



FINAL DECISION
Jemena Gas Networks (NSW)
Ltd
Access Arrangement 2015-20

Attachment 13 – Demand

June 2015

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Note

This attachment forms part of the AER's final decision on Jemena Gas Networks' 2015–20 access arrangement. It should be read with other parts of the final decision.

The final 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
AER	Australian Energy Regulator
capex	capital expenditure
CAPM	capital asset pricing model
CCP	Consumer Challenge Panel
Code	National Third Party Access Code for Natural Gas Pipeline Systems
CPI	consumer price index
DRP	debt risk premium
ERP	equity risk premium
JGN	Jemena Gas Networks (NSW) Ltd (ACN 003 004 322)
MRP	market risk premium
NGL	national gas law
NGO	national gas objective
NGR	national gas rules
opex	operating expenditure
PPI	partial performance indicators
PTRM	post-tax revenue model
RAB	regulatory asset base
RBA	Reserve Bank of Australia
RFM	roll forward model
RIN	regulatory information notice
RPP	revenue and pricing principles
SLCAPM	Sharpe-Lintner capital asset pricing model
WACC	weighted average cost of capital

13 Demand

This attachment sets out the AER's assessment of the demand forecasts for Jemena Gas Networks (JGN) for the 2015-20 access arrangement period. Demand is an important input into the derivation of JGN's reference tariffs. It also affects operating expenditure (opex) and capital expenditure (capex) linked to network growth.¹

13.1 Final decision

We do not approve the proposed demand forecasts set out in JGN's revised proposal as we are not satisfied that they comply with rule 74(2) of the NGR. JGN relied upon forecasts prepared by Core Energy. JGN also engaged HoustonKemp and Frontier Economics to review Deloitte Access Economics' (DAE) (our consultant's) methodology and forecasts for tariff V customers.²

Based on information provided in JGN's revised proposal and advice from DAE, we now accept some assumptions used by Core Energy (submitted in JGN's initial proposal and submitted again in its revised proposal) to estimate JGN's demand forecasts for the 2015-20 period. In particular, we have accepted, in forecasting consumption per customer, the application of a time series (or linear trend) approach as a starting point to estimate consumption per customer. In our draft decision, we considered that a structural approach (or an econometrics approach) would result in a better estimate of forecast demand.³ In light of this, the remaining issue we have with JGN's forecast demand relates to an adjustment to the linear trend to take account of exogenous factors (post-model adjustment).

As we do not agree with all of the post-model adjustments made by JGN, we do not consider that JGN's forecasts of consumption per customer are the best estimates possible in the circumstances. Our post-model adjustment results in increases to annual consumption per customer, from JGN's revised proposal of:

- Up to 2.6 per cent for residential customers
- Up to 3.7 per cent for small business customers
- Up to 2.2 per cent for tariff V industrial and commercial (I&C) customers.

We also do not agree with JGN's forecast small business connections as we agree with DAE that JGN's forecast is high when compared to their historical levels. We also consider that Core Energy's assumption that over the access arrangement period, 48.8 per cent of new dwellings will be new estate connections and 51.2 per cent will be medium/high density connections was not arrived at on a reasonable basis. We agree

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

² HoustonKemp, *Review of Gas Consumption Forecasting Methodology*, February 2015; Frontier Economics, *Gas Consumption forecasts for JGN's Tariff V customers*, February 2015.

³ AER, Draft Decision, Jemena Gas Networks (NSW) Ltd, Access arrangement 2015-2020, Attachment 13 - Demand, p. 13-12 – 13-13.

with DAE that a 45 and 55 per cent allocation respectively for new estate and medium/high density connections produces a better estimate in the circumstances.⁴

As in our draft decision, we accept JGN's Tariff D connections forecast.⁵

Our alternative demand forecasts are set out in Table 13-1 and Table 13-2 below. These demand forecasts have been used as inputs into our final decision. We have made all revisions necessary to give effect to this final decision in the *Approved Access Arrangement JGN's NSW gas distribution networks 1 July 2015 - 30 June 2020* (June 2015).⁶

Table 13-1 AER final decision on consumption

	2015–16	2016–17	2017–18	2018–19	2019–20
Tariff V (consumption per connection)					
Existing Residential	19.35	18.79	18.52	18.22	18.00
New E-to-G	11.37	11.04	10.88	10.70	10.58
New Estates	17.35	16.85	16.60	16.33	16.14
New Med Density	15.82	15.37	15.14	14.89	14.72
Total Residential	19.22	18.56	18.19	17.81	17.52
Small Business	206.09	196.08	189.74	182.14	173.99
I&C (Adjusted for Tariff Switching)	468.85	415.19	408.02	397.56	385.36
Tariff D (total consumption)					
ACQ	48,622,030	48,465,714	47,627,204	46,947,725	46,284,667
MDQ	278,995	276,777	272,291	269,306	266,932
CD	278,995	276,777	272,291	269,306	266,932

Source: AER analysis.

⁴ Deloitte Access Economics, Gas demand forecast for Jemena Gas Network NSW, 15 May 2015, p25-6.

⁵ AER, Draft Decision, Jemena Gas Networks (NSW) Ltd, Access arrangement 2015-2020, Attachment 13 - Demand, p. 13-17-8.

⁶ NGR, rr. 64(1) & (4).

Table 13-2 AER final decision total connection, new connection and disconnection numbers

	2015–16	2016–17	2017–18	2018–19	2019–20
Total connections					
Residential	1,208,251	1,242,767	1,274,694	1,304,049	1,330,847
Small Business	22,683	23,257	23,848	24,457	25,083
Tariff V I&C	17,183	17,498	17,871	18,259	18,662
Tariff D I&C	409	443	441	441	441
New connections					
Electricity to gas	6,392	6,072	5,951	5,832	5,715
New estates	15,955	15,595	14,565	13,535	12,505
Medium/high density	19,501	19,061	17,802	16,543	15,284
Small business	604	621	639	657	676
Tariff V I&C	380	394	409	424	440
Disconnections					
Residential	6,029	6,213	6,391	6,555	6,706
Small business	45	46	48	49	50
Tariff V I&C	34	35	36	36	37

Source: AER analysis.

13.2 JGN's revised proposal

For its revised proposal, JGN re-engaged Core Energy to review our draft decision and update the demand forecast for current information. In addition to using updated data to forecast demand, Core Energy changed the way in which it has applied the elasticity estimates to the forecast. The changes resulted in an increase in the number of new connections and decrease average use per connection. In response to our draft decision, JGN raised the following concerns with our alternative estimate:⁷

For tariff V consumption per customer:

- the inclusion of a variable to capture future economic activity (e.g. State final demand (SFD) or Gross State Product (GSP)) to forecast demand for residential and I&C customers. JGN submitted that there is no evidence that

⁷ Jemena Gas Networks (NSW) Ltd, 2015-20 Access Arrangement, Response to the AER's draft decision and revised proposal, p. 13.

changes in the level of economic activity affect consumption per customer for these tariff segments.

- an estimate of an electricity/gas cross-price elasticity estimate of 0.05, compared to Core Energy's application of 0.1.
- for small business consumption per customer, the application of a shorter time series (2008-13) due to a structural break, compared to the 2002-13 time series used by Core Energy.

For tariff V connections:

- Our use of the dwelling split for new estate and medium/high density connections of 45 per cent and 55 per cent, respectively. This compares to Core Energy's split of 48.8 per cent and 51.2 per cent.
- the use of a shorter time period (2008-13) due to a structural break in 2008, to forecast small business connections. Core Energy used a 2002-13 time series.
- the use of a shorter time period (2011-13) due to a structural break in 2011, to forecast residential disconnections. Core Energy used a 2002-13 time series.

With the *Clean Energy Act 2011 (Cth)* being repealed since the initial proposal, JGN has accepted that the carbon price should not be included as a factor to forecast demand, which is consistent with our draft and final position.⁸

13.3 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 class⁹
- 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.¹⁰

The NGR also require that forecasts and estimates:¹¹

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

⁸ Jemena Gas Networks (NSW) Ltd, 2015-2020 Access Arrangement, Response to the AER's draft decision and revised proposal, Appendix 3.1 - Demand forecasting report - response to the draft decision, 27 February 2015, p. 37.

⁹ NGR, r. 72(1)(a)(iii).

¹⁰ NGR, r. 72(1)(d).

¹¹ NGR, r. 74(2).

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.¹² 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 JGN'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 re-engaged DAE to review JGN's revised demand forecasts and to assist us in developing alternative demand forecasts where we were not satisfied that forecasts comply with the requirements of the NGR.

In making our final decision, we relied on:

- information provided by JGN as part of its proposed access arrangement; specifically, JGN's consultants' reports on demand forecasts, demand forecast spreadsheets, access arrangement information and responses to the regulatory information notice (RIN)
- additional information provided by JGN in response to our information requests
- reports provided by DAE
- Core Energy's responses to the DAE report
- reports by HoustonKemp and Frontier Economics prepared for JGN.

13.3.1 Interrelationships

We have considered interrelationships in our analysis of the constituent components of our final decision.

Several interrelationships exist in this decision, including the effect of forecast demand on the efficient levels of capex and opex in the access arrangement period. Our demand forecasts will impact our decision on:

- approved connections capex - the number of connections will affect our decision on the approved connections capex allowance.
- the estimate of unaccounted for gas (UAG) expenditure - UAG expenditure, included in opex which scale in accordance with adjustments to consumption, is calculated as consumption multiplied by the UAG rate multiplied by the gas price.

¹² NGR, r. 74(2).

- the opex rate of change - the number of connections and the gas demand (throughput) are variables 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 - tariff prices depend on estimates of per customer consumption and the number of connections. Changes in these forecasts will translate into changed tariff prices. In simple terms, tariff prices are determined by cost divided by quantity, such that an increase in forecast quantity has the effect of reducing the tariff price.

13.4 Reasons for final decision

We do not approve JGN's proposed demand forecasts. We are not satisfied that all assumptions used in JGN's forecasting methodology, and some of the data used, are arrived at on a reasonable basis and represent the best estimate possible in the circumstances.¹³ We consider that the modelling results are consequently not the best estimates in the circumstances. Our reasons are explained below.

13.4.1 Minimum, maximum and average demand

Under the NGR, JGN's access arrangement information must include minimum, maximum and average demand for the earlier access arrangement period.¹⁴ We consider that JGN's access arrangement information satisfies the requirement of rule 72(1)(a)(iii)(A) of the NGR.¹⁵ We also consider that the total customer numbers as shown in the access arrangement information and the breakdown by tariff class as shown in the RIN pro forma satisfy the requirement of rule 72(1)(a)(iii)(B) of the NGR.¹⁶

13.4.2 Forecast pipeline capacity and utilisation

Rule 72(1)(d) of the NGR requires that, to the extent practicable, the access arrangement information should include forecast pipeline capacity and utilisation of pipeline capacity over the access arrangement period. JGN did not provide information on pipeline capacity and utilisation. JGN submitted that:¹⁷

Capacity information for a distribution network is not available or meaningful for a distribution pipeline. The JGN network is a geographically dispersed network made up of interconnected pipes and there are a number of practical considerations governing why the calculation of capacity is not practicable.

We accept that there are a number of practical considerations governing why the calculation of capacity is not straightforward.

¹³ NGR, r.74(2).

¹⁴ NGR, r. 72(1)(a)(iii)(A).

¹⁵ JGN, *2015-20 Access Arrangement Information*, 27 February 2015, p. 18.

¹⁶ JGN, *2015-20 Access Arrangement Information*, 27 February 2015, p. 18; JGN, *2015-20 Access Arrangement Information*, 27 February 2015, Appendix A to the AA RIN response - Regulatory templates (CONFIDENTIAL)XLSM.

¹⁷ JGN, *2015-20 Access Arrangement Information*, June 2014, p. 39.

13.4.3 Forecast of tariff V consumption per customer

Forecasting approach

In summary, Core Energy took the following approach to forecasting gas usage by Tariff V customers:

- Segmenting the tariff V market into residential, small business and Industrial and Commercial (I&C) groups. The residential market was further segmented into existing, new estates, medium density/high rise and electricity to gas customers.
- Historic demand was normalised to remove the impact of 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). As noted in our draft decision, we are satisfied with Core Energy's weather normalisation of the historical data.¹⁸
- This historic trend was then adjusted to reflect:
 - Forecast changes in the price of gas, using an estimate of own-price elasticity.
 - Forecast changes in the price of electricity, using an estimate of cross-price elasticity.

Revised consumption per customer forecasts

After the release of the draft decision, JGN provided us with new actual consumption and connections numbers for 2013-14. DAE re-ran its econometrics model with this updated data. DAE advised that the inclusion of new actual consumption and connections numbers for 2013-14 has materially affected its updated forecasts such that a statistically significant result now no longer exists between forecast demand and some key exogenous variables – own price elasticity and State Final Demand (SFD) for all tariff segments.¹⁹ The addition of the new data point has also meant that for small business consumption per customer, the post-2008 trend is now the same as the pre-2008 trend such that the application of a shorter time series is not justified

Given key explanatory variables in its econometric model with updated data no longer showed statistical significance, DAE has reverted to using a linear trend model as a starting point to estimate consumption per customer. It has then made post-model adjustments which result in differences between its forecasts and JGN's. DAE has made three post-model adjustments to forecast consumption per customer - the inclusion of economy-wide effects to forecast residential consumption per customer, the use of 0.05 cross price elasticity factor (sensitivity of gas consumption per customer to changes in electricity prices) and revising the application of the elasticity

¹⁸ AER, Draft Decision, Jemena Gas Networks (NSW) Ltd, Access arrangement 2015-2020, Attachment 13 - Demand, p. 13-12.

¹⁹ Deloitte Access Economics, Gas demand forecast for Jemena Gas Network NSW, 15 May 2015, p. 16-21.

factor to forecast demand. Our final decision on JGN's forecast demand applies the third post-model adjustment. Our reasons for applying this adjustment as well as not applying the others advised by DAE are discussed below.

Future economy-wide effects

Our forecast for consumption per customer for all tariff segments does not take account of future economy-wide effects.

We note that DAE has made a post-model adjustment to residential consumption per customer to take account of the effect of future economic activity. DAE advised that it expects that household income drives residential consumption, rather than Gross State Product and SFD and therefore re-ran its econometrics model with household disposable income as an explanatory variable and found this to be statistically significant. DAE therefore made a post-model adjustment to the baseline forecast, using DAE's forecasts for the NSW wage price index over 2015-20 as a proxy for household disposable income.²⁰ While we agree in principle with DAE's view that future economic activity is likely to have an effect on forecast demand, we consider that in this case, based on the information before us, the likely impact of future economic activity through the use of the household income proxy is unclear, and therefore have not included the impact of future economic activity in our forecast for residential consumption per customer.

For small business and I&C consumption per connection, DAE advised that upon the inclusion of a new data point, the strength of the downward trend in 2014 small business and I&C consumption per connection was stronger than prevailing economic conditions would have indicated.²¹ Thus, DAE has not made a post model adjustment to consumption per customer for these tariff segments to take account of future economic activity. Given the absence of evidence in DAE's modelling to suggest the relevance of SFD in forecasting demand, we agree with DAE's conclusion that no post model adjustment be made to take account of future economy-wide effects on forecast small business and I&C consumption per connection.

Elasticity effects

Our forecast for consumption per customer for all tariff segments uses Core Energy's proposed cross price elasticity of 0.1. However, we have made an adjustment to apply Core Energy's original rather than its revised approach of taking account of elasticity factors on gas demand.

Core Energy applied a cross price elasticity factor of 0.1, which implies that a one per cent increase in electricity prices leads to a 0.1 per cent increase in per customer consumption of gas.²² It included this on the basis that there is an expected significant

²⁰ Deloitte Access Economics, Gas demand forecast for Jemena Gas Network NSW, 15 May 2015, p.35-8.

²¹ Deloitte Access Economics, Gas demand forecast for Jemena Gas Network NSW, 15 May 2015, p. 21.

²² JGN, 2015-20 Access Arrangement Information, 30 June 2014, Appendix 5.1: Demand forecasting report p. 91.

widening in the price differential between gas and electricity over the forecast access arrangement period. Core Energy's estimate of 0.1 for cross price elasticity is drawn from US studies.

In its revised access arrangement proposal, JGN, based on Core Energy's report, submitted a revised approach in the way elasticity factors would affect forecast demand. The reasons for the change in its original approach, while briefly noted in Core Energy's report,²³ are not made clear in JGN's revised proposal or Core Energy's report. JGN's adoption of Core Energy's original approach of a simple multiplication of the price elasticity factor by the change in the price was accepted in the draft decision and, as such, the change in approach is not directed at addressing matters raised in our draft decision.²⁴

Core Energy's revised approach of applying elasticity factors involves (using cross price elasticity as an example) firstly, estimating the elasticity effect from a change in a forecast 'trend' of electricity price on gas demand. This trend is based on historic price changes and Core Energy estimates an elasticity of X%. Then, it applies its original approach of estimating the effect from the change in forecast electricity prices on gas demand over 2015-20 (to give a Y%). The differential between the outcome from the original approach (X%) and the change in gas demand from a forecast trend (Y%) is then the overall effect on gas demand from applying the cross-price elasticity factor.

As noted by DAE, the revised approach of applying elasticity factors results in a significant effect on forecast gas demand. As X is a positive number (historically electricity prices have been increasing) and Y is a negative number (in the future, electricity prices are forecast to fall) the difference is a large positive number. The resultant impact on per customer demand is therefore larger than if the method of adjusting for historical (trend) prices was not taken into account.

Our decision to use Core Energy's proposed cross price elasticity of 0.1 and its original approach to applying elasticity factors is based on a number of reasons.

While we agree with DAE's observations about the lack of robustness around the cross price elasticity factor of 0.1, there is limited information before us in this matter in support of alternative figures, such as DAE's cross price elasticity factor of 0.05. We also note that the value of 0.1 was at the lower end of the range (between 0.1 and 0.15) of cross-price elasticity factors from the literature review undertaken by Core Energy.

While we accept the use of 0.1 cross price elasticity factor, we nevertheless consider that this estimate is likely to be on the high side. In this regard, we note the criticisms by DAE that the US-based studies cited by Core Energy are quite dated and all are

²³ Core Energy, Response to AER Draft Decision - Gas Demand Forecast Core Energy Expert Report, February 2015, p. 38.

²⁴ Under rule 60 of the NGR, amendments to an access arrangement proposal must be limited to those necessary to address matters raised in the draft decision unless the AER approves further amendments.

based on gas markets which lack relevance to the NSW gas market.²⁵ For instance, some of the studies relied on empirical testing in US states with very cold climates and with a major percentage of homes with natural gas heating - these characteristics do not exist in NSW.

However, we also note that DAE considered that, on balance, it may be reasonable to include an estimate of cross price elasticity in the per customer consumption forecasts. While it recommends using a non-zero but lower figure of 0.05, no specific basis has been stated for the 0.05 cross price elasticity factor.

While accepting 0.1 cross price elasticity factor, given the limited Australian evidence on the extent of cross-price elasticity demand effects between electricity and gas, we do not accept Core Energy's revised approach of applying elasticity factor which magnifies the impact on per customer demand.

We also note that DAE has advised that Core Energy's revised approach of attempting to adjust for historical (trend) prices is applied differently in its response to the Economic Regulation Authority of WA's (ERA) draft decision on ATCO Gas's proposed access arrangement.²⁶ When this alternate methodology (the approach it submitted in response to the ERA's draft decision) is applied in this case, DAE noted and our own modelling confirms that it results in higher per customer forecasts than DAE's own estimates.²⁷ It is unclear why Core Energy applied different approaches to adjust for the historical (trend) prices.

On the information before us, we are not satisfied that JGN's revised approach to applying the elasticity factor produces the best estimate possible in the circumstances. Consistent with our draft decision, we consider that applying Core Energy's original approach to take account of elasticity factors in forecasting demand would result in the best estimate in the circumstances.

Price of electricity

Our forecasts for demand also include the impact of non-residential price of electricity on gas demand through the cross-price elasticity factor. We consider that including the effect of non-residential price of electricity is likely to more accurately reflect the effect on gas demand from a change in the price of electricity and therefore result in a better estimate in the circumstances.

We note that reductions in the non-residential price of electricity are unlikely to be as substantial as for residential customers. DAE advised this is because network charges,

²⁵ Deloitte Access Economics, Gas demand forecast for Jemena Gas Network NSW, 15 May, p. 41-3.

²⁶ Economic Regulation Authority of WA, Draft Decision on Proposed Revisions to the Access Arrangement for the Mid-West and South-West Gas Distribution System, Submitted by ATCO Gas Australia Pty Ltd, 14 October 2014.

²⁷ Deloitte Access Economics, Gas demand forecast for Jemena Gas Network NSW, 15 May 2015, p. 45.

which are falling, make up a relatively smaller proportion of bills for non-residential customer and particularly for I&C customers.²⁸

13.4.4 Forecast of tariff V connection numbers

Forecasting connection numbers

Core Energy has applied different forecast methods to estimate the number of new connections for each type of Tariff V customer.

Consistent with the general approach used to forecast connections, Core Energy's forecasts of Tariff V residential connections are built up from base year 2013-14 customer numbers and add new connections and subtract disconnections. New connections have been separated into three categories:

- Customers switching from a pure electricity household to one which is also connected to gas ('E to G' customers)
- New dwellings – new estates
- New dwellings – medium/high density

Core Energy forecast the number of small business and industrial and commercial connections by estimating the respective historical growth between 2003 and 2013 and extrapolating that growth. It also adjusted I&C connections for expected customer movement between Tariff D and Tariff V.

DAE's revised connection numbers

DAE has advised that it remains of the view that JGN's forecast percentage of new residential connections that are located in new estates relative from those in medium to high density dwellings is high and has proposed an alternative new dwelling split. It also does not agree with the JGN's forecast number of small business connections with its forecasts showing a moderation in the increasing trend of these connections.

DAE has also advised that while in its 2014 report it expressed concern that forecast of residential disconnections seemed high, given the new 2013-14 data point, they now appear more reasonable.²⁹ It therefore made no adjustments to the disconnection forecasts.

Our final decision on these issues is discussed below.

New dwellings split

We have applied a new dwelling connections split between new estates and medium/high density of 45 per cent and 55 per cent respectively. We consider that

²⁸ Deloitte Access Economics, Gas demand forecast for Jemena Gas Network NSW, 15 May 2015, p. 9.

²⁹ Deloitte Access Economics, Gas demand forecast for Jemena's NSW network, 30 October 2014, 19.

JGN's forecast overstated the proportion of new connections that will be in new estates.

Core Energy's 2015 forecast provides that, on average 48.8 per cent of connections from 2014-15 to 2019-20 will be in new estates with 51.2 per cent being medium/high density. This is a slight reduction from historical levels where an average of 49.3 per cent of JGN's connections has been in new estates over the past 5 years, although the level in 2013-14 was only 46.3 per cent. There has been a steady decline since 2011-12. Further, DAE advised that BIS Shrapnel and HIA forecast that the percentage of new estates will decline in the short term before increasing over the access arrangement period. The HIA predicts a turnaround point for new dwelling commencements will be in 2015-16 with BIS Shrapnel considering the turnaround point will be 2017-18.³⁰

DAE advised that while Core Energy has cited a range of sources and evidence to support its forecast, the percentage split it has adopted is the same as forecast by BIS Shrapnel. DAE considered that this approach is not reasonable given that JGN's actual estate completion percentage has been lower in every year than the BIS Shrapnel actual estate completions, and sometimes materially so. It is therefore not appropriate simply to adopt the BIS Shrapnel split for forecasting purposes as this will overstate the percentage of new estates. Data, including in particular the 'gap' between the BIS Shrapnel figures and JGN's actual estate completion connections, suggests that it is likely to be at least 3-5 percentage points less than this. Based on the information before us, including DAE's advice,³¹ we consider that JGN's forecast new dwellings split does not represent the best estimate possible in the circumstances, and agree with DAE's recommended adjustment to JGN's forecasts to reflect a new estates percentage of 45 per cent.

Small business connections

Our forecast for small business new connections is lower than JGN's forecasts over the access arrangement period. We consider that JGN's forecast is not the best estimate in the circumstances.

DAE advised that JGN's forecast of small business new connections is high compared to historical levels. JGN forecast that small business new connections will rise approximately 50 per cent between 2013-14 and 2019-20, with an average annual growth rate of 8 per cent. This is high and largely reflects the large increase in new customers in 2007-08. DAE considered that given the declining competitiveness of gas due to upcoming price changes, Core Energy's forecast of new small business connections is unreasonably high. It therefore applied the actual growth rates of 2.9 per cent between 2008-09 and 2013-14 to establish a forecast of new small business

³⁰ Deloitte Access Economics, Gas demand forecast for Jemena Gas Network NSW, 15 May 2015, p. 25.

³¹ Deloitte Access Economics, Gas demand forecast for Jemena Gas Network NSW, 15 May 2015, p. 26.

connections.³² We consider that this approach is reasonable and represents the best estimate possible in the circumstances.

Residential disconnections

We accept JGN's forecast residential disconnection numbers. Core Energy forecast increasing numbers of disconnections over the access arrangement period, generally higher than the current access arrangement period. As the addition of actual 2014 residential disconnections numbers shows an increase relative to the previous recent years, we agree with JGN's forecast of a gradual increase in disconnections numbers over the access arrangement period.

³² Deloitte Access Economics, Gas demand forecast for Jemena Gas Network NSW, 15 April 2015, p. 29.