Review of the delivered price of natural gas to tariff customers served from the AGL Gas Network in NSW

Issues Paper

INDEPENDENT PRICING AND REGULATORY TRIBUNAL
OF NEW SOUTH WALES

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Issues Paper

Gas 98-2 **May 1998**

Submissions

Public involvement is an important element of the Independent Pricing and Regulatory Tribunal's processes. The Tribunal invites submissions from interested parties to all its investigations.

Submissions should have regard to the specific issues that have been raised. There is no standard format for preparation of submissions, but reference should be made to relevant issues papers and interim reports. Submissions should be made in writing. If they exceed 15 pages in length, they should also be provided on computer disk in word processor, PDF or spreadsheet format.

Confidentiality

Special reference must be made to any issues in submissions for which confidential treatment is sought and all confidential parts of submissions must be clearly marked. *However, it is important to note that confidentiality cannot be guaranteed as there are legislative provisions which give the public access to certain documents.*

Public access to submissions

The Tribunal will ensure that immediately after registration all submissions that are not subject to confidentiality are available for public inspection at the Tribunal's offices and via the Tribunal's website. Transcriptions of public hearings will also be available.

Public information about the Tribunal's activities

A range of information about the role and current activities of the Tribunal, including copies of recent reports and submissions can be found on the Tribunal's website at www.ipart.nsw.gov.au.

AGL Retail Energy Ltd are requested to forward submissions by Friday 3 July 1998 (copies will be available to interested parties). Submissions to the review on the issues raised in this paper should be received no later than 17 July 1998.

Comments or inquiries regarding this report should be directed to:
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GLOSSARY AND ACRONYMS

Access Undertaking	The document by which a distributor undertakes to provide access to its system by system users, per section 20(1) of the *Gas Supply Act 1996.*
AGC	Albury Gas Company Limited.
CAPM	Capital Asset Pricing Model, a model that relates the required return of an asset to the risks associated with that asset.
City gate	Transition point from high pressure transmission pipelines to distribution network.
CoAG	Council of Australian Governments.
CPI	Consumer Price Index.
DAC	Depreciated Actual Cost; historic cost adjusted for depreciation.
Distribution	Transport of gas over a combination of high pressure and low pressure pipelines from a city gate to various customers' usage points. Also known as reticulation.
DORC	Depreciated Optimised Replacement Cost is the replacement cost of an "optimised" system.
EAPL	East Australian Pipeline Ltd.
EPD	Energy Projects Division, a division of the Victorian Treasury.
FDC	Fully Distributed Costs.
Haulage	see Transmission.
IPART	Independent Pricing and Regulatory Tribunal of NSW.
NPV	Net present value.
PCF	Price Control Formula.
Reticulation	See Distribution.
Tariff customer	Gas customer consuming less than 10 TJ per annum.
TJ	Terajoule, equal to 1,000 GJ.
TOP Contract	Take or pay contract; an agreement to pay for a minimum amount regardless of the quantity taken.

Transmission	Long haul transportation of gas via high pressure pipelines.
UAG	Unaccounted for gas; gas lost through a transportation system due to leakage, measurement error or theft.
WACC	Weighted Average Cost of Capital.

1 INTRODUCTION

In keeping with commitments made in 1994 by the Council of Australian Governments (CoAG), the NSW Government is introducing competition into the supply of natural gas. Reforms have paved the way for suppliers[1] of gas which are not reticulators[2] to enter the NSW gas market. This has occurred through the development of a third party access regime for reticulation systems. Once suppliers have third party access to pipeline networks, they are able to access existing reticulation systems and in so doing, compete for customers.

Although all customers will eventually be able to choose their natural gas supplier, tariff customers[3] are not yet able to do so. It can therefore be argued that these customers are being supplied by a monopoly provider.[4]

Even when all customers are contestable, competition may not be effective. This review by the Independent Pricing and Regulatory Tribunal (IPART), considers the continued regulation of AGL Retail Energy Ltd's[5] tariff market prices in NSW ahead of effective retail competition in the tariff market. This review investigates whether a gas pricing order (see section 1.2) should be made for prices charged to natural gas tariff customers in Sydney, Wollongong, Newcastle and country areas of NSW currently served from the AGL gas network.[6] Currently, the maximum permissible average for prices charged to tariff customers served from the AGL gas network are determined by a price control formula (PCF) established in 1990 by the Minister for Energy. The formula and its application are discussed in detail in section 3.

1.1 Purpose of this review

The purpose of this review is to determine:

- whether the gas tariff market, or some parts of it, should continue to be regulated, and if so,
- how prices should be regulated.

If it is established that there is a need for continued regulation, the Tribunal wishes to determine whether:

- gas is being delivered at least cost
- current prices are reasonable
- satisfactory service is being delivered to customers
- suppliers are receiving an appropriate return
- whether the current form of regulation should change

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1 A gas supplier is a person (in accordance with the legal definition of 'person') who supplies natural gas to other persons, either end-use customers or other suppliers.

2 A reticulator owns or controls a natural gas transportation system within a region.

3 Tariff customers in NSW are those customers that use less than 10TJ of gas per year. These customers include residential customers (households), commercial customers (eg supermarkets) and industrial customers (eg small scale industrial process plants).

4 In accordance with the Gas Supply Regulation 1996, full customer contestability is scheduled for 1 July 1999.

5 AGL Retail Energy Limited is the holder of the Authorisation for supply to the tariff market.

6 A list of all areas where AGL Gas Networks Ltd is authorised to reticulate is provided in Appendix C.

- whether this review should be run concurrently with the 1999 access review.

These questions raise issues relevant to the areas currently served from the AGL gas network in NSW. These issues are discussed in sections 4 and 5.

1.2 Gas pricing order

Under the *NSW Gas Supply Act 1996*, the Tribunal is able to establish a pricing mechanism for delivered gas to tariff customers. Known as a gas pricing order, it has been developed pursuant to section 27 of the Act (see Appendix A).

Essentially, section 27 of the NSW Gas Supply Act 1996 states that a gas pricing order can:

- establish a methodology within which tariff customer prices for delivered gas must be set
- establish maximum tariffs or maximum average tariffs
- prohibit the imposition of certain charges.

It should be noted that any gas pricing order applicable to the delivered price of gas in a particular area applies to all retailers serving that area. This ensures that with competition among suppliers, any retailer supplying the area covered by a gas pricing order is subject to the conditions imposed by that gas pricing order.

1.3 Review process and timetable

In conducting a public review, the Tribunal is required to follow the process set out in section 32(2) of the NSW Gas Supply Act 1996 and Part 4 of the *Independent Pricing and Regulatory Tribunal Act 1992*.

Part 4 of the *Independent Pricing and Regulatory Tribunal Act 1992* details the procedure for conducting investigations. Accordingly, the Tribunal proposes to:

- advertise the review, and submission due dates
- release an issues paper
- receive and place on public record submissions from interested parties
- receive written responses to these submissions
- hold at least one public hearing
- consult widely with stakeholders.

The timetable for the AGL tariff review is as follows:

Table 1.1 Timetable for AGL tariff review

Actions	Time frame
Release issues paper	May 1998
Receive AGL Retail Energy Ltd submission	July 1998
Receive public submissions	July 1998
Hold public hearings in Sydney	To be determined(1)
Release IPART Report and Determination	To be determined(1)

Note (1) Dependent on the response regarding the timing of the tariff market review in relation to the access review.[7]

Guided by the principles of consultation and transparency, the Tribunal actively seeks public input. The Tribunal encourages all interested parties, including gas utilities, to enable as much information as possible included in submissions to be filed on the public record. The Tribunal may give greater weight to information placed on the public record which has been subjected to review by other stakeholders.

1.4 Access review

In July 1997, the Tribunal issued a Determination approving the varied Access Undertaking of AGL Gas Networks Ltd for the transportation of gas through the NSW gas network (effective until 30 June 1999). The review of the 1997 Access Undertaking is due to commence at the end of 1998.

[7] The access review is scheduled to commence late in 1998, and to be completed by 1 July 1999.

Whilst the current price control framework applicable to AGL Retail Energy Ltd is open ended, it was intended by the former NSW Gas Council that a four year review of the price control formula in the tariff gas market would take place in 1998.[8]

As noted in section 2.4, the Tribunal has decided to complete its tariff market review of delivered natural gas prices in Albury, Moama and Wagga Wagga in conjunction with access reviews for these networks. With the transportation cost potentially comprising more than 50 percent of the final delivered price to tariff customers, the Tribunal sees considerable merit in running these two reviews concurrently.

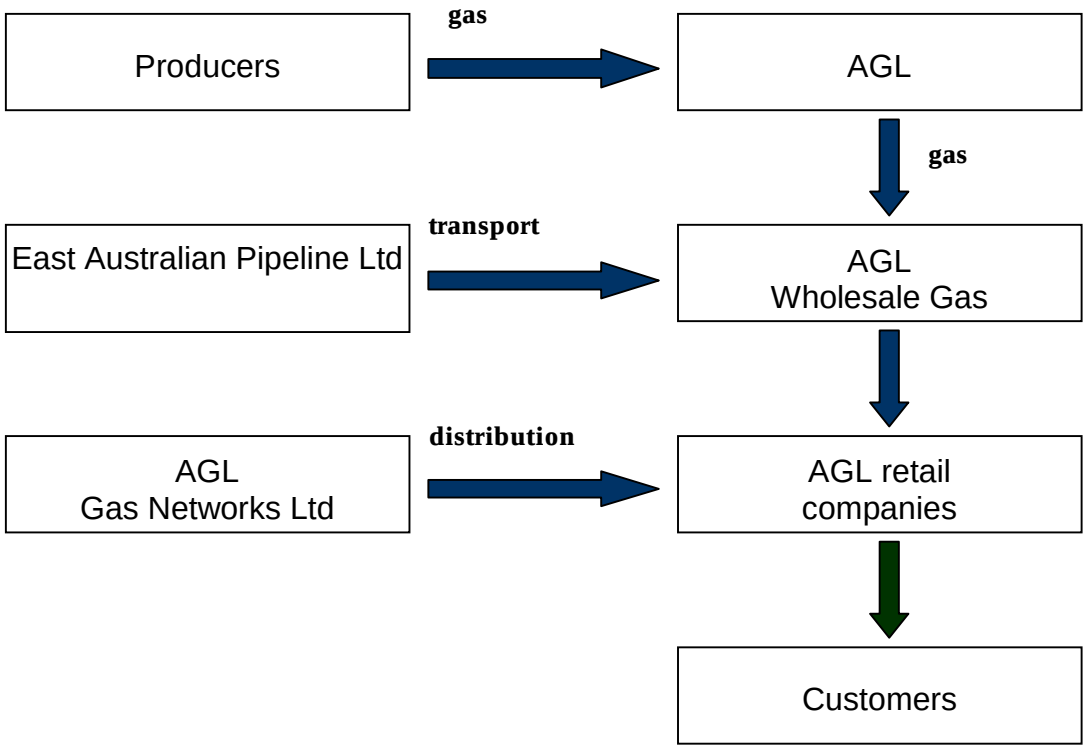
The AGL tariff market review is following the timetable intended by the former Gas Council. After submissions have been received, the Tribunal will decide whether to delay completion of the tariff review until the 1999 access review for AGL Gas Networks Ltd has been completed.

The Tribunal seeks comments on whether the tariff market review for AGL Retail Energy Ltd should be run concurrently with the access review of AGL Gas Networks Ltd in 1999, maintaining the current regulation until that time.

[8] NSW Gas Council meeting number 90, 12 January 1995.

2 BACKGROUND

AGL currently has a product portfolio which incorporates natural gas, LPG and electricity. At present AGL Gas Networks Ltd supplies around 96 percent of the NSW natural gas market. As of August 1996, AGL Gas Companies restructured its operations to create two major operating units: Energy Infrastructure and Energy Sales and Marketing. Energy Infrastructure has responsibility for AGL's transmission and distribution facilities, both gas and electricity. Within this unit is AGL Gas Networks Ltd, which is responsible for operating AGL's gas network businesses in NSW and the ACT. Energy Sales and Marketing is responsible for all sales and marketing functions across AGL, including energy contracts and trading for both gas and electricity. Within this unit, there are a number of retail companies which hold gas suppliers authorisations under the *NSW Gas Supply Act 1996*. AGL Retail Energy Ltd is the holder of the authorisation for supply to the tariff market. AGL purchases from the Cooper Basin Producers (Santos) and sells to AGL Wholesale Gas[9], which bundles the gas with transmission before selling it to retailers (AGL's three retailers and any competitor retailers which buy from AGL Wholesale Gas), making it available at the city gate. The retailers then bundle this with distribution and sell delivered gas to end-use customers. This is illustrated as follows:



Since 1 August 1997, AGL Gas Networks Ltd has been offering transport services to large gas consumers[10] and authorised suppliers wishing to deliver gas through AGL's distribution network. Similar access is also available through the Moomba to Sydney interstate pipeline owned by East Australian Pipeline Limited.

[9] AGL Wholesale Gas was established within Energy Sales and Marketing to manage AGL's energy trading activities and natural gas sales to the 25 largest contract customers in NSW.

[10] See contestability timetable, Section 4.1.

2.1 Summary of the gas market

The following table presents a summary of the market for gas in Sydney, Wollongong, Newcastle and country areas served from the AGL gas network in NSW.

Table 2.1 Gas tariff market (1996/97)

	Sydney	Wollongong	Newcastle	Country Areas	Total
Population ('000)	4,200(1)	220	740(2)	940	6,100
Total number of tariff customers	548,499	39,664	53,707	55,250	697,120
Sales of gas (TJ)	19,932	975	1,396	2,841	25,144
Network (km)	14,207	1,185	2,331	2,616	20,339
Average prices ($/GJ)(3)					
Residential	$13.53	$14.08	$14.49	$12.02	
Industrial and Commercial	$10.10	$10.16	$10.69	$10.21	

Notes: 1. Includes the NSW Central Coast.
2. Includes Lake Macquarie and the Hunter Valley.
3. For comparison with other states, see Appendix F.

With a population of approximately 3.9 million, Sydney is the largest city in Australia. Natural gas tariff customers in Sydney account for around 80 percent of the total gas tariff market[11] in NSW. With a population of approximately 940,000, country areas account for 8 percent of the total AGL gas tariff market. With a combined population of approximately 950,000, Wollongong and Newcastle customers account for approximately 13 percent of the total tariff market served by the AGL distribution system in NSW.

AGL Gas Networks Ltd operates more than 20,000 kilometres of reticulation mains serving about 700,000 customers in NSW. In 1995/96, AGL customers purchased approximately 102,000 terajoules of gas.[12] Of the total, tariff market consumption accounted for approximately 25,000 terajoules, approximately 25 percent.

[11] Market refers to customer numbers.
[12] AGL Retail Energy Ltd correspondence, 30 September 1997, p 2.

2.1.1 Tariff market profile

The tariff market can be separated into residential and commercial/industrial sub-classes.

Residential customers account for 96 percent of the total number of customers but consume only 14 percent of the total load. Average residential consumption in Sydney is about 22 gigajoules per annum. This compares to average consumption in Victoria of 58 gigajoules per year, and to 24 gigajoules per year in South Australia.[13] About 60 percent of all households in Sydney with access to the gas mains are connected. By comparison, about 85 percent of households with access to the gas mains are connected to gas in Wagga Wagga and 80 percent are connected in South Australia.[14] AGL Gas Networks Ltd net customer connections increased by 3.7 percent from the previous year.

Commercial and industrial customers account for 3 percent of AGL's total natural gas customer base in NSW. They use 11 percent of total gas sold. While contract customers[15] represent less than 1 percent of AGL's total NSW market, these customers account for the remaining 75 percent of total gas consumed. Contract uses range from hospitals and flour mills to brick manufacturing and fertiliser production.

Although this review does not cover contract market prices, it is important to consider contract customers when allocating costs. This aspect is discussed in section 5.3.

2.1.2 Tariff market price structure

Prices to tariff customers served from the AGL gas network in NSW are for a bundled service. The bundled service includes supply of gas and transportation to the customer. The pricing structure applicable to the majority of tariff customers consists of a fixed supply charge and a dollar per megajoule charge (commodity charge).

Most customers[16] can choose a supply charge and corresponding commodity charge to suit their consumption. The higher supply charges are accompanied by reduced commodity charges.

The option of a higher supply fee and lower commodity charges can benefit both the supplier and the customer. The supplier benefits as the higher fixed charge covers more of the fixed costs of the system, and the lower commodity charge makes it more economical for the customer to substitute electrical appliances for gas appliances in the home. Depending on the level of the consumption, the customer may pay a lower per megajoule of gas charge, resulting in a lower overall final bill.

AGL Retail Energy Ltd offers uniform residential tariff structures throughout NSW with the exception of Yass, and uniform structures for new and larger existing industrial and commercial customers with the exception of those in the Newcastle and Hunter Valley region.[17]. Yass customers have to pay a minimum bill. This means that if a customer does

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13 Australian Gas Association 1997, *Gas Statistics Australia*, pp 73-84.

14 Australian Gas Association 1997, *Gas Statistics Australia*, pp 73-84.

15 Contract customers are gas users that contract to consume more than 10 TJ per year.

16 Residential customers served from the AGL gas network in NSW (excluding Yass) have a choice of three levels of supply charge and corresponding commodity charges. The options available to industrial and commercial customers vary by region (see appendix B).

17 Goulburn, Yass, Wollongong and Shellharbour industrial and commercial customers, who were customers before 1 July 1996 and consume less than 45 GJ per quarter, have rates that differ from each other as well as from the rest of the industrial and commercial customers served by the system. All

not consume enough gas to incur charges equivalent to the minimum bill, they will still be charged the minimum bill. Industrial and commercial customers in the Newcastle and Hunter Valley region are also subject to a minimum bill arrangement.

Tables showing the current delivered prices to tariff customers served from the AGL gas network in NSW by region and customer class can be found in Appendix B.

Newcastle and Hunter valley industrial and commercial customers are subject to the same minimum bill arrangements, regardless of the level of consumption.

3 PRICE REGULATION IN NSW

3.1 Sydney, Wollongong, Newcastle and country areas

AGL's gas prices in NSW have been regulated since the first *Gas Act* of 1912. Prior to the introduction of the current regulatory system in 1990, tariff prices were regulated by ad hoc Boards of Inquiry. A new board had to be formed every time the gas companies or the Minister sought a change in tariff prices.

The 1990 amendments to the then Gas Act established the NSW Gas Council as an independent statutory authority to regulate the NSW gas industry. The amendments also introduced a new economic regulatory framework based on a system of authorisations[18] for gas distributors and a price control formula (PCF) to be applied to tariff customer prices. In 1996, the *NSW Gas Supply Act* was introduced.

The PCF establishes a maximum average price per gigajoule of gas to tariff customers (see Appendix C). When setting prices for these customers, Condition 3.4 of AGL Retail Energy Ltd's authorisation requires that AGL take all reasonable steps to ensure that the actual average price per gigajoule does not exceed that calculated in accordance with the PCF. In simple terms, the maximum average price in any current year is based on a price cap mechanism, in the form of a consumer price index (CPI) -X formula. CPI represents inflation, and X, the efficiency factor, which is currently set at 1.5 percent.

The 1996 NSW Gas Supply Act disbanded the NSW Gas Council, nominated the Tribunal as the regulator, and provided wide ranging powers for the regulation of tariff market prices. Under the NSW Gas Supply Act 1996, it is a condition of a supplier's authorisation that the supplier must not impose charges on a tariff customer otherwise than in accordance with any relevant gas pricing order.

A major review of the PCF was conducted in 1994. A decision was made to continue to limit increases in the final delivered prices to less than increases in the CPI. It was also decided that a further review would take place in 1998. The Tribunal decided to maintain the PCF in its current form at least until 1998, allowing the formula to operate for the intended duration since the last major review (see section 4.2.1.).

In addition to the PCF, AGL Retail Energy Ltd's authorisation contains further price control provisions for tariff gas users. These are outlined below.

3.1.1 Voluntary price setting guidelines

Condition 3.6.4 of AGL Retail Energy Ltd's authorisation establishes an obligation for AGL Retail Energy Ltd to outline the policies and principles on which tariffs for the different classes of tariff gas users are based. The voluntary principles adopted by AGL Retail Energy Ltd are summarised below:

- tariff changes will usually occur no more than once a year
- IPART must be provided with sufficient notice of any tariff changes

[18] Authorisations include the terms and conditions under which a gas supplier is able to supply gas to customers.

- tariff increases at any one time are to be no greater than $5.00 per quarter or 5 percent in real terms, whichever is the greater.

AGL has complied with these guidelines, except when tariff changes were made in 1995. These changes were approved by the former Gas Council, even though they introduced increases above the $5 or 5 percent limit due to a change in the structure of prices. The discussion in the following section provides details regarding the 1995 amendment.

3.1.2 Standing charges and minimum fees

Condition 3.8 of AGL Retail Energy Ltd's current authorisation requires IPART to approve any changes to AGL's standing charges (supply fee) and minimum bill charges (see section 2.1.2)

In 1995, following consultation with a number of community groups, the Gas Council agreed to the introduction of a material change in the structure of residential tariffs charged by AGL. The change involved replacing the minimum bill and block rate structure with a clear separation between the dollar per megajoule charge (commodity charge) and the supply fee (standing charge). AGL proposed that the change was required so that the structure of tariffs would more closely reflect the structure of costs. Most of the costs incurred in supplying gas to tariff customers are fixed. This should be reflected in the tariffs. A pre-condition to this agreement was that increases to customers, in particular, holders of pensioner concession cards (pensioners), be phased in over a period of 24 months.

Transitional arrangements were implemented to help all consumers adjust to the new tariff structure. Bill increases for non-pension customers were capped at $5 per quarter for the first seven months. Capping of pensioners' bills was to continue for a further six months to January 1998, at $5 per quarter for the first year of the new tariff structure and $8 per quarter between 1 July 1996 and 1 February 1997. The revised structure has resulted in reductions in the final bill for customers with more than one gas appliance in their home (especially if the customer has a gas hot water system). Small increases were experienced by customers using only a small amount of gas (for example, just a cook top).

3.1.3 Pensioner rebates

Condition 3.7.1 of AGL Retail Energy Ltd's authorisation requires AGL to provide discounts to pensioners holding pensioner concession cards.[19] The amount of these concessions is approximately $3.50 per quarter.

3.2 Albury, Moama and Wagga Wagga

Currently, there are no formal price control measures in Albury, Moama the NSW Murray Valley towns or Wagga Wagga. In July 1997, the Tribunal commenced a separate review of

[19] Section 11(4) of *NSW Gas Supply Act 1996* permits the Minister to impose a condition on a gas supplier's authorisation requiring the gas supplier to implement the Government's community service obligations policy. Whilst section 11(4) of the *NSW Gas Supply Act 1996* also requires the Government to fund these rebates, amendments to the Act in July 1997 deferred this obligation until the tariff market is contestable. Following the introduction of full market contestability in 1999, the Government's obligation to indemnify the holders of authorisations for the costs incurred in complying with community service obligation requirements will resume.

the delivered price of natural gas to these regions. On 13 March 1998, the Tribunal decided to:

- Postpone the Determination on the delivered price of natural gas in Albury, Moama and Wagga Wagga. This decision allows the review of the delivered price to coincide with the access reviews being conducted in these regions. The access reviews will assess and determine efficient transportation prices for the networks serving these regions. The transportation price will then form part of the final delivered price.
- Not regulate the NSW Murray Valley towns which are supplied by the Albury Gas Company. The Tribunal considers that, as these tariffs were developed as a result of a competitive process in a market already served by other energy sources, there is sufficient impetus for Albury Gas Company to maintain prices at efficient levels.[20]

[20] Albury Gas Company is still required to inform the Tribunal of any intention to vary prices to residential, commercial and industrial customers 60 days prior to the application of any price variation.

4 CONTINUED REGULATION?

4.1 Why regulate?

The only supplier of a good or service, a monopoly supplier, may use its unique position to charge high prices and generate high profits. With this in mind, the current form of regulation was introduced in 1990 with the following aims:

- to protect the interests of tariff market customers from potential abuse of monopoly power
- to provide the necessary incentives for efficiency
- to provide the necessary incentives for investment.

Whether gas supply is a monopoly or a competitive business is often disputed. On the one hand, it is argued that gas competes with electricity and other fuel sources. Households are already connected to the necessary electricity infrastructure, but consumers have to choose to install gas infrastructure. Therefore, it can be argued that there is already sufficient competitive pressure on the level of gas prices so regulation is unnecessary. Other arguments against continued regulation include the information asymmetry that may exist between the regulator and the utility which can provide greater scope for regulatory error. Moreover, if competition is effective and regulation continues unnecessarily, the cost of this regulation will be bourne by consumers as suppliers seek to pass on the costs associated with regulation.

The fact that the average price of delivered gas to tariff customers is below the maximum average price set by the PCF could be interpreted to indicate that the revenue allowed under the current PCF methodology is too generous. Another interpretation could be that current gas prices are subject to competitive pressures from electricity. This is particularly evident in the residential market, where studies have shown that a 1 percent change in the price of gas can result in a similar change in the quantity of gas demanded.[21] ABARE estimates show that residential customers are willing to substitute electricity for gas (in the long term) if electricity prices fall. However, by contrast, they are less willing or able to reduce their consumption of electricity through substitution of gas if gas prices fall.[22] This is because there are some applications, such as lighting, for which there are no alternatives. Other studies have also found electricity demand in general to be less responsive than gas demand.[23]

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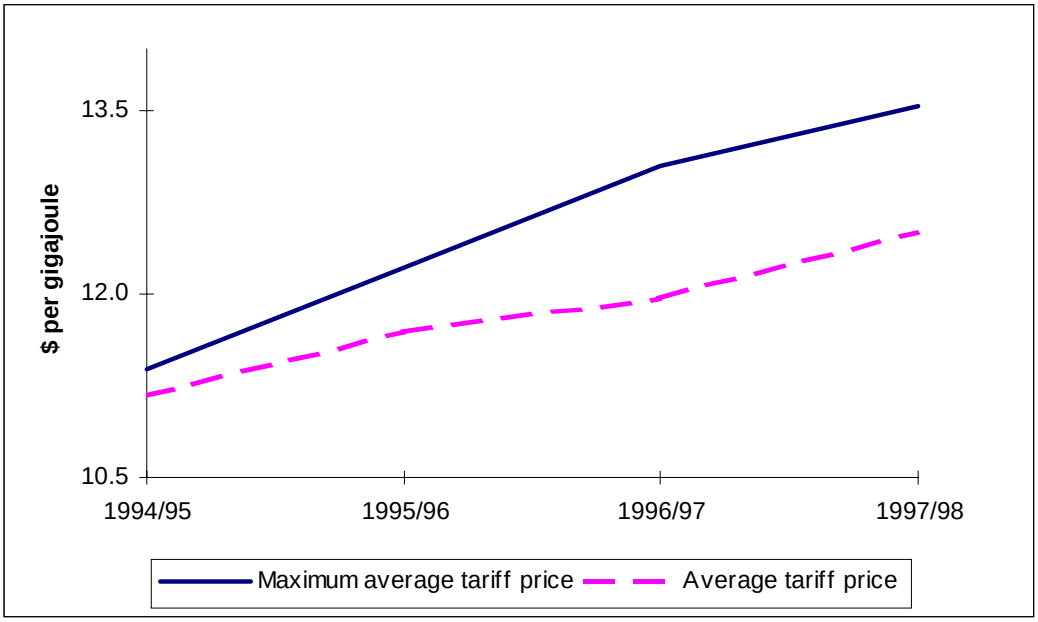
[21] Australian Gas Association, ABARE, AGA Research Paper No 3, September 1996, *Price Elasticities of Australian Energy Demand,* p 8.

[22] Australian Gas Association, ABARE, AGA Research Paper No 3, September 1996, *Price Elasticities of Australian Energy Demand,* p 8.

[23] Cox, A. 1987, *Forecasting the substitute component of energy demand in Australia,* ABARE paper presented at the Conference of Economists, Surfers Paradise, Queensland, 23-27 August.
ABARE 1991, *Energy Generation and Distribution*, submission to the Industry Commission, Canberra.

The maximum average price established under the PCF relative to the actual average prices from 1994/95 to 1997/98 are shown below.

Figure 4.1 Current average price relative to PCF maximum average tariff price



Note: The 1997/98 maximum average tariff price and average tariff price are AGL forecasts.

It can also be argued that the competition between gas and electricity is not effective. For instance, the capital costs involved in switching energy sources, or inability to switch sources (eg for renters) means that a user is a captured customer in the short term. Obviously, capture is less important in the long term, eg when new appliances are chosen.

The transitional timetable for retail competition in gas throughout NSW was established by regulation under the NSW Gas Supply Act 1996. By 1 July 1999 all customers will be able to choose an alternative supplier. This timetable is summarised below.

Table 4.1 Timetable for retail competition in NSW

Year beginning	Load category
30 August 1996	New and existing loads ≥ 500TJ pa
1 July 1997	New and existing loads ≥ 100TJ pa(1)
1 July 1998	New and existing loads ≥ 10TJ pa(2)
1 July 1999	Tariff market

Notes: 1 Since 1 July 1997, new and existing loads, in excess of 100TJ per annum, or any group of sites which are under the same corporate ownership, which each consume more than 10TJ per annum, and which together consume a total equal to, or in excess of 100TJ.

2. From 1 July 1998, any form of aggregation of the contract market will be permitted.

Tariff market controls may be more important in the lead up to competition because AGL Retail Energy Ltd has ongoing market power while small users are not contestable.[24] AGL Retail Energy Ltd may have an incentive to protect its position in the contestable markets by allocating a greater proportion of total costs to small users, resulting in price increases to these small users and allowing discounts to be passed on to large users. Even when all tariff customers are contestable, it can be argued that these customers will need to be protected until the competition is effective. A pre-requisite for effective competition may be the entrance, or threat of entrance, of a supplier other than the incumbent supplier with the ability to deliver gas to customers. To deliver gas to customers, suppliers must be able to access gas supplies and upstream haulage. Impediments to this access have been identified in NSW and may limit the ability of suppliers, other than the incumbent, to contribute towards the development of effective competition.

Concerns about the effectiveness of competition for smaller customers have been expressed in some other markets (eg electricity in the United Kingdom (UK)). The possibility that the incumbent supplier may still enjoy significant market power has led OFFER, the UK electricity regulator, to consider whether some form of 'safety net' price control is required. In contrast, strong competition appears to be developing in the retail supply of gas to residential customers in the UK.

Furthermore, a pre-existing regulated tariff can serve as a pre-competition benchmark, constraining the incumbent's use of market power. The possible impact of regulation on the development of a competitive market needs to be balanced against the possible benefits of regulation. If it were determined that some continued regulation of tariff market prices is required, it will need to be designed carefully to minimise the effect on the market. If not, the short term gains to consumers from interim regulation may be outweighed by the adverse medium to long term effects on the competitive market. For example, regulation has the potential to add costs where effective competition is otherwise providing sufficient pressure on prices and service delivery.

Non-price regulation may be an important safety net for protecting small users. For example, in the UK, Regional Electricity Companies (RECs) are required to adopt codes of practice, approved by the regulator, which govern the way in which business with tariff customers is undertaken. These include: guaranteed standards of service provision, bill payment options, services for elderly and disabled customers, and complaints procedures. The licensing of domestic gas suppliers in the UK is also contingent on the adoption of certain obligations to domestic customers. For example, if a customer has difficulty paying the bill, a supplier is not within its rights to disconnect the customer. The supplier is required to offer arrangements to assist debt repayment. As noted in section 5.5, gas suppliers in NSW are being required to develop similar arrangements.

The Tribunal seeks comments on whether the delivered price of gas to the tariff market should continue to be regulated. It also seeks comment on the need for, and scope of, non-price regulation and obligations for suppliers.

[24] It can be argued that as larger tariff market customers become contestable, they will no longer require the protection provided by regulation.

4.2 Method of regulation

As discussed in section 1.2, a gas pricing order may either:

- fix maximum tariffs or fix maximum average tariffs and any other charges, or
- fix the methodology by which maximum gas tariffs or maximum average gas tariffs and other charges are calculated, or
- prohibit the imposition of any specified charges or class of charges.

In issuing a gas pricing order, whether it be the imposition of a maximum price or another constraint, the Tribunal needs to base its decision on a general approach.

4.2.1 Future of the Price Control Formula

By establishing a maximum average price and providing for the pass through of efficiency gains in reticulation and retail costs, the PCF is broadly similar to other forms of price control. Price or revenue caps encourage the business to pursue efficiency gains, while ensuring that customers receive some of the benefits from efficiency gains. These approaches still require the regulator to establish an initial, commercially sustainable revenue base. In addition, to safeguard the interests of customers from drastic price changes, side constraints[25] may be set.

Under the current PCF arrangement, at the beginning of a financial year, AGL Retail Energy Ltd forecasts its gas sales and costs for the year to determine an estimate of the maximum average price. AGL Retail Energy Ltd must then plan any tariff changes so that the actual maximum average price determined by the PCF after the year ends is not exceeded. At the end of the year, the actual maximum average price is determined and an adjustment factor (a function of the difference between the actual average price and the actual maximum average price for the year) for the following year is applied to compensate AGL Retail Energy Ltd (with interest), or the market, with that difference. For a monopoly supplier, estimates of gas sales may prove to be difficult because sales are sensitive to economic as well as climatic variations. In an environment where more than one supplier can operate within one market, it will be extremely difficult, if not impossible to accurately estimate gas sales at the beginning of a year. Thus, the continuation of the PCF in its current form may not be viable in a competitive market.

With the development of third party access and ring fenced network prices, gas suppliers will purchase network transportation from the reticulation component of the gas business. With third party access, unless a negotiation takes place, network costs will no longer be within the control of the retailer. One option would be to provide a safety net through the development of maximum average tariffs. These tariffs would be based on a margin above the regulated network charges and wholesale market costs. Retailers would be able to offer tariffs below this safety net. Customers will change retailers if they are able to obtain a more favourable supply arrangement. A further issue is whether separate retail tariffs should apply to each of the regions supplied from the AGL gas network in NSW.

If it is considered that continued regulation is necessary in the tariff market, the Tribunal is of the view that any pricing order should aim to encourage competition to develop to benefit customers over the longer term.

[25] Side constraints restrict price increases to a maximum amount.

If it is deemed that continued regulation is necessary, the Tribunal seeks comments on the appropriate method of regulation of the delivered price of gas to tariff customers served from the AGL gas network in NSW.

4.3 Duration of any continued regulation

Another consideration for this inquiry is the duration of the gas pricing order, if one is made. Tariff market customers will be contestable from the middle of 1999. If regulation is to occur, it may only be appropriate for the period leading up to full contestability. However, there may be a transitional period where even though customers are contestable they do not have the option of an alternative supplier. It could be argued that in this case competition is not effective and regulation is still appropriate. The duration of any regulation should strike a balance between establishing certainty for the customer and the utility, and avoiding unnecessary regulation of a competitive market.

The previous electricity determination released by the Tribunal in 1996 was set for three years. In the past, AGL's Price Control Formula has been set for four years.

If a decision is taken to provide transitional regulation following the introduction of competition, it will be important to ensure that this is not in place any longer than necessary. At issue are the need to balance the promotion of a competitive market at the small customer level, and the need to protect small customers pending effective competition in the natural gas market.

If the decision is made to implement a gas pricing order, the Tribunal seeks comments on its appropriate duration.

5 ISSUES FOR CONSIDERATION

5.1 Components of the delivered price of gas

If the Tribunal decides that a gas pricing order should be issued, the next step will be to determine the regulated price. In order to do this, the Tribunal must consider the efficient cost of delivering gas to all customers in Sydney, Wollongong, Newcastle and the country areas served from the AGL distribution network in NSW. This includes the consideration of the different components of the cost and how these are to be passed through to customers in the price. The general acceptability of the final delivered prices to tariff customers, relative to comparable benchmarks, will also be assessed.

Several cost components make up the delivered price of gas. In delivering gas to a customer's door, the supplier incurs the cost of:

- purchasing the gas from the field
- transporting the gas from the field to the city gate through a transmission pipeline
- transporting the gas through the reticulation system within the serviced areas
- running the supply business (retail costs).

The field price of gas and the haulage cost of gas can be considered separately. However, it is difficult to consider the reticulation and retail costs separately. Until 30 June 1997, AGL operated as a bundled reticulator and supplier. Within that structure, costs were not recorded for the separate components of the business. The difficulty in considering the elements of the combined retail and distribution business separately, was highlighted in the 1997 access review of AGL Gas Networks Ltd. The access review considered only the cost of transporting gas through the network. The level of cost bundling and minimal direct recording made it difficult to perform robust cost analysis of the network alone.

As part of its Determination on the Access Undertaking of AGL Gas Networks Ltd, the Tribunal required information systems to be developed so that cost information with sufficient detail and reliability can be provided to enable a more robust cost analysis at the 1999 review. AGL is currently developing information systems for the revised business structure.

In considering the pass through of costs to the customer, a regulator has two options. Firstly, costs may be passed directly through to the customer. This option may limit a supplier's incentive to reduce these costs. Alternatively, costs may be set at a certain level by the regulator, and the supplier must work within this level. This option allows the supplier to benefit from efficiencies and be disadvantaged by inefficiencies.

The following sections discuss the various components that comprise the price of delivered gas and associated issues that the Tribunal will need to address in this review.

5.1.1 Field price of gas

AGL currently purchases gas under contract from a single source. The contract is a 30 year take or pay (TOP) agreement[26] with the consortium of South Australian Cooper Basin producers led by Santos Ltd. Currently there are no further contracts beyond 2006.

Alternative sources of natural gas supply will generally become available as pipelines linking NSW to other supplies of gas are completed. Additional sources of supply may provide the necessary pressures for efficient pricing. One example of these developments is the construction of a pipeline between Albury and Wagga Wagga. The pipeline proposed for construction from Longford to Sydney by BHP/Westcoast Energy would also facilitate the flow of alternative supplies of natural gas into NSW.

At issue is how the purchase cost of gas should be passed through to the customer. As the cost is currently beyond the control of the gas supplier, there is an argument that it should simply be passed directly to the customer. It can also be argued that, in the absence of alternative supplies of gas, full cost pass through should be permitted only if all the gas the supplier is entitled to is priced on the same basis. If the contract for the supply of gas provides for gas at different costs, the issue that arises is whether the allowable pass through should be a weighted average of these costs or simply, an allowable efficient or maximum cost.

In the future, AGL Retail Energy Ltd may have alternative supply options, and may be able to negotiate cheaper purchase costs. If the cost is passed through directly to the customer, the gas supplier will have little incentive to negotiate a better deal and to reduce these costs.

The Tribunal invites comments on:

- ***whether gas costs should be passed through directly to the customer***
- ***methods and implications of cost pass through.***

Within AGL's contract with the Cooper Basin producers is a schedule of contracted annual volumes. These annual volumes are subject to a take or pay obligation. This means that AGL must pay for at least 80 percent of the contract volume even if they do not require it. From 2002, volumes are scheduled to phase down until the termination of the contract in 2006. The requirement to pay for a minimum volume could result in additional costs to AGL Retail Energy Ltd if they lose existing customers. This may occur as customers choose to be supplied from an alternative retailer to AGL. However, take or pay obligations can be dealt with commercially through the re-negotiation of contracts, the diversion of gas interstate or market expansion.

The Tribunal seeks comments on the appropriateness of the pass through of any additional penalties incurred by AGL Retail Energy Ltd as a result of the take or pay contract.

5.1.2 Cost of haulage

Gas to AGL's reticulation system is currently transported through the Moomba to Sydney pipeline from the Cooper Basin to the various city gates throughout NSW. The pipeline is owned and operated by East Australian Pipeline Limited (EAPL). EAPL is 51 percent owned by AGL. The current agreement for transportation commenced on 30 June 1994.

[26] A take or pay agreement is one where the supplier agrees to pay for a minimum volume of gas, regardless of whether it is taken.

Whilst some contract gas is transmitted to city gates in regional areas, the majority of AGL's gas is transmitted to the city gate at Wilton, on the outskirts of Sydney, and enters AGL's distribution system there. The Australian Competition and Consumer Commission (ACCC) oversees the prices charged for gas haulage on the EAPL pipeline.[27]

The escalation factor for annual increases in the transportation charge, allowed for in the PCF, is linked to inflation. When the CPI is 2.2 percent or above, the haulage rate is inflated by the greater of 2.2 percent or 50 percent of the CPI in that year. In periods where inflation is below 2.2 percent, the formula provides for a direct pass through of increases in line with that year's actual CPI.

At issue is how the cost of haulage should be passed through to the customer. There is arguably limited opportunity for the gas supplier to negotiate haulage costs. Thus, it may be appropriate to pass the costs directly through to customers. However, as the price of haulage is based on the demand a supplier places on the transmission system, there may be scope for the supplier to reduce haulage costs by managing demand. In this instance, an appropriate pass through may be a maximum allowable cost. Then, the gas supplier will have adequate incentive to provide customers with options to reduce their consumption at peak times. With the emergence of a competing transmission pipeline, an allowable maximum cost will ensure that captured customers are not disadvantaged by long term arrangements at high prices.

In this context, directly passing through the cost of haulage to the customer may not be appropriate, as it removes the incentives for the gas supplier to reduce haulage costs.

The Tribunal seeks comments on:

- ***the ability of the supplier to reduce haulage costs***
- ***whether costs should be directly passed through to the customer***
- ***methods and implications of passing through these costs.***

5.1.3 Costs of reticulation

Reticulation costs are made up of operating and maintenance costs, return on assets employed, depreciation, unaccounted for gas, and general administrative expenses. Reticulation costs can comprise more than 50 percent of the total delivered price of gas to tariff customers. Therefore careful assessment of these costs is required to determine efficient prices. Completing the tariff review independently of the access review has the potential to lead to the development of final prices that do not include a cost reflective transportation cost. This could have consequences for efficient consumption and investment decisions. This issue highlights the desirability of conducting the tariff review and the access review concurrently (see section 1.4). The following discussion of reticulation costs is applicable to the costs of AGL Gas Networks Ltd only. If it is decided that the tariff review is to be run in conjunction with the access review, these costs will be the subject of that review.

[27] Under the Moomba to Sydney Pipeline Sales Act (Commonwealth Act) the ACCC, currently has only a monitoring role. Regulation of EAPL by the ACCC under the new National Access Regime, commences 30 June 1998. The national code provides that any contracts for transportation entered into prior to July 1995 will not be subject to the code.

Operating and maintenance costs

Operating and maintenance (O&M) costs are the expenses incurred in maintaining and operating the reticulation network. These costs consist largely of labour costs. Because O&M costs are largely controllable, there may be considerable scope for efficiency gains in this area. In the 1997 access review, an independent consultancy[28] commissioned by the Tribunal noted that the tariff market share of O&M costs was approximately 70 percent of AGL Gas Networks Ltd's total, with maximum daily quantity (MDQ) the cost driver. The report also noted that AGL Gas Networks Ltd had forecast reductions in tariff market O&M costs of approximately 20 percent by 1999.

In order to examine the scope AGL Gas Networks Ltd has to achieve these projected efficiencies, as well as its capacity to introduce further efficiency improvements, the Tribunal will examine current O&M expenses and the cost trends of the gas reticulation business. Where possible, the Tribunal will benchmark the relative performance of the business.

The Tribunal seeks comments on:

- ***current levels of O&M expenses***
- ***scope for reductions in O&M expenses***
- ***the most relevant indicators for benchmarking a gas reticulator***
- ***pass through of O&M costs.***

If there appears to be scope for future cost savings, the Tribunal will need to consider the extent to which and how quickly the benefits should be passed through to customers.

The Tribunal seeks comments on:

- ***the sharing of the benefits of cost efficiencies between the customer and the gas supplier***
- ***the impact this may have on the incentives of the gas supplier.***

Administration and general costs

Tariff market administration and general (A&G) costs comprise corporate expenses incurred through combined customer billing for the retail and network component of the final delivered price. A&G costs, incurred directly by the network include marketing[29] and account maintenance costs to suppliers and customers directly accessing the network.

In its report to the Tribunal, Greenwood Challoner allocated A&G costs between tariff and contract markets based on a review of AGL's cost centre structure and discussions with AGL's staff.[30] Greenwood Challoner proposed that the total A&G costs attributable to the tariff market were of the order of $85 million.[31] This reflects approximately 85 percent of the total A&G costs.

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28 Greenwood Challoner (1997), *Report on the Cost Analysis to Gas Distribution*, p 9.

29 Marketing undertaking by AGL Gas Networks Ltd refers to initiatives undertaken to increase utilisation of the system (see section 5.2).

30 Greenwood Challoner (1997), *Report on the Cost Analysis to Gas Distribution*, p 6 (Greenwood Challoner noted that in the absence of any other appropriate cost drivers, they used the allocations adopted by R J Rudden in a report to AGL Gas Networks Ltd regarding cross subsidies).

31 Greenwood Challoner (1997), *Report on the Cost Analysis to Gas Distribution*, p 6 (Greenwood Challoner noted that in the absence of any other appropriate cost drivers, they used the allocations adopted by R J Rudden in a report to AGL Gas Networks Ltd regarding cross subsidies).

In considering the issue of A&G cost pass through, as with O&M costs, the Tribunal will benchmark the relative performance of the business where possible. The Tribunal will also assess the general level and trends of A&G costs. It may be appropriate to allow pass through of an "efficient" cost, which provides incentives for AGL Gas Networks Ltd to achieve realistic gains as well as to pass those gains through to tariff customers.

The Tribunal seeks comments on:

- ***the level of A&G costs of reticulation to tariff customers served from the AGL network in NSW***
- ***an appropriate allocation of total A&G costs between contract and tariff customers***
- ***pass through of A&G costs.***

Unaccounted for gas

Unaccounted for gas (UAG) is gas lost during transportation through the pipeline network. The loss is largely attributable to pipe leakage.

The Australian Gas Association reports that, as a percentage of total gas supplied at source in NSW, UAG is 2.6 percent.[32] This represents approximately a 1 percent reduction over the 12 months from July 1995 to July 1996. The 2.6 percent in NSW is close to the Australian average of 2.5 percent. It compares with 2.3 percent in Victoria, 1.6 percent in Western Australia, and 3 percent in South Australia.[33]

Greenwood Challoner allocated $1 million of UAG costs to the contract market and $5.3 million of costs to the tariff market.[34] The allocation is made on the basis that the majority of the loss of gas relates to the low pressure system. The low pressure system serves only the tariff market.[35]

The Tribunal acknowledges that a customer could pay for the actual UAG or meet the cost of a standard benchmarked level. How the cost is to be passed through will determine whether there are incentives for the reticulator to reduce gas losses. If the cost is passed through directly to the customer, the reticulator may have little or no incentive to fund improvements to the system in order to reduce losses. If the cost of UAG is passed through at a benchmarked level, there is an incentive for the reticulator to reduce UAG costs.

The Tribunal invites comments on:

- ***the level of UAG***
- ***the level of UAG costs***
- ***the allocation of total UAG costs***
- ***the pass through of UAG costs***
- ***the impact that the treatment of UAG costs is likely to have on the incentives of the gas reticulator.***

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[32] Australian Gas Association, 1997, *Australian Gas Statistics,* p 75.

[33] Australian Gas Association, 1997, *Australian Gas Statistics,* pp 73-81.

[34] Greenwood Challoner (1997), *Report on the Cost Analysis to Gas Distribution*, p 12 (Greenwood Challoner based these estimates and allocations on the basis of the R J Rudden Report regarding cross subsidies commissioned by AGL Gas Networks).

[35] Greenwood Challoner (1997), *Report on the Cost Analysis to Gas Distribution*, p 12.

Metering costs

Metering costs are incurred in providing meters to measure customers' gas consumption, in servicing the meters, and in reading the meters. Currently considered part of the network, metering is a cost incurred by the network operator.

The metering questions are how to determine an efficient level of metering costs, and whether the current costs of metering in Sydney, Wollongong, Newcastle and country areas served from the AGL gas network are reasonable. With the development of improved information systems, among other things, the Tribunal will examine the current level of total metering costs, trends and allocations of these costs for reasonableness.

In the Tribunal's 1997 access review of AGL Gas Networks Ltd, a number of interested parties advocated separating metering from the network business and making it contestable. It can be argued that this would provide the necessary incentives to the network operator to offer an efficient, competitively priced metering package. The decision to allow AGL Gas Networks Ltd to continue to own and operate meters for the term of the 1997 undertaking was based on AGL's current obligations with respect to gas safety and quality.

If the supply of metering services and equipment is competitive, the gas supplier has a degree of control over the level of these costs. If metering services are not competitive and these costs are passed through on the basis of a maximum allowable cost or subject to competitive supply, there is an incentive for the network operator to improve on current metering rates and service.

The Tribunal seeks comments on:

- ***the current level of metering costs incurred in serving tariff customers in Sydney, Wollongong, Newcastle and country areas***
- ***an appropriate level of metering costs***
- ***whether metering provision and ownership should be subject to competition***
- ***metering cost pass through.***

Profit margins and return on assets

Prices should provide the opportunity for the owner of a business, in this case AGL Gas Networks Ltd, to earn a reasonable return on its investment if the services are delivered efficiently. In the case of a competitive business, the market determines the appropriate return. In the case of gas reticulation, which is a monopoly, the regulator must determine an "appropriate" return or profit margin.

The return on assets and the asset valuation present the greatest challenge for assessing the network costs and hence prices for the network component of the final delivered price. These returns can vary considerably, depending on the methodology and assumptions adopted. In its access Determination relating to AGL Gas Networks Ltd, the Tribunal notes:

> " the Tribunal does not favour a strict application of a rate base/rate of return model. Accordingly, the target rate of return is not the determining factor of the revenue requirement, but it is one of a suite of financial indicators to which the Tribunal refers in assessing the reasonableness of the regulatory outcome."[36]

[36] IPART, July 1997, *AGL Gas Networks Ltd Access Undertaking (as varied) – Determination, p 63.*

In the Determination, the Tribunal clearly signals that an approach that puts undue emphasis on asset value and rate of return may lead to unreasonable expectations in the market place. In previous reviews, when determining revenue streams, the Tribunal has opted for a range of financial indicators and the present value of the revenue stream rather than simply a particular asset value or rate of return. Importantly, it also had regard to the need to maintain an appropriate standard of service and quality of supply.

Asset value

Of several methods of asset valuation, the most common are:

- depreciated actual cost (DAC)
- replacement cost
- depreciated optimised replacement cost (DORC)
- deprival value
- net present value (NPV) of future revenues.

Depreciated actual cost

The depreciated actual cost of assets (ie book value) reflects the original cost of constructing the assets, less accumulated depreciation. No adjustment is made for inflation or technology. Supporters of historical cost argue that if regulation is to act as a surrogate for competition, the asset valuation methodology should be the same as that used for competitive industries. Thus, as most listed companies in Australia use actual cost as the basis for recording asset value, it can be argued that actual cost should be used by regulators. On the other hand, it can be argued that historical cost generally bears little resemblance to the value of the cash flows generated by an asset in its normal use and that therefore it is an irrelevant measure of asset value.

Replacement cost

Replacement cost reflects the current cost of reconstructing the system. One view is that using replacement cost as an asset valuation methodology is beneficial as it results in prices that more closely reflect the cost of providing additional capacity. However, it can be argued that it can lead to over recovery for the utility as it allows the utility to earn a return on capital it never invested, resulting in a windfall gain to shareholders.

Depreciated optimised replacement cost (DORC)

DORC is the replacement cost of an "optimised" system, less accumulated depreciation. An optimised system is a reconfigured system designed to serve exactly the current load with some allowances for growth. This method excludes any unused or under utilised assets and allows for potential cost savings that may have resulted from technological improvement. Calculating depreciation for this valuation approach is often a contentious issue.

Deprival value

Deprival value is determined by assessing the revenues that would be lost if the business were deprived of the asset.

Net present value (NPV)

The NPV approach values an asset as the net present value of the cash flows that are expected from the use of the asset. This method suffers from judgemental considerations of an appropriate discount rate, forecast of revenues and residual value. This is further complicated as while revenues are dependent on the asset value, in this instance, the asset value depends on future revenues, creating a circular argument. It is argued that the benefit of this approach is that it best represents the market value of the asset.

If the regulator decides on prices on other grounds, at least partially, for example, on financial indicator reasonableness, the NPV of the resulting cash flows can provide a cross check on the acceptability of the NPV approach.

The NPV approach played a major role in determining AGL's asset value in the recent access determination. The asset value was determined after considering the regulatory price path. This approach may have an impact on the assessment of any cross subsidies from contract market customers to tariff market customers.

The Tribunal is mindful of the benefits of adopting a consistent approach across the gas utilities it regulates.

In this context, the Tribunal seeks comments particularly in regard to the application of asset valuation methodologies to AGL's network assets serving tariff market customers in Sydney, Wollongong Newcastle and country areas of NSW.

Rate of return

Several models are available for estimating the appropriate rate of return of a business. These include: the capital asset pricing model (CAPM), the discounted cash flow model, and a comparable earnings test. Generally, the Tribunal has adopted CAPM.

The weighted average cost of capital (WACC) is based on the utility's cost of debt plus cost of equity. The utility's cost of debt can be readily determined by reviewing outstanding debt and any discount or premium on its issue. The rate of return on equity is derived through the CAPM model.

CAPM relates the required return of an asset to the risks associated with that asset. The approach requires several inputs to the model to be determined: the rate of return on a risk free asset (eg Commonwealth bonds), the rate of return on the equities market as a whole, and a measure of the riskiness of the utility relative to that of the equities market. Appendix E provides an example of a WACC calculation.

Presented below is a comparison of the WACC variables proposed by other gas utilities, and those proposed by the Secretariat to be a feasible range consistent with current market conditions. The main variations in the Secretariat's proposed range from the assumptions in the 1997 AGL Gas Networks Ltd's Access Determination are:

- lower risk free interest rates to reflect the reduction in market rates
- a lower estimate of the minimum market risk premium (5 percent compared with 6 percent)
- use of a gearing ratio at the upper end of the range previously assumed.

Table 5.1 Comparison of WACC calculations

	Great Southern Energy proposed (low)	Great Southern Energy proposed (high)	AGL July 1997 IPART Determination	Energy Projects Division Transmission proposal	Energy Projects Division Distribution proposal	IPART Secretariat proposed range 1997/98
Nominal risk free rate	8.00%	8.30%	7.3-8.3%	8.00%	8.00%	5.8-7.4%
Market risk premium	6.50%	7.00%	6-7%	6.50%	6.50%	5-7%
Equity beta	1.13	1.01	0.65-0.9	0.95	1.08	0.66-0.88
Nominal cost of debt	8.80%	9.00%	9.00%	8.75%	8.75%	Assumes debt premium of 80 points
Gearing ratio	60%	60%	40-60%	60%	60%	60%
Tax rate	36%	36%	36%	36%	36%	36%
Imputation utilisation rate	21%	15%	20-60%	25%	25%	20-50%
Real pre-tax WACC				**9.73%**	**10.16%**	**7.5-9.5%**
Nominal pre-tax WACC	**13.90%**	**14.30%**	**12.5%-13.5%**	**13.02%**	**13.47%**	**9-12%**

Notes: 1. The Energy Projects Division[37] proposals have yet to be approved by the regulators.
2. The Great Southern Energy proposal refers to the gas business and has yet to be approved by the regulator.

[37] The Energy Projects Division which is a division of the Victorian Treasury is responsible for the development of the access undertakings to apply to Victorian gas distribution and transmission businesses.

The Tribunal seeks comments on:

- ***the factors to be considered in assessing an appropriate return or profit margin***
- ***the means of valuing the assets and its role in determining regulated prices***
- ***the reasonableness of the assumptions set out in Table 4.2***
- ***an appropriate range for the cost of capital.***

5.1.4 Retail costs

Retail costs are those expenses incurred to run the retail component of the gas business. These may include expenses such as: billing, marketing, customer advisory services, advertising, promotions, and time spent handling customer inquiries and negotiating gas, haulage and reticulation.

In its report commissioned by the Tribunal, Greenwood Challoner notes that without the benefit of a detailed activity based costing system, it is not possible to establish exactly which costs it is appropriate to attribute to the retail operations of the bundled gas business.[38] Total retail costs were estimated to be $26 million, with $21 million allocated to the tariff market.[39] The development of improved information systems and ring fencing of the network from the retail component of the business will allow the retail costs to be determined more easily.

Again, the issue that is relevant here is the passing through of costs. The Tribunal would like to avoid sending signals which could encourage gas suppliers to provide customers with services they do not want.

The Tribunal seeks comments on the retail costs incurred by gas suppliers.

Retail margin

In addition to retail costs, retailers also consider a retail margin when pricing gas supply. A retail margin is designed to allow the retailer to earn a reasonable return from running the business.

London Economics has completed a consultancy on retail margins in competitive electricity markets for the Tribunal. Results suggested that the retail margin was somewhere between one and three percent of sales revenue.

Taking into account the public consultation process, the Tribunal concluded in the 1997 AGL Gas Networks Ltd Determination that a retail margin component should be taken from AGL Gas Network's allowable revenue. For the business as a whole, the retail margin was considered to be 2 percent of gas sales revenue ($12.6 million). Based on the Greenwood Challoner analysis, the Tribunal allocated 70 percent of the retail margin to tariff market customers and the remaining 30 percent to contract customers.[40] This resulted in a margin of approximately 3 percent for the tariff market and 1 percent for the contract market.

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[38] Greenwood Challoner, 11 February 1997, *Report to the Independent Pricing and Regulatory Tribunal of New South Wales on Retail Margin Analysis Applicable to Gas Distribution*, p 12.

[39] Greenwood Challoner, 11 February 1997, *Report to the Independent Pricing and Regulatory Tribunal of New South Wales on Retail Margin Analysis Applicable to Gas Distribution*, Appendix 6.

[40] Greenwood Challoner, 11 February 1997, *Report to the Independent Pricing and Regulatory Tribunal of New South Wales on Retail Margin Analysis Applicable to Gas Distribution*, p 24.

The Tribunal seeks comments on:

- ***the appropriate retail margin for gas supply to tariff customers***
- ***the appropriate allocation of the retail margin between contract and tariff customers.***

5.2 Scope for cost savings

In conducting its review of the delivered price of gas to customers in Albury, Moama and Wagga Wagga, the Tribunal noted cost reduction projections in both the retail and network components of the business. To some extent, these were attributable to structural and ownership changes of the businesses concerned.

AGL Gas Networks Ltd has initiatives in place to increase consumption by existing customers, while providing incentives for potential customers to change from an all electric household to one which uses some gas. These initiatives are designed to enable the fixed costs of the business to be shared amongst a greater load. This should reduce the cost per unit of gas transported and eventually result in lower prices.

In the lead up to contestability for all customers, AGL Retail Energy Ltd should be positioning itself as a low cost, efficient provider of gas services if it is to maintain existing customers as well as capturing new gas users. The emphasis of the retail business should be on reducing billing, administration and marketing costs whilst maintaining an appropriate level of service and demand. This should result in lower costs and prices.

The Tribunal seeks comments on:

- ***the size of any savings that are considered likely***
- ***the extent to which these savings should be passed through to the customer.***

5.3 Allocation of costs

Allocation of costs is critical to determining prices for services such as gas supply to different customer groups. An "appropriate" allocation is not always achieved easily and is often subject to judgement. Where costs[41] are incurred to supply two or more customer classes (eg tariff and contract) or two or more services (eg gas and electricity), it is difficult to calculate the proportion of costs that each customer or service should pay.

Firstly, the cost of supply and the cost of delivery must be allocated appropriately to the contract and tariff markets and also to customer classes within these markets. If the allocation is not appropriate, a cross subsidy may occur. This is discussed below in section 5.3.

[41] These are often referred to as " joint" or "common" costs.

The allocation of costs to the contract and tariff markets, as proposed by Greenwood Challoner as part of the 1997 AGL Gas Networks Ltd access review, are presented in the following table:

Table 5.2 1997 AGL Gas Networks Ltd access review cost allocations

Cost	Allocator
Operating and maintenance	MDQ
Metering	Meter costs
Unaccounted for gas	Pressure classification
Depreciation	MDQ
Administration and general	Based on review of cost centre
Retail margin	On the basis that the majority of such a margin would not be earned from the contract market

Secondly, the costs incurred by the gas and other businesses must be allocated appropriately. This issue is becoming increasingly important as utilities diversify their core business to become energy providers as opposed to being providers of just gas or electricity. Cost allocation is essential to ensure that gas users pay for the costs incurred in delivering gas and the electricity customers pay for the costs incurred through providing electricity services. It is not appropriate for a utility to double count costs or cross subsidise one business with the other. This issue is discussed below.

5.3.1 Cross subsidies

The issue of cross subsidies was raised initially by the Gas Council in its December 1994 report.

A cross subsidy results when a group of consumers pay prices below the cost of supply and the difference is funded by a higher price paid by another group of consumers. However, as noted in the previous section, what constitutes the cost of supply may not be easy to identify. The cost of supply may be the fully distributed cost, the stand alone cost, or the avoidable cost.[42]

Cross subsidies result in distorted prices because the price ceases to reflect the cost. This leads to over or under production, and over or under consumption. To ensure the efficient use of resources, prices should not include cross subsidies.

The Tribunal views the under recovery of avoidable costs as the most appropriate way to identify the existence of a cross subsidy. However it is not always practicable to measure

[42] Briefly, "fully distributed" costs are the resultant costs after allocating total costs using an arbitrary cost driver eg allocation according to customer consumption of gas or demand on the system. "Stand alone" costs are the costs that would be incurred if a customer was served in isolation. Avoidable costs are the costs that would not be incurred if a particular customer were no longer supplied gas. For a more detailed discussion, please refer to the Independent Pricing and Regulatory Tribunal, July 1997, AGL Determination.

avoidable costs. In the electricity industry, a fully distributed analysis was used initially to assess cross subsidies. In the absence of reliable estimates of avoidable costs in the recent access review for AGL Gas Networks Ltd, stand-alone costs for the contract market were used to identify and assess the size of the cross subsidy. In its 1997 access Determination, the Tribunal held that the over recovery in the contract market was, in large part, a cross subsidy to the tariff market. The Tribunal then set a transitional revenue path for reductions in the contract market revenue requirement.

Whilst the 1997 access review addressed the over recovery of revenue in the contract market, the 1999 tariff market review will need to address the issue of tariff market cost recovery. In considering the value of the tariff market assets, the Tribunal will need to have regard to the current contribution by the tariff market towards these assets and the reasonableness of these contributions to cover a return on and of the assets. It is important to note that if the results of the review demonstrate that tariff customers are not making an adequate contribution to medium/low pressure assets and it is not feasible for these costs to be fully recovered in a competitive energy market, this may suggest the value of these assets should be written down.

The Tribunal seeks comments on:

- ***an appropriate cost allocation method between contract and tariff customers***
- ***a relevant indicator of cross subsidies***
- ***the existence of cross subsidies from contract customers to tariff customers served from the AGL gas network in NSW***
- ***the strategy that should be adopted to address cross subsidies if they are found to exist.***

5.3.2 Ring fencing and accounting separation

The availability of alternative suppliers to some customers and not to others raises the issue of the need to separate the contestable and non-contestable elements of the gas business. For example, AGL Retail Energy Ltd could use market power to position itself favourably in the contract market before tariff customers are empowered to choose a supplier. This could be done by adjusting prices in the tariff and contract markets to recover a larger proportion of revenue from the tariff market.

AGL Gas Networks Ltd is currently developing an activity based costing system. This is designed to facilitate the direct recording and allocation of costs to the relevant activity and thus, the relevant customer class. For example, maintenance conducted on the high pressure component of the total system will be recorded on the basis of time spent and location. This will enable a more robust assessment of the cost levels and allocations proposed by AGL Gas Networks Ltd.

AGL has a portfolio of activities aside from the sale and transportation of natural gas. This has implications for the allocation of certain expenditures that affect the entire entity. For example, corporate expenditures usually occur across AGL rather than just AGL Gas Networks Ltd and the AGL retail businesses. There is a need to ensure that with this type of expenditure, the bulk of the costs are not allocated disproportionately to the regulated part of the entity, or allocated simply to captured customers.

The Tribunal seeks comments on the:

- ***allocation of costs between contestable and non-contestable customers***
- ***allocation of costs between AGL Retail Energy Ltd and AGL Gas Networks Ltd and the rest of AGL.***

5.4 Prices

Prices provide signals to users about the costs they are imposing on the community by consuming a particular good or service. This means that prices should:

- reflect the efficient costs of providing a good or service
- be equitable, in providing for a fair and reasonable sharing of common costs between consumers
- be easily understood
- be easy to administer.

In ensuring that the price of gas meets these objectives, the Tribunal may consider the structure and level of prices.

Price structure refers to issues such as the most appropriate mix of fixed (dollar per year) and consumption (dollar per megajoule) charges. Arguments for minimum charges as opposed to supply charges are relevant here.[43] To date, the Tribunal has been of the general view that price structuring should be the responsibility of the utility.[44]

In respect of the price level, the Tribunal has previously set side constraints to limit price increases as a 'safety net' for customers. This has been the approach taken for both electricity businesses and AGL.[45]

In electricity[46], domestic price increases are limited to the greater of:

- CPI[47] increase for the year
- $5 per quarter ($7 per quarter for those with off-peak tariffs).

Industrial/commercial prices are limited to the greater of:

- percent real increase[48] for the year
- $50 increase per quarter.

AGL Retail Energy Ltd's Voluntary Tariff Setting Guidelines limit tariff increases per year to the greater of:

- 5 percent per year in real terms
- $5 per quarter.

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43 A "minimum" charge is a fixed charge regardless of consumption (see section 2.1.2). A "supply" charge is in addition to consumption charges and reflects the fixed costs incurred in supplying customers.

44 There are still requirements in gas supplier authorisations to notify and seek approval from the Tribunal of any change in the existing tariff structure and the potential impact on tariff customers.

45 In the case of AGL, these side constraints were approved by the former NSW Gas Council.

46 See Independent Pricing and Regulatory Tribunal, March 1996, *Electricity Prices*.

47 Consumer Price Index as measured by the Australian Bureau of Statistics.

48 ie, excluding inflation as measured by current year CPI.

The Tribunal seeks comments on:

- ***an appropriate price structure for the price of delivered gas in Sydney, Wollongong, Newcastle and country areas served from the AGL gas network in NSW***
- ***the appropriateness of side constraints for natural gas tariffs to those regions served from the AGL gas network in NSW and the level of these constraints.***

5.4.1 Miscellaneous charges

In addition to deriving income from the sales of gas to tariff customers, AGL Retail Energy Ltd receives payments from customers for services related to gas supply. This additional revenue comprises approximately 1 percent of total tariff market sales revenue. Known as "miscellaneous charges", these are applied in many forms, including: connection fees, meter reading fees, and late payment fees.

Table 5.3 Fees and charges – Residential customers

Fee or Charge	Value
Account establishment fee	$20
Security deposit (2)	$100
Pensioner security deposit	$20
Collector call fee	$30
Collector call fee and disconnection	$50
Higher bill inquiry (1)	$49
Reconnection fee (following disconnection)	$20
Late payment fee	$5
Change of ownership reconnection	$20
Pensioner reconnection fee	$20

Note: (1) High bill inquiry fee is charged if a site visit is required and the customer has agreed to accept the charge. However, the fee is refunded if the high bill is attributed to fault up to and including the meter. Faults downstream of the meter are the responsibility of the customer. For example, a faulty appliance is regarded as customer responsibility.

(2) The security deposit for Industrial and Commercial customers is determined on the basis of customers consumption, capital expenditure required that is directly related to the customer and AGL Retail Energy Ltd's experience in the industry the customer is operating in.

There are currently no restraints on AGL Retail Energy Ltd's developing and implementing miscellaneous charges. In most cases these charges are imposed to signal to customers the costs of providing these services. In some cases, however, charges are applied to discourage customers from exploiting these services or as a deterrent to certain behaviour, as is the case with the collector call fee.

In some instances these charges may be inappropriate, or a more appropriate charge or policy may be available to achieve the same objective. An example of this is the security deposit. Some electricity distributors charge their industrial and commercial customers a small annual fee instead of retaining a large security deposit. The smaller fee is designed to reflect the cost to the utility of insuring against bad debts. This frees up the customers security deposit to be utilised in other more rewarding ventures.

At issue are:

- the scope for customers to be free to choose a lower cost alternative where a particular service is contestable
- the extent to which some fees should be above cost to ensure that customers request these services only when necessary
- the extent to which a gas supplier can exercise its own discretion on whether to impose these charges if a customer is experiencing financial hardship or where there are reasons to waive charges.

By way of comparison, miscellaneous charges for electricity distributors regulated by the Tribunal are presented in the following table.[49]

Table 5.4 Miscellaneous Charges in electricity

Allowable Charges	Maximum allowable ($)	After hours maximum ($)
Provision of Time-of-Use or Half-hourly Metering Data	***per half hour 25.00***	***Not Applicable***
Dishonoured bank transaction charge	Twice bank fee	Twice bank fee
Special reading charge	30.00	75.00
Meter test charge	50.00	125.00
Conveyancing inquiry charge (standard) or rural distributors (if desired):		
- desk inquiry	25.00	62.00
- field visit	50.00	125.00
- total	75.00	187.50
Application fee	35.00	87.50
Off-peak conversion charge	40.00	100.00
Reinspection charge (minimum 1 hr)	per half hour 25.00	62.50
Temporary supply charges:		
- underground single phase	130.00	325.00
- underground three phase	190.00	475.00
- overhead single phase	240.00	600.00
- overhead three phase	320.00	800.00
Late payment/reminder charge	5.00	5.00
Personal visit		
- if no disconnection (payment received)	30.00	na
- disconnection (payment not received)	60.00	na
- pole top disconnection	100.00	na
Maximum total (pole & meter disconnections)	160.00	na
Rectification of illegal connection	150.00	475.00

[49] Independent Pricing and Regulatory Tribunal, July 1997, *Electricity Prices*, Attachment A.

The Tribunal seeks comments on:

- ***the current leverage suppliers have to impose miscellaneous charges***
- ***the nature of miscellaneous charges***
- ***the level of AGL Retail Energy Ltd's current miscellaneous charges.***

5.5 Quality of service and customer satisfaction

The NSW Government recently introduced customer protection legislation with the objective of providing minimum non-price service standards to tariff customers. *The Gas Supply (Customer Protection) Regulation 1997* requires a supplier of tariff customers to establish a customer council or be an industry member of a customer council, and to prepare a customer service code outlining matters such as: terms and conditions of supply, standards of service, charges, and meter reading procedures.

This legislation is generally consistent with non-price regulation introduced in the UK in both the electricity and gas industries. The Tribunal is keen to ensure that increasing competitiveness and customer service are not competing objectives. In this respect, the issues that need to be considered include: AGL Retail Energy Ltd's current customer service practices, the setting of minimum standards, and enforcement provisions for poor service quality to captured customers.[50]

The Tribunal seeks comments on:

- ***AGL's current customer service***
- ***scope for improvement in AGL's customer service practices***
- ***the need for penalties in the event of poor service delivery***
- ***possible future service requirements.***

5.6 Current utilisation of the system and growth

One of the key findings of the major PCF review in 1994 (see section 2.3) and the AGL Gas Networks Ltd's 1997 access review was that AGL's distribution network in NSW is poorly utilised compared with similar networks in other states.

[50] For example, in the United Kingdom, customers which have not been receiving adequate levels of service are given energy rebates by the utility.

The following table outlines market penetration by AGL Gas Networks Ltd in NSW compared to other states.

Table 5.5 Tariff market penetration 1995/96

Households connected to gas as a % of:	Wagga Wagga	South Australia	Victoria[1]	Sydney
All households	80	51.1	77.2	27.9
Households with access to gas mains	85	80	90.4	60.3[2]

Source: Australian Gas Association 1997, *Gas Statistics Australia* pp 73-81.

Notes: 1. Includes the Albury Gas Company
2. This figure is for 1994/95, the figure for 1995/96 is not available.

It is recognised that climatic differences make it more difficult for AGL Gas Networks Ltd to achieve the utilisation of other gas utilities in States with colder winters. However, the price advantage of gas is also a primary factor in improving customer density. In February 1997, AGL Gas Networks Ltd introduced the "economy plus" tariff to domestic customers. This tariff offers rates competitive with the electricity hot water rate, in recognition that an increase in the hot water heating load will make a significant contribution towards improving residential customer density.

Most of the costs of serving the tariff market are fixed and spread over the number of customers served. Therefore, if the number of customers and the volume of gas consumed per customer increase, the share of fixed costs to be recovered from each customer and per gigajoule will reduce. With this in mind, as part of the 1997 Determination approving the varied Access Undertaking of AGL Gas Networks Ltd, the Tribunal agreed that a certain amount of revenue would be allocated to growth of the tariff market. It was agreed that expenditure would be directed towards:

- increasing the loads of existing customers through cash based incentives to encourage those customers to substitute gas appliances for electrical appliances
- creating incentives for customers not currently connected to electricity or gas, to choose gas appliances where possible.

Whilst, at this point in time, it may be premature to reach firm conclusions, the Tribunal will examine the impact of these initiatives as part of its review. At issue are the scope for further market growth and whether any cost reductions achieved through increased use of the system should be passed on to consumers.

The Tribunal seeks comments on:

- ***the potential growth in gas consumption and connection in Sydney, Wollongong, Newcastle and country areas of NSW served by AGL Gas Networks Ltd***
- ***the pass through of cost reductions to consumers.***

APPENDIX A SECTION 27, NSW GAS SUPPLY ACT 1996

Section 27 of the NSW Gas Supply Act states that:

The Tribunal may make an order (a gas pricing order) establishing a pricing mechanism according to which charges for natural gas supplied to tariff customers are to be fixed.

A gas pricing order:

(a) may fix maximum gas tariffs or maximum average tariffs and other charges, or the methodology by which maximum gas tariffs or maximum average gas tariffs and other charges are to be calculated, whether in relation to tariff customers generally, or in relation to any specified class of tariff customers, and

(b) may prohibit the imposition of any specified charges or class of charges for any specified service or class of services provided to tariff customers generally or to any specified class of tariff customers.

It is a condition of a supplier's authorisation that the supplier must not impose charges on a tariff customer otherwise than in accordance with any relevant gas pricing order, subject to any other condition imposed on the authorisation with respect to the implementation of Government policy on community service obligations to tariff customers (such a condition requiring the granting of discounts or rebates).

At any time after the expiry of 12 months from the date on which the current gas pricing order was made, an authorised supplier may apply to the Tribunal for a new gas pricing order on the basis that changes in circumstances (such as general inflationary trends) mean that the current gas pricing order is now out of date.

APPENDIX B TARIFFS

Residential Tariffs

NSW (excluding Yass)

Rate	Supply fee ($ per quarter)	Quantity per block (megajoule per quarter)		Charge per megajoule (cents)	
		Block 1	Block 2	Block 1	Block 2
Residential General	17.60	All		1.3155	
Residential Economy	21.80	All		0.9952	
Residential Economy Plus	30.00	4,500	Remainder	0.8300	0.9620

Yass

Rate	Minimum Bill ($ per quarter)	Quantity per block (megajoule per quarter)		Charge per megajoule (cents)	
		Block 1	Block 2	Block 1	Block 2
Residential General	$15.00	750	Remainder	3.2080	1.7930
Residential Economy	$29.50	4500	Remainder	4.6140	1.2682

Note: In 1992, it was determined that charges to natural gas tariff customers in Yass would need to recoup the necessary infrastructure costs and therefore be higher than charges to other NSW regions.

Industrial and Commercial Tariffs

Sydney, Central Coast, Bowral, Queanbeyan Bathurst, Orange, Lithgow, Oberon, Blayney, Cowra and Junee

Rate	Supply fee ($ per quarter)	Quantity per block (megajoule per quarter)			Charge per megajoule (cents)		
		Block 1	Block 2	Block 3	Block 1	Block 2	Block 3
Rate 1	$35.00	150,000	Remainder		1.1192	0.9007	
Rate 2[(a)]	$33.75	1,800	148,200	Remainder	1.1725	1.1192	0.9007

Note: (a) Available only to existing customers, as at June 1996, who consume less than 45 gigajoules per quarter.

Newcastle and Hunter Valley

Rate	Minimum bill ($ per quarter)	Quantity per block (megajoule per quarter)			Charge per megajoule (cents)		
		Block 1	Block 2	Block 3	Block 1	Block 2	Block 3
Rate 1	$9.00	1,500	148,500	Remainder	2.0842	1.1516	0.9731

Griffith, Leeton, Narrandera, Coolamon, Young, West Wyalong and Cootamundra

Rate	Supply fee ($ per quarter)	Quantity per block (megajoule per quarter)			Charge per megajoule (cents)		
		Block 1	Block 2	Block 3	Block 1	Block 2	Block 3
Rate 1	$35.00	150,000	Remainder		1.1192	0.9007	
Rate 2[(a)]	$33.75	1,800	148,200	Remainder	1.1725	1.1192	0.9007
Commercial fruit and seed drying rate[(b)]	$0	All			0.8100		

Notes: (a): Available only to existing customers, as at June 1996, who consume less than 45 gigajoules per quarter.

(b) Available for gas used in a commercial fruit and seed drying process, approved by AGL where the consumption is a minimum of 200 GJ per month when used, and is only used in the period November to April. Gas for other purposes must be metered separately and will be billed at the appropriate Industrial and Commercial rate.

Goulburn City

Rate	Supply fee ($ per quarter)	Quantity per block (megajoule per quarter)			Charge per megajoule (cents)		
		Block 1	Block 2	Block 3	Block 1	Block 2	Block 3
Rate 1	$35.00	150,000	Remainder		1.1192	0.9007	
Rate 2[(a)]	$20.55	1,500	34,500	114,000[(b)]	0.5812	1.1895	1.1192

Notes: (a) Available only to existing customers, as at June 1996, who consume less than 45 gigajoules per quarter.

(b) The remainder to be taken at $0.9007 per megajoule.

Yass Shire

Rate	Supply fee ($ per quarter)	Quantity per block (megajoule per quarter)			Charge per megajoule (cents)		
		Block 1	Block 2	Block 3	Block 1	Block 2	Block 3
Rate 1	$35.00	150,000	15,000	Remainder	1.4413	1.1488	0.7140
Rate 2[(a)]	$33.75	150,000	15,000	Remainder	1.4413	1.1488	0.7140

Note: (a) Available only to existing customers, as at June 1996, who consume less than 45 gigajoules per quarter.

Wollongong and Shellharbour areas

Rate	Supply fee ($ per quarter)	Quantity per block (megajoule per quarter)			Charge per megajoule (cents)		
		Block 1	Block 2	Block 3	Block 1	Block 2	Block 3
Rate 1	$35.00	150,000	Remainder		1.1192	0.9007	
Rate 2[(a)]	$18.75	30,000	120,000	Remainder	1.1626	1.1192	0.9007

Note: (a) Available only to existing customers, as at June 1996, who consume less than 45 gigajoules per quarter.

APPENDIX C PRICE CONTROL FORMULA

The general form of the price control formula (PCF) applicable to AGL Retail Energy Ltd is shown below[51]:

$$M_t = \frac{(1 + CPI_{t-} X)}{100} P_{t-1} + Y_{t-} A_t$$

Allowable gas costs (Y)

Y is the total of all costs which are considered to be beyond the immediate control of gas distributors, including: field prices, haulage prices and certain government charges. Field and haulages prices were traditionally subject to long term contracts. Costs included under Y are treated as fixed costs. AGL Retail Energy Ltd is allowed to pass on increases in the levels of fixed costs to consumers. Conversely, reductions in these costs must be passed on to consumers.

The non-gas element (P)

P consists of the remaining components of price after the costs included in Y have been deducted. The initial value for P was determined by the then Minister for Energy. Effectively, the initial value of P was determined by subtracting actual expenditure on the components of Y (field and haulages prices and government charges) in 1989/90 from a notional average price for that year based on a comparison of adjusted tariff revenue and the tariff quantity.

P was taken to represent those costs which are controllable by AGL Retail Energy Ltd as well as the profit component of price. In each year, the value of P in the formula is the previous year's value increased by CPI –X.

The efficiency incentive (x)

The current efficiency factor of 1.5 was set as part of the 1994 review of the price control formula. Factors taken into account in setting X included:

- an assessment of potential efficiency gains by AGL
- an assessment of the appropriate rate of return for comparison with previous returns for AGL and other similar utilities
- growth.

The adjustment factor (A)

This factor in the PCF provides a catch up provision from year to year and allows the formula to be self correcting. If the estimates of gas sales, or fixed costs, in any given year

[51] It should be noted that currently the PCF imposes a CPI-X restraint on the non-controllable costs of the business only (reticulation costs and retail costs). The formula allows the cost of gas and haulage to be directly passed through).

differ from those forecast, a compensating adjustment (with interest) must be included in the formula for the following year.

APPENDIX D LOCAL GOVERNMENT AREAS LISTED IN AGL GAS NETWORKS LTD'S AUTHORISATION

Ashfield	Deniliquin	Leeton	Rockdale
Auburn	Drummoyne	Leichhardt	Ryde
Bankstown	Dubbo	Liverpool	Shellharbour
Bathurst	Evans	Maitland	Singleton
Baulkham Hills	Fairfield	Manly	South Sydney
Berrigan	Forbes	Marrickville	Strathfield
Blacktown	Gosford	Mosman	Sutherland
Bland	Goulburn	Mulwaree	Sydney
Blayney	Greater Lithgow	Murray	Warringah
Blue Mountains	Griffith	Muswellbrook	Waverley
Boorowa	Hawkesbury	Narrandera	Weddin
Botany	Holroyd	Narromine	Wellington
Burwood	Hornsby	Newcastle	Willoughby
Camden	Hume	North Sydney	Wingecarribee
Campbelltown	Hunters Hill	Oberon	Wollondilly
Canterbury	Hurstville	Orange	Wollongong
Cessnock	Jerilderie	Parkes	Woollahra
Concord	Junee	Parramatta	Wyong
Conargo	Kiama	Penrith	Yarrowlumla
Coolamon	Kogarah	Pittwater	Yass
Cootamundra	Ku-ring-gai	Port Stephens	Young
Corowa	Lake Macquarie	Queanbeyan	
Cowra	Lane Cove	Randwick	

APPENDIX E WACC CALCULATION

Classical tax system

Before tax,

$$WACC = \frac{R_E}{(1-T)} \times \frac{E}{(E+D)} + R_D \times \frac{D}{(E+D)}$$

After tax,

$$WACC = R_E \times \frac{E}{(E+D)} + R_D (1-T) \times \frac{D}{(E+D)}$$

Imputation tax system

Before tax,

$$WACC = \frac{R_E}{[1-T(1-\gamma)]} \times \frac{E}{(E+D)} + R_D \times \frac{D}{(E+D)}$$

After tax,

$$WACC = \frac{R_E(1-T)}{[1-T(1-\gamma)]} \times \frac{E}{(E+D)} + R_D (1-T) \times \frac{D}{(E+D)}$$

Cost of Equity R_E

$$R_E = R_f + \beta (R_m - R_f)$$

Where,	R_E	is the expected rate of return of the stock
	R_f	is the risk free rate of return
	$(R_m - R_f)$	is the return of the market over the risk free rate
	β	Beta, is the measure of the riskiness of the stock relative to that of the market as a whole

WACC inputs

Risk free rate (R_f)	6.0% nominal
Beta (β)	0.74
Cost of equity (using CAPM) R_E	10.44% nominal
Premium to risk free rate ($R_D - R_f$)	0.8%
Cost of debt (R_D)	6.8%
Debt to value ratio, D/(E+D)	60%
Equity to value ratio, E(E+D)	40%
Effective tax rate (T)	36%
Dividend imputation factor (γ)	0.35
Inflation rate	2.0

Imputation tax system

Pre-tax

$$\text{WACC} = \frac{10.44}{[1 - .36(1 - .35)]} \text{ x } .4 + 6.8 \text{ x } .6$$

Post-tax

$$\text{WACC} = \frac{10.44(1 - .36)}{[1 - .36(1 - .35)]} \text{ x } .4 + 6.8(1 - .36) \text{ x } .6$$

Pre tax nominal, WACC	9.53
Pre tax real, WACC	7.53
Post tax nominal, WACC	6.10
Post tax real, WACC	4.10

APPENDIX F AVERAGE PRICE COMPARISONS

Average delivered gas prices (1995/96)

Rate (per GJ)	NSW	South Australia	Victoria
Residential	$13.60	$13.37	$9.15
Commercial	$10.18	$8.77	$6.32
Industrial	$5.19	$3.74	$3.71

Source: Australian Gas Association 1997, *Gas Statistics Australia*, page 53.

Note: It should be noted that these comparisons are indicative only. Differences in the technical nature of the system, utilisation, climate, contractual relationships and competitive pressures make definitive comparisons very difficult.