

The Allen Consulting Group

Wholesale Electricity and Gas Costs for Retailer of Last Resort

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Final Report to Essential Services Commission

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Executive summary

The Allen Consulting Group was engaged by the Essential Services Commission of Victoria to provide advice on updated energy costs to be incorporated in the Commission's revision of its 2006 Final Decision on RoLR pricing, for application in 2008.

The Allen Consulting Group has applied the same methodology used to advise on energy costs for the Commission's 2006 RoLR Final Decision. However inputs to the methodology have been updated to take account of significant developments in energy markets, particularly the Energy One RoLR event in June 2007 and price rises in energy markets.

The RoLR electricity up-front cost per customer is estimated as \$34.50, which is an increase of 67 per cent over the 2006 allowance. This cost is based on a weighted average cost of \$90.20 per MWh, less standing offer tariff of \$66.30 per MWh and multiplied by average customer consumption of 1.45 MWh per quarter.

The RoLR gas cost per customer is estimated as \$11.78, which is an increase of 79 per cent over the 2006 allowance. This cost is based on a weighted average gas cost of \$4.45 per GJ, less standing offer tariff of \$3.87 per GJ and multiplied by average customer consumption of 25 GJ in winter and 12 GJ in other quarters.

The Allen Consulting Group's methodology also provides the Commission with an option for another form of RoLR pricing, namely up-front administration fee per customer plus a pre-determined energy charge that better reflects the cost of serving customers and provides a better incentive for customer to move from RoLR prices to market contracts.

Chapter 1

Introduction

1.1 Background

A retailer of last resort (RoLR) scheme is intended to ensure that electricity and gas customers continue to receive electricity and gas supplies in circumstances where their existing retailer is unable to continue to provide that supply. This may be because the retailer ceases to be licensed to sell electricity or gas, so that it is legally prohibited from continuing the supply, or because it is unable to access electricity or gas in the wholesale market to supply its customers.

In February 2006, the Victorian Essential Services Commission (the Commission) published its decisions regarding the energy RoLR scheme developed by the Commission (ESC 2006). Its decisions related to the assignment of RoLR responsibility, terms and conditions, pricing, and implementation issues.

The Commission is updating its RoLR decisions for 2008 and has engaged the Allen Consulting Group to review submissions and provide advice on updated energy costs. The energy cost is added to an administration cost to produce the RoLR price.

The Commission has indicated its preference for minimal change to pricing methodology at this stage, because the Australian Energy Regulator will take responsibility in 2008 for RoLR terms and conditions, including pricing.

1.2 Changes since 2006 Decision

Since publication of the Commission's 2006 RoLR decision, there have been a few developments that need to be taken into account.

Most significantly, there has been a RoLR event — Energy One — as explained in Box 1.1. Even though only two Victorian customers were affected, the RoLR event is an important precedent and provides valuable information about possible market conditions that might apply during a RoLR event.

Another development that affects RoLR pricing is the increase in market prices for energy since the Commission's 2006 RoLR Final Decision. Pool prices in the National Electricity Market have risen, because some hydro and thermal generation has reduced availability as a consequence of the drought. Hedge contract prices have also risen as a result of higher pool prices. Prices in the Victorian gas wholesale market have also risen, in part because more gas is being used to generate electricity.

The rise in energy market prices has stimulated an increase in the standing offer price in New South Wales, South Australia and Queensland. While no change has yet been announced in Victoria, this could also affect RoLR pricing.

Box 1.1

NEWSPAPER ARTICLE: ENERGY ONE STRIPPED OF CUSTOMERS

High wholesale energy prices appear to have claimed their first victim, with junior retailer Energy One prevented from operating and its customers transferred to other retailers.

The National Electricity Market Management Company (NEMMCO) issued Energy One with a suspension notice yesterday afternoon, meaning that from midnight it cannot trade or enter into any transaction on the electricity market until the suspension is lifted.

At that time, Energy One's customers, of which there are more than 5000 spread across Queensland, NSW, the ACT and Victoria, were to be transferred to alternative retailers.

Energy One, which was formed in 1996 and listed on the stock exchange in January, has also entered into a trading halt on the Australian Securities Exchange. Its shares are valued at 58¢ after reaching a high of \$1.26 in January.

'Following an announcement by the company, normal trading will resume on Monday the 25th of June 2007', Energy One said in a statement to the market.

The problems facing upstart retailers have been underlined in recent days as energy demand hit a high in NSW where spot prices, which are set half hourly, were close to \$10 000 per megawatt hour, and winter records were set in Victoria and South Australia.

Steve Edwell, chairman of the Australian Energy Regulator, said retailers were being squeezed in the middle, forced to absorb high prices but unable to pass them on to consumers.

'If there is a lesson out of this at an early stage, it is that energy markets can be volatile and traders need to have a strong risk mitigation strategy and future hedging in place,' he said. 'I expect the reasons and the impacts of the market on this retailer will be assessed closely by us and others. We need to make sure the lights don't go out for the Energy One customers.'

Gavin Dufty, manager of social policy and research with St Vincent de Paul, said the situation was unprecedented and regulators had to make sure that Energy One's customers were protected.

'There are so many questions that arise: Will these customers have the same terms and conditions as before? What will their contract be like? These are questions that I think are only being worked through now', he said. 'Will Energy One be the first of many, will all these second-tier retailers start falling?'

Energy One's customers are largely in the small business area and predominantly in NSW. It has only two customers in Victoria, one in the ACT and about 160 in Queensland.

Under the retailer of last-resort scheme, each energy retailer is required to list another retailer to supply its customers with electricity if it enters a suspension. It is believed Energy Australia could take Energy One's customers.

Source: *The Age*, 23 June 2007, available from <http://www.theage.com.au/news/business/energy-one-stripped-of-customers/2007/06/22/1182019371245.html>

The Independent Pricing and Regulatory Tribunal of New South Wales (IPART) has received submissions from electricity retailers in New South Wales that report experience with the Energy One RoLR event, as part of IPART's 2007 review of RoLR supply arrangements. IPART's draft report, *Review of Retailer of Last Resort Supply Fee for Small Retail Customers*, published in November 2007, indicates that no electricity retailers actually applied RoLR pricing (although this may reflect the fact that retailers of last resort were not advised of the applicable fee until 20 days after the Energy One event).¹ IPART's draft recommendations follow:

- The last resort supply fee should be set as a fixed amount per transferred customer.

¹ [http://www.ipart.nsw.gov.au/files/Draft report - Review of retailer of last resort fee - November 2007.PDF](http://www.ipart.nsw.gov.au/files/Draft%20report%20-%20Review%20of%20retailer%20of%20last%20resort%20fee%20-%20November%202007.PDF), p. 8

- This amount should be \$35, which reflects the incremental administrative costs per transferred customer likely to be incurred by the retailer of last resort.
- The load associated with transferred customers should be fully covered by the Electricity Tariff Equalisation Fund for up to three months, so that the last resort supply fee does not need to compensate the retailer of last resort for costs associated with changes to wholesale electricity market conditions.
- The NSW Government consider alternative approaches to address the wholesale energy price issue and put forward these approaches as input to the national framework for non-economic distribution and retail regulation.
- The recommended fee should apply until the current retailer of last resort endorsement period expires in September 2009, unless the retailer of last resort arrangements change substantially before this date.

1.3 Outline of this report

Chapter 2 discusses the methodology used for the 2006 Decision to estimate the cost for purchasing energy after a RoLR event. It reviews submissions made to the Commission about that methodology and discusses options for revising the methodology. It should be noted that this report only deals with energy costs and no other components of RoLR pricing.

Chapter 3 applies the methodology to estimate a RoLR electricity cost. Chapter 4 applies the methodology to estimate a RoLR gas cost.

Chapter 2

Methodology for estimating RoLR energy cost

2.1 Overview

The Commission's 2006 Final Decision determined that RoLR pricing would be an up-front fee comprising an administration fee plus an allowance for energy cost set in advance and calculated per customer on the basis of average consumption. The allowance for energy cost was based on estimates provided by the Allen Consulting Group in 2006. The Commission has indicated its preference for minimal necessary change to pricing methodology at this stage.

In examining the recent market events and reviewing recent submissions to the Commission, the Allen Consulting Group has updated its 2006 methodology and considered two alternative methods for estimating the energy cost — one presented by Origin Energy and a variation on our 2006 methodology.

- Origin Energy has submitted that the allowance for energy cost should not be set in advance, but could depend on actual market prices. However this does not provide price certainty to customers.
- The Allen Consulting Group's 2006 methodology can be used to update the energy cost per customer (if minimal change is required) or can be used to implement the advantages of Origin Energy's proposal while still providing price certainty to customers.

2.2 2006 methodology

The Allen Consulting Group advised the Commission on an up-front electricity cost for its draft decision (published in December 2005) and on up-front electricity and gas costs for its Final Decision (published in February 2006). The methodology is summarised below and full details are contained in the Commission's Final Decision.

Both electricity and gas costs were estimated as the weighted average costs across a plausible range of six scenarios that might apply to RoLR wholesale energy purchases, in the light of experience prior to 2006.

Electricity

Allen Consulting Group's methodology for electricity RoLR pricing used six pricing scenarios.

Three of the scenarios represented situations in which the RoLR event did not result in any change to the wholesale electricity market and the RoLR could therefore purchase from the pool at prevailing pool prices. The three pool price scenarios took account of low, average, and high pool prices respectively. The actual levels of pool prices have been taken from Victorian historical pool prices between January 2004 and May 2005. Together the pool price scenarios were assumed to have at least fifty per cent probability, with the split between low, average and high based on historical frequency of such prices. The cost under each scenario was the load weighted cost.

The fourth scenario took account of the situation that a RoLR would seek to purchase contracts to hedge the risks of purchasing electricity for their newly acquired customers. There was assumed to be sufficient liquidity in the contract market at a price equal to the average pool price plus a premium of \$40 per MWh, namely \$69.75. An amount of \$40 per MWh was considered a very generous premium and would permit the purchase of either:

- swap contracts at twice the typical forward price; or
- cap contracts for the whole year at a premium of \$10 per MWh, even though the maximum RoLR period is for only three months.

A probability of ten per cent to thirty per cent was assumed for the contract price scenario. The first four scenarios should have a probability of approximately eighty per cent.

The fifth scenario took account of the situation that a RoLR event might occur as a result of very high prices, which lead to administered prices under NEM market rules. A probability of between ten and twenty per cent was assumed for this scenario, which was considered likely to over state the risk, as there have never been administered prices in the NEM.

The sixth scenario assumed that the RoLR event led to significant changes in the underlying wholesale market. The sixth scenario assumed that pool prices were set at \$300 per MWh for every peak period in the three months, and stayed at the same level as in scenario three during off peak periods. A probability of between ten and twenty per cent was assumed for this scenario, which was considered likely to over state the risk, as prices have never been sustained at \$300 per MWh for all peak periods over three months in the NEM.

The six scenarios and range of weights implied a range of probability weighted average electricity cost in the range \$60 per MWh to \$80 per MWh.

A RoLR was permitted to charge the standing contract price to RoLR customers, so the wholesale electricity cost allowance in the standing contract price was subtracted from the RoLR cost range in order to calculate the RoLR additional cost. The Commission's margin analysis for the review of full retail contestability used a wholesale electricity cost in the range of \$55 per MWh to \$65 per MWh, in June 2004. The lower end of the Commission cost range, namely \$55 per MWh, was subtracted, leaving an additional RoLR cost in the range \$5 to \$25 per MWh.

The additional cost per customer was calculated as the additional RoLR cost range multiplied by customer consumption of 1.375 MWh for three months, based on an average customer of 5.5 MWh per annum, resulting in a range of \$6.90 to \$34.40 per customer. The midpoint of this range was \$20.60 per customer.

Gas

Allen Consulting Group's methodology for gas RoLR pricing used six price scenarios and two load scenarios.

The six price scenarios represented a plausible range of scenarios that might apply to RoLR wholesale gas purchases. Four of the scenarios represented situations in which a RoLR purchases gas through the spot market at market prices. The other two were contracting strategies where the retailer arranged gas supply contracts to reduce exposure to spot market prices.

Three of the scenarios took account of the situations in which RoLR purchased from the spot market for three months following a RoLR event. The prices were based on historical spot market prices during the period January 2004 until November 2005, distinguishing low, average and high spot prices. Scenarios 1 to 3 assumed that a RoLR purchases gas from the spot market without using any supply contracts and that a RoLR event did not affect the market significantly. However a 1 per cent risk allowance was added to the spot price.

The fourth scenario took account of the situation in which that a RoLR purchased from the spot market, but allowed for an extreme spot price event, in which price went to VoLL (\$800 per GJ) for one day, and then was set by VENCORP to the administered price (\$80 per GJ) for a further 5 working days.

The probability that a RoLR would purchase gas from the spot market was indicated by the percentage of gas that is purchased from the spot market. The combined weighting of scenarios 1, 2, 3 and 4 was assumed to lie between 10 per cent and 40 per cent. The midpoint of 25 per cent has been used as the combined weighting for spot purchases, and sensitivities have been calculated at 10 per cent and 40 per cent. The relative weightings of the three spot price scenarios are based on historical frequency of low, average and high prices respectively, namely 25 per cent, 50 per cent and 25 per cent. Scenario 4 was allocated a probability of 1 per cent.

The fifth and sixth scenarios took account of the situation in which a RoLR purchased gas supply contracts. The fifth scenario assumed that suitable commodity contracts were available at similar prices to historical market prices on which standing offer prices were based namely the benchmark price plus a 1 per cent transaction cost, giving \$3.67 per GJ. The sixth scenario assumed that a RoLR needed to purchase commodity contracts plus sufficient capacity to meet the peak load implied by the highest 90 day load factor for residential customers, which was not less than 0.45.

The two load scenarios took account of the seasonality in the mass market gas customer segment in Victoria, given the high usage for space heating and hot water. The three month RoLR period could conceivably occur during a period of light demand, heavy demand or during seasonal crossover, so low and high load scenarios were considered. The low load period was based on the January–March quarter and the high load period on the July–September quarter. The percentage seasonal split was calculated from the total VENCORP load, rather than consumption directly attributable to mass market customers.

The fifth and sixth scenarios had a combined weighting of 75 per cent. An equal weighting was applied both scenarios during high load periods and zero weighting was applied to the sixth scenario during low load periods. The high load period occurred in the winter peak period, June to September, which comprised 33.3 per cent of a year. The high load period therefore had a weighting of 33.3 per cent and the low load period had a weighting of 66.7 per cent.

A RoLR was permitted to charge the standing contract price to RoLR customers, so the wholesale gas cost allowance in the standing contract price was subtracted from the RoLR cost range in order to calculate the RoLR additional cost. The Commission's special investigation reviewing the effectiveness of retail competition and consumer safety net in gas and electricity cited a benchmark cost of \$3.44 to \$3.60 per GJ for 2004. The approximate midpoint of \$3.50 per GJ was escalated by 1.039 to convert from June 2004 to December 2005 terms, giving a standing offer gas cost of \$3.64 per GJ. This was subtracted from the price scenarios to give an additional RoLR cost.

The additional cost per customer was calculated as the additional RoLR cost range multiplied by average customer consumption in the different load scenarios, resulting in a range between negative \$17 per customer (if a spot market strategy was chosen and spot market price was low) and \$312 per customer (if full spot exposure was taken and there was an extreme price event). The weighted average cost per customer was \$6.57 per customer.

2.3 Origin Energy methodology

Origin Energy has submitted that the 2006 methodology accepted by the Commission:

- does not reflect recent changes in the market;
- is not equitable for customers because it uses average rather than actual customer consumption; and
- does not provide sufficient protection against price risk for retailers.

Origin Energy has therefore proposed an alternative methodology, which comprises an up-front administration fee plus energy charge that reflects actual costs for energy consumption for each customer rather than an average cost per customer.

The administration fee is equal to \$23 per customer from the Commission's 2006 Final Decision escalated at 5 per cent to give \$24.26.

The energy charge is not determined in advance but depends on actual wholesale prices in the market during the three months following a RoLR event. The calculation takes current prices, subtracts the standing offer energy component, and adds back the average wholesale price in the three months following a RoLR event. This charge is then applied to metered customer consumption.

The main advantage of Origin Energy's method is that the RoLR price better reflects the cost of serving customers. All customers continue to pay the administration fee. However customers pay the same unit price for energy consumed, whereas under the Commission's method, customers pay a fixed energy price regardless of size.

A second advantage of Origin Energy's method is that it provides better incentives for customers to move from RoLR tariffs to market contracts. The Commission's 2006 Final Decision indicated that customers should stay on RoLR tariffs for three months, but this was subsequently determined not to be enforceable. Nevertheless, the up-front customer charge was determined on the basis that it would recover energy costs over a three-month period. So a customer that has paid an up-front RoLR charge has less incentive to move from the standing offer contract to a

market contract and, if they do move, may leave the RoLR with compensation for energy not actually supplied. By contrast, an ongoing energy charge should provide a greater incentive for customers to move on to market contracts, especially if the ongoing energy charge is greater than the standing offer.

The main problem with Origin Energy's method is that it provides no price certainty to customers, because the pricing depends on market outcomes during the RoLR tariff period. This raises tradeoffs for the Commission in the context of its primary objective to protect the long term interests of Victorian consumers with regard to the price, quality and reliability of essential services.

In summary, Origin Energy's option is more equitable across different sized customers but transfers price risk from retailers to customers.

2.4 Allen Consulting Group 2007 methodology

The Allen Consulting Group has updated its 2006 methodology by revising scenarios to be plausible states of the market following a RoLR event and by revising the weights to comprise relative probabilities of occurrence of the states, in the light of experience since the 2006 Final Decision. The 2007 methodology again calculates weighted average costs across five scenarios for purchasing electricity and gas respectively.

In continuing to use its methodology, the Allen Consulting Group notes that this methodology is based on the retail price methodology that the Allen Consulting Group used to advise the Essential Services Commission of South Australia for its 2004 and 2007 determinations of retail electricity prices for standing contract customers. A similar methodology was also used by Frontier Economics when advising IPART for its 2007 determination of retail standing offer prices.

The Allen Consulting Group's RoLR methodology in fact calculates an energy charge as an intermediate step in RoLR pricing per customer. This energy charge provides the Commission with an option for RoLR pricing that has the advantages of Origin Energy's proposed methodology while still providing price certainty for customers, namely allowing a RoLR to charge an up-front administration fee per customer plus an ongoing energy fee that is known in advance.

2.5 Summary of options

Table 2.1 below summarises the three options for RoLR pricing that have been discussed in this chapter. The calculations for both the updated 2006 methodology and for the energy fee option are described for electricity in Chapter 3 of this report and for gas in Chapter 4.

Table 2.1

OPTIONS FOR ROLR ENERGY PRICING

Option	Up-front admin fee \$/cust.	Up-front energy fee \$/cust.	Ongoing energy fee \$/MWh (electricity) \$/GJ (gas)
Origin Energy	\$23 escalated by CPI	\$0	Calculated in arrears based on average prices in 3 months following RoLR event
Final Decision methodology, updated for market conditions	\$23 escalated by CPI	Calculated in chapter 3 (electricity) and chapter 4 (gas)	Standing offer price
Energy fee option	\$23 escalated by CPI	\$0	Calculated in advance as explained in chapter 3 (electricity) and chapter 4 (gas)

Chapter 3

Electricity

This chapter applies the Allen Consulting Group 2007 methodology described in chapter 2 to estimate a RoLR price for electricity in both per customer and per MWh terms.

3.1 Summary

The RoLR electricity up-front cost per customer is estimated as \$34.50, which is an increase of 67 per cent over the 2006 allowance. This cost is based on a weighted average cost of \$90.20 per MWh, less estimated standing offer tariff of \$66.30 per MWh and multiplied by average customer consumption of 1.45 MWh per quarter.

The RoLR electricity cost has been estimated as the weighted average cost calculated across five scenarios for purchasing electricity, with individual costs and probability weightings as shown below:

- purchase from pool at moderate pool prices (\$50.67 per MWh and 30 per cent weight);
- purchase from pool at high pool prices (\$106.86 per MWh and 30 per cent weight);
- purchase from pool at administered prices (\$75.25 per MWh and 5 per cent weight);
- purchase from pool at very high price (\$182.73 per MWh and 5 per cent weight); and
- hedge contracts (\$100 per MWh and 30 per cent weight).

The scenarios and weights are explained below.

3.2 Scenarios for purchasing electricity

A RoLR event will not change small customer (those consuming less than 160MWh per annum) demand for electricity but may change the supply arrangements and is likely to be associated with a change in wholesale electricity cost.

In analysing the wholesale electricity cost of supplying a small customer, it is sufficient to analyse their energy consumed and the prevailing price but not their load profile, because net system load profiles are used to average small customers' load profiles. Therefore the analysis can use five scenarios for electricity purchasing that differ only in electricity cost, provided that the cost is calculated in terms of net system load profile weighted cost as explained in Box 3.1. The analysis in this chapter uses net system load profile weighted costs for all analysis unless otherwise stated.

Box 3.1

NET SYSTEM LOAD PROFILE WEIGHTED ELECTRICITY COST

Energy usage measured by a basic meter cannot be used in its raw format for wholesale settlement purposes in the National Electricity Market. This is because the electricity market is settled on 30-minute trading intervals whereas a basic meter reading is a single reading spanning a period of time, from a single day up to several months.

A mathematical process, called profiling, is used to approximate half hourly basic meter readings. This process effectively replicates the functionality of an interval meter and thus allows a basic meter reading to be settled on the wholesale market.

Electricity purchase cost is equal to metered quantity multiplied by net system load profile weighted cost, which is calculated as the weighted average of half-hourly costs where the weights are equal to half hourly amounts of net system load profile.

The Allen Consulting Group has used net system load profiles for the AGL distribution area in Victoria, as was done for the 2006 RoLR decision, because this is most representative of customers in Victoria.

Source: NEMMCO 2007, *Understanding Load Profiles Published from MSATS*, available from <http://www.nemmco.com.au/meteringandretail/700-0490.pdf>

Price scenarios**Scenarios 1 and 2: Moderate and high pool prices**

The first two scenarios take account of the possibility that the RoLR elects to purchase from the pool for three months following a RoLR event.

The first two scenarios proposed are

- moderate pool prices; and
- high pool prices.

Future pool prices are based on historical pool price data, which has been taken from NEMMCO for the period January 2006 until September 2007. This period includes the drought and therefore should provide a reasonable guide to possible pool prices in 2008. Figure 3.1 shows the cumulative frequency distribution of three month rolling average load weighted pool prices, which vary between a low price of \$25 per MWh and a high price of \$80 per MWh.

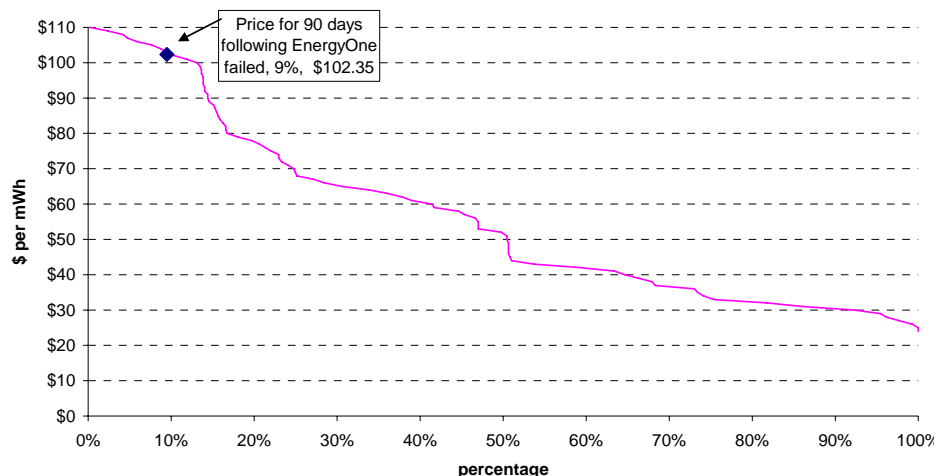
The Energy One RoLR event occurred on 22 June 2007 and the weighted average pool price for 90 days after this event was \$102.35, which corresponds to the 9th percentile.

It would seem reasonable to define scenarios 1 and 2 to be, respectively, the price ranges either side of the average price for 90 days after the Energy One RoLR event. That is, scenario 1 is the price range between the 9th and 100th percentiles and scenario 2 is the price range below the 9th percentile. These two scenarios should be equally likely.

The average of prices in the scenario 1 range is \$50.67 and the average of prices in the scenario 2 range is \$106.89.

Figure 3.1

CUMULATIVE FREQUENCY DISTRIBUTION OF THREE MONTH ROLLING AVERAGE, LOAD WEIGHTED, POOL PRICES



Source: NEMMCO

Note: NEMMCO has not published net system load profile data for the period July 2007 until October 2007, so net system load profiles from the corresponding period in 2006 have been used. This should not affect the calculation of a net system load profile weighted cost.

Scenario 3: Administered prices

This scenario takes account of the possibility that the RoLR event occurs at the time of extreme market conditions that trigger administered prices, namely prices reaching the cumulative price threshold (CPT). The CPT is the cap for the cumulative price over a rolling seven day, 336 trading interval, period and is currently set at \$150 000 per MWh. If the cumulative price exceeds this threshold then administered prices are invoked. The administered prices are set by the Australian Energy Markets Commission (previously by NECA) and are currently at \$100 per MWh for peak periods and \$50 per MWh for off peak periods.² These have not changed since the 2006 Final Decision.

This scenario assumes the worst case, namely that administered prices last for three months. In practice, administered prices should not last for more than one week because generators that were unavailable could return to service, or mothballed capacity may be able to come online. Also, studies of the Australian National Energy Market (NEM) have shown that price spikes generally last for less than one per cent of the hours in the year.

The load weighted cost under this scenario is \$75.25 per MWh.

Scenario 4: Very high pool prices

The fourth scenario assumes that the RoLR event leads to significant changes in the underlying wholesale market. For example, if there was a RoLR event involving a local retailer, then up to 30 per cent of the market could be subject to RoLR conditions.

² AEMC Reliability Panel 2007, 2007 Review of VoLL under the National Electricity Rules, p.1, available from http://www.aemc.gov.au/pdfs/reviews/VoLL_2007_Review/aemc_docs/0002007_Review_of_VoLL_under_the_National_Electricity_Rules.pdf

If, in addition, the RoLR event was due to NEMMCO suspension and the retailer's underlying hedge contracts were cancelled, the wholesale market could be left significantly under-hedged. The response of generators would be crucial in determining the impact on prices:

- generators may seek to replace hedge contracts quickly, which is modelled as scenario four; or
- generators may not replace hedges, but instead use their market power to increase pool prices.

The fourth scenario assumes that pool prices are set at \$300 per MWh for every peak period in the three months, and stay at the same level as in scenario one during off peak periods. Under this scenario, the conditions for administered prices are not met. The load weighted cost under these conditions is \$182.73 per MWh.

Scenario 5: Hedge contracting

This scenario takes account of the possibility that the RoLR will be able to purchase contracts to hedge the risks of purchasing electricity for their newly acquired customers.

The price of an optimal portfolio of swap and cap contracts to hedge customer's load profile is complex to calculate.³ However a reasonable proxy for an optimal portfolio price can be estimated as follows. An energy broker has advised that the average price for Victorian 2008 calendar year swap contracts traded during the third quarter of 2007 was \$60.45 per MWh. An additional price premium is needed to represent the cost of sculpting for peak load — the Commission's 2006 RoLR Decision allowed \$40 per MWh premium. The sum of traded flat swap contract and premium, approximately \$100 per MWh, is a reasonable proxy for optimal portfolio price for this scenario. This price is higher than \$69.75 per MWh used in the contract price scenario for the Commission's 2006 RoLR decision, because the underlying swap market prices are now higher.

3.3 Weightings for the scenarios

There are few precedents to indicate the likelihood market conditions following electricity RoLR events. The one electricity RoLR event in Australia to date, as discussed in Box 1.1, has provided very useful information about possible prices. However, other scenarios are possible and so ought to be weighted at greater than zero.

Scenario 3 (administered prices) and scenario 4 (very high prices) have not been observed in the NEM since its inception, so it is not possible to make an empirical estimate of their probabilities. However the mean time between such events is likely to be greater than ten years (of NEM history), so their combined probability is likely to be less than 1 in 10, or 0.1. A probability of 5 per cent each has been assumed for these scenarios, which is likely to overstate the risk.

³ <http://www.escosa.sa.gov.au/webdata/resources/files/070824-R-WholesaleElectricityCostsReport-ACG.pdf>, p.17-22

As previously discussed, scenarios 1 and 2 (moderate and high pool prices respectively) are assumed to be equally likely following a RoLR event. There is no clear basis for estimating their combined probability, so they have been assumed to be equally likely as scenario 5 (hedge contracting). Therefore scenarios 1, 2 and 5 have probability of 30 per cent each.

Table 3.1

SCENARIOS AND WEIGHTS

Scenario	Weight
1. Moderate price pool purchases	30%
2. High price pool purchases	30%
3. Administered price pool purchases	5%
4. Very high price pool purchases	5%
5. Hedge contracting	30%
Total	100%

3.4 RoLR cost per customer

The Commission's 2006 Decision determined that a RoLR tariff will be structured as the standing offer tariff plus an up-front fee per customer. The Allen Consulting Group estimated an up-front cost of \$20.60 per customer in addition to the standing offer tariff. The updated estimate is \$34.50 per customer, which is an increase of 67 per cent from 2006 levels, if the standing offer tariff is escalated at 10.5 per cent inflation from June 2004 until December 2007.⁵

The RoLR charge per customer is calculated in three steps: firstly, subtract off the standing offer tariff from the energy cost for each scenario; secondly, multiply by average customer consumption; and thirdly, calculate weighted average cost.

For the first step, the standing offer tariff can be estimated by updating the Commission's margin analysis for the review of full retail contestability. This analysis used a wholesale electricity cost in the range of \$55 per MWh to \$65 per MWh in June 2004, which allowed for pool purchases, long term contracts, and other wholesale on-costs such as ancillary service costs, levies, and losses. If escalated by 10.5 per cent inflation, the midpoint standing offer electricity cost would be \$66.30 per MWh.

For the second step, average customer consumption has been estimated from total consumption figures reported by electricity distributors, divided by number of small customers on main tariff only, which may slightly over-estimate average consumption. The RoLR period is assumed to be equally likely during the year, so average annual consumption of 5.79 MWh per customer is divided by four to give average consumption per customer of 1.45 MWh during a three month period.

The resulting calculation of cost per customer for each of the scenarios is illustrated in Table 3.2.

⁵

CPI from June 2004 until September 2007, forecast until December 2007

Table 3.2

SCENARIO COSTS

Scenario	Wholesale cost	Cost in addition to standing offer	Cost per customer
1. Purchase from pool at moderate prices	\$50.67	-\$15.63	-\$22.62
2. Purchase from pool at high prices	\$106.86	\$40.55	\$58.66
3. Purchase from pool at administered prices	\$75.25	\$8.94	\$12.93
4. Purchase from pool at very high prices	\$182.73	\$116.43	\$168.42
5. Hedge contracting	\$100.00	\$33.69	\$48.74

The final cost of \$34.50 per customer is calculated as the weighted average sum of costs per customer, as shown in Table 3.3. This table also shows that the weighted average cost RoLR cost would be \$90.20 per MWh, if charged per MWh rather than per customer as stipulated in the Commission's 2006 Decision.

Table 3.3

CONTRIBUTIONS TO WEIGHTED COSTS

Scenario	Weight	Contribution per customer	Contribution per MWh
1. Purchase from pool at moderate prices	30%	-\$6.78	\$15.20
2. Purchase from pool at high prices	30%	\$17.60	\$32.06
3. Purchase from pool at administered prices	5%	\$0.65	\$3.76
4. Purchase from pool at very high prices	5%	\$8.42	\$9.14
5. Hedge contracting	30%	\$14.62	\$30.00
Sum	100%	\$34.50	\$90.20

3.5 Sensitivities

The scenarios analysed in this chapter represent plausible states of the electricity market in the period following a RoLR event and have been given reasonable relative probabilities of occurrence in view of the limited history of RoLR events. The RoLR cost is not very sensitive to changes in these weights.

Weights have been varied up and down as shown in Table 3.4, with the weight for contracting scenario 5 being adjusted to ensure weights still add to one. The RoLR electricity cost per customer is most sensitive to the weights for pool purchase scenarios 1 and 2 — a 10 per cent increase in these weights causes a 5 per cent decrease in the RoLR cost, and vice versa. In contrast, a 10 per cent increase in the weight for the very high pool price scenario 4 causes a 2 per cent increase in the RoLR cost.

Table 3.4

SENSITIVITIES FOR WEIGHTS FOR ROLR ELECTRICITY COST

Scenarios	Original weight	Sensitivity weight	Original RoLR cost	Sensitivity RoLR cost	Difference	% Difference
1 & 2 (Pool)	30%	33.0%	\$34.50	\$32.66	-\$1.84	-5%
1 & 2 (Pool)	30%	27.0%	\$34.50	\$36.35	\$1.84	5%
3 (High pool)	5%	5.5%	\$34.50	\$34.33	-\$0.18	-1%
3 (High pool)	5%	4.5%	\$34.50	\$34.68	\$0.18	1%
4 (Very high pool)	5%	5.5%	\$34.50	\$35.10	\$0.60	2%
4 (Very high pool)	5%	4.5%	\$34.50	\$33.91	-\$0.60	-2%

Note: the weight for scenario 5 (contracts) is adjusted to ensure sensitivity weights sum to 1.

Chapter 4

Gas

This chapter applies the Allen Consulting Group 2007 methodology described in chapter 2 to estimate a RoLR price for gas in both per customer and per GJ terms.

4.1 Summary

The RoLR gas cost per customer is estimated as \$11.78, which is an increase of 79 per cent over the 2006 allowance. This cost is based on a weighted average gas cost of \$4.45 per GJ, less estimated standing offer tariff of \$3.87 per GJ and multiplied by average customer consumption of 25 GJ in winter and 12 GJ in other quarters.

The RoLR gas cost has been estimated as the weighted average cost calculated across five scenarios for purchasing gas, namely:

- spot purchase at moderate prices (\$3.37 per GJ and 12 per cent weight);
- spot purchase at high prices (\$5.65 per GJ and 12 per cent weight);
- spot purchase at administered prices (\$18.13 per GJ and 1 per cent weight);
- commodity contracts at spot price plus premium (\$3.91 per GJ and 62.5 per cent weight); and
- commodity plus capacity contracts (\$5.96 per GJ and 12.5 per cent weight).

The scenarios and weights are described below.

4.2 Scenarios for purchasing gas

A RoLR event will not change small customer demand for gas but may change the supply arrangements (depending on the terms of gas supply contracts) and is likely to be associated with a change in the wholesale gas price. The analysis of wholesale gas cost of supplying a small customer is similar to the analysis for electricity customers described in Chapter 3, in that it is necessary to analyse their energy consumed and the prevailing price. Furthermore, because gas consumption is much higher in winter than in summer, it is necessary to analyse timing of gas consumption. Two load scenarios as well as five price scenarios have been chosen to represent a plausible range of scenarios that might apply to RoLR wholesale gas purchases.

Price Scenarios

The five price scenarios represent a plausible range of scenarios that might apply to RoLR wholesale gas purchases. Following a RoLR event, a RoLR is unlikely to have sufficient contracts to meet customer demand. However gas suppliers who had contracts with the failed retailer may have surplus gas, which they may either sell through the spot market or offer under new contracts to a RoLR. Three of the scenarios represent situations in which a RoLR purchases gas through the spot market at market prices. The other two are contracting strategies where the retailer is able to arrange gas supply contracts.

The spot market scenarios use load weighted spot gas cost, which is explained in Box 4.1.

Box 4.1

LOAD WEIGHTED SPOT GAS COST

Most gas is purchased under long term contracts. However the price for contracts is not published, so the Allen Consulting Group is using load weighted gas costs that have been calculated using price and volume data from VENCORP, the market operator in Victoria gas market.

Gas market is settled five times a day, so gas purchase cost is equal to weighted average of metered withdrawn quantity multiplied by price value in each period.

Source: Victoria 2007, Prices and Withdrawals,
<http://www.vencorp.com.au/index.php?sectionID=8246&pageID=8939>

Scenarios 1 and 2: Average and high spot prices

These scenarios take account of the case that a RoLR has to purchase from the spot market for three months following a RoLR event. The prices are based on historical spot market prices under the following two possible cases:

- moderate spot prices; and
- high spot prices.

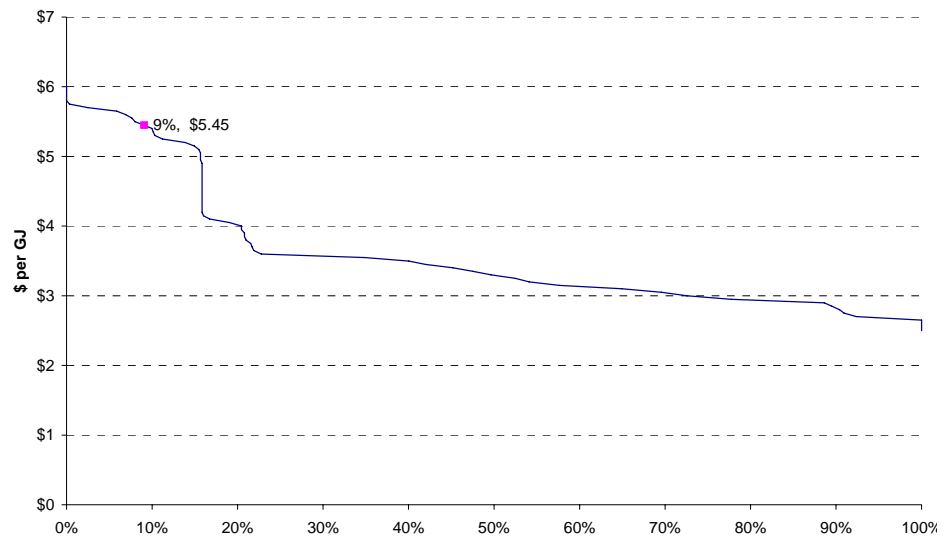
Historical spot market price data from January 2006 to October 2007 has been used as a guide to future spot prices. However the distribution of spot prices has been reweighted to increase the probability of prices being high following a RoLR event, as follows.

Although there has not been a gas RoLR event in Australia, there has been an electricity RoLR event, which is discussed in Box 1.1. In view of the convergence between gas and electricity markets, it is reasonable to assume that the distribution of gas prices might be similar to the distribution of electricity prices following a RoLR event.

As was discussed in Chapter 3, the average prices in the three months following the electricity RoLR event occurred at the 9th percentile in the distribution of prices and the electricity price distribution was reweighted to give equal weight to prices above and below the 9th percentile. Figure 4.1 shows the cumulative frequency distribution of three month rolling average spot gas costs, which vary between a low price of \$2.65 per GJ and high price of \$5.75 per GJ. Figure 4.1 also shows that the 9th percentile occurs at a price of \$5.45 per GJ.

The average of prices below the 9th percentile is \$3.37 per GJ (scenario 1) and the average of prices above the 9th percentile is \$5.65 per GJ (scenario 2). These two scenarios should be equally likely.

Figure 4.1

CUMULATIVE FREQUENCY DISTRIBUTION OF THREE MONTH ROLLING AVERAGE, LOAD WEIGHTED, SPOT GAS PRICES

Source: ACG analysis of VenCorp spot gas price data

Scenario 3: Extreme Spot prices

Scenario 3 allows for the possibility of an extreme spot price event but that the RoLR has to purchase from the spot market. Such an extreme price event has not been observed in the Victorian gas spot market to date, but could arise from the cause or outcomes of a RoLR event, from changed behaviours in the market or from an unrelated event.

Therefore the price in this scenario has been estimated as a price shock added to the high spot price. As there is no history as a guide, this scenario postulates an event in which price goes to VoLL (\$800 per GJ) for one day, and then is set by VENCORP to the administered price (\$80 per GJ) for a further five working days.⁶ Prices for the remainder of three months are assumed to be the same as scenario 2.

The price for this scenario is \$18.13 per GJ.

Scenario 4 and 5: Contract for supply

Scenarios 4 and 5 take account of the situation in which a RoLR is able to purchase gas supply contracts.

The price of gas contracts depends on the degree of competition and the attitude of suppliers. Scenario 4 assumes that commodity contracts are made available at similar prices to historical market prices on which standing offer prices are based, escalated for inflation of 10.5 per cent from June 2004 until December 2007. Scenario 5 allows for the possibility that suppliers exert some market power in negotiating contract terms, so that capacity contracts are needed.

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Administered prices from <http://www.vencorp.com.au/index.php?sectionID=8246&pageID=8939>

Scenario 4 assumes a high degree of supply competition, with suppliers willing to replace contracts at current prices so that a RoLR can enter into a commodity contract at a price equivalent to that for standing offers. Commodity contracts or groups of contracts would need to include sufficient flexibility to cover the expected load shape to a significant extent, as is the case for standing offers. Local retailers currently have the benefit of significant flexibility under the GASCOR contract. Newer contracts are unlikely to have the same amount of flexibility, and contract portfolios held by retailers will seek to cover the load sufficiently to meet their risk management targets. The scenario assumes that there is sufficient supply competition to enable adequate contract cover at the moderate spot price plus a one per cent transaction cost, giving \$3.91 per GJ.

Scenario 5 assumes much less competition because supply contract volumes for commodity and capacity are tightly held. This would not normally be an issue during low load periods, so this scenario is limited to the high load periods. In this situation, a RoLR may be concerned that spot market prices could be driven well above normal levels and would seek contracts for peak capacity as well as the flexible commodity assumed in scenario 4. Additional capacity contract cover may be available from gas suppliers, LNG contract holders, the underground storage facility, or other market participants. Public prices for capacity contracts are not generally available, with one exception. The underground storage facility owned by TRUenergy publishes a standard price on its website, with the one year price being \$190 per GJ of contracted capacity per year. Given that this is a published price, the seller may view it as an opening offer and a lower price may be negotiable. However, a risk averse RoLR will have little time to finalise such a contract, and this scenario assumes that a RoLR pays the full price of \$190 per GJ. The scenario assumes that a RoLR purchases sufficient capacity to meet the peak load implied by the highest 90 day load factor for residential customers, which is not less than 0.45. This scenario has a cost of \$5.96 per GJ.

Load scenarios

The mass market gas customer segment is very seasonal in Victoria, given the high usage of space heating and hot water. The three-month RoLR period could conceivably occur during a period of light demand, heavy demand or during seasonal crossover. It is therefore necessary to consider distinct load scenarios — low and high load scenarios should suffice.

The low load period has been determined by looking at the consumption during the January–March quarter and the high load period as consumption during July–September quarter. The percentage seasonal split has been calculated from the total VENCORP load, rather than consumption directly attributable to mass market customers. This may tend to underestimate the seasonal effect, with the impact considered through sensitivity analysis in a later section. Table 4.1 shows that average annual consumption could be left unchanged from the figure used in the Commission’s 2006 RoLR Final Decision, namely 61 GJ per residential customer, using Multinet as an example .

Table 4.1

ACTUAL AND FORECAST AVERAGE USE BY EXISTING RESIDENTIAL CUSTOMERS PER ANNUM, 2005-2012 (GJ)

	Distributor Multinet Average residential use
2005	62.1
2006	61.8
2007	61.6
2008	61.3
2009	60.8
2010	60.3
2011	59.8
2012	59.4

Source: Commission 2007, Draft Decision on *Gas Access Arrangement Review 2008-2012*, Table 11.4, p.445

The analysis assumes that a RoLR will be able to invoice the new customers for the energy they consume. As estimated meter readings will be used, the algorithm for estimation is important. If a RoLR event was to occur at the start of winter, the algorithm has to adequately account for the non-uniform daily usage of customers as the seasons change. It has been assumed that there will be no significant bias in either direction.

4.3 Weightings for the scenarios

There are few precedents to indicate the likelihood market conditions following gas RoLR events.

There was no RoLR event during the shortages of gas that followed the explosion at the Moomba gas processing plant on 1 January 2004. Although there were shortages of supply, government intervention and cooperation between gas suppliers, large users and retailers meant that prices did not rise significantly, and not to the point where retailers were in any danger of failing. This experience suggests that competitive contracting at historical prices (scenario 4) is the most likely scenario following a RoLR event. However, other scenarios are possible so need weights greater than zero.

Scenario 3 assumes an extremely high price event. Such an event has not occurred in the market to date, but the scenario has been allocated a probability of one per cent.

The probability that a RoLR will purchase gas from the spot market is indicated by the percentage of gas that is purchased from the spot market. Currently 10 per cent of total gas is purchased from the spot market, but failure of a first tier retailer could lead to an additional 30 per cent of total gas being purchased from the spot market.⁷ Therefore the combined weighting of scenarios 1, 2 and 3 should lie between 10 per cent and 40 per cent. The midpoint of 25 per cent has been used as the combined

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Tier one retailers have approximately 30 per cent of the market each.

weighting for spot purchases. Scenarios 1 and 2 should be equally likely, so have a probability of 12 per cent each.

The previous scenarios have a combined weight of 25 per cent, so scenarios 4 and 5 have a combined weighting of 75 per cent. Their relative weightings depend on the market situation at the time of a RoLR event, which will depend on customer load and time of year. During high load periods, competition will be limited and so an equal weighting has been given to scenario 4 and scenario 5. During low load periods, competition for supply is much more likely and so scenario 5 has zero weighting during low load periods.

The high load period occurs in the winter peak period, June to September, which comprises 33.3 per cent of a year. The high load period therefore has a weighting of 33.3 per cent and the low load period has a weighting of 66.7 per cent. The complete set of weightings is shown in Table 4.2.

Table 4.2

SCENARIOS AND WEIGHTS

Price scenario	Low load scenario	High load scenario	Overall weight
1. Spot purchases at moderate prices	8.0%	4.0%	12%
2. Spot purchases at high prices	8.0%	4.0%	12%
3. Spot purchases at administered prices	0.7%	0.3%	1%
4. Commodity contracts	50.0%	12.5%	63%
5. Commodity and capacity contracts	0.0%	12.5%	13%
Total	67%	33%	100%

4.4 RoLR cost per customer

The Commission's 2006 Final Decision determined that a RoLR tariff will be structured as the standing offer tariff plus an up-front fee per customer. For the 2006 Decision, the Allen Consulting Group advised an up-front cost of \$6.57 per customer in addition to the standing offer tariff. The updated estimate is \$11.78 per customer, which is an increase of 79 per cent from 2006 levels, if the standing offer tariff is escalated at 10.5 per cent inflation from June 2004 until December 2007.⁸

The RoLR charge per customer is calculated in three steps: firstly, subtract off the standing offer tariff from the energy cost for each scenario; secondly, multiply by average customer consumption; and thirdly, calculate weighted average cost.

⁸ CPI from June 2004 until September 2007, forecast until December 2007

For the first step, the standing offer tariff can be estimated by updating the Commission’s margin analysis for the review of full retail contestability. This analysis used a wholesale gas cost of \$3.50 per GJ in June 2004. If escalated by 10.5 per cent inflation, the standing offer gas cost would be \$3.87 per GJ.

For the second step, average customer consumption has been estimated from total consumption figures reported by utilities, divided by number of small customers on main tariff only, which may slightly over-estimate average consumption. The figure of 61 GJ per small customer (unchanged from 2006) is separated into winter consumption of 25 GJ and other quarters’ consumption of 12 GJ.

The resulting calculation of cost per customer for each of the scenarios is illustrated in Table 3.2.

Table 4.3

SCENARIO COSTS

Scenario	Cost per customer			
	Wholesale	Addition to standing offer	In low load period	In high load period
1. Spot purchases at moderate prices	\$3.37	-\$0.49	-\$6.02	-\$12.35
2. Spot purchases at high prices	\$5.65	\$1.78	\$21.71	\$44.51
3. Spot purchases at administered prices	\$18.13	\$14.26	\$173.97	\$356.63
4. Commodity contracts	\$3.91	\$0.04	\$0.47	\$0.97
5. Commodity and capacity contracts	\$5.96	\$2.09	na	\$52.30

The final cost of \$11.78 per customer is calculated as the weighted average sum of costs per customer, as shown in Table 3.3. This table also shows that the weighted average cost RoLR cost would be \$4.45 per GJ, if charged as per GJ rather than per customer as stipulated in the Commission’s 2006 Decision.

Table 4.4

SCENARIO COSTS

Scenario	Low Load	High load	\$ per Customer	\$ per GJ
1. Spot purchases at moderate prices	8.0%	4.0%	-\$0.98	\$0.40
2. Spot purchases at high prices	8.0%	4.0%	\$3.52	\$0.68
3. Spot purchases at administered prices	0.7%	0.3%	\$2.35	\$0.18
4. Commodity contracts	50.0%	12.5%	\$0.36	\$2.44
5. Commodity and capacity contracts	0.0%	12.5%	\$6.54	\$0.74
	67%	33%	\$11.78	\$4.45

4.5 Sensitivities

The scenarios analysed in this chapter represent plausible states of the gas market in the period following a RoLR event and have been given reasonable relative probabilities of occurrence in view of the limited history of RoLR events. The RoLR cost is not very sensitive to changes in these weights.

Weights have been varied up and down as shown in Table 4.5, with the weight for contracting scenario 4 being adjusted to ensure weights still add to one. The RoLR gas cost per customer is most sensitive to the weights for winter contracting scenario 5 — a 12 per cent increase in these weights causes a 7 per cent increase in the RoLR cost, and vice versa. In contrast, a 10 per cent increase in the weight for the very high spot price scenario 3 causes a 2 per cent increase in the RoLR cost.

Table 4.5

SENSITIVITIES FOR WEIGHTS FOR ROLR GAS COST

Scenario	Original weight	Sensitivity weight	Original RoLR cost	Sensitivity RoLR cost	Difference	% Difference
1 & 2 (Spot)	12%	13%	\$11.78	\$11.99	\$0.20	2%
1 & 2 (Spot)	12%	11%	\$11.78	\$11.58	-\$0.20	-2%
3 (High spot)	1%	1.1%	\$11.78	\$12.02	\$0.23	2%
3 (High spot)	1%	0.9%	\$11.78	\$11.55	-\$0.23	-2%
5 (Winter contracts)	12.50%	14%	\$11.78	\$12.56	\$0.78	7%
5 (Winter contracts)	12.50%	11%	\$11.78	\$11.01	-\$0.78	-7%

Note: the weight for scenario 4 (summer contracts) is adjusted to ensure sensitivity weights sum to 1.