ActewAGL DISTRIBUTION

Access Arrangement Information for ActewAGL Gas Distribution System in ACT and Greater Queanbeyan

November 2004

ActewAGL Distribution
ABN 76 670 568 688

CONTENTS

1. INTRODUCTION

This Access Arrangement Information for ActewAGL Distribution (ActewAGL) contains information intended to enable users and prospective users to understand the derivation of the elements of the Access Arrangement and should be read in conjunction with the Access Arrangement. The information covers the period from the commencement of the revised Access Arrangement to 30 June 2010.

The information presented is as required by Attachment A of the Gas Code and covers:

- access and pricing principles (section 2);
- capital costs (section 3);
- operations and maintenance costs (section 4);
- overheads and marketing costs (section 4);
- system capacity and volume assumptions (section 8); and,
- key performance indicators (section 9).

In addition to the required description of access and pricing principles, further details are provided on revenue and price paths (section 5), allocation of costs between the contract and tariff markets (section 6) and the methodology for determining reference tariffs (section 7).

2. ACCESS AND PRICING PRINCIPLES

2.1. Tariff determination methodology

Reference tariffs have been designed on the basis of a price path approach, in accordance with section 8.3 of the Gas Code. A series of reference tariffs are determined in advance for the Access Arrangement period to follow a path that is forecast to deliver a total revenue stream.

Total revenue is calculated using the cost of service methodology**.** In accordance with section 8.4 of the Gas Code, total revenue is the cost of providing all services, and is calculated as:

- a return on the capital base;
- depreciation of the capital base; and,
- operating, maintenance and other non-capital costs of providing all services supplied by the covered pipeline.

The Access Arrangement for ActewAGL covers six reference services, interconnection of embedded network service and a negotiated service. The services are as follows:

(i) Reference Services

Capacity Reservation Service: A transport service from the receipt point to a single non-tariff delivery point. Charges are determined on the basis of capacity reserved.

Two additional capacity reservation options are offered by ActewAGL:

- ***Summer Tranche Option:*** this provides an option to book capacity between the months of October and April (inclusive); or
- ***Short Term Capacity option:*** available to end use customers using gas for purposes other than space heating (subject to available capacity). There are two options: one for 30 TJ or less of gas per year, the other for over 30 TJ per year. A Short Term Capacity Charge (premium) may be charged for the under 30 TJ option.

Managed Capacity Service: A transport service from the receipt point to a single non-tariff delivery point. Charges are determined on the basis of capacity reserved.

Throughput Service: A transport service from the receipt point to a single non-tariff delivery point. Charges are determined on the basis of throughput.

Multiple Delivery Point Service: A transport service from the receipt point to a number of non-tariff delivery points. Charges are based on the relevant service at each delivery point.

Tariff Service: A transport service from the receipt point to one or more tariff delivery points. Charges are determined on the basis of throughput.

Meter Data Service: A service comprising the reading of meters and handling of metering data.

(ii) ***Interconnection of Embedded Network Service:*** a service to provide for the establishment of a single delivery point from the network to an embedded network.

(iii) ***Negotiated Service:*** any service negotiated to meet the needs of a user, which are not met by the reference services.

The determination of the reference tariffs for the above reference services involved the following steps:

- Calculate total revenue requirement using the cost of services building block approach;
- Allocate costs to asset groups, activities and market segments;
- Develop tariffs to achieve revenue equal to allowable costs.

2.2. Cost allocation

Capital costs were first allocated to asset groups, and then split between the contract and tariff markets. Operating costs were allocated to the contract and tariff markets on the basis of activity based costing information which fully distributes all costs of service delivery.

Details of the cost allocation approach are provided in section 6 of this Access Arrangement Information.

2.3. Incentive structures

In accordance with the principles in section 8 of the Gas Code, reference tariffs are based on the forecast efficient costs of providing the reference services. Reference tariffs have been designed to provide a market-based incentive to improve efficiency and to promote efficient growth of the gas market.

Reference tariffs have been structured to provide the following incentives:

- *Incentives for efficiency:* If ActewAGL is able to achieve cost outcomes (non-capital and capital) below forecast levels (including the cost of unaccounted for gas), while maintaining service standards, it will retain the benefits of such efficiency improvements over the Access Arrangement period;
- *Incentives to grow the market*: Incentives exist for ActewAGL to increase load growth in the contract market segment and to expand the tariff market segment. Prices have been

calculated on the basis of a set of revenue and growth projections. If growth is stronger than forecast, the benefit is retained by ActewAGL and prices will not change; and

- *Incentives for contract customers:* Contract customers have an incentive to reduce their delivered price of gas if they reduce or control their peak demand on the system or if they increase their annual consumption without exceeding their nominated contract maximum daily quantity (MDQ) or maximum meter flow rate.

3. CAPITAL COSTS

The capital costs to be included in the allowable costs (or total revenue requirement) for calculating reference tariffs include a return on assets invested and depreciation of the asset base. The key component in these costs is the regulatory capital base.

3.1. The opening regulatory capital base

Section 8.9 of the Gas Code requires that the capital base at the start of each Access Arrangement period after the first is determined as the sum of:

- The capital base at the start of the immediately preceding Access Arrangement period; plus,
- New facilities investment in the immediately preceding Access Arrangement period; less,
- Depreciation in the immediately preceding Access Arrangement period; less,
- Redundant capital (including disposals).

Table 3.1 shows the values used to roll forward the regulatory capital base to the start of the second Access Arrangement period.

Table 3.1 Roll forward of the regulatory capital base from 1999/00 to 2003/04

nominal $ million

Year ending 30 June	*2000*	*2001*	*2002*	*2003*	*2004*
Opening Balance	175.0	182.4	198.6	209.6	219.6
- Plus Capital Expenditure	8.6	12.7	10.9	9.3	7.4
- Less Depreciation	5.5	5.8	5.8	6.3	6.7
- Less Disposals	-	1.9	-	0.1	-
- Plus Indexation	4.3	11.2	5.9	7.1	5.6
Capital Base Rolled Forward	**182.4**	**198.6**	**209.6**	**219.6**	**225.9**

Note: Capital expenditure is net of capital contributions.

Actual capital expenditure for the period has been used, in accordance with sections 8.16 and 8.17 of the Gas Code. Regulatory depreciation has been used, in line with the requirements of the 2001 Access Arrangement. Disposals cover replacement or scrapping of aging and redundant capital, including capital affected by the January 2003 bushfires. The indexation adjustment is based on the CPI (All Groups, 8 capital cities average) for the period.

3.2. Roll forward of the capital base to 2009/10

The regulatory capital base at the start of the second Access Arrangement (expected January 2005) is rolled forward to the end of the second Access Arrangement period (June 2010), by adding forecast capital expenditure, subtracting forecast depreciation, adjusting for disposals and indexing for inflation.

Table 3.2 shows the values used to roll forward the regulatory capital base to the end of the second Access Arrangement period. The components of the roll forward are described in the following sections.

Table 3.2 Projected roll forward of the regulatory capital base from 2004/05 to 2009/10

nominal $ million

Year ending 30 June	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*
Opening Balance	225.9	236.8	244.5	252.2	260.4	272.0
- Plus Capital Expenditure	12.6	9.8	9.4	8.9	12.3	8.1
- Less Depreciation	7.4	8.1	8.6	8.4	8.7	9.0
- Less Disposals	0.1	0.1	0.1	0.1	0.1	0.1
- Plus Indexation	5.8	6.0	7.0	7.7	8.0	8.3
Capital Base Rolled Forward	**236.8**	**244.5**	**252.2**	**260.4**	**272.0**	**279.3**

Note: 2004/05 numbers are for a full year. The revised Access Arrangement will start in January 2005.

3.2.1. Capital expenditure

In accordance with section 8.20 of the Gas Code, the capital base has been increased by forecast capital expenditure. The capital expenditure is based on growth, capacity and replacement requirements identified in detailed capital planning. The expenditure meets the requirements of section 8.16, in that it does not exceed the amount that would be invested by a prudent service provider acting efficiently and in accordance with accepted good industry practice.

Forecast capital expenditure, by asset type, is shown in table 3.3.

Table 3.3 Forecast capital expenditure, by asset type

real 2004/05 $ million

Year ending 30 June	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*
Distribution system capex						
Primary (HP) mains	-	2.67	2.11	-	2.30	0.53
HP Services	0.01	-	-	-	-	-
Medium pressure (MP) mains	2.97	2.59	2.67	2.66	2.96	2.75
MP services	2.77	2.41	2.31	2.23	2.23	2.15
Regulators, valves (TRS, SRS)	1.60	0.06	-	1.57	1.67	0.10
Contract meters	0.20	0.05	0.08	0.01	0.02	0.03
Tariff meters	2.99	1.91	1.83	1.83	1.91	1.54
Total distribution system	**10.54**	**9.59**	**9.01**	**8.29**	**11.09**	**7.10**
Non-system capex						
Gas networks GIS system	0.49	-	-	-	-	-
Regulatory capitalisation costs	1.57	-	-	-	-	-
Total non-system assets	**2.06**					
Total capex	**12.61**	**9.59**	**9.01**	**8.29**	**11.09**	**7.10**

Note: 2004/05 numbers are for a full year. The revised Access Arrangement will start in January 2005.

The capital expenditure forecasts comprise 3 components:

- capital required to meet growth in customer numbers and connections;
- capacity development requirements of the overall network; and
- renewal and replacement of aging network assets.

A breakdown of the capital expenditure forecast, by type, is shown in table 3.4.

Table 3.4 Forecast capital expenditure, by type

real 2004/05 $ million

Year ending 30 June	***2005***	***2006***	***2007***	***2008***	***2009***	***2010***
Distribution system capex						
Growth market expansion	6.40	5.52	5.41	5.31	5.34	5.26
Growth capacity development	1.71	2.88	2.33	1.77	4.42	0.82
Stay in business	2.39	1.19	1.27	1.21	1.33	1.01
Total distribution system	**10.51**	**9.59**	**9.01**	**8.29**	**11.09**	**7.10**
Non system capex						
Gas networks GIS system	0.50	-	-	-	-	-
Regulatory capitalisation costs	1.60	-	-	-	-	-
Total non-system capex	**2.10**					
Total capex	**12.61**	**9.59**	**9.01**	**8.29**	**11.09**	**7.10**

Note: 2004/05 numbers are for a full year. The revised Access Arrangement will start in January 2005.

3.2.2. Depreciation

Economic asset lives were specified for each category of asset, as in the 2001 Access Arrangement and Access Arrangement Information. These asset lives were used to calculate regulatory depreciation for the regulatory capital base and new capital investment, using the straight-line depreciation method.

Economic asset lives are shown in table 3.5.

Table 3.5 Economic asset lives

Asset Class	*Economic Asset Life (Years)*
Distribution System Assets	
Primary (HP) mains	80
HP services	80
Medium pressure (MP) mains	80
MP services	50
Regulators and valves (TRS, SRS)	50
Contract meters	15
Tariff meters	15
Non System Assets	5
Consistent with the categories and lives adopted for financial reporting	

Consistent with a current cost approach, depreciation was calculated on the capital base adjusted for inflation (see table 3.7 for inflation assumptions). Depreciation for each year of the revised Access Arrangement period is shown in table 3.6.

Table 3.6 Total depreciation

real 2004/05 $ million

Year ending 30 June	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*
Regulatory depreciation	7.41	7.96	8.22	7.75	7.88	7.85

3.2.3. Disposals

Disposals include assets planned to be replaced or scrapped as the network ages. They include meters replaced, but not at the end of their regulated asset lives, assets scrapped due to service disconnections and regulators, valves and other components planned to be scrapped or replaced.

3.2.4. Indexation

The inflation adjustment is based on forecasts of the CPI (All Groups index average for the 8 capital cities) published by Econtech in June 2003. Forecast values are shown in table 3.7.

Table 3.7 Inflation forecasts

CPI (All Groups, average of 8 capital cities), per cent

Year ending 30 June	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*
CPI	2.50	2.50	2.80	3.00	3.00	3.00

3.3. Rate of return

The Weighted Average Cost of Capital (WACC) used to determine the return on the capital base is 7.0 per cent in real pre-tax terms. The assumed ranges for each of the parameters in the WACC calculation are shown in table 3.8.

Table 3.8 Assumed ranges for the WACC parameters

Parameter	**Low**	**High**
Nominal risk free rate (%)	5.41	5.41
Forecast inflation (%)	2.57	2.57
Real risk free rate (%)	2.77	2.77
Debt funding (%)	60	60
Equity funding (%)	40	40
Total funding (%)	100	100
Market risk premium (%)	6.00	6.00
Debt premium (debt margin + debt raising costs) (%)	1.245	1.430
Dividend imputation factor (gamma) (%)	50	30
Effective tax rate (%)	30	30
Equity beta	0.90	1.09
Cost of equity (nominal) (%)	10.81	11.95
Cost of debt (nominal) (%)	6.66	6.84
Nominal pre-tax WACC (%)	9.08	10.15
Real Pre-Tax WACC (%)	**6.35**	**7.40**

Within the range shown in table 3.8 the value 7.0 per cent for the real pre-tax WACC was used to calculate the return on the capital base.

4. NON-CAPITAL COSTS

In accordance with section 8.37 of the Gas Code, the total revenue and reference tariffs allow for recovery of operating, maintenance and other non-capital costs. The included costs are those that are incurred prudently to achieve the lowest sustainable cost of delivering the reference services. Forecast non-capital costs are shown in table 4.1.

Table 4.1 Non-capital costs

real 2004/05 $ million

Year ending 30 June	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*
Controllable costs						
Operating and maintenance	6.91	7.07	7.39	7.49	7.60	7.70
Corporate overheads	1.92	1.92	1.92	1.92	1.92	1.92
Non-system asset charge	0.48	0.48	0.48	0.48	0.48	0.48
Marketing	1.46	1.46	1.46	1.46	1.46	1.46
Other direct costs	0.24	0.24	0.24	0.24	0.24	0.24
Total controllable costs	**11.01**	**11.17**	**11.49**	**11.59**	**11.70**	**11.80**
Other allowable costs						
Government levies	0.55	0.55	0.55	0.55	0.55	0.55
Contestability costs	0.45	0.46	0.46	0.46	0.46	0.45
Unaccounted for gas	0.39	0.40	0.40	0.40	0.41	0.41
Other	0.24	0.24	0.24	0.24	0.25	0.25
Total other	**1.63**	**1.65**	**1.65**	**1.65**	**1.67**	**1.66**
Total non-capital costs	**12.64**	**12.81**	**13.14**	**13.24**	**13.37**	**13.46**

4.1. Controllable costs

The breakdown of controllable costs differs from that provided in the 2001 Access Arrangement Information because the organisation of ActewAGL's gas business has changed, with the contracting out of network operation and management to Agility. Operating and maintenance costs and non-system asset charges are for services provided by Agility. ActewAGL directly incurs corporate overheads, marketing and other direct (insurance) costs.

The Gas Code (Attachment A) requires a breakdown of non-capital costs into operations and maintenance costs, overheads and marketing. The Gas Code also suggests a further breakdown of operations and maintenance into components such as labour and other costs, but says that this information may remain aggregated for commercial reasons. ActewAGL does not separately incur labour and other costs associated with operating and maintaining the network – these are incurred by Agility – and has not therefore reported them separately.

4.2. Other costs

Other costs include government levies, costs associated with full retail contestability, unaccounted for gas costs and other non-controllable costs. Contestability costs were allowed as a cost pass-through in the 2001 Access Arrangement (at a higher value of $0.94 million, compared with $0.45 million in the forecast).

The forecast costs do not include one-off unexpected costs associated with unforseen events. A mechanism to adjust for defined pass-through costs has been included in ActewAGL's Access Arrangement.

5. TOTAL REVENUE

5.1. Determination of total revenue

In accordance with section 8 of the Gas Code, the price path approach and the cost of service methodology have been used to determine total revenue. The key steps were to establish a required revenue stream (or total cost of service) over the Access Arrangement period and then to allocate revenue between market segments. This process involved:

- establishing the total cost of services for the Access Arrangement period;
- allocating the cost of services between asset groups and contract and tariff customers;
- determining the revenue and price paths for the contract and tariff markets; and,
- comparing cost of services to total revenue.

5.2. Cost of services

Under the cost of service model, ActewAGL's total revenue covers the following:

- a rate of return of 7.0 per cent (real pre-tax) on the regulatory capital base;
- depreciation of the regulatory capital base; and,
- forecast non-capital costs.

Table 5.1 shows a breakdown of the total cost of services.

Table 5.1 Total cost of services

real 2004/05 $ million

Year ending 30 June	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*
Return on capital base	8.10	16.43	16.50	16.53	16.67	16.76
Depreciation	3.70	7.96	8.22	7.75	7.88	7.85
Non-capital costs	6.32	12.81	13.14	13.24	13.37	13.46
Total cost of services	**18.12**	**37.21**	**37.86**	**37.52**	**37.91**	**38.07**

Note: 2004/05 numbers are for a half year only. The revised Access Arrangement will start in January 2005. Return on capital base is calculated using the average capital base for each year.

The total cost of services was then allocated between asset groups and between contract and tariff markets.

Section 6 presents an outline of the methodology used to allocate costs between the contract and tariff markets.

5.3. Contract market costs, revenue and price path

The revenue to be recovered from the contract segment was designed to recover the following costs:

- operating costs allocated to the contract segment using activity based costing information (see section 6);

- capital costs including return on and depreciation of assets are shared between contract and tariff customers, based on the use of assets by customer group.

Costs allocated to the contract market were $1.4 million (see table 5.2). The breakdown of contract market operating and capital costs, by asset groups, is shown in section 7 (table 7.2). The allocation of contract market operating and capital costs provides the basis for calculation of reference tariffs for contract customers (see section 7).

Table 5.2 Contract cost allocation

real 2004/05 $ million

Operating costs	0.7
Capital costs	0.7
Total contract costs	**1.4**

The contract revenue path and average price path are shown in Table 5.3.

Table 5.3 Contract revenue path and average contract price

real 2004/05 $ million

Yr ending 30 June	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*
Contract Revenue	0.73	1.45	1.45	1.45	1.45	1.45
Real Av. MDQ Price ($/GJ)	2.54	2.58	2.61	2.64	2.68	2.71
Real Price Change (%)		1.5	1.5	1.1	1.5	1.1

Note: 2005 revenue is for a half year only.

5.4. Tariff market costs, revenue and price path

Costs allocated to the tariff market were $34.8 million (see table 5.4). The breakdown of tariff market operating and capital costs, by asset groups, is shown in section 7 (table 7.4). The allocation of tariff market operating and capital costs provides the basis for calculation of reference tariffs for tariff customers (see section 7).

Table 5.4 Tariff cost allocation

real 2004/05 $ million

Operating costs	11.9
Capital costs	22.9
Total tariff costs	**34.8**

Tariff revenue and price paths are shown in table 5.5.

Table 5.5 Tariff revenue and price path

real 2004/05 $ million

Year ending 30 June	***2005***	***2006***	***2007***	***2008***	***2009***	***2010***
Tariff Revenue	16.97	34.81	35.66	36.48	37.28	38.05
Real Average Price ($/GJ)	5.52	5.52	5.52	5.52	5.52	5.52
Real Price Change (%)		0	0	0	0	0

Note: 2005 revenue is for a half year only

5.5. Revenue versus cost of services

The total revenue from both contract and tariff customers is compared with the total cost of services in table 5.6.

Table 5.6 Comparison of revenue path and cost of services

real 2004/05 $ million

Year ending 30 June	***2005***	***2006***	***2007***	***2008***	***2009***	***2010***
Total revenue	17.69	36.26	37.11	37.93	38.73	39.50
Total cost of services	18.12	37.21	37.86	37.52	37.91	38.07

Note: Only a half year is shown for 2004/05.

6. COST ALLOCATION TO CONTRACT AND TARIFF

6.1. Operating cost allocation

Operating costs are allocated to customer segments using activity based costing information. Activity based costing is a better practice costing methodology used to fully distribute the full costs of service between customer segments.

Table 6.1: Operating cost allocation

real 2004/05 $ million

Total	Contract	Tariff
12.6	**0.7**	**11.9**

6.2. Capital cost allocation

Capital costs are first allocated to assets and then split into contract and tariff markets.

The allocation of the rolled forward capital base is shown in table 6.2. The allocation of assets' capital costs to the contract and tariff markets is then shown is table 6.3.

Table 6.2 Allocation of the capital base

real 2004/05 $ million

	Total	Contract	Tariff
Distribution System Assets			
Primary (HP) Mains	51.4	5.4	46.0
HP Services	0.8	0.1	0.7
MP Mains	125.1	0.1	125.1
MP Services	40.6	0.0	40.6
Regulators, valves	3.5	0.4	3.1
Contract Meters	0.5	0.5	-
Tariff Meters	3.9	-	3.9
Non Systems Assets	-	-	-
Total	**225.9**	**6.5**	**219.4**

Table 6.3 Capital cost allocation

real 2004/05 $ million

Total	Contract	Tariff
23.6	**0.7**	**22.9**

7. REVENUE ALLOCATION AND PRICING STRUCTURES

7.1. Contract revenue allocation and pricing

7.1.1. Introduction and summary

This section describes the allocation of revenue within the contract market segment and the derivation of transportation unit charges.

The transportation charges were determined from the contract revenue allocation for the following assets groups:

Table 7.1 Contract market asset groups

Asset Group	Description
Network	Includes pressure reduction stations, primary, secondary & MP mains, secondary regulators, meters and services.
Metering assets	Includes meters, meter sets and on-site data and communication equipment

Table 7.2 summarises the cost allocation to contract segment asset groups for 2004/05. The metering costs in 2004/05 were calculated by determining the capital related costs from the capital base and calculating the operating costs from activity based information. Network costs were then calculated by the difference of the total contract revenue and the metering revenue.

Table 7.2 Contract cost allocation

real 2004/05 $ million

	Capital Related Costs	Operating Costs	Total
Network	0.6	0.6	1.2
Meter Sets	0.1	0.1	0.2
On-Site Data & Communication Equipment	0.0	0.0	0.0
Meter Reading	0.0	0.1	0.1
Total	**0.7**	**0.7**	**1.4**

Derivation of contract network transportation charges

The network comprises the high pressure, medium pressure mains and services and the pressure reduction stations. The revenue allocated to the network was used to calculate the Network Unit Charge as follows:

$$\text{Network Unit Charge (\$/GJ MDQ)} = \frac{\text{Revenue}_N}{\sum_i \text{MDQ}_i}$$

where:

Revenue_N	=	Revenue allocated to the network comprising capital related and operating costs components ($)
MDQ_i	=	Contract MDQ reservation for customer i.

7.1.2. Capping of the reference tariff

Capped customers are customers whose prices would otherwise exceed the capped rates in table 7.3. The principle underlying capping of the reference tariff is that the shortfall between the expected revenue from these customers and the revenue that would be achieved if they were to pay the reference tariff that would have resulted without rolling in is borne by the remaining customers. No contract customers are forecast to pay a capped charge during the Access Arrangement period and no revenue shortfall has been rolled in, however capped rates have been retained. The capped rates are inclusive of the provision of basic metering equipment charge.

Table 7.3 Capped Rates

Blocks	$/GJ Equivalent (Real 2004/05 $)[1]
First 20 TJ p.a.	3.26
Next 30 TJ p.a.	2.83
All additional	2.39

7.1.3. Derivation of contract throughput charges

Contract revenue was allocated to users on the assumption that all users will choose services based on a charge for MDQ, because these represent the most cost effective services where a user manages their MDQ. The Throughput Service was included for users that have uncertain or variable circumstances and would prefer the predictability of throughput based charging and the MDQ management service implied by it.

It is assumed that revenues from the small proportion of the market that would choose this service will offset the revenues that would have been earned under one of the capacity based

[1] Capped Rates are inclusive of GST

services. Any potential for earning higher than expected revenue under this service is fully offset by the degree of risk associated with this service to ActewAGL when compared with the Capacity Reservation Service.

The price for the Throughput Service has been derived assuming a 20% load factor and by applying a premium to the charge for MDQ that would apply under a capacity reservation service.

7.1.4. Derivation of contract metering charges

There are three metering related charges; a Provision of Basic Metering Equipment Charge which is part of the Transportation Service, and an On-site Data And Communications Equipment Charge and a Meter Reading Charge which are part of a separate Meter Data Service. The Meter Data Service will cease to be a reference service and the two charges which are made under that service will also cease to be reference tariffs when meter reading services become contestable. The service may still be offered as a non-reference service.

The contract revenue allocation to the Provision of Basic Metering Equipment, On-site Data and Communication Equipment and Meter Reading Charges was derived from the capital related and operating costs of these components.

The revenue allocated to the three metering components was determined using the RCB for contract metering. The RCB for the metering assets was initially split into three components by the DORC relativities. Each RCB segment was then rolled forward to determine its capital related costs in 2004/05 by the addition of capital expenditure and depreciation. The operating costs were then allocated to the three components using the activity based costing information. The resultant revenues were then used to determine the unit charges.

Provision of Basic Metering Equipment Charge

A Provision of Basic Metering Equipment Charge was calculated for each type of meter set type employed in the contract market. These charges were determined by allocating the meter set revenue to each meter type on the basis of the cost relativities used in the 2001 Access Arrangement charges, as shown below:

$$\text{Provision of Basic Meter Equipment Charge for meter type } j\ (\$/\text{meter type})$$
$$= \text{Revenue}_{\text{Meter}} \times \frac{\text{Meter Type}_{jH}}{\sum_i (n_i \times \text{Meter Type}_{iH})}$$

where

$\text{Revenue}_{\text{Meter}}$	=	Revenue allocation to the Meter Sets comprising capital related and Operating Costs components ($).
Meter Type_{jH}	=	Provision of Basic Metering Equipment Charge of Type j (or equivalent type based on size and function for new types) under the 2001 Access Arrangement.

Meter Type $_{iH}$	=	Provision of Basic Metering Equipment Charge for each Type (or equivalent type based on size and function for new types) under the 2001 Access Arrangement
n_i	=	number of meters of type i (for summation of all types)

On-site Data and Communication Equipment Charge

The On-Site Data and Communication Device Charge was calculated by dividing the revenue allocated to these devices by the number of data and communication devices installed in the contract segment. The charge includes an additional incremental charge where a second device is installed at the same delivery station.

Meter Reading Charge

The Contract Meter Reading Charge was calculated by dividing the revenue allocated to meter reading by the number of data and communication devices installed in the Contract segment. The charge includes an additional incremental charge where a second device is installed at the same delivery station.

The Meter Reading Charge for customers with two devices at the same Delivery Station was calculated by multiplying the Meter Reading unit charge for a single device by an incremental factor of 1.237 (relating to the marginal operating cost for an additional device).

7.2. Tariff revenue allocation and pricing

7.2.1. Introduction

Tariff prices have the following components:

- Charges for the Network Tariff Service consisting of:
    - a Tariff Charge block structure;
    - a Provision of Basic Metering Equipment Charge; and
    - a fixed charge.
- Charges for the Meter Data Services:
    - a Meter Reading Charge.

The structure of prices is retained from the 2001 Access Arrangement. The structure provides a price for customers which is related to their usage level and does not require knowledge of customers' appliances or usage profile.

The basis of calculation of the tariff was the 2002/03 billing information which includes the number of customers in various segments (ie monthly or quarterly meter reading and number below $6m^3$/hr) as well as the percentage load in each block and the load above $6m^3$/hr. These values were then increased to account for the forecast increase in customer numbers and demand so that in each year the relativities between the various segments and blocks are maintained.

The tariff market revenue allocated to the asset groups was determined in a similar manner as the contract revenue. The metering capital related costs were derived from rolling forward the ICB of the tariff meters by the addition of capital expenditure and depreciation. The operating costs for the tariff market were determined from activity based information. The resulting metering revenue was then subtracted from the total tariff market revenue to arrive at the network revenue.

The revenue allocated to the tariff segment asset groups in 2004/05 is shown in table 7.4.

Table 7.4 Tariff cost allocation

(2004/05 $million)

	Capital Related Costs	Operating Costs	Total
Network	21.1	11.3	32.4
Meter Sets	1.8	0.2	2.0
Meter Reading	0.0	0.4	0.4
Total	**22.9**	**11.9**	**34.8**

7.2.2. Derivation of Network Tariff Charges

Network tariff charges were derived using an iterative process. The revised block structure is designed to deliver a cost reflective revenue allocation to the network for the tariff market, while minimising price shocks to individual market segments and achieving reasonable relativity between tariff and contract prices.

The network tariff charges derived for 2004/05 were then increased by the same proportion to achieve the required revenue in subsequent years using the forecast volumes for each year.

7.2.3. Derivation of tariff charges for metering

The total revenue for tariff metering was allocated to the meter sets and meter reading by the capital related and operating costs of these components.

Provision of Basic Metering Equipment Charge

The revenue for meter sets was further allocated to two groups of meters - below $6m^3$/hr capacity and above $6m^3$/hr capacity on the basis of relativities established in the 2001 Access Arrangement for the relative costs of the segments. A charge for meters below $6m^3$/hr was then determined by dividing the revenue allocation to these meters by the number of installed meters in this class. A charge for meters above $6m^3$/hr capacity was determined by dividing the revenue allocation to this group by annual throughput of these meters.

Meter Reading Charge

A charge for monthly and quarterly reads was determined by allocating the meter reading revenue in accordance with the relativities established in the 2001 Access Arrangement to reflect the relative cost and numbers of monthly and quarterly reads of the tariff customers.

8. SYSTEM CAPACITY AND VOLUME ASSUMPTIONS

8.1. System description

The main elements of the ActewAGL gas distribution system in the ACT and Greater Queanbeyan are described below.

8.1.1. High pressure system

The ActewAGL high pressure system comprises primary and secondary mains, operating at MAOP (Maximum Allowable Operating Pressure) of 7000 kPa and 1050 kPa, respectively. The primary system is fed at Watson via the lateral from the Moomba-Sydney Pipeline and at Hoskinstown from the Eastern Gas Pipeline.

At Watson, the primary main runs north to Gungahlin and south to Phillip, and supplies the secondary network via Pressure Reduction Stations at Watson, Phillip and Gungahlin. The secondary network supplies gas to the medium pressure (MP) networks, as well as to many contract customers directly.

During the period of the 2001 Access Arrangement a main was extended from the primary main at Fyshwick to connect to the Eastern Gas Pipeline (EGP) at Hoskinstown. The EGP interconnection was designed to provide capacity and security of supply to the ActewAGL gas distribution system and was completed in 2001.

8.1.2. Medium and low pressure distribution systems

The MP distribution networks are fed from the secondary network via DRSs (District Regulator Sets). MP networks have a MAOP of 210 kPa.

Tariff customers are supplied from the MP networks.

8.1.3. Meters and services

Each contract and tariff customer is supplied by a service and a meter set.

All but a number of small contract customer meters are electronically linked to ActewAGL's Metretek database.

8.2. History of network development

The ActewAGL network is relatively new, with development commencing in the early 1980's. Hence the medium pressure mains are constructed of non-corrosive plastic materials and the high pressure mains of steel.

8.3. System design and operational principles

ActewAGL uses the Stoner network analysis computer simulations to model its Primary, Secondary and MP systems. The network models are constantly updated, ensuring a reliable basis when making day-to-day decisions.

8.4. Network Performance Validation

Each year, a network performance validation is conducted in accordance with ActewAGL's Technical Policies[2]. The purpose of the validation is to identify the needs and opportunities to reinforce the system to ensure supply reliability, provide for growth in the most efficient manner, and enhance security of supply. In the validation process, the Stoner network models are verified against actual network performance data.

8.5. Data

8.5.1. Network assets

The distribution assets comprising the ActewAGL network and their valuations as at 1 July 1999 and 1 July 2004 are shown in table 8.1.

Table 8.1 Network Assets at 1 July 1999 and 1 July 2004

Assets	*length/number 1999*	*Value ($m) 1999*	*length/number 2004*	*Value ($m) 2004*
Distribution system assets				
Primary (HP) mains	188 km	27.72	233 km	51.39
HP services	298	0.77		0.81
MP mains	3,222 km	113.09	3,536 km	125.15
MP services	65,070	23.03		40.63
Regulators, valves		1.13		3.49
- TRS, PRS	1		5	
- SRS	63		84	
Contract meters	116	0.84	126	0.51
Tariff meters	73,434	6.12		3.91
Total distribution system		**172.70**		**225.87**
Non-system assets		2.30		0.00
Total		**175.00**		**225.87**

[2] Gas Network Design Criteria and Performance Validation for Supply Reliability and Growth, Agility Technical Document.

8.5.2. System load profiles

Monthly throughput (in TJ) for the period July 2002 to June 2003 is shown in table 8.2.

Table 8.2 Monthly gas throughput 2002/03

Month	*TJ*
July	1 383
August	1 111
September	713
October	410
November	204
December	191
January	156
February	145
March	216
April	365
May	729
June	1 104
Total	**6 727**

The average and peak flow rates for the contract and tariff segments for 2002/03 are shown in table 8.3.

Table 8.3 Average and peak flow rates 2002/03

Average Daily Flow Rate (TJ)	18.4
Peak Day Flow Rate (TJ)	53.3

8.5.3. Customer information

Projected customer numbers and annual loads for the ACT and Greater Queanbeyan at 30 June 2004 are shown in tables 8.4 and 8.5 below. The contract customer numbers include all customers with annual consumption greater than 10TJ.

Table 8.4 Customer numbers as at 30 June 2004

	Contract	**Tariff**
Total	38	96 069

Table 8.5 Projected 2003/04 Consumption (TJ)

	Contract	**Tariff**
Total	989	5 966

8.6. Description of system capabilities

8.6.1. Extent of ActewAGL network

The Access Arrangement applies to ActewAGL networks in the Australian Capital Territory and Greater Queanbeyan. The Access Arrangement covers the existing distribution network at the commencement of the Access Arrangement and any extension or expansion of the existing network in the Australian Capital Territory or Greater Queanbeyan in accordance with section 7 of the Access Arrangement.

A description of the ACT network is provided in table 8.6, and is shown schematically in the map in Attachment 1.

Table 8.6 ACT Network Receipt Pressures

NETWORK RECEIPT POINTS		NETWORK DESCRIPTION	
Receipt Point	**Min. Receipt Pressure**	**High Pressure**	**Medium Pressure**
Watson Metering Facility	2400 kPa	✓	✓
Hoskinstown Metering Facility	8000 kPa	✓	✓

Note: These minimum receipt pressures are based on a typical combination of supply from Watson and Hoskinstown during a winter peak period. Any significant change to the load forecasted in this Access Arrangement or the share of load supplied through each receipt point may require a revision to the pressures specified above.

The above minimum receipt point pressures are calculated with the assumption that 100% of the forecasted demand may be delivered to the network through one of the receipt points only. The Network Manager will review the minimum pressures at each receipt point to reflect the supplier's contract on the load sharing between the receipt points.

The standard operation metering pressures of the primary, secondary and medium pressure systems are shown in the following table.

Table 8.7 Operation Metering Pressure

	Maximum Allowable Operating Pressure (MAOP) (kPa)	Normal Operating System Minimum Pressure (kPa)	Emergency System Minimum (kPa)	Standard Metering Pressure (kPa)
Primary	7000	1750	1750	n/a
Secondary	1050	525	400	100
Medium	210	70	40	35, 5, 2.75

Note: MAOP on the primary main from Hoskinstown to Fyshwick is 14 000kPa.

8.7. Volume forecasts

8.7.1. Tariff market forecasts

Consumption in the residential tariff market is forecast to grow at an average rate of 2.7 per cent a year to 2009/10 (table 8.8).

Table 8.8 Residential tariff market consumption forecasts (TJ)

Yr ending 30 June	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*
Volume	4 716	4 862	5 002	5 138	5 270	5 398

The forecast residential tariff market growth is a function of:

- Changes in consumption by existing residential customers; and,
- Consumption by new residential customers.

Consumption by existing residential customers is forecast to decline slightly at 0.26 per cent per year.

Consumption by new residential customers depends on forecasts of changes in residential customer numbers and the volume of gas consumed per new customer. Different types of residential customers tend to have different growth rates and different average levels of annual consumption, so the forecasts have been split into two groups:

- New dwellings (also includes electricity to gas conversions in homes rebuilt due to the bushfires; and,
- Conversion of existing dwellings (electricity to gas).

Forecasts of customer numbers for new dwellings (both houses and medium/high density) are based on forecasts of growth in construction of new dwellings. For the ACT, forecasts published by BIS Shrapnel are used as the basis for forecasting incremental dwelling customer numbers. BIS Shrapnel (March 2004) forecast that the underlying demand for dwellings will increase from 1800, the level of the past few years, to 2300 in 2004/05 and remain at that level for the forecast period to 2009/10. Dwelling completions are assumed to equal the underlying demand level. BIS Shrapnel do not publish separate forecasts for Queanbeyan. Numbers supplied by the Queanbeyan Council provide the basis for the Queanbeyan forecasts.

In the 5 years to 2002/03, ActewAGL connected an average 92.8 per cent of new houses to gas, and this level of penetration is forecast to remain stable to 2009/10. For other dwellings, the average penetration level over the past 5 years of 77.4 per cent is forecast to remain stable.

Average annual consumption per customer in both new houses and new medium/high density dwellings is forecast to fall slightly over the period (from 53.3 GJ in 2002/03 to 51.1 GJ in 2009/10) as more energy efficient appliances, particularly hot water saving devices, are introduced.

The number of existing dwellings converting to gas is forecast to fall over the period, continuing the trend since the start of the 2001 Access Arrangement. Connections of existing houses fell from 2691 in 1999 to 1746 in 2003. The forecast continues this trend in an exponential relationship, as is typical of a market approaching maturity. The number of connections of existing dwellings in 2004 and 2005 is higher than the underlying trend due to the reconnection of houses that were disconnected during the bushfires.

Average annual consumption per customer converting to gas is forecast to fall slightly over the period.

Business tariff market consumption is forecast to grow at an average rate of 0.9 per cent per year to 2009/10 (table 8.9).

Table 8.9 Business tariff market consumption forecasts (TJ)

Yr ending 30 June	***2005***	***2006***	***2007***	***2008***	***2009***	***2010***
Volume	1 435	1 448	1 460	1 473	1 486	1 498

For existing business tariff customers, average consumption is forecast to remain constant during the period.

Forecasts of growth in consumption by new business customers are based on forecasts of changes in customer numbers and average consumption per new customer. The net annual increase in business customers (new connections less disconnections) is forecast to remain at 46 customers, which is the average for the past 5 years.

8.7.1.1. Weather adjustment

The tariff market forecasts include an adjustment for the effect of the trend to warmer weather. As is standard industry practice, the effect of temperature has been measured by heating degree days (HDDs). Analysis of historical temperature data shows that the number of HDDs per annum for the ACT (as measured at Canberra Airport) has been declining at an average rate of about 3.8 HDD per annum over the period since 1976. Declining HDDs mean warmer temperatures, which tend to reduce gas demand. Based on the estimated relationship between HDDs and gas demand and the trend in HDDs, tariff market demand was reduced by approximately 8 TJ per year over the forecast period. This represents a small proportion of total tariff demand. A one-off adjustment was also made to the base year for the forecasts, 2002/03, as temperatures were above the trend in that year.

8.7.2. Contract market forecasts

Total annual consumption (ACQ) in the contract market is forecast to decline at an average rate of 1.3 per cent a year to 2009/10 (table 8.10).

Table 8.10 Contract market consumption forecasts

Yr ending 30 June	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*
ACQ (TJ)	1 057	1 040	1 023	1 007	990	973
MDQ booked (GJ)	5 711	5 628	5 546	5 487	5 405	5 347

The number of contract sites is forecast to increase by one to 39 over the forecast period. Average consumption per contract customer is forecast to decline, as further energy efficiency initiatives, already introduced at some sites, are implemented and plant is upgraded.

To forecast total ACQ and MDQ, the market is split into 3 industry groups – health and education, offices and other. ACQ growth rates for each group are then forecast to continue in line with historical trends. Historical load factors for each industry group have been used to determine the corresponding MDQ forecast each year.

9. KEY PERFORMANCE INDICATORS

Table 9.1 Key Performance Indicators for ActewAGL's Gas Distribution System

real 2004/2005 $

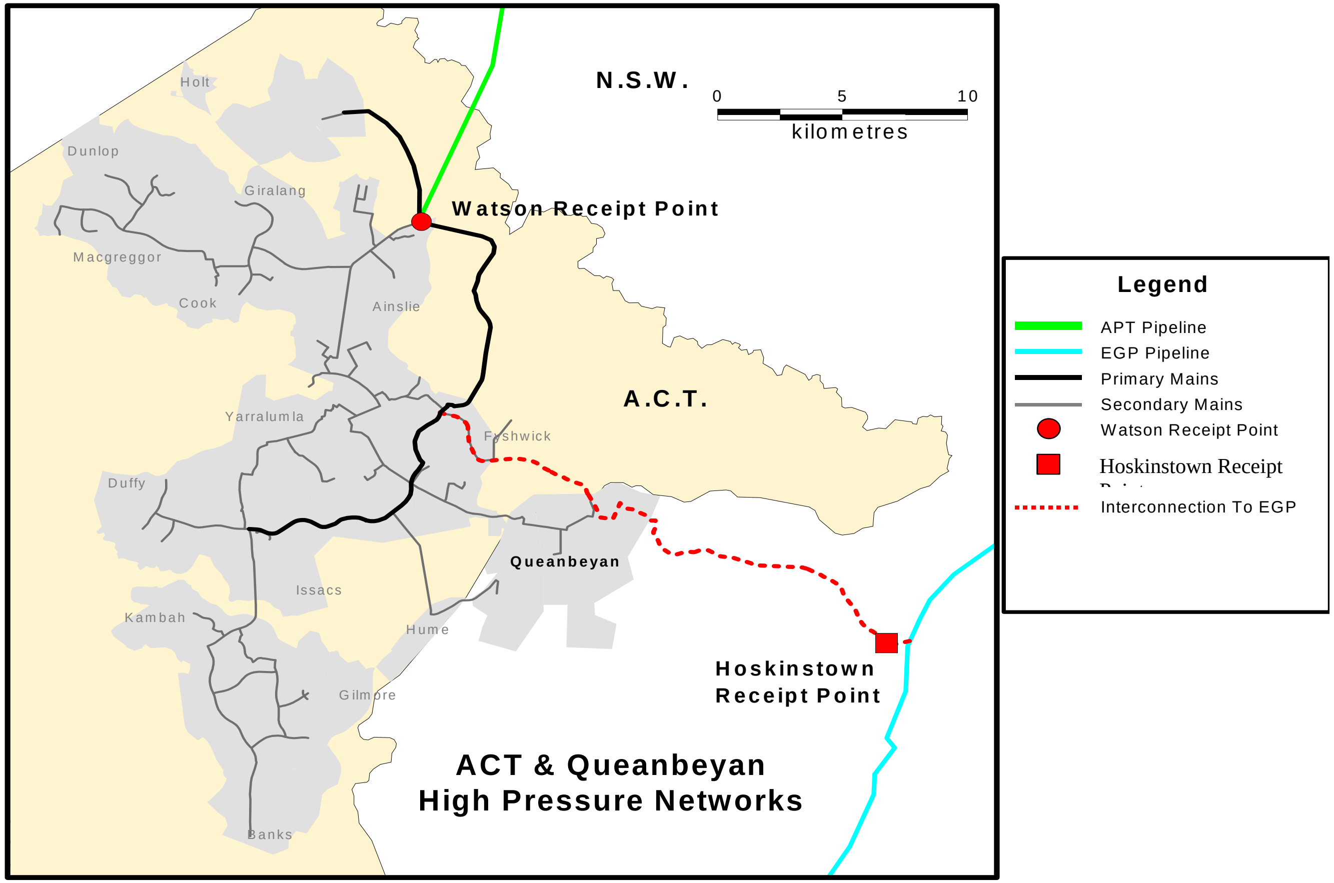
Year ending 30 June	***2001***	***2002***	***2003***	***2004***	***2005***	***2006***	***2007***	***2008***	***2009***	***2010***
Opex/customer	150	130	130	120	126	124	123	120	118	116
Opex/km	3611	3235	3312	3117	3354	3343	3374	3350	3329	3303
Opex/TJ	1908	1751	1784	1630	1754	1743	1756	1738	1726	1711

Notes: Opex means total non-capital costs
Years 2001-2003 are actual historical data
Year 2004 is forecast as submitted December 2003
Years 2005-2010 based on the Final Decision on non-capital costs

ATTACHMENTS

ATTACHMENT 1

MAP OF THE SYSTEM



ATTACHMENT 1

MAP OF THE SYSTEM

ATTACHMENT 2

INDEX OF NATIONAL ACCESS CODE ATTACHMENT A TO THIS ACCESS ARRANGEMENT INFORMATION

Categories of information to be disclosed as part of the Access Arrangement Information

Category in Access Code	Reference in Revised Access Arrangement Information
Category 1 **Information regarding Access and Pricing Principles**	Sections 2.1 to 2.3
Category 2 **Information regarding Capital Costs**	Sections 3.1 to 3.4
Category 3 **Information regarding Operations and Maintenance Costs**	Section 4.1
Category 4 **Information on Overheads and Marketing Costs**	Section 4.1
Category 5 **Information regarding System Capacity and Volume assumptions**	Sections 8.1 to 8.7
Category 6 **Information regarding Key Performance Indicators**	Section 9