



## MMA response to Envestra's comments on demand forecasts

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## 1 BACKGROUND

In October 2000, Envestra and Allgas, the two major Queensland distributors, submitted to the Queensland Competition Authority (QCA) proposed Access Arrangements (AA). Envestra submitted AA for its Brisbane (including north Brisbane and Ipswich), and Northern (Gladstone and Rockhampton) networks. Allgas submitted AA for its network covering south Brisbane, the South Coast, Oakey and Toowoomba.

According to the provisions of the Gas Pipelines Access (Queensland) Act 1998, which gives effect to the National Third Party Access Code for Natural Gas Pipeline Systems, QCA must be satisfied that any forecasts required to set reference tariffs represent "... *best estimates arrived at on a reasonable basis*". To assist it in this regard, QCA has commissioned McLennan Magasanik Associates (MMA) to forecast demand for the Allgas and Envestra networks over the period 2000/2001 to 2009/2010.

The procedure MMA followed for forecasting gas throughput for both distributors was essentially the same. It was to:

- review the forecasts provided by the distributors within the AAs and any supporting material provided
- ask for further historical and contextual data from the distributors
- ask for information about historical usage trends and any changes to drivers which were likely to impact on usage in the future
- review the forecasts in the context of the data supplied plus any relevant data in the public arena
- survey some larger customers (current and prospective) from both networks
- commission economic forecasts applicable to the region of interest – mainly Brisbane
- hold meetings with representatives of both distributors to discuss forecasting approach and methodology
- decide on an appropriate forecasting methodology by customer class
- prepare a draft report
- review and, where appropriate, incorporate comments from the distributors in preparing the final report
- prepare a public version of the reports by removing information deemed confidential by the distributors

The QCA reviewed the forecasts provided by MMA against those provided by the distributors. In its draft determination of March 2001, QCA decided that, in all the circumstances, the independent forecasts provided by MMA "...*present a more robust*

*assessment of likely future demand and are therefore more appropriate to use in deriving reference tariffs."* Draft Determination p 225.

There was relatively little difference between the MMA forecast for the Allgas network and that provided by Allgas. Allgas has agreed to accept the MMA forecasts.

Envestra has rejected the MMA forecasts as inappropriate with reasons provided in Attachment 6 to its response to the draft determination.

MMA's response to the Envestra comments contained in Attachment 6 are contained below. Chapter 2 provides an overview of recent demand growth in the Allgas and Envestra networks and the forecasts published by the distributors and MMA. Chapter 3 looks at specific Envestra comments while Chapter 4 reviews the MMA forecasting methodology against criteria previously established as relevant to forecasting.

### **Confidentiality**

Commercially or otherwise confidential information has been removed from this version of the report. Where such information has been removed, it has been highlighted.

## **2 OVERVIEW OF RECENT AND FORECAST DEMAND GROWTH**

Prior to responding to individual comments, it is worth reviewing recent demand history and the forecasts provided by the distributors and MMA.

The forecasts from both the distributors and MMA are available in the earlier MMA reports to QCA. It is, however, worthwhile reviewing historic growth rates and those forecast.

<b>Period</b>	<b>Compound Annual Growth Rate – Allgas Network</b>	<b>Compound Annual Growth Rate – Envestra Network</b>
1997/98 to 1999/2000	5.4%	4.5%
1995/96 to 1999/2000	6.1%	6.6%*
Envestra Prospectus Growth in decade to 1996		5.5% pa
MMA Forecast	1999/00 to 2004/05 4.1%	1999/00 to 2005/06 4.3%
Service Provider's Forecasts	3.4%	2.4%

\* Using retailer data for the earlier two years, see comments in Section 3.3

For the Envestra network, MMA is forecasting growth somewhat slower than that understood to have taken place over the past decade or so, while Envestra is forecasting growth at just

over half that experienced over the past two years and less than half that understood to have been experienced over the past decade.

It is clear to MMA that the Envestra forecasts postulate a movement away from recent trends. What is not clear is why Envestra considers this should be the case.

### 3 GENERAL ENVESTRA COMMENTS

In this Chapter we describe the MMA forecasting approach and methodology and comment on several general issues that Envestra has raised.

#### 3.1 “Plain vanilla macroeconomic forecasting methodology”

Envestra considers that the MMA forecasts have been generated using a “*plain vanilla macroeconomic forecasting methodology*” which is “*applicable to large distributors with close to 100% market share in a steady state market*”.

According to Envestra the macroeconomic approach is unsuitable for the Envestra distribution business which is small, services a minor portion of the overall gas market in Queensland and has quite distinctive regional demand and operating characteristics.

MMA rejects the claim that the MMA methodology is a “*plain vanilla macroeconomic forecasting methodology*”.

For Envestra, the methodology used was:

Area of Forecast	MMA methodology	Tempered by
Domestic connections	Range of indicators used, including historical for Envestra, Queensland distributors, Allgas and consideration of forecast mains growth	Expected slow-down in housing
Average domestic usage	Key drivers: move from cookers only to cookers plus hot water plus replacement of low reading meters	Price considerations
Small Commercial Load (Note that MMA could not forecast customer numbers and average usage separately due to insufficient historical data.)	Based on recent history for Envestra adjusted for category movement.	Expectation that high growth rates would not continue during economic slowdown.

Area of Forecast	MMA methodology	Tempered by
Small Industrial Load (Note that MMA could not forecast customer numbers and average usage or even total small industrial usage separately due to lack of comparable historical data and category switching.)	Assessed as part of overall Industrial Load	
Total Industrial Load	Recent Envestra history, discussions with customers	Expected economic slowdown has been used for the timing.
Price Impacts	MMA assessment of price changes based on expected delivered price (incorporating distribution from proposed AA) and AGA elasticities	

Of these, “macroeconomic” considerations were only used as primary forecasting determinants for the price impact assessments. While we did analyse the impact of manufacturing and commercial activity, in the case of Envestra, these indicators were not used in forecasting its demand.

Indeed, this was stated specifically for the industrial sector in the line quoted by Envestra:

*“MMA was unable to find any reasonable relationship between the level of manufacturing activity and Envestra’s industrial gas consumption.”*

Here we found no obvious linkage between economic activity and Envestra contract gas usage, plainly stated so, and relied on another methodology to forecast usage by this sector<sup>1</sup>.

The report did, however, say that the economic cycle might well influence the timing of demand growth over the period. As an alternative to forecasting a constant rate of demand growth over the period, MMA allowed for the possibility that the rate of growth would be slower during the economic slowdown and then pick up<sup>2</sup>. As we understand it this option, which “backends” growth should have been preferable to the distributor.

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1 This was by contrast to the methodology used for Allgas which, for this customer category, could be considered to be “macroeconomic”.

2 While retaining the same growth rate over the entire period.

In all cases, however, macroeconomic assessments have been used to temper primary assessments, tending to reduce expectations. Note that MMA does not consider review of historical trends specific to the network to be "macroeconomic". Indeed, it helps to form an essential understanding of the microeconomic drivers of the individual distributor.

It appears inappropriate, therefore, for Envestra to classify the MMA methodology as macroeconomic. In any case, however, we certainly do not accept that the term "macroeconomic" should be used pejoratively, as Envestra does. We believe that proper forecasting needs to take into account historical, macroeconomic and microeconomic considerations. MMA has attempted to do this within the constraints of the assignment.

MMA also rejects strongly the use of the term "plain vanilla" to describe the methodology used. As can be seen in the above table, MMA assessed a number of methodologies and took into account a number of considerations (including availability of consistent data) in deciding what would be the most appropriate methodology to use.

#### *KPMG macroeconomic forecast*

In its report to Envestra, KPMG also provided a macroeconomic forecast which resulted in a higher demand forecast than that used in the "microeconomic" forecast contained within the Access Arrangements. KPMG expressed the view that *"...the microeconomic forecasting methodology was more appropriate given the data limitations, refocussed network marketing strategy and the impact on demand of consumer movement between categories"*. KPMG page 17. KPMG gave no opinion as to why this resulted in overall demand forecast being significantly lower than that achieved over the recent history.

### **3.2 Applicability of the methodology to the Envestra network**

Envestra claims that the methodology used by MMA *"...is not suitable for Envestra's Queensland network, where the distribution business is small, services a minor portion of the overall gas market in Queensland and has distinctive regional demand and operating characteristics."*

The MMA report clearly agrees that the growth expected for gas use in Queensland as a whole is not likely to be reflected in growth of the distributors - see Section 2.1 of the MMA report.

- For this reason, MMA has forecast growth for each distributor on its own merits, certainly not in accordance with the prospects of the state as a whole.
- For this reason MMA has reviewed the history of each distributor separately and held discussions separately with each distributor.
- For this reason MMA has commissioned and utilised economic growth forecasts specific to Brisbane and Moreton, the main areas served by distribution.

- For this reason, MMA has stated that whereas, there appears to be a link between manufacturing output and gas usage for Allgas, this was not the case for Envestra - and only used output data to propose an alternative timing of growth for Envestra.

Having said this, however, it must be pointed out that there are likely to be similarities between Allgas and Envestra in some of the growth drivers as well as differences.

After all, they both distribute mainly in Brisbane, albeit on different sides of the river. They both operate within an almost identical economic and political (as well as similar climatic) environments<sup>3</sup> in terms of gas supply issues. They have a similar amount of residential gas usage and length of mains. They both have very low average residential usage by Australian standards, due to climate. They both have experienced rapid growth in the bulk hot water services. They both have pockets where heating load is apparently important, Toowoomba for Allgas, Ipswich for Envestra.

For this reason, some comparison between the utilities is certainly warranted. We have in all cases tried to compare growth rates (obviously not absolute growth because of the different size of the utilities) for the utilities.

In one case, growth in average domestic usage, we have used Allgas experience as a primary forecasting input (See Average Residential Usage below). In other cases we have noted and assessed the differences and similarities between the utilities.

### 3.2.1 Residential numbers

As an example of MMA's use of inappropriate methodology, Envestra states that the MMA methodology fails to take into account that natural gas is not available in every suburb of Brisbane.

Indeed, this is the case. MMA has not assessed the growth rate on a suburb by suburb basis and then assessed whether gas is, or will be supplied to the areas of growth.

We have, however, assessed the recent history of growth in residential customers and the expected growth in gas mains. These are both likely to serve as good indicators of expected growth in customer numbers that would expect to be serviced by Envestra.

And the difference in approach certainly has not resulted in a significant difference between the forecast number of new customers. The number of net new customers over the period 2000 – 2006 forecast by MMA was [REDACTED]. The increase in residential connections forecast by Envestra (connections in new areas plus net new line of mains) over this same period was [REDACTED].

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3 Including decisions about tariff increases, timing of full retail contestability etc.

4 Letter from Mr Andrew Staniford (Envestra) to Ms Jennifer Hocking (OCA), Data request for the purpose of demand forecasting, 15 December 2000

The difference between new connections forecast is very small, less than 4% in total or about [redacted] TJ usage difference by the end of the period. Overall, at the end of the Access Arrangement period, Envestra was forecasting [redacted] residential customers connected and MMA was forecasting [redacted]. Hardly a major difference despite the different methodologies. Interestingly, the MMA forecast was for less new connections than the Envestra forecast despite the MMA methodology not explicitly correcting for gas not being supplied to every suburb in Brisbane.

### 3.2.2 Average residential usage

Envestra has cited the MMA method of forecasting average usage as further evidence of inappropriate methodology.

Envestra's average residential usage is some 10.5 GJ per customer per year. Allgas' average residential usage is some 12 GJ per customer per year. Some of the difference is likely to lie in the quantity of gas used for space heating, although both networks have areas where space heating may be appropriate.

Analysis of information provided by Allgas suggested that gas usage per customer had been increasing by 0.11 GJ per customer per year and this was the number used in the MMA forecast for Allgas. It was reduced from the initial forecast following discussions with both distributors.

Similar analysis could not be carried out for Envestra because of the lack of consistent historical data.

MMA has, as stated in the report, considered the key drivers for changes in average usage per customer:

- increased appliance numbers over time
- policy to connect only "economic" customers which will tend to discourage cooker only connections
- increasing penetration of gas into hot water (average usage some 10 - 15 GJ pa)
- increased penetration of gas into the heater market and possibly for pool heating
- replacement of meters which read low for natural gas<sup>5</sup>

and balanced them against drivers tending to decrease average usage:

- trends to decreased household size over time
- improving appliance efficiencies
- eventual saturation of water heater appliance penetration within the market

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<sup>5</sup> According to Envestra, almost 20% of the residential meters were designed for town gas and read low since the conversion to natural gas. Average metered usage is expected to increase as these are replaced over the next 10 years.

- limited opportunities for expansion in space heating applications.

On balance we have decided that the most appropriate estimate to use was the same growth as that evidenced by Allgas - 0.11 GJ/customer/year. This took into account the lower starting point for Envestra and the move to convert low-reading meters as well as both the positive and negative growth drivers.

KPMG in the forecast for Envestra's network has stated that a main thrust of Envestra's network marketing strategy is to increase average consumption per residential consumer:

[REDACTED]

Further:

[REDACTED]

And yet, what outcome is expected from the first phase of this "significant" marketing effort? An increase in average residential usage from [REDACTED] to [REDACTED] GJ pa over the 5 years period of the Access Arrangements. (This implies an average annual increase in average usage of about [REDACTED] GJ.) This would result in an increase of [REDACTED] TJ of gas sold to existing residential customers over the entire access arrangement period, an increase of some 1% of the residential load over 5 years.

MMA does not accept that a [REDACTED] TJ increase over 5 years resulting from a significant strategic marketing effort is appropriate. Indeed, KPMG has also stated that this is a conservative estimate of outcomes.

MMA considers the 0.11 GJ pa increase used in MMA forecasts for Envestra to be a more reasonable estimate of the likely impact of the marketing effort and natural moves to increased usage.

### 3.3 Data limitations

The data provided by Envestra in which it has expressed confidence is very limited - being only for the period 1997/98 to 1999/2000.

Envestra has also provided some earlier data from retailer data bases which are in several cases inconsistent with the more recent Envestra data.

Envestra is concerned that MMA has placed considerable weight on the pre-1997/98 data and that *"forecasts which are justified (even partially) using the pre-1997/98 data will result in illogical, unreliable and unreasonable demand forecasts"*.

MMA has recognised in its forecasting efforts that there are inconsistencies between the pre- and post-1997/98 data. Indeed, there may be some inconsistencies within the post-1997/98 data as well, as data bases were changed progressively over time. Further inconsistencies are also caused by the classification of load into volume and demand categories and the movement of customers between categories over time.

MMA's approach has been to build up a picture from as much information as possible after trying to understand or correct for inconsistencies.

Thus, just because some data is inconsistent between pre- and post- 1997/98 it does not follow that the data pre 1997/98 is necessarily inconsistent. Nor does it follow that there are significant data inconsistencies between all pre- and post- 1997/98 data.

If data pre-1997/98 is internally consistent then it may provide reasonable historical growth rate information, even if the baseline shifts after that period. This is the approach taken by MMA for residential customer numbers. As described previously, the outcome is very similar to that forecast by Envestra in this area.

Similarly, for gross information, such as total gas sold through the network, the inconsistencies are likely to be relatively immaterial. This allows a picture to be drawn of total gas sold in the network over a reasonable period as provided in Section 2 above.

Apart from these two examples, MMA has tended to accept information from the post-1997/98 data, rather than use the earlier material. For example, the small commercial market forecast was based largely on assessment of post-1997/98 data. Again, for the industrial category, growth has been based on post-1997/98 data.

Thus, MMA has been very careful and conservative about its use of pre-1997/98 data, but has certainly included relevant information within the report to allow appropriate comparisons to be made. The only place where it has placed considerable emphasis on pre-1997/98 information was for determining connection growth and in that case the Envestra number was about the same as that used by MMA.

### 3.4 Excluded customers

The MMA forecasts were for the areas understood to be covered by the network for which Access Arrangements were proposed. They specifically excluded loads and growth in the Wide Bay area (as mentioned in the report) and other current and potential network customers such as the cogeneration plant at BP which are understood to be offtaking directly from transmission mains.

The excluded customer forecasts provided by Envestra raise some pertinent questions:

- Were loads from excluded customers included in any of the historical information supplied (including pre-1997/98 data), and if so, was this material?
- Are the excluded customers being serviced by the covered network?

If the answer to both these questions is "no" then MMA can see no reason for this to impact on the forecasts. The approach taken by MMA has not been such as to require for excluded loads to be compensated for.

If the answer to either question is yes, then this needs to be explored with Envestra.

## 4 FORECASTING CRITERIA

Envestra has reviewed the MMA criteria against three criteria:

- logic of the methodology
- lack of bias
- appropriateness of forecast for the specific network

Envestra considers that the MMA forecast has failed these criteria. Instead, Envestra considers the KPMG forecasts to represent best estimates arrived at on a reasonable basis.

As stated by Envestra, the above criteria are similar to those included within the criteria specified by MMA and Marsden Jacob Associates (MJA) in their review of demand forecasts of the Victorian gas distributors for the Office of the Regulator General (ORG).

For the sake of completeness, we include below the full list of criteria from the ORG study:

- logic and accuracy of method
- unbiased application of method
- appropriateness to situation and nature of market
- recognition and reflection of key drivers
- assumptions reasonable in light of best information
- forecasting effort commensurate with importance of forecast and
- assessment against existing forecasts and methodologies

The following Table assesses the MMA forecasts against each of these criteria.

Criterion	MMA forecasts
Logic	Build up demand by customer category to the extent possible from data. Use of all available distributor specific data to build up a "picture". Aggregation of data where warranted/required. From this selection of appropriate forecasting methodology. Economic forecasts used to temper conclusions.
Unbiased application	MMA is independent. In most areas MMA has tended towards conservative assumptions (eg use of linear rather than geometric trends, use of more conservative industrial forecasts). MMA accepted input from distributors and customers.

Criterion	MMA forecasts
Appropriateness	MMA has tailored its approach to the distributor and available information (for instance not using macroeconomic linkage for Envestra where it did with Allgas). MMA tried to use all pertinent information.
Key drivers	Explicit incorporation of price driver. Consideration of economic drivers. Consideration of drivers to change average usage.
Reasonable assumptions	Assumptions fully documented and transparent. Results tempered by available evidence and discussions.
Forecasting effort	Forecasting differences between MMA and Envestra have implications building up to the order of \$1-2 M in the final year of the Access Arrangement. MMA worked on this assignment over a number of weeks and was privy to information from both distributors.
Assessment against existing methods and forecasts	Consideration of historical, other forecasts, distributors' forecasts.

MMA considers that its forecasting methodology meets all the criteria laid out in the ORG study. Certainly, MMA rejects the assertion that its methodology is illogical, biased or inappropriate.

Envestra/KPMG based their demand forecast largely on discussions with Envestra account managers and other staff. Neither the discussions nor the process through which such discussions were translated into forecasts are transparent to, nor able to be replicated by, MMA.

Forecasting must be carried out in light of material available to the forecaster. MMA believes that, within the confines of the material available to it and uncertainties associated with all forecasts it has made a balanced forecast of future Envestra load.

MMA leaves to QCA and others an independent assessment of the MMA and Envestra/KPMG forecasting methodologies against the above, or other, pertinent criteria and a decision as to which (if either) study best meets the requirements of "best estimates arrived at on a reasonable basis".