

**Expert Witness Report on the
Authority's Adjusted Demand Forecast,
Paul Taliangis, Core Energy Group
opinion dated 25 November 2014**

Appendix 4.2

27 November 2014

Response to the ERA's Draft Decision on required
amendments to the Access Arrangement for the Mid-
West and South-West Gas Distribution System





25 November 2014

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Dear Christopher

I refer to your instructions which requested that Core Energy Group Pty Limited prepare an expert witness report in relation to the "Draft Decision on Proposed Revisions to Access Arrangement for the Mid-West and South-West Gas Distribution System", which has been issued by the Economic Regulation Authority, dated 14 October 2014.

The accompanying report is structured as follows:

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Yours sincerely,

Paul Taliangis
Chief Executive Officer

1.Introduction

Core Energy Group Pty Ltd ("**Core**") has been engaged by ATCO Gas Australia Pty Ltd ("**ATCO**") to provide an opinion on the "Draft Decision on Proposed Revisions to Access Arrangement for the Mid-West and South-West Gas Distribution System ("**AGDS**")", which has been issued by the Economic Regulation Authority ("**ERA**"), dated 14 October 2014.

Specifically, Core has been requested to provide an opinion on the second and third dot points included in Paragraph 119 of the ERA's Draft Decision, presented below for completeness.

Paragraph 119 " The Authority has adjusted ATCO's demand forecast to reflect the following:

- **Reduction in ATCO's forecast number of B3 customers to reflect the Authority's decision to exclude ATCO's proposed customer initiated greenfield growth capital expenditure from conforming capital expenditure.**
- **Average annual usage per customer for new B2 customers of 80GJ, and average annual usage per customer for new B3 customers of 12 GJ, as per recent usage data for new customers.**
- **Average usage per customer for existing B2 and B3 customers will be constant as of 2014."**

1.1.Compliance with Federal Court Practice Note CM7

The author of the report has read, understood and complied with the Federal Court's Practice Note CM 7, entitled "Expert Witnesses in Proceedings in the Federal Court of Australia".

1.2.Compliance with National Gas Rules

In forming an opinion on the adjustments made by the ERA ("**ERA Draft Decision**"), Core has referred to requirements of the National Gas Rules ("**NGR**") relating to the development of a forecast.

Rule 74 provides:

"(1)Information in the nature of a forecast or estimate must be supported by a statement of the basis of the forecast or estimate.

(2)A forecast or estimate:

(a) must be arrived at on a reasonable basis; and

(b) must represent the best forecast or estimate possible in the circumstances."

Rule 75 provides:

"Information in the nature of an extrapolation or inference must be supported by the primary information on which the extrapolation or inference is based."

2. Summary of Findings

Consistent with the approach adopted by Core in its 2013 report, this response to the ERA Draft Decision presents forecasts on a post marketing and BD basis. The Core 2014 Gas Demand Forecast report includes a section which reconciles pre and post marketing forecasts. It should be noted that the Core 2014 Gas Demand Forecast report also incorporates subsequent revisions based on latest demand data to October 2014, and a number of assumptions relating to marketing and business development (“BD”).

Paragraph 117 of the ERA Draft Decision makes a specific reference to a concern with the Core/ATCO forecast:

“EMCa has noted the following concerns in relation to the development of ATCO’s B3 demand forecast:

The Core report projects a levelling of the decline in average usage per customer that has been evident for the past seven years. The report assumes that average annual usage per customer will stabilise at around 14.8 GJ. This assumption is based on a qualitative adjustment that Core has made to the per-customer volume forecasts resulting from its regression model. EMCa notes that it is difficult to reconcile Core’s assumption that the usage decline has now stabilised, with the evidence of continuing decline each year in the average annual volumes for newly connected B3 customers. EMCa has noted that the annual usage of the most recently connected customers is less than 12 GJ.”

Core provides the following response:

- The Core forecast was derived using a balance of quantitative and qualitative analysis – which is consistent with best practice forecasting.
- A close analysis of the Core model, which accompanied the report, clearly sets out the basis for the forecast. Nevertheless, Core has presented a further analysis below to ensure the key issues are fully understood.
- The observation that recent usage by new B3 connections have fallen below 12 GJ is correct but ignores the upward trend in consumption, as new customers move toward a mature level of annual consumption – i.e. the EMCa observes a transitional rather than a mature usage by new B3 customers.

Following a comprehensive analysis of the ERA Draft Decision, Core is of the opinion that:

The ERA forecast, as summarised in Paragraph 119, has not been developed on a reasonable basis and does not represent the best forecast possible in the circumstances relating to the AGDS Access Arrangement. This opinion is based on the following:

1. The ERA approach is flawed in two main areas:
 - 1.1. It relies on a demand per connection (for both B2 and B3 customers), which is not adequately supported by quantitative analysis
 - 1.1.1. The ERA forecast relies on a demand value of 12 GJ/connection for new B3 customers, which is not representative of the mature consumption of a new B3 connection, as addressed below (refer Section 6.2). The ERA approach understates the forecast demand per B3 connection.
 - 1.1.2. The ERA forecast relies on a demand value of 80 GJ/connection for new B2 customers, which constitutes a single year observation of historical demand per connection. The ERA approach overstates the forecast demand per B2 connection, as it does not include historical trends that are indicative of a material downward influence on demand.
2. The ERA forecast relies on an assumption that average usage per customer for existing B2 and B3 customers will be constant as of 2014, which in Core’s opinion, is not a basis for deriving the best forecast available under the circumstances relating to the AGDS. Use of a constant usage number is inconsistent with the trends in demand observed historically, and has not been justified by reference to specific analysis.
3. The Core forecast provides the best estimate available under the circumstances:

- 3.1. It relies upon widely accepted, best practice approach to demand forecasting.
- 3.2. It observes historical trends and provides a clear basis for any forecast deviation from a historical trend through a rigorous analysis of both quantitative and qualitative factors.
- 3.3. It analyses detailed trends in gas usage over recent years to ensure annual usage by new customers is fairly represented.

3.Overview ERA Forecast

Tables 1 and 2 below provide a comparison of the demand forecast adjustments presented in the ERA Draft Decision, and the demand forecasts included in the ATCO submission.

In summary:

- The ERA forecast of B2 demand is materially higher than the Core/ATCO forecast (variance of up to 15.9%), due primarily to a higher level of assumed demand per connection throughout the 2015 to 2019 period
- The ERA forecast of B3 demand is materially lower than the Core/ATCO forecast (variance of up to 7.6%), due primarily to:
 - A revision of the forecast demand per customer (12 GJ p.a. constant between 2015 and 2019) for new B3 connections.
 - A related reduction in forecast number of B3 connections/customers to reflect the Authority’s decision to exclude ATCO’s proposed customer initiated greenfield growth capital expenditure from conforming capital expenditure.

Table.1 Comparison of B2 Tariff Demand | Post Marketing

	2015	2016	2017	2018	2019
ATCO Submitted GJ	1,177,612	1,169,788	1,173,334	1,183,114	1,195,512
ERA Draft Decision GJ	1,227,604	1,263,284	1,301,524	1,342,404	1,386,004
Difference GJ	49,992	93,496	128,190	159,290	190,492
Difference %	4.2%	8.0%	10.9%	13.5%	15.9%

Table.2 Comparison of B3 Tariff Demand | Post Marketing

	2015	2016	2017	2018	2019
ATCO Submitted GJ	10,089,375	10,274,990	10,501,759	10,747,244	10,999,195
ERA Draft Decision GJ	9,996,639	10,097,553	10,121,937	10,145,481	10,168,173
Difference GJ	-92,736	-177,437	-379,822	-601,763	-831,022
Difference %	-0.9%	-1.7%	-3.6%	-5.6%	-7.6%

The derivation of the ERA forecast is addressed in further detail below, including an analysis of the basis for the ERA forecast of demand per connection for existing and new customers.

4. Derivation of the ERA Forecast

4.1. Tariff B2

Table 3 presents the approach Core believes was undertaken by the ERA to adjust the Tariff B2 forecast, which comprises two primary elements:

- A forecast of total connections (which is equivalent to the forecast submitted by ATCO)
- A forecast of demand per connection (which is materially above the forecast submitted by ATCO).

Core has not been provided with details relating to the derivation of the ERA forecast. However, Core has relied upon the demand presented in Table 3 below, as calculated by Core, which is within $\pm 0.0014\%$ of the revised Tariff B2 total demand as adjusted by the ERA.

Table.3 ERA Revised | Tariff B2 | Post Marketing

	2015	2016	2017	2018	2019
Cumulative New Connections	414	860	1,338	1,849	2,394
Existing Connections	9,932	9,932	9,932	9,932	9,932
Total Connections	10,346	10,792	11,270	11,781	12,326
Demand per Connection Existing	120	120	120	120	120
Demand per Connection New	80	80	80	80	80
Demand per Connection Weighted Average	118.66	117.06	115.49	113.95	112.45
Demand Existing Connections	1,194,484	1,194,484	1,194,484	1,194,484	1,194,484
Demand New Connections	33,138	68,799	107,047	147,939	191,520
Total Demand¹	1,227,621	1,263,282	1,301,531	1,342,422	1,386,004

Core believes that the 120 GJ demand per connection used for existing Tariff B2 connections is based on the demand per connection forecast for 2014 of 120.27GJ, as presented in the Core's 2013 Gas Demand Forecast model (refer Tab Tariff B2, Cell R11) and 2013 Gas Demand Forecast report (refer Page 43, Table 6.2). The ERA appears to simply extend this 120GJ demand per connection for existing connections throughout the Access Arrangement period.

Further, Core believes the 80GJ demand per new connection utilised by the ERA is based on additional information provided by ATCO. This additional information is provided in Table 4, and it appears that the ERA have found the average 2013 demand per connection for connections established in 2009, 2010 and 2011 (equivalent to 79.74GJ). The ERA appear to simply apply the demand per connection of 80GJ to all new connections during the Access Arrangement period.

¹ Please note there is an immaterial variance between the approach undertaken by Core to replicate the total Tariff B2 demand forecast presented by the ERA's Draft Decision on Proposed Revisions to the Access Arrangement for the Mid-West and South-West Gas Distribution System, which could be attributed to rounding of significant figures.

Table.4 Tariff B2 Actual Average Demand per Connection | Pre-Weather Normalisation

Customer Connection Period	GJ/MRN/Year					
	2008	2009	2010	2011	2012	2013
Pre 2009	174.89	173.11	167.74	158.35	160.25	157.29
2009			80.23	79.46	79.36	79.92
2010				66.57	75.21	80.42
2011					73.76	78.88
2012						55.07

The difference between the ERA forecast of total B2 demand and the Core/ATCO forecast of total B2 demand relates to differing forecasts of demand per B2 connection, as highlighted in Table 5. Of particular importance is the fact that the ERA approach gives rise to an average (existing and new) compound reduction in demand per connection of -1.67% vs. an actual trend which of well in excess of -3% over recent years, post adjustments for historical price elasticity. Inclusive of historical price elasticity, the actual historical trend was -6.1% between 2007 and 2013 (refer Gas Demand Forecast Model, Tab Tariff_B2, Row 59 to 65).

Table.5 Comparison of ERA and Core/ATCO Forecasts | Tariff B2 | Post Marketing

ERA	2015	2016	2017	2018	2019	CAGR ²
Demand per Connection Existing GJ	120	120	120	120	120	-
Demand per Connection New GJ	80	80	80	80	80	-
Weighted Average ³ GJ	118.66	117.06	115.49	113.95	112.45	-1.67%
Core/ATCO	2015	2016	2017	2018	2019	
Weighted Average GJ	113.82	108.4	104.11	100.43	96.99	-5.24%
Variance	2015	2016	2017	2018	2019	
Weighted Average	4.84	8.66	11.38	13.52	15.46	-

In Core's opinion the ERA forecast of B2 demand per connection is flawed in two important respects:

- It relies on few data points to derive a demand per connection for new and existing customers - resulting in an invalid base for future projections.
- It maintains a flat demand per connection which appears to ignore the demonstrable downward trend to date in demand per connection - resulting in an overstatement of demand per connection.

² Based on a 2014 demand per connection of 120.27GJ, refer 2013 Gas Demand Forecast model and report.

³ The weighted average demand per connection, as calculated by Core to replicate Tariff B2 demand per connection forecast presented by the ERA, is equivalent to the demand per connection calculated from the B2 Customers and Usage (GJ) data contained in Table 8 of the Draft Decision on Proposed Revisions to the Access Arrangement for the Mid-West and South-West Gas Distribution System, to two decimal points.

For completeness, Core presents the Core/ATCO forecast as at 2013 against the ERA draft decision and the 2014 Core/ATCO forecast. Section 2 of the Core Gas Demand Forecast report (2014) provides an explanation and reconciliation of movements between the 2013 and 2014 Core/ATCO forecast.

Table.6 Tariff B2 Demand per Connection | GJ

Source	2014	2015	2016	2017	2018	2019	CAGR ('15-'19)
2013 Core/ATCO	120.27	113.82	108.4	104.11	100.43	96.99	-5.24%
ERA Draft Decision	120.27	118.66	117.06	115.49	113.95	112.45	-1.67%
2014 Core/ATCO	123.66	118.56	114.30	111.03	108.22	105.60	-3.87%

Table.7 Tariff B2 Connections | No.

Source	2014	2015	2016	2017	2018	2019	CAGR ('15-'19)
2013 Core/ATCO	9,932	10,346	10,792	11,270	11,781	12,326	5.55%
ERA Draft Decision	9,932	10,346	10,792	11,270	11,781	12,326	5.55%
2014 Core/ATCO	10,118	10,542	10,873	11,193	11,500	11,793	3.91%

Table.8 Tariff B2 Demand | GJ

Source	2014	2015	2016	2017	2018	2019	CAGR ('15-'19)
2013 Core/ATCO	1,194,484	1,177,612	1,169,788	1,173,334	1,183,114	1,195,512	0.02%
ERA Draft Decision	1,194,484	1,227,604	1,263,284	1,301,524	1,342,404	1,386,004	3.79%
2014 Core/ATCO	1,251,134	1,249,783	1,242,812	1,242,746	1,244,572	1,245,362	-0.12%

4.2.Tariff B3

Table 9 provides a summary of the approach Core understands was undertaken by the ERA to revise to Tariff B3 demand forecast. Core has not been provided with details relating to the derivation of the ERA forecast.

However, Core has relied upon the demand presented in Table 7 below, as calculated by Core, is within $\pm 0.00003\%$ of the revised Tariff B3 total demand as adjusted by the ERA.

Table.9 ERA Revised | Tariff B3 | Post Marketing

	2015	2016	2017	2018	2019
New Connections	2,173	10,583	12,615	14,577	16,468
Existing Connections	664,763	664,763	664,763	664,763	664,763
Total Connections	666,936	675,346	677,378	679,340	681,231
Demand per Connection Existing GJ	15	15	15	15	15
Demand per Connection New GJ	12	12	12	12	12
Weighted Average GJ	14.99	14.95	14.94	14.93	14.93
Demand Existing Connections GJ	9,970,563	9,970,563	9,970,563	9,970,563	9,970,563
Demand New Connections GJ	26,078	126,993	151,376	174,919	197,610
Total Demand GJ⁴	9,996,641	10,097,556	10,121,939	10,145,482	10,168,173

As with Tariff B2 connections, Core believes that the 15 GJ demand per connection used for existing Tariff B3 connections is based on the demand per connection forecast for 2014 of 15GJ, as presented in the Core's 2013 Gas Demand Forecast model (refer Tab Tariff B3, Cell R24) and 2013 Gas Demand Forecast report (refer Page 43, Table 6.2). The ERA appears to simply extend this 15GJ demand per connection for existing connections throughout the Access Arrangement period.

Further, Core believes the 12GJ demand per new connection utilised by the ERA is based on additional information provided by ATCO. This additional information is provided in Table 10, and it appears that the ERA have found the average 2013 demand per connection for connections established in 2011 and 2012 (equivalent to 12GJ). The ERA appear to simply apply the demand per connection of 12GJ to all new connections during the Access Arrangement period.

Table.10 Tariff B3 Actual Average Demand per Connection | Pre-Weather Normalisation

Customer Connection Period	GJ/MRN/Year					
	2008	2009	2010	2011	2012	2013
Pre 2009	18.23	18.26	17.51	15.64	15.99	15.80
2009			13.55	13.22	14.16	14.32
2010				11.75	13.55	13.88
2011					11.38	12.37
2012						11.62

⁴ Please note there is an immaterial variance between the approach undertaken by Core to replicate the total Tariff B3 demand forecast presented by the ERA's Draft Decision on Proposed Revisions to the Access Arrangement for the Mid-West and South-West Gas Distribution System, which could be attributed to rounding of significant figures.

The ERA forecast varies from the Core/ATCO forecast in two areas:

- Lower forecast B3 connections as summarised in Table 11
- Lower forecast of B3 demand per connection for new connections as summarised in Table 12

Table.11 Comparison of ERA and Core/ATCO Forecast | B3 Connections | Post Marketing

	2015	2016	2017	2018	2019
Core/ATCO	679,549	694,284	708,948	723,542	738,065
ERA	666,936	675,346	677,378	679,340	681,231
Difference	-12,613	-18,938	-31,570	-44,202	-56,834

Table.12 Comparison of ERA and Core/ATCO Forecast | Tariff B3 Demand per New Connection | Post Marketing

	2015	2016	2017	2018	2019
Core/ATCO New connection ⁵⁶	13.75	13.70	13.72	13.76	13.80
ERA New connection	12	12	12	12	12
Difference	-1.75	-1.70	-1.72	-1.76	-1.80

⁵ This reflects the weighted average demand per connection for all connections (refer MWSWGDS Gas Demand Forecast 2014 to 2019.xlsx, Tab Tariff_B3, Row 24) minus 1.098GJ to derive a demand per connection for new connections, which includes the impact of the 6-Star Building Standard. More simply, a new connection is forecast to have a demand per connection that is 1.098GJ lower than the demand per connection of all connections in any given year.

⁶ It should be noted that the numbers presented here include the impact of marketing and BD, in line with the forecasts presented in the ERA's Draft Decision. Since the submission of 2013 Gas Demand Forecast, a new set of demand forecasts that includes new demand data to October 2014 and changes to the impact of marketing and BD, have been developed. The 2014 demand per connection forecast for new Tariff B3 customers is provided in Table 6.11, Page 51 of the 2014 Gas Demand Forecast Report.

For completeness, Core presents the Core/ATCO forecast as at 2013 against the ERA draft decision and the 2014 Core/ATCO forecast. Section 2 of the Core Gas Demand Forecast report (2014) provides an explanation and reconciliation of movements between the 2013 and 2014 Core/ATCO forecast.

Table.13 Tariff B3 Demand per Connection | GJ

Source	2014	2015	2016	2017	2018	2019	CAGR
2013 Core/ATCO	15.00	14.85	14.80	14.81	14.85	14.90	-0.16%
ERA	15.00	14.99	14.95	14.94	14.93	14.93	-0.11%
2014 Core/ATCO	14.67	14.45	14.32	14.25	14.21	14.16	-0.89%

Table.14 Tariff B3 Connections | No.

Source	2014	2015	2016	2017	2018	2019	CAGR
2013 Core/ATCO	664,763	679,549	694,284	708,948	723,542	738,065	2.65%
ERA Draft Decision	664,763	666,936	675,346	677,378	679,340	681,231	0.61%
2014 Core/ATCO	666,795	682,402	698,689	715,147	730,154	743,578	2.76%

Table.15 Tariff B3 Demand | GJ

Source	2014	2015	2016	2017	2018	2019	CAGR
2013 Core/ATCO	9,970,563	10,089,375	10,274,990	10,501,759	10,747,244	10,999,195	2.49%
ERA Draft Decision	9,970,563	9,996,639	10,097,553	10,121,937	10,145,481	10,168,173	0.49%
2014 Core/ATCO	9,785,209	9,858,722	10,007,804	10,188,283	10,372,812	10,530,472	1.85%

5. Assessment of ERA Approach

5.1. Core Assessment of ERA Approach to Forecasting Tariff B2 Demand per Connection

Core is of the opinion that the ERA approach does not provide the best estimate under the circumstances for two principal reasons:

1. The approach used to arrive at forecast demand of 120 GJ per connection for existing B2 customers and 80 GJ per connection for new B2 customers
2. The use of a constant forecast of demand per connection for both existing and new B2 customers throughout the 2015 to 2019 period.

5.1.1. ERA Approach to Deriving Forecast Demand per Connection for Existing and New B2 Customers

- The basis for selecting demand per connection of 120GJ p.a. for existing customers and 80GJ p.a. for new customers is not adequately supported by quantitative or qualitative analysis and thus, in Core's opinion, does not meet the 'reasonable basis' or 'best forecast or estimate possible in the circumstances' requirements of the NGR.

The ERA appears to rely on a single year observation of historical demand per connection (for both existing and new customers) and simply uses this value as a basis for a forecast of a constant level of demand per connection. In Core's opinion, the ERA approach results in a weighted average value of demand per existing connection which is overstated, as it does not adequately address historical and forecast trends, which indicate a material downward influence on demand per B2 connection. Further the ERA approach appears to ignore or dilute the impact of price elasticity - a well-established influence on demand.

In contrast, the approach used by Core to derive its forecast of B2 demand per connection, for both existing and new customers, utilises extensive quantitative and qualitative analysis to support the forecast. Core's use of a historical data series and regression analysis to derive a statistical trend, augmented by quantitative and qualitative analysis to derive estimates of future deviations from an observable historical trend, is widely accepted as a prudent and reasonable approach to developing demand forecasts.

The approach described above has been used consistently by Core for both B1 and B2 commercial tariff classes. Core notes that the ERA has accepted the approach to derive a forecast of B1 but not B2.

5.1.2. ERA Use of a Constant Forecast Demand per Connection for Existing and New B2 Customers

- The use of constant demand per connection values for both existing and new B2 connections throughout the forecast period is not adequately supported by quantitative or qualitative analysis and thus, in Core's opinion, does not pass the 'reasonable basis' or 'best forecast or estimate possible in the circumstances' requirements of the NGR. The use of a constant number removes the downward influence of factors which have been demonstrated to influence demand over time.

In contrast, the approach used by Core to derive its forecast of B2 demand per connection utilises regression analysis to derive a forecast based on a historical trend and price sensitivity analysis, and a forecast variation from the historical trend during the 2015 to 2019 period. These approaches are widely accepted, both nationally and internationally, as reasonable and prudent approaches to deriving demand forecasts.

A constant forecast of 120 GJ per existing B2 customer and 80 GJ per new customer, as applied by the ERA, ignores two significant trends that have been addressed by Core.

- The first is the changing impact of price elasticity of demand during the 2015 to 2019 period. Core uses a widely accepted economic approach to forecast the demand response (by a varying level each year) by existing B2 customers to forecast gas price increases.

The approach described above is consistent with the approach used to derive a forecast of B1 demand, which has been accepted by the ERA.

- The second trend is the reduction in existing customer demand over time due to appliance efficiency. Each year a significant proportion of existing customer appliances will be replaced by appliances with a materially higher level of energy efficiency, which will reduce the demand for such appliances and thus, reduce the level of demand per connection. As a guide, if the Australian Tax Office depreciable life of a water heater of 15 years is assumed, then on average, 6.7% (1/15) of existing customers will replace a water heater each year. Given the significant improvement in appliance efficiency over a 15 year period, the impact of this trend is material. A similar logic applies to other appliances.

The approach described above is consistent with the approach used by Core to derive a forecast of B1 demand, which has been accepted by the ERA.

5.1.3.ERA approach to Forecasting Tariff B3 Demand per Connection

As summarised in 5.2 above, the ERA forecasts include a lower level of B3 connections and a lower level of demand per connection for new B3 customers.

In accordance with the Terms of Reference attached to this submission, Core’s assessment is focused on the adjusted forecast relating to the demand per connection of new B3 connections.

The ERA forecasts that demand for new B3 customers will be 12 GJ per connection p.a. throughout the 2015-2019 period. The ERA provides a brief explanation for this revision, stating:

“The Core report projects a levelling of the decline in average usage per customer that has been evident for the past seven years. The report assumes that average annual usage per customer will stabilise at around 14.8 GJ. This assumption is based on a qualitative adjustment that Core has made to the per-customer volume forecasts resulting from its regression model. EMCa notes that it is difficult to reconcile Core’s assumption that the usage decline has now stabilised, with the evidence of continuing decline each year in the average annual volumes for newly connected B3 customers.⁷ EMCa has noted that the annual usage of the most recently connected customers is less than 12 GJ”

5.1.4.Core Assessment of ERA Approach to Forecasting Tariff B3 Demand per Connection

Core is of the opinion that the approach undertaken by the ERA understates the annual demand of a new B3 customer.

The ERA approach relies on the observation of gas consumption in a first year of connection for a new customer, which is not representative of the average mature consumption for a new connection. Consumption is lower in the first year of a new connection than subsequent years. This is demonstrated in below.

Table 16 presents the actual average annual gas usage of pre 2009 customer connections as whole, and new customer within the AGDS post 2009. These figures are presented on both a pre and post weather normalisation basis.

Table.16 Tariff B3 Actual Average Annual Usage per Connection | Pre-Weather Normalisation

Customer Connection Period	GJ/MRN/Year					
	2008	2009	2010	2011	2012	2013
Pre 2009	18.23	18.26	17.51	15.64	15.99	15.80
2009			13.55	13.22	14.16	14.32

⁷ Energy Market Consulting associates, Review of Technical Aspects of the Proposed Access Arrangement, ATCO Gas Australia Proposed Access Arrangement for the Mid-West and South-West Gas Distribution Systems, June 2014, para 241, p. 60.

2010	11.75	13.55	13.88
2011		11.38	12.37
2012			11.62

Table.17 Tariff B3 Actual Average Annual Usage per Connection | Post-Weather Normalisation

Customer Connections Period	GJ/MRN/Year					
	2008	2009	2010	2011	2012	2013
Pre 2009	17.90	18.18	17.38	16.01	16.13	16.03
2009		13.55	13.22	14.16	14.32	14.55
2010				12.11	13.69	14.10
2011					11.51	12.60
2012						11.85

Table 17 illustrates that the weather normalised usage per connection for B3 customers, as a whole, prior to 2009, have demonstrated a flattening trend in the range of 16.01GJ to 16.13 GJ per annum (approximately 0.7% range).

Core has focused its analysis on new connections beyond 2009. Therefore, Table 18 and 19 present the pre and post weather normalised usage per B3 connection for the 2011 to 2013 period.

Further, Core believes there is a degree of inconsistency between the ERA’s approach to revised forecasts and advice from EMCa, relating to demand per connection. EMCa states that “*it is difficult to reconcile Core’s assumption that the usage decline has now stabilised with the evidence of continuing decline each year in the average annual volumes for newly connected B3 customers*”⁸. However, the ERA states for the draft decision demand forecasts that “*Average usage per customer for existing B2 and B3 customers will be constant as of 2014*”.⁹

⁸ Energy Market Consulting associates, Review of Technical Aspects of the Proposed Access Arrangement, ATCO Gas Australia Proposed Access Arrangement for the Mid-West and South-West Gas Distribution Systems, June 2014, para 241, p. 60.

⁹ ERA, Draft Decision on Proposed Revisions to the Access Arrangement for the Mid-West and South-West Gas Distribution System, October 2014, para. 121, p. 29

Table.18 Tariff B3 Actual Average Annual Usage per Connection | Pre-Weather Normalisation

GJ/MRN/Year			
Customer Connections Period	2011	2012	2013
Pre 2009	15.64	15.99	15.80
2009	13.22	14.16	14.32
2010	11.75	13.55	13.88
2011		11.38	12.37
2012			11.62

Table.19 Tariff B3 Actual Average Annual Usage per Connection | Post-Weather Normalisation

GJ/MRN/Year			
Customer Connections Period	2011	2012	2013
Pre 2009	16.01	16.13	16.03
2009	13.58	14.30	14.55
2010	12.11	13.69	14.10
2011		11.51	12.60
2012			11.85

Table 20 shows that the annual demand for new customers grows from an opening year to a mature level over the following two years:

- A 2009 connection grows from 13.58 GJ to 14.55GJ in the following two year period
- A 2010 connection grows from 12.11GJ to 14.10GJ in the following two year period
- A 2010 connection grows from 11.51GJ to 12.60GJ in 2011 in the following one year period

The annual movements in demand for new B3 customers, expressed as a percentage, is summarised in the table below.

Table.20 Tariff B3 Annual Percentage Change in Average Usage | Weather Normalised

GJ/MRN/Year				
Customer Connection Period	2011	2012	2013	Average
2010		13.0%	3.0%	8.0%
2011			9.4%	9.4%
2012			N/A	N/A

Table 21 presents B3 demand per connection forecasts assuming that post 2009 new customer demand matures in line with 2010 actual experience, which is a growth of 8% per annum over the following two year period.

Table.21 Tariff B3 Average Usage | Weather Normalised

GJ/MRN/Year					
Customer Connection Period	2011 Actual	2012 Actual	2013 Actual	2014 Forecast	2015 Forecast
Pre 2009	16.01	16.13	16.03		
2009	13.58	14.30	14.55		
2010	12.11	13.69	14.10		
2011		11.51	12.60	13.43	
2012			11.85	12.80	13.82

This analysis illustrates that a mature demand level for a new B3 customer is likely to be materially above the 12 GJ assumed by the ERA.

It is important to note that the above analysis does not represent a departure from the approach used by Core to arrive at the 2013 forecast. Core has consistently used a weighted average of new and existing connections and associated demand per new and existing connection to derive annual demand. The above analysis simply seeks to highlight the rising trend in demand per connection as the customer consumption pattern matures.

6. Conclusion

It should be noted that this paper compares the demand forecasts presented in the ERA's Draft Decision against the demand forecasts presented by Core in their 2013 Gas Demand Forecast report, as submitted by ATCO. Since this submission, the gas demand forecasts have been revised to include new demand data to October 2014, and changes in assumptions relating to marketing and BD impact. These are presented in Core's 2014 Gas Demand Forecast report.

Core is of the opinion that the forecast of demand presented in its final report meets the requirements of the NGR in full and that the forecast presented by the ERA falls short of meeting such requirements in two main areas:

- The ERA forecast of B2 and B3 demand per connection, and thus annualised demand for the tariff class as a whole, does not adequately reflect the mature usage of new connections, as addressed by Core.
- The ERA forecast does not demonstrate a valid basis for selection of opening 2014 balances and does not present adequate analysis to demonstrate that any forecast demand per connection is likely to remain constant.

In accordance with paragraph 2.2 of the Federal Court's Practice Note CM 7, entitled "Expert Witnesses in Proceedings in the Federal Court of Australia", the author has made all the inquiries that I believe are desirable and appropriate and that no matter of significance that the author regards as relevant have, to Core's knowledge, been withheld from the Court.

Attachment 1: Terms of Reference

JOHNSON WINTER & SLATTERY
LAWYERS

Partner: Roxanne Smith +61 8239 7108
Email: roxanne.smith@jws.com.au
Our Ref: B1299
Doc ID: 66210286.1

12 November 2014

Mr Paul Taliangis
Chief Executive Officer
Core Energy Group
Level 10, 81 Flinders Street
ADELAIDE SA 5000

Dear Sir

ATCO Gas Australia Pty Ltd – ERA Price Determination

We act for ATCO Gas Australia Pty Ltd (**ATCO Gas**) in relation to the Economic Regulation Authority's (**ERA**) review of the Gas Access Arrangement for ATCO Gas under the National Gas Law and Rules for the period July 2014 to December 2019.

As you are aware, on 14 October 2014 the ERA published its Draft Decision on ATCO Gas' Access Arrangement Review Proposal. ATCO Gas wishes to engage you to prepare an expert report in connection with the ERA's Draft Decision.

This letter sets out the matters which ATCO Gas wishes you to address in your report and the requirements with which the report must comply.

Terms of Reference

Legal Framework

A fundamental aspect of the Access Arrangement review and the Draft Decision is the ERA's assessment of the efficiency of proposed expenditure.

In this context the following provisions of the National Gas Rules are of note:

Rule 74 provides:

- (1) Information in the nature of a forecast or estimate must be supported by a statement of the basis of the forecast or estimate.*
- (2) A forecast or estimate:*

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- (a) *must be arrived at on a reasonable basis; and*
- (b) *must represent the best forecast or estimate possible in the circumstances.”*

Rule 75 provides:

“Information in the nature of an extrapolation or inference must be supported by the primary information on which the extrapolation or inference is based.”

Opinion

Your report is prepared in the context of assessing whether ATCO Gas is an efficient operator.

ATCO Gas wishes to engage you to prepare an expert report:

- 1 updating the independent forecast of gas demand for the Mid-West and South-West Gas Distribution System for the calendar year period 2014 to 2019 previously prepared by you for ATCO Gas in January 2014 with any further data that has become available since that time; and
- 2 providing your comments on the ERA’s comments in the Draft Decision regarding appropriate assumptions and forecasts in relation to the forecast average consumption for:
 - (a) new B2 and B3 customers; and
 - (b) all B2 and B3 customers.

It is intended that your report will be submitted by ATCO Gas to the ERA with its response to the Draft Decision. The report may be provided by the ERA to its own advisers. The report must be expressed so that it may be relied upon both by ATCO Gas and by the ERA.

The ERA may ask queries in respect of the report and you will be required to assist in answering these queries. The ERA may choose to interview you and if so, you will be required to participate in any such interviews.

The report will be reviewed by ATCO Gas’ legal advisers and will be used by them to provide legal advice as to its respective rights and obligations under the National Gas Law and National Gas Rules.

If ATCO Gas was to challenge any decision ultimately made by the ERA, that appeal will be made to the Australian Competition Tribunal and your report will be considered by the Tribunal. ATCO Gas may also seek review by a court and the report would be subject to consideration by such court. You should therefore be conscious that the report may be used in the resolution of a dispute between the ERA and ATCO Gas. Due to this, the report will need to comply with the Federal Court requirements for expert reports, which are outlined below.

Timeframe

ATCO Gas’ response to the Draft Decision must be submitted by **25 November 2014**. Your report will need to be finalised by 18 November 2014.



Compliance with the Code of Conduct for Expert Witnesses

Attached is a copy of the Federal Court's Practice Note CM 7, entitled "*Expert Witnesses in Proceedings in the Federal Court of Australia*", which comprises the guidelines for expert witnesses in the Federal Court of Australia (**Expert Witness Guidelines**).

Please read and familiarise yourself with the Expert Witness Guidelines and comply with them at all times in the course of your engagement by ATCO Gas.

In particular, your report should contain a statement at the beginning of the report to the effect that the author of the report has read, understood and complied with the Expert Witness Guidelines.

Your report must also:

- 1 contain particulars of the training, study or experience by which the expert has acquired specialised knowledge;
- 2 identify the questions that the expert has been asked to address;
- 3 set out separately each of the factual findings or assumptions on which the expert's opinion is based;
- 4 set out each of the expert's opinions separately from the factual findings or assumptions;
- 5 set out the reasons for each of the expert's opinions; and
- 6 otherwise comply with the Expert Witness Guidelines.

The expert is also required to state that each of the expert's opinions is wholly or substantially based on the expert's specialised knowledge.

It is also a requirement that the report be signed by the expert and include a declaration that "*[the expert] has made all the inquiries that [the expert] believes are desirable and appropriate and that no matters of significance that [the expert] regards as relevant have, to [the expert's] knowledge, been withheld from the report*".

Please also attach a copy of these terms of reference to the report.

Terms of Engagement

Your contract for the provision of the report will be directly with Johnson Winter & Slattery. Please forward us any terms you propose govern that contract and your fee proposal.

Please sign a counterpart of this letter and return it to us to confirm your acceptance of the engagement.

Yours faithfully

Johnson Winter & Slattery

Enc: **Federal Court of Australia Practice Note CM 7, "Expert Witnesses in Proceedings in the Federal Court of Australia"**


.....
Signed and acknowledged by Paul Taliangis

Date 18 November 2014

Attachment 2: Expert Credentials

In accordance with Practice Note CM7¹⁰ – Expert Witness in Proceedings in the Federal Court of Australia at 2.1(c), the following is a summary of the relevant training, study or experience by which Paul Taliangis has gained specialised knowledge.

Tertiary Qualifications

- Bachelor of Economics
- Post graduate Diploma in Accounting
- Member Institute of Chartered Accountants in Australia
- Various national and international intensive management development courses

General Professional Experience

In excess of 30 years of commercial/ business experience focused primarily in the areas of Corporate Finance and Energy, at a national and international level.

- Chartered Accounting – 6 years experience with Price Waterhouse – Australia and New Zealand
- Banking – 3 years experience with State Bank Group
- Management Consulting – 3 years experience with Ernst and Young Consulting
- Gas Industry – 8 years experience with Santos Limited – Australia, UK and USA
- Energy Advisory – 11 years as CEO and owner of Core Energy Group

Core Competencies

- Core competencies include:
- Research and analysis across all major segments of the Australian energy value chain
- Strategic analysis of Australian gas markets - Western, Northern and Eastern Australia and LNG
- Corporate strategy formulation and execution
- Demand forecasting and scenario analysis – at macro and micro levels
- Valuation of assets and companies
- Mergers, Acquisitions and Divestitures
- Investment decisions
- Portfolio Management

Overview of Gas Sector Experience

Introduction

In excess of 20 years experience in the Australian and international gas sector:

- Manager of Corporate Development, Santos Limited – responsibility for decision-making support relating to large scale investment projects including gas assets, gas companies, joint venture interests – covering Australia (west north and east), PNG, Asia, USA, UK.
- Manager Corporate Planning, Santos Limited – responsibility for group-wide planning including industry analysis (full value chain), strategy, competitor analysis, portfolio management and valuation.
- Founder and Chief Executive of Core Energy Group – a niche energy advisory firm with a particular focus on the Australian and international gas and LNG sectors. Service areas include strategic analysis, corporate finance and transactions.

¹⁰ Effective 3 June 2013

Relevant Specific Experience

Focus Area	Experience
Independent Expert/Witness	<p>A variety of independent expert roles covering:</p> <ul style="list-style-type: none"> > Gas contract disputes > Gas price reviews – east and western Australia > Gas demand – electricity, industrial, distribution, transmission > Drilling activity (LNG) > Gas processing plants > Gas storage > International LNG
Demand forecasting, modelling and scenario analysis	<p>Development of models and analytical tools, forecasts and demand scenarios along the gas sector value chain:</p> <ul style="list-style-type: none"> > Exploration and production; > Transmission; > Distribution; > Electricity generation; > Retailing; and > Liquefaction (LNG) <p>The following paragraphs address these areas in further detail</p>
Gas Distribution	<p>Access Arrangements</p> <ul style="list-style-type: none"> > WA – ATCO > NSW – Jemena > VIC – Envestra > SA – Envestra > ACT – Actew <p>General</p> <ul style="list-style-type: none"> > Demand forecasting, modeling and scenario analysis covering all Australian networks > Valuation of the majority of gas distribution companies and assets in Australia for a variety of purposes including acquisition evaluation, equity investment and takeover defence > Acquisition of Wagga Gas Network from NSW Government
Gas Transmission	<p>Development of gas demand scenarios for major transmission systems:</p> <ul style="list-style-type: none"> > South West Queensland > Roma Brisbane > Moomba Sydney > EGP > Moomba Adelaide > SEAGas > Tasmania > QCLNG transmission line
Gas Exploration and Production	<p>Development of contracted and potential demand and supply scenarios:</p> <ul style="list-style-type: none"> > Cooper Basin: SA and SWQ JV; unconventional gas (shale, coal seam, tight gas) > Gippsland Basin: Gippsland Basin JV > Otway Basin: Minerva, Thylacine-Geographe, Casino > Surat/Bowen Basins: all major Queensland coal seam gas fields > WA Basins: NWS Domgas, John Brookes, Gorgon, Wheatstone, Pluto > LNG – NWS JV, Gorgon, Pluto, Ichthys, Wheatstone, GLNG, APLNG, QCLNG, Darwin LNG