Jemena Gas Networks (NSW) Ltd

2015-20 Access Arrangement Information

Appendix 5.3

JGN demand forecast adapted for reference tariffs

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TABLE OF CONTENTS

Glossary ..... **iv**
1. Introduction **1**
2. Volume Customer Group **2**
2.1 Tariff classes and charge components for the 2015-20 AA period 2
2.2 Application of demand to the Volume customer charge components 3
2.3 Ancillary activities 6
3. Demand Customer Group **8**
3.1 Tariff classes and charge components for the 2015-20 AA period 8
3.2 Application of demand to the demand customer charge components 9
3.3 Ancillary activities 10

List of tables

Table 2–1: Disaggregating JGN aggregate customer number forecasts to proposed tariff classes 4
Table 2–2: Disaggregating JGN aggregate consumption forecasts to proposed tariff classes and charge components (TJ) 5
Table 2–3: Approach to forecasting the number of requested ancillary activities 6
Table 2–4: Forecast number of requested ancillary activities 6
Table 3–1: Disaggregating JGN aggregate consumption forecasts to proposed tariff classes (TJ of AQ) 10
Table 3–2: Disaggregating JGN aggregate consumption forecasts to proposed tariff classes (TJ of CD) 10
Table 3–3: Approach to forecasting the number of requested ancillary activities 11
Table 3–4: Forecast number of requested ancillary activities 11

GLOSSARY

2015 AAI	2015-20 Access Arrangement Information
AA	Access Arrangement
AQ	Annual Quantity
CD	Chargeable Demand
DC	Demand Capacity
DMT	Major End Customer Throughput tariff
DT	Demand Throughput
GJ	Gigajoule
JGN	Jemena Gas Networks (NSW) Ltd
TJ	Terajoule
V-Coastal	the Volume group for customers in the Wilton network section of JGN's network
V-Country	the Volume group for customers in the country network section of JGN's network
VB-Coastal	a tariff class in the Volume group for boundary metered customers in the Coastal area of JGN's network
VB-Country	a tariff class in the Volume group for individually metered customers in the Country area of JGN's network
VI-Coastal	a tariff class in the Volume group for individually metered customers in the Coastal area of JGN's network
VI-Country	a tariff class in the Volume group for boundary metered customers in the Country area of JGN's network
VRT	a tariff class in the Volume group for residential distributed generation technology

1. INTRODUCTION

1. To develop the reference tariffs (refer chapter 13, 2015 Access Arrangement Information (**2015 AAI**)) Jemena Gas Networks (NSW) (**JGN**) requires a forecast of chargeable quantities for each tariff class charge parameter for the 2015-20 access arrangement (**AA**) period. The types of chargeable quantities varies between tariff classes but are commonly based on a combination of fixed charges (driven by customer numbers) and variable charges (driven by consumption or utilisation of daily capacity).

2. JGN' developed demand forecasts (2015 AAI chapter 5) which differentiate between customer groups consuming:

   - less than 10 TJ p.a. (referred to as 'volume customers')
   - greater than 10 TJ p.a. (referred to as 'demand customers')

3. This appendix:

   - explains how the demand forecasts in chapter 5 of the 2015 AAI have been applied to forecast the chargeable quantities of each tariff class for the purpose of forecasting revenue from the Haulage Reference Service over the next AA period
   - demonstrates that the forecast chargeable quantities are consistent with and can be reconciled to JGN's demand forecasts.

2. VOLUME CUSTOMER GROUP

4. Volume customers consist of residential and business customers who are each reasonably expected to consume less than 10 TJ of natural gas per year. These types of customers presently account for approximately 90 per cent of JGN's reference service revenue.

2.1 TARIFF CLASSES AND CHARGE COMPONENTS FOR THE 2015-20 AA PERIOD

2.1.1 TARIFF CLASSES

5. JGN's current volume customers are *individually*[1] metered customers in the:

- Wilton network section (**V-Coastal** tariff class)
- country network sections (**V-Country** tariff class).

6. These two existing tariff classes for individually metered customers will remain (as **VI-Coastal** and **VI-Country**), with most of JGN's 1.2 million customers being on these tariffs. In addition to these, JGN is proposing to introduce new tariff classes in the volume customer group from the start of the 2015-20 AA period to recognise alternate connection configurations and developing technologies where (unlike JGN's VI tariff classes) the "customer" at the JGN delivery point will not be the ultimate energy end customer, including:

- a Volume Boundary Coastal tariff class (**VB-Coastal**)—for supply to multiple occupancy premises of coastal volume end-customers where supply is metered by a single boundary meter
- a Volume Boundary Country tariff class (**VB-Country**)—for supply to multiple occupancy premises of country volume end-customers where supply is metered by a single boundary meter
- four Residential Distributed Generation Technology tariff classes (**VRT**)—for supply to large scale multiple occupancy premises (or precincts) of residential volume end-customers receiving their energy from a large gas fired cogeneration or trigeneration system (> 50 TJ per annum)

7. As a result JGN will have eight volume customer tariff classes (see chapter 13 of the 2015 AAI).

2.1.2 CHARGE COMPONENTS

8. The current charge structure for volume customers are:

- fixed charges, including a meter provision and meter reading charges, such that revenue is dependent upon the number of customers
- a usage or consumption charge based on a declining six consumption block schedule, such that revenue is dependent on the consumption of the customers
- ancillary charges, such that revenue is dependent on the number of requested ancillary activities.

JGN is proposing to modify the charge components for the 2015-20 AA period including:

[1] JGN's current reference services are available to delivery points which deliver gas to premises for use of a single 'ultimate end user of energy'—including individually-metered residential hot water supplied through a centralised gas fired hot water system.

- consolidating the number of fixed charges for volume customers into a single fixed charge for each tariff class to simplify our charges and align with customer feedback
- modifying the block sizes and charge levels within the volume tariff classes.

2.2 APPLICATION OF DEMAND TO THE VOLUME CUSTOMER CHARGE COMPONENTS

9. Sections 2.2.1 and 2.2.2 set out the steps JGN has followed to apply the demand forecast of volume customer numbers and consumption to forecasts of charge components in each of the proposed volume tariff classes for the 2015-20 AA period.

2.2.1 CUSTOMER NUMBERS

10. The revenue from fixed charges for volume market customers is dependent on customer numbers.

11. To determine the chargeable quantities for the fixed charge components in each of the proposed volume tariff classes for the 2015-20 AA period JGN:

1. started with the total forecast customer numbers for volume customers each year as set out in chapter 5 of the AAI (including the impact of JGN's proposed step change in marketing that would add 401 customers every year from 2015-16 onwards, totalling 2005 customers by 2019-20).
2. allocated the aggregate forecast customer numbers to the *current* tariff classes (V-Coastal and V-Country) using most recent historical information on the proportion of customers in the current tariff classes[2]
3. allocated a proportion of forecast customer numbers in the V-Coastal and V-Country to the *new* tariff classes (VB-Coastal, VB-Country, VRT tariff classes) based on the likely take-up of these new tariff classes[3]
4. allocated the remaining forecast customer numbers in the V-Coastal and V-Country tariff classes to the VI-Coastal and VI-Country tariff classes
5. converted the forecasts of individual customer numbers for the new tariff classes into forecasts of boundary metered connections, using historical JGN information on individual residential metering (VB-Coastal and VB-Country) and information from recent connection inquiries and stakeholder consultation (VRT tariff classes)[4]
6. reconciled the annual customer numbers forecast per tariff class against the total demand forecast set out in chapter 5 of the AAI to test the consistency with that forecast
7. averaged the start and end of year customer numbers for the VI-Coastal and VI-Country tariff classes such that the 2015-16 customer number used to forecast revenue from the fixed charge component for that year is the average of 2014-15 and 2015-16 customer numbers etc. This reflects that the fixed charge is expressed in the revenue model as $/annum, and reasonably assumes that the change in customer numbers over a year is uniform.

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2 Based on the year ending 30 June 2013.

3 The take-up of the new VB tariff classes are likely to be driven by the property developers of new residential units and the potential savings in terms of plumbing costs and internal space requirements. The potential for existing residential units to remove individual metering has not been included in the forecast uptake, given the average prices between the VI and VB tariff classes are similar. This reflects the principle that similar customers should pay similar prices. VRT uptake was informed through JGN's stakeholder engagement on potential for residential large gas fired cogeneration or trigeneration systems.

4 JGN forecasts the number of end-customers consuming gas over the 2015-20 AA period. However, the number of customer connections for billing purposes will be lower than the number of end-customers consuming gas due to multiple occupancy premises being supplied and billed at a single connection point.

Table 2–1: Disaggregating JGN aggregate customer number forecasts to proposed tariff classes

Year ending 30 June	2015	2016	2017	2018	2019	2020
Aggregate forecast customer numbers	**1,231,231**	**1,262,196**	**1,294,964**	**1,326,503**	**1,356,828**	**1,386,945**
Old tariff classes						
V-Coastal	1,140,013	1,168,684	1,199,024	1,228,226	1,256,304	1,284,191
V-Country	91,218	93,512	95,940	98,277	100,524	102,754
New tariff classes						
VB-Coastal Customers		53	165	335	550	764
VB-Country Customers		2	4	6	8	10
VRT		3	4	9	9	9
VI-Coastal Customers	1,140,013	1,163,457	1,189,316	1,207,483	1,227,915	1,248,144
VI-Country Customers	91,218	93,439	95,773	98,004	100,139	102,269
Corresponding reduction in customer connections						
V-Coastal		*-5,227*	*-9,708*	*-20,743*	*-28,389*	*-36,047*
V-Country		*-73*	*-167*	*-273*	*-385*	*-485*
Reconcile to aggregate forecast	**1,231,231**	**1,262,196**	**1,294,964**	**1,326,503**	**1,356,828**	**1,386,945**
Average		**1,244,064**	**1,270,993**	**1,295,288**	**1,316,770**	**1,339,233**

2.2.2 CONSUMPTION

12. The revenue from variable charges for volume customers is based on consumption in the different consumption blocks set by the structure of the variable charge component (see chapter 13 of the AAI).

13. To determine the chargeable quantities for the variable charge components (throughput and demand rates) in each of the proposed volume tariff classes for the 2015-20 AA period JGN:

1. started with the total forecast consumption for volume customers each year as set out in chapter 5 of the AAI (including the impact of JGN's proposed step change in marketing that would add 0.04 PJ every year from 2015-16 onwards, totalling 0.2 PJ per year by 2019-20)
2. allocated the aggregate forecast consumption to the *current* consumption blocks (for V-Coastal and V-Country) using historical information on the proportion of consumption in the current consumption blocks[5]
3. allocated the forecast consumption in the current first block (first ~15 GJ per annum) between the two relevant *new* consumption blocks using historical information of consumption in the current consumption block[6]
4. allocated the forecast consumption in the *new* consumption blocks to the *current* tariff classes (V-Coastal and V-Country) using historical information on the proportion of consumption in the current tariff classes[7]

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[5] Based on the year ending 30 June 2013. The most recent year's annual data is considered a reasonable and transparent basis for allocating forecast consumption to blocks for the size and variability of past and future factors relevant to the Volume customer group.

[6] Based on 12 month's most recent billing as at 7 March 2014.

5. allocated a proportion of forecast consumption from new medium density end customer growth to the *new* tariff classes (VB-Coastal, VB-Country, VRT tariff classes) based on the forecast number of end-customers supplied gas on these new tariff classes (as above) and the average consumption for new medium density end-customers (as per the demand forecast)[8]

6. allocated the remaining forecast consumption from step 4 from the V-Coastal to the VI-Coastal and from the V-Country to the VI-Country tariff classes, which is consistent with the re-assignment of existing customers on volume tariffs to the new VI category tariffs from 1 July 2015.

7. reconciled the total volume consumption per tariff class against the volume demand forecasts in chapter 5 of the AAI to test the consistency with that forecast.

8. converted the variable chargeable quantities allocated to the VRT tariff classes to equivalent quantities for forecasting revenue from capacity rates (chargeable demand) using forecast customer and end customer numbers for the VRT tariff classes and information from recent residential cogeneration inquiries.

Table 2–2: Disaggregating JGN aggregate consumption forecasts to proposed tariff classes and charge components (TJ)

Year ending 30 June	2016	2017	2018	2019	2020
Aggregate forecast consumption	**34,057**	**34,177**	**34,185**	**34,232**	**34,437**
VRT	47	55	128	127	126
VB-Coastal					
Block 1	13.25	41.24	84	137	191
Block 2	10	30.32	60	97	133
Block 3	2.5	6.47	13	22	31
Block 4	2.21	5.55	11	17	24
VB-Country					
Block 1	0.5	1.00	1.5	2	2.5
Block 2	0.36	0.72	1.06	1.38	1.7
Block 3	-	-	-	-	-
Block 4	-	-	-	-	-
VI-Coastal					
Block 1	5,873	5,860	5,778	5,728	5,706
Block 2	4,235	4,221	4,151	4,109	4,088
Block 3	5,292	5,311	5,312	5,319	5,351
Block 4	10,363	10,400	10,402	10,417	10,479
Block 5	3,176	3,188	3,188	3,193	3,212
Block 6	1,156	1,160	1,160	1,162	1,169

7 Based on the year ending 30 June 2013.

8 JGN forecast the number of end-customers supplied energy in multiple occupancy premises, consuming an average of 13-14 GJ per annum (consistent with Core Energy forecasts of average consumption per medium density customer over the 2015-20 AA period.)

Year ending 30 June	2016	2017	2018	2019	2020
VI-Country					
Block 1	761	763	762	762	766
Block 2	550	551	550	550	553
Block 3	682	684	684	685	689
Block 4	1,335	1,339	1,340	1,342	1,350
Block 5	409	411	411	411	414
Block 6	149	149	149	150	151
Reconcile to aggregate forecast	**34,057**	**34,177**	**34,185**	**34,232**	**34,437**

2.3 ANCILLARY ACTIVITIES

14. The revenue from ancillary charges for volume market customers is based on the number of requested ancillary activities (see chapter 13 of the AAI).

15. Table 2–3 outlines how JGN forecast the number of requested ancillary activities for volume customers, with the resulting number of forecast ancillary activities in Table 2–4.

Table 2–3: Approach to forecasting the number of requested ancillary activities

Ancillary activity	JGN forecasting approach
Special meter reads	• Forecast based on historical volumes as at 30 June 2013. It provides consistency with base year for costs.
Disconnections **Decommissioning and Meter Removal**	• Start with JGN's demand forecast for disconnections • Allocate the aggregate forecast to the individual ancillary charges using historical information on the proportions of individual ancillary charges compared to total[9] • Allocate the forecast ancillary charges to coastal and country regions based on historical information on the proportion of ancillaries in each region.[10] • Reconcile the total against the demand forecast to check consistency.

Table 2–4: Forecast number of requested ancillary activities

Year ending 30 June	2016	2017	2018	2019	2020
VI Coastal					
Special Meter Read	182,203	182,203	182,203	182,203	182,203
Disconnection	2,924	2997	3,073	3,147	3,218
Temporary Disconnection Large Meter	519	532	545	558	571

9 Based on the year ending 30 June 2013.

10 Based on the year ending 30 June 2013.

Year ending 30 June	2016	2017	2018	2019	2020
Decommission Small Meter	2,168	2222	2,279	2,334	2,386
Decommission Large Meter	116	119	122	125	127
VI Country					
Special Meter Read	23,797	23,797	23,797	23,797	23,797
Disconnection	368	378	387	397	406
Temporary Disconnection Large Meter	67	69	70	72	74
Decommission Small Meter	38	39	40	41	42
Decommission Large Meter	6	6	6	7	7
Reconcile to demand forecast – disconnections	**6,206**	**6,360**	**6,524**	**6,680**	**6,831**
Special Meter Read forecast	**206,000**	**206,000**	**206,000**	**206,000**	**206,000**

3. DEMAND CUSTOMER GROUP

16. Demand customers consist of large industrial customers that are reasonably expected to consume more than 10 TJ of gas per year.[11] These types of customers presently account for approximately 10 per cent of JGN's reference service revenue.

3.1 TARIFF CLASSES AND CHARGE COMPONENTS FOR THE 2015-20 AA PERIOD

3.1.1 TARIFF CLASSES

17. JGN's demand customers are *individually* metered customers that are distinguished by:

- location—JGN's current charges for services to demand customer delivery points are on a zonal basis that reflects the customer's location within the local network.
- the manner in which they are billed for usage consumption:
  - capacity, in terms of Chargeable Demand (**CD**) for those customers on the Demand Capacity (**DC**) tariff
  - throughput, for those customers on the Demand Throughput (**DT**) and Major End Customer Throughput (**DMT**) tariffs
- eligibility for the First Response—available to specific existing customers that satisfy the eligibility requirements.

18. JGN is proposing to close the DCFR and DMTFR tariff classes to new customers and grandfather the tariff class for existing customers.[12]

19. For the 2015-20 AA period JGN is proposing 18 open demand tariff classes and two grandfathered FR tariff classes (see chapter 13 of the AAI).

3.1.2 CHARGE COMPONENTS

20. The current charge structures for demand customers are:

- fixed charges, including a meter provision and meter reading charges, such that revenue is dependent upon the number of customers
- a usage or consumption charge based on:
  - capacity, such that revenue is dependent on the CD of those customers on the DC tariff
  - throughput, such that revenue is dependent on the throughput of those customers on the DT and DMT tariffs

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[11] Starting in 2011, JGN's demand capacity measure for Demand Tariff capacity based charges changed from a maximum daily quantity ("MDQ") system to a Chargeable Demand ("CD") system, where chargeable demand refers to the quantity of gas used to determine Demand Charges under JGN's Haulage Reference Service.

[12] A grandfathered tariff class is one which we have extended for any existing customers who was allocated to that class on the date it was closed to new or additional customers. We have grandfathered two first response demand tariff classes that were open in the 2012-15 AA period until at least 2020.

- ancillary charges, such that revenue is dependent on the number of requested ancillary activities.

21. JGN is proposing to modify the charge components for the 2015-20 AA period including modifying the block sizes and charge levels within the demand capacity tariff classes (see chapter 13 of the AAI).

3.2 APPLICATION OF DEMAND TO THE DEMAND CUSTOMER CHARGE COMPONENTS

22. Sections 3.2.1 and 3.2.2 set out the steps JGN has followed to disaggregate the aggregate consumption forecasts to the charge components in each of the proposed tariff classes for the 2015-20 AA period.

3.2.1 CONSUMPTION

23. The revenue from usage or consumption charges for demand customers is based on consumption (including daily capacity utilisation), location and tariff class of the likely customers over the 2015-20 AA period. Forecast consumption for demand customers includes demand of a small number of customers with negotiated services and this revenue is forecast separately to reference service revenue in JGN's revenue model.[13]

24. To reasonably allocate the demand forecast among JGN's location based demand tariff classes and between reference and negotiated services, the demand forecast as set out in chapter 5 of the AAI was allocated down to the level of individual customers using a customer list that is representative of the demand customer distribution over the 2015-20 AA period.

25. To determine the chargeable quantities for the variable (capacity and throughput) charge components in each of the proposed tariff classes for the 2015-20 AA period JGN:

1. considered a 'snapshot' list of demand customers and their consumption[14] as at 31 January 2014
2. adjusted this customer and consumption information to account for the known customer additions, deletions, step changes in consumption and tariff class switching of volume customers to provide a geographical distribution of demand customers and adjusted current consumption[15]
3. globally scaled the listed customer consumption and CD so that the total consumption and CD both reconciled with the demand forecast for each year from 2015 to 2020[16]
4. adjusted the CD forecast to account for the step change in CD from 1 July 2015 (see appendix 1.4 for customer support for this one-off reduction).[17] The demand forecast in chapter 5 of the AAI does not already account for this proposed reset
5. added the forecast consumption (CD only) of a material new customer[18] which contracted for capacity after 1 January 2014

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13 Refer Appendix 13.1 and Chapter 13.3 of the AAI.

14 Including CD and AQ as at 31 January 2014.

15 These adjustments reflect the change in distribution of revenue among locational tariff classes based on factors taken into account in the demand forecast (such as closures of major customers). The adjustments also reflect information received from customers and retailers after 31 January 2014 about firm changes that would materially affect the geographical distribution.

16 JGN did not scale chargeable demand for specific customers with large non variable capacity bookings or negotiated services.

17 Chargeable demand was adjusted in line with JGN's proposal to provide a one-off automatic reset of chargeable demand for all demand customers from 1 July 2015 as per clause 5.1 of the proposed Reference Tariff Schedule. The level of CD reduction was estimated using actual customer CD levels, MHQ and historical consumption based on the 31 January customer list.

18 This customer was not included in JGN's aggregate forecast as the transportation contract was not contracted until after the demand forecast. The site is a storage facility which will withdraw gas from the network that is later re-injected back into the network to be consumed by the market. The forecast for this site has CD based on contracted capacity to account for the additional revenue JGN

6. allocated each customer and their consumption forecast (CD and annual quantity (**AQ**)) to the cheapest tariff class for which they are eligible[19] based on forecast reference tariffs (either capacity based charges based on location[20], throughput based on AQ[21], and FR eligibility)[22]. Forecast quantities for negotiated services were not included in allocations to tariff classes[23]

7. totalled the number of customers and the chargeable quantities for the charge components of each tariff class[24].

Table 3–1: Disaggregating JGN aggregate consumption forecasts to proposed tariff classes (TJ of AQ)

Year ending 30 June	2016	2017	2018	2019	2020
Adjusted customer list	51,046	51,046	51,046	51,046	51,046
Sum of scaled customer list consumption	45,952	45,290	44,645	44,015	43,400
Reconcile to aggregate forecast	**45,952**	**45,290**	**44,645**	**44,015**	**43,400**

Table 3–2: Disaggregating JGN aggregate consumption forecasts to proposed tariff classes (TJ of CD)

Year ending 30 June	2016	2017	2018	2019	2020
Adjusted customer list	272.86	272.86	272.86	272.86	272.86
Sum of scaled customer list CD	262.40	259.88	256.63	254.23	254.23
Reconcile to aggregate forecast	**262.40**	**259.88**	**256.63**	**254.23**	**254.23**
Total (including adjustments for steps 4 and 5)	260.45	258.39	255.72	253.75	253.75

3.3 ANCILLARY ACTIVITIES

26. The revenue from ancillary charges for demand market customers is based on the number of requested ancillary activities (see chapter 13 of the AAI).

27. Table 3–3 outlines how JGN forecast the number of requested ancillary activities for demand market customers with the resulting number of forecast ancillary activities in Table 3–4.

will receive, but no forecast consumption to avoid double counting as the gas goes in and out of storage for consumption by network customers.

19 Where a delivery point is eligible for more than one tariff class, Network Users may nominate the tariff class for a delivery point. It is reasonable to expect that the cheapest tariff will be selected.

20 DC1-11, and DC-Country.

21 For DMT this is also based on location and load factor eligibility.

22 For example, to calculate the annual bill for a customer under the relevant DC, DMT and DC tariffs, JGN allocated the customer's consumption to the relevant charge components for each tariff (say, DC Block 1-6).

23 Negotiated service revenues are accounted for in the cost allocation separate to reference service revenues. Negotiated revenues are forecast with regard to the commercial terms of the service.

24 For example, for all customers on DC-1, JGN summed the forecast consumption in each capacity block.

Table 3–3: Approach to forecasting the number of requested ancillary activities

Ancillary activity	JGN forecasting approach
Hourly Charge	• Start with JGN's 2011-2013 actual volume of request for service charges (historically JGN has applied RFS charges to non-standard activities) • Forecast 2016-20 volumes as the median of 2011-2013 actual volumes

Table 3–4: Forecast number of requested ancillary activities

Year ending 30 June	2016	2017	2018	2019	2020
Hourly Charge	***202***	***202***	***202***	***202***	***202***