being considered by ACIL Tasman to incorporate forecast uncertainty, is to duplicate the analysis using alternative load forecasts, such as the low growth AEMO forecast, with the final result based on a sensible probability weightings for the different load forecast.

Step 4. **Develop 11 plant outage simulations for the NEM** - Using binomial probability theory ACIL Tasman has simulated 10 sets of hourly forced outages for each generator unit in the NEM.

Step 5. **Estimate hourly pool prices across the 462 data years:** Estimate 462 years (42 simulated load traces in combination with 11 outage simulations) of hourly prices for Queensland using *PowerMark*, , and the simulated load traces developed in Step 3 and the simulated outages from Step 4 as inputs. Fuel price and other plant cost and other assumptions used in the *PowerMark* modelling are those developed by ACIL Tasman over the past 15 years and are consistent with ACIL Tasman's latest internal Base Case. These assumptions come from a wide variety of sources and are constantly being monitored and updated.

Step 6. **Determine hedging strategy -** Determine an appropriate hedging strategy which a prudent retailer would be expected to use for each settlement class. The hedging strategy involves setting the parameters to calculate the base, peak and cap contract volumes based on the median year. ACIL Tasman proposes using the same strategy as employed for 2012-13. It was shown to remove almost all the price volatility and produced hedged prices which were very stable regardless of the weather and outage conditions.

Step 7. **Determine contract volumes -** Contract volumes are calculated by applying the hedging strategy to a simulated load trace selected from Step 5 which has a peak demand and annual energy very close to the 50% POE peak demand and energy forecast and has an annual load weighted price very close to the median load weighted price across all 462 simulations. Once established, these contract volumes are then fixed across all 462 simulations when calculating the wholesale energy costs. Contract volumes are calculated for each settlement class.

Step 8. **Estimate forward contract prices for Queensland -** Estimate forward quarterly contract prices for base, peak and cap contracts for 2012-13 using forward contract price data from d-cypha Trade. The contract prices are weighted by trade volume.

Step 9. **Estimate energy costs for each of the 462 simulations -** Bring together the contract prices and volumes for the median year with the projected hourly pool prices for the 462 simulations in a contract model and calculate a cost of wholesale energy for each of the 462 simulations.

Step 10. **Calculate the energy costs for 2013-14 -** Estimated energy costs for 2012-13 were taken as the median of the annual energy cost estimates from Step 9. However, in recognition that there are other uncertainties not specifically accounted for in the process and to minimise any residual market volume or price risk, ACIL Tasman suggests using the 95th percentile of the 462 simulated annual hedged prices as the estimate of the cost of energy in 2013-14.

Step 11. **Estimate energy costs for each settlement class -** This is achieved by repeating Step 9 and Step 10 using the same hourly pool prices and contract strategy but with load profiles and contract volumes for each settlement class. For tariffs for all customers <100MWh annual consumption (residential and small business) the NSLP profile will be used. This means that the estimated energy costs are the same for all of these customers. However we note that the Authority is considering how best the estimate the energy costs for very large (ICC or CAC) non market customers in Ergon Energy's area which may involve analysis of other load profiles.

5.2 Other energy costs

The approach to estimating the cost to retailers of the renewable energy schemes (LRET and SRES), the Queensland Gas Scheme, market related fees and costs is the similar to that used in the 2012-13 Final Determination.

The LRET and SRES cost estimates will be based on the latest available Renewable Power Percentage (RPP) and Small-scale Technology Percentage (STP) for these schemes from the Clean Energy Regulator (CER) and applying the market based Large-scale Generation Certificate (LGC) prices from AFMA over recent years and allowing a price of $40.00 for Small-scale Technology Certificates (STCs).

The cost of the Queensland Gas Scheme will be based on 15% cover and an average of the Gas Electricity Certificate (GEC) prices over the past four years from AFMA.

Market fees and ancillary service charges will again be based on AEMO estimates or projections of past fees and charges.

A Ministerial Delegation

ELECTRICITY ACT 1994
Section 90AA(1)

DELEGATION

I, Mark McArdle, the Minister for Energy and Water Supply, in accordance with the power of delegation in section 90AA(1) of the *Electricity Act 1994* (the Act), delegate to the Queensland Competition Authority (QCA) the function under section 90(1) of the Act of deciding the prices that a retail entity may charge its non-market customers for customer retail services for the tariff years from 1 July 2013 to 30 June 2016.

The following are the Terms of Reference of the price determination:

Terms of Reference

1. These Terms of Reference apply for each of the tariff years in the delegation period.

2. In each tariff year of the delegation period, QCA is to calculate the notified prices and publish an annual price determination, in the form of a tariff schedule, in accordance with these Terms of Reference.

3. In accordance with section 90(5)(a) of the Act, in making a price determination for each tariff year QCA must have regard to all of the following:

   (a) the actual costs of making, producing or supplying the goods or services;

   (b) the effect of the price determination on competition in the Queensland retail electricity market; and

   (c) the matters set out in paragraph 5 of these Terms of Reference.

4. In accordance with section 90(5)(b) of the Act, QCA may have regard to any other matter that QCA considers relevant.

5. The matters that QCA is required by this delegation to consider are:

   (a) Uniform Tariff Policy - QCA must consider the Government's Uniform Tariff Policy, which provides that, wherever possible, non-market customers of the same class should have access to uniform retail tariffs and pay the same notified price for their electricity supply, regardless of their geographic location;

   (b) Time of Use Pricing – QCA must consider whether its approach to calculating time-of-use tariffs can strengthen or enhance the underlying network price

signals and encourage customers to switch to time-of-use tariffs and reduce their energy consumption during peak times;

(c) Framework - QCA must use the Network (N) plus Retail (R) cost build-up methodology when working out the notified prices and making the price determination, where N (network cost) is treated as a pass-through and R (energy and retail cost) is determined by QCA;

(d) When determining the N components for each regulated retail tariff for each tariff year, QCA must consider the following:

(i) for residential and small business customers, that is, those who consume less than 100 megawatt hours (MWh) per annum - basing the network cost component on the network charges to be levied by Energex;

(ii) for large business customers in the Ergon Energy distribution region who consume 100MWh or more per annum - basing the network cost component on the network charges to be levied by Ergon Energy given that, from 1 July 2012, large business customers in the Energex distribution region no longer have access to notified prices;

(e) Transitional Arrangements - QCA must consider:

(i) for the standard regulated residential tariff (Tariff 11), implementing a three-year transitional arrangement to rebalance the fixed and variable components of Tariff 11, so that each component (fixed and variable) of Tariff 11 is cost-reflective by 1 July 2015;

(ii) for the existing obsolete tariffs (i.e. farming, irrigation, declining block, non-domestic heating and large business customer tariffs), implementing an appropriate transitional arrangement should QCA consider there would be significant price impacts for customers on these tariffs if required to move to the alternative cost-reflective tariffs; and

(iii) for the large business customer tariffs introduced in 2012-13 (i.e. Tariffs 44, 45, 46, 47 and 48), whether customers on these tariffs should be able to access the transitional arrangements for the obsolete large business customer tariffs should QCA consider that a transitional arrangement for the obsolete tariffs is necessary.

Interim Consultation Paper

6. As part of each annual price determination, QCA must publish an interim consultation paper identifying key issues to be considered when calculating the N

and R components of each regulated retail electricity tariff and transitioning relevant retail tariffs over the three-year delegation period.

7. QCA must publish a written notice inviting submissions about the interim consultation paper. The notice must state a period during which anyone can make written submissions to QCA about issues relevant to the price determination.

8. QCA must consider any submissions received within the consultation period and make them available to the public, subject to normal confidentiality considerations.

Consultation Timetable

9. As part of each annual price determination, QCA must publish an annual consultation timetable within two weeks after submissions on the interim consultation paper are due, which can be revised at the discretion of QCA, detailing any proposed additional public papers and workshops that QCA considers would assist the consultation process.

Workshops and additional consultation

10. As part of the Interim Consultation Paper and in consideration of submissions in response to the Interim Consultation Paper the QCA must consider the merits of additional public consultation (workshops and papers) on identified key issues.

11. Specifically, given the three-year period of the delegation the QCA must conduct a public workshop on the energy and retail cost components used to determine regulated retail tariffs prior to the release of the 2013-14 Draft Determination.

Draft Price Determination

10. As part of each annual price determination, QCA must investigate and publish an annual report of its draft price determination on regulated retail electricity tariffs, with each tariff to be presented as a bundled price, for the relevant tariff year. The draft price determination must also specify the carbon cost allowances for the relevant tariff year.

11. QCA must publish a written notice inviting submissions about the draft price determination. The notice must state a period during which anyone can make written submissions to QCA about issues relevant to the draft price determination.

12. QCA must consider any submissions received within the consultation period and make them available to the public, subject to normal confidentiality considerations.

Final Price Determination

13. As part of each annual price determination, QCA must investigate and publish an annual report of its final price determination on regulated retail electricity tariffs, with each tariff to be presented as a bundled price, for the relevant tariff year, and gazette the bundled retail tariffs. The final price determination must also specify the carbon cost allowances for the relevant tariff year.

Timing

14. QCA must make its reports available to the public and, at a minimum, publicly release for each tariff year the papers and price determinations listed in paragraphs 6 to 13.

15. QCA must publish the interim consultation paper for the 2013-14 tariff year no later than one month after the date of this Delegation and no later than 30 August before the commencement of the subsequent tariff years.

16. QCA must publish the draft price determination on regulated retail electricity tariffs no later than 15 February 2013 for the 2013-14 tariff year and no later than 13 December before the commencement of the subsequent tariff years.

17. QCA must publish the final price determination on regulated retail electricity tariffs for each relevant tariff year, and have the bundled retail tariffs gazetted, no later than 31 May each year.

DATED this 5th day of September 2012.

[redacted]

SIGNED by the Honourable
Mark McArdle,
Minister for Energy and Water Supply) *(signature)*

B Consultancy Terms of Reference

Terms of Reference

Review of Regulated Retail Electricity Tariffs and Prices for 2013-14

Assessment of Energy Costs and Tariff Structure

31 October 2012

1. Project Background

On 5 September 2012, the Minister for Energy and Water Supply provided the Authority a Delegation requiring it to determine regulated retail electricity prices (notified prices) for a three-year period from 1 July 2013 to 30 June 2016 (**Attachment 1**).

While the task is delegated for three years (rather than a one-year period as previously), the Authority is still required to determine prices annually. The first determination is to apply from 1 July 2013 to 30 June 2014.

The Authority will require the assistance of a consultant to estimate the cost of energy for notified prices.

2. Outline of Consultancy

The consultant will be required to provide expert advice to the Authority on the energy costs to be incurred by a retailer to supply customers on notified prices for 2013-14. In preparing its advice, the consultant must have regard to the actual costs of making, producing or supplying the goods or service.

The Authority will require 2013-14 estimates for:

(a) wholesale energy costs;

(b) the costs of complying with state and federal government policies such as the Queensland Gas Scheme, the Enhanced Renewable Energy Target Scheme and the carbon tax;

(c) NEM fees and ancillary services charges; and

(d) losses in the transmission and distribution of electricity to customers.

The Authority is also offering an 'in principle' agreement for the consultant to be engaged to provide similar advice for its 2014-15 and 2015-16 reviews. This offer is subject to the consultant not undertaking work over the three-year period that might be seen as a conflict of interest or could otherwise preclude their appointment as the Authority's advisor. Appointment in each year would of course be subject to the proposed cost being reasonable given the nature of the task for the year and the cost in previous years.

3. Deliverables

The consultant will be required to provide a series of deliverables and take part in workshops, consultations and meetings. While Table 1 outlines the mandatory deliverables for the

- 1 -

consultancy, there may be additional requests made of the consultants from time to time as needed by the Authority.

Table 1: Timetable for the Consultancy

Deliverable	*Task*	*Due date*
Stakeholder Workshop	• Conduct a workshop with interested parties on the consultant's proposed approach to calculating energy costs	Early December 2012
Draft Report	• Address submissions on the Authority's Interim Consultation Paper and issues raised in the Stakeholder Workshop • Outline the consultant's approach • Provide draft cost estimates	7 December 2012
Final Report	• Address submissions on the Draft Report • Outline the consultant's final approach • Provide final cost estimates	5 April 2013

4. Resources/Data Provided

The consultant will be required to source modelling data and information independently.

Additional information relevant to this consultancy may be found in the Authority's publications which can be obtained from the Authority's website.

5. Project Time Frame

The consultancy will commence in mid October 2012 and is expected to be completed by 31 May 2013.

6. Proposal Specifications and Fees

The proposal should:

- include the name, address and legal status of the tenderer;
- provide the proposed methods and approach to be applied;
- provide a fixed price quote for the provision of the services detailed herein; and
- nominate the key personnel who will be engaged on the assignment together with the following information:
  - name;
  - professional qualifications;

- general experience and experience which is directly relevant to this assignment;
- expected time each consultant will work on the project; and
- standard fee rates for any contract variations.

The fee quoted is to be inclusive of all expenses and disbursements. A full breakdown of consultancy costs is required with staff costs reconciled to the consultancy work plan.

Total payment will be made within 28 days of receiving an invoice at the conclusion of the consultancy.

7. Contractual Arrangements

This consultancy will be offered in accordance with the Authority's standard contractual agreement.

This agreement can be viewed at http://www.qca.org.au/about/consultancyagreement.php

8. Reporting

The consultant will be required to provide the Authority with progress reports on an "as needs" basis or at least weekly and drafts of final reports will be required prior to project completion. If necessary, the consultant should advise at the earliest opportunity any critical issues that may impede progress of the consultancy, particularly issues that impact on the successful delivery of the Consultancy Objectives outlined in Section 2 above.

9. Confidentiality

Under no circumstance is the selected consultant to divulge any information obtained from any distributor, retailer or the Authority for the purposes of this consultancy to any party, other than with the express permission of the distributor or retailer concerned, and the Authority.

10. Conflicts of Interest

For the purpose of this consultancy, the consultant is required to affirm that there is no, and will not be any, conflict of interest as a result of this consultancy.

11. Authority Assessment of Proposal

The proposal will be assessed against the following criteria:

- understanding of the project;
- skills and experience of the firm and team;
- the proposed methods and approach;
- capacity to fulfil the project's timing requirements; and
- value for money.

In making its assessment against the criteria, the Authority will place most weight on relevant experience of the team members involved and the proposed method for the completion of the task.

12. Insurance

The consultant must hold all necessary workcover and professional indemnity insurance.

13. Quality Assurance

The consultant is required to include details of quality assurance procedures to be applied to all information and outputs provided to the Authority.

14. Lodgement of Proposals

Proposals are to be lodged with the Authority by 19 October 2012.

For further information concerning this consultancy, please contact Charles Millsteed, Energy Team Leader on (07) 3222 0543.

Proposals should be submitted to:

The Chief Executive Officer

Queensland Competition Authority
GPO Box 2257
Brisbane Qld 4001

Phone: (07) 3222 0555
Fax: (07) 3222 0599
Email: electricity@qca.org.au