



DRAFT DECISION
ActewAGL Distribution
Access Arrangement
2016 to 2021

Attachment 13 – Demand

November 2015

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Note

This attachment forms part of the AER's draft decision on ActewAGL Distribution's access arrangement for 2016–21. It should be read with all other parts of the draft decision.

The draft decision includes the following documents:

Overview

Attachment 1 - Services covered by the access arrangement

Attachment 2 - Capital base

Attachment 3 - Rate of return

Attachment 4 - Value of imputation credits

Attachment 5 - Regulatory depreciation

Attachment 6 - Capital expenditure

Attachment 7 - Operating expenditure

Attachment 8 - Corporate income tax

Attachment 9 - Efficiency carryover mechanism

Attachment 10 - Reference tariff setting

Attachment 11 - Reference tariff variation mechanism

Attachment 12 - Non-tariff components

Attachment 13 - Demand

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Shortened forms

Shortened form	Extended form
AA	Access Arrangement
AAI	Access Arrangement Information
AER	Australian Energy Regulator
ASA	Asset Services Agreement
ATO	Australian Tax Office
capex	capital expenditure
CAPM	capital asset pricing model
CCP	Consumer Challenge Panel
CESS	Capital Expenditure Sharing Scheme
CMF	construction management fee
CPI	consumer price index
DAMS	Distribution Asset Management Services
DRP	debt risk premium
EBSS	Efficiency Benefit Sharing Scheme
EIL	Energy Industry Levy
ERP	equity risk premium
Expenditure Guideline	Expenditure Forecast Assessment Guideline
gamma	Value of Imputation Credits
GSL	Guaranteed Service Level
GTA	gas transport services agreement
ICRC	Independent Competition and Regulatory Commission
MRP	market risk premium
NECF	National Energy Customer Framework
NERL	National Energy Retail Law
NERR	National Energy Retail Rules
NGL	national gas law
NGO	national gas objective
NGR	national gas rules
NPV	net present value
opex	operating expenditure

Shortened form	Extended form
PFP	partial factor productivity
PPI	partial performance indicators
PTRM	post-tax revenue model
RBA	Reserve Bank of Australia
RFM	roll forward model
RIN	regulatory information notice
RoLR	retailer of last resort
RSA	Reference Service Agreement
RPP	revenue and pricing principles
SLCAPM	Sharpe-Lintner capital asset pricing model
STTM	Short Term Trading Market
TAB	Tax asset base
UAFG	Unaccounted for gas
UNFT	Utilities Network Facilities Tax
WACC	weighted average cost of capital
WPI	Wage Price Index

13 Demand

This attachment sets out our assessment of the demand forecasts for ActewAGL for the 2016–21 access arrangement period. Demand is an important input into the derivation of ActewAGL's reference tariffs. It affects operating expenditure (opex) and capital expenditure (capex) linked to network growth.¹

13.1 Draft decision

Our position in this draft decision is to not approve ActewAGL's proposed demand forecasts.

The forecasts ActewAGL proposed in its access arrangement proposal were prepared by Core Energy. Our review of those forecasts has identified concerns with the forecasting method and assumptions that Core Energy has used to forecast new residential connection numbers and tariff V residential and commercial consumption per connection. We are not satisfied that these forecasts comply with the NGR. They have not been arrived at on a reasonable basis and are not the best estimates in the circumstances.²

We have developed alternative demand forecasts that we consider address these concerns and comply with the NGR. We have used these alternative demand forecasts in this draft decision. These forecasts are set out in [Table 13.1](#) and [Table 13.2](#). In particular, they result in:

- on average, 2600 forecast new estate and new medium density/high rise connections in the 2016–21 period (a reduction of 31.9 per cent from ActewAGL's proposed 3816 for those connection types)
- forecast consumption per connection of –3.57 per cent for all residential customers, compared to Core Energy's estimate of –4.52 per cent
- forecast consumption per connection of –3.62 per cent for all commercial customers, compared to Core Energy's estimate of –2.83 per cent.

Our alternative estimate for Tariff V business connection numbers also reflects updated GSP forecasts for 2015–16.³

We are satisfied that ActewAGL's Tariff D demand forecasts comply with the NGR.

¹ Our draft decisions on ActewAGL's capex and opex are set out in attachments 6 and 7 to this draft decision.

² NGR, r. 74(2).

³ ACT Government, *2015–16 Budget Paper, Chapter 1: Economic Performance, Outlook and Strategy*.

Table 13.1 Draft decision on consumption and consumption per connection for tariff V and tariff D

	2016–17	2017–18	2018–19	2019–20	2020–21
Tariff V total consumption					
Residential	4,795,633	4,673,937	4,574,659	4,494,840	4,419,827
Commercial	1,455,376	1,438,401	1,414,171	1,403,759	1,402,929
Tariff V consumption per connection					
Existing Residential	-	-	-	-	-
New E-to-G	-	-	-	-	-
New Estates	-	-	-	-	-
New Med Density	-	-	-	-	-
<i>Total Residential^a</i>	34.84	33.39	32.15	31.05	30.06
Existing commercial	-	-	-	-	-
New commercial	-	-	-	-	-
<i>Total commercial^a</i>	414	398	380	366	355
Tariff D total consumption					
MDQ	7,951	7,956	8,201	8,206	8,211
ACQ (GJ)	1,185,399	1,185,769	1,231,356	1,231,764	1,232,191

Source: AER analysis.

Notes: (a) This excludes the downward adjustment of –5.58GJ per annum for the new medium-density/high-rise dwellings, reflecting the impact of the Gas Service and Installation Rules Code and Gas Network Boundary Code Amendment introduced in 2013.
(b) This adjusts for tariff D movements.

Table 13.2 Draft decision on total connections, new connections and disconnection numbers

	2016–17	2017–18	2018–19	2019–20	2020–21
Total connections					
Residential	137,921	140,388	142,815	145,438	147,837
Commercial	3,572	3,680	3,792	3,907	4,025
Tariff D	40	40	40	40	40
New connections					
Existing connections from FY2014	128,406	127,436	126,451	125,664	124,862
Electricity to gas ^a	768	768	768	768	768
New estates	2,073	1,988	1,936	1,936	1,796
Medium/high density	539	681	707	707	637
Commercial	84	126	129	132	136
Disconnections					
Residential	957	971	984	787	802
Commercial	17	17	17	17	17
Tariff D to tariff V movement	3	3	3	3	3
Tariff V to tariff D movement	4	4	4	4	4

Source: AER analysis.

Notes: ^(a) this is based on an average over 2010–2014, instead of 2019–14 (used by Core Energy) to be consistent with the review period we have used for other new connection types and disconnections.

13.2 AER's assessment approach

The NGR require a full access arrangement proposal for a distribution pipeline to include usage of the pipeline over the earlier access arrangement period showing:

- minimum, maximum and average demand; and customer numbers in total and by tariff class⁴
- to the extent that it is practicable to forecast pipeline capacity and utilisation of pipeline capacity over the access arrangement period, a forecast of pipeline capacity and utilisation of pipeline capacity over that period and the basis on which the forecast has been derived.⁵

⁴ NGR, r. 72(1)(a)(iii).

⁵ NGR, r. 72(1)(d).

The NGR also require that forecasts and estimates:⁶

- are arrived at on a reasonable basis
- represent the best forecast or estimate possible in the circumstances.

We consider that there are two important considerations in assessing whether demand forecasts are arrived at on a reasonable basis and whether they represent the best forecasts possible in the circumstances.⁷ These are:

- the appropriateness of the forecast methodology – this involves consideration of how the demand forecast has been developed and whether or not relevant factors have been taken into account.
- the application of the forecasting methodology – this involves consideration of the accuracy of data and assumptions on each of the input parameters.

To determine whether ActewAGL's proposed demand forecasts are arrived at on a reasonable basis and are the best possible forecasts in the circumstances, we reviewed the data used by Core Energy to implement the forecasting methodology. We also reviewed:

- information provided by ActewAGL as part of its proposed access arrangement; specifically, its consultants' report on demand forecasts, demand forecast spreadsheets, access arrangement information and responses to the regulatory information notice (RIN)
- additional information provided by ActewAGL in response to our information requests.

13.2.1 Interrelationships

We have considered the relevant interrelationships between different components of ActewAGL's access arrangement as part of our analysis.

Several interrelationships exist. This includes the effect of forecast demand on the efficient amount of capex and opex and tariffs in the 2016–21 access arrangement period. In particular, the demand forecasts impact:

- approved connections capex, given the number of new connections affects the amount of approved connections capex
- the following opex items:
 - unaccounted Gas (UAG) expenditure, which is forecast as a fixed proportion of the forecast of total throughput⁸

⁶ NGR, r. 74(2).

⁷ NGR, r. 74(2).

⁸ ActewAGL, *2016–21 Access Arrangement Information*, June 2015, p. 24.

- Utilities Network Facilities Tax (UNFT) is charged on ‘total service length’, given ActewAGL’s forecast of total services length is based on the forecast growth in customer numbers⁹
- Energy Industry Levy (EIL), which is based partly on forecast consumption¹⁰
- output growth rate, given the variables that constitute the opex rate of change, namely the number of total connections and the gas demand (consumption), is used to determine the change in outputs. This is an element of the rate of change which is applied to the base opex
- tariff prices, given they depend on forecast demand (consumption) per connection. Changes in these forecasts will change tariff prices. In simple terms, tariff prices are determined by cost divided by quantity (where quantity is measured by demand per connection). This means that an increase in forecast quantity has the effect of reducing the tariff price.

13.2.2 Minimum, maximum and average demand

The NGR require that ActewAGL’s access arrangement information (AAI) must include minimum, maximum and average demand for the earlier access arrangement period.¹¹ We consider that ActewAGL’s AAI satisfies the requirements of the NGR, including the breakdown of its total customer numbers by tariff class.¹²

13.2.3 Forecast pipeline capacity and utilisation

The NGR require that to the extent practicable, the AAI should include forecast pipeline capacity and utilisation of pipeline capacity over the access arrangement period.¹³ ActewAGL did not provide this information and submitted that:¹⁴

This part of Rule 72 is difficult to interpret in the context of a distribution network because a distribution network is made up of a meshed network of interconnected pipes. Due to a number of practical considerations, the calculation of utilisation is not straightforward and it is thus not practicable to provide forecasts of capacity and utilisation in this case.

We recognise the practical considerations which mean that calculating capacity is not straightforward.

⁹ ActewAGL, *2016–21 Access Arrangement Information*, June 2015, p. 24.

¹⁰ ActewAGL, *2016–21 Access Arrangement Information*, June 2015, p. 24.

¹¹ NGR, r. 72(1)(a)(iii)(A).

¹² NGR, r. 72(1)(a)(iii); ActewAGL, *2016–21 Access Arrangement Information, Attachment 3*, June 2015, p. 10. ActewAGL, *2016–21 Access Arrangement Information, Attachment 3*, June 2015, pp. 10 and 11; ActewAGL AA RIN (CONFIDENTIAL)XLSM.

¹³ NGR, r. 72(1)(d).

¹⁴ ActewAGL, *2016–21 Access Arrangement Information, Attachment 3*, June 2015, pp. 8 and 9.

13.3 Reasons for draft decision

Our position in this draft decision is to not approve ActewAGL's proposed Tariff V demand forecasts. We do not consider they comply with the NGR.¹⁵ In particular, we do not consider that ActewAGL's proposed Tariff V demand forecasts have been arrived at on a reasonable basis or that they are the best estimates in the circumstances. This arises from our concerns about ActewAGL's:

- methodology and the assumptions it has made to forecast number of new connections in new dwellings (new estates and new medium density/high rise); and
- methodology to forecast consumption per connection for residential and business customers.

13.3.1 Forecast tariff V residential new connections

Residential connections are separated into three connection types:

- existing customers
- 'E to G' customers, which are customers that switch from a pure electricity household to one which is also connected to gas
- new dwellings (connections), which comprises new estates and medium density/high rise buildings.

Core Energy's Tariff V residential connections forecasts are based on base year 2015 customer numbers and add new connections and remove disconnections. Core Energy has also applied different forecast methods to estimate connection numbers for each connection type. Our main concern is with Core Energy's methodology and the assumptions it has made to derive new dwellings (new residential connections). As noted above, forecast new connection numbers are a key driver of connections capex.

Methodology to forecast new residential connections

Core Energy estimates new residential connections as follows:

1. To reflect additional new dwellings forecast in Queanbeyan and Palerang which is serviced by ActewAGL, the Housing Industry Association (HIA) housing starts for the ACT were obtained and scaled by 15.8 per cent.¹⁶
2. To forecast new dwellings within the ActewAGL network region, ActewAGL assumed that its network reaches 100 per cent of the population, i.e. that ActewAGL network will pass all new dwellings.

¹⁵ NGR, r. 74(2).

¹⁶ The upscale factor is 15.8, calculated as $1/(1-0.137) - 1$. We note that Core Energy indicates that the upscale factor is 13.7 per cent. It is 13.7 per cent across all three regions, so relative to the ACT region, the share is 15.8 per cent.

3. ActewAGL applied a gas connection rate of 90 per cent to forecast future new gas connections.
4. Additional new dwellings connections are reapplied to the new dwellings connections forecast during 2018 to 2020 to account for new homes built as part of the Mr Fluffy buy-back scheme. The scheme involves the buyback and demolition of around 1021 houses contaminated with loose fill asbestos. ActewAGL submitted that it is expected that the phased demolition of the 1021 homes will occur over three years from 2017.

Our assessment is that ActewAGL's assumption of a 90 per cent gas connection rate is not the best estimate of future new gas connections. We arrived at this position by comparing ActewAGL's forecast new connections, and assumed gas connection rate over the 2016–21 access arrangement period against a number of alternative data sources.

We also consider that ActewAGL's assumed number of new connections to be reconnected as part of the Mr Fluffy buyback scheme is overstated.

We discuss our reasons below.

Gas connection rate

A number of submissions raised concerns about ActewAGL's proposed 90 per cent gas connection rate. The Alternative Technologies Association submitted that this rate is unsubstantiated.¹⁷ The CCP made a similar submission, and also noted that this high penetration rate is at odds with evidence that gas is a fuel of choice and fewer households are choosing to connect to gas. The CCP recommended that we review this take-up rate.¹⁸

We note that the 90 per cent gas connection rate is not based on actual historical connections. Instead, it is measured as the total number of houses with gas divided by the total number of blocks within the ACT as at 5 September 2014.¹⁹ We consider that this method overestimates the penetration rate given there can be several houses as well as medium density/high rise properties on a block of land.

We compared Core Energy's 90 per cent assumed gas connection rate for future gas connections to three data series. Each comparison demonstrated that a 90 per cent penetration rate is an overestimate. Specifically:

- using historical connections data from Core Energy's demand model, new dwelling gas connections as a proportion of HIA new dwellings ranges between 49 to 71 per cent over 2010–11 to 2013–14;

¹⁷ Alternative Technologies Association, *Submission to the AER on ActewAGL's access arrangement proposal*, 10 August 2015, p. 7.

¹⁸ Consumer Challenge Panel sub-panel 8, *Advice to AER from the Consumer Challenge Panel sub-panel 8 regarding the ActewAGL Distribution (AAD) Access Arrangement (AA) 2016–2021 Proposal*, 26 August, p. 11.

¹⁹ AER, *Info request to ActewAGL no.16*, 31 July 2015, p. 1.

- using the historical data from the capex unit rate model, new dwelling connections as a proportion of HIA new dwellings ranges between 50 to 69 per cent over 2010–11 to 2013–14;²⁰ and
- the latest ABS statistics indicate that 67.9 per cent of all households in the ACT were connected with gas in 2014, down from 74.6 per cent from 2011.²¹

We alerted ActewAGL about our concerns and the alternative estimates. ActewAGL indicated that their 'revised proposal will take into account the AER's draft decision regarding the use of actual historical data to develop penetration rates for both new estate and medium density/rise (sic) forecast new connections. This will be explored through the update of Core Energy's demand forecast model.'²²

As we consider that forecast new connections for new estate and medium density/high rise dwellings based on Core Energy's methodology and assumptions are not the best estimates in the circumstances, we have derived alternative estimates.

Alternative estimates

We have derived our alternative estimates for new connections in new estates and MD/HR over the 2016–21 access arrangement period by applying:

- the difference in the HIA forecast growth rate for each year from its four year historical average (2010–11 to 2013–14) to
- the four year average (2010–11 to 2013–14) of historical new dwelling connections.

Table 13.3 sets out the HIA data that we used. In all of the forecast years, there is a significant decline in the number of new dwellings forecast relative to the four year average. The average decline is 26.2 per cent. This is driven by a decline in multi-units, with an average decline of 43.2 per cent.

²⁰ This calculation is for all the three regions relative to new housing in the ACT. So it overstates the gas connection rate, which is between 48 percent to 66 per cent for the ACT.

²¹ ABS, *Environmental Issues: Energy Use and Conservation*, Catalog number 4602.0.55.001, March 2014 and March 2011 issues.

²² AER, *Info request to ActewAGL*, no. 33, 22 September 2015, p. 2.

Table 13.3 HIA actual and forecast data for the ACT

HIA actual and forecast data	2010-11-2013-14 average (actual)	2014-15	2015-16	2016-17	2017-18	2018-19
Number of dwellings						
Houses ('000)	1.76	1.57	1.78	2.02	1.80	1.75
Multi-units ('000)	2.85	1.74	1.45	1.48	1.68	1.75
Total	4.61	3.31	3.23	3.50	3.48	3.50
Percentage change of HIA forecast from 2010-11 to 2013-14 average						
Houses (% change)		-11%	1%	15%	2%	-1%
Multi-units (% change)		-39%	-49%	-48%	-41%	-39%
Total (% change)		-28%	-30%	-24%	-25%	-24%

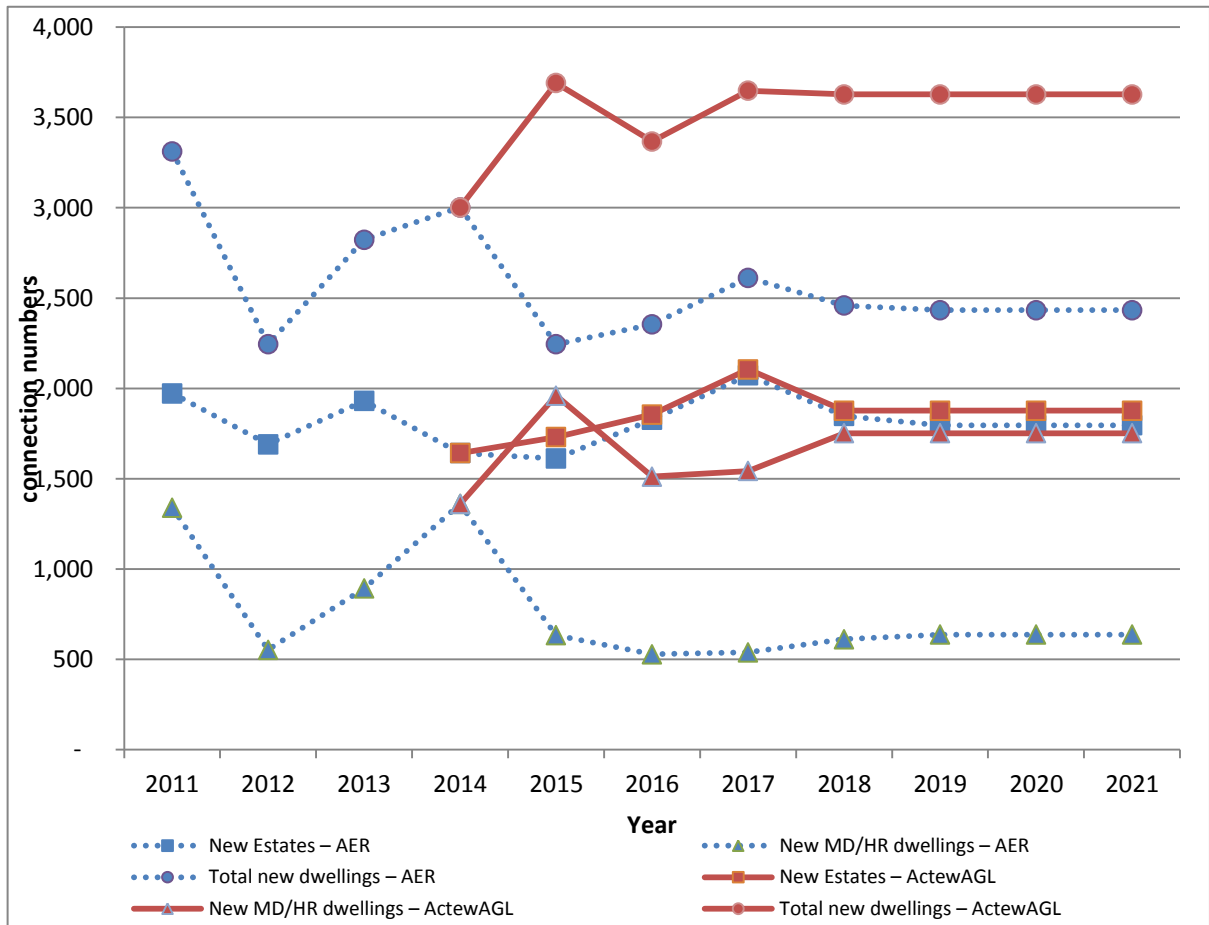
Source: Housing Industry Association, *New Housing Outlook, HIA Housing Forecasts – May 2015, Dwelling starts: by State and Territory, May 2015.*

These results are inconsistent with ActewAGL’s proposed forecast that the average annual number of connections will increase by 27 per cent over the 2016–21 access arrangement period due to an increase in new medium density/high rise connections. ActewAGL also proposed that the average medium-density/high-rise connection number will increase by 61 per cent from 1 097 to 1 771 per year (comparing 2010–16 to 2016–21).²³ Our alternative estimate is instead based on the average medium density connection being 654 over the 2016–21 access arrangement period.

Figure 13.1 compares our alternative estimate and ActewAGL’s proposal for total new dwellings, new medium density and new estates. The most significant difference concerns the forecasts for new connections for medium density/high rise dwellings. In particular, ActewAGL forecasts a major increase in this type of new connections, while we forecast a decline, consistent with the decline in HIA’s forecast relative to its four year historical average. In effect, we assume an average gas connection rate of 62 per cent for connections with new dwellings, compared to ActewAGL’s rate of 90 per cent. We consider that our forecast is the best estimate in the circumstances, as it relies on actual historical data and HIA forecasts.

²³ AER, *Info request to ActewAGL no. 23*, 13 August 2015, p. 2.

Figure 13.1 ActewAGL’s and our alternative forecast for new dwelling (new estate and medium density/high rise) connections



Source: AER analysis and information request to ActewAGL number 23, 13 August 2015.

Notes: Does not include forecast connections to account for the 'Mr Fluffy' program.

Mr Fluffy buy back scheme

Core Energy forecasts that 919 dwellings will reconnect to ActewAGL’s network to account for new homes built as part of the Mr Fluffy buy-back scheme. This forecast assumes a gas connection rate of 90 per cent. For the reasons discussed above, this gas connection rate is not the best estimate in the circumstances.

Our alternative estimate is that 630 dwellings will reconnect to ActewAGL’s network. This is based on our alternative estimate of the gas connection rate of 62 per cent over the 2016–21 access arrangement period. As noted above, our alternative estimate of the gas connection rate relies on actual historical data and HIA forecasts which are in our view the best estimate in the circumstances.

Data inconsistencies

As we noted above, we have used the historical data in Core Energy’s demand model to derive our alternative estimate.

We identified a number of data inconsistencies in ActewAGL's historical data series which we raised with them. However, in response ActewAGL while acknowledging these inconsistencies, did not provide further information or supporting data to address these inconsistencies.²⁴

Despite these inconsistencies, we consider that our alternative estimate is the best estimate in the circumstances. We apply the same data series as ActewAGL in deriving our demand forecasts. We also cross-checked our alternate estimates by applying the same methodology to the capex unit rate connections model, which generated similar results. Nevertheless, we invite ActewAGL to address or explain these inconsistencies in its revised access arrangement proposal.

13.4 Tariff V consumption per connection

Core Energy's approach to forecasting Tariff V consumption is to separately forecast consumption per connection and the number of customer connections. Total forecast demand is calculated as the product of the two.²⁵ Appendix A sets out diagrams of the methodology used to derive demand forecasts for Tariff V residential and commercial customers.

Core Energy uses the following methodology to forecast Tariff V residential and commercial consumption per connection:

- Historic demand is normalised to remove the impact of abnormal weather and to derive a per customer forecast based on historic trends (i.e. where demand is primarily a function of demand in the previous year plus a trend factor).²⁶

Based on the information before us, we are satisfied with Core Energy's weather normalisation of the historical data.

- The historical trend is projected forward for each of the following based on an analysis of the change in consumption per connection from 2011 to 2014:
 - residential connection types:
 - incumbent customers (Core Energy refers to these customers as 'existing customers')
 - new dwellings – new estates
 - new dwellings – medium density/high rise (MD/HR)
 - new electricity to gas (E to G) connections

²⁴ The difference in the number of MD/HR connections for 2014–15 which is 1960 in the Core Energy model but is 923 in ActewAGL's AA RIN (Info request to ActewAGL no. 28, 31 August 2015), and a number of connections in the historical series which could not be categorised as a connection type (these are referred to as 'unbalance/unreconciled items in the Core Energy demand model') (Info request to ActewAGL, no. 13, 28 July 2015)

²⁵ Core Energy, *Gas Demand Forecasts, AGN – SA Gas Access Arrangement 2017–21*, June 2015, p. 38.

²⁶ The trend factor is calculated as the historical average annual growth rate.

- commercial connection types:
 - incumbent (Core Energy refers to these customers as ‘existing customers’)
 - new commercial.
- Post-model adjustments are then made to this historic trend for the effects of factors predicted to affect the trend differently in the future. Two post-model adjustments are specifically made; one to take account of forecast changes in the price of gas²⁷ and the other to take account of forecast changes in the price of electricity which may differ from historical changes.²⁸

13.4.1 Methodological error with Core Energy’s forecasting approach

We do not consider that the forecasts for residential and commercial consumption per connection are the best estimates in the circumstances. In particular, we are not satisfied that average annual growth rate applied to the historical trend for residential and commercial consumption per connection results in forecasts that have been arrived at on a reasonable basis.

Table 13.4 sets out Core Energy’s proposed average annual change in consumption per connection as well as our alternative estimate over the forecast period.

²⁷ Using an estimate of own-price elasticity of -0.3 for residential demand per connection and -0.35 for commercial demand per connection.

²⁸ Using an estimate of cross-price elasticity of 0.1 for both tariff classes.

Table 13.4 Consumption per connection – average annual average growth (per cent)

Consumption per connection	Average annual growth (%) 2016-17 to 2020-21	
	Core Energy	AER draft decision
Residential		
Existing	-3.57	
New estate	-3.57	
New medium/high density	-3.57	
New E to G	-3.57	
Total residential (weighted average)	-4.52	-3.57 ^a
Commercial		
Existing	-3.62	
New commercial	-3.62	
Total commercial (weighted average)	-2.83	-3.62

Source: Core Energy, Gas Demand Forecast, *ActewAGL Distribution Access Arrangement 2017 to 2021, June 2015*, p. 38.

Notes: ^(a) In line with Core Energy's forecast, we also further adjust for the reduced average consumption of -5.58 GJ/a for new customers of medium-density/high-rise dwellings due to the impact of the Gas Service and Installation Rules Code and Gas Network Boundary Code Amendment introduced in 2013.

Residential consumption per connection

As table 13.4 shows, ActewAGL applies the average annual growth rate of -3.57 per cent to each of the individual residential customer types.

We consider that applying this overall declining rate to each individual residential connection type has the effect of double counting the reduction in gas consumption at the total residential customer level. This is because:

- Our analysis of Core Energy's model reveals that the calculation of average consumption per consumption for existing customers (at an average annual growth rate of -3.57 per cent) is actually a derivation for total (overall) residential customers. This is because consumption per connection for existing customers is calculated as total consumption divided by total connections, including the new estates, new E to G and new MD/HR connections;
- the overall declining rate (the rate for total residential customers) includes the effect of 'dwelling substitution' – where existing customers with relatively higher consumption (e.g. older houses) are disconnected and replaced with new customers with relatively lower consumption (e.g. new dwellings). As average consumption for new residential connections is lower relative to existing residential connections, the overall declining rate is higher than the rate of decline for existing customers where the latter does not include the substitution effect.

- When applying the overall declining rate that directly accounts for the dwelling substitution effect to each individual connection type, double counting occurs because Core Energy’s forecasting approach accounts for the same dwelling substitution effect via its method of adding new connection types (new MD/HR, new E to G and new estates). As these new customer types have relatively lower consumption, Core Energy’s forecasting approach results in an overstatement of the forecast decline in total residential consumption per connection.²⁹ The double counting is evident in Core Energy’s forecast of a greater declining average annual rate of -4.52 per cent compared to the rate of 3.57 per cent applied to each individual connection type.

To avoid this overstatement, we have applied the overall declining rate, on average being -3.57 per cent per annum, to total residential consumption per connection. We consider that forecasts of consumption based on the average annual change in consumption of -3.57 per cent for all residential customers results in best estimate in the circumstances.

Commercial consumption per connection

The double counting effect also exists in Core Energy’s forecasts for commercial consumption per connection, but it works in the opposite direction.

For commercial connections, the overall rate of decline for commercial customers is -3.62 per cent per annum on average. In contrast to the residential group, applying the overall declining rate to both existing and new commercial connection types *understates* the rate of decline. This is because in this case, new connections that are added, have a higher average consumption than existing customers.

To avoid this double counting, we have applied an overall declining rate of -3.62 to total commercial consumption per connection. We consider that forecasts of consumption based on average annual change in consumption of -3.62 per cent for all commercial customers results in best estimate in the circumstances.

While we note that it can be conceptually better to use growth rates applicable to individual customer types, due to the lack of reliable historical data available to us, we have not calculated alternative different growth rates for each connection type. To the extent it is relevant in setting reference tariffs, we invite ActewAGL to provide forecasts of consumption per connection at the individual connection level.³⁰

²⁹ Core Energy applies a cumulative new connections method to forecasting. That is, starting from 2015, ‘existing’ connections continue to fall (as these connections are forecast as existing connections net of disconnections), while new connections accumulate over time. It applies the observed overall growth rate to each individual connection type.

³⁰ For the purposes of setting reference tariffs in the draft decision, for one new tariff category VRB -Boundary metered with gas heating and cooking tariff), we have assumed the same growth rate across connection types which gives an overall decline rate of -3.57 per cent annum.

13.5 Revisions

We require the following revisions to make the access arrangement proposal acceptable:

Revision 13.1: Make all amendments necessary to reflect our draft decision on demand, as set out in Table 13.1 and Table 13.2.