Source: iStock

5

Regulated gas pipelines

Gas pipeline networks transport gas from upstream producers to residential, commercial and industrial customers. Australia's gas pipeline networks consist of:

- long haul transmission pipelines, which carry gas from producing basins to major population centres, power stations, and large industrial and commercial plants
- smaller urban and regional distribution networks, which transport gas to customers in local communities.

This chapter covers the 14 gas pipelines and networks regulated by the Australian Energy Regulator (AER), which is the pipeline regulator in all states and territories except Tasmania and Western Australia.[319]

Unlike electricity networks, many gas pipelines are unregulated or face only limited regulation. This chapter explains the various tiers of regulation that apply but focuses on 'full regulation' pipelines – those for which the AER sets access (usage) prices.[320] The AER sets access prices for 3 transmission pipelines – the Roma to Brisbane Pipeline (Queensland), the Victorian Transmission System (Victoria) and the Amadeus Gas Pipeline (Northern Territory). In gas distribution, the AER sets access prices for 6 distribution networks in New South Wales (NSW), Victoria, South Australia and the Australian Capital Territory (ACT).

5.1 Gas pipeline snapshot

In 2022 so far, the AER has completed one access arrangement review for a fully regulated pipeline – the Roma to Brisbane pipeline – updating the access arrangement and reference prices for that pipeline through to 2027.

Across the fully regulated pipelines, over the 12-month period to 30 June 2021:

- Revenue earned by network businesses was 6% lower than in the previous year and 6% lower than the average revenue earned over the previous 5 years (section 5.7).
- This overall reduction in revenue was driven particularly by Jemena Gas Networks (JGN) (NSW) who earned 19% less than in the previous year following an access arrangement review which brought actual revenue closer to price cap targets (section 5.7).
- Investment in the fully regulated pipelines was primarily to replace ageing mains pipelines (section 5.10).

5.2 Gas pipeline services

Gas pipeline businesses earn revenue by providing access (selling capacity) to parties needing to transport gas. Those parties include:

- energy retailers seeking to provide gas to energy users
- commercial and industrial users
- liquefied natural gas (LNG) exporters, which buy gas directly from producers and contract with a pipeline owner to transport it to export terminals.

An interconnected transmission pipeline grid links gas basins and retail markets in all states and territories other than Western Australia (Figure 5.1).

The most common service provided by transmission pipelines is haulage – that is, transporting gas 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. Some customers seek backhaul too, which is reverse direction transport. Gas can also be stored (parked) in a pipeline on a firm or interruptible basis. As the gas market evolves, more innovative services are being offered, including compression (adjusting pressure for delivery), loans (loaning gas to a third party), redirection and in-pipe trades.

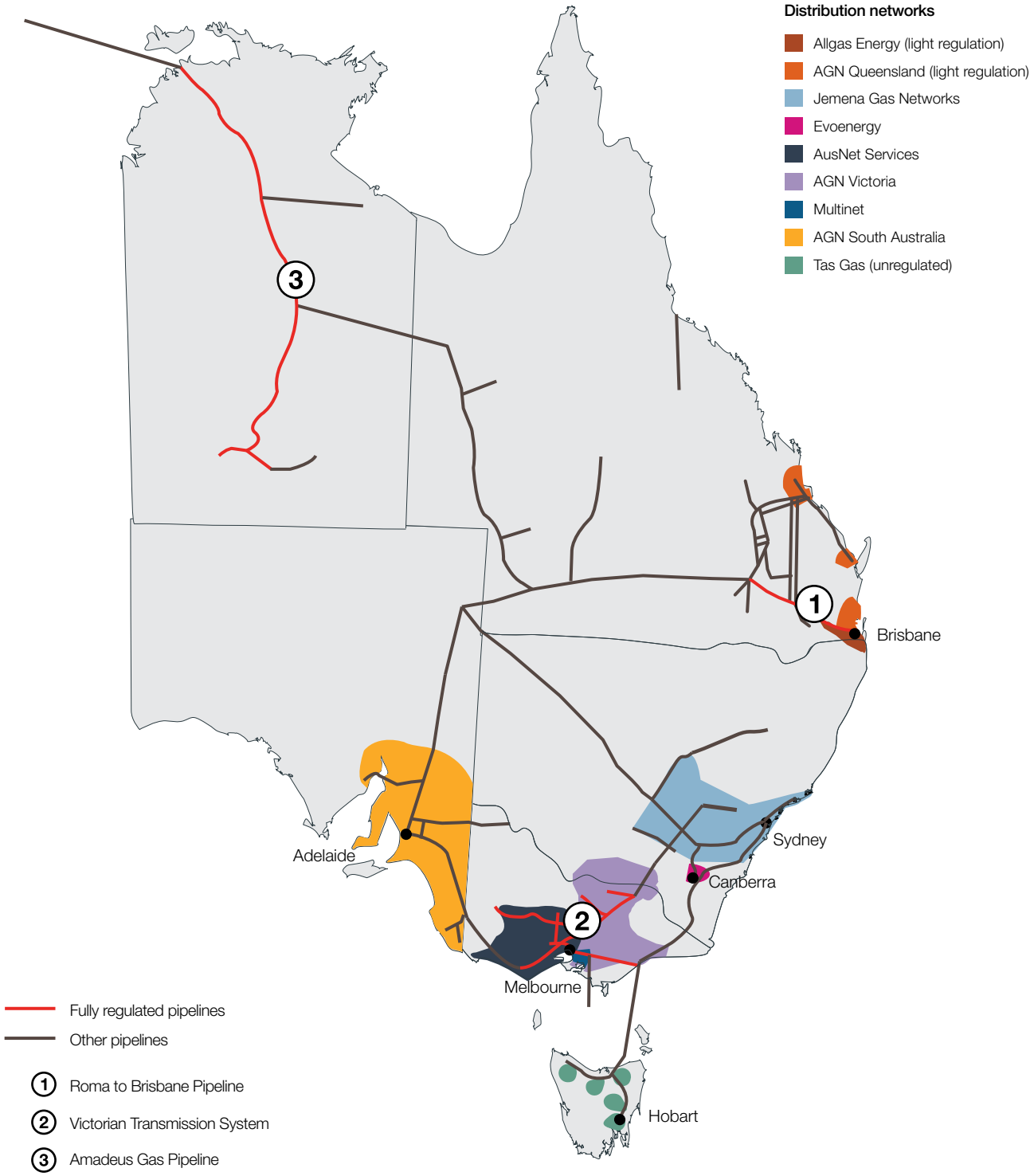
Distribution networks run underground and consist of high, medium and low-pressure pipelines. The high and medium pressure mains provide a 'backbone' that services high demand zones, while the low-pressure pipes lead off high pressure mains to commercial and industrial customers and residential homes. Although the nature of gas transmission services is evolving to meet changing market needs, distribution pipeline businesses tend to offer fairly

319 The Economic Regulation Authority (ERA) administers separate regulatory arrangements in Western Australia (www.erawa.com.au). The Office of the Tasmanian Economic Regulator (OTTER) administers separate regulatory arrangements in Tasmania (www.economicregulator.tas.gov.au/gas).

320 Chapter 4 discusses the wider gas transmission sector, including pipelines not under full regulation.

standard services – namely, allowing gas injections into a pipeline, conveying gas to supply points and allowing gas to be withdrawn.

Figure 5.1 Major gas transmission pipelines and distribution networks



Source: AER.

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. Queensland and Victoria each have multiple distribution networks, while NSW, South Australia, Tasmania and the ACT are each served by a single regulated network.[321]

Gas distributors transport gas to energy customers, but they do not sell gas. 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 products.

5.3 Gas pipeline ownership

Australia's gas pipelines are privately owned. The publicly listed APA Group (APA) is Australia's largest gas pipeline business, with a portfolio mainly in gas transmission. Other sector participants include Jemena Gas Networks (Jemena, owned by State Grid Corporation of China and Singapore Power International) and Cheung Kong Infrastructure Holdings Limited (CKI Group), which operates Australian Gas Networks. State Grid Corporation of China and Singapore Power International also have interests in the publicly listed AusNet Services (Victoria).

Table 5.1 summarises ownership of gas distribution networks, most of which are fully regulated.

Table 5.1 Ownership of gas distribution networks

PIPELINE	LOCATION	LENGTH (KM)	REGULATORY STATUS[1]	OWNER
Jemena Gas Networks	NSW	25,481	Full regulation	Jemena (State Grid Corporation of China 60%, Singapore Power 40%)
AusNet Services	Vic	12,337	Full regulation	Australian Energy Holdings No 4 Pty Limited
Multinet Gas Network	Vic	10,143	Full regulation	CK Infrastructure Holdings
Australian Gas Networks	Vic	11,984	Full regulation	CK Infrastructure Holdings
Australian Gas Networks	SA	8,420	Full regulation	CK Infrastructure Holdings
Evoenergy	ACT	4,614	Full regulation	ICONWater (ACT Government), 50%; Jemena, 50%
Allgas Energy	Qld	3,218	Light regulation	Marubeni, 40%, SAS Trustee Corp, 40%; APA Group, 20%
Australian Gas Networks	Qld	3,463	Light regulation	CK Infrastructure Holdings

Source: AER gas network performance data; corporate websites.

Table 5.2 summarises ownership of key gas transmission pipelines and their forms of regulation.

321 Some networks cross state or territory boundaries. For example, Australian Gas Network's Victorian network and Evoenergy's ACT network both extend into NSW. Some jurisdictions also have smaller unregulated regional networks, such as the Wagga Wagga network in NSW.

Table 5.2 Ownership of key gas transmission pipelines

PIPELINE	LOCATION	LENGTH (KM)	CAPACITY (TJ/DAY)	REGULATORY STATUS[1]	OWNER
Roma (Wallumbilla) to Brisbane	Qld	438	211 (125)	Full regulation	APA Group
Victorian Transmission System (GasNet)	Vic	2,035	1,030	Full regulation	APA Group
Amadeus Gas Pipeline	NT	1,658	120	Full regulation	APA Group
South West Queensland Pipeline (Wallumbilla to Moomba)	Qld–SA	937	404 (340)	Part 23 regulation	APA Group
Queensland Gas Pipeline (Wallumbilla to Gladstone)	Qld	627	140 (40)	Part 23 regulation	Jemena (State Grid Corporation of China 60%, Singapore Power 40%)
Carpentaria Pipeline (South West Qld to Mount Isa)	Qld	840	119	Light regulation	APA Group
GLNG Pipeline (Surat–Bowen Basin to Gladstone)	Qld	435	1,430	15 year no coverage	Santos 30%, PETRONAS 27.5%, Total 27.5%, KOGAS 15%
Wallumbilla Gladstone Pipeline	Qld	334	1,588	Part 23 and 15 year no coverage	APA Group
APLNG Pipeline (Surat–Bowen Basin to Gladstone)	Qld	530	1,560	15 year no coverage	Origin Energy 37.5%, ConocoPhillips 37.5%, Sinopec 25%
Moomba to Sydney Pipeline	SA–NSW	2,029	489 (120)	Partial light regulation/ partial Part 23 Regulation[2]	APA Group
Moomba to Adelaide Pipeline	SA	1,184	241 (85)	Part 23 regulation	QIC Global Infrastructure
Eastern Gas Pipeline (Longford to Sydney)	Vic–NSW	797	358	Part 23 regulation	Jemena (State Grid Corporation of China 60%, Singapore Power 40%)
Vic–NSW Interconnect	Vic–NSW		223 (150)	Part 23 regulation	Jemena (State Grid Corporation of China 60%, Singapore Power 40%)
SEA Gas Pipeline (Port Campbell to Adelaide)	Vic–SA	680	314	Part 23 regulation	APA Group 50%, Retail Employees Superannuation Trust 50%
Tasmanian Gas Pipeline (Longford to Hobart)	Vic–Tas	734	129 (120)	Part 23 regulation	Palisade Investment Partners
Northern Gas Pipeline (Tennant Creek to Mount Isa)	NT–Qld	622	90	Part 23 regulation	Jemena (State Grid Corporation of China 60%, Singapore Power 40%)
Bonaparte Pipeline	NT	287	80	Part 23 exemption	Energy Infrastructure Investments (APA Group 19.9%, Marubeni 49.9%, Osaka Gas 30.2%)

TJ/day: terajoules per day.

Note: For bi-directional pipelines, reverse capacity is shown in brackets.

1 Full regulation pipelines have their prices assessed by the AER. Light regulation pipelines do not have their prices assessed by the AER, but parties can seek arbitration to address a dispute. Part 23 pipelines are subject to information disclosure and arbitration provisions. Exempt pipelines are subject to no economic regulation. Chapter 5 outlines the various tiers of regulation.

2 The Moomba to Sydney Pipeline is subject to Part 23 regulation only from Moomba to Marsden. Light regulation applies to the remainder of the pipeline.

Source: AER; ACCC, interim reports of gas inquiry 2017–2025; corporate websites; Gas Bulletin Board (www.gasbb.com.au).

5.4 How gas pipelines are regulated

Gas pipelines are capital intensive and require significant amounts of investment to install and operate the required infrastructure. This characteristic gives rise to a natural monopoly industry structure, where it is more efficient to have a single network provider than to have multiple providers offering the same service. Because monopolies face no competitive pressure, they have the opportunity and incentive to charge unfair prices. This poses risks to consumers, because pipeline charges make up a significant portion of residential gas bills (section 6.6.2).

Many pipelines are regulated to manage the risk of monopoly pricing, and different tiers of regulation apply (discussed below). The National Competition Council (NCC) and the relevant Minister[322] are responsible for decisions on the classification of natural gas pipelines and the form of regulation to be applied to a covered pipeline (that is, full or light regulation). A case-by-case test is undertaken to assess the type of regulation that applies 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 is expected to be responsible for determining the level of regulation for gas pipelines, subject to the passage of the amendments to the National Gas Law, Regulations and the National Gas Rules through the South Australian Parliament.

Box 5.1 summarises the AER's role in gas pipeline regulation. Additionally, the AER monitors participants' compliance with the National Gas Law and National Gas Rules and takes enforcement action when needed. Box 4.1 in chapter 4 outlines the AER's work in this area, including its advocacy for reform to improve access to idle capacity in transmission pipelines.

More generally, the AER advises policy bodies on issues in the gas pipeline sector. It may propose or participate in rule change processes, and it engages in policy reviews to improve regulatory arrangements.

Box 5.1 How the AER regulates gas pipelines

The AER's role in gas pipeline regulation varies depending on the type of regulation applying to a pipeline:

- For full regulation pipelines, it sets a reference tariff (prices) for at least one service offered by the pipeline following an assessment of the pipeline's efficient costs and revenue needs. The AER undertakes this role for 3 transmission pipelines (in Queensland, Victoria and the Northern Territory) and for all major distribution networks in NSW, Victoria, South Australia and the ACT.
- For light regulation pipelines, the AER arbitrates disputes referred by access seekers and monitors pipeline businesses' compliance with their price disclosure obligations.
- For pipelines under Part 23 regulation, the AER sets guidelines on the disclosure of financial and pipeline use information and monitors and enforces compliance with these obligations. We 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.

5.4.1 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 all jurisdictions except 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.

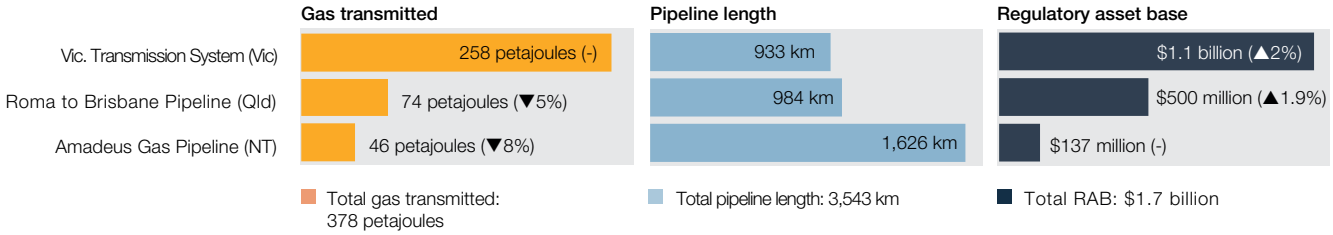
Currently, the AER applies full regulation to 3 gas transmission pipelines and 6 gas distribution networks, with a combined regulatory asset base (RAB) of $12.3 billion (Figure 5.2 and Figure 5.3). [323]

322 Relevant Minister can refer to a state or Commonwealth Minister depending on the pipeline that is under consideration.

323 RABs capture the total economic value of assets that are providing network services to customers. These assets have been accumulated over time and are at various stages of their economic lives.

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 (section 5.4.2). Other pipelines are free from any form of regulation.

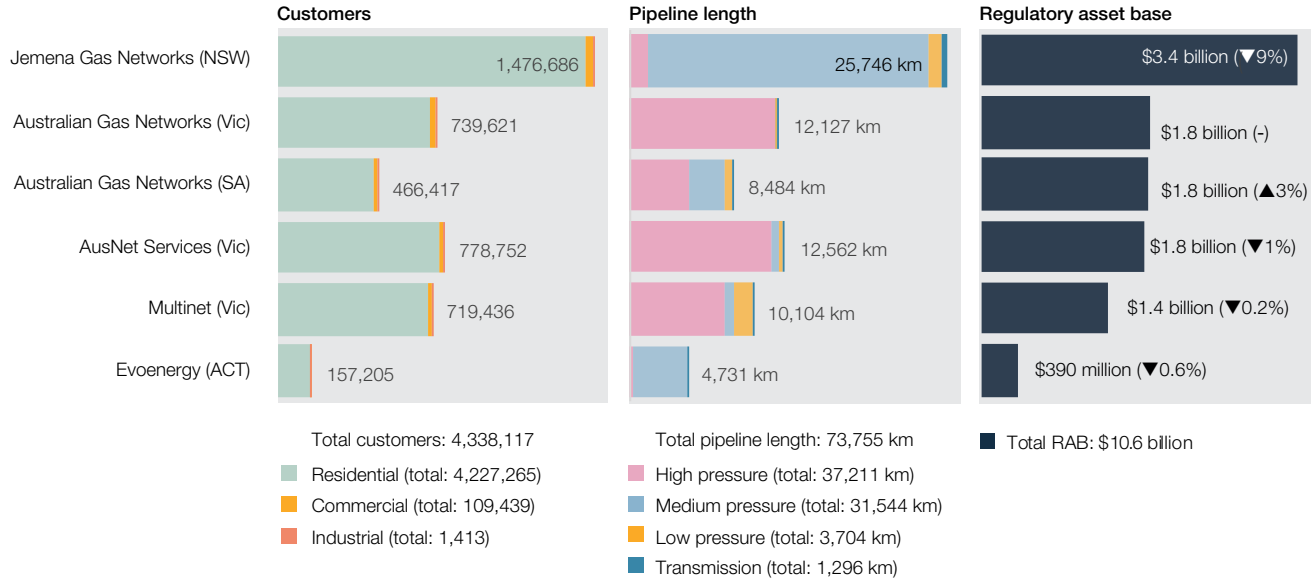
Figure 5.2 Gas transmission pipelines – full regulation



Note: RAB is adjusted to June 2022 dollars based on forecasts of the consumer price index (CPI). The RAB is the forecast value of network assets based on the closing RAB at 30 June 2021, except for the Victorian transmission network (31 March 2021). Excludes gas pipelines in Western Australia, which the Economic Regulation Authority (ERA) regulates.

Source: AER access arrangement decisions and annual regulatory information notices (RINs).

Figure 5.3 Gas distribution networks – full regulation



Note: RAB is adjusted to June 2022 dollars based on forecasts of the CPI. The RAB is the forecast value of network assets based on the closing RAB at 30 June 2021, except for the Victorian distribution networks (31 December 2021). Excludes gas pipelines in Western Australia, which the Economic Regulation Authority (ERA) regulates.

Source: AER access arrangement decisions and annual reporting RINs.

5.4.2 Light regulation

Light regulation uses a commercial negotiation approach supported by mandatory information disclosure. It requires gas pipeline businesses to publish access prices and other terms and conditions on their website. They cannot engage in price discrimination or other conduct adversely affecting access or competition in other markets.

If a party is unable to negotiate access to a pipeline, they may request the AER arbitrate a dispute.

The Carpentaria Pipeline in Queensland, the Central West Pipeline in NSW and portions of the Moomba to Sydney Pipeline are subject to light regulation. Queensland's 2 gas distribution networks – Australian Gas Networks (AGN) (Queensland) and Allgas Energy – converted from full to light regulation in 2015.

5.4.3 Part 23 regulation

Gas pipelines not subject to full or light regulation are 'unregulated', so they are free to set their own prices and other terms and conditions. A number of independent reviews raised concerns that this allowed monopolistic practices by some pipeline operators.[324]

These concerns led to the introduction of the Part 23 provisions in the National Gas Rules, which took effect in 2018. 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 certain financial, service and access information following guidelines published by the AER.

Customers can use the disclosed information under Part 23 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 uses 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 maintains a register of arbitrated access determinations.[325]

A pipeline owner can apply to the AER for an exemption from the disclosure provisions for several reasons, including a pipeline not providing third party access, having only a single shipper or having average daily gas injections of less than 10 terajoules per day. Exemptions may be subject to conditions and varied at the AER's discretion.

In July 2022 the AER announced that one of its key enforcement and compliance priorities for 2022–23 was to ensure service providers meet the information disclosure obligations under Part 23 of the National Gas Rules.

Access disputes

There have been 2 arbitrated access determinations made under Part 23 rules. The first concerned a dispute between Hydro Tasmania and Tasmanian Gas Pipeline (TGP) over access to the TGP transmission pipeline in April 2018.[326] The second concerned a dispute between Gas Pipelines Victoria and EnergyAustralia over access to the Carisbrook to Horsham Pipeline in January 2021.[327]

In both disputes, the arbitrator made a determination on a valuation method to reflect the value of assets used to provide the relevant transport services required by the access seeker. Following each dispute, the access seeker gave notice to the AER that it wished to enter an access contract in accordance with the arbitrator's determination.

5.4.4 Regulatory reforms to gas pipeline regulation

In May 2021 Commonwealth, state and territory energy ministers agreed on a package of reforms to improve gas pipeline regulation.[328] In September 2021 energy senior officials held public consultation on a draft legal package to give effect to the agreed reforms.[329]

In March 2022 energy ministers agreed to a final package of gas pipeline regulatory reforms, which are intended to provide a simpler regulatory framework and continue to support the safe, reliable and efficient use of, and investment in, gas pipelines. In particular, they are intended to provide:

- more effective constraints on market power of pipeline operators
- better access to pipelines that would not otherwise provide such access
- streamlined governance arrangements
- better support for commercial negotiations between shippers and service providers, through more transparency (including greater price transparency) and improvements to the negotiation framework and dispute resolution mechanisms.

The implementation of the reforms is subject to passage through the South Australian Parliament.

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324 ACCC, Gas inquiry 2017–2020 interim report, April 2018; Ministerial Forum of Energy Ministers (formerly CoAG Energy Council), Examination of the current test for the regulation of gas pipelines, December 2016.

325 AER, 'Part 23 (Access to non-scheme pipelines) exemptions', AER website, accessed 1 February 2022.

326 AER, 'Final access determination – Tasmanian Gas Pipeline', AER website, 12 April 2018, accessed 4 February 2022.

327 AER, 'Access dispute – Carisbrook to Horsham Pipeline', AER website, 28 January 2021, assessed 4 February 2022.

328 Department of Industry, Science, Energy and Resources, 'Energy Ministers release gas pipeline Decision Regulation Impact Statement', 3 May 2021, accessed 5 April 2022.

329 Department of Industry, Science, Energy and Resources, 'Energy Senior Officials gas pipeline draft legal package consultation', 2 September 2021, accessed 5 April 2022.

5.4.5 Gas network performance report

In December 2021 the AER published its first gas network performance report. The report focused on key outcomes and trends in the operational and financial performance data for fully regulated gas distribution pipelines.[330] Subsequent reports will include analysis of the fully regulated gas transmission pipelines.

5.5 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 recent Part 23 provisions – are free to set their own prices.

5.5.1 Regulatory objective and approach

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

Owners of full regulation gas pipelines must periodically submit a regulatory proposal – called an access arrangement – to the AER. The proposal sets out the pipeline business's forecast revenue and expenditure needs over the forthcoming access arrangement period (typically 5 years) and an access price derived from demand forecasts.

The AER assesses the proposal, and the supporting material, and forms an opinion on the reasonableness of the forecasts and the efficiency of the proposed expenditure. If the AER determines the proposal is likely to be unreasonably costly, it may ask for more detailed information or a clearer business case. Subsequently, the AER may amend the amount of revenue proposed by a gas pipeline to ensure the approved cost forecasts are efficient. Ensuring only efficient costs are included in the calculation of a regulated business's revenue requirement helps protect customers from being charged unreasonable prices.

As with electricity, the AER uses a building block approach to assess the business's efficient costs (section 5.5.5). The AER draws on a range of inputs to assess efficient costs, including cost and demand forecasts and revealed costs from experience. Unlike electricity, the approach is not formalised in published guidelines. An exception is the allowed rate of return assessment, for which a common AER guideline applies to both electricity and gas.

The AER's final decision sets an access price (reference tariff) for a commonly sought gas pipeline service (reference service) – such as firm haulage – for the duration of the access arrangement. That reference tariff provides a basis for access seekers to negotiate prices to other services. If a dispute arises, a frustrated access seeker can apply to the AER to determine a tariff and other conditions of access.

5.5.2 Incentive schemes

The National Gas Rules allow scope for gas pipeline businesses to earn bonus revenue by outperforming efficiency targets (and incur penalties for underperformance). An efficiency carryover mechanism allows businesses to retain, for up to 6 years, efficiency savings in managing their operating costs. In the longer term, pipeline businesses must share efficiency gains with their customers by passing on around 70% of the gains through lower access prices. The mechanism is similar to the efficiency benefit sharing scheme (EBSS) in electricity (chapter 3, Box 3.4), but it is written into each business's access arrangement rather than being set out in a general guideline.

A number of gas distributors have proposed a capital expenditure sharing scheme (CESS). The National Gas Rules do not mandate such schemes, but they allow the AER to approve their use to incentivise pipeline businesses to efficiently maintain and operate their networks.

The Victorian gas distributors were the first to implement a CESS as part of their 2018–2022 access arrangements. The AER then approved Jemena's (NSW) request for a CESS for its 2020–2025 access arrangement and requests by

330 AER, 'Gas network performance report', December 2021.

AGN (South Australia) and Evoenergy (ACT) for their 2021–2026 access arrangements. To date, no gas transmission business has sought to participate in a CESS.

The CESS for gas pipelines operates in a similar way to the CESS for electricity networks (chapter 3, Box 3.3). It allows a pipeline business to earn a bonus by keeping new investment spending below forecast levels (and incur penalties if the business invests above target). In later access arrangements, the business must pass on around 70% of savings to customers as lower pipeline charges.

The CESS carries a risk of encouraging pipeline businesses to inflate their investment forecasts. To mitigate this risk, the AER scrutinises whether proposed investments are efficient. The design of the CESS ensures deferred expenditure does not attract rewards so that businesses are not incentivised to defer critical investment needed for safe and reliable network operation. A network health index ensures that rewards depend on the pipeline business maintaining current service standards.

Other incentives applied to electricity networks – such as those relating to service performance and demand management innovations – are not available to gas pipeline businesses.

5.5.3 Timelines and process

Once a gas pipeline business submits an access arrangement proposal, the AER has 6 months (plus optional stop-the-clock time at certain stages) to make a final decision on the access price. The assessment period can be extended by up to 2 months, with a maximum of 13 months to render a decision.

The AER consults with gas pipeline customers and other stakeholders during the process. As part of this consultation, the AER publishes a draft decision on which it seeks stakeholder input to inform its final decision. At the completion of a review, the AER publishes an access arrangement decision that sets the reference tariff that a gas pipeline business can charge its customers. The AER annually reviews pipeline charges to ensure they are consistent with its decision.

The AER assesses access arrangements on a rolling cycle, with staggered review timing to avoid bunching. The (typically) 5-year review cycle helps create a stable investment environment but also risks locking in inaccurate forecasts.

Countering this risk, the gas rules include ways of managing uncertainties. The AER can approve cost pass throughs if a significant event (such as a regulatory change or natural disaster) imposes significant costs that were not forecast. A gas network may also approach the AER to pre-approve a contingent investment project if the need for it is uncertain at the time of the reset. A pre-approval allows the network business to roll the project into the pipeline's RAB in the forthcoming access arrangement if pre-determined conditions are met.

5.5.4 Customer engagement

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

Some recent access arrangement proposals demonstrated better levels of customer engagement:

- Before submitting its 2021–2026 access arrangement proposal for the Amadeus Gas Pipeline (Northern Territory), APA consulted with stakeholders on the pipeline's asset management plan. APA put forward a well-informed proposal underpinned by sound consumer engagement. The proposal incorporated stakeholder views and included a targeted stakeholder engagement approach that the AER considered to be well-calculated and appropriate.[331]
- Evoenergy submitted a well-informed 2021–2026 access arrangement proposal, underpinned by significant improvements to its consumer engagement approach. The AER noted Evoenergy's commitment to put consumers at the centre of its business and to ensure stakeholders' views are reflected in its proposals.[332]
- The AER commended AGN (South Australia) on its consumer engagement approach in developing its 2021–2026 access arrangement proposal. AGN demonstrated meaningful engagement with its customers, which it facilitated

331 AER, 'Final decision – Amadeus Gas Pipeline access arrangement 2021 to 2026', AER website, 30 April 2021, accessed 5 April 2022.

332 AER, 'Final decision – Evoenergy access arrangement 2021 to 2026', AER website, 30 April 2021, accessed 5 April 2022.

through workshops held across regional South Australia with residential and business customers. All submissions the AER received on AGN's proposal praised AGN for its quality consumer engagement.

However, in its November 2021 draft decision on APTPPL's (Roma to Brisbane Pipeline (Queensland)) 2022–2027 access arrangement proposal, the AER considered there is room for improvement in its overall approach to, and quality of, consumer engagement compared with the high standard set by some of its industry peers.[333]

The AER commented that APTPPL would have benefitted from greater investment in its pre-lodgement processes, including an earlier and sharper focus on planning the proposal and methods to facilitate more meaningful and deeper consumer engagement.[334]

5.5.5 Regulating gas pipelines under uncertainty

In November 2021 the AER published an information paper, 'Regulating gas pipelines under uncertainty', that discusses the potential implications of a decarbonised future energy mix on the long-term gas demand forecast and the expected economic lives of gas pipeline assets.[335]

The information paper explains how these potential implications may affect the AER's regulatory approaches when undertaking access arrangement reviews for full regulation gas pipelines now and in the future. It canvassed a range of potential options, including their costs and benefits, for managing the pricing risk and stranded asset risk that may arise from a potential material decline in gas demand in the future. These options include:

- accelerating asset depreciation
- providing ex-ante risk compensation
- removing redundant assets from capital base
- removing capital base indexation
- revaluating capital base
- introducing exit fees
- increasing fixed charges.

The paper also discusses how the uncertainty in future gas demand can affect specific aspects of the AER's regulatory decisions, such as the assumed payback period of pipeline investment in expenditure assessments, the incentives regulated businesses may have in substituting capital and operating expenditure, the prudency of allowing regulated businesses to recover from customers expenditure that is for repurposing gas assets to potentially transport renewable gases in the future, and the increased demand risk that regulated businesses may face under price cap regulation if gas demand falls persistently.

An example of this uncertainty is the ACT government's decision to cease connecting gas to homes and businesses in Canberra from 1 January 2023.[336]

The paper is intended to inform stakeholders of the longer-term issues facing the gas market and understand the implications on economic regulation for gas pipelines and, therefore, gas prices. This is designed to encourage and facilitate constructive stakeholder debate and engagement during access arrangement review processes, such as the Victorian distribution access arrangement reviews that commenced in July 2022.

333 APT Petroleum Pipelines Pty Limited (APTPPL) owns and operates the Roma to Brisbane Pipeline.

334 AER, 'Draft decision – Roma to Brisbane pipeline access arrangement 2022 to 2027', AER website, 26 November 2021, accessed 5 April 2022.

335 AER, '*Regulating gas pipelines under uncertainty – information paper*', November 2021.

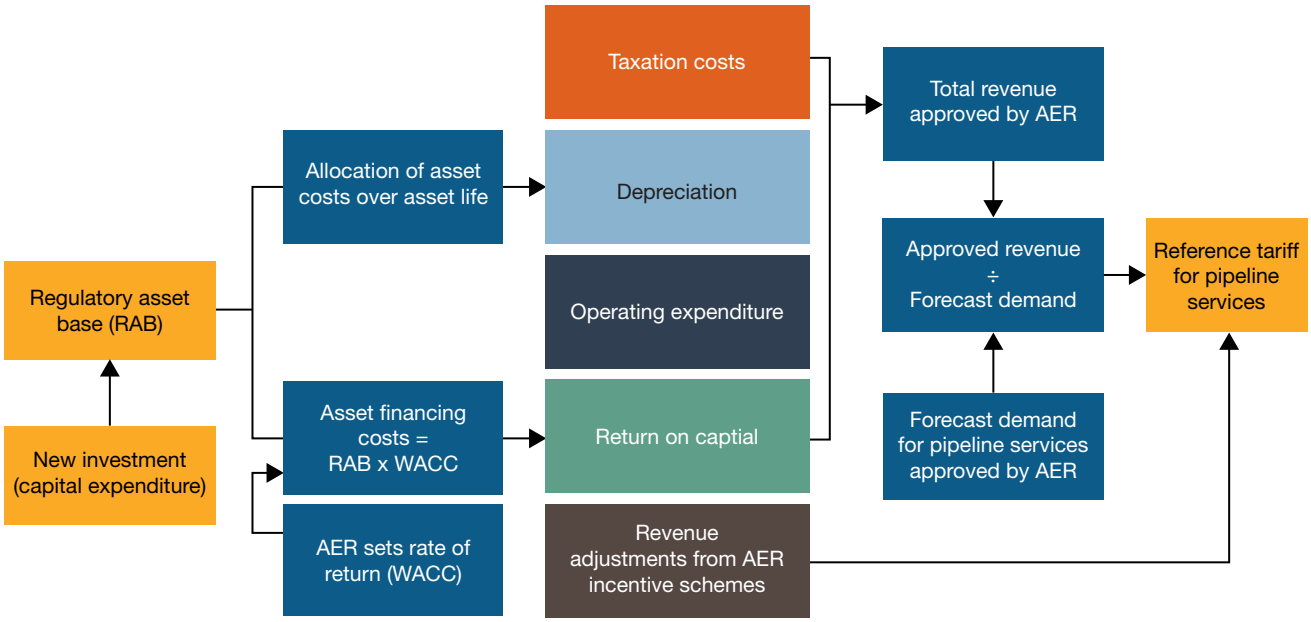
336 ABC News, 'No new gas connections for ACT homes and businesses from 2023 under plan to phase out fossil fuels', 4 August 2022, accessed 16 August 2022.

5.6 Building blocks of gas pipeline revenue

The AER uses a 'building block' approach to assess a gas pipeline business's revenue needs (Figure 5.4). Specifically, it forecasts how much revenue the business will need to cover:

- a commercial return to investors that fund the network's assets and operations
- efficient operating and maintenance costs
- asset depreciation costs
- taxation costs.

Figure 5.4 How gas pipeline revenue and charges are set



WACC: weighted average cost of capital.

Note: Revenue adjustments from incentive schemes encourage pipeline businesses to manage their operating and capital expenditure efficiently and to innovate.

Source: AER.

Network assets have a long life, so investment costs are recovered over the economic life of the assets, which may run to several decades. The amount recovered each year is called depreciation and it reflects the lost value of network assets each year through wear and tear and technical obsolescence.

Additionally, the shareholders and lenders that fund these assets must be paid a commercial return on their investment. Those returns are forecast to absorb around 39% of revenues (54% for transmission and 37% for distribution) in the current access periods. The returns are calculated by multiplying:

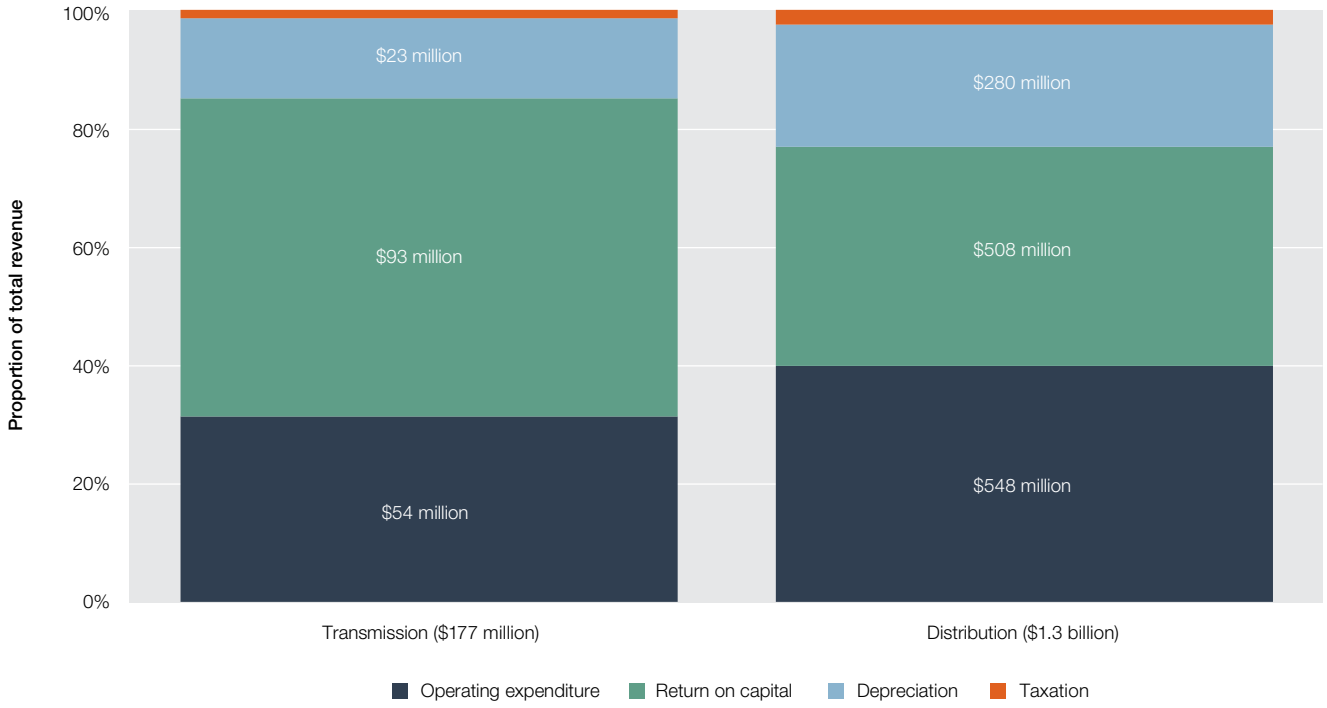
- the value of the network's RAB
- the rate of return that the AER allows based on the forecast cost of funding those assets through equity and debt.[337]

Operating and maintenance costs are also forecast to absorb around 39% of revenues (31% for transmission and 40% for distribution) in the current access periods. Overheads, taxation and other costs account for the remainder of a pipeline's revenue. Figure 5.5 illustrates the composition of pipeline revenues in current gas transmission and distribution decisions.

Gas pipeline businesses can also earn additional revenue through regulatory incentives that encourage the efficient management of operating and capital expenditure programs (section 5.5.2).

337 The return on equity is the return that shareholders of the business will require for them to continue to invest. The return on debt is the interest rate that the network business pays when it borrows money to invest.

Figure 5.5 Composition of average annual gas pipeline revenues



Note: CPI adjusted to June 2022 dollars. Gas pipeline businesses also receive bonuses or penalties that impact on annual network revenues. These bonuses/penalties are not material and are not considered in Figure 5.5.

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

5.6.1 Recent AER access arrangement decision

In April 2022 the AER approved a target revenue of $223 million ($45 million per year) for APT's Roma to Brisbane Pipeline (Queensland) for the current access period.[338] This pipeline transports natural gas between the Wallumbilla gas hub, near Roma, and Brisbane and regional centres in between (Figure 5.6).

The target revenue is $21 million (9%) less than the target revenue used to determine tariffs in the 2017–2022 period. The revenue allowance included a reduction in the return on capital and depreciation, which were marginally offset by an increase in operating expenditure.

The AER's final decision affects the component of a customer bill relating to gas transmission tariffs, which represent approximately 3.4% on average of a Queensland retail gas consumer's annual bill.[339]

Figure 5.6 Recent AER access arrangement decision

	Revenue	Capital expenditure	Operating expenditure	Annual impact on residential bill
Roma to Brisbane Pipeline	$233m (▼9%)	$39m (▼47%)	$105m (▲30%)	▲0.1%

338 The current regulatory period is the period in place at 1 July 2022.

339 APTPPL, 'Roma to Brisbane Pipeline 2022–27 access arrangement, Reset RIN Workbook 5 Indicative bill impacts', AER website, 1 July 2021, accessed 5 April 2022.

5.7 Revenue

All fully regulated gas transmission pipelines and distribution networks are regulated under a price cap. Network businesses can earn above or below forecast revenue over time due to changes in demand. If actual demand exceeds forecast demand, the business keeps the additional revenue. Conversely, if actual demand is less than forecast revenue the business is exposed to the shortfall.

Figure 5.7 provides a breakdown of the amount of revenue gas distribution networks earned in 2021 and how this compared with previous years.

Figure 5.7 Revenue in 2021

	2021 (actual)	Compared to 2020	Compared to peak (year)
Transmission	$201m (excl. Amadeus)	▲6.5m (▲3%) (excl. Amadeus)	▼11%(2012) (excl. Amadeus)
Distribution	$1.5b	▼$113m (▼7%)	▼15% (2015)

Note: Amadeus Gas Pipeline's actual revenue is confidential as it contains commercially sensitive information.

Figure 5.8 provides a snapshot of the key forecasts from the AER's revenue decisions for the current regulatory periods and how they compare with forecasts from the previous period.[340]

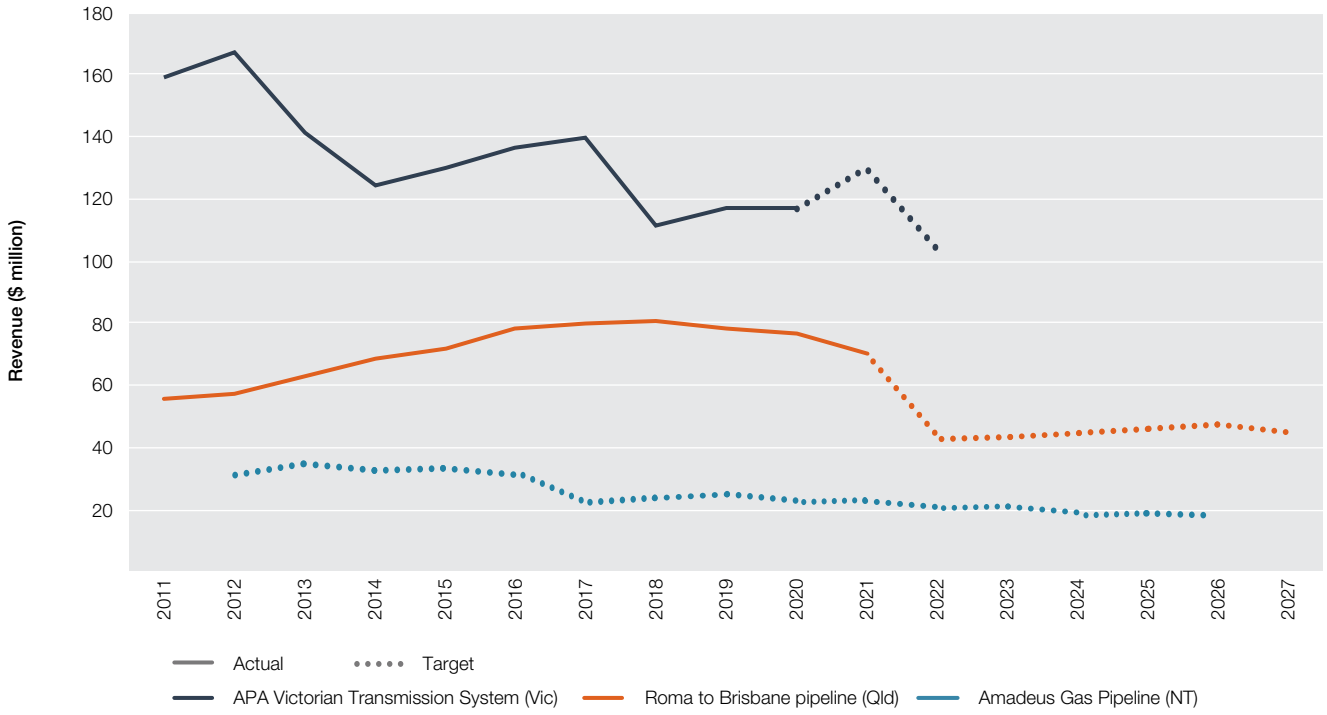
Figure 5.8 AER gas pipeline revenue decisions

	Revenue	Capital expenditure	Operating expenditure
Transmission	$872m (▼3%)	$311m (▲6%)	$296m (▼10%)
Distribution	$6.8b (▼0.6%)	$3.0b (▼4%)	$2.8b (▲8%)
Total	$7.6b (▼0.9%)	$3.3b (▼3%)	$3.1b (▲6%)

Note: Gas pipeline revenue decisions for the current access arrangement periods.

340 The current regulatory period is the period in place at 1 July 2022.

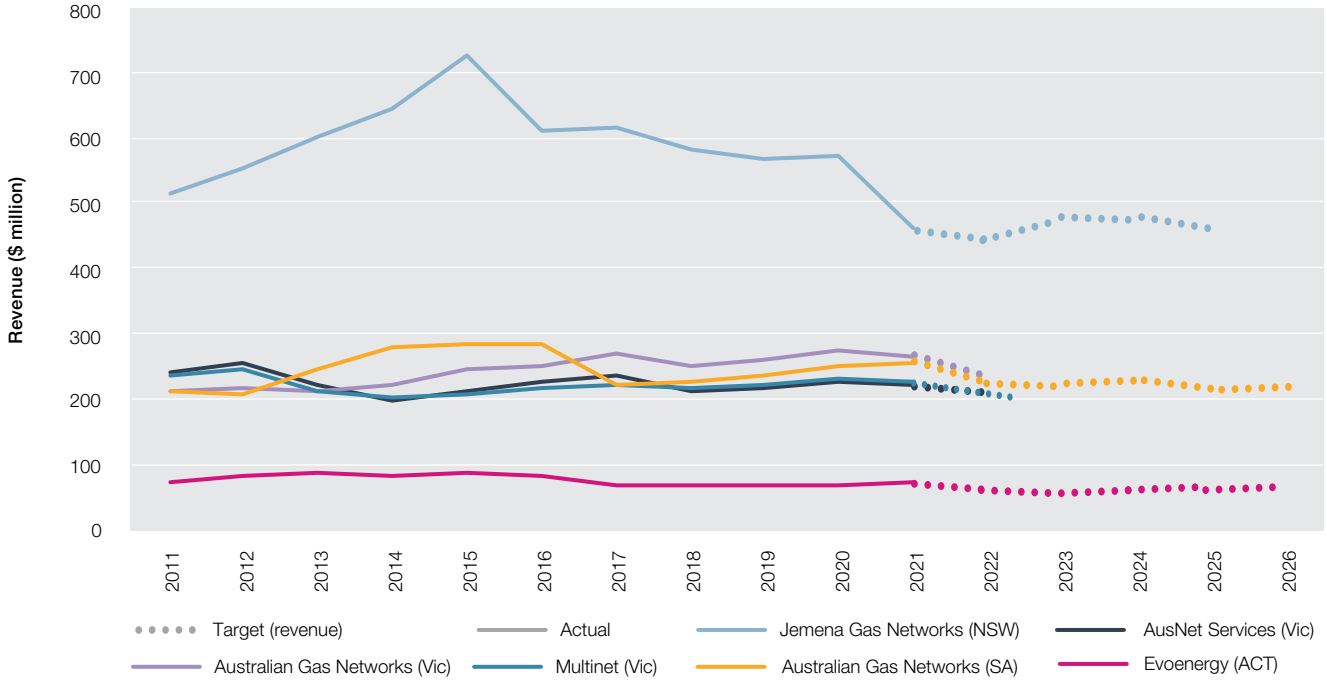
Figure 5.9 Revenue – gas transmission pipelines



Note: All data are adjusted to June 2022 dollars, based on forecasts of the CPI. Victorian pipeline businesses report on a calendar year basis (year ending 31 December). All other pipeline businesses report on a financial year basis (year ending 30 June). The data show outcomes for the reporting period ending in that year (for example, the 2017–18 reporting year is shown as 2018). Amadeus Gas Pipeline's actual revenue data is confidential.

Source: AER modelling; annual reporting RIN responses.

Figure 5.10 Revenue – gas distribution pipelines



Note: All data are adjusted to June 2022 dollars, based on forecasts of the CPI. Victorian pipeline businesses report on a calendar year basis (year ending 31 December). All other pipeline businesses report on a financial year basis (year ending 30 June). The data show outcomes for the reporting period ending in that year (for example, the 2017–18 reporting year is shown as 2018).

Source: AER modelling; annual reporting RIN responses.

Some key drivers of transmission pipeline and distribution network revenues have eased in recent years. Previous access arrangements were made at a time of increased pipeline investment in response to ageing assets and forecasts of rising energy demand. However, capital expenditure on both distribution and transmission pipelines decreased in 2016 and has since plateaued. Pipeline and network businesses also had higher financing costs due to instability in global financial markets.

In gas transmission, revenues are forecast to fall by 18% for the Amadeus Gas Pipeline (Northern Territory). However, the Victorian Transmission System is forecast to increase revenue by 3%, reflecting an increased RAB following new investment from 2013 to 2017.

In gas distribution, revenues are forecast to increase by 13% for AGN (Victoria), 9% for AGN (South Australia) and 3% for Multinet (Victoria) over the current period. Conversely, revenues are forecast to decrease by 11% for Jemena (NSW), 6% for Evoenergy (ACT) and 1.9% for AusNet Services (Victoria).

Weaker domestic gas demand in recent years – caused by significantly higher gas prices – reduced forecast revenue needs for most pipeline businesses.

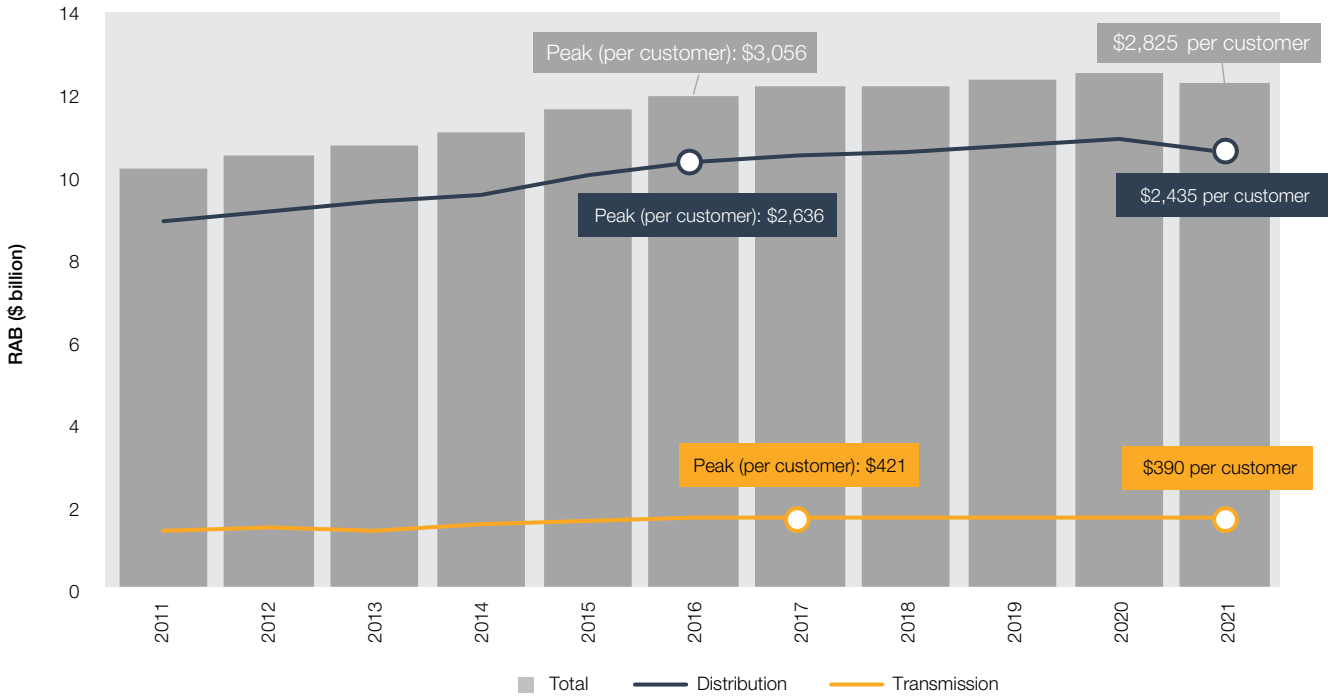
Despite the recent reduction in total gas pipeline and network revenues, additional 'program-specific' revenue is still needed to cover new programs, such as AGN's (South Australia) new Vulnerable Customer Assistance Program (VCAP) during the current access period. The objective of the VCAP is to allow AGN to develop a better understanding of the needs of its vulnerable customers and put in place measures to support these customers.

5.8 Regulatory asset base

The RAB for a gas pipeline business represents the total economic value of assets that provide services to customers. The value of the RAB substantially impacts a gas pipeline owner's revenue requirement.

Capital investment approved by the AER is added to a pipeline's RAB, on which future returns are earned. Reduced investment from 2015 to 2020 slowed RAB growth. Further reductions in investment saw the RAB decrease by $30 million (2%) to $12.3 billion ($1.7 billion for transmission pipelines and $10.6 billion for distribution networks) in 2021 (Figure 5.11).

Figure 5.11 Regulatory asset base – gas pipelines



Note: All data are adjusted to June 2022 dollars, based on forecasts of the CPI. Victorian pipeline businesses report on a calendar year basis (year ending 31 December). All other pipeline businesses report on a financial year basis (year ending 30 June). The data show outcomes for the reporting period ending in that year (for example, the 2017–18 reporting year is shown as 2018).

Source: AER modelling.

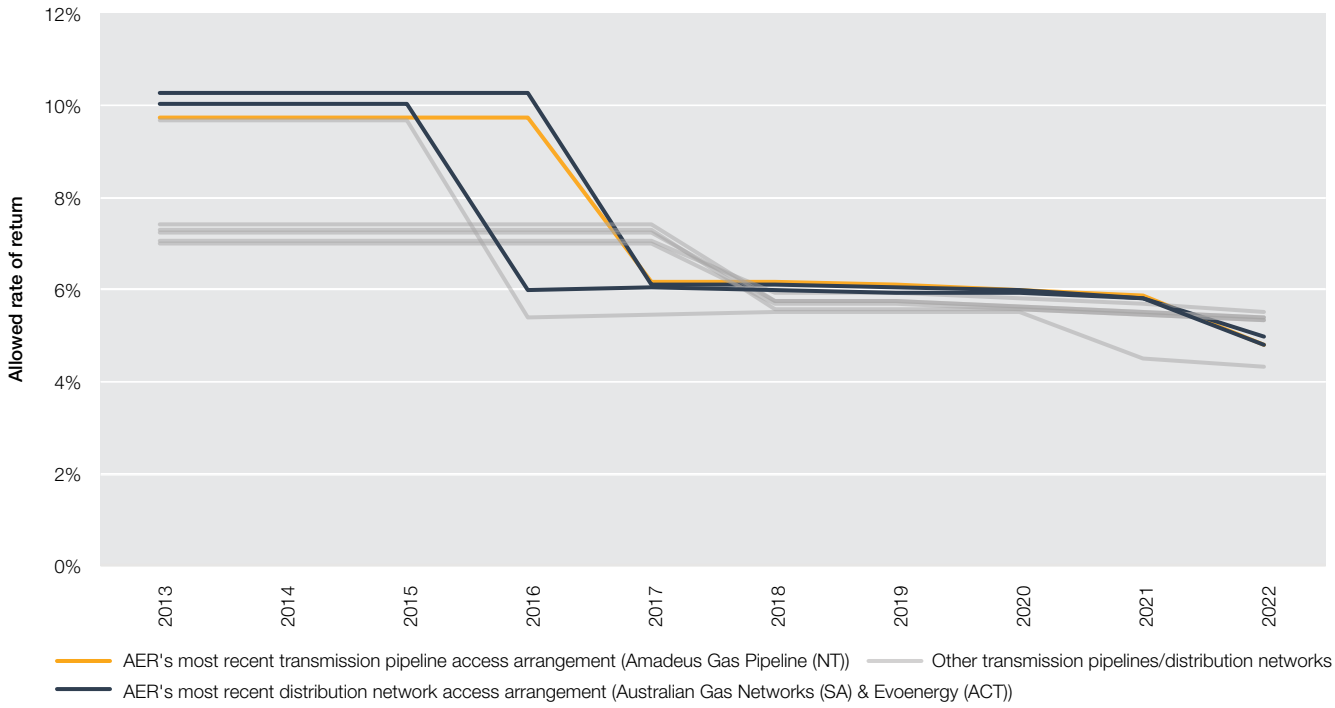
5.9 Rates of return

The shareholders and lenders that finance a gas pipeline business expect a commercial return on their investment. The rate of return estimates the financial return a gas pipeline or network business's financiers require to justify investing in the business. It is a weighted average of the return needed to attract both equity and debt funding. Equity funding is the dividends paid to a network business's shareholders and debt funding relates to interest paid on borrowings from banks and other lenders. Given this weighting approach, the rate of return is sometimes called the weighted average cost of capital (WACC).

The AER sets an allowed rate of return, but a network's actual returns can vary from the allowed rate. The difference can be due to several factors, such as the impact of incentive schemes, forecasting errors, revenue over-recovery or under-recovery under a revenue cap or the revenue smoothing process. The AER calculates allowed returns each year by multiplying the RAB by the allowed rate of return.[341]

Legislation introduced in 2018 provided for the AER to make binding rate of return determinations that apply to all regulated gas pipeline businesses. This change, along with lower financing costs, reduced the average allowed rate of return from around 10% at the beginning of the 2010s, to less than 6% (Figure 5.12). This reduction translated to significantly lower network revenues and gas pipeline charges.

Figure 5.12 Allowed rates of return



Note: Allowed rate of return = nominal vanilla weighted average cost of capital (WACC). Victorian pipeline businesses report on a calendar year basis (year ending 31 December). All other pipeline businesses report on a financial year basis (year ending 30 June). The data show outcomes for the reporting period ending in that year (for example, the 2017–18 reporting year is shown as 2018).

Source: AER decisions on gas pipeline access arrangements; AER decision following the remittal by the Australian Competition Tribunal and Full Federal Court.

In recent months, some key inputs into rates of return have increased. For example, the risk-free rate is an important driver of allowed returns on equity and is estimated using required returns on Commonwealth Government Securities (CGSs), also known as Australian government bonds. Annual yields on 10-year CGSs were as low as 0.6% in March 2020, but over 2022 to the end of August have averaged roughly 3%. Similarly, annual yields on 5-year CGSs were as low as 0.25% in November 2020 but over 2022 to the end of August have averaged roughly 2.7%.[342] If risk-free rates, or other key inputs, remain at levels above lower recent rates, this will put upward pressure on fully regulated pipeline revenue over coming years.

341 For example, if the rate of return is 5% and the RAB is $10 billion, then the return to investors is $500 million. This return forms part of a gas pipeline business's revenue needs and must be paid for by customers.

342 RBA, Capital Market Yields – Government Bonds – Daily – F2, accessed 6 September 2022.

5.10 Investment

Investment requirements differ between the gas transmission and distribution sectors. Gas transmission investment typically involves large capital projects to expand existing pipelines (through compression, looping or extension) or constructing new infrastructure. Additionally, some transmission pipelines have been re-engineered for bi-directional flows.

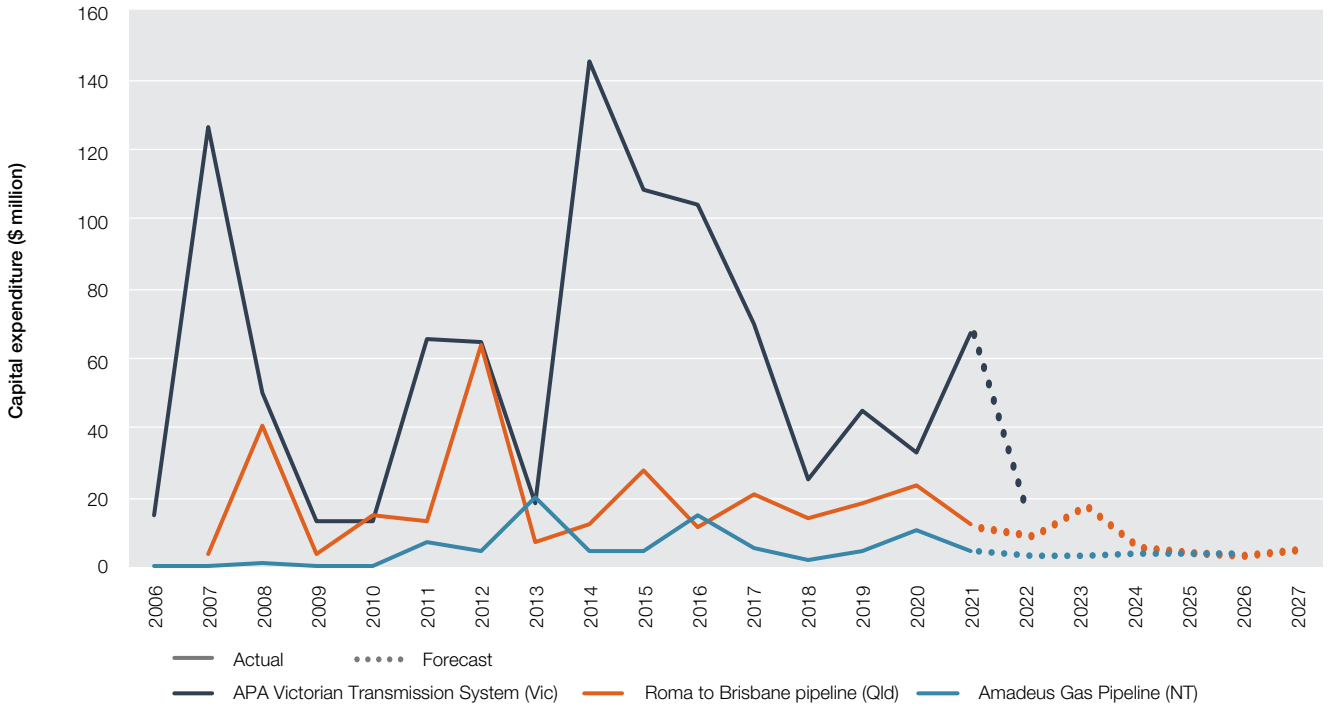
Gas distribution investment mainly comprises augmentation (expansion) of existing systems to cope with new customer connections, as in new housing estate developments. Older networks also require replacement programs for deteriorating infrastructure. For pipelines under full economic regulation (Table 5.2), the AER assesses whether investments are prudent and efficient based on criteria in the National Gas Rules.

Figure 5.13 provides a breakdown of the amount of investment network businesses undertook in 2021 and how this compared with previous years' expenditure and forecasts.

Figure 5.13 Capital expenditure in 2021

	2021 (actual)	Compared to 2020	Compared to forecast	Compared to peak (year)
Transmission	$84m	▲$15m (▲23%)	▲$55m (▲186%)	▼48% (2014)
Distribution	$623m	▼$20m (▼3%)	▲$8m (▲1.2%)	▼17% (2015)
Total	$707m	▲$4m (▲0.6%)	▲$62m (▲10%)	▼20% (2015)

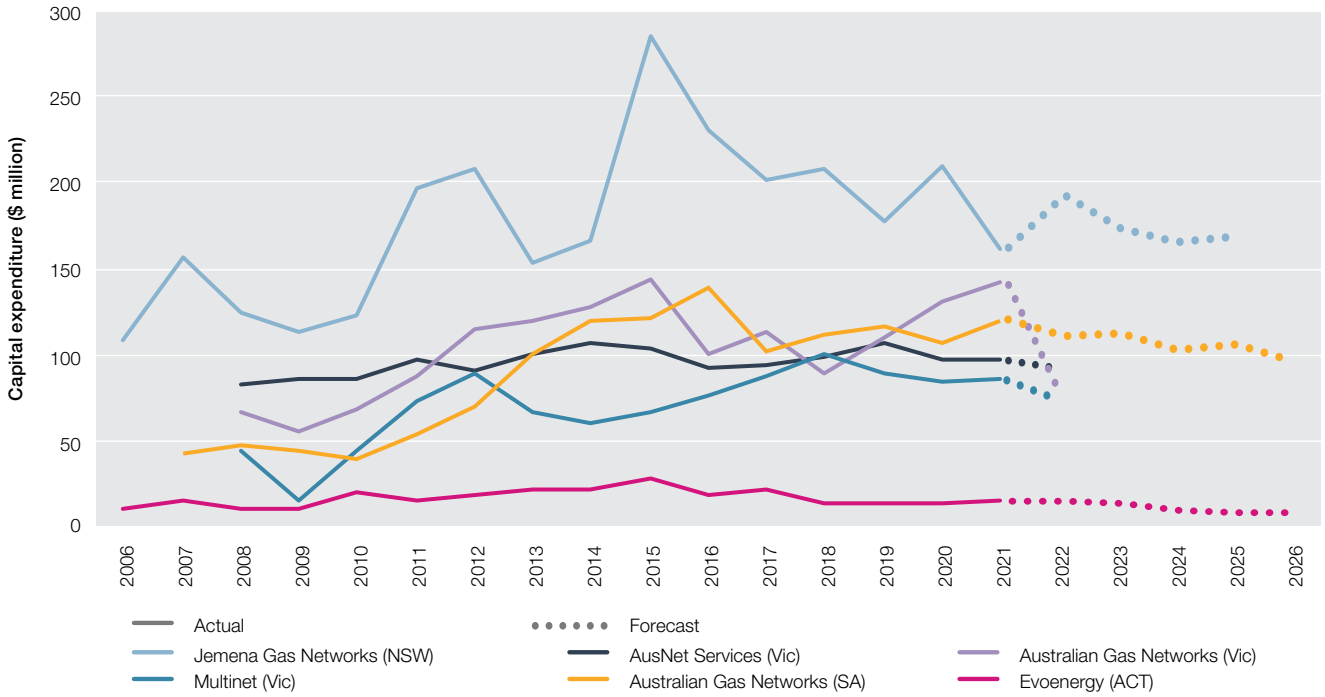
Figure 5.14 Capital expenditure – gas transmission pipelines



Note: All data are adjusted to June 2022 dollars, based on forecasts of the CPI. Victorian pipeline businesses report on a calendar year basis (year ending 31 December). All other pipeline businesses report on a financial year basis (year ending 30 June). The data show outcomes for the reporting period ending in that year (for example, the 2017–18 reporting year is shown as 2018).

Source: AER modelling; annual reporting RIN responses.

Figure 5.15 Capital expenditure – gas distribution networks



Note: All data are adjusted to June 2022 dollars, based on forecasts of the CPI. Victorian pipeline businesses report on a calendar year basis (year ending 31 December). All other pipeline businesses report on a financial year basis (year ending 30 June). The data show outcomes for the reporting period ending in that year (for example, the 2017–18 reporting year is shown as 2018).

Source: AER modelling; annual reporting RIN responses.

5.11 Operating costs

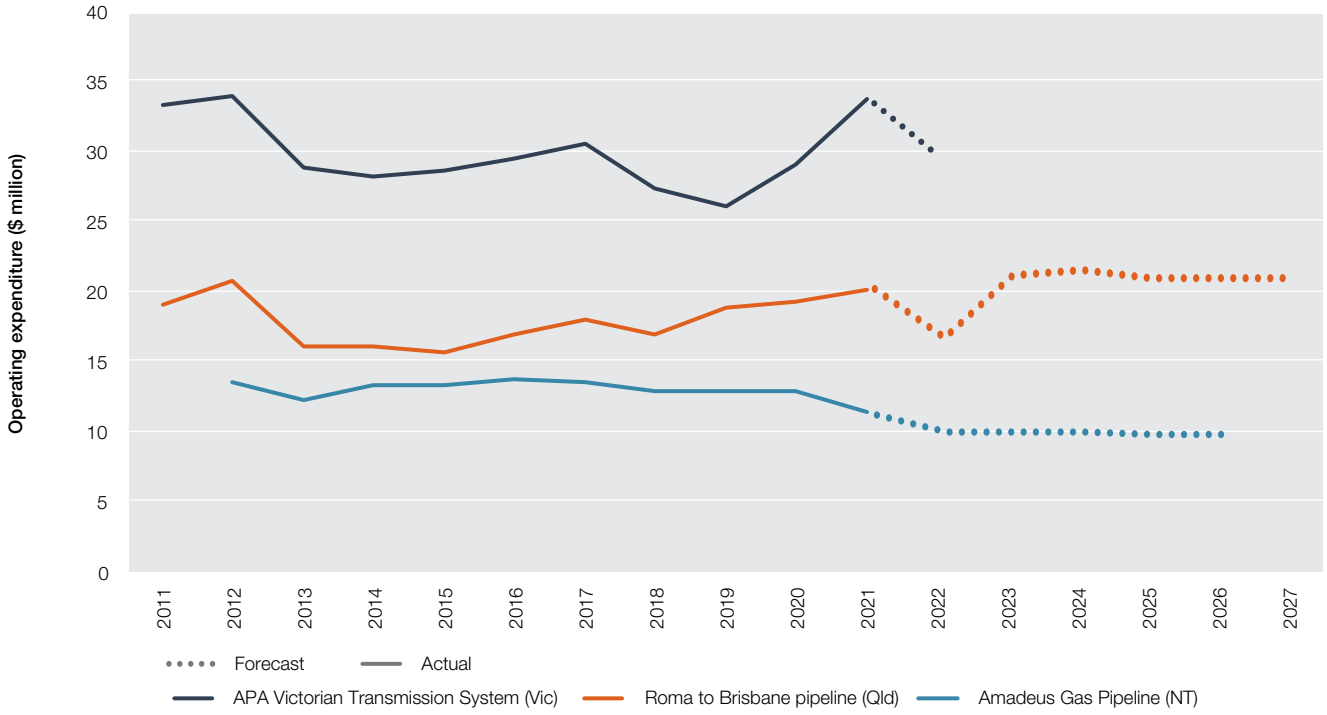
Gas pipelines incur operating and maintenance costs that absorb around 39% of their annual revenue (31% for transmission and 40% for distribution) (Figure 5.5). When assessing a gas pipeline network's efficient operating and maintenance costs, the AER considers cost drivers such as forecast customer growth, expected productivity improvements, changes in labour and materials costs and changes in the regulatory environment. Gas pipelines are subject to an efficiency carryover mechanism, which incentivises them to reduce operating expenditures where efficient to do so.

Figure 5.16 provides a breakdown of network businesses' operating costs in 2021 and how this compared with previous years' expenditure and forecasts.

Figure 5.16 Operating expenditure in 2021

	2021 (actual)	Compared to 2020	Compared to forecast	Compared to peak (year)
Transmission	$65m	▲$4m (▲6%)	▲$6m (▲10%)	▼4% (2012)
Distribution	$468m	▼$19m (▼4%)	▼$85m (▼15%)	▼8% (2012)
Total	$533m	▼$15m (▼3%)	▼$79m (▼13%)	▼8% (2012)

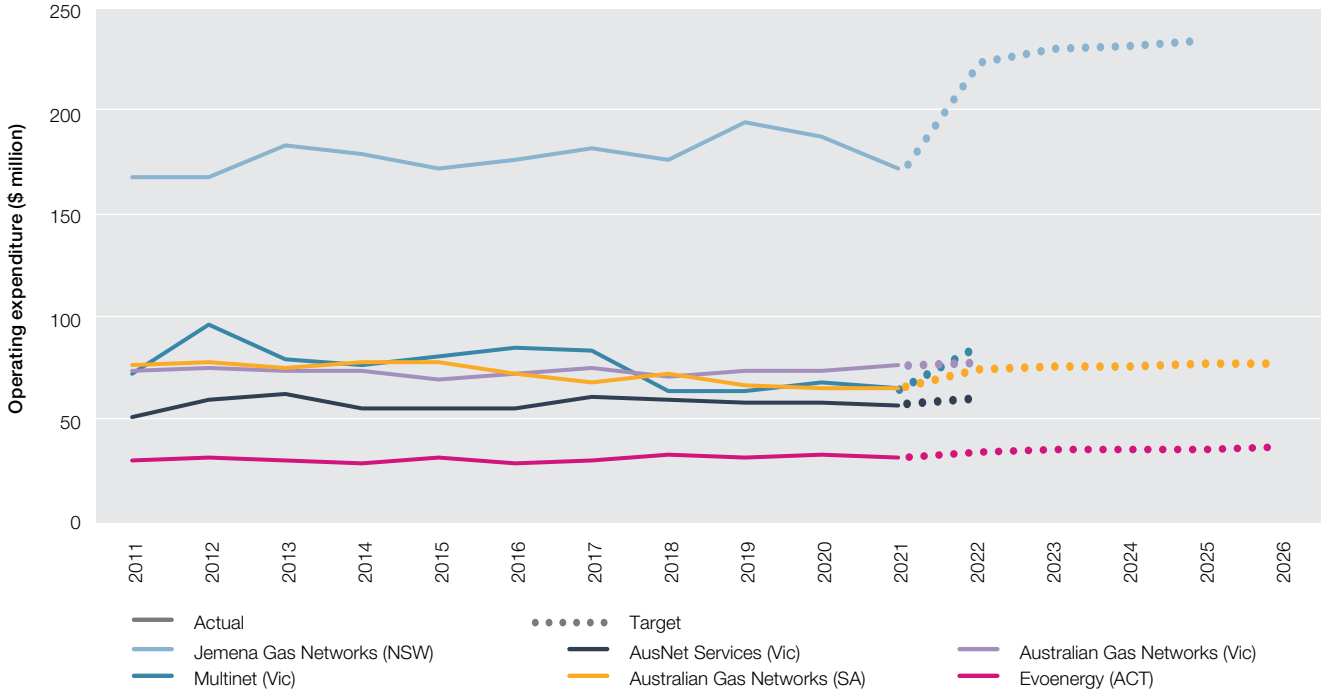
Figure 5.17 Operating expenditure – gas transmission pipelines



Note: All data are adjusted to June 2022 dollars, based on forecasts of the CPI. Victorian pipeline businesses report on a calendar year basis (year ending 31 December). All other pipeline businesses report on a financial year basis (year ending 30 June). The data show outcomes for the reporting period ending in that year (for example, the 2017–18 reporting year is shown as 2018).

Source: AER modelling; annual reporting RIN responses.

Figure 5.18 Operating expenditure – gas distribution pipelines



Note: All data are adjusted to June 2022 dollars, based on forecasts of the CPI. Victorian pipeline businesses report on a calendar year basis (year ending 31 December). All other pipeline businesses report on a financial year basis (year ending 30 June). The data show outcomes for the reporting period ending in that year (for example, the 2017–18 reporting year is shown as 2018).

Source: AER modelling; annual reporting RIN responses.