



5 Regulated gas pipelines

Australia's gas pipeline infrastructure consists of transmission and distribution pipelines. The role of the transmission pipelines is to transport gas from upstream producing basins to major population centres, power stations, and large industrial and commercial plants. Smaller urban and regional distribution pipelines transport gas to customers in local communities.

This chapter covers the scheme pipelines regulated by the AER, which is the regulator in all states and territories except Tasmania and Western Australia.⁴¹⁷

5.1 Snapshot

Across all transmission and distribution pipeline service providers for which the AER determines access prices, over the 12-month period to 30 June 2023:

- \$797 million was invested in capital projects, 3.1% more than in the previous year and the most since 2016. Investments were primarily driven by new connections and mains replacements of old and substantially depreciated cast iron pipelines with pipelines made from polyethylene or polyamide materials (section 5.10).
- \$619 million was spent on operating costs, 5% more than in the previous year and the most since 2017 (section 5.11).

The AER did not review any access arrangement applications for transmission or distribution pipelines in the 12-month period to 30 June 2024.

⁴¹⁷ The [Economic Regulation Authority \(ERA\)](#) administers separate regulatory arrangements in Western Australia. The [Office of the Tasmanian Economic Regulator \(OTTER\)](#) administers separate regulatory arrangements in Tasmania.

5.2 Gas pipeline characteristics

Pipeline service providers earn revenue by providing access (selling capacity) to parties needing to transport gas. These parties include:

- energy retailers seeking to buy natural gas in large volumes and onsell it to consumers
- commercial and industrial users
- liquefied natural gas (LNG) exporters, which buy gas directly from producers and contract with a pipeline service provider to transport it to export terminals.

The most common service provided by transmission pipelines is haulage – that is, transporting (or ‘shipping’) 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 or stored in a connected storage facility, 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.

Transmission pipelines typically have wide diameters and operate under high pressure to optimise shipping capacity. An interconnected transmission grid links gas basins and retail markets in all states and territories other than Western Australia (Figure 5.1).

Distribution pipelines are installed underground and consist of high, medium and low-pressure mains. The high and medium-pressure pipes 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.

Distribution pipeline service providers transport gas to energy customers, but they do not sell gas. Energy retailers purchase gas from producers and purchase pipeline services (which includes transportation) from pipeline service providers. This combination of gas and pipeline services is sold as a packaged retail product to customers. Many retailers offer both gas and electricity products.

The services provided by transmission pipelines continue to evolve to meet changing market needs, but distribution pipelines tend to offer fairly standard services – namely, allowing gas injections into a pipeline, conveying gas to supply points and allowing gas to be withdrawn.

The combined value of the capital bases for scheme pipelines for which the AER sets access prices is around \$13.3 billion.

Gas is distributed to most Australian capital cities, major regional areas and towns. Queensland and Victoria each have multiple pipeline service providers, while New South Wales (NSW), South Australia, Tasmania and the Australian Capital Territory (ACT) are each served by a single regulated service provider.⁴¹⁸ Gas is also distributed to export terminals in Queensland, where it is converted to LNG before being transported overseas via cargo ship.

In 2023, residential customers accounted for more than 97% of the total distribution customer base but only consumed around 42% of the total gas delivered within Australia. The other 3% of customers were either industrial or commercial customers and consumed the balance (58%) of the total gas delivered.

⁴¹⁸ Some pipelines cross state or territory boundaries. For example, Australian Gas Network's Victorian pipeline and Evoenergy's ACT pipeline both extend into NSW. Some jurisdictions also have smaller unregulated regional pipelines, such as the Wagga Wagga pipeline in NSW.

The combined value of the capital bases for scheme pipelines for which the AER sets access prices is around \$13.3 billion.⁴¹⁹ This comprises 3 transmission pipelines valued at \$2.1 billion and 6 distribution pipelines valued at \$11.2 billion. In total, the networks consist of around 80,000 kilometers of pipe and supply natural gas to more than 4.3 million residential customers and over 110,000 commercial and industrial customers (Figure 5.2 and Figure 5.3).

Box 5.1 Changing forms of regulation

Recent reforms to improve and simplify the gas pipeline regulatory framework have resulted in several significant changes to the National Gas Law and National Gas Rules (section 5.4).

Prior to the reforms, the National Gas Law provided for the following forms of regulation:

- full regulation for scheme pipelines
- light regulation for scheme pipelines
- Part 23 (National Gas Rules) regulation for non-scheme pipelines that provided third party access to pipeline services.

Under the reformed regulatory framework, gas pipelines are now classified as either:

- scheme pipelines, or
- non-scheme pipelines (section 5.4).

Expansions of the capacity of a pipeline are treated as part of the same pipeline.

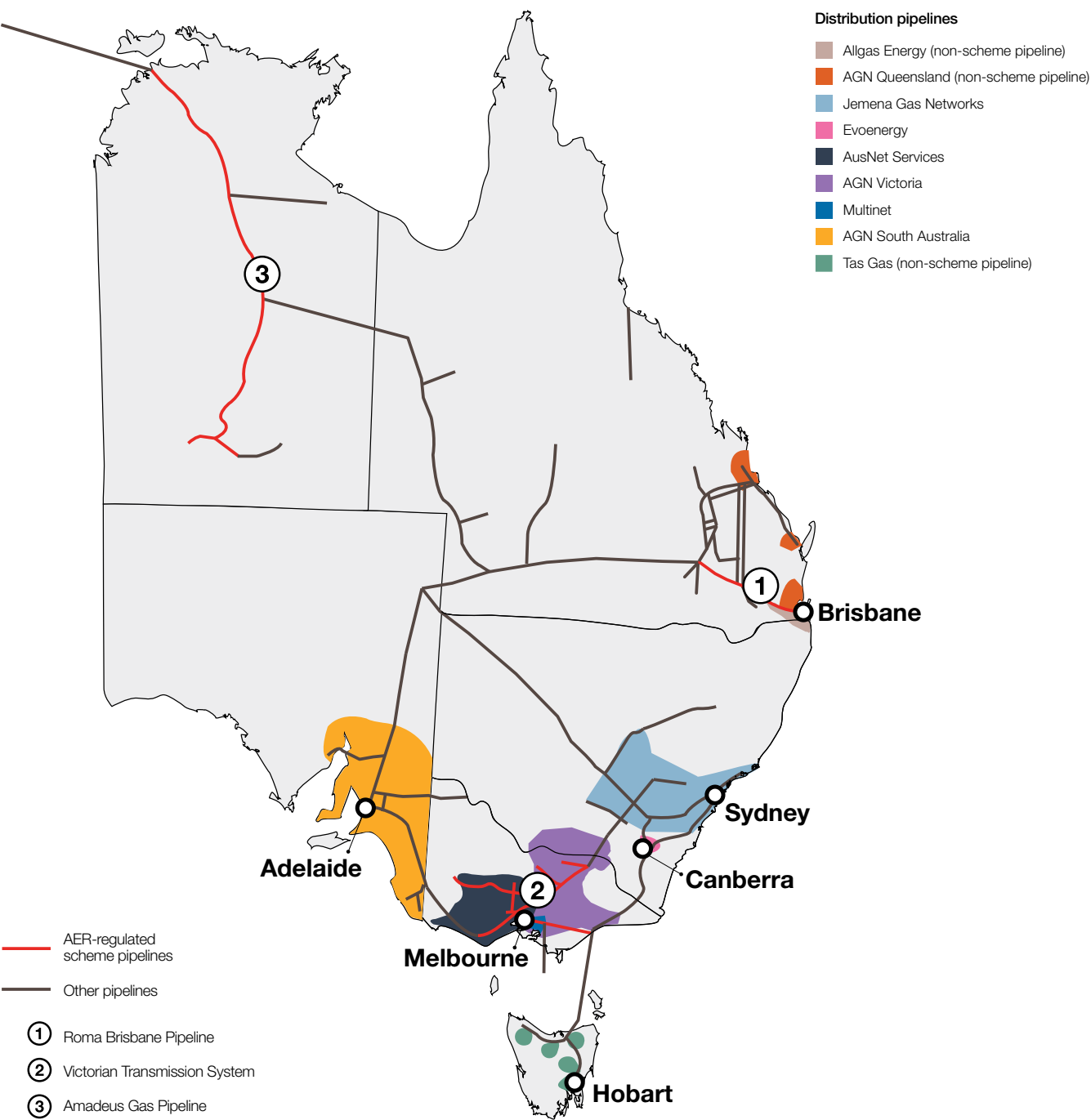
Previous publications of the State of the energy market focused on the pipeline service providers for which the AER assesses the terms and conditions of access to nominated reference services using a building block approach to assess the service provider's efficient costs (section 5.5.1). Before the reforms this included all fully regulated scheme pipelines.

In this report we continue to focus on the pipeline service providers we have focused on in the past.^a

^a Three transmission pipeline service providers – Roma Brisbane Pipeline (Queensland), APA Victorian Transmission System (Victoria) and the Amadeus Gas Pipeline (Northern Territory) – and 6 distribution pipeline service providers in NSW, Victoria, South Australia and the ACT.

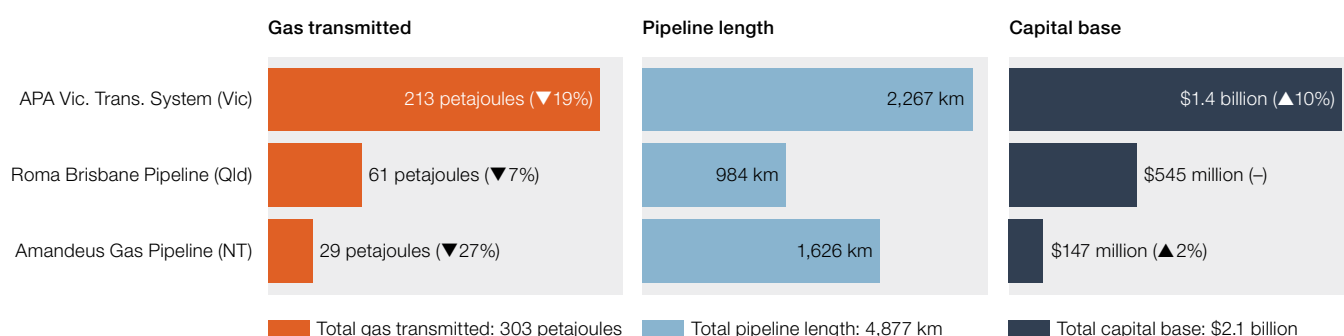
⁴¹⁹ Capital bases capture the total economic value of assets that are providing pipeline services to customers. These assets have been accumulated over time and are at various stages of their economic lives.

Figure 5.1 Major gas transmission and distribution pipelines



Source: AER.

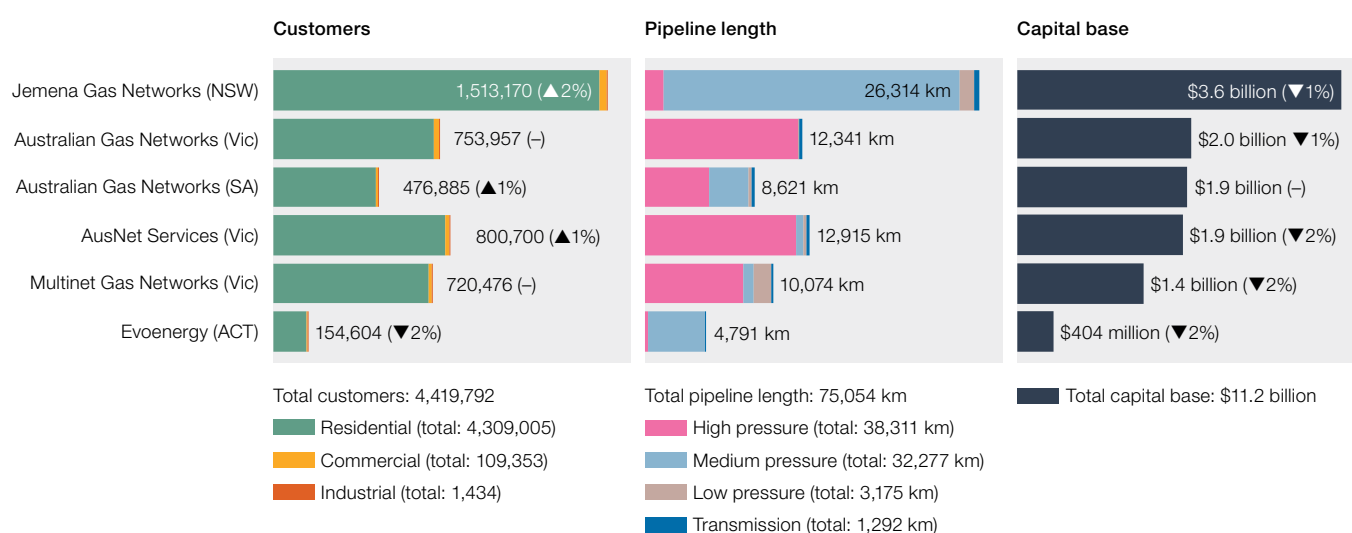
Figure 5.2 Gas transmission pipelines regulated by the AER



Note: Capital base is adjusted to June 2023 dollars. The capital base is the forecast value of pipeline assets based on the closing capital base at 30 June 2023, except for APA Victorian Transmission System (31 March 2023). Pipeline length includes looping where applicable. Looping refers to 2 or more lengths of pipeline along a route – for example, where the existing pipeline has been duplicated.

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

Figure 5.3 Gas distribution pipelines regulated by the AER



Note: Capital base is adjusted to June 2023 dollars. The capital base is the forecast value of pipeline assets based on the closing capital base at 30 June 2023, except for the Victorian distribution pipelines (31 December 2023).

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

5.3 Gas pipeline ownership

Australia's gas pipelines are privately owned. The publicly listed APA Group (APA) is Australia's largest pipeline service provider, 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 the ownership structure of key gas transmission pipelines.

Table 5.1 Ownership of key gas transmission pipelines

Pipeline service provider	Location	Capacity (TJ/day)	Regulatory status	Owner
Roma Brisbane Pipeline	Qld	167 (145)	Scheme pipeline	APA Group
Longford to Melbourne Pipeline	Vic	1,160	Scheme pipeline	APA Group
Amadeus Gas Pipeline	NT	165	Scheme pipeline	APA Group
South West Queensland Pipeline (Wallumbilla to Moomba)	Qld-SA	512 (340)	Non-scheme pipeline (currently under review by AER)	APA Group
Queensland Gas Pipeline (Wallumbilla to Gladstone)	Qld	149 (37)	Non-scheme pipeline	Jemena (State Grid Corporation of China, 60%; Singapore Power, 40%)
Carpentaria Pipeline (South West Qld to Mount Isa)	Qld	119 (65)	Non-scheme pipeline	APA Group
GLNG Pipeline (Surat-Bowen Basin to Gladstone)	Qld	1,430	13-year no coverage	Santos, 30%; PETRONAS, 27.5%; Total, 27.5%; KOGAS, 15%
Wallumbilla Gladstone Pipeline	Qld	1,598	Non-scheme pipeline/ 15-year no coverage	APA Group
APLNG Pipeline (Surat-Bowen Basin to Gladstone)	Qld	1,760	12-year no coverage	Origin Energy, 37.5%; ConocoPhillips, 37.5%; Sinopec, 25%
Moomba to Sydney Pipeline	SA-NSW	565 (193)	Non-scheme pipeline	APA Group
Moomba to Adelaide Pipeline	SA	249 (85)	Non-scheme pipeline	QIC Global Infrastructure
Eastern Gas Pipeline (Longford to Sydney)	Vic-NSW	350	Non-scheme pipeline	Jemena (State Grid Corporation of China, 60%; Singapore Power, 40%)
Victoria Northern Interconnect	Vic-NSW	218 (224)	Scheme pipeline	APA Group
SEA Gas Pipeline (Port Campbell to Adelaide)	Vic-SA	251	Non-scheme pipeline	APA Group, 50%; Retail Employees Superannuation Trust, 50%
Tasmanian Gas Pipeline (Longford to Hobart)	Vic-Tas	129	Non-scheme pipeline	Palisade Investment Partners
Northern Gas Pipeline (Tennant Creek to Mount Isa)	NT-Qld	90	Non-scheme pipeline	Jemena (State Grid Corporation of China, 60%; Singapore Power, 40%)
Bonaparte Pipeline	NT	108	Non-scheme pipeline	Energy Infrastructure Investments (Marubeni, 49.9%; Osaka Gas, 30.2%; APA Group, 19.9%)

Note: TJ/day: terajoules per day. For bidirectional pipelines, reverse capacity is shown in brackets. The Victoria Northern Interconnect is part of the Victorian Transmission System.

Source: AER; ACCC, interim reports of gas inquiry 2017-2025; corporate websites; [Gas Bulletin Board](#).

Table 5.2 summarises the ownership structure of key gas distribution pipelines.

Table 5.2 Ownership of gas distribution pipelines

Pipeline service provider	Location	Owner
Jemena Gas Networks	NSW	Jemena (State Grid Corporation of China, 60%; Singapore Power, 40%)
AusNet Services	Vic	Australian Energy Holdings No 4 Pty Limited
Multinet Gas Network	Vic	CK Infrastructure Holdings
Australian Gas Networks	Vic	CK Infrastructure Holdings
Australian Gas Networks	SA	CK Infrastructure Holdings
Evoenergy	ACT	ICONWater (ACT Government), 50%; Jemena, 50%
Allgas Energy	Qld	Marubeni, 40%; SAS Trustee Corp, 40%; APA Group, 20%
Australian Gas Networks	Qld	CK Infrastructure Holdings

Source: Corporate websites.

5.4 Regulatory objective and approach

One of the AER's key objectives is to deliver efficient regulation of monopoly electricity and gas infrastructure while incentivising networks to become platforms for energy services.⁴²⁰ The National Gas Law and National Gas Rules set out the regulatory framework for gas pipelines.

In May 2023, Energy Ministers agreed to amend the national energy laws to incorporate an emissions reduction objective into the National Gas Objective.⁴²¹ The amended National Gas Objective seeks to promote efficient investment in, and efficient operation and use of, covered gas services for the long-term interests of consumers of covered gas with respect to:

- price, quality, safety, reliability and security of supply of covered gas
- the achievement of targets set by a participating jurisdiction
 - for reducing Australia's greenhouse gas emissions, or
 - that are likely to contribute to reducing Australia's greenhouse gas emissions.

On 1 February 2024, the National Gas Rules were amended to enable pipeline service providers to include expenditure that contributes to achieving emissions reduction targets in their access arrangement proposals. This amendment to the National Gas Rules will provide greater clarity to Australia's energy market bodies⁴²² for transitioning Australia's energy system to net zero by 2050.

The regulatory package of reforms introduced in March 2023 changed the way gas pipelines are regulated in order to increase market transparency and improve access to pipelines on fair terms. Under the reforms:⁴²³

- The 3 previous forms of regulation (full or light regulation for scheme pipelines, and non-scheme pipelines) have been condensed into 2 forms of regulation. Under the revised regulatory framework, gas pipelines are classified as either 'scheme' or 'non-scheme' pipelines and expansions of the capacity of a pipeline are treated as part of the same pipeline.
- The AER is now responsible for determining the form of regulation by applying a regulatory determination test.
- Pipeline service providers may apply to the AER for a greenfields incentive determination and a greenfield price protection determination before commissioning new pipelines.

420 ACCC and AER, [ACCC and AER Corporate plan 2024–25](#), 30 August 2024, accessed 10 September 2024.

421 The National Electricity Objective (NEO), National Energy Retail Objective (NERO) and the National Gas Objective (NGO) govern and guide the Australian Energy Market Commission (AEMC) in all its activities under the relevant national energy legislation.

422 The Australian Energy Market Commission (AEMC), the Australian Energy Market Operator (AEMO), the Australian Energy Regulator (AER) and Western Australia's Economic Regulation Authority (ERA).

423 AER, [Compliance bulletin – new obligations on gas pipeline, compression and storage service providers](#), Australian Energy Regulator, 7 June 2023, accessed 16 May 2024.

- All pipelines are subject to the same access negotiation and dispute resolution frameworks and ring-fencing requirements.
- The AER is responsible for introducing a new dispute resolution mechanism that includes mediation as an option for small gas shippers to use in pipeline access disputes.
- All pipeline service providers must publish prescribed transparency information under a unified information disclosure framework unless they hold an exemption. Additionally, standalone compression and storage facilities are required to publish standing terms and price information. The AER has a role in monitoring and reporting on this information and is scheduled to publish its first biennial gas pipelines report in early 2025.

In May 2024, the Essential Services Commission (Victoria) released its final decision on the Gas Distribution Code of Practice, which sets out the minimum standards for the operation and use of the Victorian gas distribution system.⁴²⁴

The new code will take effect on 1 October 2024 and will:

- enable the Essential Services Commission to use its enforcement powers to effectively monitor and enforce the rules on gas distributors, including through civil penalty provisions
- require gas distribution pipeline service providers to provide clear information to customers on their websites, including how customers can disconnect or abolish their gas connections.
- remove duplication with other regulations to streamline the regulatory framework.

The new code also removes inefficient incentives for new gas connections. From 1 January 2025, customers who may seek to establish a new gas connection will pay up-front installation costs for new gas connections, consistent with the current practice for new electricity and water connections.

The AER is responsible for determining the form of regulation by applying a regulatory determination test.

In August 2024, the Essential Services Commission of South Australia (ESCOSA) made a draft decision on the protections that Australian Gas Networks (South Australia) must deliver for consumers during its forthcoming (1 July 2026 to 30 June 2031) access arrangement period. The draft decision includes proposals to:

- extend the application of the Australian Gas Networks (South Australia) distribution licence so it also applies to distribution of hydrogen and other renewable gases
- continue monitoring network reliability and create service standards if required
- require that Australian Gas Networks (South Australia) reports directly to the public on aspects of its operational performance
- begin monitoring the timely provision of disconnection and abolishment services
- ensure that consumers receive information about how to disconnect from the gas network
- require Australian Gas Networks (South Australia) to seek the ESCOSA's approval if it proposes to disable any part of the gas distribution network in the future.
- create specific timeframes for reconnecting customers after de-energisation where Australian Gas Networks (South Australia) is obliged to do so by the National Energy Retail Rules
- make a series of changes to the Gas Metering Code to improve consistency with other regulatory instruments, provide for changes in the composition of gas and accommodate possible expanded use of digital meters.

ESCOSA will consider stakeholder and public feedback and make a final decision in early 2025.⁴²⁵

⁴²⁴ Essential Services Commission, [New code of practice for gas distributors to apply from 1 October 2024](#), media release, Essential Services Commission, 9 May 2024.

⁴²⁵ ESCOSA, [Australian Gas Networks regulatory framework review 2026–2031 – draft decision](#), Essential Services Commission of South Australia, 5 August 2024, accessed 12 August 2024.

5.4.1 Forms of regulation

Under the current regulatory framework, the form of regulation of a scheme or non-scheme pipeline can change if:

- the AER makes a determination that a scheme pipeline should become a non-scheme pipeline (a scheme pipeline revocation determination) or a non-scheme pipeline should become a scheme pipeline (a scheme pipeline determination)
- a non-scheme pipeline service provider elects for a pipeline to become a scheme pipeline (a scheme pipeline election).

The AER is also responsible for determining the level of regulation for new pipelines (through greenfields determinations) and the classification and reclassification of pipelines. This role was previously fulfilled by the National Competition Council and the jurisdictional minister.

Under the reforms, 'light regulation' has been abolished. All pipelines are now subject to a range of uniform access, transparency and ring-fencing requirements. Service providers operating scheme pipelines are subject to more comprehensive regulatory obligations, including:

- a regulatory-oriented access dispute process
- periodically submitting an access arrangement revisions proposal to the AER for approval⁴²⁶
- submitting a reference service proposal to the AER 12-months prior to submitting the relevant access arrangement revisions proposal.

In deciding whether a pipeline service should be specified as a reference service, the AER must have regard to the reference service factors specified in the National Gas Rules. Services which the AER determines meet the reference service factors will be determined to be reference services. Services which the AER determines do not meet the reference service factors will be treated as non-reference services.

Determining a service to be a reference service, as compared to it being a non-reference service, makes a significant difference to how the service is regulated. Reference services are subject to AER price regulation. That is, the AER sets maximum prices, or price caps, which gas network pipeline service providers may charge network users for reference services. Gas network pipeline service providers may choose to charge network users less than the price caps we determine but they may not charge more. Services the AER determines to be non-reference services are not subject to price regulation. This means gas pipeline service providers set their own charges for non-reference services.

All new pipelines will be non-scheme pipelines when they are commissioned.

In October 2024, the AER published its draft decision for the South West Queensland Pipeline (SWQP)⁴²⁷ form of regulation review.⁴²⁸ The draft decision is that the SWQP, owned and operated by APA Group, should remain a non-scheme pipeline, subject to lighter handed regulation.

The AER found the benefits of scheme regulation do not outweigh the increased costs of scheme regulation because:

- it is uncertain whether scheme regulation will substantially improve prices
- access under non-scheme regulation has the potential to improve in the future.

However, the AER also found that prices for SWQP services may be high and shippers face challenges in negotiating the terms and conditions of access to the pipeline. The AER has proposed to monitor prices, terms and conditions on the pipeline as capacity becomes available for contracting. If prices on the SWQP increase without reasonable cause, it could justify a further review of the form of regulation applied to this pipeline.

⁴²⁶ A pipeline is a scheme pipeline if it was a covered pipeline (other than a light regulation pipeline) immediately before 2 March 2023.

⁴²⁷ The South West Queensland Pipeline is a bidirectional transmission pipeline consisting of 2 parallel pipelines, linking Wallumbilla in South East Queensland to Moomba in South Australia.

⁴²⁸ AER, [Form of regulation review: South West Queensland Pipeline – Draft decision](#), Australian Energy Regulator, 9 October 2024, accessed 16 October 2024.

The review of the SWQP is the first of a series of AER initiated form of regulation reviews. The SWQP was chosen as the first pipeline for a review due to its importance to the east coast gas system.

5.4.2 Pipeline classification and reclassification

In July 2024, the AER published a new version of the *Pipeline regulatory determinations and elections guide* outlining its functions and powers under Part 4 of the National Gas Law and chapter 2 of the National Gas Rules. The guide outlines how the AER will approach regulatory determinations and how stakeholders can make applications about the regulatory treatment of a pipeline.⁴²⁹

Under the reforms, the default position is that a pipeline is a distribution pipeline if it is classified as a distribution pipeline under its jurisdictional licence or authorisation. Similarly, a pipeline is a transmission pipeline if it is classified as a transmission pipeline under its licence/authorisation. For new pipelines, if the jurisdictional licence contains no classification, the pipeline service provider must apply to the AER for a classification decision.⁴³⁰ A service provider may apply to the AER for reclassification if it considers it has been wrongly classified. The AER may also, on its own initiative, make a decision for a pipeline to be reclassified.

The first of the AER's scheduled biennial gas pipelines reports is due to be published in early 2025.

5.4.3 Greenfields pipeline projects

Before the reforms commenced, '15-year no coverage' determinations were made by the relevant minister on the recommendation of the National Competition Council. The minister was required to make the determination unless satisfied that all the coverage criteria were satisfied.

Under the reforms, a service provider for a greenfields pipeline project may apply to the AER (before commissioning) for a greenfields incentive determination. They may also apply for a greenfields price protection determination, either as part of the greenfields incentive determination application process or later if they obtain a greenfields incentive determination.⁴³¹

5.4.4 Prescribed transparency information for pipelines

Part 10 of the National Gas Rules prescribes the transparency information requirements that apply to all scheme and non-scheme pipeline service providers. This information is to assist users of the pipeline in negotiations with the pipeline service provider.

Before the reforms, service providers of light regulation pipelines and non-scheme pipelines were required to prepare prescribed transparency information under Parts 7 and 23 of the National Gas Rules, respectively. These Parts are repealed and have been replaced by Part 10.

Exemptions from certain requirements are available for pipeline service providers that meet the exemption criteria. The requirements to prepare, publish and maintain the information set out in the National Gas Rules and the pipeline information disclosure guidelines are classified as 'tier 1'⁴³² civil penalty provisions under the National Gas (South Australia) Regulations.⁴³³

429 AER, [Pipeline regulatory determinations and elections guide](#), Australian Energy Regulator, 30 July 2024, accessed 2 August 2024.

430 AGS, [Legal briefing – Gas pipeline reforms](#), 17 March 2023, accessed 16 May 2024. [Legal briefing – Gas pipeline reforms](#)

431 AGS, [Legal briefing – Gas pipeline reforms](#), 17 March 2023, accessed 16 May 2024.

432 Tier 1 provisions carry maximum penalties for corporations of \$10 million or, if greater, 3 times the benefit obtained from the breach if this can be determined, or if not, 10% of annual turnover.

433 Government of South Australia, [National Gas \(South Australia\) Regulations](#), accessed 16 May 2024.

5.4.5 Ring-fencing requirements

Under the reforms, all pipelines are subject to a set of requirements that previously only applied to some pipelines.⁴³⁴ Pipeline service providers must comply with ring-fencing provisions regarding related businesses, and provisions regarding associate contracts. The requirement is classified as a conduct provision and ‘tier 2’ civil penalty provision under the National Gas (South Australia) Regulations.⁴³⁵

The National Gas Rules provide for a service provider to apply to the AER for an exemption from the ring-fencing requirements. As at 1 August 2024, 2 exemptions were in place – APT Pipelines (Northern Territory)⁴³⁶ and Meridian SeamGas Joint Venture and WestSide Corporation Limited.⁴³⁷ In these cases, the AER considers that the costs of complying with the ring-fencing obligations outweigh any associated public benefit.

5.4.6 Monitoring and surveillance

Under the reforms, the AER is required to monitor the behaviour of pipeline service providers, including the prices charged for pipeline services, the information published by pipeline service providers, outcomes of access negotiations, dealings with associates and compliance with ring-fencing requirements.

The first of the AER’s scheduled biennial gas pipelines reports is due to be published in early 2025.

In addition to these recently assigned monitoring and surveillance responsibilities, the AER already publishes an annual electricity and gas networks performance report. The report provides an in-depth analysis of key outcomes and trends in the operational and financial performance of the transmission and distribution pipelines that, under the new framework, are classified as scheme pipelines.

5.5 How gas access prices are set

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

As with electricity, the AER uses a building block approach to assess a gas pipeline service provider’s revenue needs (section 5.5.1). 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.

Gas pipelines are capital intensive and require significant investment to install, operate and maintain the necessary infrastructure. This gives rise to a natural monopoly industry structure, where it is more efficient to have a single pipeline service provider than to have multiple providers offering the same service.

Because monopolies face little competitive pressure, they have opportunities and incentives to charge higher prices than they could charge in a competitive market. This monopolistic environment poses risks to consumers because pipeline charges make up around 40% of a residential customer’s gas bill (Figure 6.3 in chapter 6). To counter these risks, the role of the AER as the economic regulator is to replicate the incentives that pipeline service providers would face in a competitive market (that is, to control costs, invest efficiently and not overcharge consumers).

434 AGS, [Legal briefing – Gas pipeline reforms](#), 17 March 2023, accessed 16 May 2024.

435 Government of South Australia, [National Gas \(South Australia\) Regulations](#), accessed 14 June 2023.

436 AER, [Final decision on APTNT’s ring fencing exemption application](#), Australian Energy Regulator, 17 August 2011.

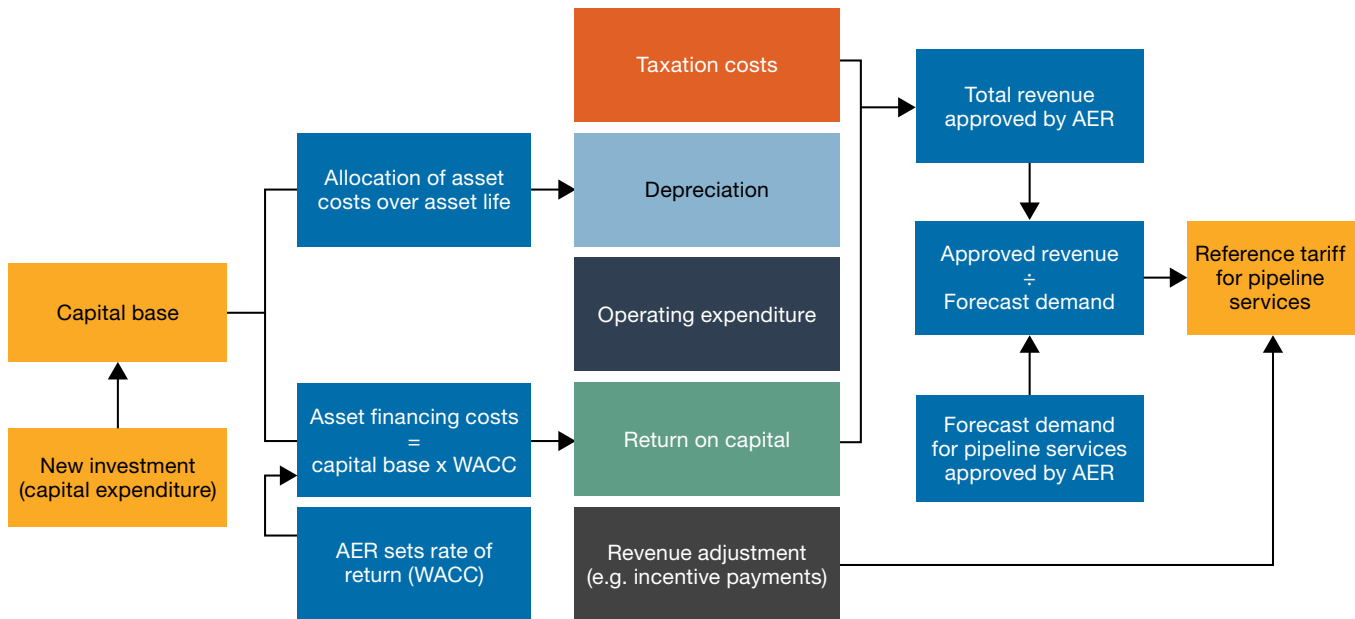
437 AER, [Final decision on ring fencing exemption application for Meridian SeamGas Joint Venture and WestSide Corporation](#), Australian Energy Regulator, 25 July 2012.

5.5.1 Building blocks of gas pipeline revenue

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

- a return to investors that fund the pipeline service provider'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



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

Source: AER.

Operating and maintenance costs are forecast to account for around 39% of revenue requirements (35% for transmission and 40% for distribution) in the current access periods.

Pipeline assets have long lives, and investment costs are recovered over the economic life of the assets. The amount recovered each year is called depreciation and reflects the lost value of pipeline 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 37% of revenues (52% for transmission and 35% for distribution) in the current access periods. The returns are calculated by multiplying:

- the value of the pipeline service provider's capital base
- the rate of return that the AER allows based on the forecast cost of funding those assets through equity and debt.⁴³⁸

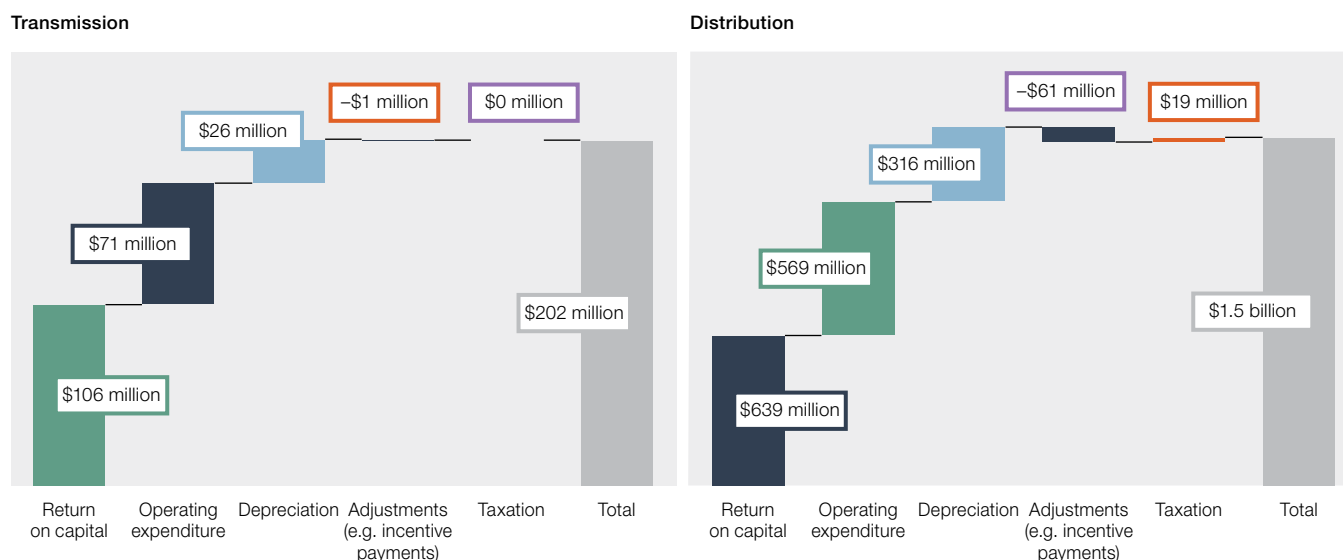
Overheads, taxation and other costs account for the remainder of a pipeline's revenue.

438 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 pipeline service provider business pays when it borrows money to invest.

Figure 5.5 illustrates the composition of pipeline revenues in the current gas transmission and distribution access arrangements.

Pipeline service providers can also earn additional revenue through regulatory incentive schemes that encourage the efficient management of operating and capital expenditure programs (section 5.5.2).

Figure 5.5 Composition of average annual gas pipeline revenues



Note: Composition of average annual gas pipeline revenue – current periods as at 1 July 2024. All data are adjusted to June 2023 dollars.

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

5.5.2 Incentive schemes

The National Gas Rules provide scope for pipeline service providers to earn financial rewards by outperforming efficiency targets (and incur financial penalties for underperformance). An efficiency carryover mechanism allows service providers to retain, for up to 6 years, efficiency savings in managing their operating costs. In the longer term, service providers 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).

The difference is that if the proposed application of the scheme is accepted by the AER, it is written into the service provider's access arrangement rather than being set out in a general guideline.

Several pipeline service providers proposed the application of a capital expenditure sharing scheme (CESS) in their most recent access arrangement. The National Gas Rules do not mandate such schemes, but they do allow the AER to approve their use to incentivise service providers to efficiently maintain and operate their pipelines.

The Victorian distribution pipeline service providers were the first to implement a CESS approved by the AER as part of their 2018–22 access arrangements. The AER subsequently approved Jemena Gas Networks' (NSW) request for a CESS for its 2020–25 access arrangement and requests by Australian Gas Networks (South Australia) and Evoenergy (ACT) for their 2021–26 access arrangements. To date, no transmission service providers have sought to participate in a CESS.

The CESS for gas pipeline service providers operates in a similar way to the CESS for electricity networks (chapter 3, Box 3.3). It allows a service provider to earn financial rewards by keeping new investment spending below forecast levels (and incur financial penalties for investing above forecast). In later access arrangements, the service providers must pass on 70% of savings to customers through lower charges.

The CESS carries a risk of encouraging service providers 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 service providers are not incentivised to defer critical investment needed for safe and reliable pipeline operation. A network health index ensures that rewards depend on the service provider maintaining current service standards.

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

5.5.3 Timelines and processes

Once a pipeline service provider 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 arrangement. 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 pipeline customers and other stakeholders during the assessment 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 a final access arrangement decision that sets the reference tariff that a pipeline service provider can charge its customers. The AER annually reviews pipeline tariff variations to ensure they are consistent with its decision.

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

Countering this risk, the National Gas Rules include ways of managing uncertainties. The AER can approve cost pass-throughs if a specified event (such as a regulatory change or natural disaster) imposes significant costs on the pipeline service provider that were not forecast. A pipeline service provider may also approach the AER to pre-approve a contingent investment project if the need to do so was uncertain at the time of the access arrangement decision. A pre-approval allows a service provider to roll the project into the capital base in the forthcoming access arrangement if pre-determined conditions are met.

In October 2020, the Victorian Government changed the timing of the Victorian distribution pipeline service providers' access arrangements from calendar to financial regulatory years.⁴³⁹ To implement the change, the 1 January 2018 to 31 December 2022 access arrangement period was extended to include a 6-month transition period. The current access arrangement periods began on 1 July 2023.

For the purposes of this report, data relating to the 6-month period from 1 January 2023 to 30 June 2023 has been annualised. We acknowledge that this process may impact the accuracy of some reporting measures; however, we expect these issues to be resolved when we report on a full regulatory year in next year's report.

5.5.4 Consumer engagement

An important focus of gas pipeline regulation is how constructively a pipeline service provider engages with its consumers in developing an access arrangement proposal. Although not mandated in the National Gas Rules, evidence of constructive engagement can give the AER confidence that the service provider is genuinely committed to meeting its consumers' needs and preferences. Robust consumer engagement can lay the foundation for the AER to accept elements of an access arrangement proposal, including capital and operating expenditure forecasts.

The AER's framework for considering consumer engagement in pipeline access arrangement determinations is set out in the *Better Resets Handbook*.⁴⁴⁰

⁴³⁹ Victorian legislation, [National Energy Legislation Amendment Act 2020](#), 20 October 2020, accessed 1 August 2024.

⁴⁴⁰ AER, [Better Resets Handbook – Towards consumer-centric network proposals](#), Australian Energy Regulator, 18 November 2022, accessed 26 June 2023.

5.5.5 Road to net zero by 2050

Australia now has a legislated carbon emissions target of net-zero greenhouse gas emissions by 2050 and a National Gas Objective that includes achievement of emissions reductions targets. The Future Gas Strategy maps the Australian Government's plan for how gas will support our economy's transition to net zero in partnership with the world.⁴⁴¹

The strategy's objectives are to:

- support decarbonisation of the Australian economy
- safeguard energy security and affordability
- entrench Australia's reputation as an attractive trade and investment destination
- help our trade partners on their own paths to net zero.

State and territory governments are already taking measures to reduce residential and small commercial consumers' reliance on gas.

In November 2020, the NSW Government released its Electricity Infrastructure Roadmap – a 20-year plan to transform the state's electricity system into one that is affordable, clean and reliable for everyone.⁴⁴² Gas will continue to play an important role in the energy transition and the NSW Government aims to maximise investments through its Electricity Infrastructure Roadmap and renewable energy zones (REZ).

In October 2022 the Victorian Government released its Gas Substitution Roadmap – a plan to help Victoria reduce the cost of energy bills and cut carbon emissions.⁴⁴³ Victoria is taking steps to speed up the transition to renewable energy with the goal of achieving a 45–50% reduction in emissions by 2030, 75–80% reduction by 2035 and net zero by 2045.⁴⁴⁴ To achieve its targets, Victoria must cut emissions across the entire economy, including the gas sector, which contributes around 17% of the state's net greenhouse gas emissions.

The Gas Substitution Roadmap offers options and support for Victorian residential and small commercial consumers who are interested in switching from gas to solar or electricity. Switching from gas to efficient electric appliances will help households to save money on their energy bills. The Gas Substitution Roadmap indicates that converting an existing home with solar panels from dual-fuel to all-electric can save around \$1,700 per year on energy bills, in addition to the approximately \$1,000 of savings per year generated by the solar PV system.⁴⁴⁵

The pace of change in Victoria has continued to accelerate with the introduction of rule changes to reduce new and existing gas connections. Since 1 January 2024, all new homes in Victoria requiring a planning permit are required to be all-electric. This means new homes and residential subdivisions that require a planning permit can no longer connect to the gas network.

The ACT Government's Climate Change and Greenhouse Gas Reduction (Natural Gas Transition) Amendment Bill 2022 established the legal framework to end new fossil fuel gas connections in the ACT.⁴⁴⁶ In June 2024, the ACT Government announced its intention to invest in an all-electric, zero emissions future for Canberra with the release of a new Integrated Energy Plan (IEP). The IEP sets out the next stage of work for the ACT's transition over the next 20 years, including a range of government commitments to support consumers through the transition.⁴⁴⁷

Gas underpins a wide range of economic activity in Australia and globally, with secure gas supplies being a core component of energy security for many economies. Australia's domestic climate action is progressing against a backdrop of growing global momentum to deliver the goals of the Paris Agreement. Therefore, emissions from gas must reduce significantly.⁴⁴⁸

441 Australian Government, [Future gas strategy](#), Department of Industry, Science and Resources, 25 June 2024, accessed 10 September 2024.

442 NSW Government, [Electricity infrastructure roadmap](#), 20 November 2020, accessed 9 September 2024.

443 Victorian Government, [Victoria's Gas Substitution Roadmap](#), Department of Energy, Environment and Climate Action, accessed 11 June 2023.

444 Victorian Government, [Victoria's Gas Substitution Roadmap](#), Department of Energy, Environment and Climate Action, accessed 18 July 2024.

445 Assuming a 6.6 kW solar PV system.

446 ACT Government, [ACT reaches milestone preventing new fossil fuel gas connections](#), media release, 8 June 2023.

447 ACT Government, [Electrifying Canberra](#), media release, 19 June 2024.

448 Australian Government, [Future Gas Strategy Analytical Report](#), Department of Industry, Science and Resources, 9 May 2024, accessed 12 August 2024, p. 3.

Australian contracts for LNG exports will expire between 2030 and 2035. Within the Asian region to which Australia currently exports LNG, demand for LNG is expected to continue to 2050 and beyond and consultation indicates continued demand for secure exports from Australia. The future role of Australia's existing pipeline infrastructure will depend on the broader role of gas, both domestically and abroad.

5.5.6 Regulating gas pipelines under uncertainty

In November 2021, the AER published an information paper, 'Regulating gas pipelines under uncertainty', which discussed 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.⁴⁴⁹

The information paper explained how these potential implications may affect the AER's regulatory approaches when undertaking access arrangement reviews for service providers operating scheme 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 (Box 5.3)
- 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 discussed how the uncertainty in future gas demand (section 5.6.1) can affect specific aspects of the AER's regulatory decisions, such as:

- the assumed payback period of pipeline investment in expenditure assessments
- the incentives that regulated service providers may have in substituting capital and operating expenditure
- whether it is in the long-term interests of gas consumers to preserve optionality when evaluating capital investments that are for repurposing gas networks⁴⁵⁰
- the increased demand risk that regulated service providers may face under price cap regulation if gas demand falls persistently.

In its 2023–28 access arrangements for the Victorian gas transmission and distribution pipelines, the AER:

- changed the way costs are recovered for gas disconnections to encourage consumers to disconnect safely through permanent abolishment of their gas connection instead of the cheaper temporary disconnection option
- allowed for some accelerated depreciation of assets, noting that bringing forward the recovery of assets while pipeline use remains relatively high spreads the increased costs among a larger pool of customers.

The AER noted that these were interim measures and may not be suitable for greater rates of declining demand for gas. Abolition of gas connections and accelerated depreciation are discussed in Box 5.2 and Box 5.3.

449 AER, [AER tackles gas pipeline regulation in an uncertain future](#), Australian Energy Regulator, November 2021.

450 Future hydrogen users are not currently considered as gas consumers under the National Gas Law or National Gas Rules.

5.6 Recent AER access arrangement decisions

The AER did not review any access arrangement applications for transmission or distribution pipelines in the 12-month period to 30 June 2024.

Table 5.3 provides a comparative summary between the AER's final decisions on the access arrangements in place for the current access period and those in place in the previous access period.⁴⁵¹

Table 5.3 AER gas revenue determinations – current access arrangements

NSP	Revenue (forecast)	Capital expenditure (forecast)	Operating expenditure (forecast)
Transmission	\$986m (▼1.7%)	\$296m (▼23%)	\$351m (▲10%)
Distribution	\$7.4b (▼5.1%)	\$3.1b (▼11%)	\$3.2b (▲14%)
Total	\$8.3b (▼4.7%)	\$3.4b (▼13%)	\$3.6b (▲13%)

Source: AER estimates.

5.6.1 Gas consumption and demand forecasts

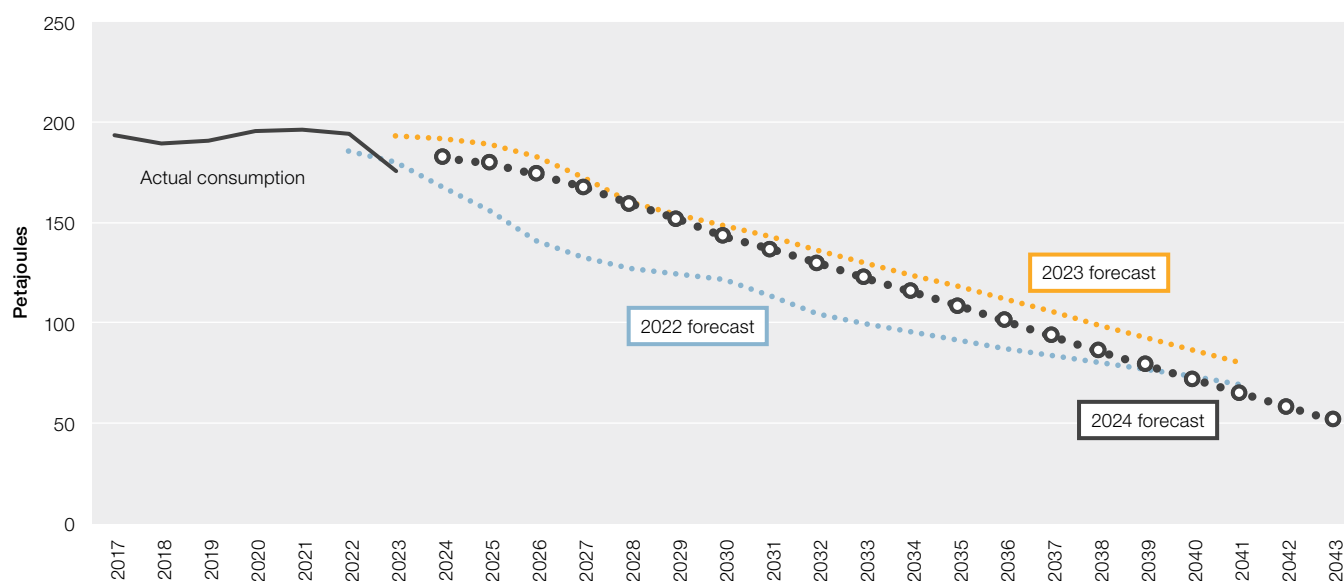
The Australian Energy Market Operator (AEMO), through its *Gas Statement of Opportunities* (GSOO),⁴⁵² forecasts the adequacy of gas supplies to meet the needs of consumers in central and eastern Australia. The 'step change' scenario is now considered the most likely scenario, wherein consumer actions lead to rapid and significant continued investment in orchestrated consumer energy resources (CER) and include electrification of the transportation sector.

AEMO's forecasts reflect assumptions about connections and population growth and the impacts of energy efficiency investments, gas fuel-switching such as electrification, gas prices and climate change. Electrification remains the most significant driver of forecast declining residential/commercial consumption, with a total anticipated demand reduction of around 50 petajoules (PJ) in 2030 increasing to about 170 PJ at the end of the outlook period. Further, new homes in all jurisdictions are increasingly likely to be built without a gas connection (Figure 5.6).

⁴⁵¹ The current access arrangement period is the arrangement in place at 1 July 2024.

⁴⁵² AEMO, [Gas Statement of Opportunities](#), Australian Energy Market Operator, 21 March 2024, accessed 17 May 2024.

Figure 5.6 AEMO's forecast gas consumption – residential/commercial customers



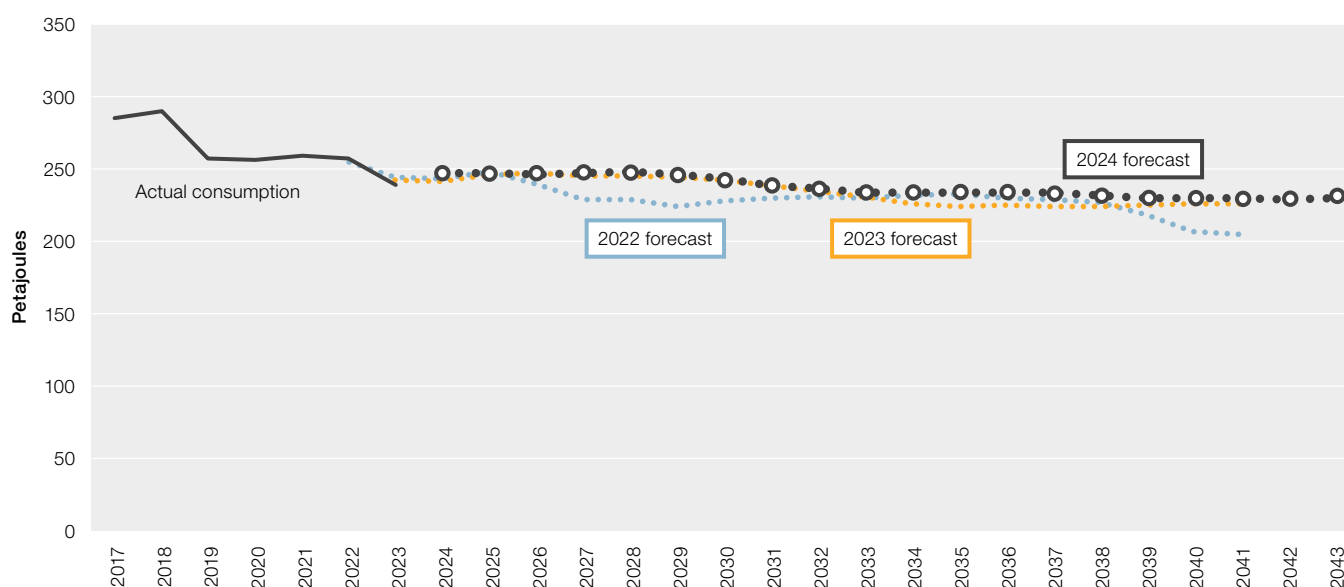
Note: Residential and commercial customers include consumers on volume-based tariffs. Forecasts represent the most likely scenario in AEMO's Gas Statement of Opportunities: 2022 step change scenario, 2023 orchestrated step change (1.8°C) scenario, 2024 step change scenario.

Source: AEMO, [Gas Statement of Opportunities](#), March 2024.

Gas consumption in the industrial sector is forecast to remain relatively stable over the short term before reducing in the 2030s due to a combination of electrification and reduced demand from large industrial loads. The impact of electrification on the industrial sector is expected to be slower and less pronounced than for the residential and commercial sectors, due to the difficulty and/or high cost of technologies to electrify high heat processes (temperatures exceeding 400°C). Apart from retrofitting site equipment, the increased power requirements could also call for electricity network upgrades. Additionally, a significant share of natural gas usage in industry is for chemical feedstock, for which electricity is not a substitute without complementary changes in technology and processes (Figure 5.7).



Figure 5.7 AEMO's forecast gas consumption – industrial customers



Note: Industrial customers include large customers such as fertiliser producers, mineral processing, primary metal, paper and chemical producers, oil refineries, large food processors and mining. Any onsite electricity generation that consumes gas is also included. Forecasts represent the most likely scenario in AEMO's Gas Statement of Opportunities: 2022 step change scenario, 2023 orchestrated step change (1.8°C) scenario, 2024 step change scenario.

Source: AEMO, [Gas Statement of Opportunities](#), March 2024.

Transformation in the energy system and the explicit policy goal of reaching net zero emissions by 2050 create considerable uncertainties in forecasting future gas demand. While the decline in the demand for gas is expected to accelerate, there is considerable uncertainty as to how quickly the acceleration will happen, what the path to small customer 'electrification' will look like and whether any existing gas pipelines will have any ongoing role in transporting hydrogen or biogas.

Declining throughput on remaining connections will put upwards pressure on the price of gas haulage. If this eventuates, it will likely encourage further decline in demand and an increase in customers leaving the network, causing self-reinforcing upwards pressure on tariffs for remaining customers. In a report for Energy Consumers Australia, CSIRO and Dynamic Analysis undertook modelling of how this scenario may arise under AEMO's 'step change' scenario.⁴⁵³

While declining demand is already having an impact on growth-driven elements of forecast expenditure, its impact on other drivers of expenditure is expected to happen more slowly. The AER closely scrutinises proposed capital and operating expenditure to ensure the customers who are still reliant on gas are paying no more than necessary for a safe, reliable and secure supply. While declining demand is already having an impact on growth driven elements of forecast expenditure, its impact on other drivers will be slower. The obligation on pipeline service providers to continue to offer the same services while meeting the same regulated standards means many costs will not necessarily fall as demand falls. This makes it difficult to avoid increases in costs per customer under the current regulatory framework.

⁴⁵³ CSIRO and Dynamic Analysis, [Consumer impacts of the energy transition: Modelling report](#), Energy Consumers Australia, July 2023, pp. 21–22, accessed 17 May 2024.

Box 5.2 Temporary disconnection versus permanent abolishment of gas connections

Through our assessments of AusNet Services', Australia Gas Networks' and Multinet Gas Networks' 2023–28 access arrangements, the AER became aware that some customers seeking to move away from gas have sought temporary disconnection measures over the safer, permanent removal of connection assets.

Energy Safe Victoria, the regulator responsible for electricity, gas and pipelines safety, considers that when a customer chooses to stop using gas at their premises, permanent abolishment of the connection is required. Failure to do so impedes the pipeline service providers from meeting their safety obligations.

However, permanent abolishment of a gas connection (by removing the pipeline assets and closing off the connection or premises to the mains) is more costly than temporarily stopping the withdrawal of gas through the meter. As such, the cost of permanently disconnecting the premises has been a deterrent for customers wanting to move away from gas.

To narrow the price difference between temporary and permanent gas disconnection services, and the associated safety risks it appears to be creating, the AER has determined an upfront cost of \$220 for connection abolishment with the remainder added to the regulated revenue we use to set haulage tariffs and shared between all customers.^a

This is not a change to the total costs that distribution pipeline service providers will be allowed to recover for connection abolishment services. It only changes the way in which costs are recovered.

We acknowledge this is not a long-term solution.

Energy Safe Victoria is committed to working with the distribution pipeline service providers to understand whether other methods may be more appropriate than permanent abolishment.

a AER, [AER decision supports Victorian gas consumers in energy transition](#), Australian Energy Regulator, 2 June 2023, accessed 12 May 2024.

5.7 Revenue

All gas transmission and distribution service providers operating scheme pipelines are regulated under a weighted average price cap. Pipeline service providers can earn above or below forecast revenue over time due to changes in demand. If actual demand exceeds forecast demand, the service provider keeps the additional revenue. Conversely, if actual demand is less than forecast revenue, the service provider is exposed to the shortfall.



5.7.1 Revenue in 2023

Table 5.4 provides a summary of the revenue that distribution pipeline service providers earned in 2023 and how it compared with previous years.

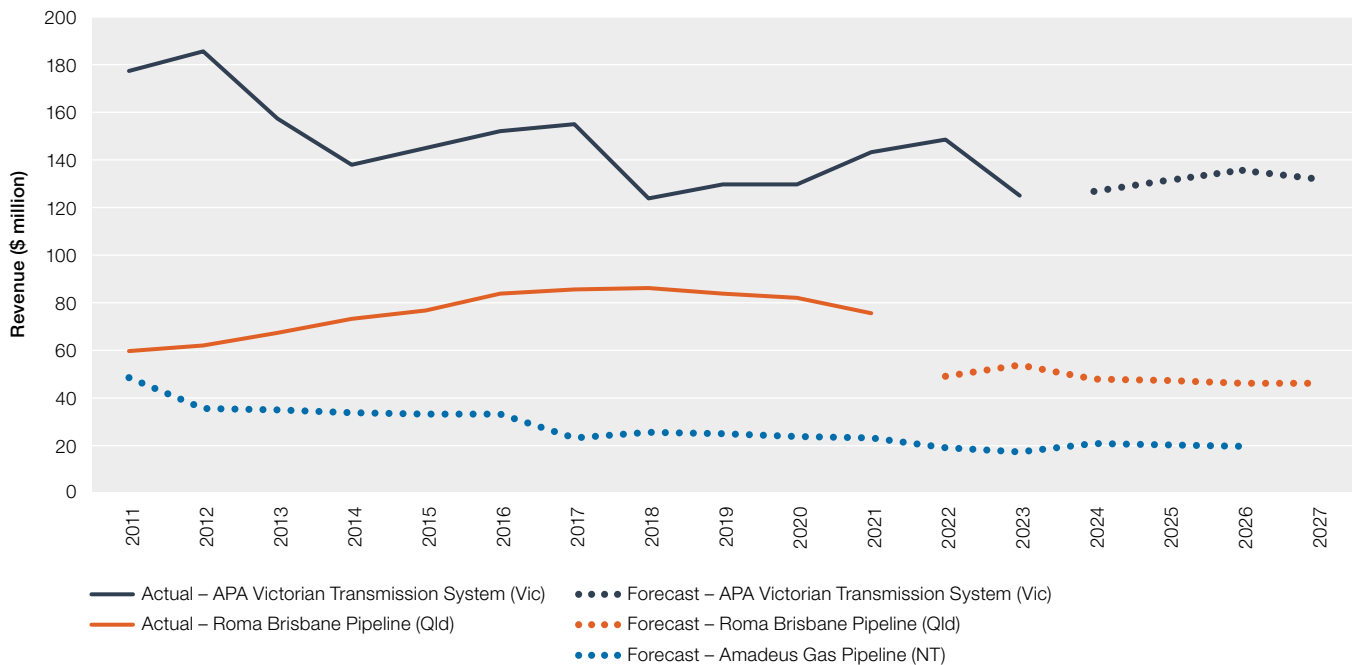
Table 5.4 Revenue in 2023 – key outcomes

Service type	Revenue (actual) (2023)	Revenue (actual) (compared with 2022)	Revenue (actual) (compared with peak)
Distribution	\$1.4b	▼\$145m (▼9%)	▼\$465m (▼25%) (2015)

Note: Actual revenue for the transmission pipeline service providers is not shown as Amadeus Gas Pipeline's and Roma Brisbane Pipeline's actual revenues contain commercially sensitive information.

Source: AER estimates.

Figure 5.8 Revenue – gas transmission pipelines

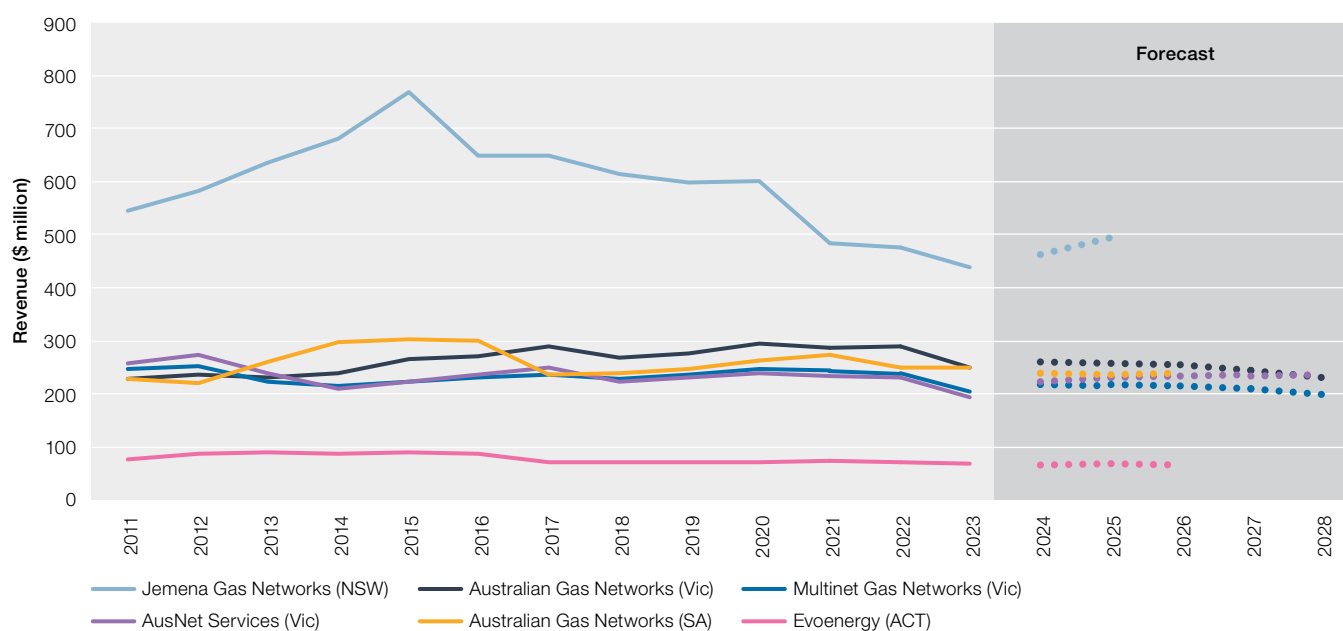


Note: All data are adjusted to June 2023 dollars. APA Victorian Transmission System (Vic) reports on a calendar year basis (year ending 31 December). All other pipeline businesses report on a financial year basis (year ending 30 June). The data show outcomes for the reporting period ending in that year (for example, the 2017–18 reporting year is shown as 2018). Amadeus Gas Pipeline's (Northern Territory) and Roma Brisbane Pipeline's (Queensland) actual revenue data is confidential.

Source: AER modelling; annual reporting RIN responses.

Revenues for most of the distribution pipeline service providers are forecast to decrease in the current access arrangement period. These forecast decreases are driven by the reductions in return on capital (section 5.9) and net tax allowance offsetting the forecast increases in operating expenditure and depreciation.

Figure 5.9 Revenue – gas distribution pipelines



Note: All data are adjusted to June 2023 dollars. Up until 31 December 2022, Victorian gas pipeline service providers reported on a calendar year basis (year ending 31 December). From 1 July 2023, Victorian pipeline service providers will report on a financial year basis. No revenue forecasts were developed for the Victorian pipeline service providers for the 6-month transition period (1 January 2023 to 30 June 2023). All other distribution pipeline service providers 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.

Costs of capital and inflation have been increasing in recent years, both of which put upward pressure on gas pipeline revenue drivers (section 5.9), similar to what has occurred for electricity networks. Any increases in a pipeline service provider's allowed rate of return will be reflected in forecast revenue through the return on capital building block (section 5.5.1).

Specific investment requirements will also increase pipeline costs, so additional revenue is still needed to cover some new projects. For example, APA Victorian Transmission System has justified the need for capital expenditure to finance its South West Pipeline and Western Outer Ring main projects. These projects were deemed necessary to avert shortfalls and increase capacity between existing sources of natural gas supply.⁴⁵⁴

5.8 Capital base

The capital base for a gas pipeline service provider represents the total economic value of assets that provide services to customers. The value of the capital base substantially impacts a service provider's revenue requirement.

Capital investment approved by the AER is added to a service provider's capital base, on which future returns are earned.

Although the forecast demand for natural gas continues to decline (section 5.6.1), new gas infrastructure investments and ongoing asset maintenance are necessary to ensure the reliability and safety of gas supply. The impact of new investment adds to the value of the capital base, the cost of which will be recovered across a declining base of customers, pushing gas prices up for those remaining customers.⁴⁵⁵

454 AER, [APA Victorian Transmission System – Access arrangement 2023–27](#), Australian Energy Regulator, 9 December 2022, accessed 2 December 2024.

455 AER, [Submission to Victoria's Gas Substitution Roadmap consultation paper](#), Australian Energy Regulator, 2 August 2021, accessed 11 June 2023.

Box 5.3 Accelerated depreciation to address asset stranding risk

In its final decisions on the 2023–28 access arrangements for the Victorian gas transmission and distribution pipelines, the AER allowed for some accelerated depreciation of assets. The combined value of asset bases to be recovered across these Victorian pipelines for their remaining lives is around \$6 billion. Bringing forward the recovery of assets while pipeline use remains relatively high has increased costs to consumers of the pipeline in the short term, but reduced the pool of depreciation to be recovered from consumers in the future when pipeline use is expected to be lower.

Accelerating the rate at which assets are depreciated is pertinent given the uncertain future for gas pipelines in Victoria. It is important to take small steps now to manage the equitable recovery of the cost of the assets from what will be a declining, and sometimes vulnerable, customer base over time.

AEMO forecasts a material decline in gas volumes over the next 20 years (section 5.6.1). There is also considerable uncertainty around likely medium to long-term forecast volumes of customer abolishment (Box 5.2). Further, the future role for hydrogen and other renewable gases is uncertain at this time.

The Victorian Government's Gas Substitution Roadmap commits to achieve net zero emissions by 2050 (section 5.5). This will likely mean a limited role for natural gas beyond this date. The roadmap includes several initiatives that will reduce the role for gas in Victoria, such as incentives for residential customers to switch to electric appliances, the removal of planning provisions requiring new housing developments to connect to gas and higher energy efficiency requirements for housing.

These changes are likely to eventuate, but the pace of change remains uncertain. We consider that approving some amount of accelerated depreciation is consistent with our information paper 'Regulating gas pipelines under uncertainty' (section 5.5.5), wherein we stated, '... the opportunity and flexibility for adjustment is greatest when we act as soon as we can to minimise the adverse impact of a decline in gas demand'.

The AER seeks to strike a balance between determining an appropriate level of accelerated depreciation and the impact it will have on price stability (section 5.5.1). For example, we did not allow the full amount of accelerated depreciation sought by some Victorian gas distribution service providers. We instead allowed a smaller start to accelerated depreciation that balanced the price impacts in the short term with the need for longer-term price stability.

We consider that accepting some accelerated depreciation leaves open the option to change course at future reviews, where more accelerated depreciation or reversals at a future date may be required to promote efficient growth (including negative growth) of the market as required under the National Gas Rules.

The declining demand for gas is not unique to Australia. In July 2024, scientific journal *Cell Press* published a journal highlighting the issue of regulating gas transportation infrastructure in Europe. According to *Cell Press*:

'... the era of widespread fossil gas consumption across Europe will also come to an end as the world decarbonises its energy use.' 'At the moment, regulation in most European countries treats gas distribution broadly as if they are expected to operate in perpetuity, though there are some exceptions.' [As is the case in Australia, the declining demand for gas] 'poses a significant challenge for policy makers: if fewer customers use gas, how is the decline of the system managed and who pays for it...?'

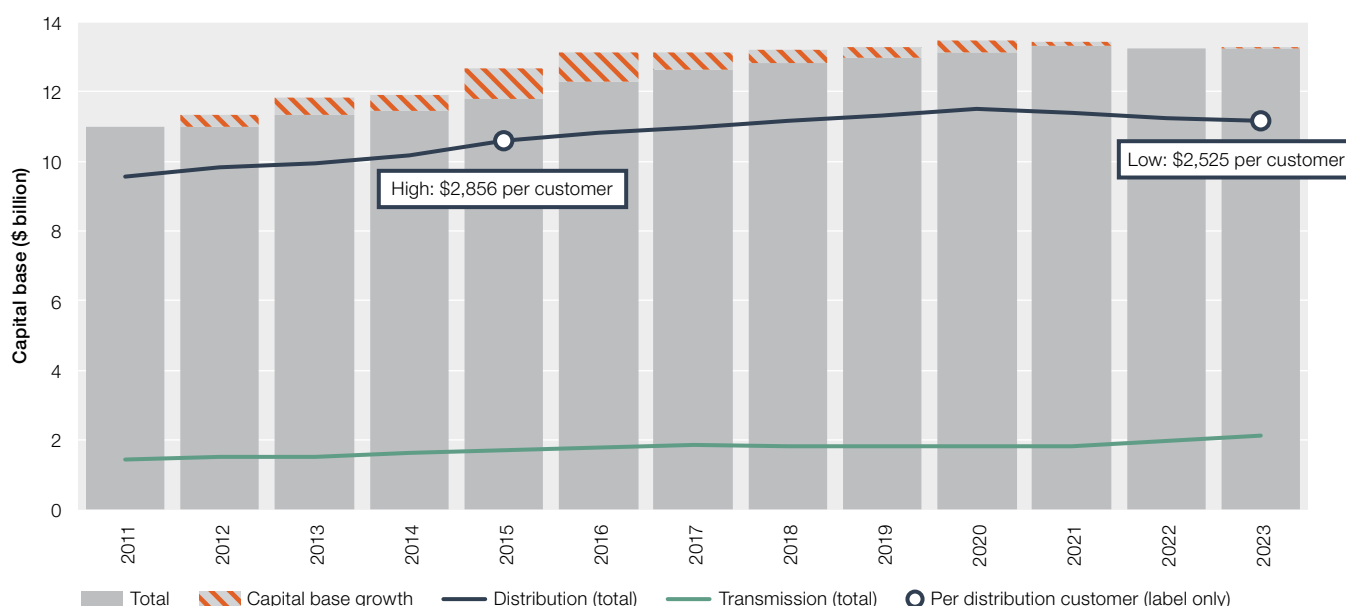
'The Netherlands is making far-reaching changes via a combination of accelerated depreciation and local authority powers. In the current regulatory period (2022–26), distribution system operators are permitted to depreciate investments in their grids on a cost-reflective basis which recognises a shrinking grid. This is intended to align the costs with the actual use of the network, with connection points expected to decrease in the medium term. Furthermore, gas distribution system operators receive compensation for the costs of dismantling the gas distribution networks and for removing connection points. ... UK regulator Ofgem has consulted on future network regulation, which includes a proposal to accelerate financial depreciation rates and smooth their impacts in line with expected disconnection rates'.^a

^a Rosenow, et al., *The elephant in the room: How do we regulate gas transportation infrastructure as gas demand declines?*, One Earth, 19 July 2024 (purchased journal).

5.8.1 Capital base in 2023

As at 30 June 2023, the total combined value of the capital base for gas pipeline service providers was \$13.3 billion, an increase of \$31 million from the previous year (Figure 5.10).

Figure 5.10 Value of gas pipelines assets (capital base)



Note: All data are adjusted to June 2023 dollars. Victorian pipeline service providers report on a calendar year basis (year ending 31 December). All other pipeline service providers 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 service provider expect a return on their investment. The rate of return estimates the financial return a pipeline service provider's financiers require to justify investing in the business. It is a weighted average of the expected returns needed to attract both equity and debt funding. Equity funding is provided by shareholders in exchange for part ownership of a pipeline service provider, while debt funding is provided by an external lender such as a bank. Given this weighted approach, the rate of return is sometimes called the weighted average cost of capital (WACC).

The AER sets an allowed rate of return based on a benchmark efficient entity, but a service provider's actual returns can vary from the allowed rate. The difference can be due to several factors, such as the impact of incentive schemes, efficiency improvements, forecasting errors or the pipeline service provider adopting a different debt or tax structure to the benchmark efficient entity. Some differences may be temporary if caused by 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 capital base (section 5.8) by the allowed rate of return.⁴⁵⁶

Lower financing costs and updated estimates of rate of return parameters contributed to the average allowed rate of return declining from around 10% at the beginning of the 2010s, to less than 6% from 2018 (Figure 5.11). This reduction translated to significantly lower forecast pipeline revenue requirements.

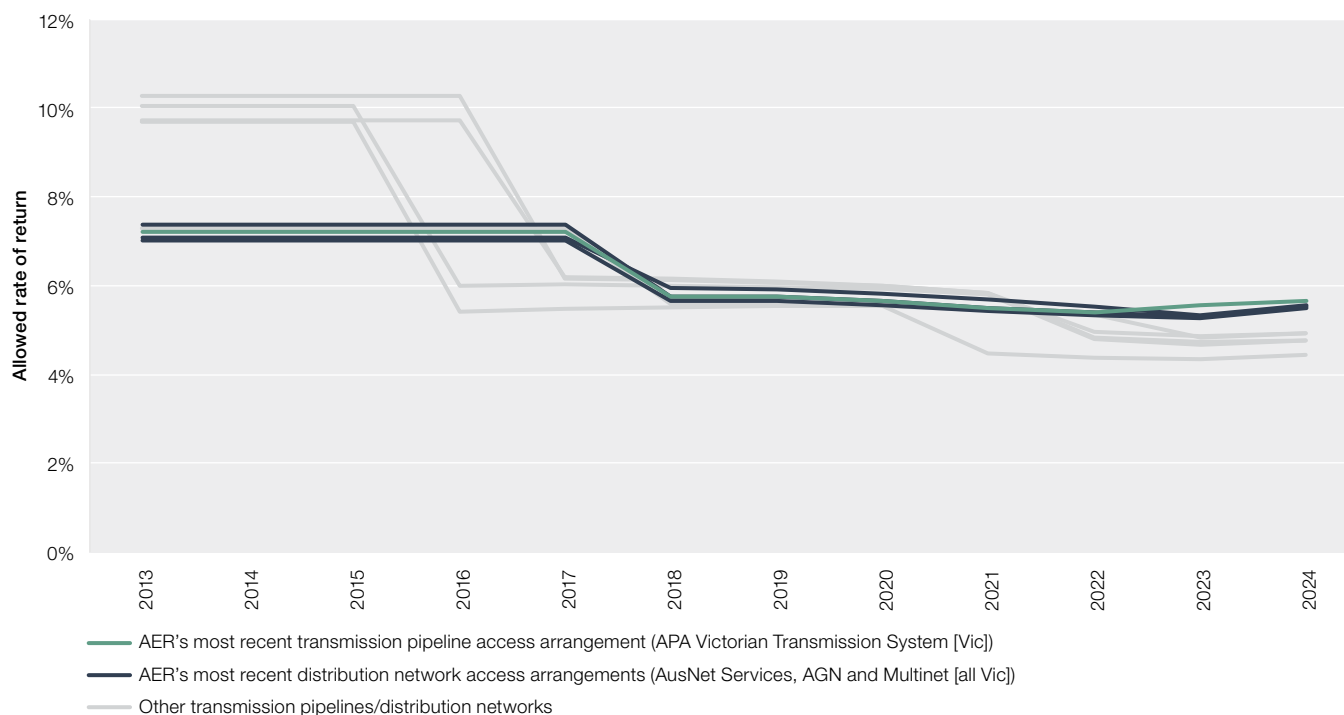
Legislation introduced in 2018 provided for the AER to make binding rate of return determinations that apply to all regulated pipeline service providers.

⁴⁵⁶ For example, if the rate of return is 5% and the capital base 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.

In February 2023, the AER released its latest rate of return instrument (the 2022 Instrument). The rate of return is a key component used to determine the amount of revenue network service providers can recover from customers. The AER sets the rate of return to cover the cost of capital of an efficient service provider.

In March 2024, the AER released an updated version of the February 2023 Instrument, which binds all access arrangements from 25 February 2023 until the next revision of the Instrument.⁴⁵⁷

Figure 5.11 Allowed rate of return



Note: Allowed rate of return = nominal vanilla weighted average cost of capital (WACC).

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

Recently, 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. Since January 2020, annual yields on 10-year CGSs have ranged from 0.61% (March 2020) to 4.94% (November 2023). Over the 12-month period to July 2024, annual yields on 10-year CGSs averaged around 4.24%.⁴⁵⁸

457 AER, [Rate of Return Instrument 2022](#), Australian Energy Regulator, accessed 18 April 2024.

458 RBA, [Capital Market Yields – Government Bonds – Daily – F2](#), Reserve Bank of Australia, accessed 10 July 2024.

5.10 Capital expenditure

Capital expenditure (i.e. investment) requirements differ between the gas transmission and distribution sectors.

Investment in gas transmission 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 bidirectional flows.

Investment in gas distribution mainly comprises augmentation (expansion) of existing systems to cope with new customer connections, such as for new housing estate developments. Older pipelines also require replacement programs for deteriorating infrastructure. For regulated service providers operating scheme pipelines (Table 5.1), the AER assesses whether investments are prudent and efficient based on criteria in the National Gas Rules.

Long-term demand risk can influence the AER's regulatory decisions on pipeline investments. Demand forecasts that underpin the need for new investments are carefully scrutinised.

Changes in demand can lead to pipeline assets becoming 'stranded', wherein they are prematurely written down, devalued or even reclassified as liabilities. The costs to maintain a gas pipeline do not decrease in proportion to gas demand decline.⁴⁵⁹ Regulated service providers will incur ongoing maintenance and replacement costs to maintain safe and reliable reference services for the remaining customers on the network, subject to any partial shutdowns of the network, for as long as the gas pipeline assets remain in use.

5.10.1 Capital expenditure in 2023

Over the 12-month period to 30 June 2023, pipeline service providers invested \$797 million in capital projects, \$24 million (3.1%) more than in the previous year and \$60 million (8%) more than was forecast. The significant increase in capital expenditure on transmission pipelines in 2022 and 2023 was driven by APA Victorian Transmission System's expansion of the South West Pipeline and its construction of the Western Outer Ring Main project.

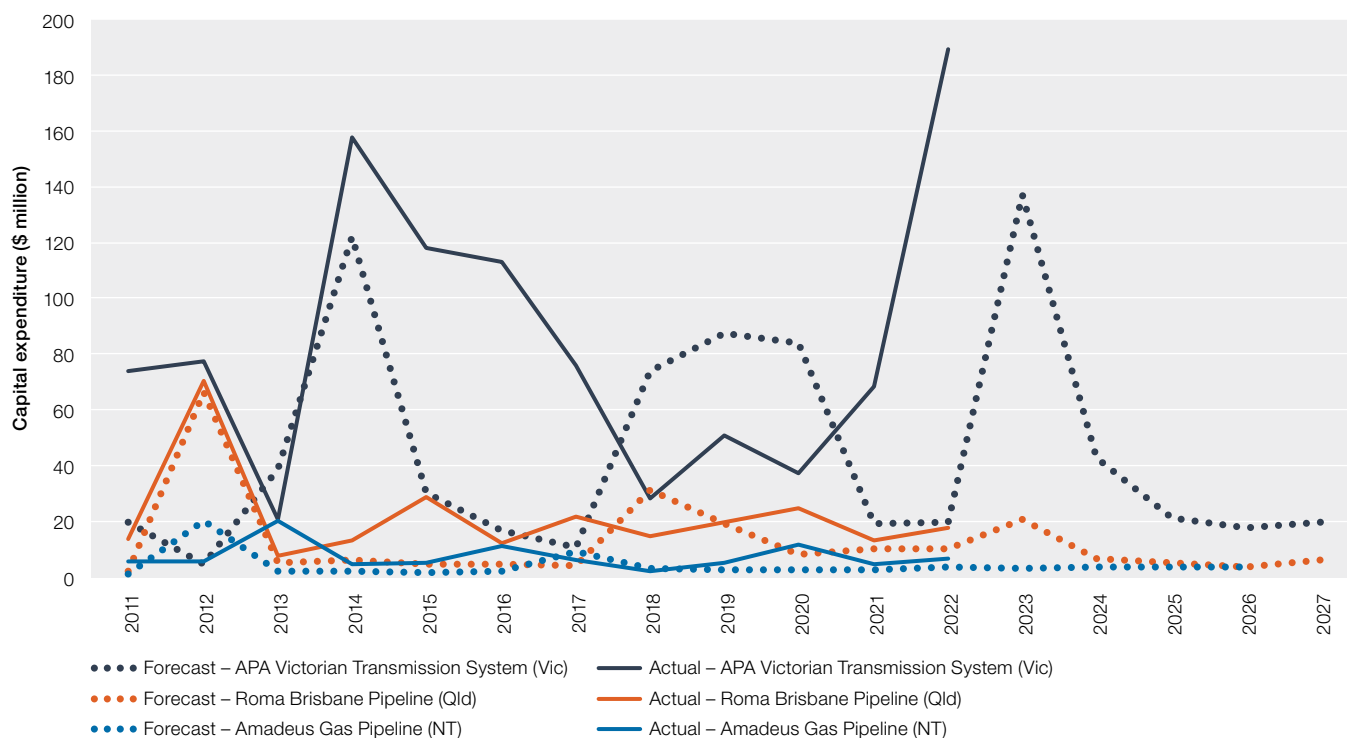
Table 5.5 provides a breakdown of the amount of investment that pipeline service providers undertook in 2023 and how this compared with previous years' expenditure and forecasts.

Table 5.5 Capital expenditure in 2023 – key outcomes

Service type	Capital expenditure (2023)	Capital expenditure (compared with 2022)	Capital expenditure (compared with peak)
Transmission	\$209m (▲30% than forecast)	▼\$4m (▼2.1%)	▼\$4m (▼2.1%) (2022)
Distribution	\$588m (▲1.9% than forecast)	▲\$28m (▲5%)	▼\$159m (▼21%) (2015)
Total	\$797m (▲8% than forecast)	▲\$24m (▲3.1%)	▼\$102m (▼11%) (2015)

⁴⁵⁹ Lucas Davis, Catherin Hausman, Energy Institute at Haas, [Who will pay for legacy utility costs?](#), March 2022.

Figure 5.12 Capital expenditure – gas transmission pipelines

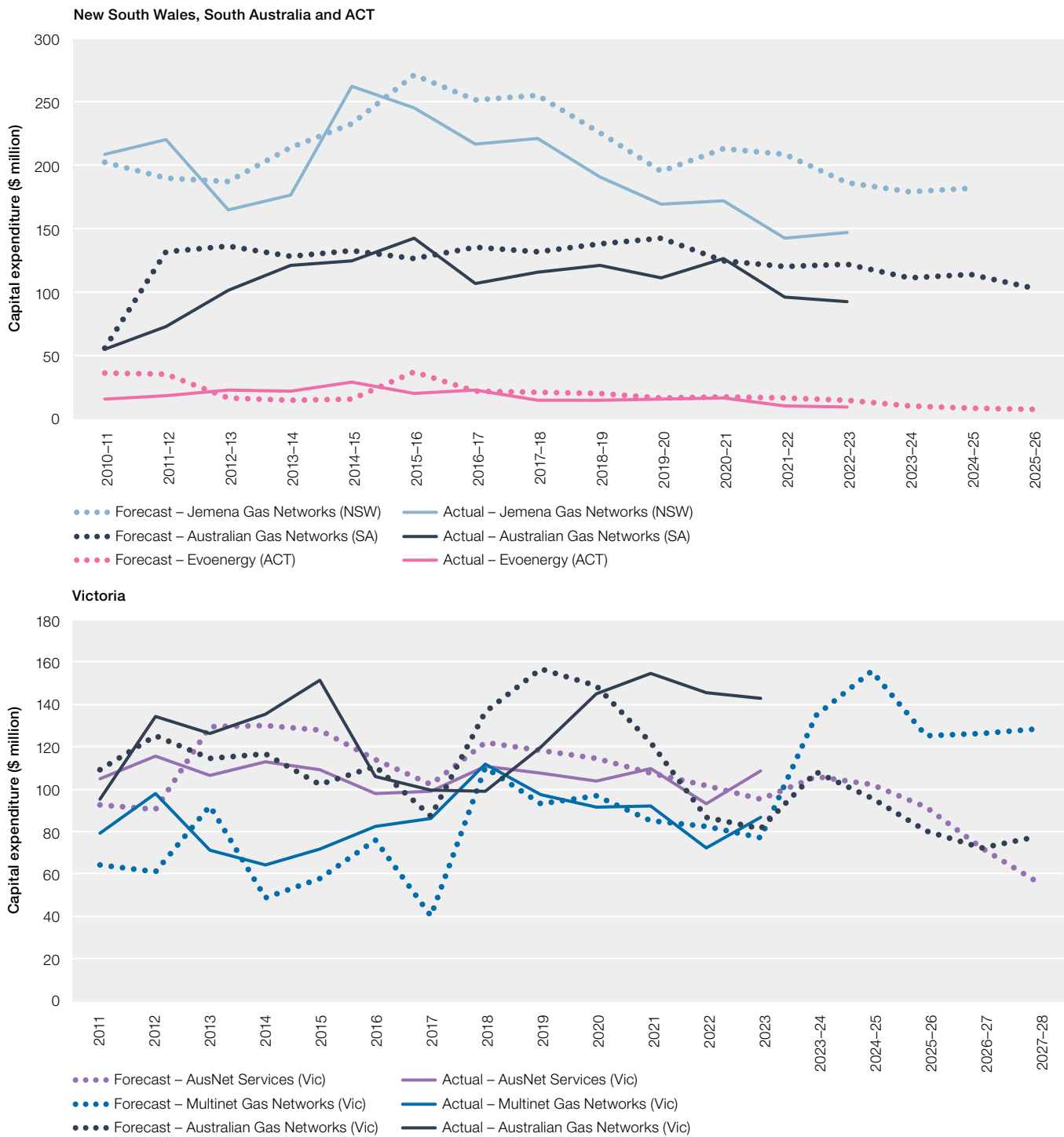


Note: All data are adjusted to June 2023 dollars. APA Victorian Transmission System (Vic) reports on a calendar year basis (year ending 31 December). All other pipeline service providers report on a financial year basis (year ending 30 June). The data show outcomes for the reporting period ending in that year (for example, the 2017–18 reporting year is shown as 2018).

Source: AER modelling; annual reporting RIN responses.



Figure 5.13 Capital expenditure – gas distribution pipelines



Note: All data are adjusted to June 2023 dollars. Up until 31 December 2022, Victorian pipeline service providers reported on a calendar year basis (year ending 31 December). From 1 July 2023, the Victorian pipeline service providers report on a financial year basis. To enable reporting on equivalent terms, forecasts for the Victorian pipeline service providers for the 6-month transitional period (1 January to 30 June 2023) have been doubled. All other pipeline service providers 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 expenditure

Pipeline service providers incur operating and maintenance costs that absorb around 42% of their annual revenue (35% for transmission and 43% for distribution) (Figure 5.5). When assessing a pipeline service provider's efficient operating and maintenance costs, the AER considers cost drivers such as forecast customer growth, expected productivity improvements, changes in labour prices, and changes in the regulatory environment. Pipeline service providers are also subject to an efficiency carryover mechanism, which incentivises them to reduce operating expenditures where efficient to do so.

5.11.1 Operating expenditure in 2023

Over the 12-month period to 30 June 2023, pipeline service providers spent \$619 million on operating costs, \$29 million (5%) more than in the previous year, but \$76 million (11%) less than was forecast.

Table 5.6 provides a breakdown of pipeline service providers' operating costs in 2023 and how this compared with previous years' expenditure and forecasts.

Table 5.6 Operating expenditure in 2023 – key outcomes

Service type	Operating expenditure (2023)	Operating expenditure (compared with 2022)	Operating expenditure (compared with peak)
Transmission	\$93m (▲29% than forecast)	▲\$16m (▲21%)	2023 = peak
Distribution	\$526m (▼15% than forecast)	▲\$13m (▲2.6%)	▼\$33m (▼6%) (2012)
Total	\$619m (▼11% than forecast)	▲\$29m (▲5%)	▼\$14m (▼2.3%) (2012)

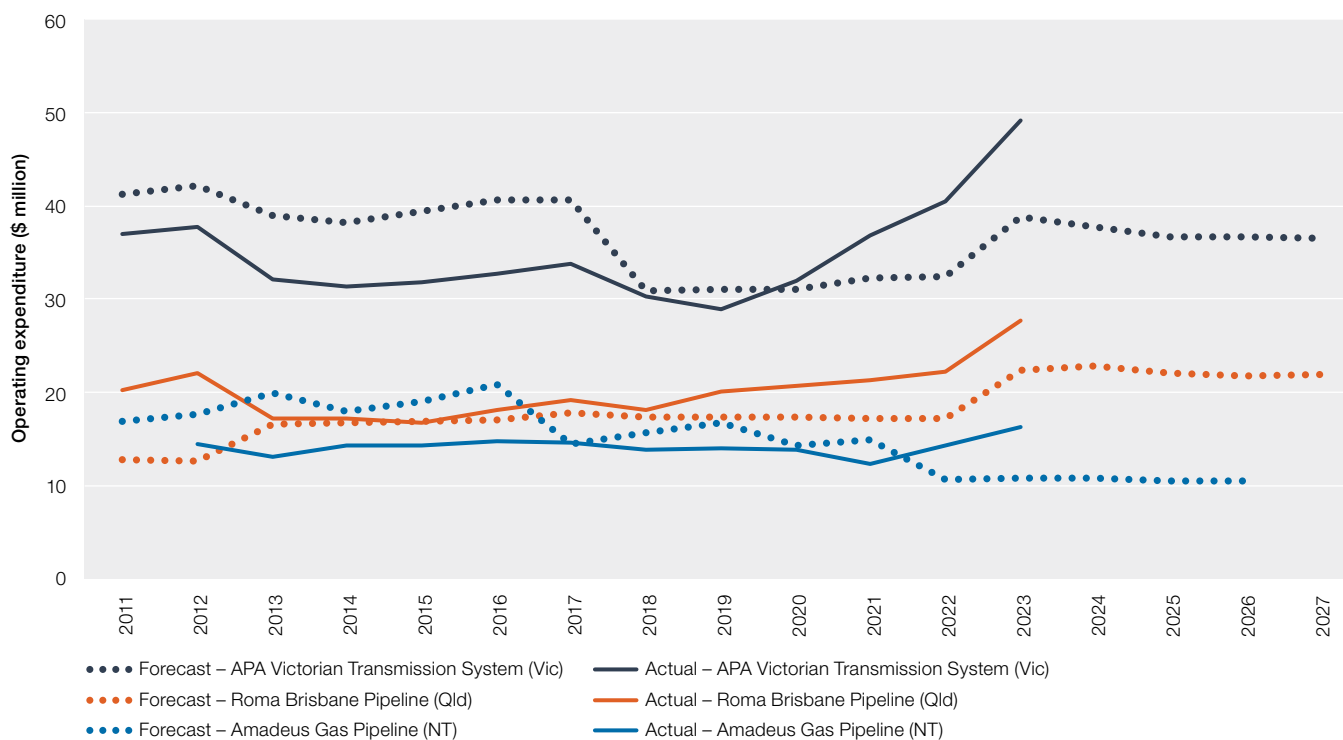
The differing trends in transmission and distribution pipeline service providers operating expenditure is quite pronounced. In each of the 4 years since 2019, transmission pipeline service providers have overspent against forecast by an average of 18% (Figure 5.14). Conversely, in each of the 6 years since 2017, distribution pipeline service providers have underspent against forecast by an average of 11% (Figure 5.15).

Over the 6-year period to 2023, Multinet Gas Networks (Victoria) and Australian Gas Networks (South Australia) have underspent by 23% and 20%, respectively. However, these underspends may be attributed to ongoing cost savings stemming from the purchase of the pipelines in 2017⁴⁶⁰ and 2014,⁴⁶¹ respectively.

460 Australian Financial Review, [FIRB approves Cheung Kong's DUET acquisition](#), 20 April 2017, accessed 2 August 2024.

461 Australian Gas Networks, [Australian Gas Networks – Our History](#), accessed 2 August 2024.

Figure 5.14 Operating expenditure – gas transmission pipelines



Note: All data are adjusted to June 2023 dollars. APA Victorian Transmission System (Vic) reports on a calendar year basis (year ending 31 December). All other pipeline service providers 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 Operating expenditure – gas distribution pipelines



Note: All data are adjusted to June 2023 dollars. Up until 31 December 2022, Victorian pipeline service providers reported on a calendar year basis (year ending 31 December). From 1 July 2023, the Victorian pipeline service providers report on a financial year basis. To enable reporting on equivalent terms, forecasts for the Victorian pipeline service providers for the 6-month transitional period (1 January to 30 June 2023) have been doubled. All other pipeline service providers 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.