Attachment 7.8

Response Draft Decision:
Operating Expenditure

2016/17 to 2020/21 Access Arrangement Information Response to Draft Decision

Australian Gas Networks

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1 Response to Draft Decision on Operating Expenditure

1.1 Introduction

This attachment sets out Australian Gas Networks Limited's (AGN's) response to the Australian Energy Regulator's (AER's) Draft Decision on operating expenditure (opex) over the next (2016/17 to 2020/21) Access Arrangement (AA) period.

As required by Rule 91 of the National Gas Rules (NGR), AGN's forecast opex is that required to be incurred by a prudent service provider acting efficiently, and in accordance with accepted good industry practice, to achieve the lowest sustainable cost of delivering Reference Services throughout the South Australian natural gas distribution network (the Network).

AGN applied a Base Year Roll Forward approach to forecasting opex in its initial AA Proposal submitted to the AER on 1 July 2015 (Initial AA Proposal). In its Draft Decision, the AER instead implemented its preferred Base-Step-Trend approach, which is detailed in the AER's Expenditure Forecast Assessment Guidelines (EFAGs) developed for electricity distribution and transmission businesses. This resulted in significant changes to the methodology applied to determine forecast opex, which has resulted in a 3% reduction in forecast opex proposed by AGN in its Initial AA Proposal.

Despite these changes, AGN has sought to accept the AER's Draft Decision wherever feasible, on the basis that it would provide AGN with a reasonable opportunity to recover at least the efficient costs forecast over the next AA period.[1] This attachment explains AGN's reasons in respect of those elements of the AER's Draft Decision that AGN has not accepted in this Revised AA Proposal.

1.2 AER Draft Decision

The AER reviewed the opex forecast proposed by AGN in its Initial AA Proposal against Rule 74 and 91 of the NGR and found that they were:

> *"… not satisfied that the forecast of total opex AGN proposed complies with the opex criteria and the criteria for forecasts and estimates."*[2]

The key change made by the AER was to apply its preferred Base-Step-Trend approach to forecasting opex. This approach is described as follows in the AER's Draft Decision:

- Base – the AER firstly selects a base year that is most representative of efficient, recurrent opex[3];
- Step – following selection of the base year, the AER then assesses whether additional opex is required in order to achieve the opex criteria over the forecast period[4]; and
- Trend – the AER then applies an annual escalator to take account of the ongoing changes to efficient opex over the forecast period; this is estimated by adding expected changes in prices and outputs, then incorporating a reasonable estimate of changes in productivity[5].

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1 National Gas Law, Part 3, Division 2, Section 24(2), Revenue and Pricing Principles.

2 AER 2015, "*Attachment 7 – Operating Expenditure | Draft Decision: Australian Gas Networks 2016 to 2021*", November 2015, pg. 7-6.

3 Ibid, pg. 7.11.

4 Ibid, pg. 7.12.

5 Ibid, pg. 7-12.

The application of the Base-Step-Trend approach applied by the AER in their Draft Decision led to the following specific changes to our Initial AA Proposal:

- the introduction of the Rate of Change approach to calculating the future 'trend' in opex over the next AA period;
- no step changes proposed by AGN (referred to as non-base year costs by AGN) have been accepted by the AER in its Draft Decision;
- adjustment applied to base year opex to reflect all recurrent expenditure; and the
- re-categorisation of three capital expenditure (capex) projects to opex.

Overall, the AER's Draft Decision resulted in a total opex forecast of $343 million ($2014/15)[6] over the next AA period, reflecting a 3% decrease in relation to AGN's AA Proposal of $353 million[7]. Table 1.1 below summarises the AER's Draft Decision for each element of AGN's opex proposal.

TABLE 1.1: SUMMARY OF AER'S DRAFT DECISION ON OPEX

	AER Draft Decision	AER Comment
Base – Base Year		
2014/15 Base Year	Accept AGN Proposal	Accepted the 2014/15 base year, updated for actual information and adjusted to reflect all recurrent expenditure on the basis that this is consistent with applying the Base-Step-Trend approach.
Category Specific Forecasts	Reject AGN Proposal	Rejected AGN's Category Specific Forecasts. These costs are instead incorporated into the base year as described above.
Unaccounted for Gas (UAFG)	Accept AGN Proposal	Accepted AGN's proposed volume and price forecasts of UAFG and proposed a true-up mechanism in relation to UAFG unit prices over the next AA period.
Step – Step Changes		
Opex Business Cases	Reject AGN Proposal	Rejected all proposed step changes on the basis that either project costs should be offset by future productivity gains or that base year opex already includes an efficient and prudent level of expenditure.
Trend – Rate of Change		
Input Cost Escalation	Modify AGN Proposal	Accepted AGN's proposed method of calculating the labour cost escalation rate, but updated the Deloitte Access Economics (DAE) forecasts and applied different input cost weightings to AGN's forecast opex.
Output Growth	Reject AGN Proposal	Rejected AGN's proposed method of calculating the incremental opex cost per customer and instead applied an alternative output growth method derived from econometric analysis.
Productivity Growth	Reject AGN Proposal	Applied a forecast of productivity growth to AGN's forecast opex to account for future productivity gains.
Other		
Re-categorisation of Business Cases	Reject AGN Proposal	Re-categorised three capex projects to opex.

[6] Note: the AER provided an updated Opex forecast to AGN on Wednesday 2 December 2015, to reflect errors in the AER's model released publicly on 26 November 2015.

[7] Note: unless otherwise stated, all dollars are expressed in $2014/15 dollar terms.

1.3 AGN Response to the Draft Decision

AGN has sought to accept the AER's Draft Decision wherever feasible. As such, despite the above amendments the AER has implemented to the methodology underpinning the forecast opex, AGN has for the most part accepted the AER's approach. AGN's response to the Draft Decision is summarised in Table 1.2 below and detailed in the remainder of this attachment.

TABLE 1.2: SUMMARY OF AGN'S RESPONSE TO THE AER DRAFT DECISION ON OPEX

	AER Draft Decision	AGN Response	AGN Comment
Base – Base Year			
2014/15 Base Year	Accept AGN Proposal	Accept Draft Decision	AGN has accepted the AER's Draft Decision and has updated for 2014/15 actual data.
Category Specific Forecasts	Reject AGN Proposal	Accept Draft Decision	AGN has accepted the AER's approach to applying its Base-Step-Trend approach, and as such, factored all recurrent costs into the base year.
UAFG	Accept AGN Proposal	Accept Draft Decision	AGN has accepted the AER's Draft Decision and has updated its UAFG volume forecast to reflect the latest data available and the mains replacement program detailed in Attachment 8.10. AGN is supportive of the true-up mechanism proposed by the AER.
Step – Step Changes			
Opex Business Cases	Reject AGN Proposal	Modify Draft Decision	AGN has partly accepted the AER's decision but has re-proposed one of the nine opex step changes included in the AA Proposal.
Trend – Rate of Change			
Input Cost Escalation	Modify AGN Proposal	Accept Draft Decision	AGN has accepted the AER's Draft Decision on the basis that the outcome provides a reasonable opportunity to recover at least the efficient costs over the next AA period.
Output Growth	Reject AGN Proposal	Accept Draft Decision	
Productivity Growth	Reject AGN Proposal	Respond to Draft Decision	AGN does not accept the application of a productivity adjustment to AGN's opex forecast over the next AA period.
Other			
Re-categorisation of Business Cases	Reject AGN Proposal	Modify Draft Decision	AGN has accepted the re-categorisation of Business Cases SA21a and SA32, but has not accepted the re-categorisation of SA09. Discussion relating to SA09 is contained in Attachment 8.9.

1.3.1 Base Year

1.3.1.1 2014/15 Base Year

In its Draft Decision, the AER accepted AGN's 2014/15 base year as efficient:

> *"AGN has been subject to [an] incentive framework for a number of access arrangement periods, including the application of an efficiency carryover mechanism for opex. In theory, AGN as a profit maximising firm should reveal its efficient costs over time, and these can be used to forecast opex into the future. Unless we have evidence that the revealed opex in a*

> *proposed base year is materially inefficient, we use the revealed costs of the service provider for our alternative opex forecast."*[8]
>
> *"We are satisfied AGN's proposed 2014-15 base year is not biased upwards and do not have any evidence to suggest expenditure in the proposed base year is materially inefficient. In our alternative forecast of total opex we have adjusted 2014-15 base year expenditure to include the network management fee, ancillary reference services expenditure and insurance expenditure. We have also included additional opex in the base year relating to reclassified capex project step changes."*[9]

AGN accepts the approach taken by the AER in terms of the 2014/15 base year but notes that at the time of submitting the Initial AA Proposal, AGN's base year total consisted of nine months of actual and three months of estimated data. Following the submission of AGN's Annual Regulatory Information Notice (RIN) on 16 November 2015 and consistent with the AER's Draft Decision, AGN has updated its 2014/15 base year to reflect twelve months of actual information. The actual 2014/15 base year is now $57 million.

AGN has reflected this updated base year in its Opex Model provided as Attachment 7.7A to this Revised AA Proposal. AGN has also reflected actual 2014/15 opex into the calculation of the Efficiency Benefit Sharing Scheme (EBSS), which is provided as Attachment 12.1.

1.3.1.2 Category Specific Forecasts

The AER has rejected the Category Specific Forecasts proposed by AGN for costs relating to the Network Management Fee (NMF), Ancillary Reference Services (ARS) and Insurance. The approach taken by the AER is consistent with its preferred application of the Base-Step-Trend approach and is described by the AER below:

> *"We have included all NMF and ARS expenditure identified by AGN in our estimate of base year costs, and note these expenditures have been subject to the efficiency carryover mechanism in the 2011-16 period. As such, including expenditure for these specific categories of opex in the base year should not detract from the overall efficiency of total opex in the base year."*[10]

AGN has accepted the AER's approach to these forecasts, on the basis that it is consistent with the AER's preferred Base-Step-Trend approach.

1.3.1.3 UAFG

Consistent with the AER's Draft Decision[11], AGN has updated the forecast volume of UAFG to account for the change in composition of our revised mains replacement program. The derivation of the revised UAFG volume forecasts is set out in Asset Integrity Australasia's (AIA's) report, provided as Attachment 7.9. Table 1.3 details the resulting UAFG forecast over the next AA period.

TABLE 1.3: UAFG FORECASTS ($2014/15, MILLION)

Volumes	2016/17	2017/18	2018/19	2019/20	2020/21	Total
AA Proposal	10.5	11.3	11.6	11.2	10.8	**55.4**
Revised AA Proposal	11.3	12.0	12.4	12.0	11.6	**59.1**

8 AER 2015, "*Attachment 7: Operating Expenditure | Draft Decision Australian Gas Networks 2016 to 2021*", November 2015, pg. 7-14.

9 Ibid, pg. 7-17.

10 Ibid, pg. 7-39.

11 Ibid, pg. 7-42.

1.3.2 Step Changes

AGN proposed nine step changes (referred to as non-base year costs in AGN's AA Proposal), totalling $11 million over the next AA period. In its Draft Decision, the AER did not accept any of the step changes proposed by AGN, due to the following reasons:

- the AER considered the projects as discretionary where costs should be offset by future productivity gains;[12] and
- the AER considered that base year opex already includes an efficient and prudent level of expenditure.[13]

AGN has considered the AER's Draft Decision in relation to these projects and accepts the AER's decision in relation to eight of the proposed nine step changes.

In particular, AGN has accepted the AER's Draft Decision on the basis that its proposed capex program will deliver benefits over the next AA period (for example, through the delivery of the proposed SA60 Business Intelligence initiative). The proposed capex program is expected to provide AGN with the capacity to work more effectively and absorb the costs of these proposed step changes. Without these projects (particularly the proposed Business Intelligence initiative), AGN considers that additional expenditure would be required.

Therefore, AGN is still proposing to complete this work in the next AA period however we are not re-proposing the costs associated with eight of the proposed nine step changes in this Revised AA Proposal as we consider our capex program over the next AA period will enable us to absorb these costs. This is detailed in Table 1.4 below.

TABLE 1.4: OPEX STEP CHANGES ($2014/15, MILLION)[14]

	AA Proposal	Draft Decision	Revised Proposal
SA44 – Inlet Data Capture	1.7	0.0	1.7
SA54 – Ongoing Risk Management of HDPE	3.2	0.0	3.2[15]
SA56 – Gas Vents on HDPE Mains	0.9	0.0	0.9
SA58 – GIS	0.9	0.0	0.9
SA59 – Mobility Integration	0.6	0.0	N/A[16]
SA60 – Business Intelligence	0.5[17]	0.0	N/A[18]
SA64 – Remote Meter Reading	0.5	0.0	0.5
SA77 – Monarto FEED Study	0.3	0.0	0.3
SA83 – Stakeholder Engagement	1.0	0.0	1.0
SA84 – Development of Digital Capabilities	1.5	0.0	1.5
Total	**11.1**	**0.0**	**10.0**
Incorporated into forecast opex as step changes	**10.6**	**0.0**	**1.7**
Absorbed by AGN	**0.5**	**10.6**	**8.3**

12 Ibid, pg. 7-24.

13 Ibid, pg. 7-27.

14 Note: as per the approach taken by the AER in its Draft Decision, AGN has not escalated costs associated with the step changes proposed in its Revised AA Proposal.

15 Note: AGN has accepted the AER's Draft Decision in relation to Business Case SA54 on the basis that AGN's proposed Business Intelligence project (SA60) is accepted by the AER. If the AER chooses not to accept this project, then AGN considers that this cost should be incorporated into the final opex forecast for the next AA period.

16 Note: opex costs associated with SA59 Mobility Integration have been offset against the forecast benefits in our Revised AA Proposal.

17 Note: opex costs associated with SA60 Business Intelligence were offset by the project's estimated opex cost savings in our AA Proposal.

18 Note: opex costs associated with SA60 Business Intelligence have been offset against the forecast benefits in our Revised AA Proposal.

As a result, AGN has re-proposed one step change only; SA44 Inlet Data Capture. The project scope of this Business Case is to capture the geographic details of inlet services for 9,800 existing Industrial and Commercial customers and 3,300 major unit development sites.[19] The project is an expansion of an initiative that was approved by the AER for the current (2011/12 to 2015/16) AA period. In making its assessment of this step change, the AER stated it considers this activity to be discretionary, and as such, efficient discretionary changes in inputs should not normally have a net negative impact on expenditure.[20]

AGN has reviewed the AER's Draft Decision and submits that the primary driver of this project is public safety and risk reduction rather than it being a discretionary project with offsetting efficiency improvements. AGN therefore disagrees with the AER's characterisation of this project as a, "… *discretionary activity aimed at developing more efficient business practices*."[21] This expenditure is instead considered by AGN to be stay-in-business in nature and is required in order to ensure the safe and efficient operation of the Network.

For further information relating to SA44, please refer to the Business Case Addendum provided in Attachment 7.1A.

AGN also notes that SA56 Gas Vents on high density polyethylene (HDPE) Mains and SA54 Ongoing Risk Management of HDPE are safety related. With regard to the former, the AER noted in its Draft Decision that:

> *"… the proposed step change of $0.9 million dollars would amount to approximately a quarter of a percent of AGN's total forecast opex for the access arrangement period.*
>
> *As discussed, while total opex is relatively recurrent, opex on individual projects and programs may not be recurrent. That means each year a service provider could spend more opex on some areas (such as installing gas vents on HDPE mains) and less opex on other areas. We consider AGN acting as a prudent and efficient service provider could allocate the relatively small amount of required funds to this project by redirecting funds from categories of opex which were expected to decline in the forecast access arrangement period. Alternatively it could do this by reprioritising its opex budget. We are not satisfied that a prudent and efficient service provider would need additional funding from consumers for this project above an efficient base amount of opex."*[22]

AGN accepts the Draft Decision in relation to this proposed step change and discusses the collective impact of absorbing such costs in section 1.3.3.3 of this attachment.

With regard to SA54, the AER stated in its Draft Decision that:

> *"… there has been a change in circumstances facing AGN with respect to its HDPE network components. However based on the information received from AGN, we are not satisfied that AGN has adequately quantified the risks arising from its HDPE network components. As discussed in section 6.4.2, AGN provided little evidence in the form of a rigorous risk assessment to demonstrate that the proposed HDPE projects are prudent or efficient expenses. Any step changes related to HDPE need to be considered holistically as part of AGN's revised risk assessment. We also note that stakeholders have raised concerns about replacing the HDPE piping, rather than continuing the current practice of repair as problems arise.*

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19 AGN 2015, "*Access Arrangement Information for Australian Gas Networks' South Australian Gas Distribution Network*", July 2015, pg. 120.

20 AER 2015, "*Attachment 7 – Operating Expenditure | Draft decision: Australian Gas Networks 2016 to 2021*", November 2015, pg. 7-22 – 7-23.

21 Ibid, pg. 7-22.

22 Ibid, pg. 7-27.

> *Until we have received further information from AGN appropriately quantifying the risks predicating this step change, we are not satisfied that [it] should be included in AGN's total opex forecast."*[23]

AGN has provided the additional information requested by the AER in Attachment 8.10. This includes further risk assessment and analysis comparing the cost to customers of different mains replacement scenarios. AGN has therefore provided the additional information requested by the AER, and as such, this step change should be included in the opex forecast. As explained in Attachment 8.10, this Business Case is one of a suite of risk mitigation activities aimed at managing the residual safety risk on the Network.

AGN is, however, not seeking to include this step change in the opex forecast due to the proposal of various capex projects. In particular, our proposed Business Intelligence initiative (SA60) will provide AGN with the type of analytical capability sought by SA54 Ongoing Risk Management of HDPE. As explained by the AER, AGN therefore accepts that the costs associated with SA54 reflect an offsetting productivity benefit related specifically to SA60 Business Intelligence.

AGN submits that SA54 will need to be directly factored into the opex forecast in the event initiatives such as SA60 Business Intelligence are not accepted by the AER in its Final Decision.

1.3.2.1 Re-categorisation of Capex Business Cases

In addition to the step change projects listed in the table above, the AER has re-categorised three capex Business Cases to opex. These are:

- SA09 Valve Corrosion Protection;
- SA21a Pitting Issues Under Sleeves; and
- SA32 Replacement Associated with Non-Compliant Meter Installations.

Regarding Business Case SA09, AGN has sought independent advice from Deloitte to determine how this Business Case should be categorised. In Attachment 7.10, Deloitte has found that the costs associated with this project should be categorised as capex because the project involves work that is major and involves infrequent repair rather than routine maintenance.[24]

Consistent with Deloitte's advice, AGN has categorised this Business Case as capex. Further discussion on this Business Case is incorporated in Attachment 8.9.

1.3.3 Rate of Change

In its Draft Decision, the AER rejected AGN's Base Year Roll Forward approach to forecasting opex. Instead, the AER applied a Base-Step-Trend approach that they have developed in consultation with electricity distribution and transmission businesses in the National Electricity Market. This approach is documented in the AER's EFAG released in November 2013 as part of the AER's Better Regulation reform package.[25]

This section discusses the "trend" part of the AER's Base-Step-Trend approach, which is also referred to as the Rate of Change in opex. The Rate of Change adjusts total opex for forecast changes in input (labour and materials) costs, changes in costs related to forecast growth in outputs delivered by the distributor and for forecast productivity growth.

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23 Ibid, pg. 7-27-7-28.

24 Deloitte 2015, "*Advice regarding opex versus capex classification for project SA09 Valve Corrosion Protection*", December 2015, pg. 5.

25 AER 2013, "*Expenditure Forecast Assessment Guideline for Electricity Distribution*", November 2013 and "*Expenditure Forecast Assessment Guideline for Electricity Transmission*", November 2013.

AGN has sought to accept those aspects of the AER's approach to forecasting opex that provide a reasonable opportunity for AGN to recover efficient costs. The key exception to this relates to the application of an explicit productivity adjustment.

The Rate of Change applied by AGN in its Revised AA Proposal is explained in the remainder of this section.

1.3.3.1 Input Cost Escalation

In its AA Proposal, AGN applied zero real cost escalation to materials costs over the next AA period, which was accepted by the AER.

In terms of labour cost escalation, the AER also accepted AGN's proposed approach to calculating the rate at which these costs will escalate over the next AA period. This method applies an average of forecasts developed by BIS Shrapnel and DAE of the Wage Price Index (WPI) for the Electricity, Gas, Water and Waste Services (EGWWS) sector in South Australia. The AER provided updated DAE forecasts in its Draft Decision, which AGN has accepted and used in its Revised AA Proposal.

TABLE 1.5: WPI FORECASTS FOR THE EGWWS INDUSTRY IN SOUTH AUSTRALIA

Annual % Change	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
BIS Shrapnel	0.9	1.4	1.3	1.5	1.7	1.9
Deloitte Access Economics	0.0	0.1	0.7	1.0	1.1	1.1
Average	**0.5**	**0.8**	**1.0**	**1.2**	**1.4**	**1.5**

In terms of the weightings applied to labour and materials (or non-labour) costs, AGN proposed weightings of labour and materials costs based on the most recent three-year average of actual costs. The AER has rejected this approach and has instead applied labour and non-labour cost weightings derived from data relating to the resource mix employed by Victorian electricity distributors.[26]

AGN considers that the resource mix used in an alternative industry has little relevance to the resources utilised by AGN and should, as a minimum, reflect the resource mix of gas distribution businesses. Importantly, AGN notes the AER's concern that using weightings derived from a service provider's own data (such as that derived from AGN's base year), *"… would provide the service provider an incentive to use more than the efficient proportion of internal labour in the base year to increase its forecast price change."*[27]

However, AGN considers that this concern is inconsistent with the AER's reasoning to accept or reject base year opex as efficient. AGN considers that if the AER accepts a gas distribution businesses' base year opex as efficient, then the resource mix utilised within that year has also been accepted as efficient. AGN also considers this reasoning to be inconsistent with the EBSS, which provides businesses with an incentive to reveal any efficiency gain in the year it is realised. As the AER explains in their Expenditure Incentives Guideline Explanatory Statement:

> *"The EBSS aims to provide a continuous incentive for NSPs [Network Service Providers] to pursue efficiency improvements in opex and to share efficient gains between NSPs and network users… If a NSP has operated under an effective incentive framework, and sought to maximize its profits, the actual opex incurred in a base year should be a good indicator of the efficient opex required."*[28]

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26 Economic Insights 2014, "*Economic Benchmarking Assessment of Operating Expenditure for NSW and ACT Electricity DNSPs*", November 2014, pg. 14.

27 AER 2015, "*Attachment 7 – Operating Expenditure | Draft decision: Australian Gas Networks 2016 to 2021*", November 2015, pg. 7-34.

28 AER 2013, "*Expenditure Incentive Guideline Explanatory Statement*", November 2013, pg. 5.

The AER has accepted AGN's base year opex as efficient, so it follows that the resource mix utilised by AGN in its base year is also efficient. Despite these concerns, AGN has accepted the AER's approach to developing input cost weightings and labour cost escalation more broadly in its Revised AA Proposal.

1.3.3.2 Output Growth

In our AA Proposal, AGN determined an incremental opex cost for each new customer that is forecast to connect to the Network over the next AA period. The AER rejected this approach, and instead derived an output growth factor based on AGN's forecast customer numbers and throughput.

AGN, however, does not consider the AER's approach reasonable as it assumes that opex costs are driven by both customer numbers and throughput. AGN accepts that opex costs are driven by customer numbers (which is consistent with the approach proposed by AGN in its Initial AA Proposal), however does not consider that increases or decreases in throughput have a direct relationship with opex costs.

Furthermore, in a study commissioned by ActewAGL, ACIL Allen discusses recent evidence relating to the relationship between opex costs and throughput:

> *"A key characteristic of these [output growth] models is that the energy throughput variable has a negative coefficient. Moreover it is not statistically significant at the 1% level in three of the five models. These results are not surprising given that gas throughput has been declining for the majority of the distribution businesses over the period of 2005 to 2013, while operating expenditures have continued to increase. This suggests that energy (gas throughput) is no longer a key driver of increasing operating expenses for the nine gas distribution businesses under consideration."*[29]

Despite these concerns, and consistent with the rationale provided in relation to other aspects of AGN's Revised AA Proposal, AGN accepts the AER's approach for the next AA period as providing a reasonable opportunity to recover efficient costs.

1.3.3.3 Productivity Growth

The AER in its Draft Decision has applied an adjustment for productivity growth of 0.5% per annum over the next AA period. This implies that AGN will achieve efficiency gains of $6 million over the forecast period.[30]

AGN does not accept the AER's application of a productivity adjustment for a number of reasons, including:

- the labour cost escalator used to inflate costs does not capture all drivers of productivity, so any discrete adjustment for productivity will not provide AGN with a reasonable opportunity to recover efficient costs;
- the AER's productivity adjustment has not been arrived at on a reasonable basis, and as such, is not consistent with Rule 74 of the National Gas Rules (NGR);
- the productivity adjustment is not consistent with the AER's forecasting principles and consequently cannot be used deterministically;
- AGN has accepted the AER's Draft Decision to not accept the inclusion of eight of the nine proposed step changes in the opex forecast, which has resulted in an implicit productivity adjustment already applied to AGN's Revised AA Proposal;
- the AER has applied a productivity adjustment derived for an alternative gas distribution business, using data that is irrelevant to AGN (AGN has updated this forecast to reflect its own circumstances); and

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29 ACIL Allen 2015, "*Productivity Study: ActewAGL Distribution Gas Network*", 29 April 2015, pg. 31.

30 Note: this number is based on applying the 0.5% per annum productivity adjustment to the AER's Draft Decision.

- if the AER followed the methodology it applied to ActewAGL and substituted ActewAGL data for AGN-specific data, the forecast productivity adjustment would be materially negative.

Each of these points are discussed in turn below.

Productivity Growth not Captured in Labour Cost Inflator

Whilst the AER has decided to apply a productivity adjustment to AGN's forecast opex, the AER also stated that:

> *"If productivity growth is accounted for within the other escalation factors applying to the base year forecast, then there is no need to incorporate a separate productivity factor in the overall rate of change applied to AGN's base year opex."*[31]

AGN supports this position from the AER. In particular, AGN considers that the WPI does not capture all of the drivers of labour productivity growth, and as such, it is inappropriate to apply an additional productivity adjustment to forecast opex. This is consistent with the views of Professor Jeff Borland, detailed in a report previously commissioned by AGN (then Envestra), in March 2012.

In his report, Professor Borland concludes that an appropriate measure of forecasting growth in real labour costs could be achieved by subtracting forecast productivity growth from forecast growth in the Average Weekly Ordinary Time Earnings (AWOTE) index, because AWOTE incorporates all drivers of productivity growth (more specifically, the 'worker composition effect').[32] Alternatively, it would be *inappropriate* to deduct forecast productivity growth from forecast WPI, as this measure of labour cost growth already excludes wage growth attributable to labour productivity:

> *"Taking the rate of change in AWOTE and subtracting the rate of change in labour productivity gives a measure of labour costs that appropriately adjusts for the effects of labour productivity on a firm's costs. By comparison, subtracting the rate of change in labour productivity from the rate of change in LPI does not appropriately make this adjustment. This is because the LPI measure does not incorporate Worker composition effects on Labour productivity."*[33]
>
> *"… to use LPI as the earnings measure, and then adjust for changes to labour productivity, is to double-adjust for productivity changes. Because of the double-adjustment, the measure of the change in labour costs derived using LPI will under-estimate the true change in labour costs."*[34]

In essence, the effect of subtracting productivity growth from forecast WPI effectively double-counts productivity growth attributable to 'worker composition effects', which is defined by Professor Borland as:

> *"… where a worker's output per hour of labour increases for reasons unrelated to increases in the skill of that worker."*[35]

The worker composition effect could include, for example, changes in the skill composition of the workforce driven by extra education and/or training, or in the average experience of the workforce (often referred to as the upskilling of the workforce). Worker composition effects are already excluded from the WPI and hence the labour escalator applied by AGN also already excludes these labour productivity gains, whereas the

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31 AER 2015, "*Attachment 7 – Operating Expenditure | Draft decision: Australian Gas Networks 2016 to 2021*", November 2015, pg. 7-37 – 7-38.

32 Professor Jeff Borland 2012, "*Labour Cost Escalation: Choosing Between AWOTE and LPI*", March 2012, pg. 12.

33 Ibid, pg. 18.

34 Ibid, pg. 4.

35 Professor Jeff Borland 2011, "*Labour Cost Escalation Report*", November 2011, pg. 7.

productivity measure proposed by the AER assumes that costs are being escalated by the worker composition effect.

AGN therefore considers that the AER has effectively double-counted the growth in productivity that AGN can be expected to achieve over the next AA period. As such, AGN does not accept the AER's application of a productivity adjustment on the basis that the benefits of future productivity gains have already been excluded from the WPI, which is the index that has been used to escalate labour costs.

A Reasonable Forecast of Productivity Growth cannot be Calculated

In its Draft Decision, the AER cited that AGN's proposed opex forecast did not satisfy the criteria of Rule 91 or Rule 74 of the NGR.[36] Rule 91 relates to costs incurred by a prudent service provider acting efficiently, while Rule 74 relates to forecasts arrived at on a reasonable basis and reflecting the best possible forecast in the circumstances.

AGN does not accept the AER's application of a productivity adjustment to AGN's forecast opex (i.e. a forecast of productivity growth) on the basis that a forecast of productivity growth that is arrived at on a reasonable basis cannot be calculated.

Firstly, AGN does not consider it appropriate for the AER to use cost function analysis to determine and apply a forecast of productivity growth (such as that conducted by ACIL Allen) to future opex, and as such, does not consider that a forecast of future productivity growth arrived at using this type of analysis is reasonable. This is consistent with the view of Huegin Consulting (Huegin), who has been engaged by AGN to assess the approach the AER has taken in its application of a productivity adjustment to AGN. Huegin's report is provided as Attachment 7.13 to this Revised AA Proposal.

Huegin considers that results generated using this methodology should be used in an informative manner only, given the significant limitations applicable to the approach adopted by the AER.[37] Huegin's key concerns are outlined below.

- Data comparability: Unlike the electricity industry, in which the AER has introduced its Economic Benchmarking Regulatory Information Notice for distribution and transmission businesses, the AER acknowledges that there are no standard data collection methods in the gas distribution industry. Furthermore, there is no auditing of data to assess its quality and comparability for benchmarking purposes.[38] As Huegin comments:

  > *"One example in the context of the recent benchmarking of the electricity distribution industry was the different Cost Allocation Methodologies (CAMs) between businesses. Given that any productivity assessment measures the amount of opex used to produce a set of outputs, differences between what constitutes opex between businesses benchmarked will impact on efficiency results. Businesses that have higher capitalisation policies will benefits using the AER's opex benchmarking as more expenditure is classified as capex relative to other businesses."*[39]

[36] AER 2015, "*Attachment 7 – Operating Expenditure | Draft decision: Australian Gas Networks 2016 to 2021*", November 2015, pg. 7-6.

[37] Huegin Consulting 2015, "*Opex productivity in the gas distribution industry*", December 2015, pg. 10.

[38] AER 2015, "*Attachment 7 – Operating Expenditure | Draft decision: Australian Gas Networks 2016 to 2021*", November 2015, pg. 7-15.

[39] Huegin Consulting 2015, "Opex productivity in the gas distribution industry", December 2015, pg. 9.

- Model specification: There are many model specifications that could be used to develop a cost function for gas distribution businesses. As demonstrated in the electricity industry (in which the AER undertook extensive consultation regarding model specification before finalising its approach in its 2014 Annual Benchmarking Report[40]), changes in the model specification used to generate a forecast of productivity growth (holding all else equal), can generate significant variability in the results.[41] As Huegin comments:

  > *"In the recent electricity distribution determinations the technique that was adopted (opex partial productivity or stochastic frontier analysis) resulted in significantly different estimates of efficiency…"*[42]

  As such, the robustness of productivity growth forecasts is limited, particularly given the small sample size in both the electricity and gas industries.

- Environmental variables: Furthermore, in any benchmarking study it is important to understand the effect that key environmental variables may have on the overall results. Not adequately adjusting results to incorporate the effects of these variables may bias the results and disadvantage businesses with less favourable environmental conditions (such as lower energy density or customer density). Huegin summarises this issue below:

  > *"… a specification that lacks consideration of environmental variables is most unlikely to produce accurate and reliable results…"*[43]

Given the limitations listed above, AGN does not consider that the AER Draft Decision forecast of productivity growth has been arrived at on a reasonable basis or is the best estimate in the circumstances.

Additionally, ACIL Allen shares Huegin's reservations and (in its report developed for ActewAGL), ACIL Allen comments on each of these shortcomings and concludes that the results should be relied upon for indicative purposes only (i.e. not deterministically):

> *"… there remains uncertainty about data comparability that ACIL Allen is not able to resolve. Possible differences in the comparability of cost categories and other inevitable shortcomings in the benchmarking analysis mean that the efficiency and productivity benchmarks produced should be treated as indicative, not exact. Other potential shortcomings that limit the ability of the benchmarking models in this study to represent the gas distribution businesses' true cost and production functions include:*
>
> - *The limited data available for this study e.g. a richer data set with a broader range of cost inputs, outputs and operating environment factors could be used to create model specifications that better account for the variation between the gas distribution businesses*
> - *Potential data errors that have not been identified*
> - *The limitations of the modelling techniques in terms of their ability to accurately estimate the true efficient cost and production frontiers."*[44]

ACIL Allen also comments that the results provided in their report need to be interpreted with due consideration, given the impact of environmental variables not included in the cost function specification:

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40 AER 2014, "*Electricity distribution network service providers annual benchmarking report*", November 2014.

41 Huegin Consulting 2015, "*Opex productivity in the gas distribution industry*", December 2015, pg. 7.

42 Ibid, pg. 9.

43 Ibid, pg. 15.

44 ACIL Allen 2015, "*Productivity Study – ActewAGL Distribution Gas Network*", 29 April 2015, pg. viii-iv.

> *"Since the data set used has only one environmental control variable, the likelihood of correct model specification is limited. However, this does not invalidate the results, but rather suggests that the results need to be cautiously interpreted."*[45]

AGN considers that, consistent with the views of both Huegin and ACIL Allen, there are significant limitations with any forecast of productivity growth generated by cost function analysis for the gas distribution sector. That is, AGN does not accept the application of a 0.5% productivity adjustment because using cost function analysis does not provide a forecast of productivity growth that is arrived at on a reasonable basis (and hence does not comply with Rule 74 of the NGR).

As such, to the extent that the AER prefers to apply its Base-Step-Trend methodology, AGN considers that the best forecast of productivity growth possible in the circumstances is zero. This is discussed further in subsequent sections.

Forecast of Productivity Growth does not Comply with the AER's Forecast Assessment Principles

AGN also engaged Huegin to provide their opinion on whether the forecast of productivity growth applied by the AER in its Draft Decision is consistent with the forecast assessment principles detailed in the AER's EFAG for electricity distribution businesses. In the EFAG, the AER describes the purpose of these forecast assessment principles as follows:

> *"We may consider assessment techniques when we need to form a view on the level of reliance we should place on assessment techniques, a DNSP's [distribution network service provider's] forecasting methodology (or both)… The principles exist to provide some reassurance to NSPs and stakeholders of the rigour and transparency that we apply when we exercise discretion."*[46]

Table 1.6 summarises Huegin's assessment of the forecast productivity growth applied to AGN against each of these principles. For further detail regarding Huegin's assessment, please refer to Attachment 7.13.

TABLE 1.6: AER'S FORECAST ASSESSMENT PRINCIPLES

Assessment Principle	AER Definition	Principle Satisfied?	Huegin's Opinion
Validity	Assessment technique must be appropriate for what it is assessing and should adequately account for factors outside the control of service providers.[47]	No	The use of ActewAGL's data is not appropriate for the assessment of AGN's forecast productivity growth. Additionally, there has been no consideration of factors outside the control of AGN, because ACIL Allen's model was not designed for this purpose. As such, it should not be used in the manner it has.[48]
Accuracy and Reliability	Assessment technique must produce unbiased, consistent results and should produce similar results under consistent conditions.[49]	No	A model based on ActewAGL's data and a specification that lacks consideration of environmental variables is unlikely to produce accurate and reliable results for a different network operating in different conditions.[50]

45 Ibid, pg. 22.

46 AER 2013, "*Expenditure Forecast Assessment Guideline for Electricity Distribution*", November 2013, pg. 15.

47 Ibid.

48 Huegin Consulting 2015, "*Opex productivity in the gas distribution industry*", December 2015, pg. 14.

49 Ibid.

50 Ibid.

Robustness	Assessment techniques must remain valid under different assumptions, parameters and initial conditions. A technique that is lacking in some material aspect cannot be robust.[51]	No	A productivity adjustment based on a model that has customers as the only output and uses ActewAGL's data is unlikely to be a reasonable representation of AGN's forecast productivity growth over the next AA period.[52]
Transparency	Assessment technique must have the ability to be tested in order to assess the results in the context of the underlying assumptions, parameters and conditions.[53]	No	There is no evidence to suggest that the model the AER has relied upon to apply its productivity adjustment to AGN has been tested by the AER.[54]
Parsimony	Assessment technique should be as simple as possible.[55]	No	AGN operates under the EBSS and the AER has not found AGN to have materially inefficient revealed costs. As such, the simplest technique would be to set a productivity adjustment factor of zero.[56]
Fitness for Purpose	Assessment technique should be appropriate for the task.[57]	No	It is difficult to conclude that the application of a 0.5% productivity adjustment reasonably reflects the expenditure criteria when it has been arbitrarily selected from information not related to AGN's forecast or circumstances.[58]

Consistent with Huegin's findings, AGN considers that the technique the AER has used (in this case cost function analysis to calculate forecast productivity growth), does not satisfy any of the forecast assessment principles developed by the AER. AGN therefore does not accept the AER's application of a productivity adjustment to AGN's forecast opex over the next AA period, on the basis that it is inconsistent with the AER's forecast assessment principles.

AGN has Already Absorbed Significant Opex Costs in its Revised AA Proposal

The AER comments in its Draft Decision that AGN:

> *"… should be able to achieve productivity growth in the 2016-21 period, and not including productivity growth will result in a total opex forecast that does not meet the opex criteria."*[59]

Furthermore, the AER also notes that:

> *"AGN has not advised us of any circumstances specific to its network that would result in it being unable to make productivity improvements in the 2016-21 period. Therefore, we expect AGN to obtain productivity gains, as a prudent operator of a gas distribution business."*[60]

As discussed above, in its Draft Decision the AER did not accept any of the nine opex step changes AGN included in its AA Proposal. In most cases, the AER did not accept these projects using a rationale that:

51 Ibid.

52 Ibid.

53 Ibid.

54 Ibid.

55 Ibid.

56 Ibid.

57 Ibid.

58 Ibid.

59 AER 2015, "*Attachment 7 – Operating Expenditure | Draft decision: Australian Gas Networks 2016 to 2021*", November 2015, pg. 7-36.

60 Ibid, pg. 7-37.

- the project costs should be offset by future productivity gains[61]; and/or
- the relatively immaterial costs could be absorbed by AGN through reprioritisation of opex costs.[62]

With regard to the first point, the AER states that:

> *"Usually increases in costs are not required for discretionary changes in inputs. Efficient discretionary changes in inputs (not required to increase output) should normally have a net negative impact on expenditure."*[63]

That is, the AER has not accepted certain additional opex costs on the basis that the business is expected to achieve offsetting efficiency gains. The AER concludes that:

> *"We therefore expect that there will [be] both productivity gains and cost savings to AGN from each of these projects. We consider that AGN should not be provided with an increase in its total opex to finance the projects, since the costs should be at least offset by future productivity gains and the reductions in other costs if they are efficient."*[64]

As detailed earlier, AGN has accepted this reasoning and has decided not to seek additional funding for eight of the nine proposed step changes. This is because of the benefits AGN expects to generate from several of its capex initiatives to be undertaken in the next AA period, including SA60 Business Intelligence.

The costs of these step changes effectively act as an implicit productivity adjustment to AGN's forecast opex, which has also been calculated in Table 1.7.

TABLE 1.7: OPEX STEP CHANGES AND IMPLICIT PRODUCTIVITY ADJUSTMENT

	Revised AA Proposal
Opex Step Changes Absorbed by AGN	$8.3 million ($2014/15)
Implicit Annual Productivity Adjustment	0.7%

As detailed in Table 1.7 by choosing to deliver these projects over the next AA period, but not reproposing the associated costs, AGN is applying the equivalent of a 0.7% productivity adjustment per annum. As such, AGN considers it is already absorbing significant costs that it expects to recover through efficiency gains generated through the delivery of its proposed capex program over the next AA period, and therefore it is not necessary for the AER to apply an additional productivity adjustment to forecast opex.

The AER has Applied a Productivity Adjustment that is Not Firm-Specific

In its Draft Decision, the AER applied a productivity adjustment of 0.5% to AGN's forecast opex. This number has been derived by ACIL Allen for ActewAGL and is based on ActewAGL's forecast data. Whilst the AER has chosen to apply this productivity adjustment, it also concedes:

> *"We are aware that differences between service providers can make the forecast productivity measures for ActewAGL and JGN [Jemena Gas Networks] less applicable to AGN. However, other service providers and the industry as a whole appear to be obtaining and forecast to obtain productivity gains. Therefore, we do not consider that the forecast of zero used by AGN*

61 Ibid, pg. 7-24.

62 Ibid, pg. 7-27.

63 Ibid, pg. 7-19.

64 Ibid, pg. 7-24.

> *results in the best forecast of total opex. In the absence of robust AGN specific forecasts we have applied a productivity growth factor of 0.5 per cent to derive our overall rate of change."*[65]

AGN agrees with the AER that differences between service providers (such as ActewAGL and AGN) would result in forecasts of productivity growth that are less applicable to AGN. AGN considers that the forecast productivity gains of an alternative gas distribution business has little relevance to the forecast productivity performance of AGN over the next AA period, particularly as ACIL Allen did not use any of AGN's forecast information in the development of the productivity adjustment.

ACIL Allen, in a report prepared for AGN in response to the AER Draft Decision, also comments on the AER's application of a productivity adjustment in AGN's Draft Decision:

> *"It is our opinion that this is inappropriate given the fact that AGN's growth drivers are significantly different from those of ActewAGL, and we would expect the partial productivity forecasts to differ as a result."*[66]

Furthermore, it is Huegin's opinion that:

> *"… the productivity adjustment outlined in the Draft Decision cannot be considered to represent the best available under the circumstances particularly given the ACIL Allen reported figure of 0.5% doesn't use AGN's forecast data but is specific to ActewAGL."*[67]

Therefore, even if the AER does not accept the above arguments regarding the inappropriateness of applying a productivity adjustment to AGN's forecast opex, it is clear that the particular productivity adjustment the AER has chosen to apply in this instance, is not an estimate of forecast productivity growth that has been arrived at on a reasonable basis (and hence does not comply with Rule 74 of the NGR).

AGN's Productivity Adjustment would be Less than Zero

AGN notes that the AER stated in its Draft Decision:

> *"AGN has not supplied forecasts of productivity changes, while other service providers have. ActewAGL Gas Distribution (ActewAGL) in the ACT [Australian Capital Territory], and Jemena Gas Networks (JGN) in NSW [New South Wales] both provided recent forecasts of improving gas distribution productivity."*[68]

Despite the above arguments detailing the inappropriateness of calculating and applying a productivity adjustment to forecast opex, should the AER continue to apply a productivity adjustment, it should at least be based on AGN-specific data.

As such, AGN has engaged ACIL Allen to develop a forecast productivity adjustment that is consistent with the approach used in its report for ActewAGL, but using AGN-specific forecast data relating to the AER's Draft Decision and AGN's Revised AA Proposal. The results of this analysis are shown in Table 1.8 below and are detailed further in ACIL Allen's report provided as Attachment 7.14. In each scenario, ACIL Allen has determined that the productivity factor for AGN is negative.

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65 Ibid, pg. 7-38.

66 ACIL Allen 2015, "*Opex Partial Productivity Forecasts: Australian Gas Networks Limited*", December 2015, pg. 14.

67 Huegin Consulting 2015, "*Opex productivity in the gas distribution industry*", December 2015, pg. 13.

68 AER 2015, "Attachment 7 – Operating Expenditure | Draft decision: Australian Gas Networks 2016 to 2021", November 2015, pg. 7-36.

TABLE 1.8: FORECAST PRODUCTIVITY GROWTH RATES, ACIL ALLEN[69]

	Annual Forecast Productivity Growth Rate
AER Draft Decision	-0.2%
Revised AA Proposal	-1.8%

AGN has chosen not to apply either of these productivity adjustments in the Rate of Change formula, as in both cases, the negative productivity adjustment would result in an increase to AGN's forecast opex over the next AA period. That is, the productivity forecast calculated in respect of this Revised AA Proposal and the AER Draft Decision would result in an increase in opex of $22 million[70] and $2 million[71], respectively over the next AA period.

The decision not to apply either of these productivity adjustments reflects our view that a forecast of productivity growth cannot be arrived at on a reasonable basis and therefore cannot meet the criteria as detailed in Rule 74 of the NGR. As such, AGN has removed the productivity adjustment from the Rate of Change formula incorporated into the Opex Model in Attachment 7.7A.

However, implicit in this decision not to apply a negative productivity adjustment to forecast opex, is the expectation that AGN will generate productivity *improvements* over the next AA period, equivalent to $22 million. That is, although AGN has effectively applied a zero productivity adjustment, forecast productivity growth for AGN (using the AER's method in the Draft Decision) generates an increase in forecast opex. As a result, by not applying the negative productivity adjustment, AGN is still forecasting productivity *improvements* in order to absorb these costs over the next AA period.

Importantly, AGN anticipates that these improvements will be enabled due to the benefits derived from its proposed capex program – for example, IT projects such as Business Intelligence. AGN's achievement of these productivity improvements would be at risk if these projects were not accepted by the AER.

Conclusion

In summary, AGN does not accept the AER's application of a productivity adjustment to its forecast opex over the next AA period, for the following reasons:

- the labour cost escalation rate does not compensate the business for forecast productivity improvements;
- AGN does not consider that a forecast of productivity growth can be arrived at on a reasonable basis;
- AGN considers the forecast of productivity growth applied by the AER to forecast opex does not meet the AER's forecast assessment principles;
- AGN has absorbed significant opex costs in its Revised AA Proposal (effectively applying a productivity adjustment of 0.7%), so it is not necessary for the AER to apply an additional productivity adjustment;
- the productivity adjustment applied by the AER in its Draft Decision is irrelevant to AGN.

Further, should the AER not accept the above arguments, AGN contends that a more appropriate productivity adjustment (based on AGN data), results in a negative productivity adjustment (i.e. an increase in forecast opex).

69 ACIL Allen 2015, "*Opex partial productivity forecast: Australian Gas Networks Limited*", December 2015.

70 Note: based on a productivity adjustment of -1.8%.

71 Note: based on a productivity adjustment of -0.2%.

As AGN has not applied a productivity adjustment to forecast opex over the next AA period, AGN has effectively forecast productivity *improvements* summing to 3%, which is the sum of the implied productivity factor of 0.7% and the AGN specific productivity saving of 2%. These productivity factors equate to productivity gains of around $30 million over the next AA period. Achieving these gains is in large part attributed to the proposed capex program detailed in Attachment 8.9, such as the benefits derived from projects such as SA60 Business Intelligence.

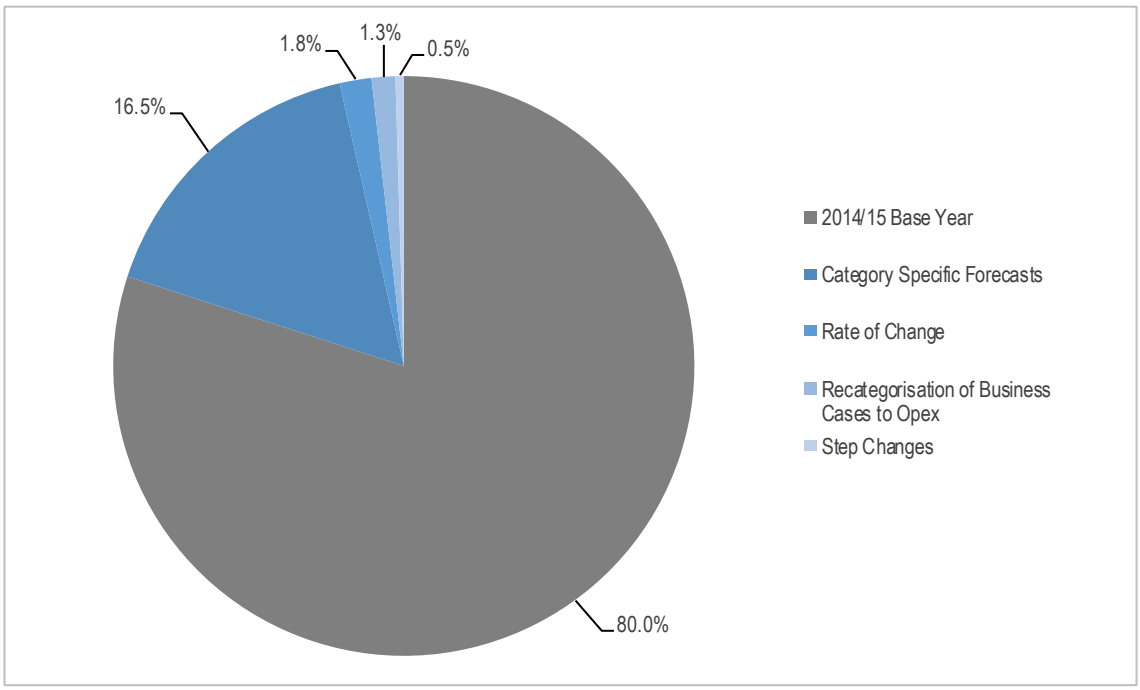
1.4 Summary

Although AGN does not agree with the AER's approach to forecasting opex over the next AA period, AGN has accepted the AER's Draft Decision in most instances. The two key areas of the AER's Draft Decision that AGN has not accepted are the following:

- the application of a productivity growth forecast in the AER's Rate of Change formula; and
- the rejection of one step change; SA44 Inlet Data Capture.

Figure 1.1 and Table 1.9 below summarises AGN's Revised AA Proposal in relation to forecast opex.

FIGURE 1.1: COMPOSITION OF OPEX FORECAST



Note: Totals may not add due to rounding.

TABLE 1.9: SUMMARY OF THE AER'S DRAFT DECISION, COMPARISON TO AGN'S AA PROPOSAL

$2014/15, million	Initial AA Proposal	Draft Decision	Revised AA Proposal
2014/15 Base Year	232.0	282.3	287.1
Category Specific Forecasts	102.8	55.4	59.1
Recategorisation of Business Cases to Opex	0.0	4.7	4.7
Step Changes	10.1	0.0	1.7
Input Cost Escalation	6.5	6.3	6.5
Output Growth	1.6	-0.1	-0.1
Productivity Growth	0.0	-5.7	0.0
Total	**352.7**	**342.8**	**358.8**