Victoria and Albury Draft Plan

Workshop 2: Return on Capital, Inflation, Regulated Asset Base, Financeability, Demand, Network Revenue and Pricing

30 August 2016

Australian Gas Networks
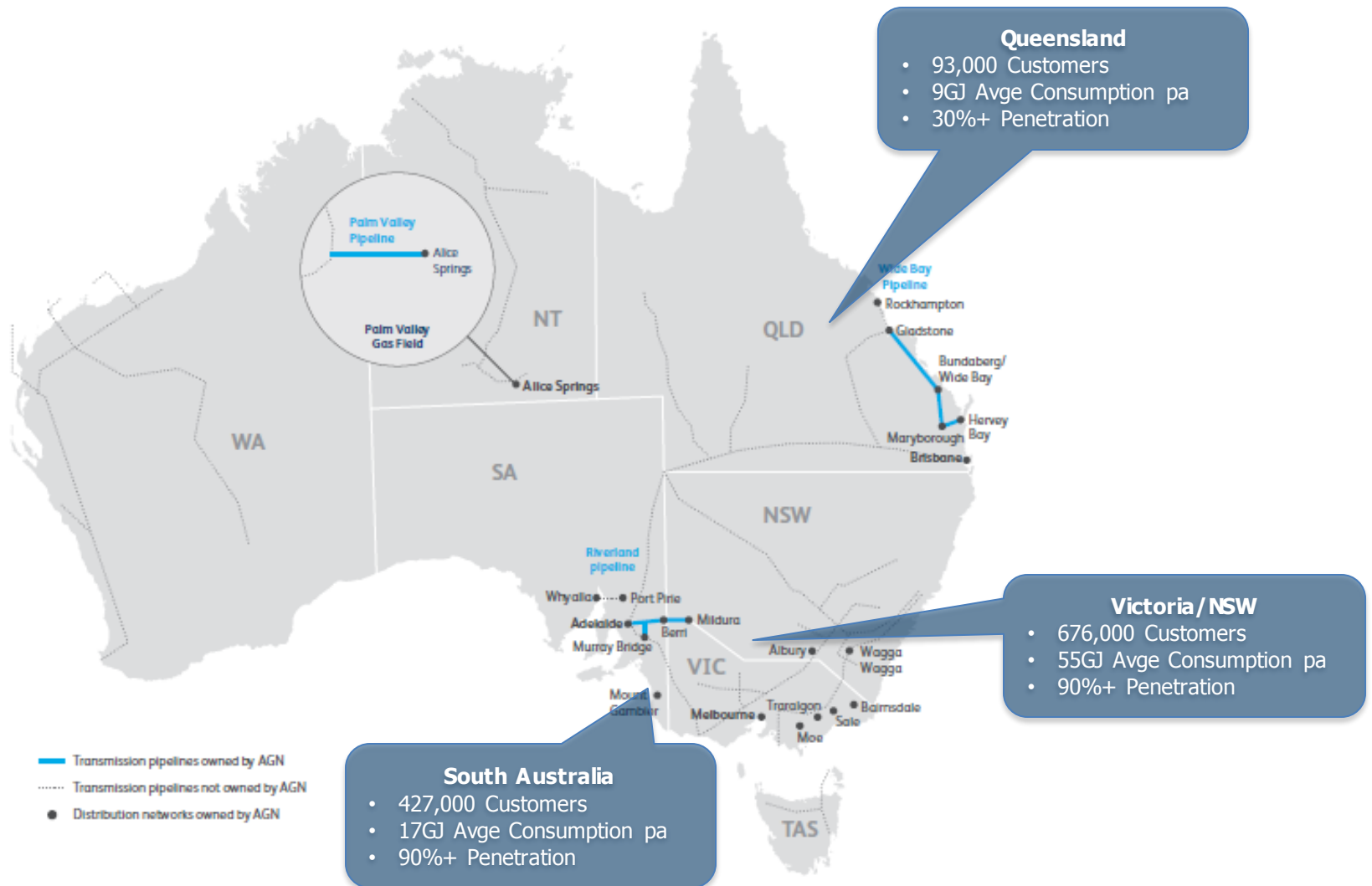
Agenda

- **Overview**
  - Recap of Workshop 1
  - About AGN
  - Purpose of the Draft Plan and Role of Deloitte
  - Building Block Model

- **Return on Capital and Inflation**
  - Determining the Rate of Return
  - Forecasts of Inflation

- **Financeability**
  - Cashflow requirements

- **Demand**
  - Residential, Commercial and Industrial Demand Forecasts

- **Network Revenue and Pricing**
  - Aligning Tariffs

- **Next Steps**

Overview

Overview | Recap of Workshop 1

- Workshop 1 (held on 23 August) provided an overview of the Draft Plan and our expenditure proposal

  - 13 external stakeholders attended, as well as key AGN and APA management

  - Meeting record to be circulated to all participants

- Stakeholders were generally supportive of forecasting approach to operating expenditure (opex), including our approach to adjusting base year expenditure

  - Support for progressing with our proposed joint marketing program, approach to accounting for customer growth and productivity

- Stakeholders were also comfortable with approach to forecasting capital expenditure (capex), including with the continuation of certain initiatives consistent with recent Australian Energy Regulator (AER) decision for South Australia (SA)

AGN Operates Networks in Most Australian States and Territories

Queensland
- 93,000 Customers
- 9GJ Avge Consumption pa
- 30%+ Penetration

Victoria/NSW
- 676,000 Customers
- 55GJ Avge Consumption pa
- 90%+ Penetration

South Australia
- 427,000 Customers
- 17GJ Avge Consumption pa
- 90%+ Penetration

Palm Valley Pipeline
Palm Valley Gas Field
Alice Springs

Wide Bay Pipeline
Rockhampton
Gladstone
Bundaberg/Wide Bay
Hervey Bay
Maryborough
Brisbane

Riverland pipeline
Whyalla
Port Pirie
Adelaide
Berri
Mildura
Murray Bridge
Mount Gambier
Albury
Wagga Wagga
Melbourne
Traralgon
Moe
Sale
Bairnsdale

NT
WA
SA
NSW
QLD
VIC
TAS

- Transmission pipelines owned by AGN
- Transmission pipelines not owned by AGN
- Distribution networks owned by AGN

Australian Gas Networks

Our vision

Our vision is to be the leading natural gas distributor in Australia...

Delivering for customers

Public Safety | Reliability | Customer Service

A good employer

Safety | Employee Engagement | Skills Development

Sustainably cost efficient

Working Within Industry Benchmarks | Delivering Profitable Growth

...achieving top quartile performance on our targets

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Overview | What we Delivered in South Australia

- We recently completed the SA Access Arrangement (AA) for 2016-2021

- Plans were informed by stakeholder engagement

- 23% upfront price cut (coming off a Weighted Average Cost of Capital of 10.3%)

- Opex and capex almost entirely accepted by the AER

- AGN accepted the AER's Final Decision

- Agreed positions have been applied to this Victorian and Albury Review

"More than 400,000 SA households and businesses are set to benefit from a drop in gas prices."
(*Channel 10 Adelaide*)

"… we think this [decision] is actually good for the state's economy."
(*Mark Henley (Uniting Communities), Channel 7 Adelaide*)

Prices in South Australia are down $144 (domestic) and $750 (small business)

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Overview | What We Have and What We Will Deliver

	Which means…	2013 – 2017 Actuals/Estimates	2018 – 2022 Targets
Delivering for Customers	• **Public Safety** • **Reliability** • **Customer Service**	• Emergency calls: 92% answered in 10 seconds • Customer calls: 80% answered in 30 seconds • Leaks: 95% attended in two hours • Average 18 interruptions to 5+ customers per annum • Around 16,000 new connections per annum • Stakeholder engagement program implemented	• Maintain high performance levels • Improve safety and maintain reliability • Support customer growth (approximately 14,000 new connections per annum) • Plans informed by stakeholder engagement • Improve and strengthen network incentives

A Good Employer	• **Safety**
	• **Employee engagement**
	• **Skills development**
		• Less than two Lost Time Injuries (LTIs) per annum
		• Lost Time Injury Frequency Rate (LTIFR): 1.6 per annum, per million hours
		• 100% compliance regarding employee refresher training and accreditation checks
			• Continuous improvement:
			  • LTIFR less than 1.0 per million hours
			  • Restricted duties rate: less than 15 days
			  • Implementation of employee engagement program
			  • Training and compliance monitoring

Sustainably Cost Efficient	• **Doing work within industry benchmarks** • **Delivering profitable growth**	• 100% mains replacement program delivered (696km) • Delivered network extensions to Merrifield, Koo Wee Rup and Wandong-Heathcote Junction. • Outperformed operating expenditure and capital expenditure	• Complete low pressure mains replacement program (307km) • Lower costs and network tariffs in real terms – 11% upfront price reduction • Continue to deliver leading productivity performance (by lowering expenditure relative to current levels)

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Overview | Victorian and Albury AA Plan
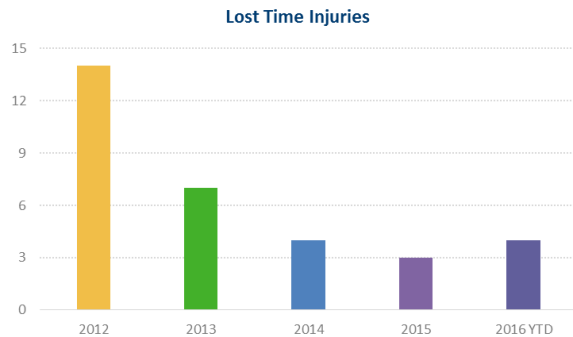
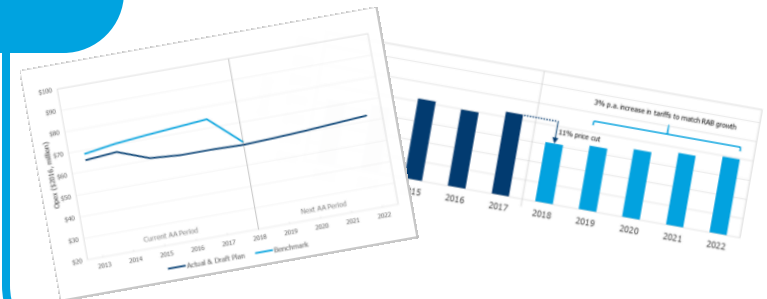## Effective Engagement

Delivering for Customers
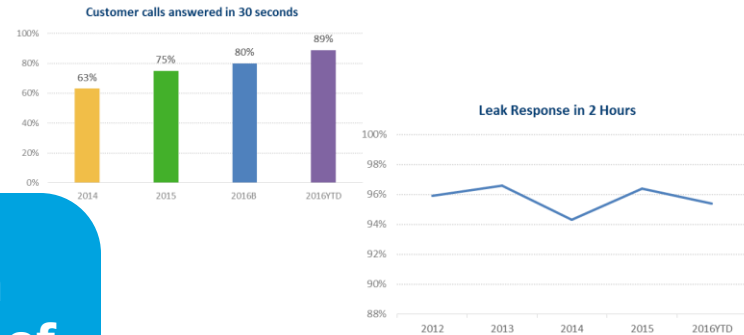
Delivering an initial price cut of 11% to our customers

A Good Employer

Sustainably Cost Efficient

Lower prices, lower costs, continuous service improvement

Overview | Purpose of the Draft Plan

- We published our Draft Plan for the next (2018 – 2022) AA period on 5 July

- The key purpose of the Draft Plan is to facilitate improved engagement on our business plans

- The Draft Plan outlines:

    - How feedback received so far has been incorporated into our Draft Plan

    - The activities and expenditure we propose to undertake in the next AA period

    - Future prices and revenue we intend to recover

    - Consultation questions for stakeholders

- Feedback will be incorporated in our final Victorian and Albury AA Proposal

AGN's intention is to submit an AA Proposal that is underpinned by effective stakeholder engagement and is capable of being accepted

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Overview | Stakeholder Engagement – Approach

Strategy Phase	Research Phase	Implementation Phase

Nov-15 ———————————— Mar-16 ———————————— Jun -16 ———————————————————— 2017+

Ongoing communications with key stakeholders

Ongoing Engagement

• Developed Scoping Paper	• Workshops with customers and retailers	• Internal and external engagement on insights	• Consideration of Draft Plan feedback in development of AA Proposal
• Established Victoria/Albury Reference Group	• Outcome of 9 customer insights	• Incorporation of insights into Draft Plan	• Ongoing engagement
• Liaised with key stakeholders	• Developed and released Customer Insights Report	• Further workshops with stakeholders on Draft Plan	
• Developed engagement strategy			

Engagement Strategy

Stakeholder Research and Customer Insights Report

Draft Plan

Deloitte Report

AA Proposal
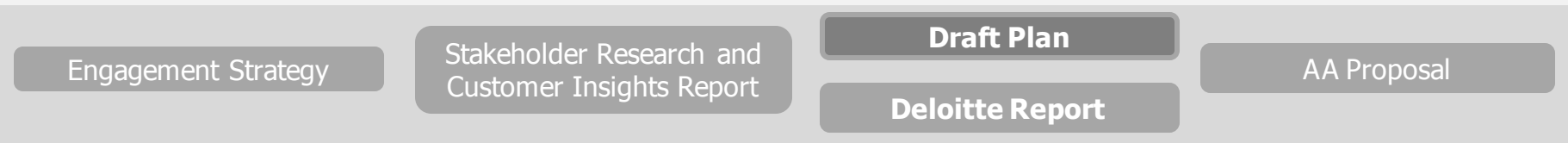
Initial Research Phase

- CUSTOMERS RECRUITED ON THE BASIS OF AGE, GENDER, INCOME
- RESIDENTS AND BUSINESSES
- 78 PARTICIPANTS
- 6 WORKSHOPS

Customer Insights Report

Draft Plan

Further Research

- STAKEHOLDERS INVITED DIRECTLY AND INDIRECTLY
- RESIDENTS, BUSINESS, GOVERNMENT, INDUSTRY BODIES, REGULATORS
- 2 DRAFT PLAN WORKSHOPS
- FURTHER STAKEHOLDER WORKSHOPS
- ONE-ON-ONE MEETINGS

Deloitte Report

TBC

ONGOING ENGAGEMENT WITH REFERENCE GROUPS, REGULATORS AND OTHER KEY STAKEHOLDERS

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Overview | Stakeholder Engagement – Engagement on Draft Plan

- The Draft Plan is an important part of our stakeholder engagement program

  - Seeking submissions from stakeholders (flexible on timing, any comment is beneficial)

  - Seeking ongoing engagement with our Reference Groups, the AER, Consumer Challenge Panel and Energy Safe Victoria

- Recent engagement activities:

  - Dedicated engagement on incentive arrangements

  - Presentation of Draft Plan to Reference Groups and AER

- Will conduct further engagement, including workshops with stakeholders

3. Do you have any suggestions as to how AGN could improve on and/or extend its stakeholder engagement program?

Overview | Purpose of Workshop and Next Steps

> **To proactively receive stakeholder feedback on our plans so this can be considered and reflected in our AA Proposal to the AER.**

- Next steps:

  - Series of workshops to discuss Draft Plan and receive stakeholder feedback

  - One-on-one meetings with stakeholders

  - Further stakeholder workshops

  - Consideration and incorporation of feedback received in our AA Proposal
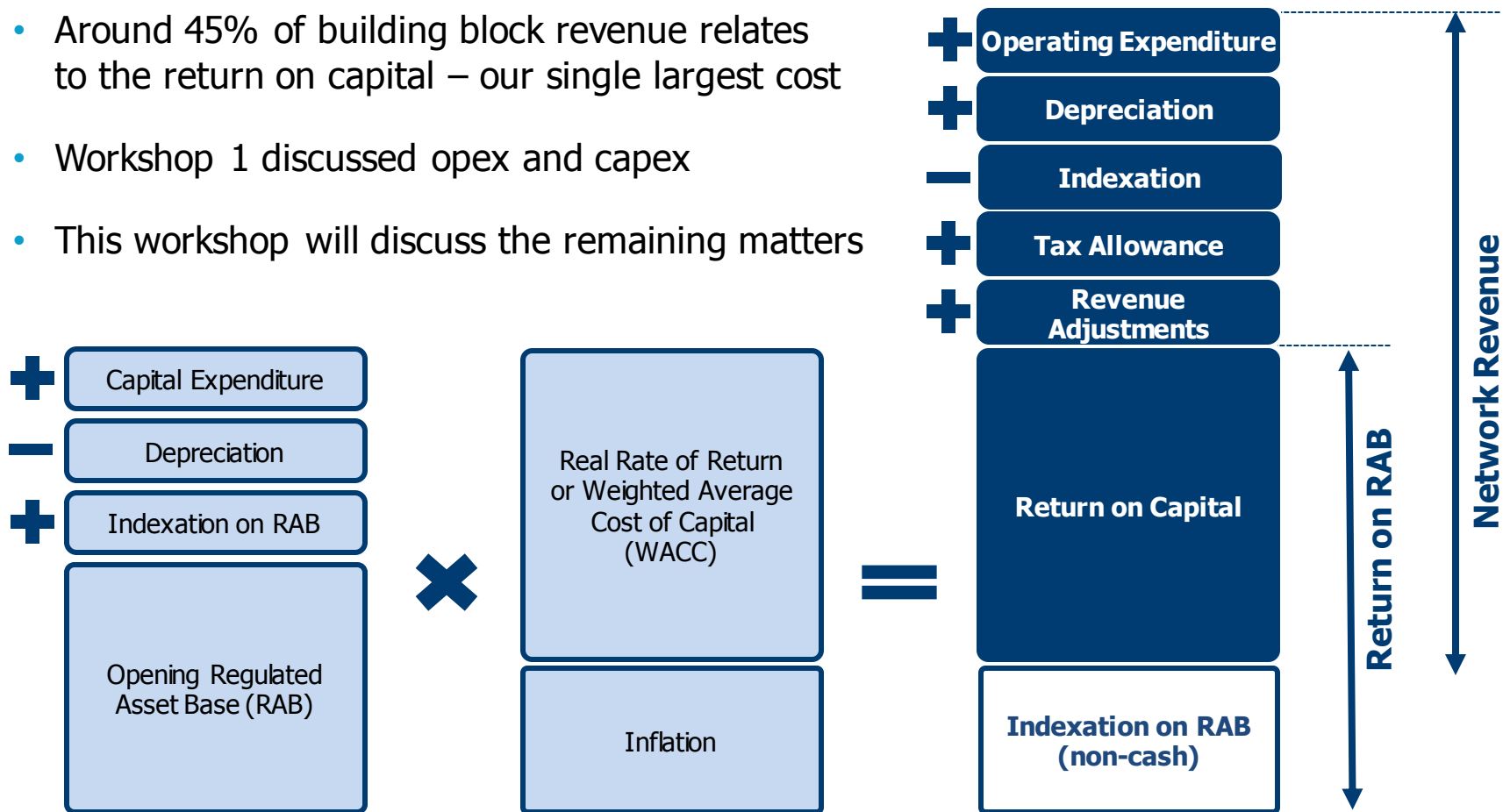
Stakeholder engagement is key to achieving our aim of submitting a plan that delivers for our customers and is capable of being accepted by the AER

Overview | Role of Deloitte

- Deloitte were engaged mid-last year to assist AGN with the design and delivery of its stakeholder engagement program

- Key role is to capture and report back to AGN and its stakeholders the feedback received from our engagement program

  - Have published alongside this Draft Plan the Deloitte Stakeholder Insights Report from first round of stakeholder workshops

- Deloitte will sit across all aspects of our stakeholder engagement program

  - Facilitates a comprehensive/consolidated reporting on all engagement outcomes

- We will share with all stakeholders the feedback from today's workshop to ensure that it has been accurately captured before it is considered by our management team

Overview | Building Block Model

- Building blocks sum the efficient cost of providing services to customers

- Around 45% of building block revenue relates to the return on capital – our single largest cost

- Workshop 1 discussed opex and capex

- This workshop will discuss the remaining matters

+ Operating Expenditure

+ Depreciation

− Indexation

+ Tax Allowance

+ Revenue Adjustments

Network Revenue

+ Capital Expenditure

− Depreciation

+ Indexation on RAB

Opening Regulated Asset Base (RAB)

×

Real Rate of Return or Weighted Average Cost of Capital (WACC)

Inflation

=

Return on Capital

Return on RAB

Indexation on RAB (non-cash)

Overview | Process Through to Delivery of Final Plan

- Stakeholder workshops to further explain and discuss Draft Plan

- Dedicated engagement with key stakeholders, including, but not limited to, Reference Groups, the AER and Energy Safe Victoria

5 July 2016
AGN Publish Draft Plan

23 August 2016
Workshop 1 – Overview, Opex and Capex

Early October 2016
Further stakeholder workshops

By 1 January 2017
AGN submit AA Proposal to the AER

AA drafting and review

16 August 2016
Initial submissions on Draft Plan

30 August 2016
Workshop 2 – Return on Capital, Demand, Revenue and Pricing

End October 2016
Deloitte Report published

Early December 2016
Reference Group Meetings on AA Proposal

Continued
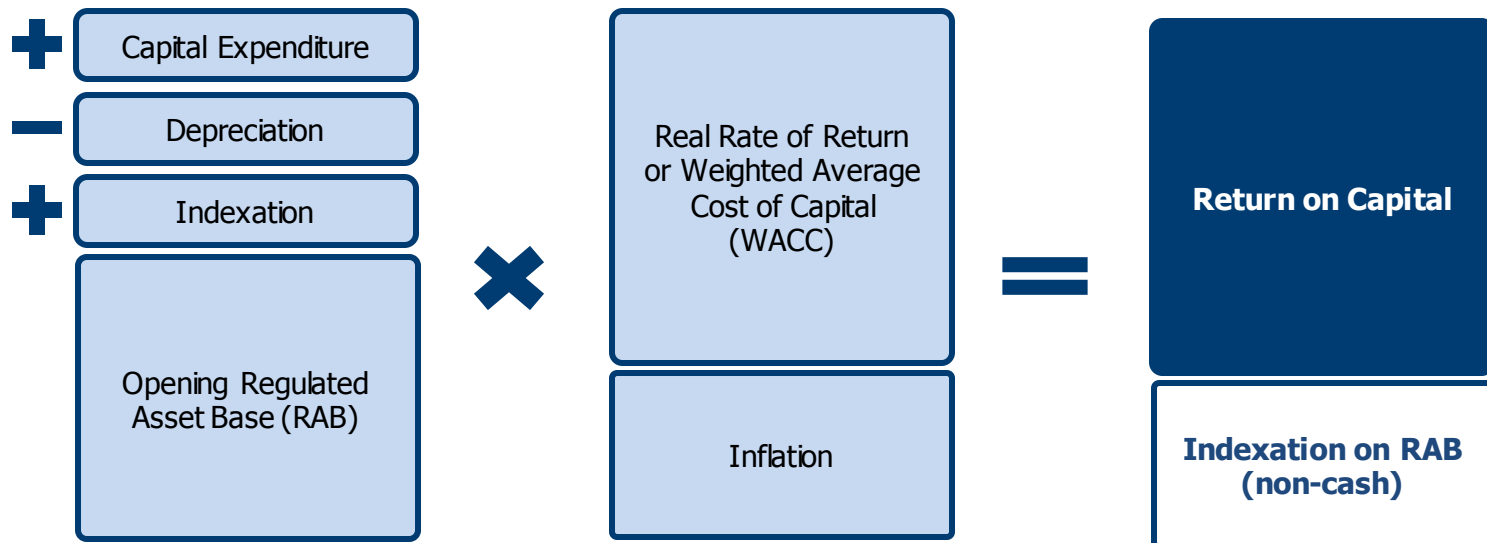Engagement with Regulators and other key stakeholders

We are open to stakeholder feedback at any time

Rate of Return and Inflation

Rate of Return & Inflation | Return on Capital

- Return on capital reflects the cost to AGN of funding the approximate $1.5 billion RAB

  - It is the single largest cost incurred by AGN

- Comprises two components

  - Cost of debt (weighted at 60%) and Cost of equity (weighted at 40%)

- Forecast inflation deducted from cash return

+ Capital Expenditure

– Depreciation

+ Indexation

Opening Regulated Asset Base (RAB)

✕

Real Rate of Return or Weighted Average Cost of Capital (WACC)

Inflation

=

Return on Capital

Indexation on RAB (non-cash)

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Rate of Return & Inflation | Return on Capital

- We have adopted the AER's guideline approach to determine the costs of debt and equity

  - Cost of debt of 5.0% and cost of equity of 6.9%

- Yields a rate of return of

  - 5.0% x 0.6 + 6.9% x 0.4 = 5.8%

  - Less inflation of 2.39% provides a cash return of 3.4%

  - Compares to 4.9% cash return for the current period

- Recent market evidence suggests rates have fallen further to new historic lows

  - Also market forecasts of inflation are below 2% for the next two years

- We have also applied the AER guideline approach to determining the tax allowance by application of a gamma 0.4

- We will continue to apply the AER guideline approach to the determination of these parameters up until there is information suggesting this is no longer appropriate

  - For example, to reflect the outcome of the current appeal activity

Rate of Return & Inflation | Cost of Debt

- The AER estimates the allowed return on debt using a 10-year trailing average portfolio approach implemented with a 10-year transition period

- The trailing average approach estimates the average return that would have been required by debt investors in a benchmark efficient entity if it raised debt equally over a 10-year historical period prior to the commencement of the regulatory period

  - There is industry agreement with the 10-year trailing average approach

- The AER then transitions from the previous "on-the-day" approach to the 10-year trailing average approach over a 10 year period

  - The 10-year transition is the key point of industry contention and has been subject to appeal

Rate of Return & Inflation | Cost of Debt

- Key features of the trailing average:

  - Assumes that the benchmark efficient entity would have a staggered debt portfolio where 10% of its debt is refinanced each year

  - The average term of the debt is assumed to be 10 years

  - A credit rating of BBB+ is applied

  - The data source for deriving the return on debt for each year is a weighted average (50% each) of Bloomberg and the Reserve Bank of Australia (RBA) published yields on broad BBB debt (extrapolated to 10 years to match the term)
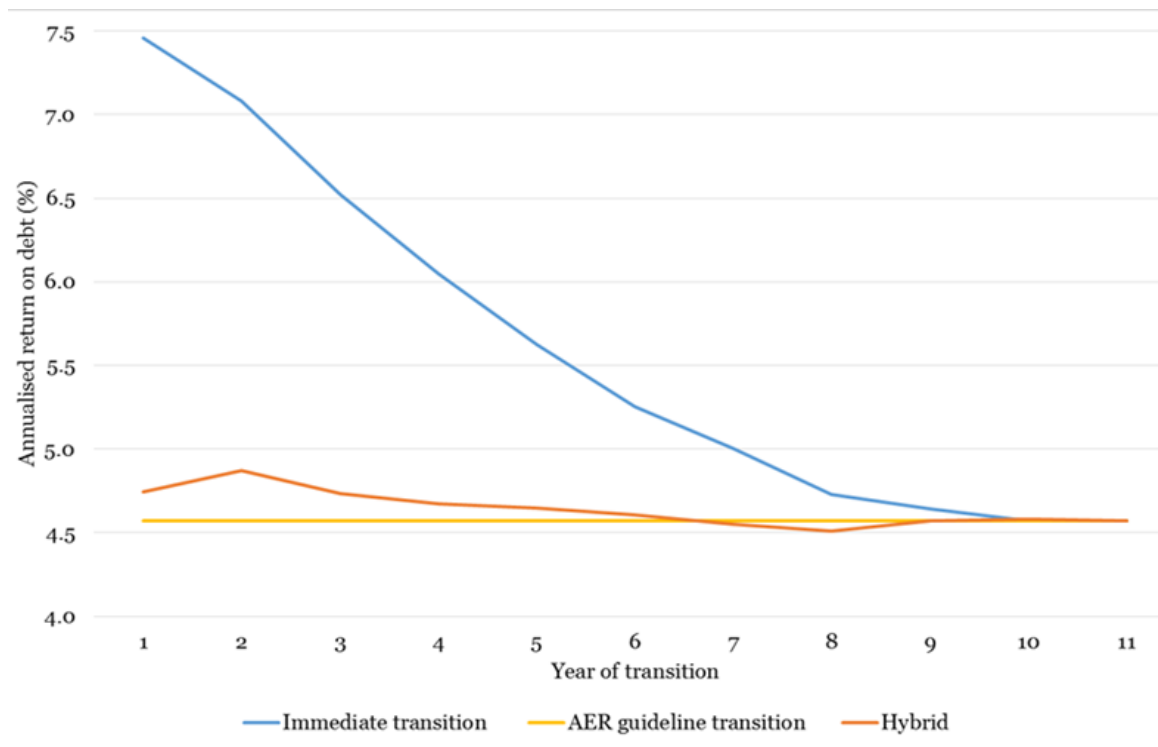
Rate of Return & Inflation | Cost of Debt

- The AER progressively moves from the previous "on the day" approach to the trailing average approach over a 10-year period

- The transition applies to the whole of the cost of debt estimate (base rate and the debt risk premium or credit spread)

- Key features of the transition:

  - In year 1, the return on debt is based entirely on the year 1 prevailing or spot rate (the yields observed over the year 1 averaging period)

  - In year 2, 90% of the return on debt is based on the year 1 estimate above, 10% is based on the return on debt observed during the year 2 averaging period

  - In year 3, 80% is based on the year 1 return on debt, 10% on the year 2 return and 10% is based on the return observed during the year 3 averaging period

  - And so on until in year 10, the return on debt is calculated as a 10 year historical trailing average over years 1 to 10

Rate of Return & Inflation | Other Approach to the Cost of Debt

- **No Transition** – Immediate implementation of trailing average

  - Moves to estimate the return on debt by reference to a 10-year historical trailing average with no transition phase (i.e. at the start of the regulatory period)

  - Updated each year such that the estimate is a rolling 10-year average

- **Hybrid Transition** – No transition on the debt risk premium (DRP)

  - Breaks down the return on debt calculation to the base rate and the DRP

  - Applies a transition to the base rate component on the basis regulated entities have previously hedged the base rate to regulatory allowances and the hedges need to be unwound

  - Otherwise calculates the DRP component by reference to the 10-year historical average DRP

  - Recognises that DRP component of debt cannot be hedged

  - Replicable and reflects the actual steps a service provider would need to take to move from a hedging strategy to a 10-year trailing average portfolio

Rate of Return & Inflation | Other Cost of Debt Approaches

- The below shows a comparison of the different approaches to transitioning to the trailing average cost of debt

  - This demonstrates the difference between approaches converges over time

Rate of Return & Inflation | Cost of Equity

- Cost of equity reflects the required return expected by equity (as opposed to debt) investors

- AER guideline cost of equity is determined from the following

  - Risk free rate + equity beta x market risk premium = cost of equity

  - 2.45% + 0.7 x 6.5% = 6.9%

- Risk free rate is proxied by 10 year Commonwealth Government Securities (CGS)

  - Fallen since draft plan release to approximately 1.9%

  - Implies current rate of return of 5.5% relative to 5.8% applied in draft plan

- Our view is the ACT largely accepted the AER's approach to setting the cost of equity

  - We will continue to engage with the AER

Rate of Return & Inflation | Return on Capital Summary

- We have applied the AER's guideline approach to establishing the cost of debt, cost of equity and gamma for the draft plan

  - Consistent with our SA decision

- However, we note the significant appeal activity occurring

- We consider rate of return to be an industry issue

  - The same methodology therefore should be applied to each business when determining the respective rates of return

- We will continue to apply the AER guideline approach to the determination of these parameters up until there is information suggesting this is no longer appropriate

18. Do you have any comments on our approach to setting the financing and tax costs in this Draft Plan?

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Rate of Return & Inflation | Inflation

- Forecast inflation is a critical element in determining our total revenue (and hence prices)

  - Used to index the RAB over the next AA period (replaced with actual Consumer Price Index (CPI) when it is known)

- The indexation applied to the RAB is also deducted from the allowed revenue to take account of the fact that the return on capital is calculated by applying a nominal rate of return to a nominal RAB

- The key issue therefore arises where forecast of inflation is different to actual inflation

- Where the forecast of inflation reasonably proxies actual inflation, then the negative adjustment to forecast revenues has the same (or very similar) value as the positive adjustments made to actual prices under the CPI-X price adjustment

  - The value of inflation is therefore 'a wash'

- However in cash terms we have to pay the nominal debt costs, which does exceed the real rate of return

Rate of Return & Inflation | Inflation

- If forecast inflation is over-estimated, then the negative adjustment to forecast revenues is greater than the addition for actual inflation through the CPI-X price adjustment (and vice versa if inflation is under-estimated)

  - The business will not be provided with a reasonable opportunity to recover its efficient costs through its prices over the AA period

- Importantly, there is no mechanism to revisit the amount of forecast inflation that is removed from revenues

  - Unlike the RAB where actual inflation is used to adjust the RAB in the next period

- This has been a particular issue across our networks over recent years, where actual inflation has been well below the forecast of inflation used to set revenue/prices

  - The most recent actual inflation used to adjust our Victorian prices for 2016 was 1.5%, which is well below the forecast of 2.5%

  - Inflation has averaged of around 2.0% over the past 5 years, relative to AER estimates of closer to 2.5%

Australian Gas Networks

Rate of Return & Inflation | Inflation

- The two most recent approaches to forecast inflation are the:

  - **AER approach** – which develops a 10-year forecast of inflation based on a combination of the RBA's short term forecast of inflation (for the first two years of the 10-year term) and the mid-point of the RBA's longer term target range of inflation (for the last eight years)

  - **Market-based approach** – which develops a 10-year forecast of inflation based on the difference between yields on nominal and inflation indexed Commonwealth Government bonds with a 10-year term

- We prefer the market-based approach because it uses the same market information used to determine the nominal rate of return

  - Using the same sources reduces the potential for variances between forecasts

- The AER however has concerns over whether the market-based approach can be relied upon to develop reliable forecasts, primarily due to concerns over the liquidity of the inflation indexed Commonwealth Government bond market

  - The market based approach was used by regulators up until 2008, after which time the Commonwealth Government bond market was relatively illiquid

Rate of Return & Inflation | Inflation

- We are concerned that the AER approach will materially overstate actual inflation over the next AA period

  - AER approach forecast of inflation is 2.39%

  - Our preferred market based approach is 1.6%

  - Current actual inflation is 1.0%

  - AER has also referred to inflation swaps which are at 2.2%

- We note that the approach to inflation is currently subject to legal review and there is considerable uncertainty as to the correct approach to use

- Draft Plan applied the AER approach for forecast inflation 2.39%

  - We will update forecast inflation based on outcomes of current review processes

  - Actual inflation continues to fall well below the AER's forecast of CPI

16. Do you consider that the AER's approach will produce better forecasts of inflation relative to the market-based approach? Are there any other approaches to forecasting inflation that should be used/considered?

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Regulated Asset Base (RAB)

Regulated Asset Base | Adjusting the RAB

- The RAB reflects the value of past investments not recovered by investors

  - Current RAB value is just over $1.5 billion

- The value of the RAB is adjusted to account for new capex, depreciation of existing assets and inflation in accordance with the Rules

Closing Capital Base = Opening Capital Base **+** New Capex **−** Depreciation **+** Inflation

| | | Conforming capex only – AER can remove capex deemed inefficient | | Depreciation based on forecast, not actual capex | | Forecast inflation using RBA inflation targets |
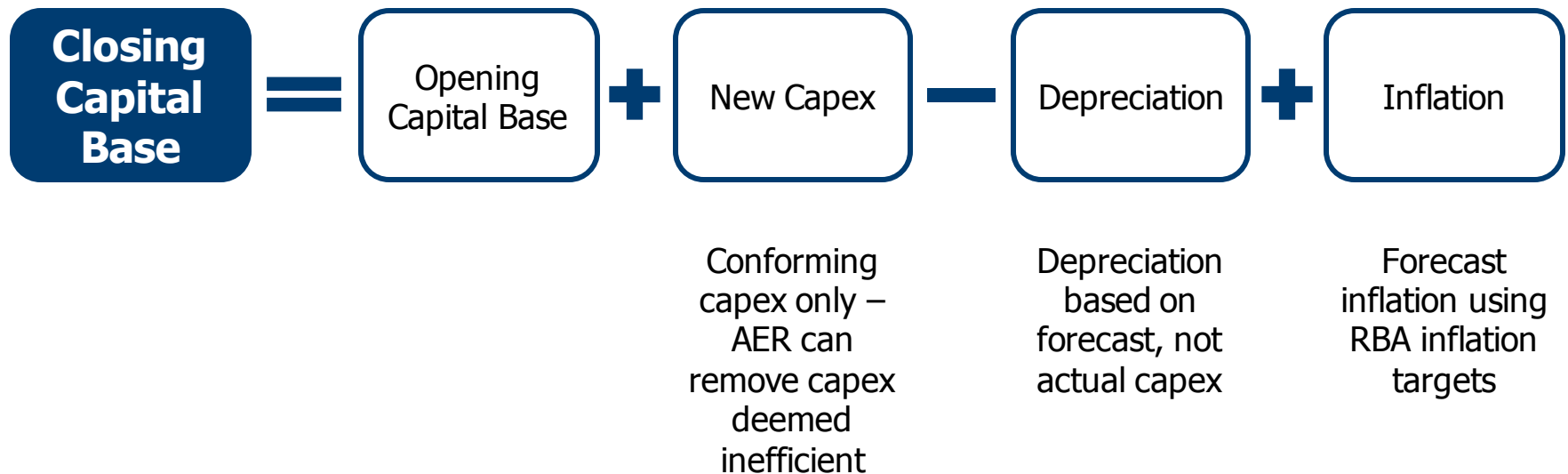
Regulated Asset Base | Adjusting the RAB

- We have continued to apply the straight line approach and asset lives approved by the AER for the current AA period

Asset Category	Standard Useful Life (years)
Mains and Services	60
Meters	15
Buildings	50
SCADA	15
Computer Equipment	5
Other Assets	15

- We have used the 'year by year' tracking approach to set depreciation in respect of forecast capex for the current AA period

- The 'year-by-year' tracking approach more closely reflects the life of the asset and was also used by the AER in its recent decisions for the Victorian electricity distributors

Regulated Asset Base | Adjusting the RAB

- Objective is to depreciate assets over their technical life

- AER has regard for the need to align economic and technical (or operational) lives

- For example, the AER has adjusted depreciation where the technical life of an asset no longer matches the economic life of the asset in respect of:

  - The same low pressure mains replaced by the other Victorian gas distributors

  - Various assets that were determined by the Victorian Bushfire Royal Commission as requiring replacement in respect of the Victorian electricity distributors

- Our mains replacement program will see all low pressure mains replaced by the end of the next AA period

- The depreciation schedule takes account of this physical replacement so there is also no asset value attributable to the low pressure mains in the RAB by the end of the next AA period

  - This process aligns the economic and technical (or operational) lives of these assets

17. Do you have any comments regarding our approach to adjust our capital base over the current and next AA periods?

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Financeability

Financeability | Assessment of Cash Flows

Moody's	S&P	Description	Example
Aaa	AAA	Prime	Australia (neg)
Aa1	AA+	High grade	
Aa2	AA	High grade	
Aa3	AA-	High grade	
A1	A+	Upper medium grade	
A2	A	Upper medium grade	
A3	A-	Upper medium grade	
Baa1	BBB+	Lower medium grade	AGN
Baa2	BBB	Lower medium grade	
Baa3	BBB-	Lower medium grade	Qantas (stable)
Ba1	BB+	Non-investment grade speculative "junk"	
Ba2	BB	Non-investment grade speculative "junk"	Brazil (neg)
Ba3	BB-	Non-investment grade speculative "junk"	
B1	B+	Highly speculative	
B2	B	Highly speculative	
B3	B-	Highly speculative	
Caa1	CCC+	Substantial risks	
Caa2	CCC	Substantial risks	
Caa3	CCC-	Substantial risks	
C	CC	Extremely speculative	
C	C	Default imminent	
C	RD, SD or C	In default	Arrium

- When setting the price path we ensure that changes in prices are aligned to changes in underlying costs

- This is necessary to achieve the credit metrics required to achieve the benchmark credit rating

- We assess the delivered cash flows to ensure they are sufficient to meet a BBB+/Baa1 credit rating (we refer to this as a financeability assessment/test)

  - The AER assumes a BBB+/Baa1 credit rating when it sets the return on debt

- We consider a financeability assessment is consistent with good regulatory practice

- The AER does not undertake this type of analysis for a range of reasons, including because it considers this is not required by the Rules

- A consideration of financeability is however common practice in overseas jurisdictions

  - Office of Gas and Electricity Markets in the UK

Financeability | Assessment of Cash Flows

- We have the assessed the credit metrics of the draft plan against the two key measures considered by the credit ratings agencies

  - Funds from Operations (FFO) to debt – which measures the availability of cash flow to repay the balance of outstanding debt

  - FFO to interest – which measures the availability of cash flow to pay interest

	2018	2019	2020	2021	2022	Average	Target
FFO to Debt	6.9%	7.0%	7.3%	8.8%	9.8%	8.0%	>9.0%
FFO to Interest Cover	2.4	2.4	2.5	2.7	2.9	2.6	>2.5

- The Draft Plan credit metrics are marginal, but are met in the final year

29. Do you support our objectives of maintaining stable credit metrics and aligning revenue with underlying costs in setting our proposed price path?

Would you prefer an alternate price path, and if so, on what basis?

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Financeability | Implementation

- Given marginal cash flows, any material change to our proposal might require a financeability adjustment

- This adjustment can happen in a number of ways, including:

  - Reduce the inflation adjustment that is applied to our capital base such that more of the return is provided through cash (CPI-Z)

  - Change the classification of certain capex to opex which increases cash flow as opex is recovered in the year that it is incurred while capex is recovered over the longer term

- Such adjustments only change the timing of cash flow and does not increase the total amount of cash received by the business

  - Customers are no better or worse off as a result of the change in the medium to longer term

Financeability | Gas and Electricity Regulated Businesses

FFO/Debt and 5-year Depreciation/RAB of Recent AER Decisions

Credit Rating

FFO/Debt

R² = 0.9169

AGN Victoria & Albury

● Gas
● Electricity

Depreciation/RAB
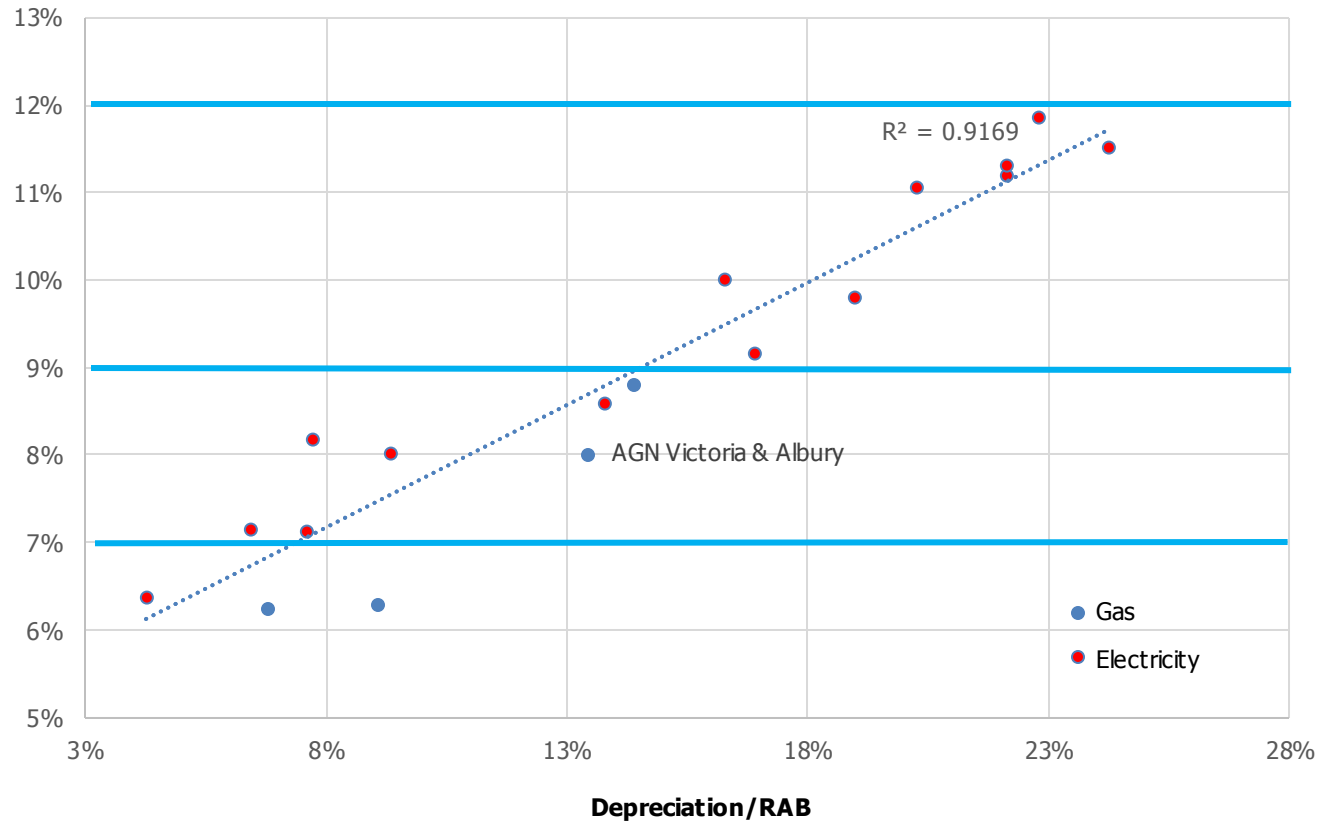
A-/A3

BBB+/Baa1

BBB/Baa2

BBB-/Baa3

We Consider Adjustment Required in Only a Few Cases

Financeability | Implementation

- AER did not accept the need for a financeability assessment for our SA network

  - Test not required by the Rules

  - Credit rating agencies look at more than these two measures

30. Do you consider that explicit consideration should be given as to whether our pricing proposal provides sufficient cash flow to maintain the credit rating assumed by the AER in setting the cost of debt?

If so, how do you think this assessment should be done – for example, by considering the credit metrics against levels assumed by ratings agencies?

If an adjustment to prices is required, how should this be undertaken – for example, through changes in capitalisation or depreciation?

Demand

Demand | What are Demand Forecasts

- Forecasts of natural gas consumption and customer numbers (or connections) are collectively referred to as Demand Forecasts

- Demand forecasts are a key input into determining expenditure related to new connections, and under a price cap form of regulation, the prices charged to customers

Network Prices	=	Network Revenue	÷	Demand Forecasts
Growth Capex	=	Unit Rate	×	Connection Forecasts
Opex (part)	=	Cost per Connection	×	Connection Forecasts
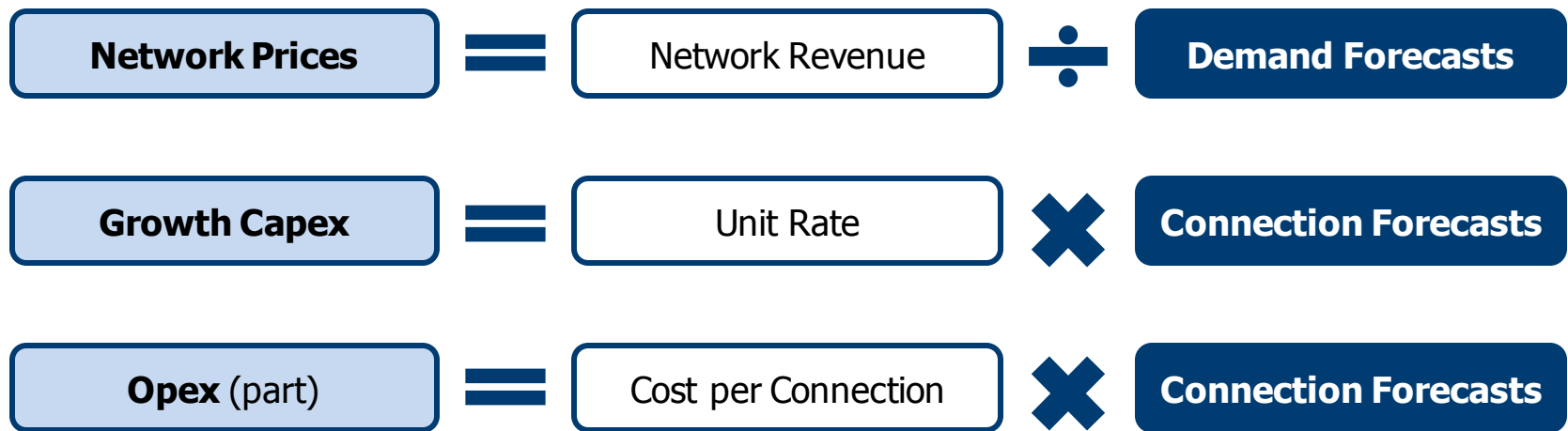
Demand forecasts are a key input into multiple parts of our Plan

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Demand | Forecasting Approach – General

- Separate forecasts were developed for each of our three customer classes

  - This allows the forecasts to better reflect the different drivers of each class and allows us to more effectively use the forecast to drive our Plan

Residential Customers	**Commercial Customers**	**Industrial Customers**
Those who use gas for residential purposes (i.e. hot water, cooktop and space heating)	Business customers who use less than 10 TJ of gas each year (annual bill of circa $200,000 or less)	Our largest business customers
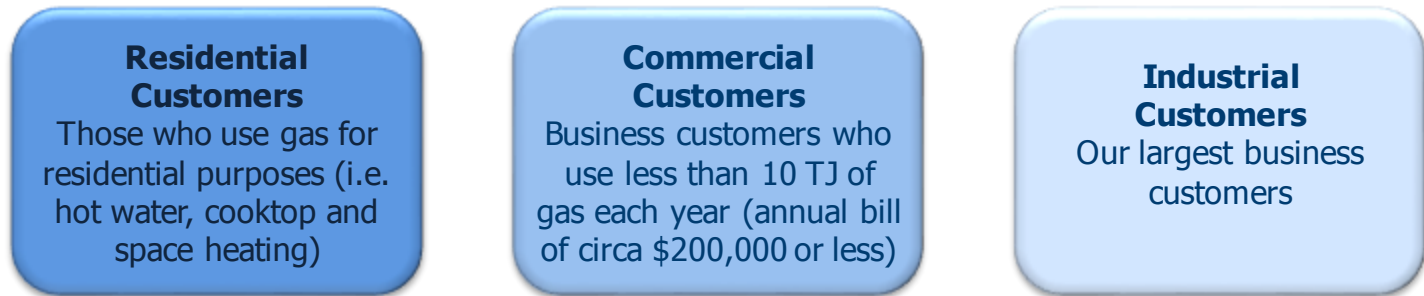
- Independent expert Core Energy Group were engaged to develop forecasts

- Core Energy's methodology is:

  - The same as that recently used by the AER for our SA network

  - Consistent with key forecasting principles applied by AEMO

Australian Gas Networks

Demand | Residential & Commercial – Forecasting Approach

Residential and Commercial Demand = **Consumption per Connection** ✖ **Number of Connections**

Consumption per Connection

Determine the Normalised Historic Trend
by removing the impact of weather and changes in energy prices

Apply the Historic Trend
to the last actual (normalised volume) to forecast consumption going forward

Adjust the Historic Trend
for any new drivers that are not included in history, such as movement in energy prices (gas and electricity) and known policy changes

Number of Connections

For Residential
based on the expected growth in new dwellings and historic penetration rate of gas into these homes

For Commercial
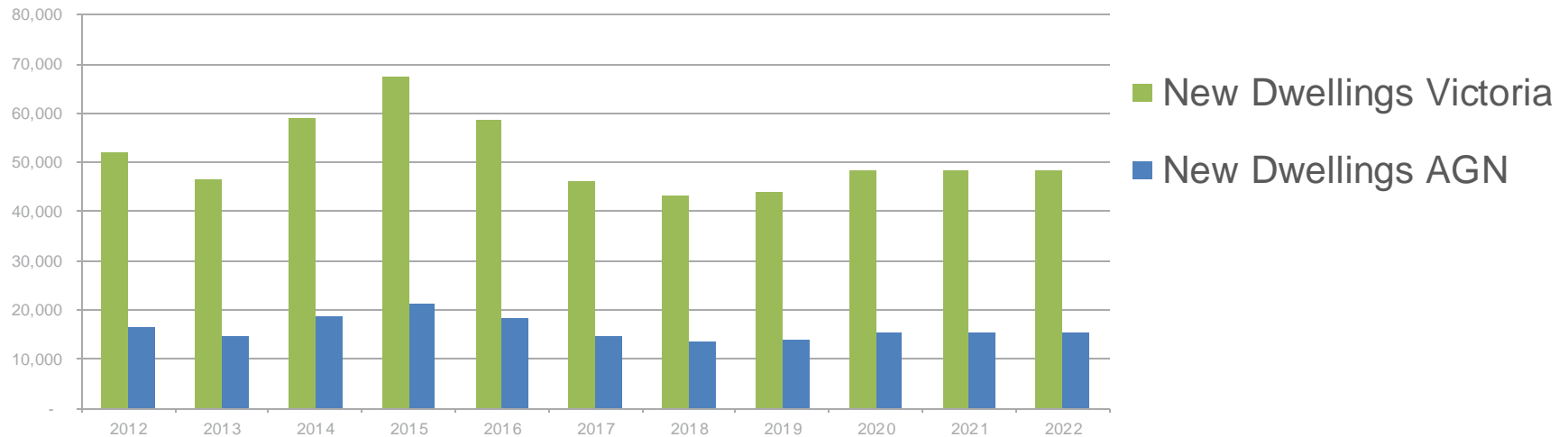historic trend

Australian Gas Networks

Demand | Residential & Commercial – Key Assumption: Price & Elasticity

- Average annual real gas price increases over the period are:

  - Residential 2.2% and Commercial 3.0%

  - Reflects projected increases to wholesale gas costs

- Projected retail gas and electricity prices impact on gas demand through application of a measure of own-price elasticity and cross-price elasticity

  - **Own-price elasticity** – which captures how changes in retail gas prices impacts average consumption

  - **Cross-price elasticity** – which captures how changes in retail electricity prices impacts average consumption

- Elasticity values are consistent with that accepted by the AER

  - A lagged long term own-price elasticity of -0.3 for residential customers and -0.35 for commercial customers

Do you agree with this assumption/approach?

Australian Gas Networks

Demand | Residential & Commercial – Key Assumption: Dwellings

- The number of new residential connections is directly related to the forecast number of new dwellings in Victoria and Albury

- We have relied on independent forecasts of new dwellings from the Housing Industry Association (HIA) as a basis for projecting new gas connections

Do you agree with this assumption/approach?

Demand | Residential & Commercial – Key Assumption: Policy

- We have made no assumption in respect of future policy effects on forecast demand or connections

  - Policy impacts reflected in historic trend and therefore carried forward

**Do you agree with this assumption/approach?**

20. … Are you aware of any potential future energy policy changes that will effect gas demand?

21. The Victorian government recently announced a target of zero carbon dioxide emissions by the year 2050. Do you think this announcement will impact gas demand over the next AA period, and if so, how should this be factored into our demand forecasts?

Demand | Residential & Commercial – Residential Forecasts

- Residential demand is forecast to be relatively flat over the next AA period as customer growth is offset by declining consumption per connection

  - Net customer growth is forecast to be 1.7% per year relative to the recent historic rate of 2.2%, driven by a slowing of new dwelling construction (HIA estimate)

  - Consumption per connection is forecast to decline at 2.4% per year relative to historic rate of 1.5% per year, driven by customer response to increasing wholesale gas prices
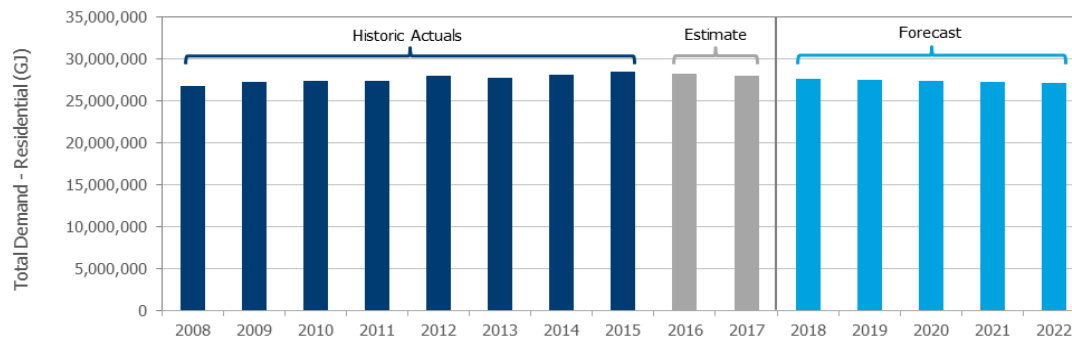
19. Do you consider our approach to forecasting demand to be reasonable?

20. Are there other factors we should consider?

Demand | Residential & Commercial – Commercial Forecasts

- Commercial demand is forecast to increase by 0.6% per year over the next AA period

    - Net customer growth which is forecast to be 0.5% per year, consistent with history

    - Consumption per connection growth which is forecast to be 0.2% per year, consistent with history
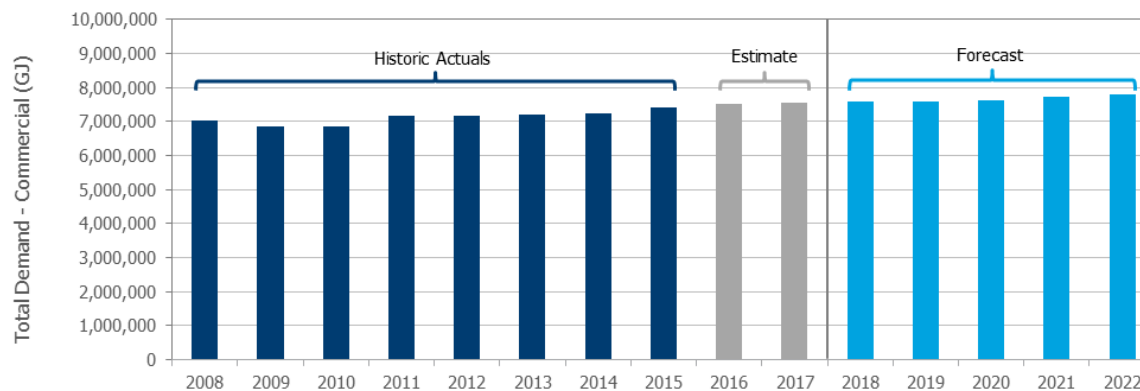

19. Do you consider our approach to forecasting demand to be reasonable?

20. Are there other factors we should consider?

Demand | Industrial – Forecasting Approach

| Industrial Demand | = | Current Connections (circa 300) |

+ −

Known Changes
identify known changes such as connections, disconnections, expansions/contractions and apply to starting consumption

For customers with no known changes:

✕

Impact of Economic Activity
assess for statistical relationship with economic growth and, where there is correlation apply an adjustment based on forecast economic growth

For customers with no known changes or relationship with economic activity:

✕

Apply Historic Trend
apply the X-year historic trend for that customer for the forecast period

Demand | Industrial – Forecasts

- Industrial demand is forecast to decline by 0.5% per year over the next AA period, consistent with history

  - This reflects challenging economic conditions for industrial customers
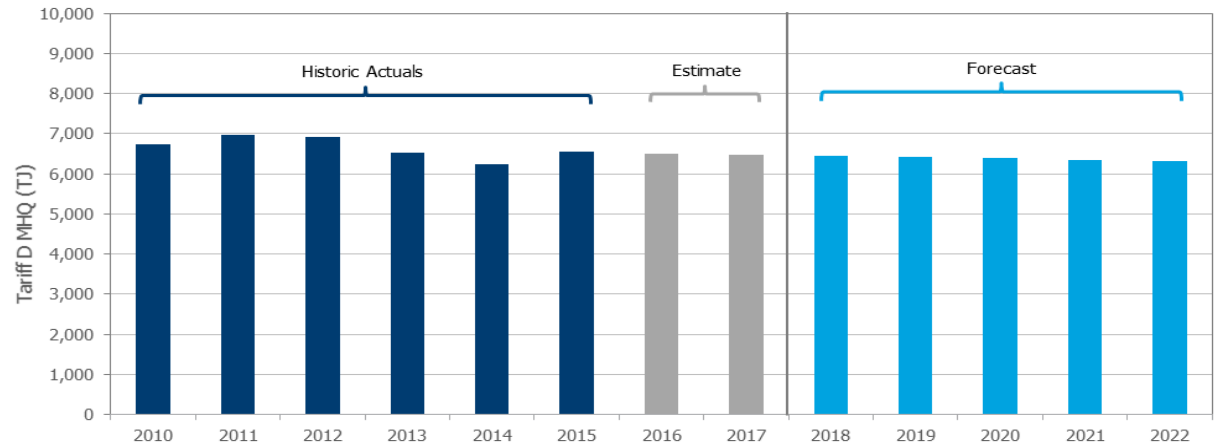
	2018	2019	2020	2021	2022
GJ MHQ	6,446	6,415	6,383	6,352	6,322

19. Do you consider our approach to forecasting demand to be reasonable?

20. Are there other factors we should consider?

Australian Gas Networks

Network Revenue and Pricing

Network Revenue & Pricing | Building Block and Price Revenue

- The costs described earlier (e.g. expenditure and financing costs) are referred to as 'building blocks' and combine to form the **'building block revenue'**

- We recover this building block revenue through the prices (or tariffs) that we charge retailers for the provision of reference services to form the **'Price revenue'**

- The tariffs are set such that the total revenue we recover through prices is the same as the building block total revenue

$$\boxed{\text{Price}} \quad \pmb{\times} \quad \boxed{\text{Demand}} \quad = \quad \boxed{\textbf{Price Revenue}}$$

- The process of price setting delivers the annual real (i.e. before inflation) price changes (or X factors) that will be applied during the Access Arrangement period

  - This is known as the **'price path'**

Draft Plan price path is 11% cut followed by 3% increases thereafter

Australian Gas Networks

Network Revenue & Pricing | Building Block and Price Revenue

- The allowed building block and expected tariff revenue is set out in below

$ Nominal	2018	2019	2020	2021	2022
Building Block Revenue	209	224	242	229	231
Price Revenue	203	214	227	240	254
Real Price Path	11.0%	-3.1%	-3.1%	-3.1%	-3.1%

- The figure below demonstrates how tariff revenue tracks growth in the RAB

Legend: Building Block Growth, Tariff Growth, RAB Growth
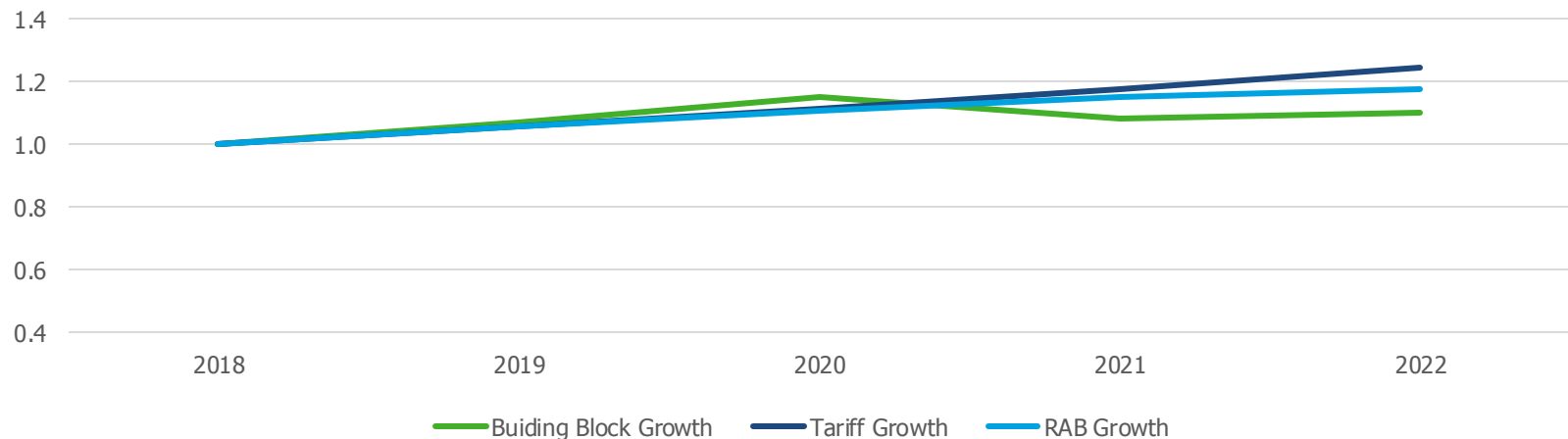
Network Revenue & Pricing | Price Alignment

- There are four different pricing zones in Victoria (Central, Northern, Murray Valley and Bairnsdale) and one additional pricing zone in Albury

    - Each zone comprises Residential, Commercial and Industrial prices

- The AER has directed that Albury must be maintained as a separate pricing zone

- Bairnsdale is a relatively recent extension to our network
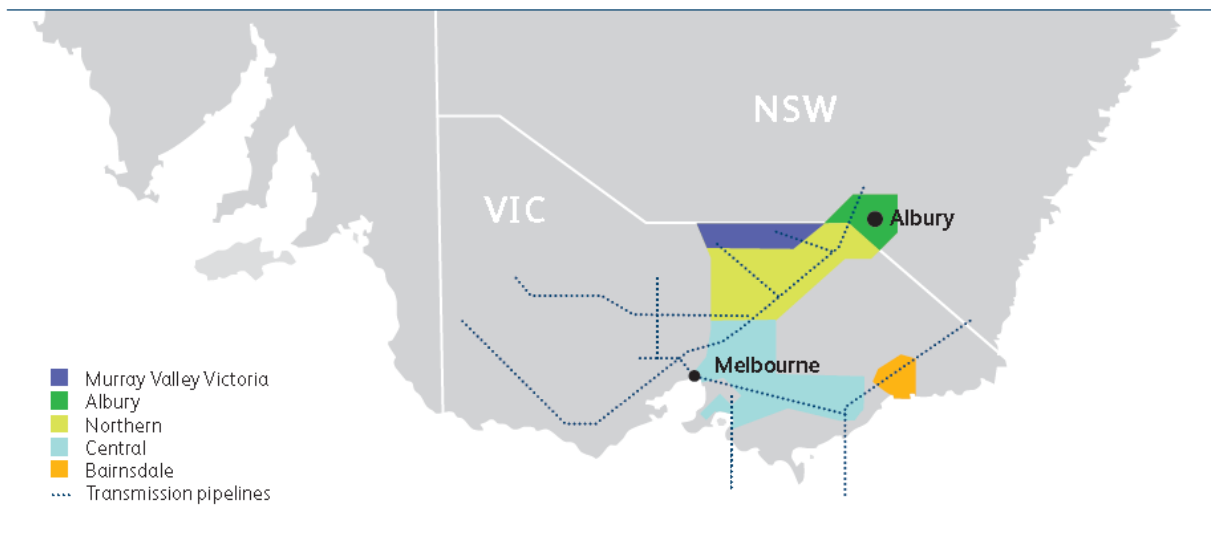
Network Revenue & Pricing | Price Alignment

- AGN is proposing to align pricing across the three largest and most mature zones of Central, Northern and Murray Valley

    - Our Retailer Reference Group asked that we consider alignment of tariffs

    - Bairnsdale not included as relatively new and approved based on current tariff

- The average cost of providing reference services reduces as customer density rises

- Northern zone tariffs are currently lower than the Central zone tariffs despite being less dense – legacy of privatisation nearly 20 years ago

	Central	Northern	Murray Valley	Bairnsdale	Albury
Total km	8,252	1630	199	156	396
Total Customer Numbers	532,106	74,958	7,696	3,765	21,619
Customers per km	64	46	39	24	54
Residential customers per km	62	44	37	23	52
Commercial customers per km	2	2	2	1	2

Australian
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Network Revenue & Pricing | Price Alignment

- The effect of alignment, including our proposed overall price cut of 11%, is that our network charge will fall in all zones with the exception of a minor price rise in the Northern zone

- Agree with the retailers that aligned structure is simpler, and as such, transaction costs will be reduced

Average Customer Impact of Proposed Single Tariff		2017 Average Annual Charge ($)	2018 Average Annual Charge ($)	Variance ($)	Variance (%)
Residential	Central	338	304	(34)	(10.0%)
	Northern	303	304	1	0.3%
	Murray Valley	314	304	(10)	(3.2%)
Commercial	Central	1,329	1,195	(133)	(10.0%)
	Northern	1,178	1,195	18	1.5%
	Murray Valley	1,330	1,195	(135)	(10.1%)

32. Do you agree with our proposed pricing structures, including our decision to align prices across the three Victorian zones of Central, Northern and Murray Valley?

Australian Gas Networks

Network Revenue & Pricing | Fixed versus Variable Charges

- Our tariffs to our residential and commercial customers comprise

    - Fixed component – reflected as a $ per day charge

    - Declining block variable component – reflected as $ per GJ delivered

- The variable component forms 75% and 94% of the average customer distribution charge for residential and commercial customers respectively

- In our customer workshops, three-quarters (74%) of participants supported a high to very high degree of variability in their gas bill in-line with their gas usage

    - A high variable component meant customers saw a stronger relationship between their gas consumption and their invoice

31. Do you consider that there is an appropriate split between our fixed and variable charges?

Next Steps

Victorian and Albury AA | Next Steps

- Will consider and reflect feedback from today's workshop in our Plan

  - Will provide feedback to participants to ensure it is accurate

  - Feel free to contact us to discuss any aspect of this workshop further

  - Can also provide written submissions on the Draft Plan (haveyoursay@agnl.com.au) we are flexible on timing, any comment is beneficial

- Additional workshop to be held 30 August (return on capital, demand forecasts and network revenue and pricing)

- Would you like more information on any other aspect of our Draft Plan?

- Further stakeholder workshops and ongoing meeting program

5 July 2016
AGN Publish Draft Plan

23 & 30 August 2016
Workshops on Draft Plan

Early December 2016
Reference Group Meetings on AA Proposal

February 2017
Public submissions on our AA proposal closing in February

July 2017
AGN to submit Revised AA Proposal to the AER

October 2017
AER Final Decision expected end-October

1 January 2018
New AA Period begins

16 August 2016
Initial submissions on Draft Plan

October 2016
Further stakeholder workshops and Deloitte Report published

By 1 January 2017
AGN to submit AA Proposal to the AER

June 2017
AER Draft Decision

August 2017
Public submissions on Draft Decision and Revised AA Proposal due to the AER

Continued Engagement with Regulators and other key stakeholders

Australian Gas Networks

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Supporting Slides

Overview | Stakeholder Engagement – Customer Insights

- Customer feedback received so far has been distilled into nine key customer insights

OVERARCHING INSIGHTS	CUSTOMER EXPERIENCE	NETWORK SAFETY & RELIABILITY	TARIFF STRUCTURES	ENVIRONMENTAL COMMITMENT

Customers do not understand the structure of the gas industry
02

Customers would like AGN to be more visible, believing it would improve their experience as customers
04

Customers view gas as a reliable source of energy and value the current standard of reliability
06

Customers value the control gained by having their gas bill dependent on usage levels
08

01
Customers are not aware of Australian Gas Networks

03
Customers traditionally considered gas a cost-effective alternative to electricity but are concerned with recent price increases

05
Customers would like to access to more information from AGN and favour digital channels
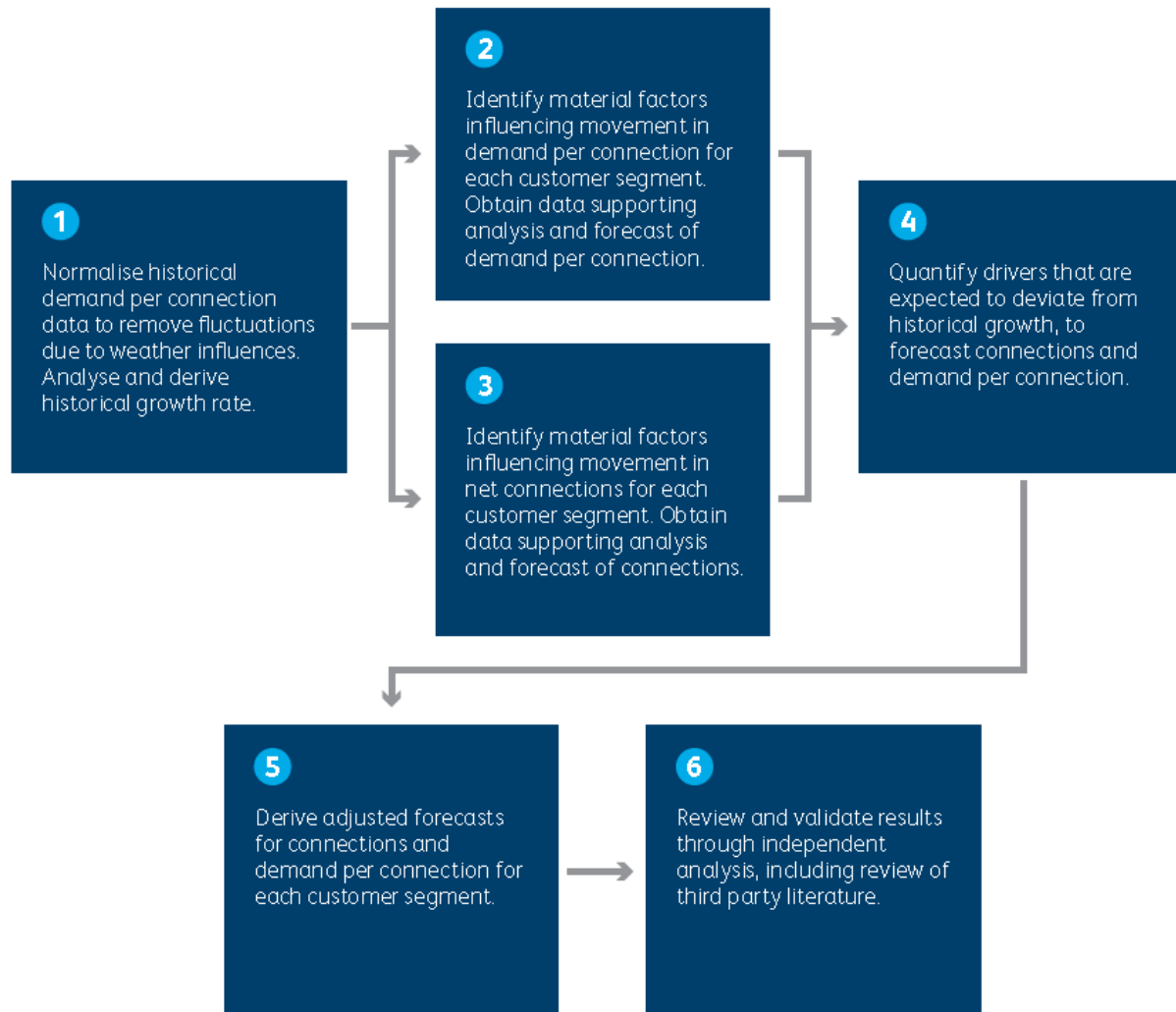
07
Customers are supportive of initiatives that maintain the reliability and improve the safety of the network

09
Customers would like AGN to play a leadership role in minimising environmental impact

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Demand | Forecasting Approach – Residential & Commercial

1

Normalise historical demand per connection data to remove fluctuations due to weather influences. Analyse and derive historical growth rate.

2

Identify material factors influencing movement in demand per connection for each customer segment. Obtain data supporting analysis and forecast of demand per connection.

3

Identify material factors influencing movement in net connections for each customer segment. Obtain data supporting analysis and forecast of connections.

4

Quantify drivers that are expected to deviate from historical growth, to forecast connections and demand per connection.

5

Derive adjusted forecasts for connections and demand per connection for each customer segment.

6

Review and validate results through independent analysis, including review of third party literature.

Demand | Forecasting Approach – Residential & Commercial

1 Compile historical ACQ & MDQ of individual Tariff D customers.

2 Identify new connections, disconnections and tariff movements expected to occur during the forecast period.

3 Identify major consuming customers and issue survey to gauge expected future load. Collate results.

4 For Tariff D customers whose demand was observed to have a significant relationship with gross value add ("GVA"), apply an adjustment to future load based on expected economic outlook.

5 For remaining Tariff D customers, apply an adjustment to future load based on historical trend in MDQ and ACQ.

6 Consolidate outputs from Step 3 and Step f to derive Tariff D demand forecast.

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Demand | Residential & Commercial – Residential Forecasts

	2018	2019	2020	2021	2022
Net Customer Numbers	649,657	659,567	670,785	681,957	693,082
Consumption per Connection (GJ)	43.9	42.9	42.1	41.2	40.4
Demand (TJ)	28,525	28,304	28,212	28,092	28,029

Demand | Residential & Commercial – Commercial Forecasts
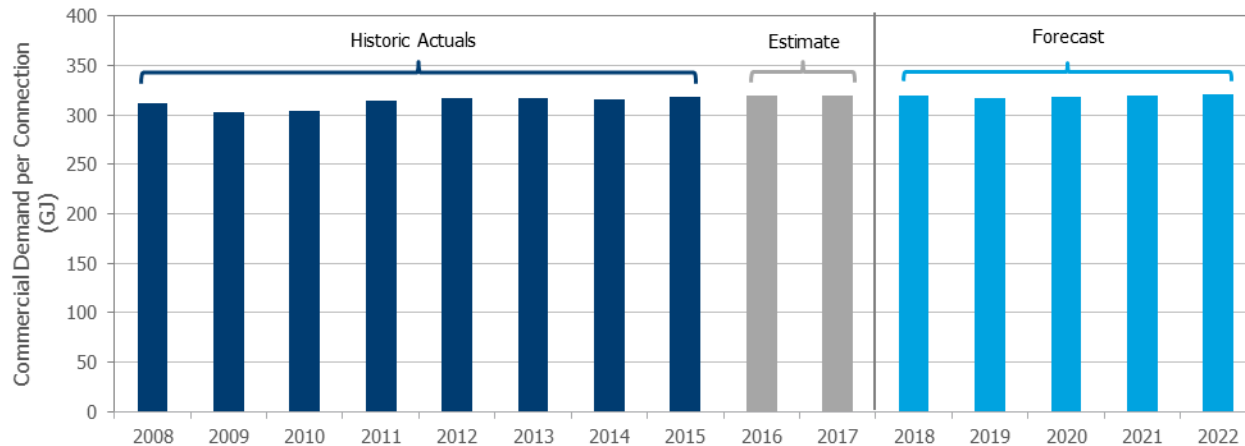
	2018	2019	2020	2021	2022
Net Customer Numbers	24,724	24,874	25,024	25,174	25,324
Consumption per Connection (GJ)	317.4	315.6	315.8	317.4	318.7
Demand (TJ)	7,849	7,850	7,904	7,990	8,071

Network Revenue & Pricing | Invoice Breakdown

- Average Residential Customer
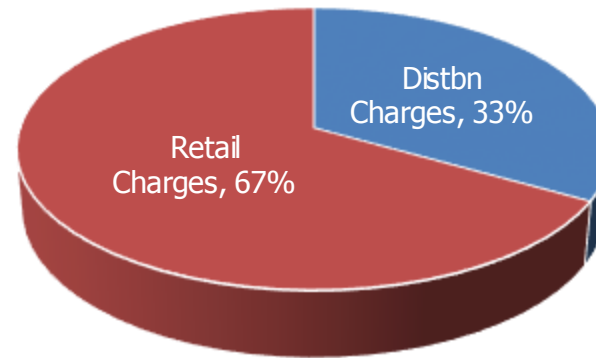
- Average Commercial Customer