Final report to

Queensland Competition Authority

Demand forecasts for Allgas

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EXECUTIVE SUMMARY

Introduction

The Queensland Competition Authority (the Authority) regulates third party access to the Queensland gas distribution networks through approval of Access Arrangements. Allgas, the natural gas distributor for the southern part of Brisbane, Gold Coast, Toowoomba and Oakey has submitted proposed Access Arrangements (AA) revisions and supporting AA information (AAI) covering the period 1 July 2006 to 30 June 2011.

The AAI include forecasts of gas demand for two reference services, the Volume Customer service for customers consuming less than 10 TJ pa and the Demand Customer service for customers consuming more than 10 TJ pa. Distribution revenue from the Volume service is earned largely according to customer numbers and consumption, while in the Demand service it is earned mainly according to the maximum daily quantity (MDQ) capacity contracted by customers.

The Authority has asked McLennan Magasanik Associates (MMA) to forecast customer numbers and consumption for the Volume market and MDQ for the Demand market to help in the Authority's review of the proposed AA revisions.

MMA has prepared financial year forecasts for the Domestic and Small Business markets, both part of the Volume Customer service and the Demand market.

Domestic market

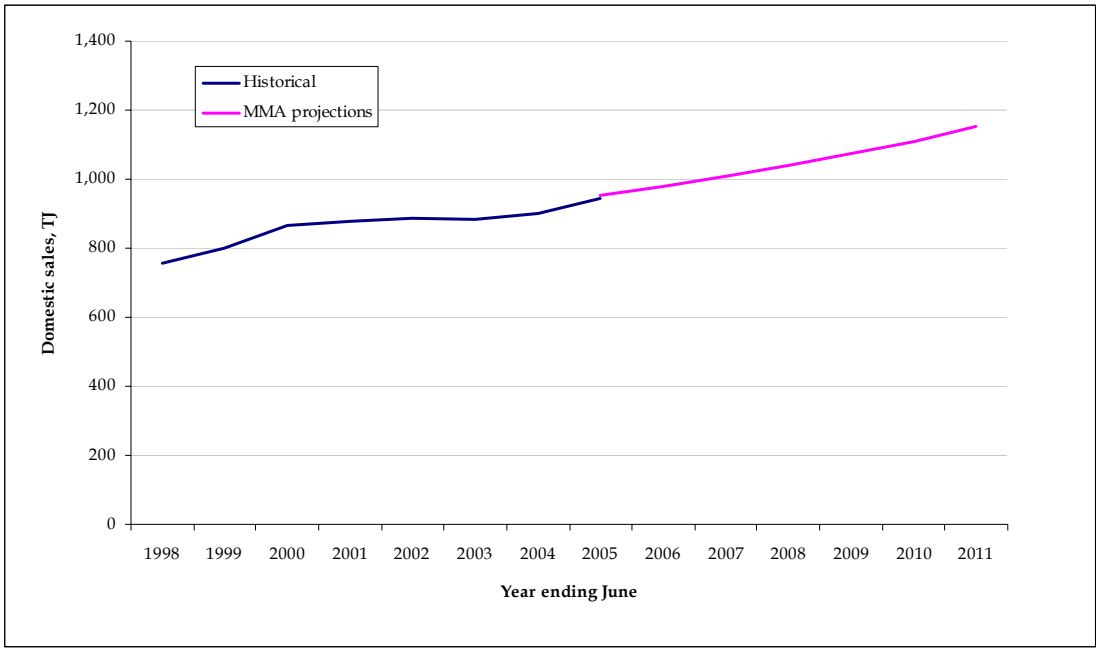
For Allgas the domestic market includes both the residential sector and the serviced hot water (SHW) sector. Growth over the past five years has been about 1.5% to 2% pa, made up largely of growth in customer numbers as average usage has changed little over the period. Within the market the residential sector has been growing largely in line with customer number growth as average usage per customer has changed little. Conversely, the number of SHW apartment blocks has only increased slowly the average usage has grown as the average size of the apartments served has increased.

The key drivers likely to affect the domestic sector over the next few years include the growth in dwellings for the region, the Government sustainable housing initiative, due to commence on 1 March 2006, which means that gas hot water systems are likely to be the cheapest to install in new homes with access to natural gas, Allgas' network development plans and the significant price increases recently experienced by the residential market.

Allgas is forecasting significant increases in residential connections over the coming regulatory period. MMA considers that, while challenging, these plans are achievable and has adopted these forecasts of customer numbers. MMA has forecast that average usage will continue to fall due to appliance and end-user efficiencies and the impact of price

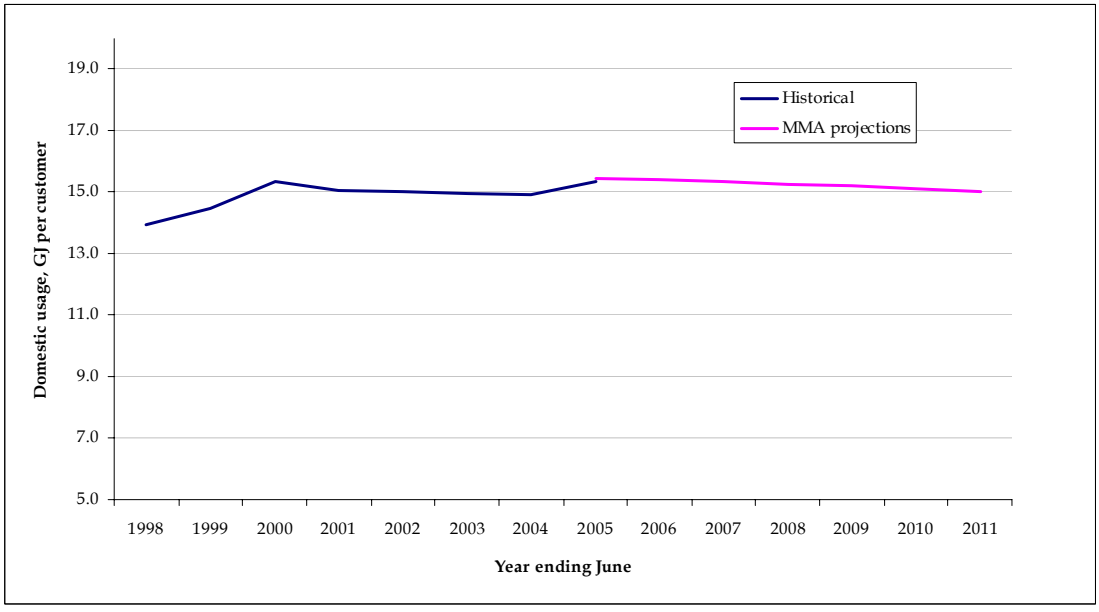
increases. SHW blocks are forecast to grow largely in line with recent trends. The history of the domestic market and MMA forecasts are provided in Exec Figure 1.

Exec Figure 1 History and MMA forecasts of domestic consumption



Although the domestic market is forecast to grow at a rate of about 3.4% pa this growth is all derived from customer number growth (3.8% pa) as average usage per domestic customer is forecast to reduce as seen in Exec Figure 2.

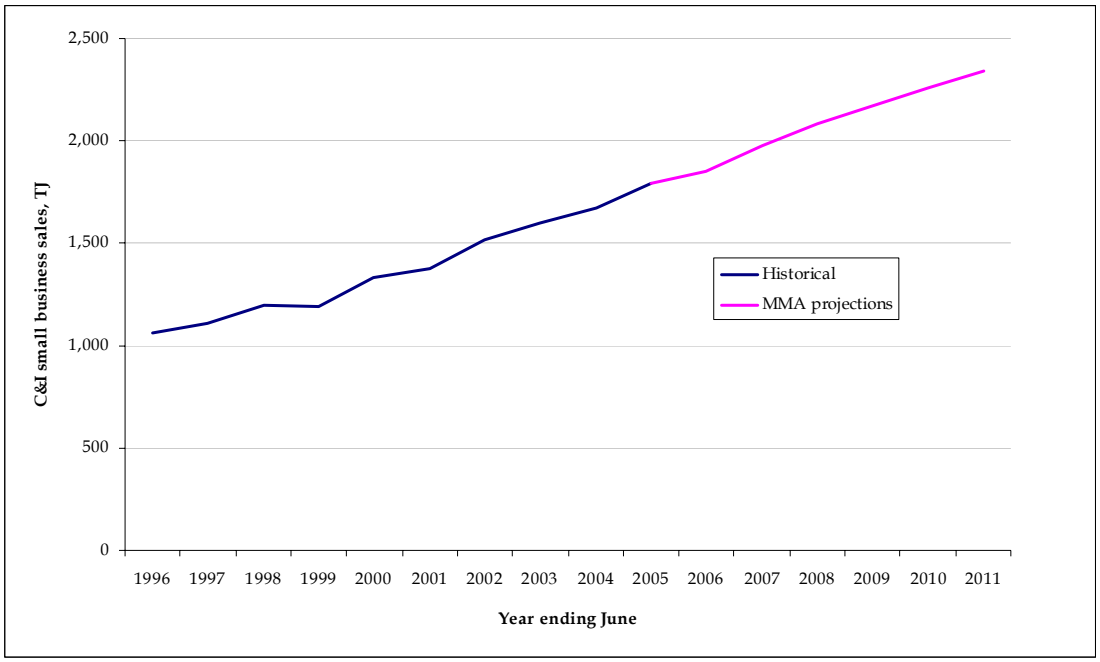
Exec Figure 2 History and MMA forecasts of average usage per domestic customer, GJ



Small business or C&I market

Historical and MMA forecast growth in the small business market are illustrated in Exec Figure 3. The Allgas small business market has been growing strongly at 6% pa due to both economic growth and network extensions to the South Coast. As both the economy and extensions are expected to continue to grow, albeit at a slightly reduced rate, MMA has forecast that the small business market will also continue to grow reasonably strongly at about 4.6% pa.

Exec Figure 3 History and MMA forecasts of consumption by small business customers, TJ

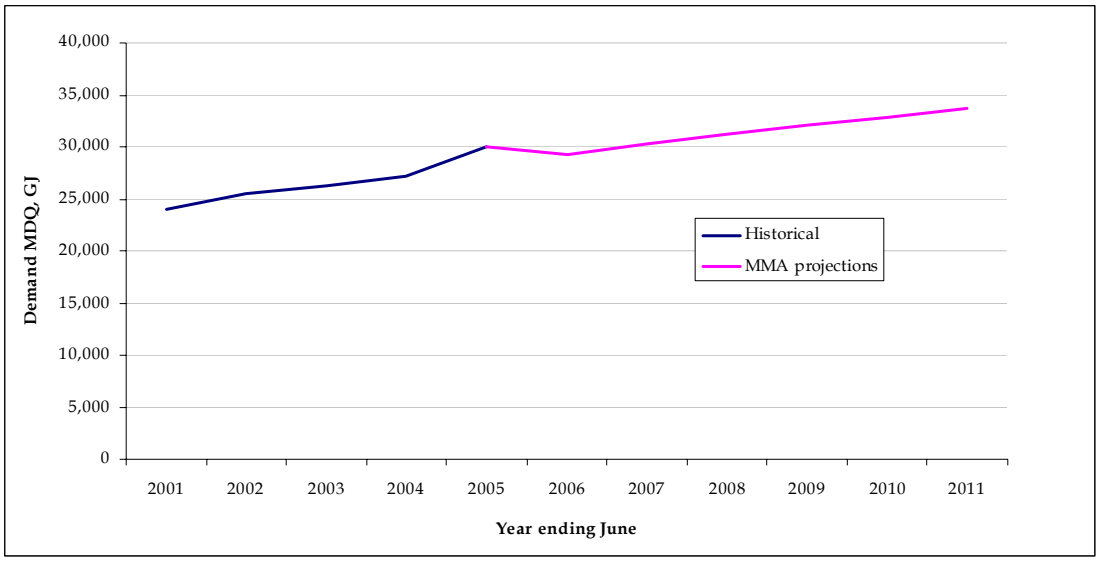


Demand market

Consumption in the demand market has grown at about 2.8% pa over the past seven years, but over the past four years growth has slowed to only 2.1% pa. However, over the same four-year time period MDQ has grown at an appreciably faster rate, 6% pa, mainly in Brisbane and the South Coast. This is due to the load factor, (average daily quantity divided by maximum daily quantity) declining over the period.

MMA has initially forecast consumption, based on deriving a relationship between consumption and Gross State Product (GSP, a measure of economic growth) and has then used a reducing load factor to convert this to MDQ. MMA has also talked to some of Allgas customers to discuss their gas consumption and MDQ outlook, taking this into account where relevant. The historical (only available since 2001) and MMA forecast of MDQ is provided in Exec Figure 4.

Exec Figure 4 History and MMA forecasts of contracted MDQ, GJ



MMA has forecast a slight reduction in MDQ in the year 2006, due largely to a customer curtailing production, followed by an increase in MDQ at about 3% pa.

Summary of MMA forecasts

MMA's forecasts for the Volume market (customer numbers and consumption) and the Demand market (MDQ) are set out in Exec Table 1.

Exec Table 1 Summary of MMA forecasts

	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11
Volume customer numbers	64413	66538	68941	71482	74206	77263	80903
Volume consumption, TJ	2737	2833	2986	3126	3243	3369	3499
MDQ, GJ	29930	29210	30258	31220	32025	32877	33722
MDQ Brisbane, GJ	22814	22523	23344	24093	24717	25377	26029
MDQ South. GJ	3173	3214	3466	3695	3875	4069	4261
MDQ Toowoomba, GJ	3943	3473	3448	3433	3432	3431	3433

Over the period 2005 to 2011 Volume customer numbers are forecast to increase at 3.9% pa with consumption forecast to increase at a slightly faster rate of 4.2% pa. Contracted MDQ is forecast to increase by 2% pa overall.

1 INTRODUCTION

1.1 Background

The Queensland Competition Authority (the Authority) regulates the gas distribution businesses or service providers (SPs) in Queensland under the National Third Party Access Code for Natural Gas Pipeline Systems (the Code).

There are two major Queensland gas SPs:

- Allgas (Energex)[1] which reticulates the southern part of Brisbane, Gold Coast, Toowoomba and Oakey
- Envestra which reticulates the northern part of Brisbane, Ipswich, Gladstone, Rockhampton and the Wide Bay area[2].

Allgas and Envestra are regulated through Access Arrangements (AA) approved by the Authority in 2001 which remain in force until 30 June 2006. A new regulatory period, the second to be regulated by the Authority, is to commence on 1 July 2006. The SPs provided their proposed AAs for the next regulatory period in October 2005.

1.2 Role of demand forecasts

Demand forecasts play a significant role under the combined building block and price cap regulatory approach expected to apply over the next period:

- Firstly the level of demand acts as a divisor of regulated revenue in setting actual tariffs.
- Secondly, demand levels act as input into assessing the capital and operating costs required over the regulatory period.

Under the price cap regulatory approach the SPs benefit from demand exceeding forecasts and are adversely affected if demand is less than forecast. As a result the SPs have an incentive to understate their demand expectations.

Under the Code demand forecasts are required to be "…best estimates arrived at on a reasonable basis". The Authority has commissioned McLennan Magasanik Associates (MMA) to prepare independent advice regarding demand forecasts for the two SPs covering the period 1 July 2006 to 30 June 2011.

1.3 Process

MMA has adopted the following process in undertaking its forecasts:

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1 Energex purchased the Allgas gas utility but in the regulatory context the name Allgas is still used. Allgas is still the name of the company and is the name used in this report.

2 Supply to the Wide Bay area and also the supply by Envestra to the BP refinery and cogeneration facility are not under consideration by the Authority and not reviewed in this report.

- Initially requesting historical information and information with respect to the expected key drivers of gas demand from the SPs.
- Clarifying the information provided through discussions with the SPs.
- Reviewing the history of gas demand.
- Considering and modelling the key drivers likely to apply over the forecast period.
- Holding discussions with some of the largest users.
- Modelling gas demand for the residential, small business and large "demand" customers.

Although the two SPs operate in a very similar location geographically, they are quite distinct in terms of the history and make-up of the business, their approaches to strategic growth and the information they were able to provide. For this reason the analysis and modelling has been done separately, although in general terms the key drivers are similar.

This report is laid out as follows:

- Chapter 2 provides an overview of recent history of the Allgas network
- Chapter 3 reviews key drivers expected to operate over the coming regulatory period
- MMA's forecasts for the domestic, small business and large demand customers are provided in Chapter 4. The Allgas forecasts are also provided for comparison.

1.4 Conventions:

All the analysis has been carried out using financial year data. Unless otherwise specified all results and tables refer to financial years. The convention followed in the report has been to refer to the financial year as either both the years covered or as the year which contains the 30th June. Thus, the financial year commencing 1 July 2003 and concluding on 30 June 2004 is referred to in the text as either 2003/04 or 2004.

We have in some cases derived relationships which use logarithmic functions. Generally we use the natural logarithm (ln) for these relationships but sometimes refer to them as log.

This report to the Authority contains information which may be considered confidential by Envestra and Allgas. MMA recommends that the businesses be asked to specify which information they consider needs to be removed from any public report.

Tables and percentages may not appear to completely reconcile in some cases. This could be for a number of reasons including rounding and use of trend estimates.

This report has generally relied on the historical data provided by Allgas. While the Allgas forecasts have been reviewed it has been assumed that the historical data are accurate and comment has been made only where data appears anomalous.

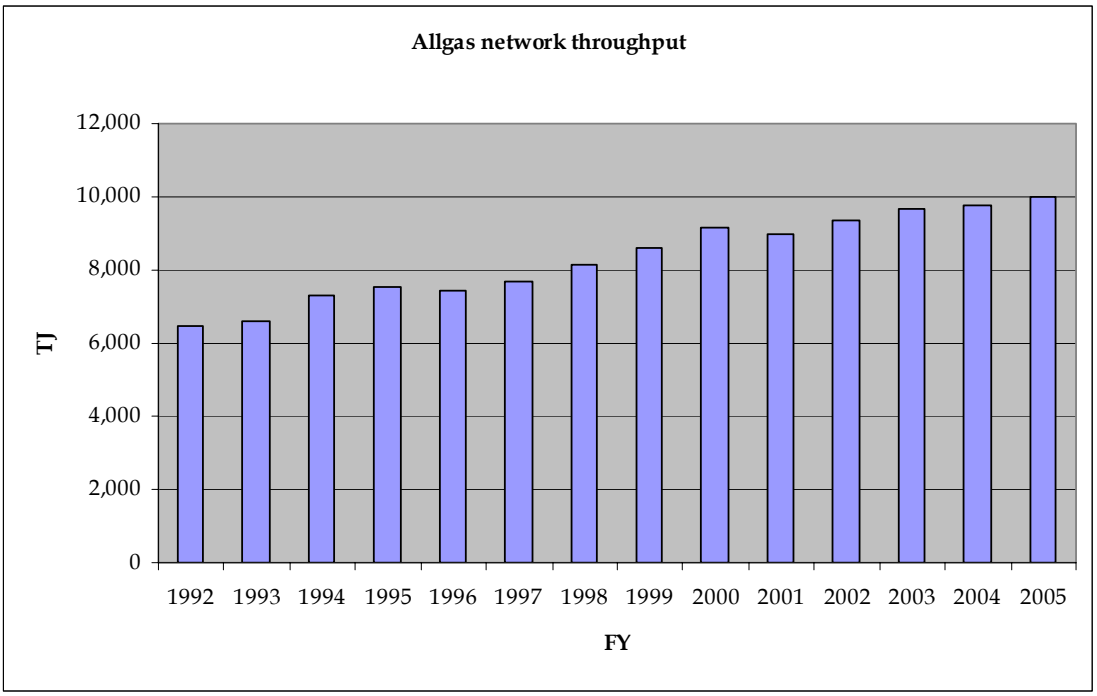
2 HISTORICAL

In this section of the report we review the demand history of the network as a whole and then the different components of the market.

2.1 Overall throughput

Total gas throughput by the utility is shown in Figure 2-1[3].

Figure 2-1 Overall historical Allgas throughput, TJ



Over the period 1992 to 2005 growth has averaged 3.4% pa. However, growth has clearly not been even, with down-turns in 1996 and 2001. The unevenness of growth emphasises the importance of three considerations in forecasting, division of forecasting into suitable categories for which the drivers are expected to be similar, review over a suitable period, with selection of a starting year being important, and judicious use of trend rather than point estimates for forecasting purposes. Based on trend estimates, growth over the past few years has averaged about 3% pa, a little lower than the growth over the entire period.

2.2 Division into markets

Allgas has been able to separate its historical information into three or four markets:

[3] It should be noted that the information provided by Allgas for the 2003 year is anomalous as it includes some LPG consumption and customers for the residential and small business markets which Allgashas not been able to rectify.

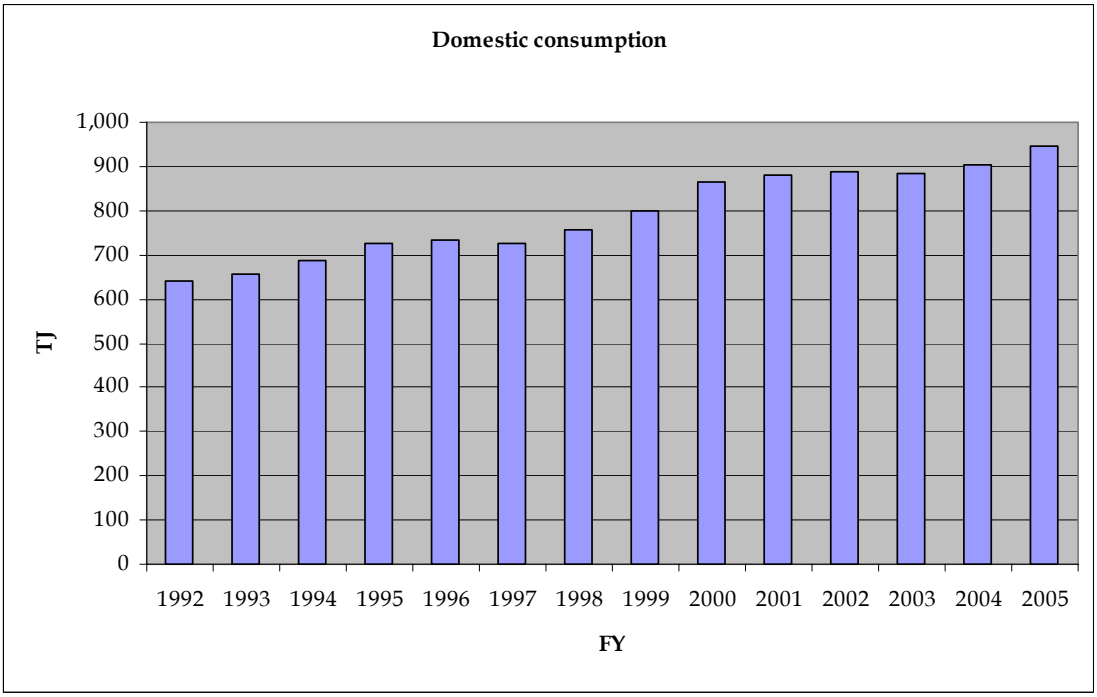
- Domestic (this includes both residential consumers who take gas separately and those apartment blocks which are supplied by serviced hot water (SHW)[4]. Although Allgas was able to separate out SHW from its residential in the earlier years it says it is unable to do so now with any certainty).
- Small business or C&I customers who consume less than 10 TJ pa.
- Large or Demand customers who nominally take over 10 TJ of gas pa.

Allgas has provided historical data divided into these categories for the period 1996 to 2005.

2.3 Domestic market

Growth in the domestic market (including residential and SHW) is illustrated in Figure 2-2. Growth has been about 3% pa over the entire 13 year period, but appears to have slowed somewhat to about 1.5 -2% pa over the past five year period.

Figure 2-2 Residential sales, TJ



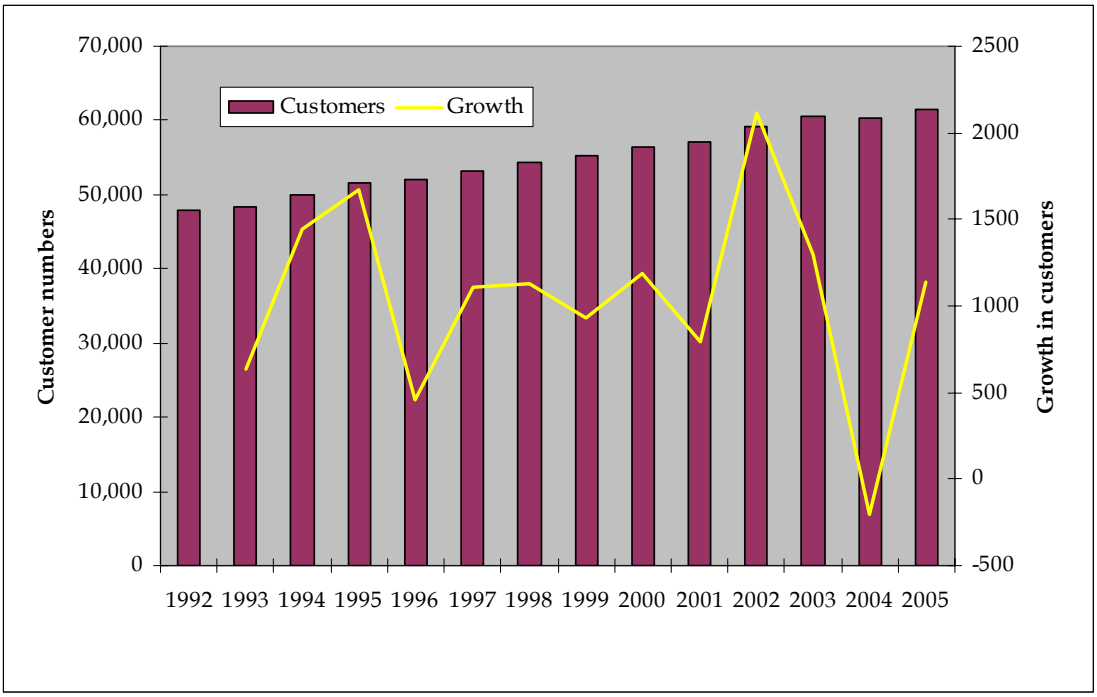
It is important to understand the reason behind the slowing of growth in the domestic sector. Generally, residential growth is divided into two components, growth in customer numbers and growth in average usage.

[4] These customers, around 1500 in 2004/05 are the number of apartment blocks using serviced hot water, not the number of apartments which take serviced hot water.

2.3.1 Domestic customer numbers

Allgas has provided a history of domestic customer numbers from 1991/92 to 2004/05. These include both residential and SHW customers. These are illustrated in Figure 2-3, together with the annual growth in customer numbers (right hand axis) over the period.

Figure 2-3 Domestic customer numbers



According to Allgas, domestic customer numbers have grown from 47,800 in 1991/92 to 61,500 in 2004/05, of these some 1500 in 2004/05 are SHW apartment blocks[5]. This means that customer numbers have grown by about 1000 – 1100, or around 2%, per annum over the entire period. However, growth over the past five years has been very variable as demonstrated in the Figure. Over the past five years it has ranged between 3.5% and 1.0% on an annual basis[6], averaging about 1.8%. The reason for this is unclear. It has certainly not related to the underlying housing growth in the region.

2.3.2 Average usage per customer

The other component of domestic consumption is average usage per customer. For the domestic market as a whole the change in average consumption over the past 13 years is illustrated in Figure 2-4. A trend line is included as the consumption in any year is likely to be affected by weather (see Section 3.2.10).

Over the past 13 years there has been reasonable growth in average usage of about 1% pa. However, the growth rate appears to have reduced over the past decade, with growth of

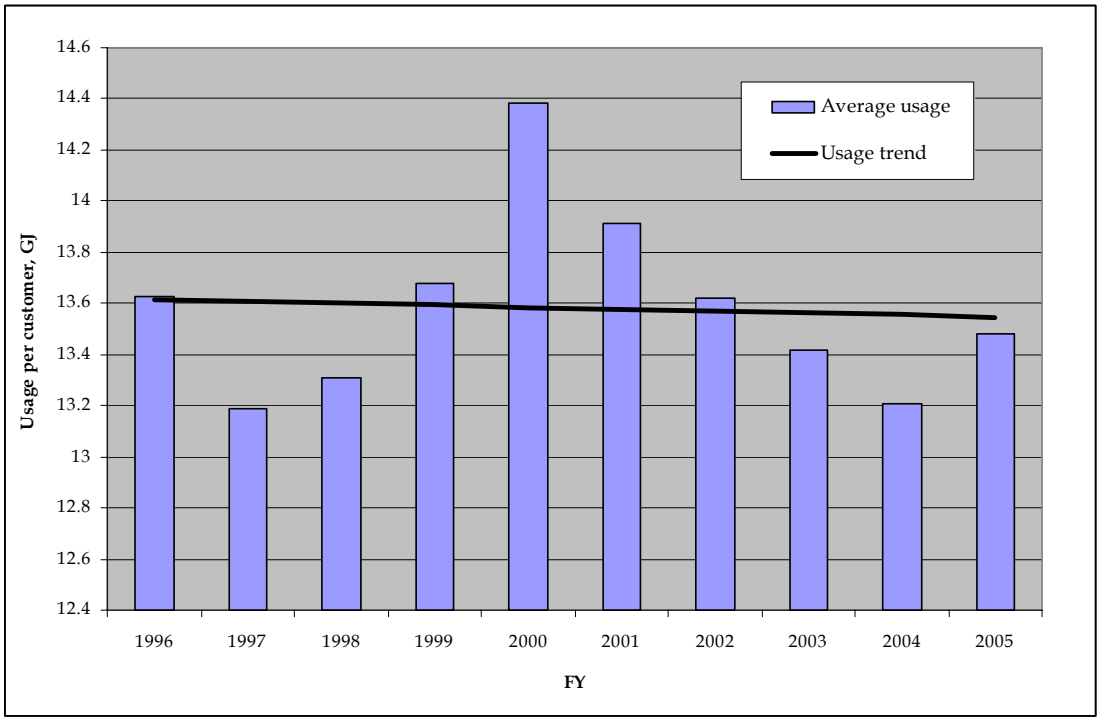
[5] These are counted as blocks rather than according to the number of apartments actually served.
[6] After averaging customer number growth for 2002/03 where LPG was included.

0.7% pa over the past 9 years and no material growth apparent over the past 5 years. In the year 2004/05 average usage per domestic customer is estimated to have been about 15.2 GJ. However, this average usage calculation is for the combined residential and SHW sectors.

We have assessed the changes in average residential usage alone by using Allgas estimates of SHW customer numbers and trend estimates of SHW consumption to 2001/02 when the SHW numbers stopped being collected by Allgas[7]. Growth in average usage of SHW has been very strong, according to Allgas because of penetration into fewer, but much larger apartment blocks.

Using this analysis, there has been an apparent reduction in average residential usage of about 0.1% pa over the past 9 years to about 13.5 GJ in 2005.

Figure 2-4 Average residential usage and linear trend, GJ per customer



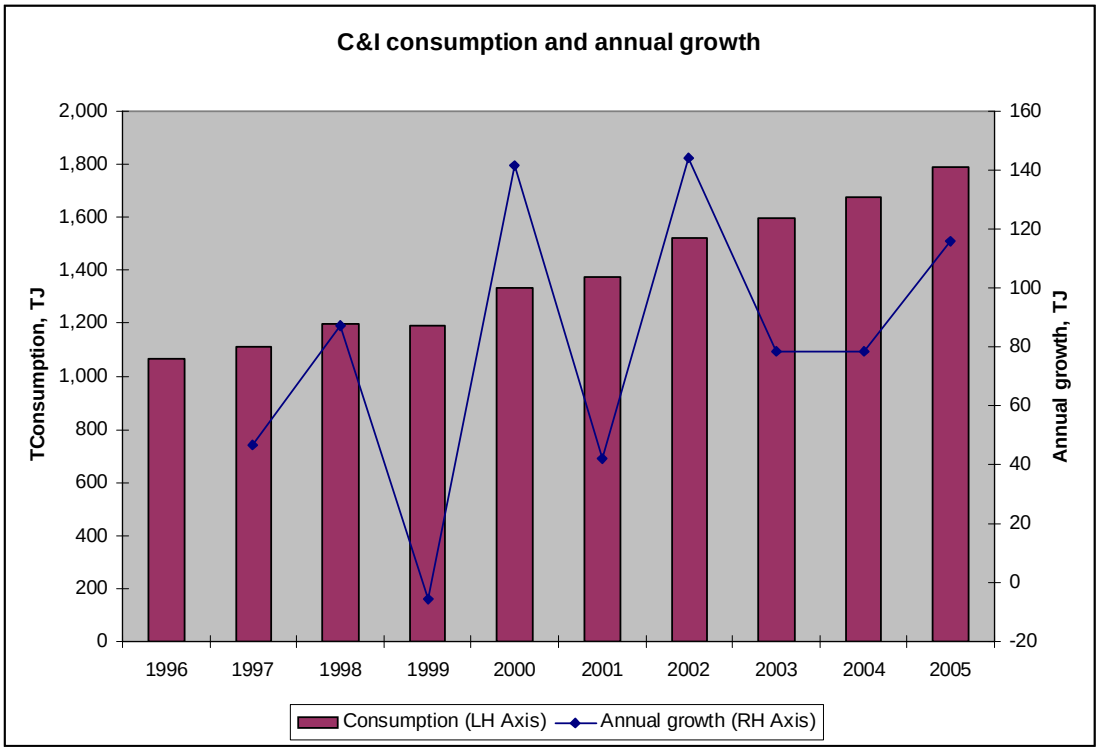
Thus the analysis of average usage suggests that while the average usage of SHW has increased at a rapid rate over the past few years the residential average usage may have been flat or reduced somewhat, especially over more recent years. Any forecasting of growth must take these different trends into account.

[7] Although Allgas has provided estimates of SHW consumption, we consider the very significant increases over the past two years not to be credible without further substantiation. Allgas was estimating growth in average SHW usage of about 15% pa. Even with the MMA analysis the numbers show a strong growth in average gas usage for SHW of about 9% pa.

2.4 Small business or C&I class

Small business or C&I customers are those not identified as domestic[8] and generally using less than 10 TJ pa. Growth in C&I consumption for Allgas as a whole over the past nine years has been strong, about 6% pa, and even stronger over the past few years.

Figure 2-5 C&I consumption, TJ*



* Note we have used an average number for 2002/03 as the Allgas numbers included LPG

This growth reflects not only the strong commercial and manufacturing environment but also Allgas' expansion into the South Coast areas. Over the past four years C&I growth in the South Coast has been about 7% pa while that in Brisbane has been about 5.5% pa[9]. Despite the difference in growth rates, over 70% of the growth over the past few years has still come from the Brisbane area.

2.4.1 C&I customer numbers

Growth in C&I numbers is a driver of growth in this market. Growth of C&I customer numbers for the network as a whole has been steady at about 3-4% pa over the past nine years. However, the location of customer number growth is instructive, with two thirds of the growth in customer numbers being in the South Coast in line with Allgas' expansion there.

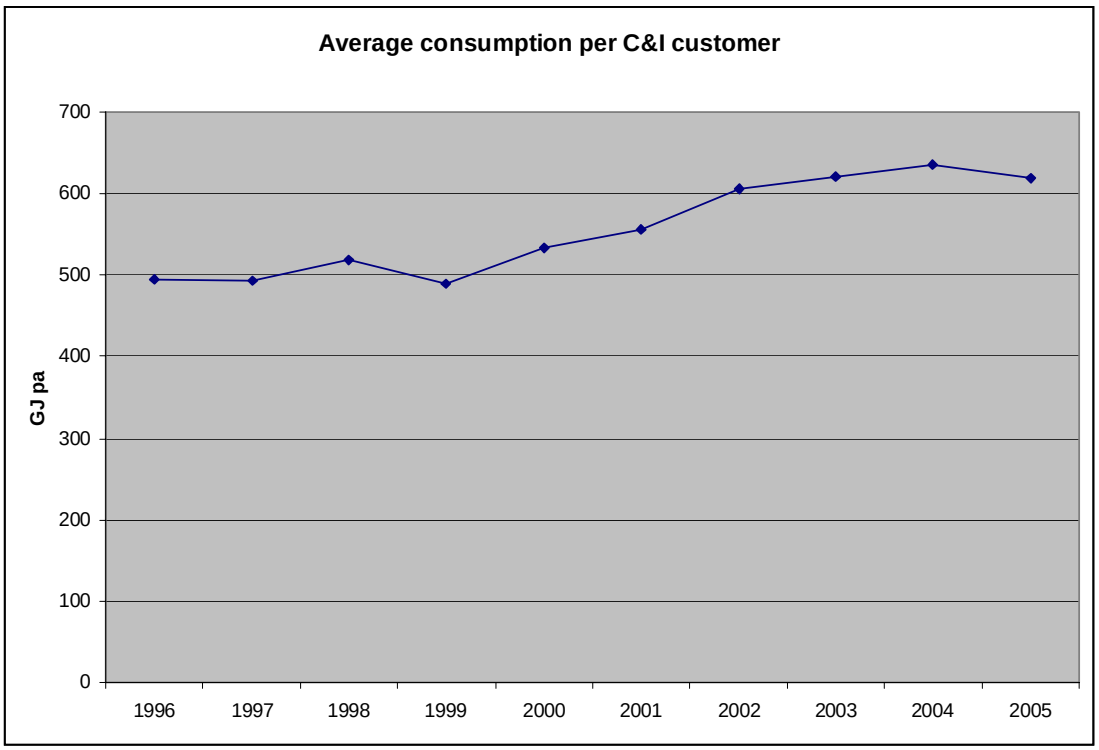
[8] SHW customers are included within the domestic market.
[9] Note that according to the latest figures provided by Allgas growth in Toowoomba C&I appears anomalously high over the past four years.

2.4.2 Average usage by C&I customers

Consideration of average usage by C&I customers provides an indication of what kind of growth is being seen by the network. Over the past nine years growth in average usage has been about 2.5% pa. This, combined with the 3.4% pa growth in customer numbers, has made up the C&I growth rate.

However, over the past few years the type of growth seen appears to have changed somewhat. Although the growth in C&I consumption has remained at about 6% pa, the growth in customer numbers appears to have increased, while the growth in average usage has slowed. This may be a result of newer connections on the South Coast being smaller and using less energy, on average, than the first group of such connections.

Figure 2-6 C&I average usage, GJ per customer*

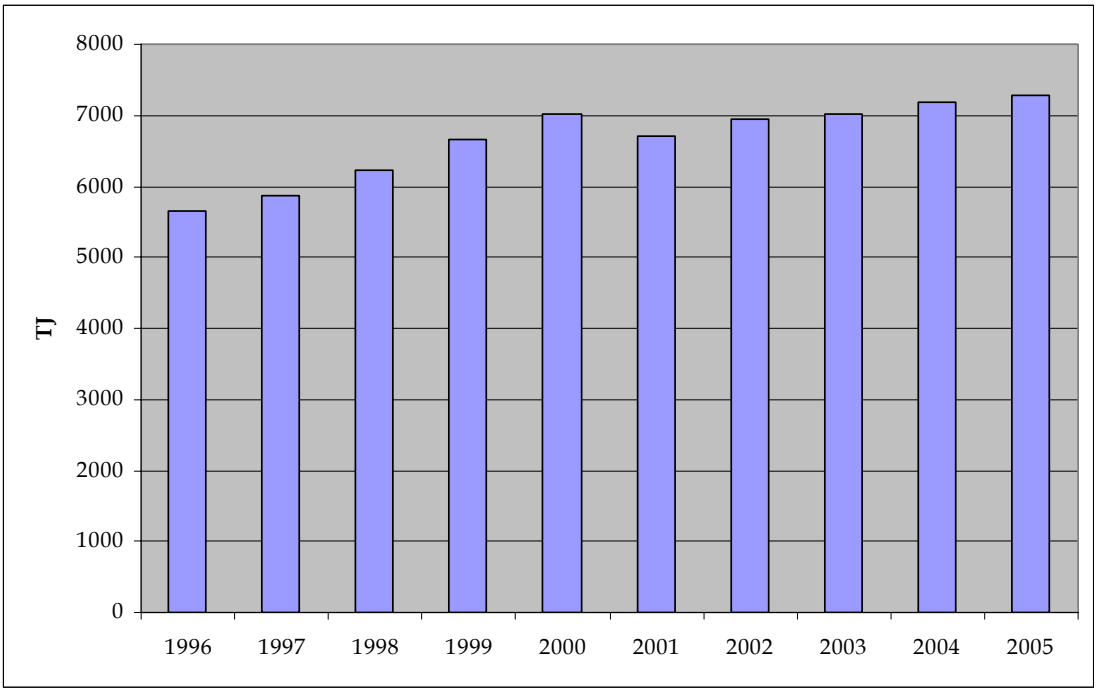


* Note we have used an average number for 2002/03 as the Allgas numbers included LPG

2.5 Demand customers

The volumes consumed by customers defined as Demand (previously Large) customers have been provided by Allgas on an annual basis from 1995/96 to 2004/2005. The list provided by Allgas includes some customers who consumed less than 10 TJ in some years but their impact is small.

Figure 2-7 Demand customer consumption, TJ

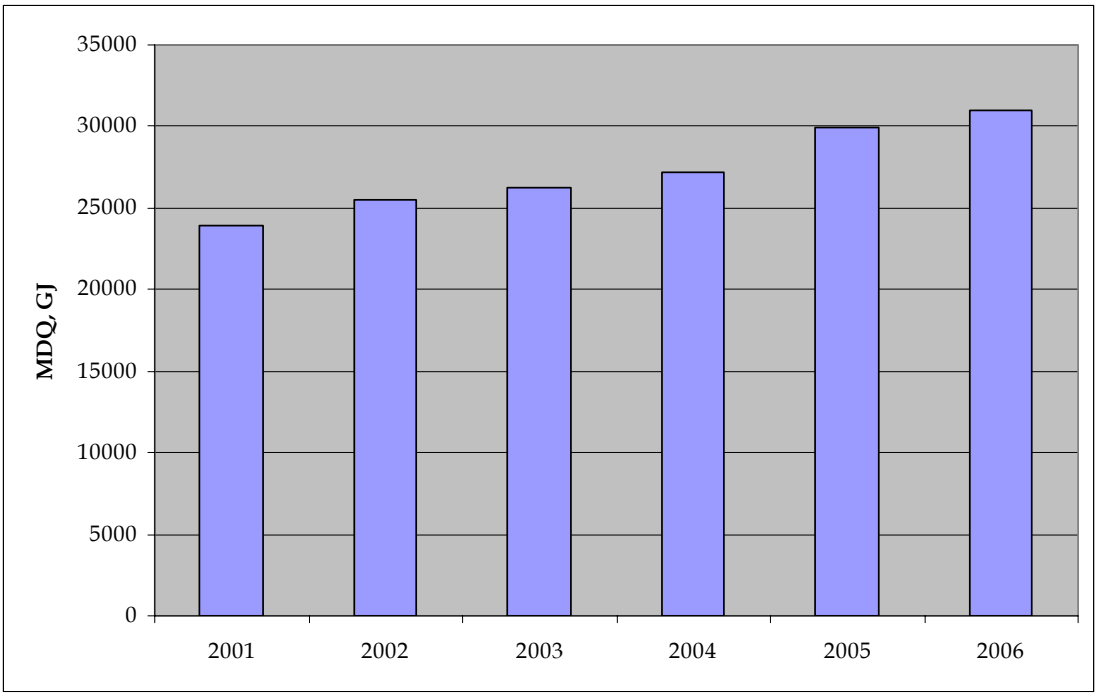


Over the 9-year period growth has been moderate at about 2.8% pa, however, over the past few years growth appears to have slowed somewhat to about 2% pa. As with the C&I market, although most of the absolute growth in consumption has been in Brisbane (some 70%), growth rates in the South Coast have been the fastest, in line with network extensions to this region. Although consumption by demand customers in Toowoomba has grown at over 3% pa over the period as a whole, over recent years it has shrunk due to the loss of volume of one large customer.

Analysis shows that 80% of growth over the past nine years has been from the larger demand customers, those consuming more than 100 TJ. These included some large customers who were over 100 TJ at the start of the period and then closed or relocated, and several customers of this size at the end of the period, who were smaller or not connected at the start.

The Maximum Daily Quantity (MDQ) contracted by demand customers is the key demand parameter. MDQ data from 2001 are provided in Figure 2-8.

Figure 2-8 Demand customers MDQ, GJ



Growth in MDQ over the past four years has been strong, some 5% pa with a further 3.4% expected by Allgas for the 2006 year. Clearly MDQ growth by demand customers has been greater than consumption growth, meaning that the load factor (average daily quantity divided by MDQ) is reducing. A possible explanation of this is the addition and growth of customers who have a poorer load factor than the market as a whole.

2.6 Summary

In summary, the domestic market, including residential and SHW has been growing at about 2.8% pa over the period 1996-2005. Much of this growth is attributable to customer number growth which has averaged 2% over that period. The remainder of growth has been due to increases in average consumption by about 0.8% pa.

However, the residential market and SHW market are quite different. Looking at the different components of the market as we understand them[10] over the period 1996-2005, the residential market has grown at about 1.7% pa, due entirely to customer number growth because we estimate average usage per residential customer to have declined by about 0.1% pa.

Conversely we estimate that the SHW market has grown very strongly over the period due mainly to increases in average usage per block.

The C&I market has been growing strongly at 6% pa over the entire period 1992 to 2005. This has been as a result of growth in both customer numbers and average usage.

[10] We have had to estimate the split between residential and SHW after 2002.

However, the trend of increasing average usage appears to have slowed and possibly reversed.

Growth in consumption by the demand market has been almost 3% over the entire period 1996 to 2005, largely in Brisbane and the South Coast, but has been somewhat patchy and appears to have moderated somewhat, to about 2% pa, in recent years. However, according to Allgas data from 2001, growth in MDQ has been significantly stronger than this, meaning that load factors have reduced.

3 KEY DRIVERS

Key drivers for forecasting gas demand include both macro and microeconomic parameters, weather and government policy. As the state of the economy is considered to be a significant macro driver for the network as a whole an economic overview for Queensland and the Brisbane region is initially provided. Following that specific key drivers are considered for both the residential and non-residential sectors.

3.1 Economic overview

In assessing the general economic outlook over the next five or six years MMA has utilised forecasts by Econtech[11] and the National Institute of Economic and Industry Research (NIEIR)[12]. MMA has also utilised various economic and demographic indicators from the Australian Bureau of Statistics (ABS) and the Queensland Department of Local Government and Planning including Gross State Product (GSP) and historical population and housing statistics.

Over the past few years growth in Queensland has been strong. Between 1998 and 2005 the Queensland economy grew by about 5% pa, significantly higher than the Australian economic growth rate of 3.5%.

Econtech has forecast domestic demand in Australia to weaken in 2005/06 due to slower growth in private consumption and a further weakening of the housing market. However, the external sector is expected to rebound. High commodity prices and a downward correction in the Australian dollar should stimulate an improved contribution of net exports to growth in the years ahead. Queensland as a state with significant exposure to mining, agriculture and tourism is expected to benefit from the improvement in the external sector.

After a low estimated growth rate in 2004/05 of 2.5%, Econtech has forecast Queensland GSP to grow by 4.1% per annum to 2011 compared to the Australian GDP average growth of 3.3% pa over the same period. Over the same period NIEIR has forecast that the Queensland GSP would grow by 3.8% pa, a little slower than the Econtech forecast[13]. While the Queensland economy is fairly broadly based, a number of sectors are particularly important. These include the tourism, agriculture, mining and metals sectors. The state's manufacturing sector relies more heavily on commodity type exports than the rest of Australia. The Queensland economy is thus relatively exposed to changes in the global economic environment.

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11 Econtech,, "Australian State and Industry Outlook", 8 July 2005

12 Three NIEIR documents have been used: Report to NEMMCO, Economic Outlook for NEM States to 2014/15 (May 2005), Report to Energex "Electricity consumption and maximum demand projections for the ENERGEX region to 2014 (August 2004).

13 But NIEIR has a higher estimated 2004/05 outcome.

Table 3-1 provides a summary of the Queensland economic growth outlook to 2010.

Table 3-1 Queensland Economic Outlook (% Growth)

	Actual	Est	Forecast					
Fin Year ending June	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
Private consumption	8.5	5.5	4.6	4	3.3	2.5	2.6	3.2
Private Investment								
- In dwellings	12.2	5.1	3.5	5.7	-0.8	-1	3.1	-0.5
- In other building & structures	-0.3	15.4	8.9	5.2	5	3.3	2.8	2.4
- In machinery & equipment	12.8	14.1	3.8	5.2	5.5	3	2.3	2.2
GSP	5.8	2.5	4.9	5.8	4.7	3.2	3.3	3.0
Employment	3.1	4.9	2.4	2.8	2.5	1.4	1.1	1.1
Population	2.2	1.8	1.9	2.1	2.2	1.9	2.0	

Sources: Econtech, Australian State & Industry Outlook, 8 July 2005.

3.1.1 Population and housing growth

Population in Queensland has consistently grown faster than in the rest of Australia over the last few decades. Although the growth rate slowed in the mid 1990s it accelerated again in the early 2000s, with growth of about 2.2% to 2.5% pa over the past few years. The return to strong population growth has been due to strong net population inflows from both overseas and interstate.

According to NIEIR[14], Queensland population growth over the next few years and to 2011 is expected to be around 2.1% pa. While this growth rate is expected to be faster than the Australian average growth rate of about 1% over the same period, it is below the level experienced in the early 1990s when growth of around 2.5% pa was realised. It can be expected that the South East Queensland (SEQ) region will enjoy higher population growth rates than Queensland as a whole given that this region is continuing to experience a higher share of interstate and international migration than other parts of the state. This is expected to result in a population growth in SEQ some 0.1% to 0.2% pa greater than in Queensland as a whole[15].

Dwelling growth in the south east Queensland and Brisbane regions is forecast to grow by about 0.2% to 0.3% pa more than the change in population. This is because of a continuing trend towards smaller household sizes. A dwelling growth rate of about 2.4% to 2.5%% pa is forecast for the Brisbane region.

[14] NIEIR's Economic Outlook for NEM States to 2014/15 (May 2005).

[15] In its report to Energex , "Electricity consumption and maximum demand projections for the Energex region to 2014", August 2004, NIEIR forecast that the population growth rate for the Energex region would be some 0.2% pa higher than that for Queensland.

3.1.2 Private consumption expenditure

Private consumption expenditure in Queensland rose by a strong 8.5% in 2003/4. The strong rise in expenditure was supported by the strong growth in housing construction (12.1%), low nominal interest rates and stronger employment, income and population growth. These factors more than offset the negative impact of the drought.

The strong growth in private consumption expenditure is forecast to slow over the coming period to 2011. Higher nominal interest rates and declines in the household goods sector are expected to constrain Queensland's private consumption expenditure growth to around 3.4% pa.

3.1.3 Dwellings investment

Private dwelling investment in Queensland rose by 12.2% in 2003/04. The boom in housing construction in Queensland was initially driven by the First Home Owner's Grant and low nominal interest rates. The resumption of much stronger population growth in Queensland over recent years and stronger levels of investor activity has supported growth over the recent past.

While Queensland has avoided the large slowdown in residential investment affecting Victoria and NSW in 2004/05, private new dwelling investment in Queensland is nevertheless forecast to also slow to around 2.1% over the coming period.

3.1.4 Private business investment

Queensland private business investment in machinery and equipment rose by 12.8% in 2003/4 while investment in building and structures were relatively stable. Business investment in Queensland is expected to be supported by ongoing investment activity in the mining and manufacturing sectors.

Expenditure on machinery and equipment will be supported by the high Australian dollar and falling prices of information technology products and sustained high commodity prices. Any fall in commodity prices and further appreciations in the Australian dollar, however, could choke off growth in investment in Queensland over the medium term.

Business investment in machinery and equipment is expected to grow by 4.0% pa and business investment in buildings and structures by 5.0% pa between 2006 and 2010.

3.1.5 Employment

Queensland's employment growth has been very rapid over the last few years. Employment growth was 3.1% in 2003/04. Queensland's industry employment has risen significantly in the construction and tertiary sectors. The key growth sectors within the tertiary sector are retail trade, property and business services, government administration and defence, health and community services and cultural and recreational services.

Queensland's employment growth is forecast to slow to around 2.0% over the next period as construction employment falls and GSP growth slows somewhat.

3.1.6 Summary

Overall, the Queensland economy is expected to continue to outperform the Australian economy over the next regulatory period, but to slow somewhat from growth seen over the past few years. The Queensland Gross State Product is forecast to grow by 4.2% pa over the period to 2011 compared to a growth rate of about 5% pa between 1998 and 2005. Population growth is expected to slow a little to 2.1% pa, approximately in line with that experienced over the last decade.[16] Dwelling investment is also forecast to fall from the high rates of growth recently although this is likely to be tempered in the Brisbane region with the area experiencing a larger share of interstate and international migration.

3.2 Residential drivers

Many factors impact on the gas residential market. In the Queensland context these can be divided into two components, those that impact on the number of gas customers, and those that impact on the average usage per customer.

3.2.1 Impacts on customer numbers

Estimating growth of electricity customers within a region is relatively straight-forward. As virtually all dwellings within a region consume electricity, the number of electricity customers corresponds well with the number of dwellings. The growth in electricity customer numbers should similarly correspond well with the growth of dwellings.

However, natural gas is generally considered to be a discretionary fuel in Queensland. A low heating requirement in most parts of Queensland, together with the fact that reticulated natural gas is relatively expensive (which is largely a consequence of the low heating use[17]), has meant that only a small proportion of Queenslanders and even residents of Brisbane are connected to gas, and also that natural gas is not available to a very significant part of the state and the south eastern corner.

This, in turn, has meant that the growth of residential customer numbers has been limited despite population and dwelling growth in the region serviced by the service providers being relatively high.

Future growth in residential gas customer numbers is likely to be defined by a combination of a number of inter-related factors including:

- Growth of the region.
- The availability of reticulated gas within economical reach.
- The economics of gas connection

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16 'Housing Update, No 18', October 2005 PIFU, Qld Government

17 There are significant capital costs in establishing a gas network and in connecting individual customers. For Queensland customers these costs have to be allocated across a fairly low average residential consumption (about 10-14 GJ)compared to NSW and South Australian customers who consume approximately double this amount and Victorian customers who consume, on average, some four times this amount.

- Imperatives for gas retailers and distributors and
- Government policy

3.2.2 Dwelling growth in the region

As stated previously, dwelling growth for the Energex electricity region, which contains both the Allgas and Envestra Brisbane regions was forecast by MMA to be about 2.3% to 2.6% pa[18].

Within this, growth in both the Envestra and Allgas regions is forecast to be about 2.4% pa. A discussion on population and dwelling growth is provided in APPENDIX A .

3.2.3 Availability of reticulated gas nearby

Although Brisbane and regions are forecast to grow at 2.4% pa, the region is not growing uniformly and not all new homes have access to nearby natural gas. There are parts of greater Brisbane which are unlikely to be reticulated because they are not sufficiently close to the current network to make the extension economical.

As well, Allgas has confirmed that it will not proceed with reticulation of a new housing development unless it has an agreement in place with the developer that a great majority of the new houses will have both gas hot water and gas cooking connected. Envestra has stated that it currently has a penetration rate of about 45% in new home subdivisions but is also seeking to have entire new developments considered "gas only".

Without detailed analysis of the actual prospects it would appear to be reasonable to assume that the growth rate sufficiently near existing mains will be the same as the region as a whole. In other words, if the growth of a particular region is expected to be 2.4%, this assumption would also hold true for regions with reasonably economic access to natural gas.

Allgas has provided more detailed analysis of where growth in new housing is likely to take place. While this analysis results in an expected growth rate higher than that for the region as a whole it appears to be reasonable.

3.2.4 Economics of gas connection to a consumer

According to research previously conducted by MMA, the economics of natural gas hot water systems in new households[19], relative to electricity, have not been particularly attractive. This is because the cost of a gas hot water system is about the same or slightly higher than that of an electric system, while the operating costs taking into account the different appliance efficiencies are also higher.

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[18] McLennan Magasanik Associates ," Demand Forecasts for Distribution Network Services in Queensland" final report to the Queensland Competition Auhority, September 2004.

[19] A summary of the analysis is available in the Regulatory Impact Statement (RIS) published by the Queensland Department of Local Government and Planning and Queensland Environmental Protection Agency (EPA), "Proposed amendments to building and plumbing regulations to improve sustainability of new houses", December 2004. The work was based on a report by MMA.

Thus, while we understand that many new home customers have a preference for gas cooking (hotplates at least), the inferior economic performance of natural gas for hot water systems relative to off-peak electricity has tended to limit the number of connections to new homes. Generally natural gas systems have been attractive only if a homeowner wished to have the benefits offered by natural gas systems (eg continuous access to hot water) or a preference for gas for cooking or heating.

3.2.5 Economics for housing developers of gas connection

Capital costs are the key consideration for new home developers. Generally, for items such as hot water systems developers will minimise their outlays within the constraint of ensuring that systems provide the level of utility required and that regulations are met.

As discussed previously, connection to electricity is a necessity for all new homes, connection to gas is not. If developers are faced by additional costs to supply gas hot water systems[20] and potentially additional costs or effort to connect to gas they will generally not do so unless this is a feature considered attractive to new home owners.

For these reasons there seems to have been relatively little imperative for developers to specify gas hot water systems in new houses. However, as discussed below, gas hot water systems are the mainstay of gas connections for distributors. Without a guaranteed gas hot water system as a minimum, distributors are unlikely to be keen to connect a new house.

3.2.6 Economics for distributors of gas connections

Both Allgas and Envestra have stated that they try to restrict new residential customer connections to those where customers connect, at a minimum, both hot water and cooking gas appliances. Without connection to a hot water system the required returns for new connections are unlikely to be met.

The reasoning behind this is straightforward. Cooking with natural gas (both cooker and some oven) is estimated to use of the order of 2 GJ of gas pa. Gas hot water is estimated to use about 9 – 15 GJ of gas pa, depending on both the size and efficiency of the gas appliance. Space heating may add a significant amount of gas, perhaps 10 GJ pa in colder areas, but is typically only connected by a proportion of households in colder areas such as Toowoomba.

The capital costs of connecting a gas customer are such that unless the customer uses at least of the order of 10 GJ pa the investment costs are unlikely to be recovered over a reasonable timeframe. This makes gas usage for hot water a necessity prior to any connection.

[20] MMA has estimated in the report to DLGP and EPA that the cost of a continuous system would be some $250 or more greater than the costs of an electric storage system.

3.2.7 Economics for gas retailers

There are two domestic retailers currently operating in the Queensland market, Energex and Origin and the residential market has not been contestable. The economics of residential connections for gas retailers are summarised below.

For most of the current regulatory period there has been little or no incentive for a "stand-alone" retailer to connect new residential gas customers. This is because the gross margin available to the retailer, after paying the regulated distribution charges, and for gas and transmission, was negative or very low – certainly lower than the costs actually incurred by the retailer. This has meant that stand-alone retailers actually had a disincentive to connect gas customers.

However, this has changed over the past year, with two increases of 10% being applied to residential customers. The first of these increases was in March 2005 and the second on 1 October 2005.

In its revised AA documentation Envestra has provided indicative estimates of the costs of delivered gas to a residential customer, presumably consuming about 10 GJ pa, the Envestra average. (Network Development Report p 20 Ch 3). The retail charges were presumably those applicable prior to the 1 October 2005 increases.

From this assessment it can be seen that the retail cost of gas is about $29/GJ, or $290/customer pa, while the network cost is about $21/GJ or $210/customer pa. Envestra has assessed the cost of gas and transmission at about $6/GJ ($60/customer pa) and this leaves, therefore, a retail margin of about $2/GJ or $20/customer pa.

These numbers are reasonably consistent with MMA's assessment of the prices and costs at the time.

In order to understand the economic drivers for retailers, MMA has analysed the gross margins available to retailers across various consumption sizes in the residential and C&I markets. The gross margins have been calculated as the published retail price minus the published distribution price and minus an estimated cost of gas and transmission to Brisbane. The columns show the gross margins to retailers in dollar terms after the first and second price increases, each of 10%.

Figure 3-1 Energex's gross margin, $ pa, based on the two recent tariff structures

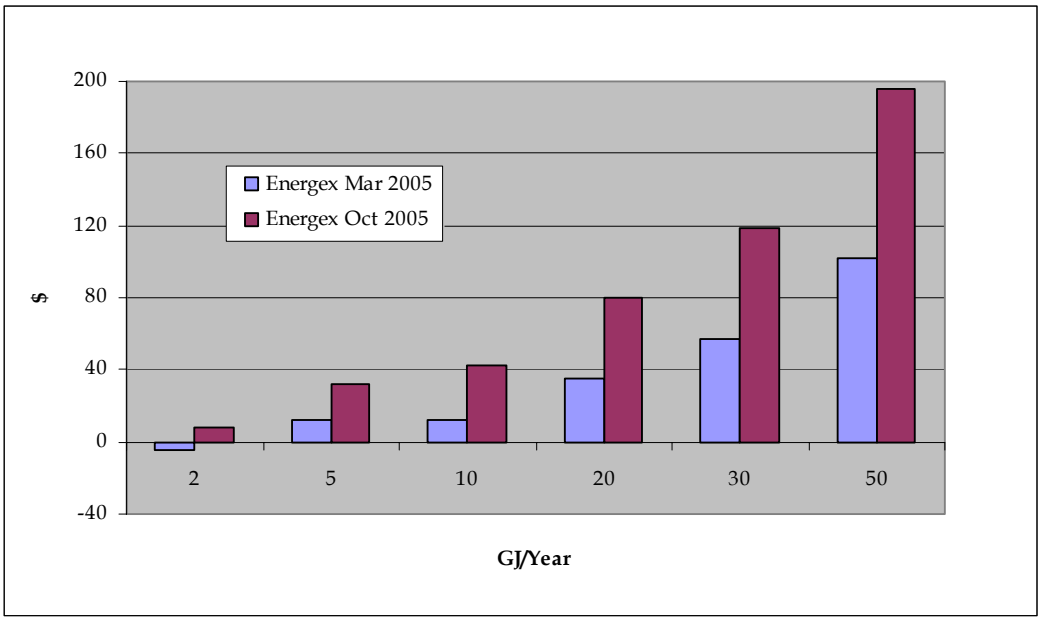
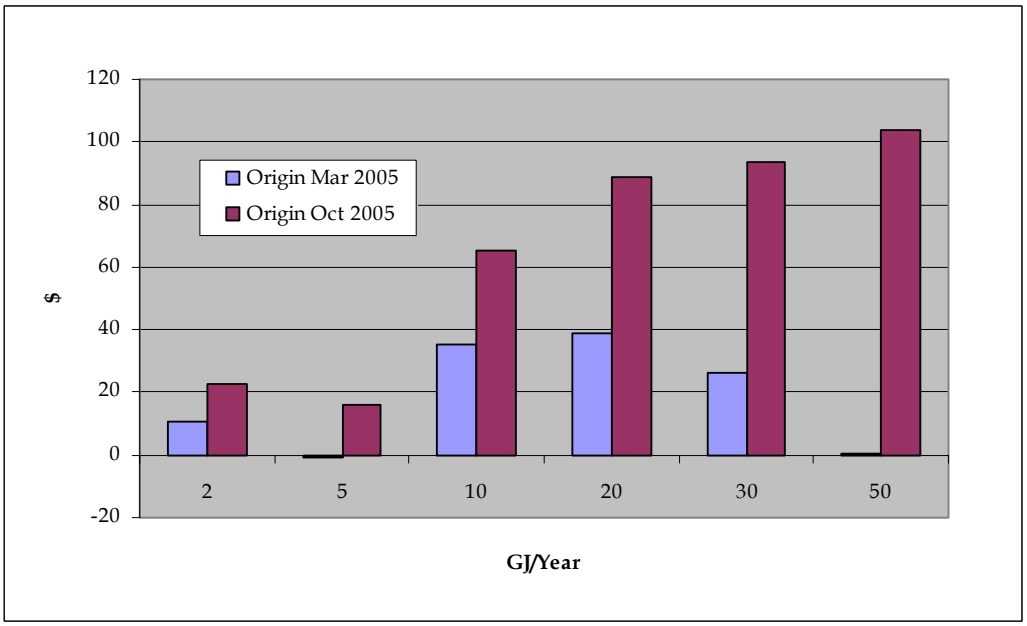


Figure 3-2 Origin's gross margin, $ pa, based on the two recent tariff structures



As can be seen from these graphs even after the first increase the gross margins available to a retailer were very low for consumption less than 5 GJ and not more than about $40 in total for any customer of about average size. This is significantly less than the expected average retail costs incurred of around $80 – $100 per customer. Gross retail margins of

less than $30 or so per/year may well be less than the marginal retail cost of supplying domestic customers.

There appears to have been very little incentive for Origin to seek to connect new customers on its own behalf. While it is a part owner of the Envestra network (18%)[21], this appears to provide relatively little incentive for Origin. Thus, while Envestra has an incentive to grow its load in Queensland, Origin appears to have very little. This appears to provide a good rationale for why the Envestra network has seen relatively little residential expansion over the past few years.

While Energex would appear to similarly have very little financial incentive to grow the Allgas network the situation is somewhat different. This is because the Allgas network is entirely owned by Energex. Although the retail margin is likely to be inadequate to fuel growth, the combined distribution and retail margin (taking into account that much of the distribution return is related to capital that has previously been spent) are presumably more attractive.

As can be seen from Figure 3-1 and Figure 3-2, the tariffs now allow retailers to earn a margin closer to the $100 or so considered reasonable. This may mean that there will be some competition when full retail contestability (FRC) is introduced on 1 July 2007. Retailers may even take some interest in extending the network.

On the other hand, the price increases will further exacerbate the difference in operating costs between electricity and gas. This is likely to have a depressing impact on consumption by existing users (see discussion under average usage) and may make new users more resistant to connecting until Government policy makes gas relatively more attractive.

3.2.8 Price of LPG

Although the price of natural gas is likely to increase relative to electricity, this may not be the case relative to LPG. The world price of LPG commodity has increased significantly over the past year, by about 25% in US$ terms over the past few months alone. Although the commodity price of LPG is only a component of the price of LPG cylinders delivered to customers, the price of delivered LPG will certainly also have increased. This price increase for LPG means that gas will not necessarily be disadvantaged relative to this fuel.

3.2.9 Government policy

On 2 August 2005 the Queensland Government announced a "Sustainable Housing Initiative"[22] which will require planning submissions for new Class 1 (separate) houses from 1 March 2006 to include:

[21] 'Finanical Statements 2005', Origin, June 2005.

[22] Media statement by D Boyle, Minister for Environment, Local Government, Planning and Women, "Smart state to get smarter houses", 2 August 2005 available at http://statements.cabinet.qld.gov.au.

- Greenhouse efficient hot water systems (defined as solar, gas or electric heat pump).
- Energy efficient lighting for at least 40% of internal space.
- AAA rated showerheads.
- Dual flush toilets.
- Pressure limiters to restrict household water pressure to less than 500 kPa.

According to the media statement, about 40,000 new homes need to be built in Queensland each year and these steps will make new houses more sustainable. New units and town-houses will not be required to have the greenhouse efficient hot water systems, but will be required to have the water efficient showerheads, dual flush toilets and energy efficient lighting.

The statement goes on to say that the additional cost for new houses will be low, adding an extra $260 per house if a gas hot water system is used or $1500 if a solar hot water system is used.

Discussions with Queensland government personnel have clarified the requirements pertinent to the hot water systems and AAA showerhead requirements for the current study:

- To qualify, gas hot water systems must be considered efficient, either continuous or high (5-star) efficiency.
- The hot water system requirement is for Class 1 houses[23] while the AAA showerhead requirement is for both Class 1 and Class 2.
- The requirements are to be uniform across Queensland. Local councils may not elect to vary the requirements. If a council tries to do this, the Department of Local Government will object.
- The new requirement starts on 1 March 2006 for plans submitted after that date.
- The solar hot water rebate scheme ended on 30 June 2005 and there are no moves in place to replace it.
- There has been consideration given to extending the initiative to broader policy objectives such as safety and security, however, these were expected to take some time.
- There has been some consideration given to mandatory disclosure of energy performance in houses upon sale (eg house thermal rating) but this is not expected to impact materially on energy usage within the timeframe.

[23] Class 1 buildings include all separate houses and all semi-detached row or terrace houses and townhouses. Flats and apartments are the only major class of building excluded.

As a consequence, MMA understands that from 1 March 2006 all new house plans will be required to meet the new requirements. Assuming that new houses take, on average, about nine months between submission of plans and occupation[24], this means that the impact will start to be felt by about 1 December 2006.

The hot water system impact is expected to be on all Class 1 houses in the area. The impact of the AAA showerheads is expected to apply to all new houses from that date.

MMA expects the policy will also impact on the penetration of gas into new houses. As stated above, although gas hot water systems are more expensive than the electric systems, they are significantly cheaper than the alternatives, solar and heat pump, available to new house builders from 1 March 2006, especially after the removal of the solar rebate. This significant advantage in purchase price is likely to make gas the fuel of choice for hot water systems installed by price conscious buyers and builders.

3.2.10 Average usage per residential customer

Average usage per customer relies on a multitude of factors. Some of these are listed below.

- Demographics. Household size, the number of persons per household, is reducing slowly. This tends to reduce average usage per customer as households with fewer people tend to use less energy for cooking, hot water and heating. Probably as a result of the above change, more Queenslanders are also choosing to live in apartments and town-houses. About one third of new housing approvals in Brisbane over the past few years have been for dwellings other than separate houses. The trend to such dwellings is likely to have been important in the strong trend towards continuous rather than storage gas hot water heating.

- Weather. Weather in any given year will have an impact, not only on the amount of gas used in space heating, but also in heating hot water. Despite this neither Allgas nor Envestra have taken weather into account in their forecasts. An additional consideration is that a slight warming trend is evident in Brisbane as it is in other urban parts of the country.

- Comfort. Despite household sizes reducing, there is evidence to show that the floor space of houses is increasing, either as new houses are built or renovations made. This, together with an increase in comfort requirements seen in other jurisdictions and increased usage of natural gas in newer applications such as in spas, connections for barbecues and pool heating, acts to increase average usage.

- Appliance mix and efficiencies. Although the key uses of natural gas in Queensland, hot water and cooking, remain unchanged, there is evidence that the mix, penetration rates and efficiencies of the appliances are changing. Thus, for

[24] McLennan Magasanik Associates, report to the Independent Pricing and Regulatory Tribunal of NSW, "Review of consumption forecasts, NSW metropolitan water agencies", December 2004.page 31.

example, Envestra has stated that the mix of gas hot water systems in new homes has shifted from 60% storage and 40% continuous flow five years ago to 20% storage and 80% continuous flow now. This is a significant shift with an associated significant shift in average usage per hot water system. As well, Envestra has commented that the increased availability and reduced cost of reverse cycle air conditioning will reduce gas usage for heating.

- Reduction in hot water use. Showers are a major contributor to hot water usage. The trend towards water efficient showerheads which has been seen over the past decade has tended to reduce water usage, and hence energy used in providing hot water.
- Selection of customers. The transfer of small customers to LPG, to the extent it happens, and decision to connect only hot water and cooker customers will act to increase the average usage of residential customers.
- Government policy. The Government sustainability initiative announced on 2 August 2005 is expected to result in reduced gas usage in hot water systems for new houses as only efficient hot water systems[25] will be allowed.
- Price. Residential prices have increased significantly over the past year. The own price elasticity of natural gas for residential customers has been estimated by one set of researchers to be -0.78[26] and by other researchers to fall between 0 and -1[27]. The price increases will undoubtedly have an impact over the longer term.

Overall, there are a great number of drivers impacting on average residential usage. The overall impact of individual drivers will change over time. An assessment of changes in historical average usage should provide the best estimate of recent trends in average usage. Trend estimates are the most relevant to use as they help to take into account impacts such as changes in weather and billing cycles.

3.3 Changes in average usage over time

Determining a trend in average usage for either the Envestra or the Allgas networks is not particularly straightforward.

In the case of Allgas we have used the estimated residential usage (after subtracting SHW) over the period 1996-2005. This analysis shows average usage overall to be declining by about 0.1% pa with an average usage in 2005 of about 13.5 GJ.

In the case of Envestra for the Brisbane network the longest series of data available is from 1998 to 2005. This series suggests an increase in trend average usage by about 0.5% pa.

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[25] Taken to mean the efficiency associated with instantaneous or continuous hot water systems.
[26] Australian Gsa Association Research Paper No 3, "Price Elasticities of Australian Energy Demand, "September 1996.
[27] M Akmal and DI Stern, "The structure of Australian residential energy demand", February 2001, available from the Australian National University, Working Papers in Ecological Economics at http://cres.anu.edu.au.

Using shorter series, however results in an estimated trend reduction of average usage. On balance, MMA has used a six-year trend including some simple weather normalisation resulting in an estimated annual reduction in average usage of 0.66% pa with an estimated average usage in 2005 of 10.05 GJ.

3.3.1 Forecasting changes in average usage

Once appliances have been chosen they tend to remain unchanged for a lengthy period, of the order of ten to twenty years. Key changes and Government policy, therefore, tend to be applied to new houses when the initial appliance choices are made. Many changes to the residential sector are likely to have most impact on new houses. In order to estimate the impact of these it is necessary to estimate the trend in average usage of new houses and existing houses.

Using a historical "reconstruction" of estimated changes to average usage, we have estimated the following parameters for the two distributors.

Table 3-2 Estimated historical and modelling parameters for residential usage

	Annual change in average usage by existing customers	Starting average use in 2004/05	Estimated new users in 2004/05
Allgas	-0.4%	13.55 GJ	13.4 GJ
Envestra	-1.25%	10.05 GJ	12.7 GJ

We have also factored in the impact of:

- A continuing move towards instantaneous hot water systems.
- Changing efficiencies of new gas hot water systems and AAA showerheads with the Government Sustainable Housing Initiative.
- The cumulative 20% price increases on 1 October 2005 as an additional annual reduction of 1% pa on existing users[28]. This assumption takes into account a number of factors including the limited capability for short-term response by the residential sector, potential for existing users to switch fuels over time as appliances are replaced, the relatively low size of the annual gas bill in Queensland and a preference for existing gas users continuing to use gas (according to the Envestra survey "Flying in Formation", see for example page 16 for hot water replacement intentions). As appliances generally have lives of some 10-15 years this means that some 8% of existing usage will be re-considered every year. Actual switches will depend on customer preferences, convenience and the prices of competing fuels, principally electricity and LPG. While the significant gas price increases are expected to have an influence at the time of appliance replacement, the amount of switching is expected to be tempered by the above

[28] New users from 1 March 2006 are still considered likely to use natural gas as the main fuel for hot water systems because of its initial price advantage.

considerations. We have assumed that some 10-15% of existing gas customers (a combination of those who according to the Envestra survey were quite likely to choose gas hot water or uncertain about the choice), who are switching appliances annually will choose to switch from gas to another fuel.

3.4 Non-residential growth

Non-residential growth is made up of two components:

- Small business (or C&I)
- Large demand customers

Although both are likely to be driven at least in part, by the economy, the former are also likely to be related also to the business's extension policies under the network development plan. We consider each separately.

3.5 C&I or small business market

As has been seen in Section 2.4, the Allgas small business category has been growing at about 6% pa. Although the South Coast has seen strong growth in percentage terms, 70% of the actual consumption growth of over the period 2001/02 to 2004/05[29] has been in the Brisbane area. There is clearly a relationship between economic growth and growth in the small business sector.

The history of Allgas C&I sales is reasonably described by a relationship with Queensland GSP. This relationship is shown in Figure 3-3. The history is, however, also well described by a linear relationship with time (see Figure 3-4).

[29] The 2000/01 numbers provided by Allgas appear anomalous for Toowoomba and thus the next year has been used.

Figure 3-3 Log-log relationship of C&I consumption and GSP

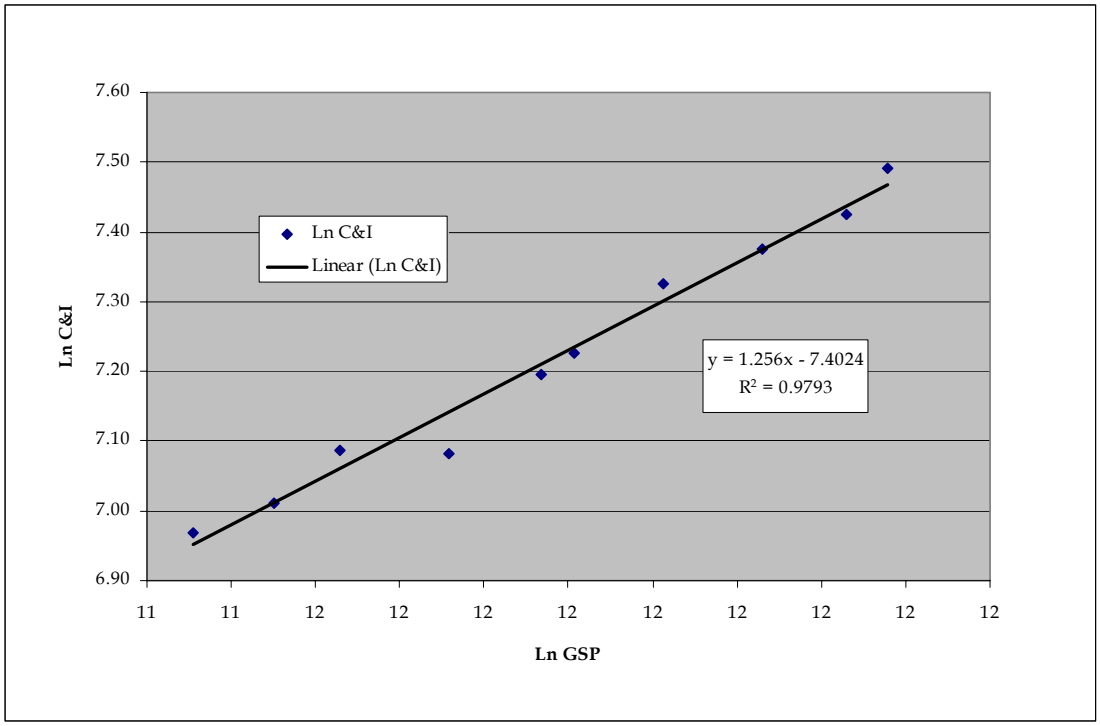
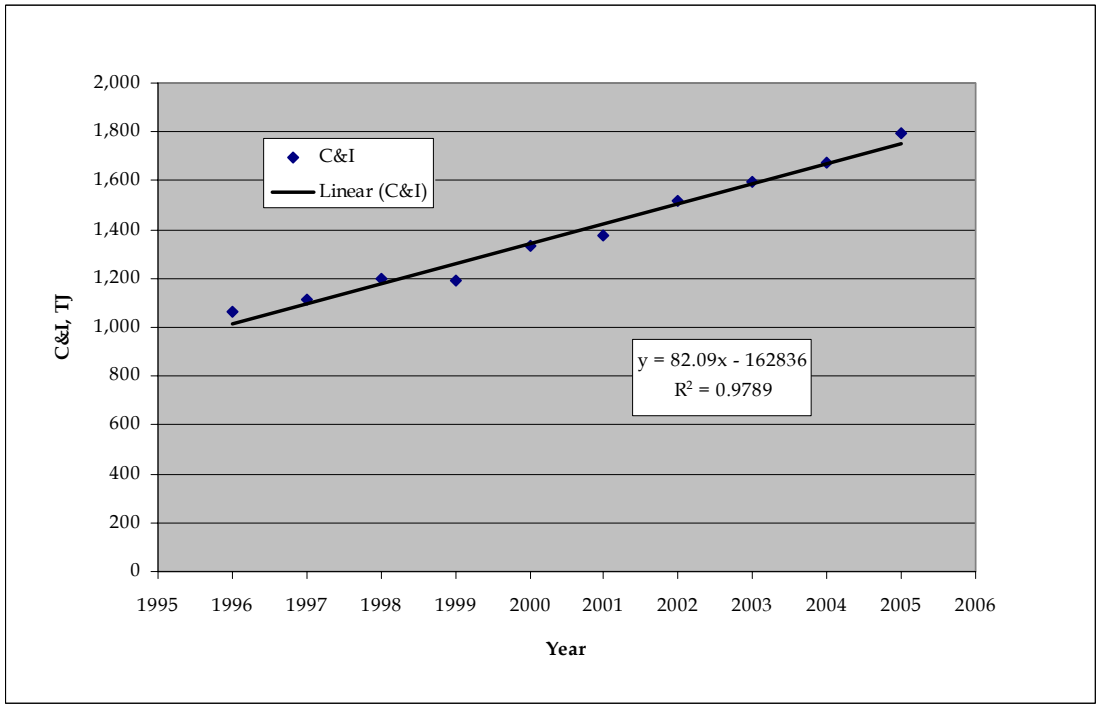


Figure 3-4 C&I consumption and linear fit trendline



Both relationships appear reasonable to consider in forecasting for the C&I market. The latter relationship suggests that the market is growing at about 80 TJ per year, while the former that a 1% change in GSP will result in a 1.25% change in usage.

3.6 Pricing and retail contestability

Customers of size greater than 100 TJ have been contestable since January 2003. Retail contestability for commercial and industrial customers of size greater than 1 TJ commenced in October 2005 while full retail contestability is scheduled to commence on 1 July 2007.

We would expect retail contestability to allow price competition in some, but not necessarily all sections of the market. This is illustrated in the following Figures which provide indicative gross retail margins (published retail tariffs minus published distribution tariffs minus estimated cost of gas plus transmission) for the Origin/Envestra and Energex/Allgas C&I market between 100 GJ and 5 TJ.

Figure 3-5 Indicative gross retail margins, $ pa, for C&I customers on the Envestra Brisbane network

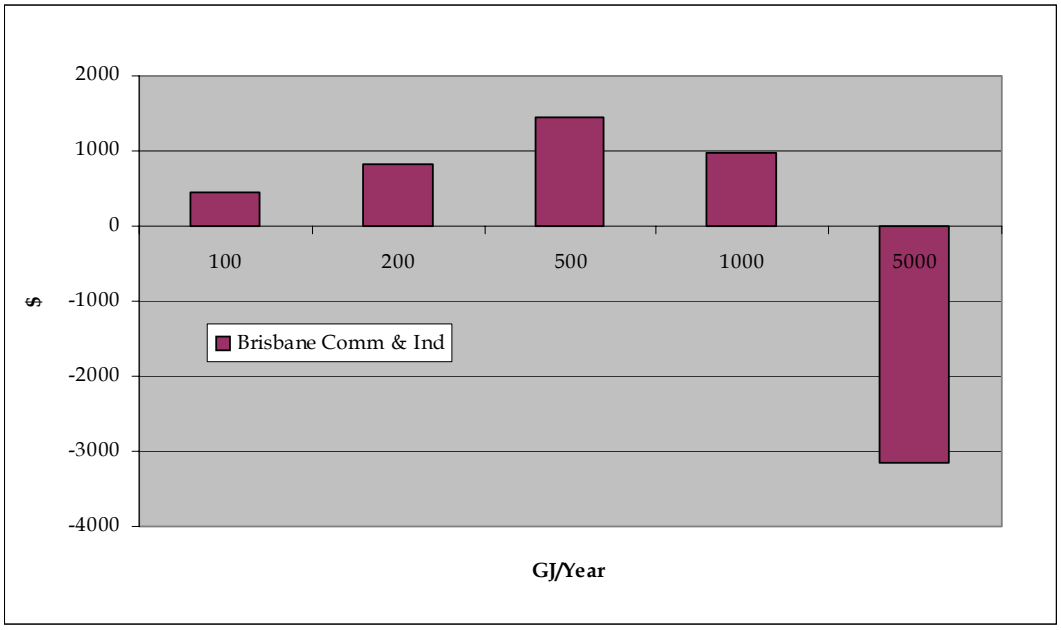
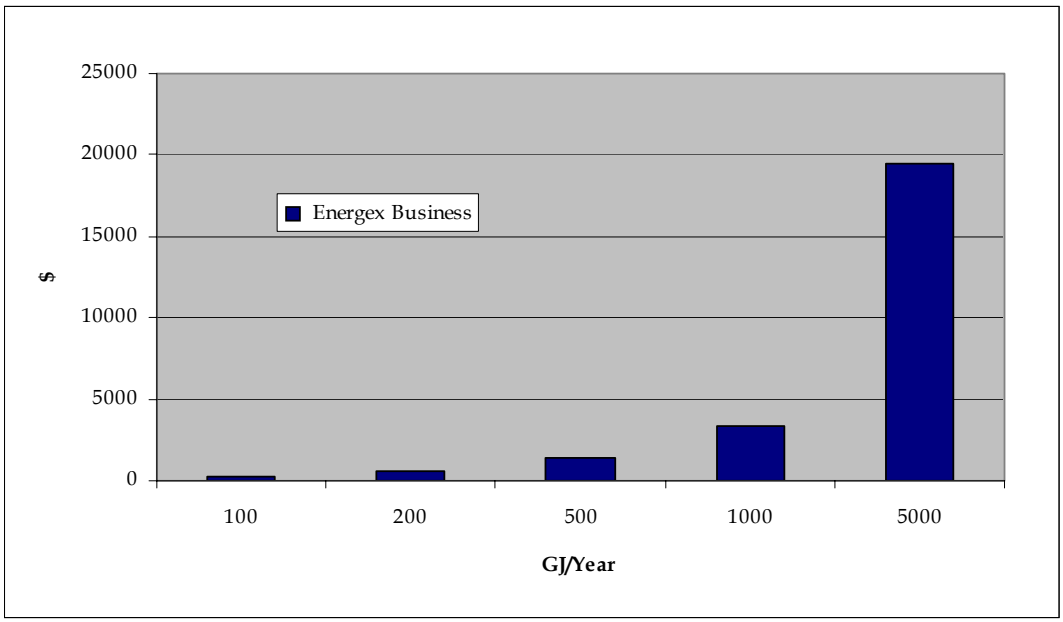


Figure 3-6 Indicative gross retail margins for C&I customers on the Allgas network, $ pa



While it must be stressed that the above margins are indicative only, as we have used estimated costs of gas and transmission by customer size and have based our analysis on published tariffs, some issues are highlighted by this analysis.

Firstly, the dollar margins on the Envestra network appear anomalously low for the larger customers approaching the 10 TJ threshold. Retail customer costs and margins in $ terms generally increase with size, therefore the shape of the Allgas margin curve appears more normal.

Secondly, it would appear that, based on the published tariffs, there has been little incentive for Origin to pursue growth by customers of size 1 TJ or above. While it may be that gas and transmission are less expensive than we have assumed, based on our assessment the distribution pricing structure provides limited scope for any retail margin. We do not see retail contestability having a price impact on these customers[30] unless the distribution price structure changes.

There does appear to be some scope for retail price competition in the Allgas C&I market of size greater than 1 TJ.

We do not have information about prices paid by demand customers (> 10 TJ pa), but anecdotal information does suggest that there will also be scope for some price competition in these markets as well.

[30] The 1 to 100 TJ market became contestable on 1 November 2005.

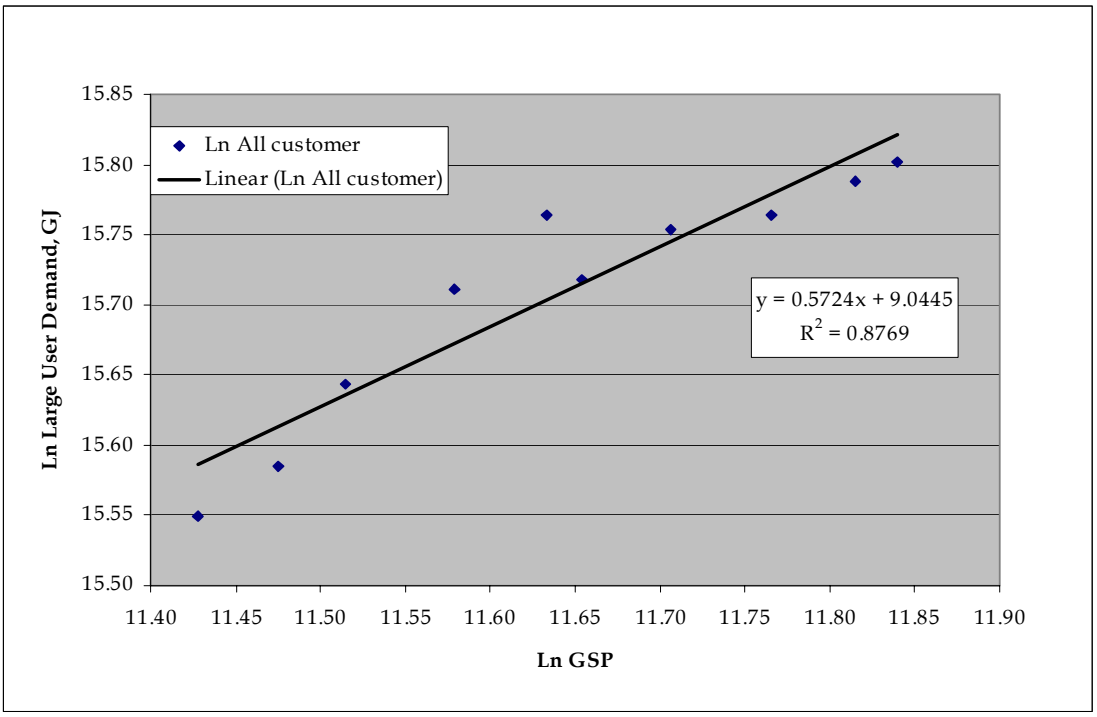
One of the SPs has commented that despite contestability being announced this did not mean any would actually ensue, as the market is very small, barely profitable and as the two incumbent retailers have contracted the entire capacity of the Roma to Brisbane Pipeline. While MMA agrees that this may limit entry by new retailers, it does not, however, preclude competition between the incumbent retailers. For example, there has been some churn among customers of size greater than 100 TJ, and evidence of price competition even when churn did not eventuate.

Given the size of the margins available for commercial and industrial customers, MMA considers it likely that there will be some price competition, even if only between incumbent retailers, but this will be patchy, and network and size specific. However, there is also the possibility that retail contestability might, in some cases, result in price increases. The own-price elasticity of demand by the commercial and industrial customers at about -0.1 to -0.3[31] are lower than that of the domestic customers. While we do expect some impact from competition, given the uncertainty about extent and location we have not modelled these.

3.7 Demand customers

Figure 3-7 shows the relationship between the natural logarithm (ln) of GSP and the ln consumption by the large demand customers.

Figure 3-7 ln-ln relationship of GSP and large customer demand from 1996 to 2005

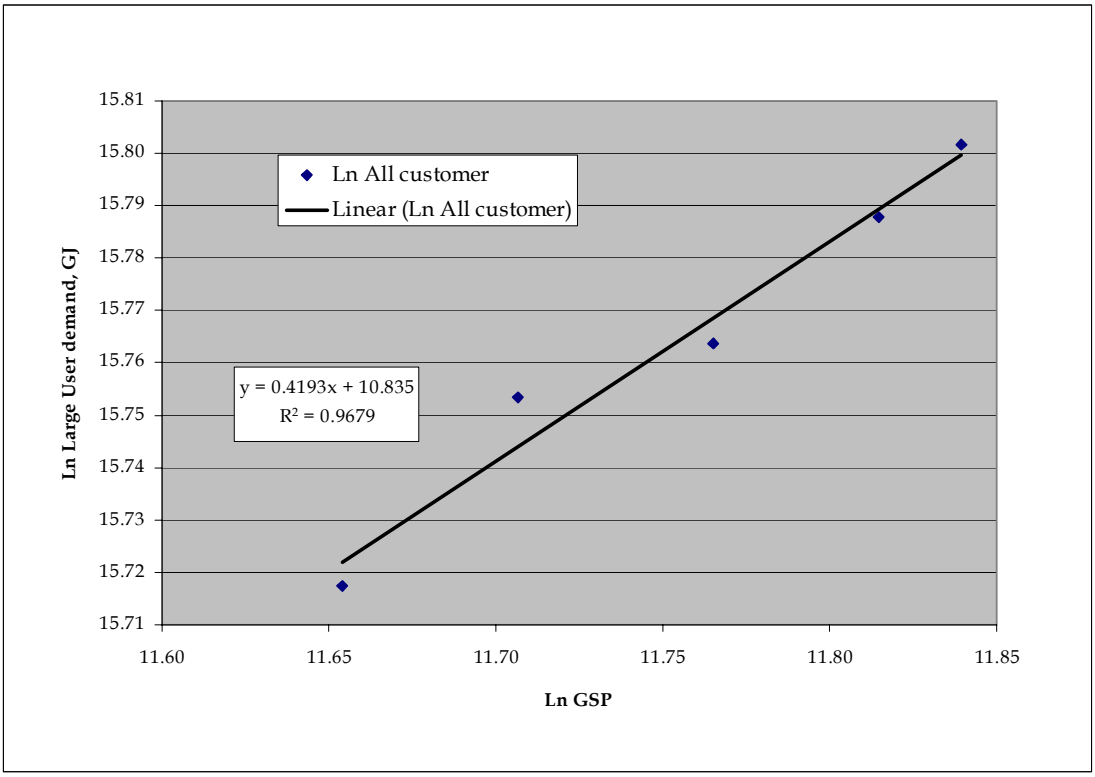


[31] Australian Gsa Association Research Paper No 3, "Price Elasticities of Australian Energy Demand, "September 1996.

Although the correlation coefficient for the relationship is quite reasonable (R^2 of 0.88), it appears from the graph that the relationship in the latter years (towards the right of the graph) may be somewhat different to that in the early years of the period (towards the left of the graph). The relationship between demand customers and economic growth appears to be divided in two parts, before and after what appears to have been an anomalously large fall of usage in 2000/01[32]. Before this year growth appeared to be very strong, weakening somewhat from 2001. Growth since that time appears to have been more moderate than over the entire period.

The shorter-term trend, from 2001 is illustrated in Figure 3-8. It has a good fit with the linear relationship but an implied elasticity not quite as high. Growth over the past two years of about 2% pa is well reproduced by this relationship. This may be due in part to limitations of transmission capacity mentioned by Allgas.

Figure 3-8 ln-ln relationship of GSP and large customer demand, 5 year



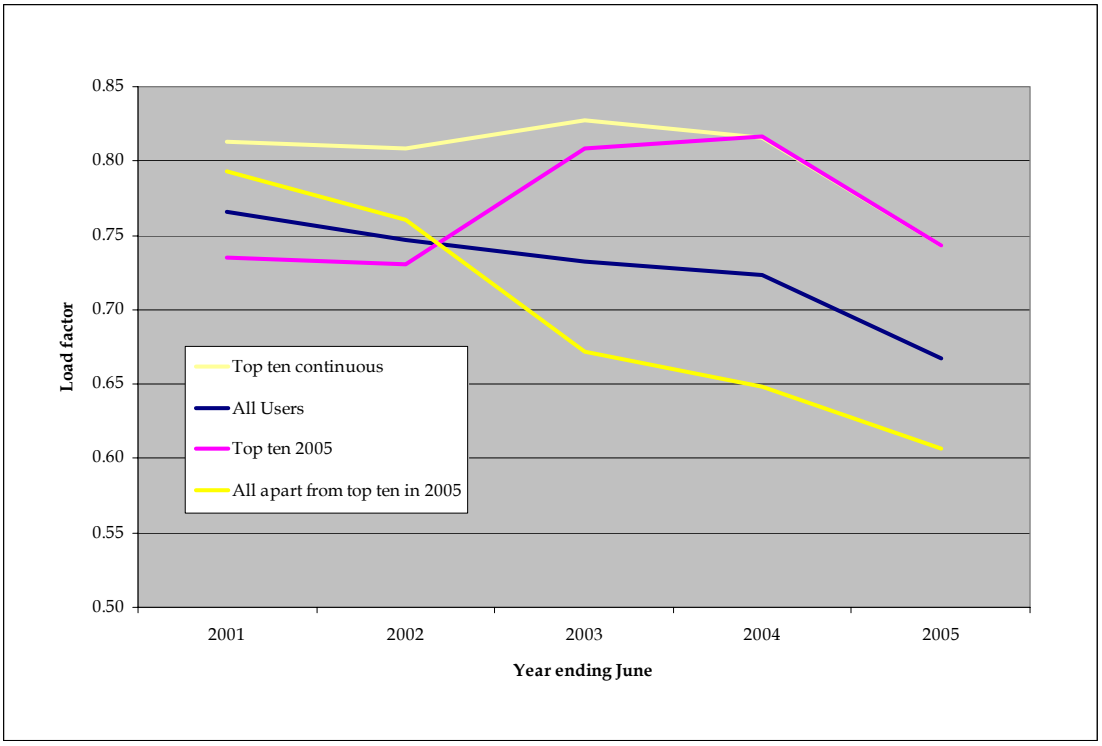
3.7.1 Maximum daily quantity

As has been seen in Section 2.5, despite the consumption of large customers only having grown by about 2% pa over the past few years the MDQ numbers provided by Allgas show that the MDQ actually grew by 5% pa over that period.

[32] Allgas could not explain the fall in that year apart from saying that consumption by many large users had decreased.

Figure 3-9 provides graphs of load factors (LF)[33] for the Demand customers as a whole and various subgroups of this including the largest (top) ten customers in 2005, the top ten continuously consuming customers and all customers apart from the top ten in 2005. As can be seen the load factor for the network as a whole has dropped significantly, from 77% in 2001 to 67% in 2005.

Figure 3-9 Load factors for large customers



A part of the reason behind the significantly reduced load factor in 2005 appears to be that large users have taken less load, possibly due to economic conditions or temporary shutdowns (for maintenance etc) but largely retained MDQ. However, the trend over the previous few years is likely to have been due to a genuine reduction in load factor for the class as a whole and possibly new users being connected with lower load factors than existing users.

It appears that a reducing load factor must also be taken into account in forecasting MDQ.

[33] The LF is calculated as the ratio of average daily quantity (which is the consumption divided by the number of days in the year) to MDQ for the particular customer group.

4 FORECASTS FOR ALLGAS

4.1 Domestic market

MMA has forecast the domestic market in two parts, the residential market and the serviced hot water market. In each of these parts there is an assessment made of both customer numbers and average usage.

4.1.1 Domestic customer numbers

As seen in Section 3.2.2, the number of dwellings in Brisbane is growing by the order of 2.4% pa. Allgas residential customer numbers have been growing at a substantially lower rate, some 1.7% pa. However, according to its network development plan (NDP), Allgas has plans to add net domestic customers at a significantly higher rate, starting at 3.2% of domestic customer numbers in 2005/06 and building to a net increase of 4.7% of its domestic customer numbers in 2010/11.

While this appears to be a challenging growth rate, Allgas appears to have based it largely on discussions and agreements with developers and presented a reasonable level of detail in its NDP. In light of the Government's Sustainable Housing Initiative together with the discontinuation of rebates for solar hot water systems and heat pumps, MMA considers these numbers to be achievable. MMA therefore considers it reasonable to accept Allgas proposal for increased customer numbers despite these being significantly higher than those for the area as a whole.

4.1.2 Serviced Hot Water customer numbers

It must be borne in mind that the domestic market includes both residential and SHW customers. Allgas does not appear to have forecast the numbers of new SHW customers separately. Yet there has been steady growth in SHW customer numbers over the past decade and significant associated load increases (see Section 2.3). Allgas has stated that it is connecting fewer of these SHW units but each with larger loads, and this appears to be borne out by the data it has provided.

MMA has assumed that the net connection growth will include new SHW customers, commencing in 2006 at about the same rate as over the past few years and then reducing slightly over time.

4.1.3 Net and gross domestic customer number growth

The net residential and SHW customer numbers are provided in Table 4-1.

Table 4-1 Projections of Allgas customer numbers

	2005	2006	2007	2008	2009	2010	2011
Residential	60072	62024	64154	66443	68954	71792	75217
SHW	1445	1487	1527	1564	1599	1630	1659
Net Domestic	61517	63511	65681	68007	70553	73422	76876
Disconnections		418	422	426	429	431	431
Number of new domestic connections		2412	2592	2752	2975	3300	3885

Allgas has proposed a disconnection rate of 418 per year. While MMA has not been able to check these for consistency with recent data[34] , they do not appear unreasonable. We have assumed that all the disconnections are residential. The gross number of new connections is also provided in Table 4-1.

4.2 Average usage per domestic customer

The average usage per domestic customer is currently just under 15.4 GJ and appears to have been increasing slowly over the past few years. It is this high, in part, because it includes gas usage by SHW apartment blocks.

MMA has forecast changes to average usage separately for residential and SHW as they appear to have different drivers and influences.

4.2.1 Residential

As discussed in Section3.3.1, MMA has applied a trend change to existing gas users of -0.4% pa to take into account recent trends. Superimposed on these has been a further decline of 1.0% pa (half from October 2005) to take into account the expected impact of the recent price increases on existing users.

New users have also been forecast with reduced gas load, from 13.4 GJ in 2005 to 11.9 GJ in 2011, due to the new sustainability initiatives requiring efficient gas hot water systems and efficient showerheads. We have not factored in any increased average usage (from other appliances such as heating or spas) in the first five years.

This has resulted in the average usage for all residential users dropping from 13.6 GJ to 12.5 GJ over the period. The forecast loads and average usages are provided in Table 4-2.

[34] According to Allgas it has had some difficulty in interpreting the disconnection data especially in Toowoomba.

4.3 Serviced hot water

Average usage per SHW customer has been increasing over time as larger flats are connected. MMA has forecast the SHW average load by:

- Using the trend growth rate in average usage from 1996 to 2001 to extrapolate average usage until 2011.
- Factoring in reduced average usage due to the efficient showerhead requirement for new apartment blocks, but taking into account timing of construction, the estimated proportion of apartment blocks affected (ie new construction) and proportion of apartments which already have efficient showerheads.

This has resulted in the forecast average usage for all SHW users increasing from 94 to 129 GJ over the period. The forecast loads and average usages are provided in Table 4-2.

Table 4-2 Residential & serviced hot water customers & usage

Residential	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
Number of customers	60072	62024	64154	66443	68954	71792	75217
Average usage, GJ	13.6	13.4	13.2	13.0	12.8	12.6	12.4
Residential load, TJ	815	830	846	862	881	904	935
SHW							
Number of customers	1445	1487	1527	1564	1599	1630	1659
Average usage, GJ	94	100	107	113	119	125	131
SHW load, TJ	135	149	163	177	191	204	218
Total domestic							
Number of customers	61517	63511	65681	68007	70553	73422	76876
Average usage, GJ	15.4	15.4	15.4	15.3	15.2	15.1	15.0
Domestic load, TJ	950	979	1009	1039	1072	1109	1153

MMA is forecasting the total Allgas domestic market to grow from 950 TJ to 1153 TJ over the period 2005 to 2011, a growth rate of some 3.3% pa. Within this the growth rate of the residential sector is forecast to grow at 2.3% pa while the SHW is expected to continue growing strongly at 8.3% pa as more, large apartment blocks are connected.

The residential growth rate is made up of a growth of 3.8% pa in net customer numbers but a 1.4% pa decline in average consumption, due to the impacts of both gas price increases and also efficiency requirements for new houses.

4.4 Comparison with the Allgas forecasts

The MMA and Allgas load forecasts for the domestic market are compared in Table 4-3.

Table 4-3 Comparison of MMA and Allgas forecasts for the Domestic market

	2005	2006	2007	2008	2009	2010	2011
Consumption forecasts, TJ							
MMA Forecast	950	979	1009	1039	1072	1109	1153
Allgas forecast		943	971	1002	1035	1072	1115
Difference		36	38	37	37	37	38

The customer numbers and new connection forecasts are largely the same as those used by Allgas.

There is a difference of about 36 TJ for the year 2006, increasing slightly to 38 TJ over time.

4.5 C&I or small business market

MMA has assessed small business consumption by using a combination of regression analysis of C&I usage against both time and GSP. This is because growth in this segment is a combination of economic growth and network expansion, which is expected to continue.

Regression against time is more closely analogous to the result from network expansion to the South Coast. Network extensions often rely on the largest conversions being made initially (being the ones that make the extension economic) followed by smaller conversions and opportunities over time. Growth in the existing regions is likely to be more strongly related to GSP, and it produces a somewhat stronger growth rate.

As most of the recent growth (in absolute terms) has originated from already reticulated areas, where growth is expected to more closely follow GSP, we have weighted the forecast more strongly towards the GSP relationship.

This results in forecast growth rate of 4.6% pa, a reduction on the 6% seen over both the short and the medium term for this market. The reduction in growth reflects a balance between an economy which is slowing slightly, an expectation of further reticulation expansion but with somewhat fewer large new opportunities.

MMA's forecasting of customer numbers has been derived by dividing the annual loads by the expected average usages per customer. Average usage per C&I customer has been increasing slightly over recent years and was 618 GJ per customer in 2005. Because of the extension of reticulation and the expectation that the larger opportunities may well have been picked up, MMA expects the average to reduce slightly by about 1% pa. MMA has used the Allgas estimate of around 50 disconnections per year to convert net customers to new customer connections. MMA is forecasting a connection rate of new C&I customers similar to those forecast by Allgas.

4.6 Comparison with the Allgas forecasts

Actual 2004/05 numbers together with the MMA and Allgas forecasts are provided in Table 4-4.

Table 4-4 Comparison of MMA and Allgas forecasts for the C&I market

	2005	2006	2007	2008	2009	2010	2011
Consumption forecasts, TJ							
MMA Forecast	1792	1854	1977	2087	2171	2260	2346
Allgas forecast	1792	1904	1974	2052	2139	2230	2323
Customer number forecasts							
MMA Forecast	2896	3027	3260	3475	3653	3841	4027
Allgas forecast	2896	3071	3246	3444	3661	3878	4103
New customer connections							
MMA Forecast		182	284	266	229	241	238
Allgas forecast		209	226	249	269	269	277

The consumption forecasts produced by Allgas and MMA are similar in most years. However, the 2005/06 number differs significantly, with Allgas having higher numbers. It is not clear why this is the case. It is possible that SHW has been included here but this appears unlikely given the customer numbers.

The MMA customer numbers and connection forecasts are similar to those of Allgas.

4.7 Demand load

MMA has forecast consumption for the Allgas demand market by:

- Considering growth achieved over the periods 1996 to 2005 and 2001 to 2005 (see Sections 2.5 & 3.7).
- Holding discussions with several of the largest Allgas customers
- Using the relationship derived between GSP and consumption to forecast growth in consumption by region.
- Deriving the likely MDQ from the historical relationship between consumption and MDQ
- Taking into account an announced curtailment.

4.7.1 Relationship between consumption and GSP

MMA has reviewed the relationships discussed in Section 3.7, and, after consideration, has used the linear relationship between ln consumption and ln GSP over the period 2001 – 2005 in its forecasting. The relationship is graphed in Figure 3-8.

This relationship, together with the Econtech GSP forecasts, results in a forecast growth rate between 2005 and 2011 of about 1.7% pa.

4.7.2 Discussions with large customers

MMA has held discussions with 12 of Allgas' largest customers. Most of the customers foresee some growth over the next five years, although a couple expect virtually no change at all. Overall, the largest users foresee growth of about 1.3% pa. However, this does not take into account growth from smaller and new users.

Over both the period 1996 to 2005 and 2001 to 2005 the growth rate of the top ten continuous users has been significantly less than the growth rate of the rest of the demand users, including new users. The forecast growth rate of 1.7% pa is thus reasonably consistent with the lower growth rate forecast by the largest users.

Probably the key finding from the discussion with large customers is the confirmation that, apart from one which has been identified, none expects to close or significantly curtail usage.

4.7.3 Allocation of consumption growth to region

We have allocated growth to region for the Brisbane, South Coast and Toowoomba regions in line with the above relationship. This results in a forecast growth rate of 1.9% pa in Brisbane, 3.7% pa in South Coast and -1.5% pa in Toowoomba[35]. These forecasts are compared against actual results over the past few years in Table 4-5.

Table 4-5 Historical and forecast consumption growth rates for the demand market

Consumption	1996-2005	2001-2005	Forecast C 2005-2011
Brisbane	2.6%	2.0%	1.9%
South Coast	4.8%	7.0%	3.7%
Toowoomba	3.2%	-1.0%	-1.5%
Total	2.8%	2.1%	1.7%

4.7.4 Load factor and MDQ forecasting

As discussed in Section3.7, load factors have been reducing steadily over the past few years, meaning that the growth rate of MDQ has been significantly higher than that of consumption. As further discussed in Section 3.7, MMA has considered trending the load

[35] Note that this forecast takes into account the loss of the Dairy Farmers load.

factor in line with changes seen from 2001 to 2004[36]. However, given the lack of history and relative understanding as to the causes of this reduction in load factor, MMA believes it reasonable to be cautious and assume that the reduction over the next period will be only half that seen over the period 2001 to 2004. For Toowoomba we have taken into account that one large customer is likely to close.

The resultant MDQ forecasts, by region, are provided in Table 4-6.

Table 4-6 Comparison of MMA and Allgas forecasts for the Demand market

MMA MDQ forecasts, GJ	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
Brisbane	22814	22523	23344	24093	24717	25377	26029
South Coast	3173	3214	3466	3695	3875	4069	4261
Toowoomba	3943	3473	3448	3433	3432	3431	3433
Total	29930	29210	30258	31220	32025	32877	33722
Allgas MDQ forecasts	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
Brisbane	22,814	23,585	23,600	23,764	24,000	24,239	24,480
South Coast	3,173	3,324	3,326	3,449	3,572	3,695	3,818
Toowoomba	3,943	3,635	3,419	3,415	3,450	3,484	3,519
Total	29,930	30,544	30,345	30,628	31,022	31,418	31,817
Difference, GJ	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
Brisbane		1,062	256	-329	-717	-1,137	-1,548
South Coast		110	-140	-246	-303	-375	-443
Toowoomba		162	-29	-18	17	53	86
Total		1,334	87	-592	-1,003	-1,459	-1,905

MMA has forecast an MDQ growth rate of 2% pa over the period 2005 to 2011, with Brisbane MDQ forecast to grow at 2.2% pa and the South Coast at 5% pa but Toowoomba reducing because of the likely loss of one customer.

The MMA results are less than the Allgas forecasts for the first year, 2005/06. As we understand that the figures provided by Allgas for that year are actual MDQ contracted it would appear appropriate to use these.

Beyond this, MMA forecasts are higher for Brisbane and the South Coast and about the same for Toowoomba.

[36] The year 2005 is considered anomalous in this regard.

APPENDIX A POPULATION AND DWELLING GROWTH

A.1 Population Growth

A.1.1 Overview of Queensland growth

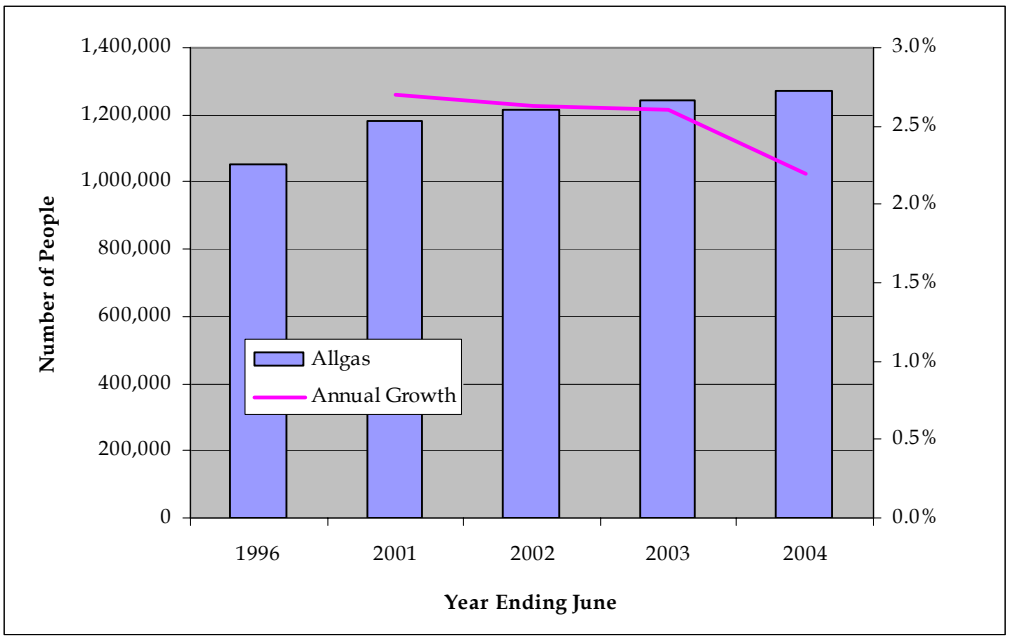
Queensland population is growing relatively rapidly, achieving a growth rate of 2.1%, about 80,000 people, compared with the rest of Australia at 1.2%, in the year to 30 June 2004.[37] The high growth has been maintained over the last decade with average growth at about 2% pa to 31 Dec 2004.[38] The majority (76%) of this growth was in SE Queensland, at about 62,000 people. [39] In absolute terms Brisbane and the Gold Coast are well above any other region in Queensland with growth at about 18,000 and 13,000 people respectively.[40]

The historical population growth for the regions covered by the service providers was analysed on an LGA level using data provided by the Queensland Government.

A.1.2 Allgas Region Historical

Using data provided by the Queensland Government, MMA has assessed the historical population numbers and growth for the Allgas distribution area, illustrated below in Figure A-1.

Figure A-1 Historical growth for the Allgas region



Source: 'Population Growth- Highlights & Trends 2005', Qld Gov, Planning Information & Forecasting Unit.

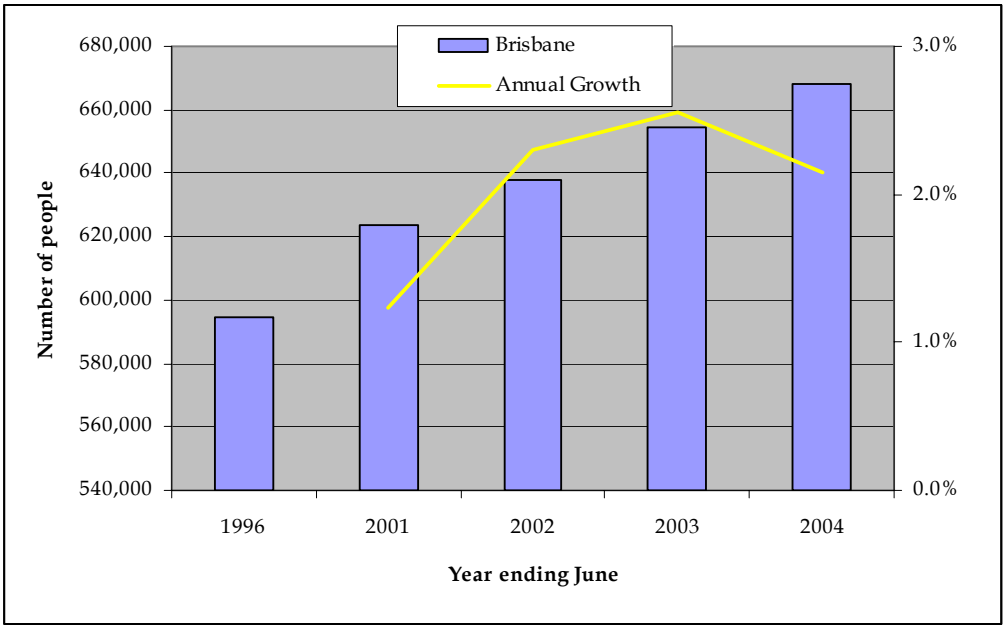
[37] Queensland Government, 'Population growth – highlights and trends, Queensland 2005'
[38] 'Housing Update, No 18', October 2005 PIFU, Qld Government
[39] Queensland Government, 'Population growth – highlights and trends, Queensland 2005'
[40] Queensland Government, 'Population growth – highlights and trends, Queensland 2005'

Population in the Allgas distribution area has undergone substantial growth, having a compound annual growth rate of 2.4 % for the 1996-2004 period. This increased for the period 2001-2004 to 2.5 %. Despite there being a slow-down in 2004, it still remained strong at about 2.2% in that year.

While not all the population presented here as Allgas has reticulated gas, the growth is representative of the reticulated area.

A.1.3 Envestra Region Historical

Figure A-2 Historical growth for the Envestra Brisbane network



Source: 'Population Growth- Highlights & Trends 2005', Qld Gov, Planning Information & Forecasting Unit.

The Envestra region grew at just 1% pa for the period 1996-2001 however this increased significantly to about 2.3% pa for the period 2001-2004. A further breakdown of the Envestra area was able to limit the LGAs included to only those with reticulation. This revealed only a slight difference in growth with growth over the period 2001-2004 being 2.4% pa. In light of this small difference MMA has used the whole Envestra region for its analysis.

A.1.4 Forecasts of Population

MMA has assessed several different population growth forecasts which are provided in Table A-1.

Table A-1 Population projections, % change

Source	Growth, % pa	Years
NIEIR(Energex Elec Region)	2.26%	2006-2010
NIEIR-NEM States(Qld)	2.1%	2004-2009

Sources: NIEIR Reports. 'The economic outlook for the NEM states to 2014-15', May 2005 and 'Electricity consumption and maximum demand projections for the ENERGEX region to 2014', August 2004.

MMA considers a rate of population growth of 2.0% - 2.1% pa for Queensland to be reasonable to assume for the coming regulatory period. As the South East Queensland population is growing more rapidly than the Queensland population, MMA considers a population growth rate for the region of about 2.2% to 2.3% to be reasonable.

A.2 Housing Growth

A.2.1 Overview of Queensland growth

As for population, growth in dwellings has been strong, again particularly in SEQ. The following analysis is based on ABS census data from 2001 and housing approvals from the Queensland Government by LGA[41].

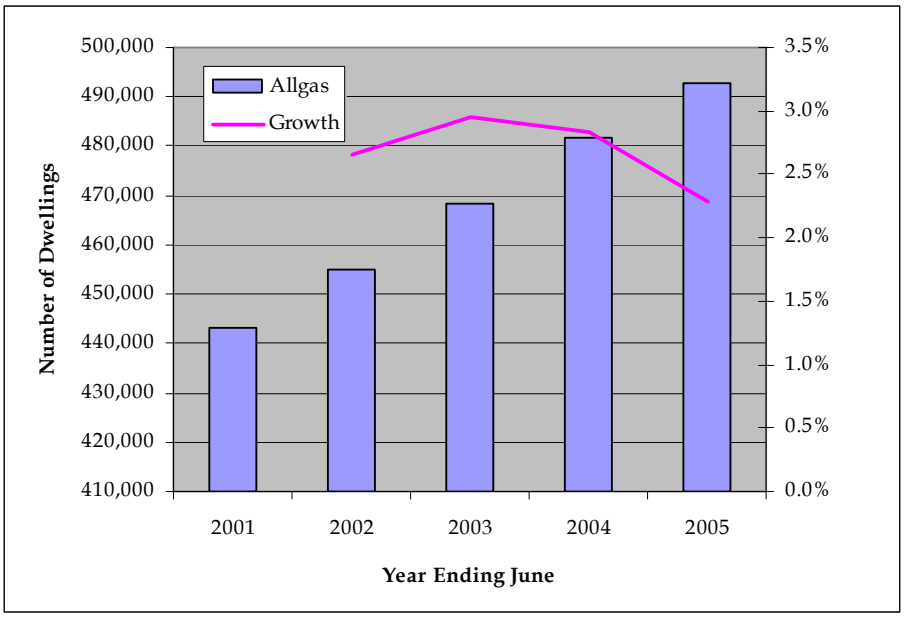
Queensland as a whole saw growth in dwellings of about 2.6% pa over the period 2000/01 to 2004/05. The Statistical Division (SD) of Brisbane (SD) also saw a 2.6% pa increase in dwelling stock. In the year to June 2005, Ipswich (C) - East and Coomera-Cedar Creek had the highest number of dwelling approvals with 1,271 and 1,169 respectively.[42]

A.2.2 Allgas Region Historical

MMA estimates of historical housing growth for the Allgas area are illustrated in Figure A-3.

[41] We have assumed that 90% of the dwelling approvals translate into net dwellings with no time lag.
[42] Housing Update 18, October 2005, PIFU- Qld Government.

Figure A-3 Dwelling Stock Growth for the Allgas Distribution Area

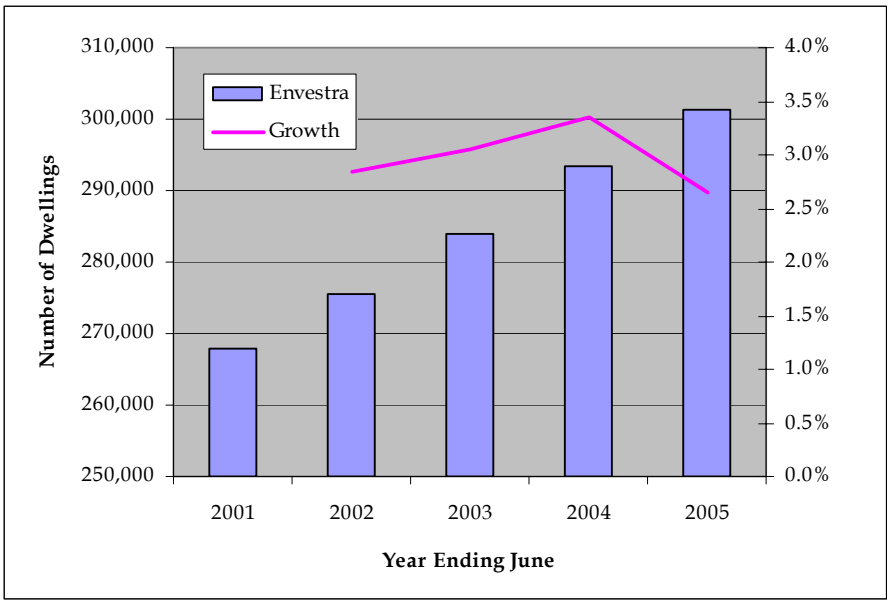


The Allgas distribution area has seen strong dwelling growth over the past few years, with growth at about 2.7% pa since 2001. This is due to the very strong growth in the Gold Coast region at around 3.5% for the period while South Brisbane had average growth of 2.3% pa. The peak in 2003 was 2.9%, with a drop in growth for the financial years 2004 and 2005.

A.2.3 Envestra Region Historical

The historical housing growth for the whole Envestra region is shown in Figure A-4. Envestra has seen average growth of around 2.7% pa for the period 2001-2005. There has been extremely strong growth in Ipswich (SD) at over 5% pa, while North Brisbane has seen growth of around 2.7% pa. The statistical divisions of Gladstone and Rockhampton have seen 2.3% pa and 1.0% pa respectively.

Figure A-4 Dwelling stock growth for the Envestra region



A.2.4 Forecasts of Dwelling Numbers

Table A-2 contains various projections of dwelling growth for Brisbane and Queensland and the Energex electricity distribution area.

Table A-2 Forecast Dwelling Growth Rates, % pa

	CAGR	Years
NIEIR(Energex Elec Dist)	2.35	2006-2010
NIEIR(Qld, for Energex)	2.21	2006-2010
ABS(Qld)	2.34	2005-2011
ABS(Brisbane)	2.26	2005-2011

Sources: NIEIR Reports. 'The economic outlook for the NEM states to 2014-15', May 2005 and 'Electricity consumption and maximum demand projections for the ENERGEX region to 2014', August 2004. Projected Households, Series II 'Family & Household Projections 2001-2026' (3236.0) , ABS 2002.

Projected growth rates range from 2.2% pa to 2.5% pa. The ABS projections are older projections than the NIEIR ones, so MMA considers these to not have fully factored in recent rapid growth rates and thus to slightly underestimate the likely growth in dwellings.

Envestra

MMA expects Envestra's Brisbane region growth to be about 2.4% pa.

Allgas

MMA expects the growth in dwellings for the Allgas region to be about 2.4% pa for the period 2005-2011.