DRAFT DECISION
Australian Gas Networks Victoria and Albury gas access arrangement 2018 to 2022

Attachment 7 – Operating expenditure

July 2017

AUSTRALIAN ENERGY REGULATOR

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Note

This attachment forms part of the AER's draft decision on the access arrangement for AGN's Victoria and Albury gas distribution networks for 2018-22. It should be read with all other parts of the draft decision.

The draft decision includes the following documents:

Overview

Attachment 1 - Services covered by the access arrangement

Attachment 2 - Capital base

Attachment 3 - Rate of return

Attachment 4 - Value of imputation credits

Attachment 5 - Regulatory depreciation

Attachment 6 - Capital expenditure

Attachment 7 - Operating expenditure

Attachment 8 - Corporate income tax

Attachment 9 - Efficiency carryover mechanism

Attachment 10 - Reference tariff setting

Attachment 11 - Reference tariff variation mechanism

Attachment 12 - Non-tariff components

Attachment 13 - Demand

Attachment 14 - Other incentive schemes

Contents

Shortened forms

Shortened form	Extended form
AER	Australian Energy Regulator
ATO	Australian Tax Office
capex	capital expenditure
CAPM	capital asset pricing model
CESS	Capital Expenditure Sharing Scheme
CPI	consumer price index
DRP	debt risk premium
ECM	(Opex) Efficiency Carryover Mechanism
ERP	equity risk premium
Expenditure Guideline	Expenditure Forecast Assessment Guideline
gamma	Value of Imputation Credits
MRP	market risk premium
NGL	National Gas Law
NGO	national gas objective
NGR	National Gas Rules
NPV	net present value
opex	operating expenditure
PTRM	post-tax revenue model
RBA	Reserve Bank of Australia
RFM	roll forward model
RIN	regulatory information notice
RPP	revenue and pricing principles
SLCAPM	Sharpe-Lintner capital asset pricing model
STTM	Short Term Trading Market
TAB	Tax asset base
UAFG	Unaccounted for gas
WACC	weighted average cost of capital
WPI	Wage Price Index

7 Operating expenditure

Operating expenditure (opex) is the operating, maintenance and other non-capital expenses, incurred in the provision of pipeline services.[1] Forecast opex is one of the building blocks we use to determine a service provider's total revenue requirement.

This attachment outlines our assessment of AGN's forecast opex for the 2018–22 access arrangement period.

7.1 Draft decision

Our draft decision is to accept AGN's forecast opex of $344.0 million ($2017) for the 2018–22 access arrangement period.[2] We expect AGN to update its forecast to reflect actual opex in 2016 in its revised proposal, which we will then review for the final decision. Our draft decision is set out in Table 7.1.

Table 7.1 Our draft decision on total opex ($ million, 2017)

	2018	2019	2020	2021	2022	Total
Forecast total opex	67.2	67.9	68.7	69.6	70.6	**344.0**

Source: AGN, Revenue proposal: *opex model* and *PTRM*, December 2016.

Note: Numbers may not add up due to rounding. Includes debt raising costs.

Our assessment approach, as detailed below, is to develop an alternative estimate of AGN's total opex requirements to test whether AGN's proposal meets the opex criteria. We have not included some aspects of AGN's proposal in our alternative estimate, such as the marketing step change. However, this is offset by other factors, with the result that overall there is not a material difference between our estimate and AGN's proposal.

We assess the efficiency of AGN's *overall* opex forecast, as an element of the total revenue requirement. Under the ex-ante regulatory framework, it is for AGN to decide how it will meet its obligations in delivering its services, including which specific opex projects it will undertake.

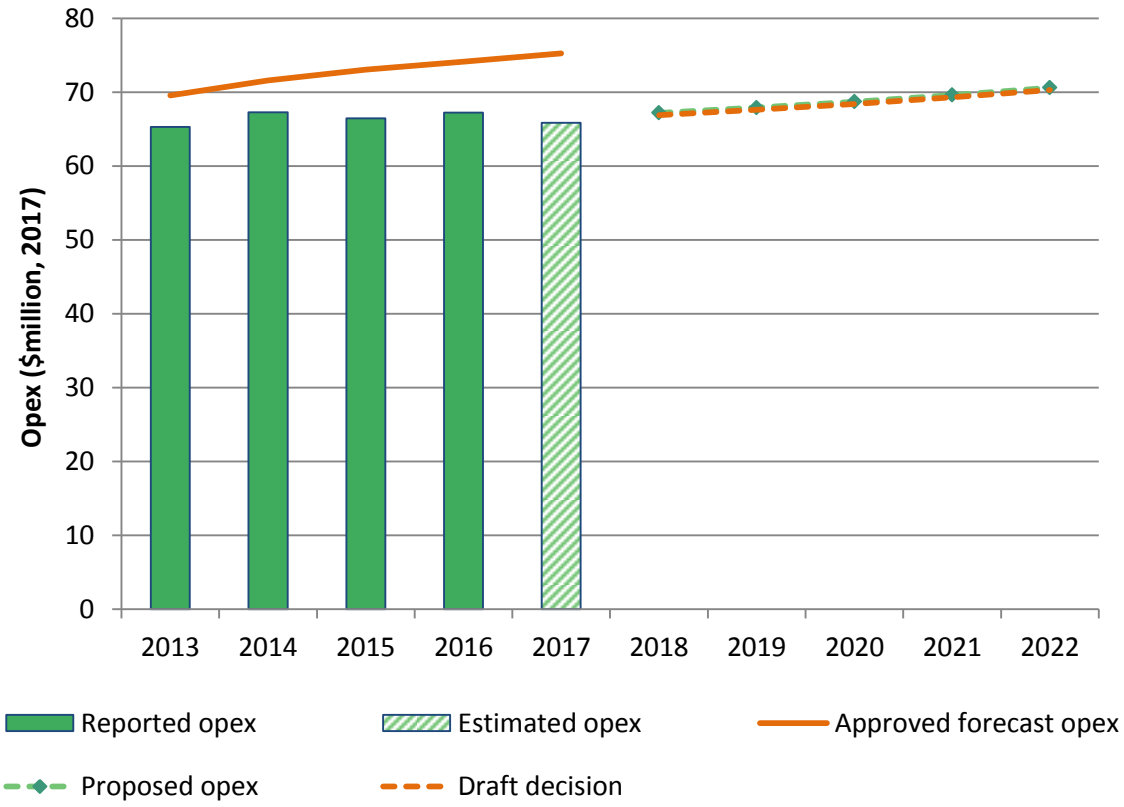
Figure 7.1 compares the opex forecast we approve in this draft decision to the forecast we approved for 2013–17 and AGN's actual opex in that period. Our approved opex forecast for 2018–22 is in-line with AGN's expenditure in 2013–17. AGN's expenditure in the current period is around 9 per cent lower than the forecast we approved in our

[1] NGR, r. 91.

[2] Includes debt raising costs and ancillary reference services.

2013–17 final decision.[3] AGN attributed this reduction to efficiencies flowing from its change in ownership in 2014 and reductions in unit costs.

Figure 7.1 Our draft decision compared to AGN's past opex ($ million, 2017)



Source: AGN, Proposed reset RIN, AER analysis.

Note: Includes debt raising costs.

7.2 AGN's proposal

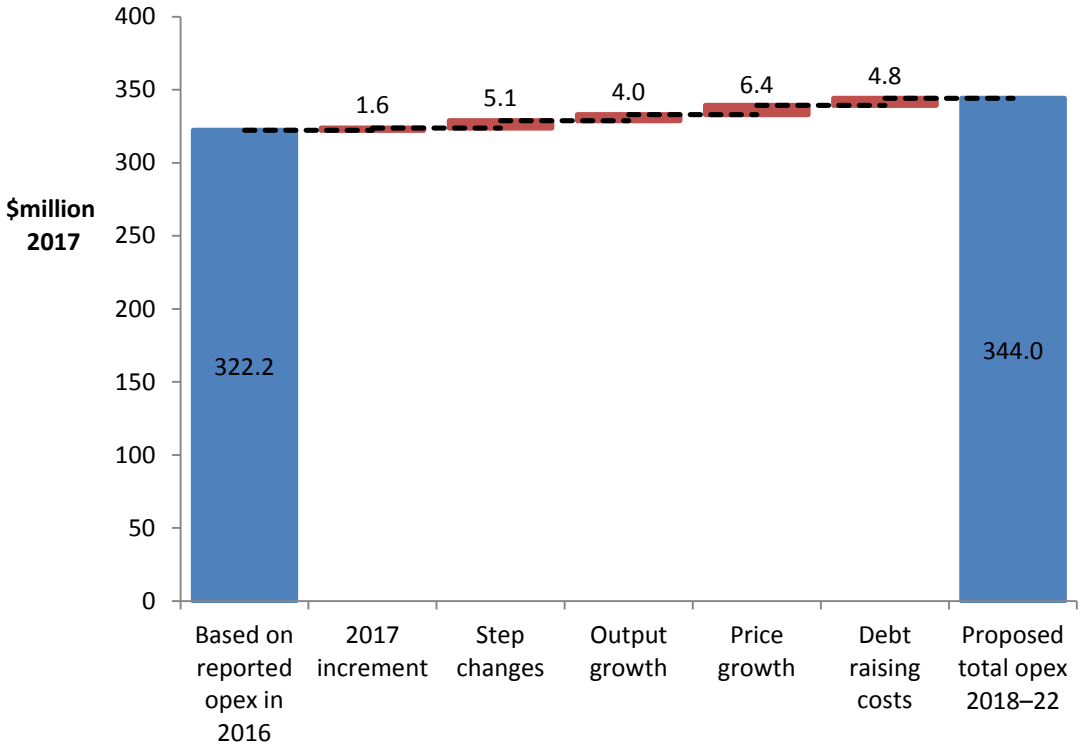
AGN proposed total opex of $344.0 million ($2017) for the 2018–22 access arrangement period (see Table 7.1).[4]

In Figure 7.2 we separate AGN's proposed opex into the different elements that make up its forecast.

[3] Expenditure in the current period is based on reported expenditure in 2013–16 and estimated expenditure in 2017.

[4] Includes debt raising costs.

Figure 7.2 AGN's opex forecast ($ million, 2017)



Source: AGN, *Proposed opex model, date and proposed PTRM* .

We describe each of these elements below:

- AGN adopted our base–step–trend forecasting approach.[5]
- AGN used an estimate of the actual opex it incurred in 2016 as the base for forecasting its opex for the 2018–22 access arrangement period. If no adjustments were made, this would lead to a base opex of $322.2 million ($2017), excluding debt raising costs.
- To forecast the increase in opex between the base year and start of the access arrangement period, AGN added its forecast input price growth. This increased its total opex forecast by $1.6 million ($2017).
- AGN's forecast rate of change increased its total opex forecast by $10.4 million ($2017). This was attributable to real input price growth of $6.4 million ($2017) and output growth of $4.0 million ($2017).
- AGN forecast no productivity growth over the 2018–22 period.
- AGN proposed a single step change for expanding its marketing expenditure, which increased its total opex forecast by $5.1 million ($2017).

[5] AGN, *Final Plan Access Arrangement Information for our Victorian and Albury natural gas distribution networks: 2018 to 2022*, December 2016, p.65.

- These components resulted in a total opex forecast of $344.0 million ($2017), including forecast debt raising costs of $4.8 million ($2017).

7.2.1 Submissions on AGN's proposal

We received several submissions on AGN's proposal.

- The AER's Consumer Challenge Panel (CCP11) did not support the Victorian distributors' marketing step change proposal. They did not consider any of them, including AGN, demonstrated they have the support of their customers for the proposed marketing expenditure. CCP11 considered a marketing step change was not prudent, due to the high degree of uncertainty around future gas appliance usage, the lack of any indication that the level of marketing expenditure will be maintained in the future, and concerns around the extent to which the proposed program will be actually carried out.[6]
- United Communities submitted AGN's revised growth projections passed the 'reasonableness test'.[7] However, it was unconvinced marketing costs are a legitimate step change, noting that marketing is not a new or unexpected expenditure, but a standard cost for most businesses.[8]
- Red Energy / Lumo Energy provided conditional support for a marketing step change, as long as its benefits exceeded the costs.[9]
- Origin Energy considered AGN's forecast growth is reasonable. Origin Energy also provided conditional support for a marketing step change, but suggested it be reviewed throughout the access arrangement to examine its effectiveness.[10]
- AGL indicated its support for the marketing allowance, noting it should drive more efficient use of the network over time.[11]

7.3 Our assessment approach

Our role is to decide whether or not to accept a business' forecast opex. We approve the business' forecast opex if we are satisfied that it is consistent with the opex criteria:

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6 Consumer Challenge Panel (sub-panel 11), *Response to proposals from AGN, AusNet and Multinet for revenue reset/access arrangements for the period 2018 to 2022*, March 2017, p. 60.

7 Uniting Communities*, No Shocks Access Arrangement Proposal - Submission to the AER regarding the AGN access arrangement proposal for Victoria Albury*, 19 March 2017, p. 4.

8 Uniting Communities, *No Shocks Access Arrangement Proposal - Submission to the AER regarding the AGN access arrangement proposal for Victoria Albury*, 19 March 2017, p. 7

9 Red Energy and Lumo Energy, *Submission on the Australian Gas Networks Access Arrangement,* 6 March 2017, p. 1.

10 Origin Energy, *Victorian aas access arrangement review 2018-22 - Response to gas distribution businesses' proposals,* 17 February 2017, p. 4.

11 AGL Energy Ltd, *Submission to the AER on the Victorian gas access arrangement ,* March 2017, p. 1.

> Operating expenditure must be as such as 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.[12]

In determining whether forecast opex is consistent with the opex criteria we apply the forecasting and estimate requirements under the NGR.[13]

Our approach is to assess the business' forecast opex at a total level, rather than to assess individual opex projects. To do so, we develop an alternative estimate of total opex using a 'top-down' forecasting method, known as the 'base–step–trend' approach.[14] The advantage of this forecasting approach is that it largely relies on the business' aggregate historic ('revealed') cost that is shown to be sufficient for the business to operate under its existing regulatory obligations. This contrasts with building a total opex forecast from the 'bottom up' using individual opex category or project forecasts. The disadvantage of the bottom-up approach is that it is more susceptible to forecasting risk given the business has an incentive to inflate its forecasts.

We compare our estimate with the business' total opex forecast to form a view on the reasonableness of the business' proposal. If we are satisfied the business' total forecast meets the NGR requirements, we accept the forecast. If we are not satisfied, we substitute the business' forecast with our alternative estimate.

In making this decision, we take into account the reasons for the difference between our alternative estimate and the business' forecast, and the materiality of that difference. We also take into consideration the interrelationships between our opex forecast and the other constituent components of our decision, such that our decision is likely to contribute to the achievement of the NGO.[15]

We develop our alternative estimate of total opex using the base–step–trend forecasting approach, which is summarised in figure 7.3. Further explanation of the rationale behind our forecasting method can be found in our draft decisions for AusNet Services and Multinet's gas access arrangements for 2018–22.[16] These are available on our website.

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12 NGR, rr. 91 and 40(2).

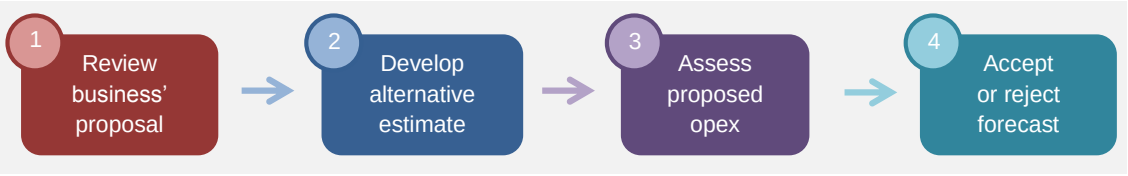
13 NGR, r. 74(2). A forecast or estimate must be arrived at on a reasonable basis and must represent the best forecast or estimate possible in the circumstances.

14 A 'top-down' approach forecasts total opex at an aggregate level, rather than forecasting individual projects or categories to build a total opex forecast from the 'bottom up'.

15 NGL, s28(1).

16 AER, *Draft decision AusNet Services access arrangement 2018–22, Attachment 7 Operating Expenditure*, June 2017, pp. 7-8 to 7-15.
AER, *Draft decision Multinet Gas access arrangement 2018–22, Attachment 7 Operating Expenditure*, June 2017, pp. 7-8 to 7-15.

Figure 7.3 Our opex assessment approach



1. Review business' proposal

We review the business' proposal and identify the key drivers.

2. Develop alternative estimate

Base

We use the business' opex in a recent year as a starting point (revealed opex). We assess the revealed opex (e.g. through benchmarking) to test whether it is efficient. If we find it to be efficient, we accept it. If we find it to be materially inefficient we may make an efficiency adjustment.

Trend

We trend base opex forward by applying a forecast 'rate of change' to account for growth in input prices, output and productivity.

Step

We add or subtract any step changes for costs not compensated by base opex and the rate of change (i.e. costs associated with regulatory obligation changes or capex/opex substitutions).

Other

We include a 'category specific forecast' for any opex component that we consider necessary to be forecast separately.

3. Assess proposed opex

We contrast our alternative estimate with the business' opex proposal. We identify all drivers of differences between our alternative estimate and the business' opex forecast. We consider each driver of difference between the two estimates and go back and adjust our alternative estimate if we consider it necessary.

4. Accept or reject forecast

We use our alternative estimate to test whether we are satisfied the business' opex forecast meets the opex criteria and other NGR requirements. We accept the proposal if we are satisfied.

If we are not satisfied the business' opex forecast meets the opex criteria and other NGR requirements we substitute it with our alternative estimate.

7.4 Reasons for draft decision

Our draft decision is to accept AGN's total forecast opex of $344.0 million ($2017) for the 2018–22 access arrangement period.[17] Having regard to our alternative estimate,

[17] Including debt raising costs.

we are satisfied AGN's forecast total opex complies with the opex criteria[18] and the requirements for forecasts and estimates.[19]

Our decision takes into account AGN's statement in its proposal that it will update its 2016 estimated (base year) opex to reflect actual information in its response to our draft decision.[20] We expect AGN to update its forecast of total opex in its revised proposal to reflect the actual opex it incurred in 2016, which we will then review for the final decision.[21]

We accept AGN's proposed total opex of $344.0 million ($2017) because there is not a material difference between our alternative estimate and AGN's proposal.[22]

Table 7.2 compares the differences between the components of our alternative estimate and AGN's proposal. While the components of our forecasts are different, the differences broadly offset each other such that our total opex forecasts are not materially different. In particular, when arriving at our alternative estimate, we did not include AGN's proposed marketing step change and our category specific forecast for debt raising costs was slightly lower—both of which reduced our estimate. However, we included a different estimate of AGN's final year opex, which increased our total opex forecast by a similar magnitude.

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18 NGR, r. 91.

19 NGR, r. 74.

20 AGN, *Final Plan Access Arrangement Information for our Victorian and Albury natural gas distribution networks: 2018 to 2022*, December 2016, p. 67.

21 Includes debt raising costs; Due to the interrelationship between the opex framework and the efficiency carryover mechanism (ECM), updating AGN's total opex forecast to reflect actual 2016 opex implies AGN must also adjust its ECM calculation accordingly.

22 Includes debt raising costs. We have relied on AGN's estimated opex in 2016 to forecast its opex over the 2018–22 access arrangement period.

Table 7.2 Our alternative estimate compared to AGN's proposal ($ million, 2017)

	AGN	Our alternative estimate	Difference
Base opex	322.2	324.0	1.8
2017 increment	1.6	5.6	4.0
Price growth	6.4	6.3	–0.1
Output and productivity growth	4.0	4.0	–
Step changes	5.1	–	–5.1
Category specific forecasts	4.8	4.1	–0.6
Total opex	**344.0**	**344.0**	**–0.1**

Source: AGN proposed opex model, AER draft decision opex model (using estimated opex in 2016).

Note: Debt raising costs are included in category specific forecasts. Base opex has been adjusted for movements in provisions. Numbers may not add due to rounding. Our base opex is slightly higher than AGN's because we use different methods to adjust for inflation.

We briefly discuss the components of our alternative estimate below. Full details of our alternative estimate are set out in our opex model, which is available on our website.

7.4.1 Base opex

We relied on AGN's *estimated* opex in 2016 to forecast its opex over the 2018–22 access arrangement period. As noted above, our final decision will reflect AGN's *actual* opex in 2016.

AGN's opex was subject to the incentives of an ex ante regulatory framework, including the application of an efficiency carryover mechanism in the 2013–17 period. Typically, where a service provider is subject to these incentives, we are satisfied there is a continuous incentive for a service provider to make efficiency gains and it does not have an incentive to increase its opex in the proposed base year. Taking this into account, and in the absence of any evidence to the contrary, we are satisfied AGN's proposed 2016 base year reflects its year-to-year opex requirements. [23]

We have considered benchmarking undertaken by Economic Insights, which was engaged by the three Victorian gas distribution businesses to assess the efficiency of their base year expenditure.[24] Economic Insights considered AGN is at or below the average opex per customer for gas distribution businesses with relatively high

[23] NGR, r. 71(1).

[24] Economic Insights, *Benchmarking the Victorian Gas Distribution Businesses' Operating and Capital Costs Using Partial Productivity Indicators*, report prepared for AusNet Services, Australian Gas Networks Limited and Multinet Gas, 15 June 2016.

customer density.[25] Economic Insights stated that the comparison does not control for other opex cost drivers which may be relevant and care needs to be taken when drawing inferences.[26]

We consider conclusions from the benchmarking undertaken by Economic Insights should be treated with caution. The benchmarking exercise is limited by the small sample size of gas distribution businesses and it is difficult to test some of the underlying data sources—among other things. In light of this, we have given limited weight to Economic Insight's benchmarking and conclusions. However, as set out above, and in the absence of any evidence to the contrary, we are satisfied that the 2016 base year opex is efficient.

We have not removed the licence fees from AGN's base year expenditure. AGN recovered the costs of its annual licence fees payable to Essential Services Commission of Victoria through a licence fee factor in the reference tariff variation mechanism in the 2013–17 access arrangement period.[27] Given licence costs are relatively stable from year-to-year, we consider it appropriate for AGN to recover these costs as a base opex component going forward, rather than through the licence fee factor. Accordingly, we have not removed the licence fees from AGN's base year expenditure. We exclude the licence fee factor from its tariff variation formula to ensure AGN does not recover these costs twice.

Similarly, AGN's base year expenditure includes the levy it pays Energy Safe Victoria (ESV) in 2016. Therefore, we have excluded the ESV levy pass through adjustment factor in AGN's proposed price control formula to ensure that it does not over recover these costs.

7.4.2 Rate of change

Once we estimate opex in the final year of the current period, we apply a forecast annual rate of change to forecast opex for the 2018–22 access arrangement period. This accounts for forecast growth in prices, output and productivity.

Forecast price growth

We applied average annual price growth of 0.7 per cent in our alternative estimate. AGN proposed price growth of 0.7 per cent.

AGN's approach to forecast input price growth is consistent with our approach:

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[25] Economic Insights, *Benchmarking the Victorian Gas Distribution Businesses' Operating and Capital Costs Using Partial Productivity Indicators*, report prepared for AusNet Services, Australian Gas Networks Limited and Multinet Gas, 15 June 2016, p.9.

[26] Economic Insights, *Benchmarking the Victorian Gas Distribution Businesses' Operating and Capital Costs Using Partial Productivity Indicators*, report prepared for AusNet Services, Australian Gas Networks Limited and Multinet Gas, 15 June 2016, p 9.

[27] AER, *Access arrangement for Envestra's Victorian gas distribution system 2013 – 2017*, April 2013, pp.37–38. The reference tariff variation mechanism comprises the mechanisms and processes for varying reference tariffs during the access arrangement period and may allow for cost pass through of specific costs.

- to forecast labour price growth, we used forecast growth in the Victorian utilities WPI
- to forecast non-labour price growth, we applied the forecast change in CPI.

We weighted the forecast price growth to account for the proportion of opex that is labour and the proportion that is non-labour.[28] Our labour and non-labour price weights reflect the benchmark efficient mix of labour services and other costs required to provide distribution services.

Like AGN, we used an average of Deloitte Access Economics' and BIS Shrapnel's wage price index (WPI) growth forecasts. The only difference between our price growth forecast and AGN's is that we updated the Victorian WPI for the utilities industry to reflect the most up-to-date Deloitte Access Economics forecasts.

Forecast output growth

We are satisfied AGN's proposed total output growth of $4.0 million ($2017) for the 2018–22 access arrangement period is made on a reasonable basis and represents the best forecast possible in the circumstances.

Table 7.3 shows AGN's proposed output growth compared to those of the other two Victorian gas distributors. It shows that of the three businesses, AGN proposed the lowest output growth.

Table 7.3 AGN's proposed output growth in context

	Forecast approach	Impact on 5 year opex forecast $m	Increase on base opex forecast, per cent	Proposed average annual growth rate, per cent
AusNet Services	Customer numbers 45 per cent, gas throughput 55 per cent	10.4	4.0	1.28
Multinet	Customer numbers 45 per cent, pipeline length 55 per cent	7.2	2.0	0.65
AGN	**Customer numbers times cost per new customer**	**4.0**	**1.2**	**0.43**

Source: Victorian gas access arrangement proposals.

We typically forecast output growth based on the forecast growth in a defined output measure, using econometric modelling. However, we do not have the necessary dataset for gas to undertake the modelling needed to determine a standard industry output specification. Therefore, we developed a test to determine whether the network businesses' forecast method provides a reasonable forecast of output growth. Our test

[28] We applied Economic Insights' benchmark opex price weightings for labour and non-labour: 62 per cent for labour and 38 per cent for non-labour. For more detail for our approach to forecasting price changes refer to AER, *Draft decision AusNet Services transmission determination 2017–18 to 2021–22*, *Attachment 7- Operating expenditure*, 20 July 2016, pp. 7-19 to 7- 20, 7-47 to 7-53.

established an acceptable range of forecast output growth based on cost functions estimated by Economic Insights[29] and ACIL Allen[30]. We consider this approach uses the best information available to provide a reasonable basis on which to establish an acceptable range.

AGN forecast output growth based on a forecast of the number of new customers multiplied by a fixed cost per customer.[31] This is the same approach it used, and we adopted, for its 2013–17 access arrangement.

While AGN's approach differs from our standard approach, its forecast average annual output growth, net of productivity growth, falls within the acceptable range of forecast output growth (Table 7.4). On this basis, we are satisfied its proposed output growth of $4.0 million ($2017) over the 2018–22 access arrangement period meets the opex criteria and we have included it in our alternative estimate.

Table 7.4 Comparison of AGN's forecast output growth with the acceptable range of output growth net of productivity

	Proposed average annual growth rate, per cent	Acceptable range, average annual growth rate, per cent	Assessment
AGN	**0. 43**	**–0.57 to 1.59**	**Within acceptable range**

Source: AER analysis.

Forecast productivity growth

We have implicitly accounted for productivity growth by including an output growth forecast that is net of productivity growth in our alternative estimate.

We consider network growth should deliver productivity gains such as economies of scale, particularly for operating costs.

Achieving productivity gains would be consistent with AGN's past performance as well as that of other gas distribution businesses. According to the productivity performance study Economic Insights prepared for the three Victorian distribution businesses, positive opex partial factor productivity index performance improved for all three from 1999 to 2015, showing positive productivity growth.

We have also considered the report Economic Insights prepared for Multinet in estimating its opex cost function.[32] Economic Insights found significant economies of

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29 Economic Insights, *Gas Distribution Businesses Opex Cost Function, Report prepared for Multinet Gas*, 22 August 2016

30 ACIL Allen Consulting, *Opex Partial Productivity Analysis, Report for AGN*, 20 December 2016.

31 AGN, *Final Plan Access Arrangement Information for our Victorian and Albury natural gas distribution networks: 2018 to 2022*, December 2016, pp. 71-72.

32 Economic Insights, *Gas distribution businesses opex cost function,* report prepared for Multinet Gas, 22 August 2016.

scale as well as positive technological change. Both economies of scale and technological change are components of productivity change, and indicate the gas distribution businesses should achieve positive productivity growth.

7.4.3 Step changes

We did not include any step changes proposed by AGN when arriving at our alternative estimate.

Expanded marketing program

AGN proposed a $5.1 million ($2017) step change to expand its marketing program and coordinate marketing activities with the other two Victorian gas distributors in the next access arrangement period (the joint marketing program).

We did not include AGN's marketing step change in our alternative estimate of total opex. We consider base opex, trended forward by the forecast rate of change, is sufficient for AGN to continue to meet its existing obligations. Marketing is a 'business-as-usual' expense for AGN to consider within its existing base opex forecast. Our reasons for not including a step change in our alternative estimate are set out in more detail in our draft access arrangement decisions for Multinet and AusNet Services.[33] Again, although we have not included these costs in the opex forecast, the difference between our alternative estimate and AGN's total forecast is not material.

7.4.4 Category specific forecasts

We included a category specific forecast for debt raising costs of $4.1 million ($2017) in our alternative estimate. This is slightly lower than AGN's forecast.

Debt raising costs are transaction costs incurred each time debt is raised or refinanced. We forecast them based on a benchmarking approach rather than a service provider's actual costs for consistency with the forecast of the cost of debt in the rate of return building block. Further details are set out in the debt and equity raising costs appendix in the rate of return attachment.

7.4.5 Interrelationships

In assessing total forecast opex we took into account other components of our draft decision, including:

- the operation of the efficiency carryover mechanism in the 2013–17 access arrangement period, which provided AGN an incentive to reduce opex in the base year

[33] AER, *Draft decision Multinet gas access arrangement 2018 to 2022– Attachment 7 Operating Expenditure*, June 2017; AER, *Draft decision AusNet Services gas access arrangement 2018 to 2022– Attachment 7 Operating Expenditure*, June 2017, p. ???.

- the approach to assessing the rate of return, to ensure there is consistency between our determination of debt raising costs and the rate of return building block.

7.5 Revisions

We require AGN, in its revised proposal, to update its opex forecast for 2018–22 to reflect the actual opex it incurred in 2016.

AGN's opex forecast is based on AGN's estimate of the opex it will incur in 2016, as the actual data was not available at the time AGN submitted its proposal.