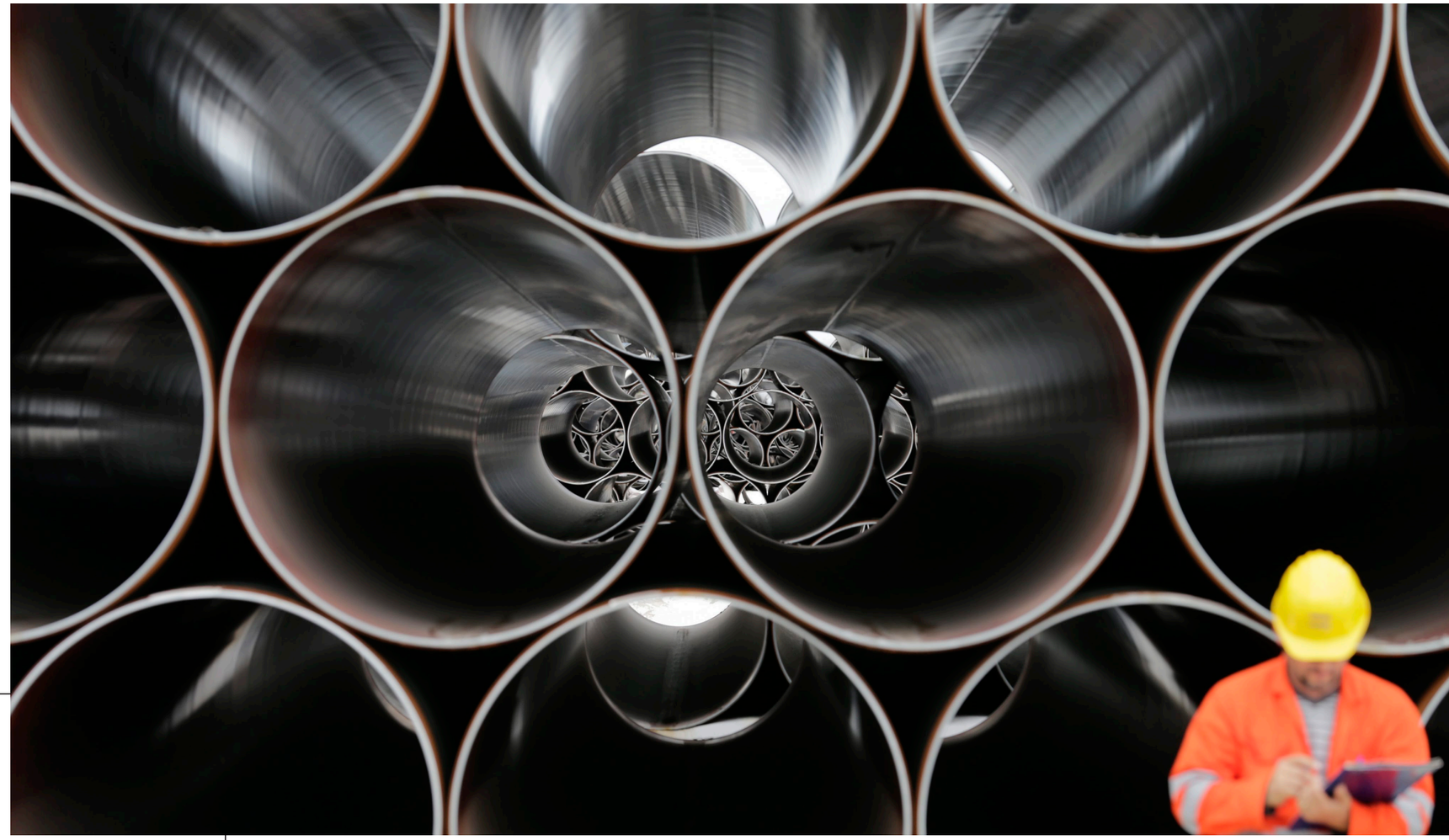


Australian Associated Press

5 REGULATED GAS NETWORKS

Gas pipeline networks transport gas from upstream producers to energy customers. Australia's gas pipeline networks consist of long haul *transmission* pipelines that carry gas from producing basins to urban and regional *distribution* networks, which serve local communities. This chapter covers the 14 gas pipelines and networks regulated by the Australian Energy Regulator (AER), which are located in states and territories other than Tasmania and Western Australia.[1]

Unlike the electricity network sector, many gas pipelines are unregulated or only face limited regulation. This chapter explains the various tiers of regulation that apply, but mainly focuses on 'full regulation' pipelines—those for which the AER sets access prices.[2]

Currently, the AER only fully regulates three transmission pipelines—the Roma to Brisbane Pipeline (Queensland), the Victoria Transmission System and the Amadeus Gas Pipeline (Northern Territory). In gas distribution, the AER fully regulates major networks in New South Wales (NSW), Victoria, South Australia and the Australian Capital Territory (ACT).

5.1 Gas pipeline services

Gas pipeline companies earn revenue by selling capacity to third parties needing to transport gas—termed providing access. Pipeline customers include energy retailers needing to transport gas to energy consumers, large commercial and industrial users, and liquefied natural gas (LNG) exporters that contract for gas directly with producers.

Gas transmission pipelines transport gas from production fields to major demand centres or hubs. The pipelines typically have wide diameters and operate under high pressure to optimise shipping capacity.

An interconnected transmission pipeline grid links gas basins in Queensland, central Australia and Victoria with retail markets across eastern and southern Australia (figure 5.1). This interconnected network further expanded with the opening in 2018 of the Northern Gas Pipeline linking the Northern Territory with Queensland.

The most common service provided by a transmission pipelines is haulage—transporting gas in a forward direction from an injection point on the pipeline to an offtake point further along. Haulage may be offered on a firm (guaranteed) or interruptible (only if spare capacity is available) basis.

Backhaul (reverse direction transport) is also sought by some customers. Gas can also be stored (parked) in a pipeline on a firm or interruptible basis.

As the gas market evolves, increasingly sophisticated types of services are being offered, such as compression (adjusting pressure for delivery), loans (loaning gas to a third party), redirection and in-pipe trades.

Some transmission pipelines only interconnect with other transmission pipelines. Others deliver gas to power stations, large industrial and commercial plant, and retailers who then sell the gas to their customers. A number of pipelines deliver into an urban or regional *gas distribution network*, a spaghetti-like cluster of smaller pipes that transports gas to customers in local communities.

Distribution networks consists of high, medium and low pressure pipelines and run underground. The high and medium pressure mains provide a 'backbone' servicing high demand zones, while the low pressure pipes lead off high pressure mains to commercial and industrial customers and residential homes.

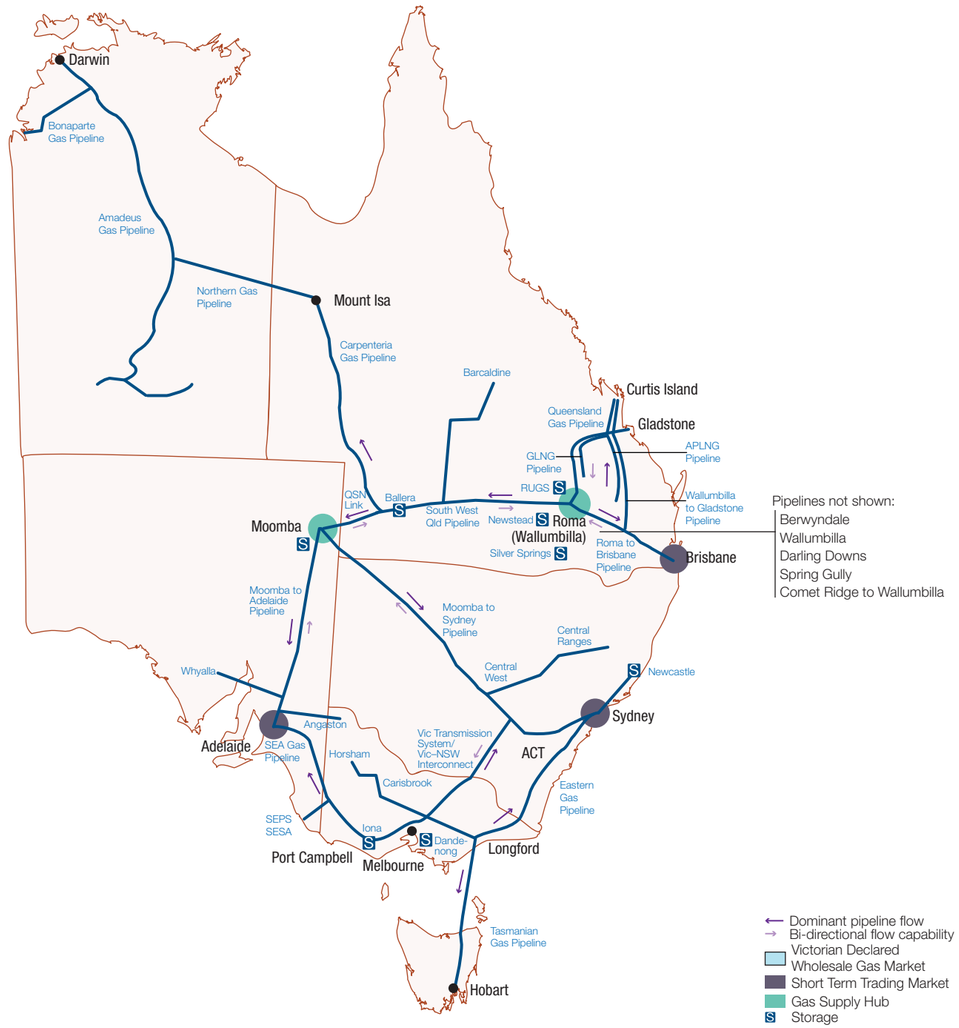
While the nature of gas transmission services is evolving to meet changing market needs, distribution pipeline businesses tend to offer fairly standard services—allowing gas injections into a pipeline, conveying it to supply points, and allowing the gas to be withdrawn.

The total length of gas distribution networks in eastern Australia is around 77 000 kilometres. Gas is distributed to most Australian capital cities, major regional areas, and towns. Victoria and Queensland each have multiple distribution networks serving particular areas of the state. NSW, South Australia, Tasmania and the ACT each have a single network.[3]

While gas distributors transport gas to energy customers, they do not sell it. Energy retailers purchase gas from producers and pipeline services from pipeline businesses, and sell them as a packaged retail product to their customers. Many retailers offer both gas and electricity retail products.

1 The Economic Regulation Authority (ERA) administers separate regulatory arrangements in Western Australia.
2 Chapter 4 discusses the wider gas transmission sector, including pipelines not under full regulation.
3 Some jurisdictions also have smaller unregulated regional networks, such as the Wagga Wagga network in NSW.

Figure 5.1
Gas pipeline networks regulated by the AER



Source: AER.

5.2 Gas pipeline ownership

Australia's gas pipelines are privately owned. Tables 5.1 and 5.2 detail ownership arrangements for pipelines regulated by the AER. Chapter 4 includes information for other pipelines.

The publicly listed APA Group (APA) is the principal owner in the gas pipeline sector. Its portfolio is mainly in the gas transmission sector. Other participants include Jemena (owned by the State Grid Corporation of China and Singapore Power International) and Cheung Kong Infrastructure and its associates (which operates Australian Gas Networks). The State Grid Corporation of China and Singapore Power International also have interests in the publicly listed AusNet Services.

The State Grid Corporation of China, Singapore Power International and Cheung Kong Infrastructure and its associates also have ownership interests (some substantial) in the electricity network sector.

Cheung Kong Infrastructure and its associates recently acquired a number of assets in the energy network sector. In 2017 they acquired DUET Group's gas and electricity assets—Victoria's Multinet gas distribution network, Western Australia's Dampier to Bunbury Gas Pipeline, and equity in Victoria's United Energy electricity distribution network. In 2014 they acquired gas pipeline business Envestra (now operating as Australian Gas Networks).

In 2018 the entities launched a takeover bid for APA, Australia's largest gas pipeline business. While the Australian Competition and Consumer Commission (ACCC) cleared the bid of anti-competitive concerns, the Treasurer, on advice from the Foreign Investment Review Board, rejected it as 'contrary to the national interest'. The Treasurer cited concerns the takeover would result in an 'undue concentration of foreign ownership by a single company group in [Australia's] most significant gas transmission business.'[4]

5.3 How gas pipelines are regulated

Gas pipelines are capital intensive and their average costs decline as output rises. This can give rise to a *natural monopoly* structure, where it is more efficient to have a single provider than multiple providers offering the same pipeline services.

But monopolies face no competitive pressure, so have opportunities and incentives to charge unfair prices. This poses serious risks, because pipeline charges make up a significant portion of a residential gas bill (chapter 1). For this reason, many gas pipelines are regulated to manage the risk of monopoly pricing.

Different tiers of regulation apply to gas pipelines in Australia (discussed below). A case-by-case test assesses the type of regulation applicable to each pipeline, considering whether:

- the pipeline is a natural monopoly
- regulation would promote competition
- regulation would be cost effective (that is, the benefits of regulation outweigh the costs).

The AER's role in gas pipeline regulation is summarised in box 5.1.

Box 5.1 The AER's role in gas pipeline regulation

The Australian Energy Regulator's (AER) role in gas pipeline regulation varies depending on the type of regulation applying to a pipeline.

- For *full regulation* pipelines, we set a reference tariff (prices) for at least one service offered by the pipeline, following our assessment of the pipeline's efficient costs and revenue needs. We undertake this role for three major transmission pipelines (in Queensland, Victoria and the Northern Territory), and for gas distribution networks in NSW, Victoria, South Australia and the ACT.
- For *light regulation* pipelines, we arbitrate disputes referred to us by access seekers and monitor pipeline businesses' compliance with their price disclosure obligations.
- For pipelines under *Part 23 regulation*, we set guidelines on disclosure of financial and pipeline use information, and monitor and enforce compliance with these obligations. We also establish a pool of experienced arbitrators to deal with disputes and we can be called on to appoint an arbitrator. We also set conditions for exempting a pipeline from Part 23 obligations.

4 The Hon. Josh Frydenberg MP, Treasurer, *Proposed Acquisition of APA*, 7 November 2018.

From 2019 we will monitor and enforce compliance with reforms to improve access to underused capacity in transmission pipelines, including bilateral trading and the mandatory auction of any contracted capacity that is not in use.

More generally, we advise policy bodies and other stakeholders on issues in the gas pipeline sector. We may propose or participate in rule change processes and engage in policy reviews with a view to improving the regulatory arrangements.

5.3.1 Full regulation

Full regulation is the most intensive form of regulation. It involves the pipeline owner submitting its prices to an independent regulatory body for a detailed economic assessment. The AER undertakes this role in jurisdictions other than Western Australia.

In particular, the AER assesses whether the access tariffs (prices) paid by a third party for using a full regulation pipeline are efficient. Currently, the AER applies full regulation to three gas transmission pipelines and six gas distribution networks, with a combined value of close to $90 billion.

Only a handful of transmission pipelines are fully regulated. Full regulation has been removed from many pipelines over the past 20 years, and no new pipeline commissioned in the past 20 years is subject to full regulation. Some pipelines moved to *light regulation*, which replaces upfront price regulation with a commercial negotiation approach supported by mandatory information disclosure. Other pipelines are free from any form of regulation.

Full regulation is discussed further in section 5.4.

5.3.2 Light regulation

Light regulation pipeline businesses must publish access prices and other terms and conditions on their website. If unable to negotiate access to the pipeline, a party may request the AER arbitrate a dispute. A light regulation pipeline owner may not engage in inefficient price discrimination or other conduct adversely affecting access or competition in other markets.

In eastern Australia, the Carpentaria Pipeline in Queensland, portions of the Moomba to Sydney Pipeline, and the Central West Pipeline in NSW are subject to light regulation. Queensland's two gas distribution networks—the Australian Gas Networks and Allgas Energy networks—became the first distribution networks to convert from full to light regulation in 2015.

5.3.3 Part 23 regulation

Gas pipelines not subject to full or light regulation are 'unregulated' and are free to set their own prices and other terms and conditions. Independent reviews by the ACCC in 2015[5] and for the Council of Australian Governments COAG Energy Council in 2016[6] raised concerns about monopolistic practices by some pipeline operators.

These concerns led to the introduction of new provisions (Part 23) in the National Gas Rules in August 2017. Part 23 aims to make it easier for gas customers to negotiate access to unregulated pipelines at a reasonable price. The rules require otherwise unregulated pipeline businesses to disclose financial, service and access information, following guidelines published by the AER. The obligations on pipeline operators were phased in during 2018. The ACCC will review the quality of information published and report in 2019 on whether further disclosure is needed.

Customers can use the disclosed information to negotiate gas transport contracts with pipeline operators. If the pipeline operator and access seeker cannot reach an agreement, an access seeker can apply for arbitration. The AER establishes a pool of experienced arbitrators to determine disputes, and liaises with the parties on appointing an arbitrator from the pool. If the parties fail to select an arbitrator, the AER appoints the arbitrator. The AER may correct errors in arbitrated access determinations. It also maintains a register of arbitrated access determinations.[7]

A pipeline owner can apply to the AER for an exemption from the disclosure provisions—for example, if a pipeline does not provide third party access, only has a single shipper, or has average daily gas injections of less than 10 TJ per day. Exemptions may be subject to conditions and varied at the AER's discretion.

Tasmania dispute

The first access determination under the Part 23 rules was made on 12 April 2018 by Justin Gleeson SC. The dispute between Hydro Tasmania and Tasmanian Gas Pipeline (TGP)

5 ACCC, *Inquiry into the east coast gas market*, 2018.
6 COAG Energy Council, *Examination of the current test for the regulation of gas pipelines*, December 2016.
7 AER, *Part 23 (Access to non-scheme pipelines) exemptions)*, available at www.aer.gov.au/networks-pipelines/non-scheme-pipelines/part-23-access-to-non-scheme-pipelines-exemptions.

Table 5.1
Full regulation pipelines

PIPELINE	LOCATION	CUSTOMER NUMBERS	LENGTH (KM)	CAPACITY (TJ/D)[1]	ASSET BASE ($ MILLION)[2]	ANNUAL INVESTMENT ($ MILLION)[3]	ANNUAL REVENUE ($ MILLION)[3]	CURRENT REGULATORY PERIOD[4]	OWNER
TRANSMISSION									
APA Victorian Transmission System	Vic	na	2 035	1 030	976	240	525	1 Jan 2018–31 Dec 2022	APA Group
Roma to Brisbane Pipeline	Qld	na	867	211/125	461	67	223	1 July 2017–30 June 2022	APA Group
Amandeus Gas Pipeline	NT	na	1 658	104	124	17	109	1 July 2016–30 June 2021	APA Group
DISTRIBUTION									
Jemena Gas Networks	NSW	1 300 000	25 000	na	3 248	1 002	2 169	1 July 2015–30 June 2020	Jemena (State Grid Corporation, Singapore Power)
AusNet Services	Vic	647 000	10 478	na	1 555	480	958	1 Jan 2018–31 Dec 2022	Listed Company (Singapore Power 31%, State Grid Corporation 20%)
Multinet	Vic	687 000	9 866	na	1 199	398	956	1 Jan 2018–31 Dec 2022	Cheung Kong Group
Australian Gas Networks	Vic	613 454	10 447	na	1 580	554	1 113	1 Jan 2018–31 Dec 2022	Cheung Kong Group
Australian Gas Networks	SA	423 462	7 950	na	1 506	577	947	1 July 2016–30 June 2021	Cheung Kong Group
Evoenergy	ACT	137 806	4 911	na	381	114	309	1 July 2015–30 June 2021	ACTEW Corporation (ACT Government) 50%, Jemena (State Grid Corporation, Singapore Power) 50%

km, kilometres; na, not available; TJ/d, terajoules per day.

1. Where two capacity values appear, the first value represents pipeline capacity for the primary gas flow direction. The second value represents reverse flow capacity for bi-directional pipelines.
2. The asset base is the estimated value of network assets based on the closing regulated asset base (RAB) at 30 June 2017, except for Victorian transmission (31 March 2017) and Victorian distribution (31 December 2017). Data is in June 2018 dollars. The RAB rises each year due to new investment, and is lowered by depreciation, and assets disposals.
3. Investment and revenue as forecast for the current regulatory period in June 2018 dollars.
4. The current regulatory period at 1 July 2018.

over access to the TGP transmission pipeline was referred for arbitration in November 2017.

The dispute related to the valuation of assets used to provide the services required by the access seeker. The arbitrator determined an appropriate method reflecting the value of assets used in providing the required services (firm forward haul services, as available forward haulage) but excluding the value of assets used to provide separate services such as high priority storage services and interconnect services with the Victorian gas transmission system.[8]

8 AER, *Final access determination—Tasmanian Gas Pipeline*, April 2018.

5.4 How gas pipeline access prices are set

Gas pipeline businesses earn revenue by selling capacity in their pipelines to customers needing to transport gas. A customer buys access to that capacity under terms and conditions that include an access price. The AER sets access prices for full regulation pipelines in eastern Australia and the Northern Territory under broadly similar rules to those applied to electricity networks (chapter 3).

The owners of other pipelines—including those subject to light regulation and the new Part 23 regime—are free to set their own prices. Light regulation pipeline owners must publish their prices, but these prices are not independently vetted.

Table 5.2
Light regulation pipelines

PIPELINE	LOCATION	CUSTOMER NUMBERS	LENGTH (KM)	CAPACITY (TJ/D)[2]	OWNER
TRANSMISSION					
Carpentaria Pipeline (Ballera to Mt Isa)	Qld	na	944	119	APA Group
Central West Pipeline (Marsden to Dubbo)	NSW	na	255	3	APA Group
Moomba to Sydney Pipeline[1]	NSW	na	2 001	489/120	APA Group
DISTRIBUTION					
Allgas Energy[3]	Qld	100 000	3 218	na	Marubeni 40%, Deutsche AWM 40%, APA Group 20%
Australian Gas Networks[3]	Qld	92 852	2 703	na	Cheung Kong Group

km, kilometres; TJ/d, terajoules per day.

1. Part of the Moomba to Sydney Pipeline is subject to light regulation. The pipeline is unregulated from Moomba to the offtake point of the Central West Pipeline at Marsden.
2. Where two capacity values appear, the first value represents pipeline capacity for the primary gas flow direction. The second value represents reverse flow capacity for bi-directional pipelines.
3. Gas distribution pipelines in Queensland converted from full to light regulation in 2015.

Note (tables 5.1 and 5.2): Excludes gas pipelines in Western Australia, which the ERA regulates. The AER does not conduct access arrangement reviews for light regulation pipelines, so limited data is available. Unlisted pipelines are unregulated, except under the Part 23 information disclosure and arbitration provisions introduced in July 2017. Chapter 4 lists unregulated transmission pipelines. Gas distribution networks in Tasmania and the Northern Territory are unregulated.

Source (tables 5.1 and 5.2): AER access arrangement decisions; Gas Bulletin Board; AEMO website; Australian Securities Exchange (ASX) releases; company websites; company annual reports.

5.4.1 Regulatory objective and approach

The National Gas Law and National Gas Rules lay out the regulatory framework for gas pipelines, which the AER applies in states and territories other than Western Australia. The Law's regulatory objective is to promote efficient investment in, and operation and use of, gas services for the long term interests of consumers of gas concerning price, quality, safety, reliability and security of supply of gas. The Rules set out revenue and pricing principles, including that pipeline businesses should have a reasonable opportunity to recover efficient costs.

For full regulation gas pipelines, the AER pursues this regulatory objective by setting an access price (reference tariff) for a commonly sought gas pipeline service (reference service)—such as firm haulage—at a level which allows the pipeline to earn enough revenue to cover its efficient costs.

Owners of full regulation gas pipelines must periodically submit a regulatory proposal—called an *access arrangement*—to the AER. The proposal includes the pipeline's forecast revenue and expenditure needs over the upcoming regulatory period (typically five years), and an access price derived from demand forecasts.

The AER then assesses the proposal—focusing on the business's forecast revenue requirements to cover its efficient costs. As in electricity, the AER uses a building block approach to assess the business's efficient costs (section 5.5). Ensuring only *efficient* costs are included

helps protect customers from being charged unreasonable prices. The AER's final decision sets an access price for the regulatory period, which the business may increase only to cover inflation.

The AER draws on a range of inputs to assess efficient costs, including cost and demand forecasts and revealed costs from experience, but the approach is not formalised through published guidelines. An exception is the rate of return assessment, where a common guideline applies in both electricity and gas. The AER in 2018 reviewed its approach to setting the rate of return, which will be made binding in future (section 3.12.2).

If the AER's analysis finds a business's access arrangement proposals are unnecessarily costly, it may go back and ask for information that is more detailed or a clearer business case. If these steps fail to reach a satisfactory conclusion, it may amend the access arrangement to align it with efficient costs.

While the approach to assessing revenue is similar for gas and electricity networks, there are differences. In electricity, the AER determines a cap on the maximum revenue a network can earn during a regulatory period. But in gas, it goes a step further by allocating forecast revenue over the demand for pipeline services to set a reference tariff (access price) for using the pipeline. The reference tariff must apply to a widely sought pipeline service, and provides a basis for access seekers to negotiate prices to other services. A frustrated access seeker can apply to the AER to determine a tariff and other conditions of access if a dispute arises.

Concerns have arisen among policy makers that 'too narrow a set of services are subject to the determination of a tariff by the regulator'.[9] The AEMC in July 2018 recommended widening the scope of price regulation to a wider range of services, such as bi-directional flow, park and hold services.[10] The COAG Energy Council in late 2018 proposed rule changes to implement the reforms, which the AEMC intended to fast track.[11]

5.4.2 Incentive schemes

The Gas Rules allow scope for gas pipeline businesses to earn bonus revenue by outperforming efficiency targets (and imposes penalties for underperformance).

An *efficiency carryover mechanism* allows businesses to retain efficiency savings in managing operating costs for up to six years. In the longer term, pipeline businesses must share efficiency gains with their customers, by passing on about 70 per cent of the gains through lower access prices. The mechanism is similar to the efficiency benefit sharing scheme in electricity (section 3.13), but is written into each business's access arrangement rather than being articulated in a general guideline.

A number of gas distribution businesses proposed a *capital expenditure sharing* scheme (CESS) in their latest access arrangement proposals. The gas rules do not mandate such schemes, but allow flexibility for the AER to approve their use. The AER first approved their use in 2017 to strengthen incentives for pipeline businesses to find efficient ways of maintaining and operating their networks.

The scheme operates in a similar way to the CESS for electricity networks (section 3.11), but is written into each business's access arrangement. It allows a pipeline business to earn a bonus by keeping new investment spending below forecast levels (penalties apply if it invests above target). In later regulatory periods, the business must pass on around 70 per cent of savings to customers as lower pipeline charges.

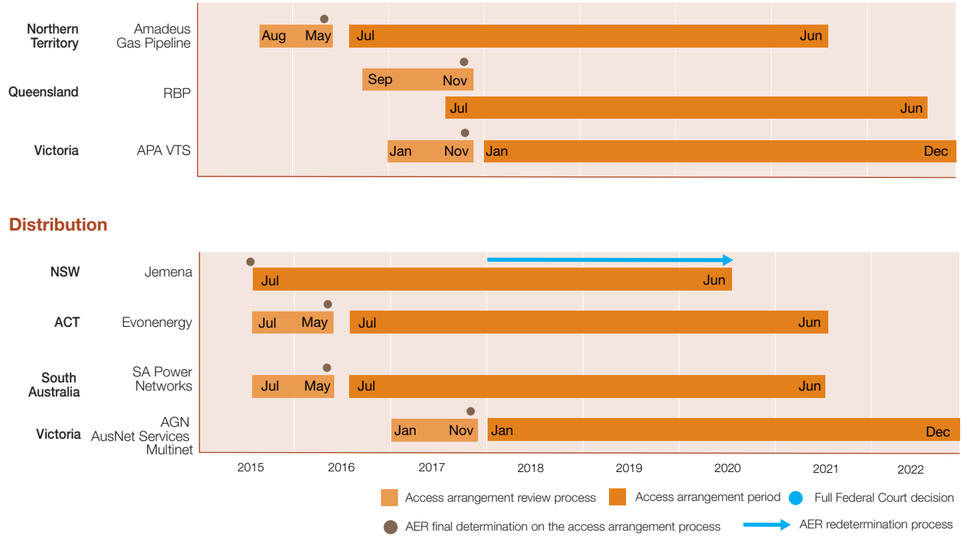
To mitigate the risk of encouraging pipeline businesses to inflate investment forecasts, the AER closely scrutinises whether proposed investments are efficient. The CESS design ensures deferred expenditure does not attract rewards, which removes incentives for businesses to defer critical investment needed for safe and reliable network operation. A network health index ensures rewards are contingent on the pipeline business maintaining current service standards.

The Victorian gas distributors were the first pipeline businesses to implement the CESS scheme as part of their access arrangements, for the period 2018–22. To date, no gas transmission business has sought to participate in the scheme.

Other incentive schemes applying in electricity—for maintaining or improving service performance and demand management innovations—are not currently available to gas pipeline businesses. The Victorian gas distributors sought the introduction of a Network Innovation Scheme in 2018–2022. The AER rejected the scheme, arguing the current framework provides sufficient incentives for innovation, particularly with the addition of the new CESS scheme.[12]

9 AEMC, *Review into the scope of economic regulation applied to covered pipelines*, July 2018, p. ii.
10 AEMC, *Review into the scope of economic regulation applied to covered pipelines*, July 2018.
11 AEMC, *AEMC fast tracks rule change request to improve regulation of covered gas pipelines*, Media release, November 2018.
12 AER, *AusNet Services Gas access arrangement 2018–2022, draft decision, Attachment 14–Other incentive schemes*, July 2017.

Figure 5.2
AER decision timelines—full regulation gas pipelines



AGN, Australian Gas Networks; RBP, Roma to Brisbane Pipeline, VTS, Victorian Transmission System.
Note: Times are subject to variation. For the latest information, please check www.aer.gov.au/networks-pipelines/determinations-access-arrangements.
Source: AER.

5.4.3 Timelines and process

After a gas pipeline business submits an access arrangement proposal, the AER has six months (plus optional stop-the-clock time at specific stages of the process) to decide whether to approve it. This period can be extended by up to two months, with a maximum of 13 months to render a decision.

The AER consults with gas pipeline customers and other stakeholders during the process, including by publishing a draft decision seeking stakeholder input to inform its final decision.

At the completion of a review, the AER publishes an access arrangement decision setting the reference tariff a gas pipeline business can charge its customers. The AER annually reviews pipeline charges to ensure they are consistent with its decision.

Figure 5.2 sets out timelines for the AER's upcoming access arrangement reviews. The AER assesses access arrangements on a rolling cycle, with the timing of reviews staggered to avoid bunching. The long review cycle helps create a stable investment environment but also risks locking in inaccurate forecasts.

The rules include ways of dealing with some uncertainties, such as cost pass-throughs in the event of a significant event such as a regulatory changes or natural disaster. A gas network may also approach the AER to pre-approve a contingent investment project where the need is uncertain at the time of the reset. A pre-approval allows the project to be rolled into the pipeline's asset base in the next regulatory period (but not the current period).

5.4.4 Customer engagement

As in electricity, an important focus of gas pipeline regulation is how constructively a business engages with its customers in developing an access arrangement proposal. While not mandated in the gas rules, evidence of constructive engagement can give the AER confidence the business is genuinely committed to meeting customer needs and preferences. This can lay the foundation for the AER to accept elements of an access arrangement proposal, including capital and operating expenditure forecasts.

The Victorian gas distributors—Multinet, AusNet Services and Australian Gas Networks (Victoria and Albury)—engaged closely with their customers in developing access arrangements for the 2018–2022 period. The AER's *Consumer Challenge Panel* particularly commended Australian Gas Networks' genuine commitment to giving small and large consumers a say—clearly identifying feedback from stakeholders and how they had addressed it. The panel found this transparency enhanced confidence the business was open to ongoing collaboration on issues of concern.[13]

To date, customer engagement is more advanced in the gas distribution sector than in transmission. APA Group chose not to undertake stakeholder engagement in developing its 2017–2022 access arrangement proposal for the Roma to Brisbane Pipeline. Similarly, the AER's *Consumer Challenge Panel* was critical of APA's commitment to customer engagement on its 2018–2022 access arrangement for the Victorian Transmission System.[14] APA described the AER's and panel's consultation expectations to be 'unrealistic' and 'ultimately…a waste of time and resources.'[15]

5.4.5 Recent AER access arrangement decisions

The AER in November 2017 published final decisions on access arrangements for five gas pipeline systems—Victoria's three gas distribution networks (AusNet Services, Multinet and Australian Gas Networks), and the two major transmission pipelines (APA's Victorian Transmission System and the Roma to Brisbane Pipeline in Queensland). These access arrangements all took effect on 1 January 2018 and will remain in place until 31 December 2022.

In 2018 the AER engaged with Jemena Gas Networks (NSW gas distribution) on remaking its access arrangement for the regulatory period 2014–19, following orders from the Full Federal Court (section 3.5.2). The AER in 2019 will launch a new access arrangement review for Jemena for the period 2020–25.

5.4.6 Price impacts of recent AER decisions

The AER's access arrangement decisions for Victoria's gas distribution networks reduced pipeline charges by up to 9.4 per cent in 2018 (table 5.3).[16] It found the networks needed less revenue than in the past because their financing costs had fallen. The decisions approved rates of return below 6 per cent for each network, compared with over 7 per cent in the previous period. However, transmission charges rose in Victoria, mainly because costs associated with new investment projects offset the impact of lower rates of return.

For a typical residential customer in Victoria, distribution and transmission charges make up about a quarter of their total gas bill. The AER's access arrangement decisions reduced pipeline charges in a typical residential gas bill in 2018 by up to $28 from their 2017 levels. For a small business customer, the AER estimated an average annual bill would fall by around $46 in 2018.[17]

Investment in Victorian gas networks is rising to meet demand for new gas connections and maintain network safety, reliability and security. The AER found Victoria's three gas distributors—Multinet, AusNet Services and Australian Gas Networks—had engaged constructively with their customers on priorities, including that the networks provide a safe and reliable gas supply. The networks will continue with substantial mains replacement programs over the next five years.

The AER took advice from the Consumer Challenge Panel, Australian Energy Market Operator (AEMO) and network users in approving additional capital expenditure for APA to improve capacity and security across the Victorian Transmission System, including construction of a new Western Outer Ring Main Pipeline. This investment will help address concerns about gas pipeline constraints raised by AEMO (the Victorian gas market operator) and gas users.

In Queensland, the AER's November 2017 decision found the Roma to Brisbane Pipeline (the only transmission pipeline carrying gas to Brisbane) would need 17.2 per cent less revenue in 2018–22 than in the previous period, mainly because improved financial market conditions had reduced financing costs. The approved rate of return fell from 7.22 per cent (nominal) in 2012–17 to 5.58 per cent under the decision.

Despite this, the price savings for small customers are modest, as gas transmission costs only comprise 3 per cent of final bills and expected demand is lower than the current period. The AER estimates reductions in annual gas bills of around $3 for residential customers and $31 for small business customers in 2018. Large customers directly connected to the pipeline will see larger bill reductions of around 5 per cent each year.

The AER explored the pipeline's pricing arrangements in the context of the gas market's evolving dynamics. The pipeline's key service—long term gas transportation (with a minimum three year contract) will be made bi-directional to reflect changing market dynamics.

The AER decided not to regulate a short term service because APA is already negotiating prices for those services with pipeline customers. However, it redefined a number of supporting services (park and loan, in-pipe trading and capacity trading) as rebateable to ensure pipeline customers share the benefits of innovation.[18] In future, APA will pass on 70 per cent of the revenue earned from rebateable services through lower reference tariffs.[19]

Table 5.3 Impact of recent AER decisions on gas pipeline charges

FULL REGULATION PIPELINE	STATE	REGULATION CONTROL PERIOD	ANNUAL REVENUE ($ million)	ANNUAL OPEX ($ MILLION)	ANNUAL CAPEX ($ MILLION)	RATE OF RETURN (%)	CHANGE IN NETWORK PRICES IN 2018 (%)	EFFECT ON RESIDENTIAL GAS BILL IN 2018 (%)
TRANSMISSION								
APA Victorian Transmission System	Vic	1 July 2018–31 Dec 2022	525	27	240	5.75	4.8	0
Roma to Brisbane Pipeline	Qld	1 July 2017–30 June 2022	223	15	67	5.58	–0.4	–0.4
DISTRIBUTION								
Australian Gas Networks	Vic	1 Jan 2018–31 Dec 2022	1113	70	554	5.75	–4.9	0
AusNet Services	Vic	1 Jan 2018–31 Dec 2022	958	55	480	5.67	–9.4	–0.2
Multinet	Vic	1 Jan 2018–31 Dec 2022	956	77	398	5.94	–1.0	–2.2

OPEX, operating and maintenance expenditure; CAPEX, capital expenditure.

Note: per cent changes in forecast revenue, OPEX and CAPEX in current access arrangement period compared with previous period. AER estimates of impact on residential gas bills assuming a standard household consumes 24 gigajoules of gas per year on a single rate tariff. All data is in real 2018 dollars except where otherwise specified.

Source: AER final decisions on gas access arrangements for 2018–22.

5.4.7 Legal reviews

An affected party can file an application with the Federal Court for judicial review of an AER access arrangement decision.

Until 2017 a party could also apply to the Australian Competition Tribunal (Tribunal) for a limited merits review of an AER decision, and then appeal the Tribunal's decision to the Full Federal Court. The Australian Government abolished this avenue of appeal in October 2017.

Legal proceedings on two long-running appeals concluded during 2017. The disputed matters included the allowed rate of return, the cost of corporate income tax and the AER's approach to determining efficient operating expenditure.

In July 2017 the Full Federal Court ordered the AER to remake elements of its access arrangement decision for

13 Sub-Panel CCP11, *Response to the AER's Draft Decisions and the Revised Proposals from AGN, AusNet and Multinet for a revenue reset/access arrangement for the period 2018 to 2022*, 12 September 2017, p. 10

14 CCP11, *Response to the AER's Draft Decisions and the Revised Proposal from APA VTS for a revenue reset/access arrangement for the period 2018 to 2022*, September 2017, p. 4

15 APA, *Victorian Transmission System Access Arrangement Revised Proposal, Submission Response to Draft Decision*, 14 August 2017, p. 8.

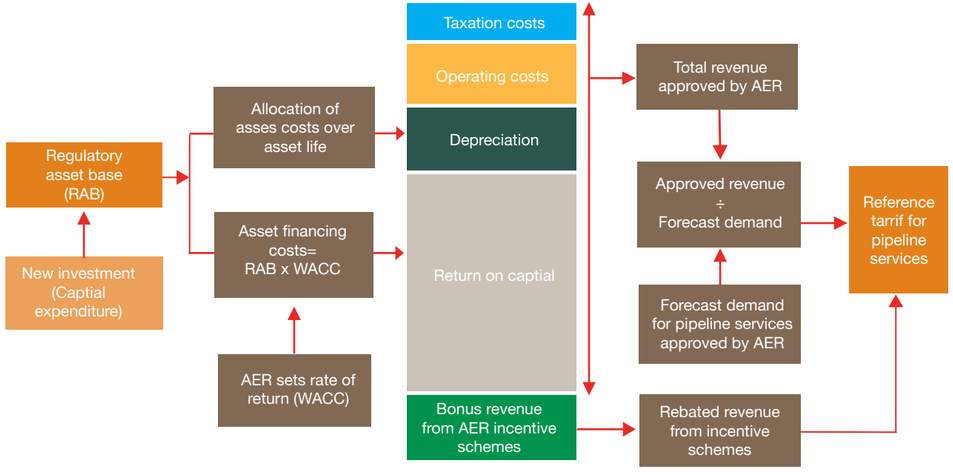
16 AER, *Final decisions, Victorian gas access arrangements for 2018–22*, factsheet, November 2017.

17 AER, *Final decisions, Victorian gas access arrangements for 2018–22*, factsheet, November 2017.

18 Where there is uncertainty around the amount of revenue a non-reference pipeline service is likely to generate it may be classified as a rebateable service. A portion of the costs of providing this service may be added to the reference tariff. But revenue from sales of this service may later be returned to users of the reference service as a discount.

19 AER, *Final decisions, Roma to Brisbane Pipeline gas access arrangements for 2017–22*, factsheet, November 2017.

Figure 5.3
How gas pipeline revenue and charges are set



Note: Bonus revenue may be earned under incentive schemes encouraging pipeline businesses to efficiently manage their operating and capital expenditure and encourage innovation.

Source: AER.

Jemena Gas Networks (NSW) covering the period 2015–20. In particular, the AER was ordered to revisit its decisions on Jemena's return on debt (an element of the rate of return), and aspects of the business's capital expenditure.

The AER hosted a roundtable meeting with Jemena and the *Consumer Challenge Panel* in January 2018 to resolve outstanding issues. Its discussions with Jemena and key customer groups continued in 2018, aimed at developing a new access arrangement proposal with the long term interests of consumers in mind.

The Tribunal's final limited merits review matter in gas related to the AER's 2016–21 access arrangement for the ACT gas distribution network (owned by Evoenergy, formerly ActewAGL). On 17 October 2017 the Tribunal affirmed the AER's final decision in relation to all grounds of review sought by the business. This meant the AER's original decision to reduce the amount of revenue the business could recover from customers stands.

5.5 The building blocks of gas pipeline revenue

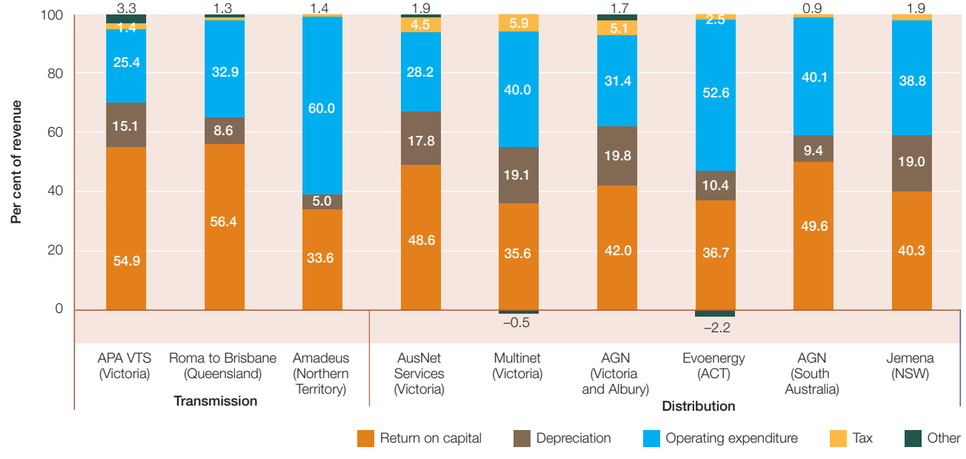
In assessing a gas pipeline business's revenue needs, the AER breaks up its costs into 'building blocks'. Specifically, the AER forecasts how much revenue the business is likely to need to cover:

- efficient operating and maintenance costs
- commercial returns to shareholders and investors who fund its operations
- asset depreciation costs
- forecast taxation costs.

It also makes adjustments for past over or under recovery of revenue, and for incentive payments (figure 5.3).

While gas pipelines are entitled to earn revenue to cover their efficient costs each year, they are *not* entitled to recover all the cost of investment in new assets during any given year. Gas pipelines have a long life, so the cost of new investment is recovered over the economic life of the asset—which may run to several decades. The amount recovered each year is called *depreciation* and covers the lost value of assets through wear and tear, and technical

Figure 5.4
Composition of gas pipeline revenues



AGN, Australian Gas Networks; VTS, Victorian Transmission System.

Note: Other includes incentive scheme payments.

Source: Post tax revenue modelling used in AER determination process.

obsolescence. Depreciation may absorb 5–20 per cent of a gas pipeline's revenue.

The shareholders and lenders who fund those assets must be paid a commercial *rate of return* on their investment each year. The AER sets this rate of return (also called the weighted average cost of capital, or WACC). This return may account for 30–60 per cent of a gas pipeline's revenue, and depends on:

- the value of the network's assets, measured by the regulated asset base plus forecast new capital expenditure
- the rate of return the AER considers appropriate for the equity and debt used to fund those assets.

Operating costs—such as maintenance and overhead costs—absorb around 20–60 per cent of a pipeline's revenue. *Taxation* and other costs account for the remainder. The AER in May 2018 launched a review into the taxation costs for regulated networks. This review responded to concerns about anomalies in the amount of tax paid by some businesses, relative to their forecast taxation costs (box 3.2).

Businesses also have opportunities to earn additional revenue through regulatory incentives encouraging efficient management of operating and capital expenditure programs (section 5.4.2).

Figure 5.4 illustrates the composition of pipeline revenues in recent gas transmission and distribution decisions. Sections 5.6–5.8 examine the major components in more detail.

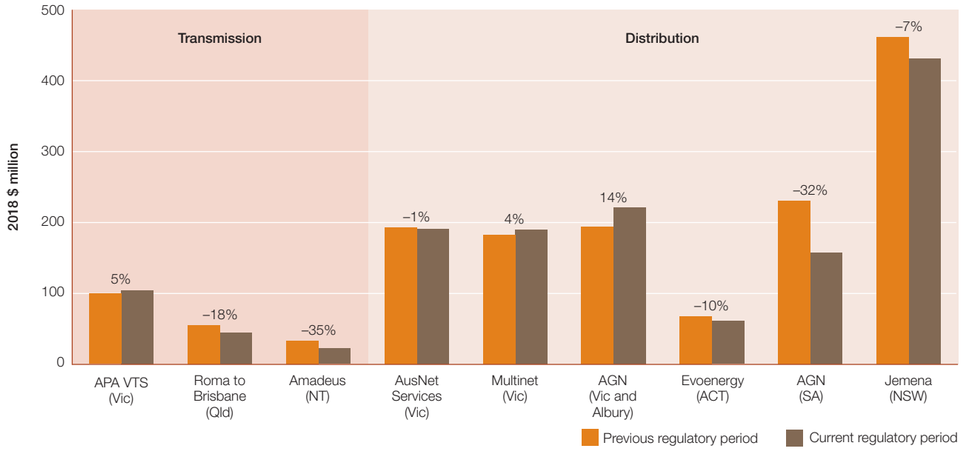
5.6 Gas pipeline revenues

Full regulation gas pipelines (listed in table 5.1) are forecast to earn around $7.36 billion in their current access arrangement periods—3.44 per cent less than forecast in previous periods:

- Full regulation *transmission* pipelines are forecast to earn around $857 million in current access arrangement periods—8.86 per cent less than forecast in previous periods.
- Full regulation *distribution* networks are forecast to earn around $6.5 billion in current access arrangement periods—2.67 per cent less than forecast in previous periods.

The previous round of access arrangement decisions were made at a time of increased pipeline investment in response to ageing assets and forecasts of rising energy demand.

Figure 5.5
Gas pipeline revenues



VTS, Victorian Transmission System; AGN, Australian Gas Networks.

Note: Smoothed annual averages. All data are forecasts. Current regulatory period is at 1 July 2018 (tables 5.1 and 5.2). Percentages represent the change between periods. Forecasting updates may result in some outcomes varying from those previously reported.

Source: AER.

Network businesses also had higher financing costs due to instability in global financial markets.

These cost pressures have since eased. Lower financing costs and weaker domestic gas demand in recent years—caused by a significantly higher gas prices—have reduced forecast revenue needs for most pipeline businesses.

Access arrangement decisions made since 2015 also incorporate a new approach to determining rates of return. The cost of capital is now updated annually to reflect changes in debt costs.

These factors reduced the average of return in the AER's five access arrangement decisions made in 2017 to under 6 per cent—compared with over 10 per cent in decisions made from 2008 to 2010. This reduction translates to significantly lower network revenue.

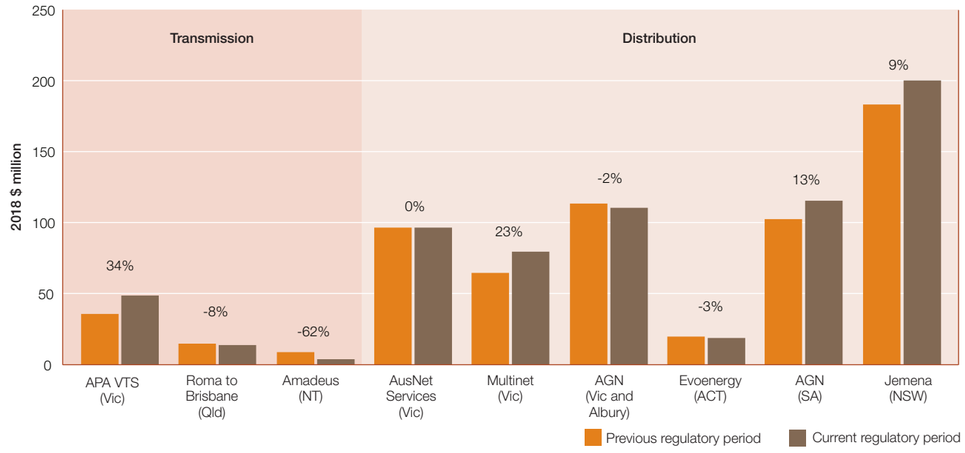
In gas transmission, current AER decisions forecast revenue will fall—by 18 per cent for the Roma to Brisbane Pipeline (Queensland) and 35 per cent for the Amadeus Pipeline (Northern Territory)—compared with the previous period. The reductions mainly reflect significantly lower allowed rates of return. The Victorian Transmission System, however, is forecast to increase revenue by 5 per cent, reflecting the increased capital base from investments APA made in the 2013–17 regulatory period.

In gas distribution, four of the six full regulation networks are forecast to record lower revenue. Revenue for networks in NSW, South Australia and the ACT are forecast to fall by 7–32 per cent, with rises of 4–14 per cent in two Victorian networks. Across transmission and distribution, revenue is more stable or rising for the Victorian networks compared with networks elsewhere. This is mainly due to higher operating and capital expenditure costs associated with new customer connections, such in new housing estates (figure 5.5).

5.7 Gas pipeline investment

Investment requirements differ between the gas transmission and distribution sectors. Gas transmission investment typically involves large, lumpy capital projects to expand existing pipelines (through compression, looping or extension) or construct new infrastructure. Additionally, some transmission pipelines have been re-engineered for bi-directional flows. Chapter 4 considers recent investment in gas transmission pipelines that are not fully regulated.

Figure 5.6
Gas pipeline investment



VTS, Victorian Transmission System; AGN, Australian Gas Networks.

Note: Smoothed annual averages. All data are forecasts. Current regulatory period is at 1 July 2018 (tables 5.1 and 5.2). Percentages represent the average annual investment (CAPEX) change between the previous and current regulatory period. Forecasting updates may result in some outcomes varying from those previously reported.

Source: AER.

Gas distribution investment mainly comprises augmentation (expansion) of existing systems to cope with new customer connections, such as in new housing estate developments. Older networks also require replacement programs for deteriorating infrastructure.

For pipelines under full economic regulation (table 5.1), the AER assesses whether investments are prudent and efficient, based on criteria in the National Gas Rules.

5.7.1 Recent investment

Full regulation transmission pipelines are forecast to invest a total of $324 million over the current regulatory periods (typically five years) (figure 5.6):

- Investment in the Roma to Brisbane Pipeline is forecast to fall by 8 per cent in the current period following the completion of a major augmentation program.
- Investment requirements are also forecast to fall in the Northern Territory (by 62 per cent over 2016–21) following the completion of an integrity works program.
- Investment in Victoria's AGN and AusNet Services distribution networks is steady (0 per cent and 2 per cent fall respectively).

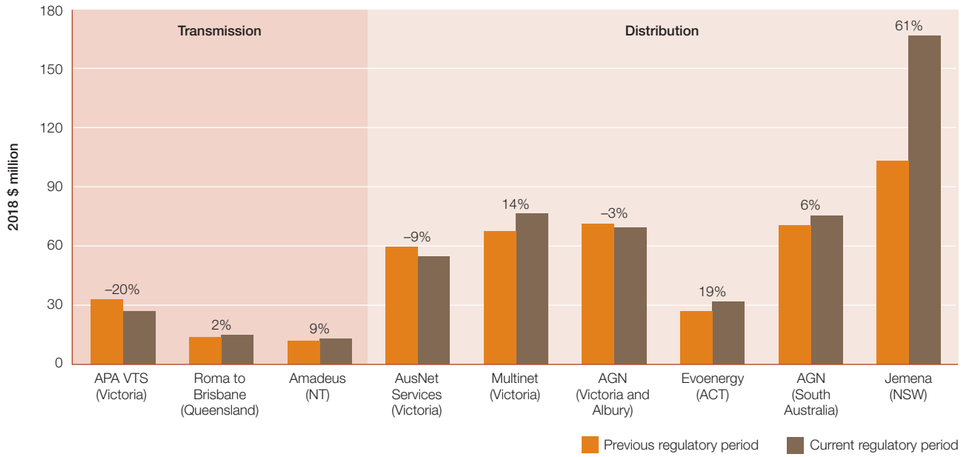
Investment in full regulation distribution networks in eastern Australia is forecast at around $3.13 billion in the current access arrangement periods—7.95 per cent higher than in the previous periods:

- Forecast investment growth is highest in the Victorian Transmission System at 34 per cent.
- The AER's 2016 determinations for the AGN South Australia network forecast investment would rise by 13 per cent over 2016–21 to fund a major mains replacement project.
- Less investment is forecast for the ACT's Evoenergy distribution network, after the AER found a prudent operator would not undertake significant elements of its augmentation proposals. Overall, investment in the ACT network is forecast to fall by 3 per cent in 2016–21 compared with the previous period.

5.8 Gas pipeline operating costs

The AER's assessment of a gas network's efficient operating and maintenance costs accounts for cost drivers such as forecast customer growth, expected productivity

Figure 5.7
Gas pipeline operating costs



VTS, Victorian Transmission System; AGN, Australian Gas Networks.

Note: Smoothed annual averages. All data are forecasts. Current regulatory period is at 1 July 2018 (tables 5.1 and 5.2). Percentages represent the average annual change in operating costs (OPEX) between the previous and current regulatory period. Forecasting updates may result in some outcomes varying from those previously reported.

Source: AER.

improvements, changes in labour and materials costs, and changes in the regulatory environment.

In the current regulatory cycle, full regulation transmission networks are forecast to spend around $271 million on operating expenses.

Operating expenditure will also rise for gas distribution networks, which are jointly forecast to spend over $2.42 billion on these costs—a rise of 20 per cent on forecast expenditure in previous periods. The largest rise (61 per cent) is forecast for NSW's Jemena network.

The AER's 2016 decision forecast a 6 per cent rise in operating expenditure of South Australia's AGN distribution network in 2016–21 compared with forecast spending in the previous period. The AER found the network had operated efficiently in the past, so its decision maintained base levels of expenditure, with increases to cover higher costs in some areas. Operating costs for the ACT's Evoenergy network are forecast to rise by 19 per cent over the same period (figure 5.7). The expected cost increase is mainly associated with compliance issues and business-to-business harmonisation.