ActewAGL

ActewAGL Distribution

Access Arrangement Information

For the 2016-21 ACT, Queanbeyan and Palerang Access Arrangement

Revised in response to the AER's draft decision

January 2016

Table of contents

List of tables

1 Introduction

1.1 Purpose of this revised access arrangement information

ActewAGL Distribution submitted its proposed access arrangement for the ACT, Queanbeyan and Palerang gas distribution network 2016-21 (access arrangement proposal) to the Australian Energy Regulator (AER) on 30 June 2015. The access arrangement proposal was accompanied by access arrangement information, which is information that is reasonably necessary for users and prospective users of the network to understand the basis and derivation of the various elements of the access arrangement proposal.

The AER published the *Draft decision, ActewAGL access arrangement 2016 to 2021* (draft decision) on 26 November 2015 and set a due date of 6 January 2016 for submission of revisions to the access arrangement proposal.

ActewAGL Distribution submitted a revised access arrangement proposal to the AER on 6 January 2016. The revised access arrangement proposal addresses matters arising from the draft decision and incorporates updates since the June 2015 submission.

ActewAGL Distribution has also prepared and submitted this revised access arrangement information. This document contains information that is reasonably necessary for users to understand the basis and derivation of the various elements of the revised access arrangement proposal. Rule 72(1) of the National Gas Rules (Rules or NGR) specifies the information that must be included in access arrangement information. Chapter 13 of this revised access arrangement information contains a checklist of where the required information is provided.

Further background and explanation of the revised access arrangement proposal is provided in ActewAGL Distribution's *Response to AER draft decision* submitted to the AER on 6 January 2016.

1.1.1 Basis for the information provided in this revised access arrangement information

Rule 73 requires ActewAGL Distribution to provide all financial information consistently on the same basis and to state the basis on which that information is provided in the access arrangement information.

Unless otherwise stated, the financial information in this revised access arrangement information is provided in 2015/16 real dollars. Past values are brought to this basis using the Consumer Price Index (CPI) calculated using the all groups index for the weighted average of eight capital cities average of the four quarters to December over the four quarters to December the previous year, published by the Australian Bureau of Statistics and the Reserve Bank of Australia (RBA) forecast for the individual years 2013/14 and 2014/15. Estimated inflation for the access arrangement period for use in the financial modelling is forecast as discussed in section 8 of this revised access arrangement information.

Rule 74 requires that information in the form of a forecast or estimate be supported by a statement of the basis of the forecast or estimate. This revised access arrangement information

contains a statement of the basis for the forecasts and estimates for capital expenditure (capex), operating expenditure (opex) and demand.

The forecasts and estimates are reasonable and the best possible in the circumstances, as required under Rule 75. ActewAGL Distribution's access arrangement information submitted with the June 2015 access arrangement proposal provides detailed explanations of why the forecasts and estimates are reasonable and the best possible under the circumstances. Where the forecasts or estimates have been revised, explanations are provided in the relevant sections of this revised access arrangement information and the other documents submitted in response to the AER's draft decision.

1.2 Network overview

1.2.1 Ownership and operation of the network

ActewAGL Distribution is licenced under the *Utilities Act 2000* (ACT) to provide gas distribution and connection services in the ACT, and holds a Reticulator's Authorisation under the *Gas Supply Act 1996* (NSW) for its gas distribution system in the Queanbeyan City Local Government Area (LGA) and in the adjoining Palerang LGA, and a pipeline licence for the Eastern Gas Pipeline (EGP) interconnect from Hoskinstown in New South Wales (NSW) to the ACT border.

The NGL defines a service provider as a person who owns, controls or operates a pipeline or intends to own, control or operate a pipeline.[1] In respect of the ACT, Queanbeyan and Palerang gas distribution network, the parties that satisfy the definition under the NGL are:

- Icon Distribution Investments Limited (ACN 83 073 025 224); and
- Jemena Networks (ACT) Pty Ltd (ACN 24 008 552 663).

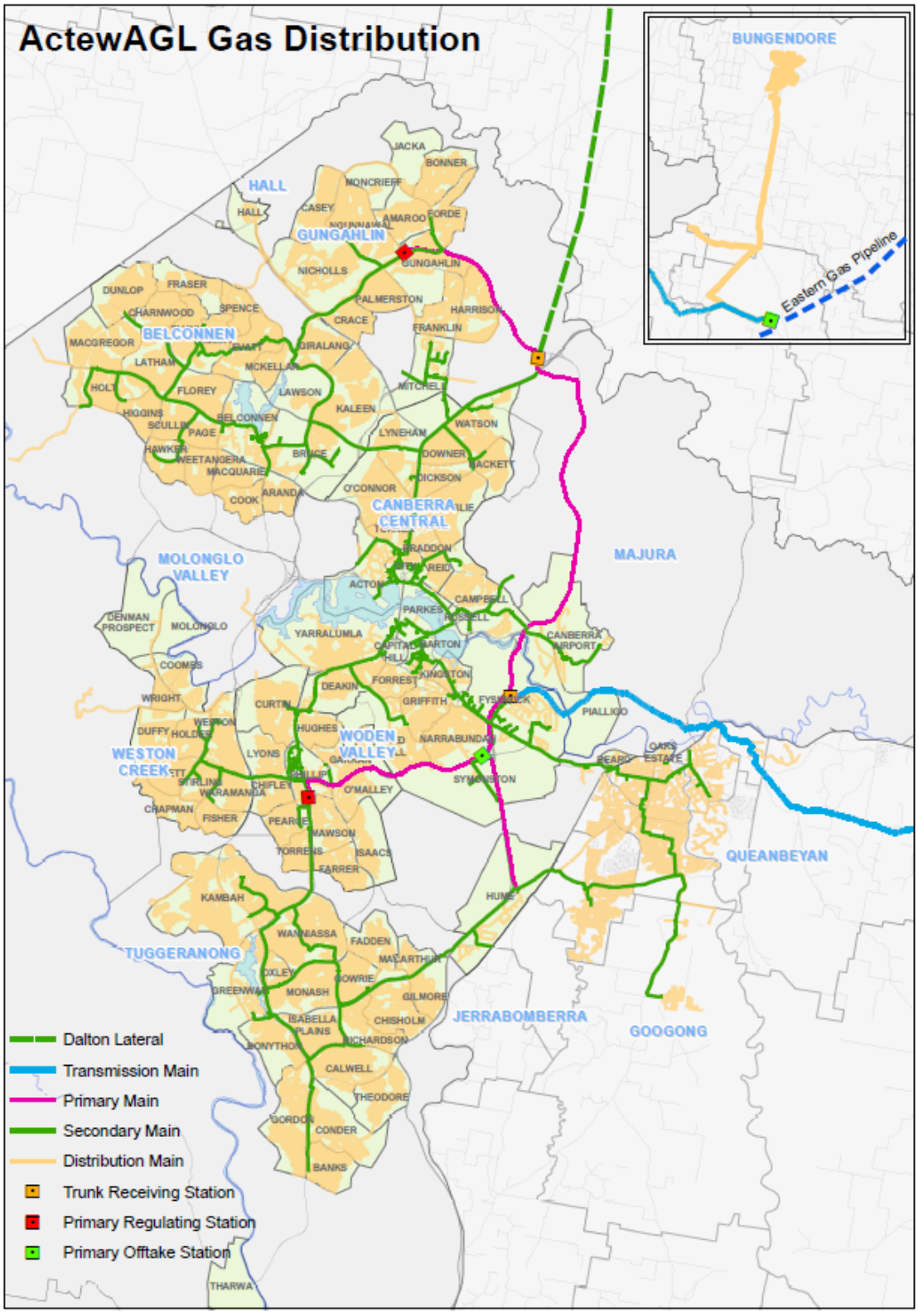
The two service providers, the ActewAGL Distribution partner companies, jointly own, control and operate the network. The partner companies each hold a 50 per cent interest in the ActewAGL Distribution partnership.

1.2.2 ActewAGL Distribution's gas network

ActewAGL Distribution's ACT, Queanbeyan and Palerang network comprises around 4,500 kilometres of natural gas distribution pipelines, delivering natural gas to approximately 138,000 homes and businesses. Two high-pressure transmission pipelines supply natural gas to ActewAGL's distribution system in the ACT and Queanbeyan: the Dalton to Watson pipeline spur from the Moomba–Sydney Pipeline through the northern Watson trunk receiving station (TRS) and the EGP from Longford in Victoria through the eastern Hoskinstown TRS. ActewAGL Distribution owns the Hoskinstown to ACT pipeline. A map of the network is provided in Figure 1.1.

[1] *National Gas (South Australia) Act 2008*, Section 8 (1).

Figure 1.1 ActewAGL Distribution gas network



A description of the assets that comprise the network is provided in ActewAGL Distribution's access arrangement information submitted to the AER in June 2015.

Approximately 138,000 residential and business customers and around 40 major customers (each consuming more than 10 terajoules (TJ) of gas per year) are connected to ActewAGL Distribution's gas network (at 1 July 2015). The residential and business consumers account for around 95 per cent of revenue and 88 per cent of the total load.

1.2.3 Pipeline services offered

The *Services policy* in the 2016-21 access arrangement describes the pipeline services offered by ActewAGL Distribution. The pipeline services comprise:

- *Reference services* which are services likely to be sought by a significant part of the market. These services are offered under a standard set of terms and conditions and a reference tariff schedule, both of which are set out in the access arrangement.
- *Non-reference services* which are negotiated on a case-by-case basis with reference to the relevant access arrangement schedules including the reference tariff schedule.

ActewAGL Distribution offers:

- a single haulage reference service; and,
- two non-reference services—the interconnection of embedded network service and negotiated services.

The single haulage reference service includes:

- receiving gas injected from a different gas pipeline or other gas facility (the point of injection is referred to as the receipt point);
- transportation of gas from a receipt point to an eligible delivery point;
- allowing the withdrawal of gas at an eligible delivery point;
- meter reading and associated data services, and the provision and maintenance of a standard metering installation; and
- other network user requested ancillary activities, being:
    - special meter reads—meter reading for a delivery point that is in addition to the scheduled meter reading;
    - disconnections—disconnection to prevent the withdrawal of gas at the delivery point (the specific method of disconnection is at the discretion of ActewAGL Distribution);
    - reconnections—reconnection to allow the withdrawal of gas at the delivery point but only where the equipment to allow the withdrawal of gas is still present at the delivery point;
    - decommissioning and meter removals (new)—removal of a meter and the permanent decommissioning of a network connection.

2 Current period outcomes

The tables below show capital expenditure (by asset class), operating expenditure (by category), usage of the pipeline and customer numbers for the current access arrangement period, as required by Rule 72(1)(a).

The current regulatory period is as defined in the Regulatory Information Notice (RIN), served by the AER on ActewAGL Distribution on 17 April 2015:

> *The six year period that commenced on 1 July 2010 and is intended to conclude on 30 June 2016.*[2]

2.1 Capital expenditure

Table 2.1 sets out ActewAGL Distribution's actual capex by category for the 2010-16 access arrangement period.

Table 2.1 Capex by category for 2010-16 access arrangement period ($million, 2015/16)

	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16 forecast	Total 2010/11 – 14/15
Market expansion	8.6	8.8	9.5	8.0	8.4	8.0	**43.2**
Capacity development	4.0	2.8	2.1	8.0	10.6	12.2	**27.5**
Stay in business	1.4	3.8	9.1	3.0	4.8	11.3	**22.0**
Non-system	0.4	0.3	0.2	-0.3	0.0	0.0	**0.5**
Sub total	**14.4**	**15.6**	**20.8**	**18.6**	**23.7**	**31.6**	**93.3**
Capital contributions	1.5	0.1	1.6	0.1	0.0	0.7	**3.3**
Total	**12.9**	**15.5**	**19.2**	**18.6**	**23.7**	**30.8**	**90.0**

Capex by asset class is provided in Table 3.4 and further details are provided in attachment 6 to our June 2015 submission.

[2] Final RIN issued by the AER to ActewAGL Distribution 17 April 2015, p. 50. The AER extended the current period by 12 months in accordance with transitional arrangements in the 2012 amendments to the National Gas Rules.

2.2 Operating expenditure

Table 2.2 sets out ActewAGL Distribution's actual opex by category for the 2010-16 access arrangement period.

Table 2.2 Actual opex by category for the 2010-15 period ($million, 2015/16)

	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16 forecast	Total 2010/11 – 14/15
Controllable costs							
Operations & maintenance	10.5	10.5	10.7	11.7	11.7	12.5	**55.2**
Corporate overheads	3.9	3.4	3.2	2.8	3.3	1.5	**16.7**
Non-system asset charge	0.7	0.6	0.6	0.0	0.0	0.0	**1.9**
Marketing	1.3	0.9	1.2	0.6	1.2	1.2	**5.1**
Other direct costs	2.3	1.9	1.4	1.3	1.1	1.1	**8.0**
Total controllable costs	**18.7**	**17.4**	**17.2**	**16.4**	**17.2**	**16.3**	**86.9**
Other allowable costs							
Energy Industry Levy	0.6	1.0	0.3	0.8	0.2	0.8	**2.9**
UNFT	4.3	4.5	5.2	5.3	5.6	5.7	**25.0**
Carbon - permits	0.0	0.0	0.9	0.8	0.0	0.0	**1.7**
Contestability costs	0.6	0.6	0.6	0.0	0.0	0.0	**1.8**
Unaccounted for gas (UAG)	0.9	1.4	1.1	1.1	1.2	1.6	**5.7**
Ancillary services	0.9	0.9	0.9	1.0	1.1	1.1	**5.5**
Other direct costs	0.3	1.6	0.3	0.4	2.9	4.2	**5.4**
Total other allowable costs	**7.5**	**10.0**	**9.4**	**9.5**	**11.0**	**13.4**	**47.3**
Total opex*	**26.2**	**27.4**	**26.6**	**25.8**	**28.2**	**29.7**	**134.2**

**excluding debt raising costs*

2.3 Usage of the pipeline

Table 2.3 provides pipeline usage over the 2010-16 access arrangement period.

Table 2.3 Actual historical minimum, maximum and average pipeline daily demand

	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16 forecast
Minimum	61.73	65.75	59.62	62.34	62.94	63.24
Maximum	4.22	4.97	4.81	3.95	5.07	5.28
Average	23.66	23.80	22.93	21.26	22.95	22.77

Table 2.4 provides customer numbers by customer type for the 2010-16 access arrangement period.

Table 2.4 Actual customer numbers by customer type over the 2010-15 period

	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16 forecast
Total volume market	120,438	124,411	129,394	134,234	138,839	140,136
Total demand market	37	38	38	39	40	40

3 Capital base

3.1 Opening capital base for the 2010-15 period

The opening regulatory asset base (RAB) as at 1 July 2010 is the closing RAB as at 30 June 2010 of $278.1 million (total). That amount includes estimated net capex of $15.5 million for 2009/10. Actual net capex for 2009/10 was $10.8 million. The difference ($4.7 million), uplifted at the weighted average cost of capital for five years, is included as an adjustment of -$7.5 million in 2015. Details of the adjustment are shown in Table 3.1.

Table 3.1 Adjustment for difference between estimated and actual net capex in 2009-10 ($million, nominal)

Asset class	Closing RAB	Difference between estimated and actual net capex for 2009-10			WACC uplift	Adjustment in 2014/15
	30 June 2010	Estimate	Actual	Difference		
Combined total	**278.1**	**15.5**	**10.8**	**-4.7**	**-2.9**	**-7.5**

(1) Net capex is capex after accounting for capital contributions and disposals.

3.2 Closing capital base for the 2010-15 period

ActewAGL Distribution accounts for inflation by indexing the capital base. This is consistent with the NGR, and with the precedent set in the majority of Australian regulatory decisions. Therefore, ActewAGL Distribution has adjusted its capital base as follows:

> *capital base = opening capital base + indexation at CPI + conforming capital expenditure – depreciation + conforming assets from speculative investment account – redundant assets + re-used redundant assets – asset disposals.*[3]

The following projections of the capital base are based on actual data for capex, capital contributions and asset disposals for the years 2010/11 to 2014/15 inclusive. In addition to:

- consumer price index (CPI) values are as set out in Table 3.2.
- economic and remaining asset lives are as presented in section 3.4.

[3] Rule 77.

Table 3.2 Increase in CPI (per cent)

Year	Annual increase in CPI
2010/11	2.85
2011/12	3.39
2012/13	1.76
2013/14	2.45
2014/15	2.49

(1) Source: Australian Bureau of Statistics.

(2) Values are year on year CPI inflation for the year to December for the eight capital cities as published by the Australian Bureau of Statistics.

In rolling forward the capital base to 2015, ActewAGL Distribution has not included any conforming assets from a speculative investment account, classified any assets as redundant assets, or re-used any assets previously classified as redundant.

ActewAGL Distribution has deducted forecast depreciation in rolling forward its capital base from 2010/11 to 2014/15 in accordance with the 2010 access arrangement decision.

Further, ActewAGL Distribution did not forecast any asset disposals and has not incurred (or forecast) any disposals during the 2010-15 period.

Table 3.3 sets out ActewAGL Distribution's roll forward of the capital base for its gas distribution system over the 2010-15 period.

Table 3.3 Roll forward of combined total capital base over the 2010/11 - 2014/15 period ($million, nominal)

	2010/11	2011/6	2012/13	2013/14	2014/15
Opening balance	278.1	288.59	302.2	313.8	326.9
Net capex	12.0	15.0	18.7	18.6	24.3
Indexation of capital base	7.9	9.8	5.3	7.7	8.1
Depreciation of capital base	-9.4	-11.2	-12.5	-13.2	-13.7
Adjustment for 2009-10 capex	0	0	0	0	-7.5
Closing capital base	**288.6**	**302.2**	**313.8**	**326.9**	**338.1**

The closing capital base value for 2014/15 constitutes the opening capital base for the 2015-21 period.

Conforming capital expenditure over the 2009-15 period is summarised by asset class in Table 3.4. We also provide capital contributions over the 2009-15 period in Table 3.5. Further details on historical capex were provided in Attachment 6 of our June 2015 submission.

Table 3.4 Conforming capital expenditure by asset class 2009/10 – 2014/15 ($million, 2009/10)

	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
High pressure (HP) Mains	2.4	2.6	1.4	1.1	5.7	6.0
HP Services		0	0	0	0	0
Medium pressure (MP) Mains	3.2	3.1	3.9	2.1	3.0	2.1
MP Services	2.4	2.8	2.4	2.5	3.1	3.7
TRS & DRS – Values & Regulators	0	0.2	3.3	6.8	0.9	5.1
Contract meters	0	0	0	0	0	0
Tariff meters	1.4	2.3	2.4	4.0	3.7	3.7
Regulatory costs	0.6	0	0	0	0	0
IT system	0.2	0.3	0.2	0.1	0.2	0
Land and easement	0	0	0	0	0	0
Total	**10.2**	**11.2**	**13.6**	**16.6**	**16.1**	**20.5**

Table 3.5 Capital contributions over the 2010/11 - 2014/15 period ($million, nominal)

	2010/11	2011/12	2012/13	2013/14	2014/15	Total
Contributions	**1.3**	**0.1**	**1.5**	**0.0**	**0.0**	**3.2**

3.3 Projected capital base for the 2015-21 period

The projected capital base for the 2015-21 period is set out in Table 3.6.

Table 3.6 Roll forward of combined total capital base over the 2015/16 – 2020/21 period ($million, nominal)

	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
Opening balance	338.1	365.5	380.1	393.8	408.2	423.0
Net capex	31.8	20.1	19.9	21.4	22.7	18.5
Indexation of capital base	7.4	8.0	8.3	8.6	8.9	9.3
Depreciation of capital base	-11.8	-13.4	-14.5	-15.6	-16.9	-18.0
Closing capital base	**365.5**	**380.1**	**393.8**	**408.2**	**423.0**	**432.7**

The project capital base is derived from our revised capex forecast and summarised by asset class in Table 3.7. We also provide forecast capital contributions in Table 3.8.

Table 3.7 Conforming capital expenditure by asset class 2015/16 – 2020/21 ($million, 2015/16)

	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
High pressure (HP) Mains	10.5	2.7	1.9	2.1	7.4	3.4
HP Services	0.2	0.2	0.2	0.2	0.2	0.2
Medium pressure (MP) Mains	5.1	4.6	4.8	4.7	2.6	2.4
MP Services	3.6	3.8	3.8	3.7	3.7	3.6
TRS & DRS – Values & Regulators	6.7	2.6	2.7	2.3	0.2	0.6
Contract meters	0.3	0.3	0.1	0.2	0.1	0.2
Tariff meters	4.5	4.7	4.9	5.8	5.9	5.7
Regulatory costs	0	0	0	0	0	0
IT system	0	0.2	0.1	0.2	0	0
Land and easement	0	0	0	0.4	0	0
Total	**30.8**	**19.0**	**18.5**	**19.4**	**20.2**	**16.1**

Table 3.8 Forecast capital contributions over the 2015/16 – 2020/21 period ($million, 2015/16)

	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	Total
Contributions	**0.7**	**0.7**	**0.8**	**0.8**	**0.8**	**0.8**	**4.8**

3.4 Depreciation

ActewAGL Distribution has established a depreciation schedule that reflects the economic lives and cash flow needs of the business consistent with the NGR requirements.

The amount of regulatory depreciation for each asset class is determined for each year of the access arrangement period by applying the real straight-line depreciation method to the opening regulatory value of each asset class for each year. Real straight-line depreciation (as distinct from historical cost straight-line) involves deducting the same real amount of depreciation in each year of an asset's life.

Forecast regulatory depreciation for the 2015-21 period is provided in Table 3.9. A demonstration of how the forecast is derived is included in the Post-tax Revenue Model.

Table 3.9 Forecast depreciation over the 2015/16 – 2020/21 period ($million, nominal)

	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	Total
Total	11.8	13.4	14.5	15.6	16.9	18.0	**90.2**

Forecast depreciation for the 2015-21 period, adjusted for the difference between forecast and actual CPI, will be used in rolling forward the capital base to the beginning of the access arrangement period beginning on 1 July 2021 (Rule 90(2)).

3.4.1 Assumptions on economic life of assets for regulatory depreciation

The economic lives that ActewAGL Distribution has adopted for its assets are set out in Table 3.10.

Table 3.10 Economic lives of ActewAGL Distribution assets (years)

Asset class	Economic asset life (years)
High pressure (HP) Mains	80
HP Services	50
Medium pressure (MP) Mains	50
MP Services	50
TRS & DRS – Values & Regulators	15
Contract meters	15
Tariff meters	15
Regulatory costs	5
IT system	5
Land and easement	n/a

3.4.2 Remaining Asset Lives

Remaining asset lives for the capital base at 30 June 2015 are set out in Table 3.11.

Table 3.11 Remaining asset lives as at 30 June 2015 (years)

Asset class	Remaining life (years)
High pressure (HP) Mains	64.2
HP Services	27.5
Medium pressure (MP) Mains	27.3
MP Services	37.6
TRS & DRS – Values & Regulators	11.6
Contract meters	1.0
Tariff meters	11.6
Regulatory costs	1.0
IT system	5.4
Land and easement	n/a

4 Demand

4.1 Demand forecasting approach

ActewAGL Distribution engaged Core Energy to prepare the demand forecasts for the access arrangement period. The demand forecasting approach broadly involved forecasting customer numbers and the average consumption per connection to provide total forecast demand.[4]

4.1.1 Approach to forecasting customer numbers

The approach to forecasting customer connections involved:

- determining the historical trend in new connections to derive a suitable forecast for each year;
- analysing the historical trend in the rate of disconnections to derive a suitable forecast for each year; and
- adjusting connection forecasts for factors which are not present in the historical trend, including forecast changes in the relative prices of gas and electricity.

4.1.2 Approach to forecasting demand per connection

The approach to forecasting demand per connection involved:

- normalising total demand per annum for the effects of weather, based on AEMO guidelines;[5]
- dividing total demand by number of connections to determine consumption per connection;
- determining the historical trend in consumption per connection to establish a base for projection; and
- adjusting consumption per connection forecasts for factors which are not present in the historical trend, including the impact of rising wholesale gas prices.

[4] Rule 72(1)(d) of the National Gas Rules states that the access arrangement information must provide to the extent practicable a forecast of pipeline capacity over the access arrangement period and the basis upon which the forecast has been derived. Capacity information for a distribution network is not available or meaningful for a distribution pipeline. The ActewAGL Distribution 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.

[5] AEMO, 2012 *Review of the weather standards for gas forecasting*, April 2012.

4.2 Demand forecast

Table 4.1 to Table 4.3 set out ActewAGL Distribution's forecast customer numbers, average daily consumption and annual consumption by customer type over the 2016-21 access arrangement period.

Table 4.1 Forecast customer numbers by customer type

	2016/17	2017/18	2018/19	2019/20	2020/21
Total volume market	143,146	146,310	149,459	152,806	155,927
Total demand market	40	40	40	40	40
Total customers	143,186	146,350	149,499	152,846	155,967

Table 4.2 Forecast average daily consumption by customer type and MDQ (GJ)

	2016/17	2017/18	2018/19	2019/20	2020/21
Volume market	17,258	16,917	16,615	16,401	16,224
Demand market	3,248	3,249	3,374	3,375	3,376
Total average load	20,506	20,165	19,989	19,776	19,600
Demand market MDQ/CD	7,951	7,956	8,201	8,206	8,211

Table 4.3 Forecast annual consumption by customer type (TJ)

	2016/17	2017/18	2018/19	2019/20	2020/21
Total volume market	6,299	6,175	6,064	5,986	5,922
Total demand market	1,185	1,186	1,231	1,232	1,232
Total consumption	7,485	7,360	7,296	7,218	7,154

Table 4.4 details ActewAGL Distribution's forecast new connections by volume market type over the 2016-21 access arrangement period.

Table 4.4 Forecast new connections by volume market type

	2016/17	2017/18	2018/19	2019/20	2020/21
Electricity to gas (E to G)	768	768	768	768	768
New estates	2,073	1,988	1,936	1,936	1,796
New medium density and high rise	1,066	1,280	1,330	1,330	1,260
Small business	84	126	129	132	136

Actual and forecast consumption per connection is set out in Table 4.5 by market type.

Table 4.5 Actual and forecast average consumption by market type (GJ)

	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2021/22
Total residential	37.47	36.07	34.84	33.39	32.15	31.05	30.06
Total business	439	427	414	398	380	366	355

ActewAGL Distribution notes that under Rule 72(1)(d) the access arrangement information must include:

> *… to the extent that 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.*

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. The AER has recognised this in the draft decision.[6]

[6] AER 2015, *Attachment 13 – Demand, Draft decision: ActewAGL Distribution access arrangement 2016-21*, November, p. 13-10

5 Operating expenditure

5.1 Operating expenditure forecasting approach

ActewAGL Distribution's opex forecast has been prepared on a basis that ensures its expenditure during the 2016-21 access arrangement period reasonably reflects the criteria set out in Rule 91(1). Two methods have been adopted for forecasting opex in the next access arrangement period.

- A ***base-step-trend approach*** has been used for controllable costs.
- ***Annual category specific forecasts*** have been used for non-controllable costs, for which base year expenditure does not necessarily reflect ActewAGL Distribution's expectations of these costs over the 2016-21 access arrangement period. For these costs, ActewAGL Distribution proposes to continue to pass through actual costs incurred by way of an annual tariff variation.

ActewAGL Distribution considers this approach best delivers a forecast that reflects the opex that would be incurred by a prudent service provider acting efficiently, in accordance with accepted good industry practice, to achieve the lowest sustainable cost of delivering pipeline services in its circumstances.

5.2 Operating expenditure forecast

ActewAGL Distribution's opex forecast for the 2016-21 access arrangement period by category (excluding debt raising costs) is provided in Table 5.1.

Table 5.1 ActewAGL Distribution's 2016-21 opex forecast by category ($million, 2015/16)

	2016/17	2017/18	2018/19	2019/20	2020/21	Total
Controllable costs						
Management services fee	10.2	9.3	9.3	9.5	9.7	**48.0**
Asset services fee	4.1	4.2	4.3	4.6	4.4	**21.6**
Corporate overheads	2.3	2.3	2.3	2.3	2.6	**11.9**
Information technology support	0.2	0.2	0.2	0.2	0.2	**0.8**
Regulatory operations	2.6	2.6	2.8	5.3	4.1	**17.4**
Consumer engagement	0.1	0.1	0.1	0.1	0.1	**0.5**
Marketing	1.2	1.2	1.2	1.3	1.3	**6.2**
Other direct costs	1.1	1.1	1.1	1.2	1.2	**5.7**
Total controllable costs	**21.7**	**21.1**	**21.3**	**24.4**	**23.6**	**112.1**
Non-controllable costs						
Government levies	0.6	0.5	0.5	0.5	0.5	**2.7**
UNFT	6.2	6.5	6.8	7.1	6.9	**33.5**
UAG	1.5	1.5	1.5	1.5	1.5	**7.6**
Water bath heater operations	0.2	0.2	0.2	0.2	0.2	**0.8**
Ancillary services	1.1	1.1	1.1	1.2	1.2	**5.7**
Insurance	0.1	0.1	0.1	0.1	0.1	**0.6**
Total non-controllable costs	**9.7**	**9.9**	**10.2**	**10.6**	**10.4**	**50.8**
Total opex	**31.4**	**31.0**	**31.6**	**35.0**	**34.0**	**162.9**

6 Key performance indicators

For the 2016-21 access arrangement period ActewAGL Distribution will apply the same key performance indicators (KPIs) as it has applied during the current access arrangement period. The KPIs and the targets are shown in Table 6.1 below.

Table 6.1 Key performance indicators

Indicator	Definition	Target
Supply reliability		
Major unplanned outages ≥5 customers	The number of unplanned supply outage incidents that impact five or more customers. Performance under this indicator reflects the adequacy of the design of the network. Performance under this measure is mostly driven by third party hits to the network, and so is linked to performance under the 'hits to network' indicator.	2
Asset integrity		
Third Party Reported Gas Leaks per 10 kilometre of main	The frequency of gas leaks reports by parties external to the distributor per 10 kilometre of main. These are usually very minor reports such as the smell of gas. Performance under this indicator is mostly driven by leaks at customer metering equipment and drives metering equipment replacement capital expenditure and maintenance expenditure.	3
Hits to Network per 10 kilometre of main	The number of mechanical damage incidents per 10 kilometre of main. These incidents may have serious consequences in regard to supply reliability, safety and the environment. Minimising this measure has a direct impact on unplanned maintenance and it therefore a significant driver of operating costs, for example UAG and gas losses.	0.7
% Unaccounted for Gas	The proportion of gas measured as being received into the network that is not measured as being delivered. This is direct driver of network operating expenditure.	1.96
Emergency management		
% Emergency Response within 60 minutes	The annual percentage of times that responses to emergency incidents have been inside 60 minutes. This is an important indicator of responsiveness to emergency incidents. ACTPLA uses this measure to determine emergency responsiveness in accordance with regulatory obligations. This indicator also provides a measure to assist understanding of factors that influence response times and the ability to deliver outcomes that exceed regulatory compliance and mitigate network and community risks.	100

Indicator	Definition	Target
Preventative Maintenance (PM) Completion (%)	The level of PM work completed within the 12-month period, as a percentage of all PM of scheduled for completion with the year. PM extends the life of assets and ensures operational effectiveness and efficiency, thereby influencing stay-in-business capex and network reliability. It also contributes to safety outcomes as PM can identify asset integrity issues that may lead to safety issues before they occur.	100
PM/CM Ratio (%)	The number of PM service orders completed during the year, compared with the number of Corrective Maintenance (CM) service orders as a percentage. A high level of CM may highlight specific problems within a system that may be used to identify poorly performing assets, or a change in asset risk profiles, driving the need for capital improvements.	50
Pipeline Patrol Compliance (%)	Tracks whether the several types of pipeline patrol with different frequencies are being completed on schedule. This can be used to determine the adequacy of current resource levels, particularly with regard to standby resources and third party contractor management.	100
Simulations Conducted	Number of emergency simulations conducted each year. Simulations of incidents and emergency exercises are conducted at regular intervals to confirm the adequacy of resources and robustness of emergency response management systems. Rotating simulations across regions and asset classes ensures that staff emergency training is maintained.	2
Utilisation		
Customers per kilometre Mains	The customers connected per kilometre of the mains laid. This indicator shows the utilisation of infrastructure as a lead indicator for load and capacity planning for capacity development and stay-in-business capex, together with network marketing strategies.	25
Network Performance		
Cathodic Protection Reliability (%)	The percentage the level of cathodic protection in the network. Cathodic protection is an important indicator for the protection of key high-pressure assets to ensure maintenance (and extension) to asset lives.	100
SAIFI per 1000 customers	System average interruption frequency index (SAIFI) is the ratio of total number of events to the total number of customers, expressed per 1000 customers. This is an important indicator of network performance and system reliability.	<10
Back Office/ Market interface		
Contract Billing (%)	The timeliness of monthly read of daily read sites as a percentage. This shows customer billing management performance, allowing network revenue management and customer service levels to be maintained.	98

Indicator	Definition	Target
Quarterly and Monthly Tariff Reading (%)	The percentage of quarterly and monthly meter reading completed within ±2 days of the scheduled date. This shows customer billing management performance, allowing network revenue management and customer service levels to be maintained.	95
Service Order Delivery (%)	The provision of the requested service within the specified timeframe for the activity. This shows that customer and retailer service level obligations are met in line with regulatory requirements.	100
Health and safety		
Lost Time Injury: JAM	Lost Time Injury (LTI) to JAM employees. ActewAGL Distribution has obligations under the *Work Safety Act 2008* (ACT) to ensure the safety of its employees, including contractors. This indicator assists in monitoring the safety performance of JAM. Lost time injuries are also a driver of costs.	<5
LTI: Contractors	This keeps account of LTI of contractors to JAM. ActewAGL Distribution has obligations to sub-contractors as well as direct employees under the Work Safety Act.	<5
Environment		
Reportable Environment Incidents	The number of times ActewAGL Distribution is directly involved in an environmental incident with requires external reporting to the Environment Protection Authority of NSW or Environment ACT. Environmental incidents are costly and damage ActewAGL Distribution's reputation. Minimisation of this measure, through appropriate environment management plans, practices and procedures is a key driver of expenditure.	0
Safety and Operating Plan (SAOP)		
Non-Conformance Report not actioned	Percentage of SAOP non-conformance reports (NCRs) that are followed up within the required timeframe. This is a measure of compliance with the SAOP. This includes application and compliance with relevant Australian Standards, which are called up in the SAOP and management of distribution authorisation and licence obligations.	0
Customer service		
New Customer Connections on time	Percentage of new customer connections made on time. This is a measure of customer service, as well as relating to a Consumer Protection Code (CPC) Minimum Service Standard rebate. This is also a key driver of ActewAGL Distribution revenue, as late connections lead to foregone revenue.	100
Consumer Protection Code (CPC) Compliance	The CPC outlines the basic rights of customers and consumers and utilities with respect to access to, and provision of, utility services. Compliance with the CPC is a key obligation on ActewAGL Distribution.	100

7 Rate of return, imputation credits and inflation

This section addresses the requirements of the NGR for the access arrangement information to include for each regulatory year of the 2016-21 access arrangement period:

- As prescribed by Rule 72(1)(g), the proposed:
    - return on equity;
    - return on debt; and
    - allowed rate of return,

  for each year of the access arrangement period, including any departure from the methodologies set out in the Rate of Return Guideline and the reasons for that departure.
- As prescribed by Rule 72(1)(ga), include the proposed formula (if any) that is to be applied in accordance with Rule 87(12):
    - Rule 87(12), if applicable, requires specification of a formula to give effect to the resulting change in total revenue arising from the annual adjustment to the return on debt.

This section also addresses the proposed return on equity, return on debt and allowed rate of return for the 2015/16 year, for the purpose of the true-up for the interval of delay in accordance with Rule 92(3) of the NGR that impacts on total revenues for the 2016-21 access arrangement period.

7.1 Summary of revised rate of return, imputation and inflation estimates

The allowed rate of return for the 2016-21 regulatory period, specified as a nominal vanilla WACC and based on a placeholder averaging period for the return on equity risk free rate and the return on debt of the last 20 business days in September 2015, is 8.58 per cent per annum as set out in Table 7.1. The return on debt set out in Table 7.1 is estimated using a trailing average portfolio approach, with the averaging period adopted for each of the prior nine financial years being:

- for each of 2007/08 to 2014/15 inclusive, the immediately preceding full financial year, that is 2006/07 to 2013/14 respectively; and
- for 2015/16, our nominated return on debt averaging period for that year (accepted by the AER in the Draft Decision) of the 15 business days commencing on 4 June 2015.

This WACC is to be updated in the final decision for our actual return on equity risk free rate averaging period for the 2016-21 regulatory period and our return on debt averaging period for the 2016/17 financial year. It is also to be updated annually thereafter for each of the second

and subsequent financial years for the trailing average return on debt derived for that year by reference to the prevailing return on debt in the averaging period for that financial year.

Table 7.1: ActewAGL Distribution's revised rate of return, 2016-21 period

Parameters	AAD's revised proposal (per cent)
Return on equity	9.89
Return on debt	7.70
Inflation	2.19
Leverage	60.00
Gamma	25.00
Corporate tax rate	30.00
Nominal vanilla WACC	**8.58**

Note: the return on equity risk free rate, return on debt and forecast inflation based on the 20-business day period ending 30 September 2015

The allowed rate of return for the 2015/16 year, for the purpose of performing the true-up for the interval of delay in accordance with Rule 92(3) of the NGR, specified as a nominal vanilla WACC and based on a placeholder averaging period for the return on equity risk free rate of the last 20 business days in September 2015 and our actual return on debt averaging period for the 2015/16 year (accepted by the AER in its Draft Decision) of the 15 business days commencing on 4 June 2015, is 8.64 per cent per annum as set out in Table 7.2.

The return on debt set out in Table 7.2 is estimated using a trailing average portfolio approach, with the averaging period adopted for each of the prior nine regulatory years, 2006/07 to 2014/15 inclusive, being the immediately preceding full financial year, that is 2005/06 to 2013/14 respectively.

This WACC is to be updated in the final decision for our actual return on equity risk free rate averaging period.

Table 7.2: ActewAGL Distribution's revised rate of return, 2015/16 year

Parameters	AAD's revised proposal (per cent)
Return on equity	9.89
Return on debt	7.81
Inflation	2.19
Leverage	60.00
Gamma	25.00
Corporate tax rate	30.00
Nominal vanilla WACC	**8.64**

Note: the return on equity risk free rate and forecast inflation based on the 20-business day period ending 30 September 2015

7.2 Departures from the Rate of Return Guideline

ActewAGL Distribution has departed from the AER's Rate of Return Guideline to the extent that we do not consider that the guideline best achieves the allowed rate of return objective (ARORO) set out in Rule 87(2).

The departures from the Rate of Return Guideline are:

- ActewAGL Distribution has outlined an alternative approach to estimating the return on equity that adjusts the calculation of the market risk premium and the equity beta, although this is carried out in a manner consistent with the foundation model (SL-CAPM) preferred in the Guideline;
- ActewAGL Distribution has adopted a different credit rating assumption for the purposes of estimating the return on debt. A credit rating of BBB to BBB+ is proposed, rather than BBB+ as proposed by the AER;
- ActewAGL Distribution has proposed immediately implementing a trailing average approach to estimating the return on debt (with no transition), rather than the applying the method for transitioning to the trailing average portfolio approach outlined in the Rate of Return Guideline. In estimating the return on debt for the 2015/16 year, it is proposed that the trailing average approach utilise a simple average of the Bloomberg and RBA curves for the first 9 years, and the RBA curve for the most recent year (based on ActewAGL Distribution's nominated averaging period for the 2015/16 year (accepted by the AER in the Draft Decision) of the 15 business days commencing 4 June 2015). In estimating the return on debt for the 2016/17 year, being the first year of the 2016-21 regulatory period, it is proposed that the trailing average approach utilise the prevailing return on debt for 2015/16 derived in the manner just described, a simple average of the Bloomberg and RBA curves for the prior 8 years and the prevailing return on debt for the 2016/17 year estimated using the data source and extrapolation method selected for ActewAGL Distribution's nominated 2016/17 averaging period using ActewAGL Distribution's proposed data source selection method;
- ActewAGL Distribution has adopted a method for selection of future averaging periods for the purposes of estimating the prevailing return on debt in each year of the 2016-21 regulatory period, rather than specifying all averaging periods in advance of that regulatory period. ActewAGL Distribution has proposed for 2017/18 and subsequent financial years, the in-period nomination and specification of averaging periods in accordance with section 6 of the revised access arrangement; and
- ActewAGL Distribution has adopted a different estimate of the value of imputation credits (gamma).

In each case the reason for the departure is that we do not consider that the Rate of Return Guideline best achieves the ARORO. The reasons for these departures are explained in detail in ActewAGL Distribution's *Response to the draft decision*, and associated appendices.

7.3 Process for updating the return on debt and total revenue annually in 2016-21 period

ActewAGL Distribution applies a four step process for updating the return on debt each year over the 2016-21 regulatory period and the resulting change in total revenue. This process is specified in ActewAGL Distribution's access arrangement (clause 6).

The steps are as follows:

- **Steps 1 and 2**: **estimate a 'spot rate' return on debt for the relevant year**, where:
    - The averaging period for the spot rate is nominated by ActewAGL Distribution and either accepted or rejected by the AER in advance of that period and, if rejected, an alternative period is set by the AER (step 1).
    - The spot rate is estimated using the independent third party data source that best fits the traded bond data over that averaging period, where the fit is measured statistically (step 2).

      ActewAGL Distribution gives effect to this step using a process that automatically selects the best fitting independent third party estimate. This process is codified in clause 6.7 of our access arrangement. The process is specified in as much detail as possible, so that it can be applied automatically and within a relatively short timeframe.

      The estimate produced by step 2 is not the return on debt that will be used to update total revenue and tariffs for the relevant year—rather, it is one parameter in the calculation of the updated return on debt (see step 3 below).
- **Step 3: update the trailing average to derive the updated return on debt figure to apply for the relevant year**. This is the return on debt used to update total revenue and tariffs. The updated trailing average return on debt is a function of the 'spot rate' estimated in step 2 for that year and the spot rates for previous years.
    - The return on debt is updated using an automatic application of a weighted average formula. The weighted average formula is set out in clause 6.1 of the access arrangement.
- **Step 4: update total revenue and tariffs** entering the return on debt figure from step 3 into ActewAGL Distribution's revenue forecast model (the PTRM), attached as draft decision response Appendix 10.01 and resolving for the relevant X factors. As required by the NGR, the change in total revenue resulting from any update to the return on debt is given effect by automatic application of a formula that is set out in ActewAGL Distribution's revised PTRM. Once the updated return on debt is entered, this model updates forecast revenues and X factors automatically using the formulae embedded within it.

7.4 Forecast inflation

ActewAGL Distribution proposes to apply an inflation forecast of 2.19 per cent based on market data, referred to as the breakeven inflation method, for the 2015-21 period.

7.5 Debt raising costs

ActewAGL Distribution has revised its estimate of debt raising costs for the 2015-21 period to 9.2bppa.

7.6 Equity raising costs

ActewAGL Distribution has used the latest version of the PTRM to calculate equity raising costs and found that, based on its submitted expenditure programs for the 2015-21 period, it would not incur any equity raising costs in that period.

However, although we continue to estimate zero equity raising costs for the 2015-21 period at this stage, we propose retaining the calculation within the PTRM and updating it for any changes in forecast cash flows or RAB in the AER's final decision.

Further detail is provided in Chapter 5 of the Response to the draft decision.

8 Corporate income tax

Clause 87A of the Rules state that the estimated cost of corporate income tax for each regulatory year (ETC_t) must be estimated in accordance with the following formula:

$ETC_t = (ETI_t \times r_t)(1 - \gamma)$

where:

ETI_t is an estimate of the taxable income for that regulatory year that would be earned by a benchmark efficient entity as a result of the provision of reference services if such an entity, rather than the service provider, operated the business of the service provider;

r_t is the expected statutory income tax rate for that regulatory year as determined by the AER; and

γ is the value of imputation credits.

ActewAGL Distribution has calculated the corporate income tax building block using the approach in the AER's post tax revenue model (PTRM) and covered in this section.

The key inputs into this method of setting the allowance for corporate income taxes are the tax asset base (TAB), tax standard and remaining lives, and the gamma parameter setting the value of imputation tax credits.[7]

8.1 Tax asset base

The TAB is rolled forward using the AER's roll-forward model (RFM) and uses the same capital expenditure (capex) and capital contributions inputs as for the capital base.

The value of the TAB and the roll forward to 30 June 2015 is demonstrated in Table 8.1. Consistent with the AER's RFM, the TAB has been updated for the actual capex outcome in 2009/10 rather than the forecast capex amount included in the AER's 2010 final decision. ActewAGL Distribution has calculated depreciation based on the standard and remaining lives as set out in the AER's 2010 final decision.

[7] Gamma measures the value of imputation credits to investors. Though it does not enter into the nominal vanilla weighted-average cost of capital (WACC), it is typically considered part of the cost of capital. The appropriate rate for gamma is discussed in section 7.

Table 8.1 Roll forward of the TAB, 2009/10-2014/15 ($million, nominal)

$ million (nominal)	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
Opening TAB	189.4	191.6	195.8	201.0	210.9	218.7
plus capex	10.4	12.8	14.3	19.4	17.8	23.2
less tax depreciation	8.2	8.6	9.1	9.5	10.0	10.5
Closing TAB	**191.6**	**195.8**	**201.0**	**210.9**	**218.7**	**231.4**

The forecast TAB over the 2015/16 extension year and 2016-21 access arrangement period is calculated within the PTRM and is shown in Table 8.2.

Table 8.2 Roll forward of the TAB, 2015/16-2020/21 ($million, nominal)

$ million (nominal)	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
Opening TAB	231.4	252.2	260.8	270.2	281.3	292.9
***plus* net capex**	30.8	19.5	19.3	20.7	22.0	17.9
***plus* capital contributions**	0.7	0.8	0.9	0.9	0.9	0.9
***less* tax depreciation**	10.8	11.7	10.7	10.5	11.3	12.2
Closing TAB, distribution	**252.2**	**260.8**	**270.2**	**281.3**	**292.9**	**299.6**

8.2 Corporate income tax building block

ActewAGL Distribution proposes a corporate income tax building block as set out in Table 8.3.

Table 8.3 Corporate income tax building block 2015/16–2020/21 ($million, nominal)

	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	Total
Tax payable	3.0	3.5	4.4	5.0	5.3	5.5	**26.7**
Less value of imputation credits	0.7	0.9	1.1	1.3	1.3	1.4	**6.7**
Tax allowance	**2.2**	**2.6**	**3.3**	**3.8**	**4.0**	**4.1**	**20.0**

This building block is based on:

- an estimate of the taxable income for each respective regulatory year using the PTRM input parameters as set out in this proposal, consistent with what would be earned by a benchmark efficient entity;
- the application of a utilisation of imputation credits of 25 per cent, as set out in section 7; and
- ActewAGL Distribution's use of the legislated corporate tax rate of 30 per cent as the expected statutory income tax rate.

9 Incentive mechanisms

9.1 Carryover amounts from the 2010-15 incentive mechanism

In accordance with the rolling carryover mechanism in clause 4.6 of the 2010-15 access arrangement and the AER's draft decision on the formulae to be applied for the calculation of carryover amounts in 2014/15 and 2015/16, ActewAGL Distribution has calculated the carryover amounts as shown in Table 9.1 below. The carryover amounts for each year of the 2016-21 access arrangement period, as shown in Table 9.2, have been added to the revenue building blocks for that year.

Table 9.1 Carryover amounts from 2010-15 access arrangement ($million)

	2010/11	2011/12	2012/13	2013/14	2014/15
Forecast opex for the incentive mechanism, $2009/10	15.9	18.0	18.6	18.6	18.0
Forecast opex for the incentive mechanism, $2015/16	18.4	20.9	21.6	21.6	20.9
Total actual opex, $2015/16	26.6	28.4	27.6	26.1	28.6
Excluded costs, $2015/16	6.0	8.4	7.9	8.4	7.3
Opex subject to the incentive mechanism, $2015/16	20.6	20.0	19.8	17.8	21.2
Incremental gain/loss ($2015/16)	-2.2	3.0	1.0	2.0	-4.2

Table 9.2 Carryover amounts for 2015/16 – 2020/21 ($million, 2015/16)

	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	Total
Carryover amount	-0.4	1.8	-1.2	-2.2	-4.2	0.0	**-6.2**

9.2 Opex efficiency carryover mechanism for 2016-21

ActewAGL Distribution's revised access arrangement for 2016-21 includes an efficiency carryover mechanism (ECM) for opex. Including an incentive mechanism in the 2016-21 access arrangement is consistent with the revenue and pricing principles in the NGL, and in particular the principle in section 24(3) of the NGL:

A service provider should be provided with effective incentives in order to promote economic efficiency with respect to reference services the service provider provides. The economic efficiency that should be promoted includes–

(a) efficient investment in, or in connection with, a pipeline with which the service provider provides reference services; and

(b) the efficient provision of pipeline services; and

(c) the efficient use of the pipeline.

The AER has approved opex incentive mechanisms for all the gas distribution networks that it regulates.

The ECM in the 2016-21 access arrangement retains the central features of the 2010-15 opex incentive mechanism. ActewAGL Distribution retains the benefit of efficiency gains derived from actual opex being lower, or incurs efficiency losses derived from actual opex being higher, than forecast opex in each year of the access arrangement period. The scheme carries forward ActewAGL Distribution's incremental efficiency gains (or losses) for five years from the year those gains (or losses) occur. The carryover amounts will be an additional building block when ActewAGL Distribution's revenue allowance is determined for the subsequent regulatory period.

Clause 3.7 of the 2016-21 access arrangement specifies the adjustments and exclusions to be made in applying the ECM. The adjustments and exclusions represent changes in circumstances and changes in costs which are outside ActewAGL Distribution's control and do not represent true efficiency gains or losses. The adjustments and exclusions are necessary to ensure that ActewAGL Distribution is given a reasonable opportunity to recover at least its efficient costs, as required under the revenue and pricing principles in the NGL.

Under clause 3.7(a) of the 2016-21 access arrangement, the opex benchmarks used to calculate the carryover amount at the end of the regulatory period will be adjusted for:

- a difference between forecast and actual connections; and/or
- any change in the classification of costs as capex or opex during the access arrangement period.

Under clause 3.7(b) of the 2016-21 access arrangement the following opex categories will be excluded from the operation of the incentive mechanism. The amounts in relation to these categories will be deducted from both the forecast opex and actual opex:

- UAG costs;
- Licence costs;
- Debt raising costs;
- Carbon costs;
- Relevant taxes;

- Other specific uncontrollable costs incurred and reported by ActewAGL Distribution during the access arrangement period, which the AER considers should be excluded in accordance with the NGL and NGR; and,
- Any expenditure incurred in respect of an expenditure category that:
    - is not forecast using a single year revealed cost approach; and,
    - the AER determines, following consultation, to exclude because it is satisfied that it would not promote the NGO.

Finally, under clause 3.7(c), the forecast opex for each year will be adjusted to include any Determined Pass Through Amounts or other AER approved expenditure arising from Cost Pass Through Events which apply in respect of that year.

10 Reference tariffs

ActewAGL Distribution's 2016-21 access arrangement contains several changes to the tariff classes and tariff structures offered in the 2010-15 access arrangement.

In accordance with rule 72(1)(j) of the Rules, this section sets out the proposed approach to the setting of tariffs over the 2016-21 access arrangement period including:

- the suggested basis of reference tariffs, including the method used to allocate costs and a demonstration of the relationship between costs and tariffs; and
- a description of pricing principles employed to set the proposed reference tariffs.

10.1 Pricing principles and basis of reference tariffs

ActewAGL Distribution has considered the following pricing principles and objectives in setting the tariffs for the 2016-21 access arrangement period and over the longer term:

- **recover efficient costs** — ActewAGL Distribution needs to recover at least its efficient costs to continue providing safe and reliable network services to customers now and into the future;
- **promote the efficient use and growth of the network —** set cost-reflective tariffs to enable customers to respond to the tariffs and encourage the efficient use and growth of the network**;**
- **treat customers equitably** — ensure similar customers are grouped together and pay prices that reflect the costs they impose on the network;
- **keep gas competitive** — maintain and enhance the attractiveness and position of natural gas as a value-for-money fuel of choice, and promote competition with alternative energy sources;
- **provide stability in network tariffs** — where possible, minimise any sudden changes in network tariffs; and
- **provide simplicity and transparency in tariffs** — consider customer preferences and the transaction costs of providing customised tariffs, provide information on the tariffs and any tariff variations to help customers understand and be able to respond to the tariffs, and ensure consumers, stakeholders and the community value and support changes made by ActewAGL Distribution.

To support these objectives, ActewAGL Distribution is proposing to offer the customer groups, tariff classes, tariff structures and charge components as set out in Table 10.1.

Table 10.1 Proposed tariff structure and charge components

Reference service		
Haulage Reference Service		
Customer groups		
Volume (V)		Demand (D)
Tariff classes		
Residential (R)	Business (B)	
Tariff categories		
• residential individually metered (VRI) • residential individually metered with gas heating and other gas appliances (VRH) • residential boundary metered (VRB) • large scale generation principally for residential end customers (VRG)	• small business individually metered (VBS) • medium business individually metered (VBM)	• major customer capacity (DBC) • major customer throughput (DBT) • large scale generation principally for business end customers (DBG)
Charge Components		
• VRI o one fixed charge o four usage block sizes • VRH o one fixed charge o three usage block sizes • VRB o one fixed charge o three usage block sizes • VRG o one fixed charge o three capacity usage block sizes	• VBS o one fixed charge o three usage block sizes • VBM o one fixed charge o three usage block sizes	• DBC o one fixed charge o three capacity usage block sizes • DBT o one fixed charge o one usage charge • DBG o one fixed charge o three capacity usage block sizes

10.2 Method to allocate total revenue to services

ActewAGL Distribution offers a single reference service—the haulage reference service—to meet customer preferences. Rule 93(1) requires total revenue to be allocated between reference and other services in the ratio in which costs are allocated between reference and other services.

ActewAGL Distribution does not have any customers on non-reference services. [8] As a result, the required cost of service (building blocks) is allocated to the haulage reference service.

10.3 Relationship between costs and tariffs

This section outlines the way ActewAGL Distribution's tariffs support allocative efficiency and meet the tariff requirements in the Rules.

It provides:

- demonstration of efficient prices including ActewAGL Distribution's estimates of:
  - standalone and avoidable costs; and
  - long-run marginal costs (LRMC);
- ActewAGL Distribution's consideration of transaction costs; and
- ActewAGL Distribution's consideration of its customers' ability to respond to price signals.

10.3.1 The efficiency measures

10.3.1.1 Standalone and avoidable costs

Rule 94(3) requires that the expected revenue recovered for each tariff class should lie on or between the standalone cost of providing the reference service and the avoidable cost of not providing the reference service.

ActewAGL Distribution's standalone and avoidable cost estimates for each tariff class and the approach to calculating these are set out in the initial proposal[9] and summarised in Table 10.2. The report and Table 10.2 demonstrate that ActewAGL Distribution's expected revenue for each tariff class lies between the two efficiency measures.

[8] ActewAGL Distribution offers two non-reference services: (a) negotiated services; and (b) interconnection of embedded network services.

[9] ActewAGL Distribution - Access Arrangement Information: Appendix 12.02 HoustonKemp COSM Final Report - July 2015.

Table 10.2 ActewAGL Distribution's standalone and avoidable costs and average revenue

Tariff Class	2016/17	2017/18	2018/19	2019/20	2020/21	Compliance check
Residential $/GJ in nominal terms						
Standalone cost	13.16	13.45	14.54	15.82	16.62	Compliant
Avoidable cost	4.20	4.26	4.61	4.82	5.25	Compliant
Average revenue	11.93	12.33	12.74	13.15	13.57	Compliant
Business $/GJ in nominal terms						
Standalone cost	17.14	17.15	18.07	19.60	19.97	Compliant
Avoidable cost	1.19	1.21	1.30	1.36	1.48	Compliant
Average revenue	6.31	6.47	6.50	6.60	6.73	Compliant

10.3.1.2 Long run marginal cost

Rule 94(4) requires the distribution network service provider to take into account the long run marginal cost (LRMC) in setting tariffs.

The LRMC is an estimate of future costs that would be caused by an incremental change in demand. These costs include the costs of expanding the capacity of the network to satisfy incremental change in demand and the associated operation and maintenance of the augmentation.

ActewAGL Distribution has estimated the LRMC for each tariff class using the average incremental approach. Information on the approach used to estimate the LRMC is set out in the initial proposal[10] and summarised in Table 10.3.

The LRMC driven by forecast gas consumption of the network is undefined as gas consumption is forecast to decline over the foreseeable future, and the LRMC associated with forecast growth in customer numbers and forecast peak demand on the network has been estimated based on the $/connection/annum.

Table 10.3 ActewAGL Distribution's LRMC by tariff component

Cost	Annual cost
LRMC Energy Consumption ($/GJ)	Undefined
LRMC residential tariff class ($/connection/annum)	459.79
LRMC business tariff class ($/connection/annum)	460.59

[10] HoustonKemp 2015, *ActewAGL Distribution access arrangement information: Appendix 12.02 COSM Final Report* - June

10.3.1.3 Taking LRMC into account

ActewAGL Distribution considers this LRMC is an upper bound that might apply to a new customer's fixed charge. However, as this LRMC includes network capacity development for existing and new customers to meet forecast peak demand on the network, part of the LRMC could be apportioned to a capacity-based charge. A capacity-based charge might be more appropriate to provide customers with price signals on the costs to provide network services during peak gas usage on the network. However, given customers' usage is not recorded in time increments (as most of ActewAGL Distribution's customers have basic metering equipment installed at their premises which are read quarterly or monthly), the LRMC per connection could instead be appropriately apportioned to customers' usage charges as a proxy for peak demand.

Factors applicable to the consideration of LRMC for gas network pricing, and which explain the reasons LRMC estimates are not equivalent to ActewAGL Distribution's tariff levels, are as follows.

- The Rules permit ActewAGL Distribution to recover its building block cost of services, which includes a return on sunk costs (i.e. the regulatory asset base) and operating expenditure, and can therefore be expected to be different to the LRMC, as acknowledged by Rule 94(5).
- Customers advised ActewAGL Distribution that they prefer for ActewAGL Distribution to minimise its fixed charge as customers see fixed charges as a barrier to gas connection and small gas consumers, particularly over the periods in which consumers use minimal quantities of gas.
- The LRMC estimates are sensitive to assumptions and the quality of input information.
- ActewAGL Distribution needs to ensure that natural gas, as a discretionary fuel, remains competitive. Keeping fixed charges low for first time gas consumers helps to keep gas competitive.
- ActewAGL Distribution's customers indicated that they valued price stability. ActewAGL Distribution notes that the LRMC estimates can be volatile when reassessed over time.

Gas networks are very different from electricity distribution businesses, which must, under the National Electricity Rules, base their tariffs on LRMC. This is because electricity distribution businesses' capacity requirements are primarily driven by peak demand. Gas, and in particular ActewAGL Distribution's gas network, faces competition from other fuel sources as gas is a discretionary fuel in the ACT and NSW. In addition, climate is a significant determinant of the customer mix and utilisation of the network. These factors affect the application of the LRMC to signal the impact of incremental changes in demand.

ActewAGL Distribution notes that its network does not experience capacity constraints to the same extent as some electricity networks. ActewAGL Distribution has capacity to provide additional gas network services to customers, particularly over the summer and spring period where there is currently low gas consumption. For this reason, ActewAGL Distribution is not subject to the same incentives to price its usage or fixed charges at the LRMC and can better

promote the NGO by setting its tariffs to be more cost reflective and by enabling customers to respond to these tariffs to encourage the efficient use and growth of the network.

ActewAGL Distribution has demonstrated this by taking into account its customer preferences for:

- lower usage charges in the VRH, VBS and VBM tariff categories to encourage gas consumption throughout the year through the uptake of multiple gas appliances and commercial gas appliances and applications at a delivery point, rather than solely for heating; and
- lower fixed charges in the VRI tariff category to encourage customers to connect to gas and stay connected to gas as their fuel of choice.

10.3.1.4 Transaction costs

Rule 94(2)(b) requires each tariff class to be constituted with regard to the need to avoid unnecessary transaction costs. It also requires that a tariff, and each charging parameter for a tariff class, be determined with regard to the transaction costs associated with the tariff or each charging parameter.

ActewAGL Distribution has considered transaction costs such as metering charges and administrative costs when determining its tariff classes and charge components. This includes establishing an appropriate balance of transaction costs that supports ActewAGL Distribution's pricing objectives set out in section 10.1 and is consistent with the revenue and pricing principles and the Rules.

ActewAGL Distribution considers that its decision to move to a tariff structure that targets different customer segments is economically efficient for a number of reasons. For example, it would be inefficient to charge individually metered customers consuming less than 10 TJ a year on a capacity-based charge as this would require more sophisticated daily metering and data handling. Such metering costs are avoided by charging these customers on usage, using basic metering equipment.

ActewAGL Distribution also believes the one-off administrative cost to implement the proposed reference tariff categories, classes and structures (the tariff categories referred to in Table 10.1 is justified on the basis that it will encourage new connections and consumption decisions which will promote the efficient use and growth of the network and will lead to lower network charges for all customers over the long term.

This is because the tariff structure has been designed to encourage, through appropriate price incentives:

- new customers to connect to the network and stay connected to the network, which will lead to lower network charges for all customers over the long term as ActewAGL Distribution's costs (which are mainly fixed costs) can be allocated across a larger customer base;

- existing customers to use gas throughout the year by encouraging these customers to install multiple gas appliances or commercial gas appliances and applications, rather than solely gas heating at the delivery point, which will lead to lower network charges for all customers over the long term (as ActewAGL Distribution recovers most of its costs through its usage charges), and will promote the efficient use of the network (as most of the gas is currently consumed on ActewAGL Distribution's network during winter); and
- emerging markets, particularly base load gas users to connect to the network, which will lead to lower network charges for all customers over the long term as ActewAGL Distribution's cost can be allocated across a larger customer base, and will promote the efficient use and growth of the network (as these customers generally have a flat consumption profile and will pay for their own connection to the network).

To ensure the implementation of these changes does not cause retailers unreasonable administrative burden and costs, which may be passed onto customers, and to reduce any administrative burden and costs currently experienced by retailers, ActewAGL Distribution has:

- consulted early and extensively with retailers on the tariff structure and transitional arrangements from the 2010-15 access arrangement to the 2016-21 access arrangement; and
- streamlined the process for major customers to seek additional gas capacity on the network by moving to a chargeable demand-base charge, which harmonises with the approach adopted by JGN in NSW.

ActewAGL Distribution's simplified reference services and move to a chargeable demand-based charge will also avoid transaction costs associated with having multiple fixed charge components for each tariff category and a complex tariff charge component structure. The simplified reference service will improve customer understanding of ActewAGL Distribution's charges and improve participation in energy markets, including reducing the administrative costs and complexity of retail comparison websites. By moving to a chargeable demand-based charge, ActewAGL Distribution has streamlined the process for major customers to seek additional gas capacity and simplified the charge components of the tariffs.

ActewAGL Distribution considers that its proposed tariffs and tariff classes for the 2016-21 access arrangement period provide the appropriate balance between minimising transaction costs and ensuring that customers have incentives to respond to pricing signals.

10.3.1.5 Response to price signals

Rule 94(4)(b)(ii) requires that where a tariff consists of two or more charging parameters, each parameter for a tariff class must be determined having regard to whether the customers belonging to the relevant tariff class are able or likely to respond to price signals.

ActewAGL Distribution considers that it has structured its tariffs and charging components to allow customers and end customers to respond to price signals.

ActewAGL Distribution's proposed approach to lower the usage charges for the VRH, VBS and VBM tariff categories will encourage customers to respond to the tariffs through reduced total energy costs for each additional gas appliances or commercial gas appliance or application installed at the delivery point.

This is because:

- these customers can benefit from lower usage charges to offset the relatively higher fixed charge, and a lower winter bill; and
- ActewAGL Distribution can increase its competitiveness compared to alternative energy sources, by offering to lower its usage charges to help reduce a customer's total energy costs for each additional gas appliance installed at the delivery point.

ActewAGL Distribution considers that this is an appropriate price signal for customers where the marginal costs of supplying additional units is materially lower than the average costs, encouraging increased network utilisation.

ActewAGL Distribution's proposed approach to lower the fixed charge for the VRI tariff category will encourage customers to connect to gas and stay connected to gas by keeping gas competitive compared to alternative energy sources.

11 Reference tariff variation mechanism

The reference tariff variation mechanism in the 2016-21 access arrangement sets out the mechanisms and processes for varying reference tariffs. The mechanism comprises:

- the formula for annual variation of reference tariffs;
- provision for intra-year variation of reference tariffs (in limited circumstances);
- the cost pass through arrangements; and
- the process for the annual reference tariff variation.

11.1 Formula for annual variation of reference tariffs

ActewAGL Distribution has adopted a weighted average price cap (WAPC) in the 2016-21 access arrangement. A WAPC (also known as a tariff basket) sets a limit on the weighted average increase in prices from one year to the next, with the weights based on the quantities sold at each charging parameter. In terms of promoting the NGO, the WAPC is superior to the current fixed price schedule that applied in the 2010-15 access arrangement, and the other options set out in Rule 97 as it aligns ActewAGL Distribution's incentives with the long term interests of consumers. The incentives for ActewAGL Distribution are to:

- Increase throughput and network utilisation, given revenues are not constrained. This supports productive and allocative efficiency.
- Price at cost reflective levels to help ensure customers that are susceptible to bypassing the network are retained, again supporting allocative efficiency.

The annual tariff variation mechanism includes an annual adjustment factor (A_t), which allows for differences between forecast and actual costs for specified events to be recovered or savings returned in tariffs. The proposed automatic adjustment factor, set out in Schedule 4 of the 2016-21 access arrangement, covers the following uncontrollable costs:

- licence fees, including the Australian Energy Market Operator (AEMO) Fee, the Energy Industry Levy and the Utilities (Networks Facilities) Tax (UNFT);
- benchmark unaccounted for gas (UAG) costs;
- carbon costs; and
- relevant taxes.

The automatic adjustment factor will reduce administrative cost for both the AER and ActewAGL Distribution by removing the need for annual cost pass through applications for specified uncontrollable costs.[11]

The automatic adjustment factor is consistent with the mechanism approved by the AER in other access arrangements, such as for JGN. It is also consistent with the approach adopted for electricity distribution networks, where costs associated with jurisdictional schemes (for example UNFT costs for ActewAGL Distribution's electricity network) are recovered via an adjustment in the annual pricing approval process rather than through the cost pass through mechanism.[12]

The formula for the annual tariff variation mechanism also includes a cost pass through factor, calculated in accordance with schedule 4 of the 2016-21 access arrangement. It also includes provision for the X factor for each year to be updated for the return on debt, in accordance with the provisions in clauses 6.25 to 6.31 of the 2016-21 access arrangement.

A side constraint also applies to annual reference tariff variations. While the Rules do not include requirements for side constraints, ActewAGL Distribution has applied a side constraint at the tariff class level, recognising that:

- the AER has adopted side constraints in previous gas access arrangement determinations, where a WAPC has applied;
- a side constraint reduces price volatility and provides additional certainty to customers on annual price movements; and
- the Energy Consumer Reference Council (ECRC) has told ActewAGL Distribution that price shocks should be avoided.

The 10 per cent side constraint is the same as approved by the AER in its final decision for JGN.

11.1.1 Adding or removing tariffs during the access arrangement period

Under clause 7.2 of the 2016-21 access arrangement ActewAGL Distribution may, with the approval of the AER:

- introduce a new tariff class and/or tariff category; and
- remove an existing tariff class and/or tariff category (with or without grandfathering for existing customers).

This clause gives ActewAGL Distribution flexibility to respond to changing consumer preferences or new market opportunities and to give better effect to the NGO. This flexibility is preferred to

[11] Under the 2010-15 access arrangement, specified uncontrollable cost events - related to the AEMO Fee, the UNFT, the Energy Industry Levy and cost differences in the benchmark UAG forecast (set at the UAG target rate of 1.96 per cent) due to price changes - and change in tax events were addressed through the cost pass through mechanism.

[12] AER 2015, *Final Decision, ActewAGL Distribution determination, 2015-19, Attachment 14, Control mechanisms*, April.

the alternative of re-opening and amending the access arrangement when tariff changes are proposed.

Allowing ActewAGL Distribution to add or remove tariffs during the access arrangement period aligns it with the approved approaches for other gas distribution businesses (for example JGN and Envestra) and also with electricity distribution businesses which have scope to add or remove tariffs via the new Tariff Structure Statement process.

11.1.2 Intra-year variations to reference tariffs

Under clause 7.5 of the 2016-21 access arrangement ActewAGL Distribution can propose to vary reference tariffs during a financial year to apply at a date prior to the start of the next financial year, including for the purposes of passing through an amount relating to a cost pass through event. The variation must comply with the WAPC formula set out in clause 7.4 of the access arrangement.

11.2 Cost pass through mechanism

Cost pass through mechanisms provide network service providers an opportunity to recover (and return) unexpected and uncontrollable changes in cost. The purpose is to allow recovery of efficient costs, thereby promoting the efficient operation and use of, and efficient investment in, network services and thus the NGO.[13]

The cost pass through events are:

- Regulatory Change Event
- Service Standard Event
- Insurance Cap Event
- Insurer Credit Risk Event
- Terrorism Event
- Natural Disaster Event
- Network User Failure Event

[13] AEMC 2012, *National Electricity Amendment (Cost pass through arrangements for Network Service Providers) Rule 2012 Rule Determination,* November, p.18, where the AEMC recognized that cost pass throughs enable the service provider to recover the efficient unforeseen costs of events outside the provider's control and that the inability to recover these efficient costs would, over the long term, adversely affect the efficient investment in, and operation of, the provider's network.

11.3 The annual reference tariff variation process

Clauses 7.17 to 7.27 of the 2016-21 access arrangement set out the process for ActewAGL Distribution to notify the AER of a tariff variation and for the AER to assess the proposal. The clauses also specify the information that ActewAGL Distribution must provide, in order to give the AER adequate oversight, as required under Rule 97(4). The process is aligned with that in other approved access arrangements, and also in the National Electricity Rules. This reduces the administrative burden for ActewAGL Distribution and the AER, which ultimately results in lower costs for consumers.

12 Total revenue requirement

ActewAGL Distribution's total annual pipeline service building blocks revenue requirement for the 2016-21 access arrangement period, as well as the 2015/16 extension year, and resulting smoothed revenues and X-factors are set out in Table 12.1 below. The total unsmoothed revenue requirement for the 2016-21 access arrangement (not including 2015/16) is $390.8 million ($nominal).

Table 12.1 ActewAGL Distribution total revenue, 2015-21 ($million, nominal)

$ million (nominal)	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	Total
Return on capital	29.2	31.3	32.6	33.8	35.0	36.3	**198.2**
Return of capital (regulatory depreciation)	4.4	5.4	6.2	7.0	7.9	8.8	**39.6**
Operating expenditure	29.9	32.3	32.6	33.9	38.4	38.1	**205.1**
Revenue adjustments	-0.4	1.8	-1.3	-2.4	-4.6	0.0	**-6.8**
Corporate income tax	2.2	2.6	3.3	3.8	4.0	4.1	**20.0**
Total revenue (unsmoothed)	65.4	73.5	73.4	76.1	80.7	87.3	**456.2**
Total revenue (smoothed)	**70.4**	**74.4**	**75.3**	**76.4**	**77.6**	**79.0**	**453.0**
X-factor	2.14%	-3.78%	0.00%	0.00%	0.00%	0.00%	N/A
Forecast inflation	2.19%	2.19%	2.19%	2.19%	2.19%	2.19%	N/A
Nominal price change	0.00%	6.05%	2.19%	2.19%	2.19%	2.19%	N/A

For the purpose of the interval of delay in accordance with Rule 92(3) of the Rules, the smoothed revenues and X factors for the 2016-21 access arrangement period in Table 12.1 above include a revenue reconciliation or 'true up' of revenue for 2015/16 of $5.0 million. This is the difference between ActewAGL Distribution's estimated revenue to be recovered in 2015/16 and ActewAGL Distribution's forecast building block revenue requirement. This has been calculated using the PTRM and parameter estimates consistent with ActewAGL Distribution's 2016-21 access arrangement proposed building blocks. A nominal vanilla WACC of 8.64 per cent has been applied in 2015/16, which is based on a placeholder averaging period for the return on equity risk free rate of the last 20 business days in September 2015 and ActewAGL Distribution's actual return on debt averaging period for the 2015/16 year (accepted by the AER in its Draft Decision) of the 15 business days commencing on 4 June 2015. The rate of return parameters for 2015/16 are set out in Table 7.2.

13 Compliance checklist

Table 13.1 National Gas Rules requirements for access arrangement information (AAI)

Rule	Requirement	AAI references
72(1)(a)	The access arrangement information must include: (i) capital expenditure (by asset class) over the earlier access arrangement period; and (ii) operating expenditure (by category) over the earlier access arrangement period; and (iii) usage of the pipeline over the earlier access arrangement period showing: (A) for a distribution pipeline, minimum, maximum and average demand...; and (B) for a distribution pipeline, customer numbers in total and by tariff class...	Chapter 2 revised AAI
72(1)(b)	The access arrangement information must include how the capital base is arrived at and, if the access arrangement period commences at the end of an earlier access arrangement period, a demonstration of how the capital base increased or diminished over the previous access arrangement period.	Chapter 3 revised AAI
72(1)(c)	The access arrangement information must include the projected capital base over the access arrangement period, including: (i) a forecast of conforming capital expenditure for the period and the basis for the forecast; and (ii) a forecast of depreciation for the period including a demonstration of how the forecast is derived on the basis of the proposed depreciation method.	Chapter 3 revised AAI
72(1)(d)	The access arrangement information must include to the extent 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	Chapter 4 revised AAI
72(1)(e)	The access arrangement information must include a forecast of operating expenditure over the access arrangement period and the basis on which the forecast has been derived	Chapter 5 revised AAI
72(1)(f)	The access arrangement information must include the key performance indicators to be used by the service provider to support expenditure to be incurred over the access arrangement period	Chapter 6 revised AAI

72(1)(g)	The access arrangement information must include: the proposed return on equity the return on debt the allowed rate of return ...for each regulatory year of the access arrangement period, in accordance with rule 87, including any departure from the methodologies set out in the rate of return guidelines and the reasons for that departure.	Chapter 7 revised AAI
72(1)(ga)	The access arrangement information must include the proposed formula (if any) that is to be applied in accordance with rule 87(12).	Chapter 7 revised AAI
72(1)(h)	The access arrangement information must include the estimated cost of corporate income tax calculated in accordance with rule 87A, including the proposed value of imputation credits referred to in that rule.	Chapter 8 revised AAI
72(1)(i)	The access arrangement information must include, if an incentive mechanism operated for the previous access arrangement period - the proposed carry-over of increments for efficiency gains or decrements for efficiency losses in the previous access arrangement period and a demonstration of how allowance is to be made for any such increments or decrements.	Chapter 9 revised AAI
72(1)(j)	The access arrangement information must include the proposed approach to the setting of tariffs including: (i) the suggested basis of reference tariffs, including the method used to allocate costs and a demonstration of the relationship between costs and tariffs; and (ii) a description of any pricing principles employed but not otherwise disclosed under this Rule.	Chapter 10 revised AAI
72(1)(k)	The access arrangement information must include the service provider's rationale for any proposed reference tariff variation mechanisms.	Chapter 11 revised AAI. Further details on the rationale are provided in attachment 13 of the AAI submitted in June 2015.
72(1)(l)	The access arrangement information must include the service provider's rationale for any proposed incentive mechanism.	Chapter 9 revised AAI. Further details on the rationale are provided in attachment 10 of the AAI submitted in June 2015.

72(1)(m)	The access arrangement information must include the total revenue to be derived from pipeline services for each regulatory year of the access arrangement period.	Chapter 12 revised AAI

Abbreviations used in this document

Abbreviation	Full term
ACT	Australian Capital Territory
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
ARORO	Allowed rate of return objective
CAM	cost allocation method
capex	capital expenditure
CPI	Consumer price index
DAMS	Distribution Asset Management Services Agreement
ECRC	Energy Consumer Reference Council
EGP	Eastern Gas Pipeline
EIL	Energy Industry Levy
IT	information technology
JAM	Jemena Asset Management Pty Ltd
JGN	Jemena Gas Networks (NSW) Ltd
kPa	kilopascal(s)
LGA	Local government area
LRMC	Long run marginal cost
m	metre(s) / millions (when relating to financial information)
NGO	National Gas Objective
NSW	New South Wales
O&M	operations and maintenance
opex	operating and maintenance expenditure
PTRM	Post tax revenue model
RAB	Regulatory asset base
RBA	Reserve Bank of Australia
RIN	Regulatory Information Notice
RFM	Roll forward model
Rules, the, NGR	National Gas Rules
SL CAPM	Sharpe-Lintner capital asset pricing model
TAB	Tax asset base
TJ	Terajoule

Abbreviation	Full term
TRS	Trunk receiving station
UAG	unaccounted-for gas
UNFT	Utilities Network Facilities Tax
WACC	weighted average cost of capital
WAPC	Weighted average price cap