4 GAS PIPELINES

Gas pipelines provide a transportation link between upstream gas producers and downstream energy customers. This chapter focuses on gas pipelines in jurisdictions for which the AER has regulatory responsibilities—those located in jurisdictions other than Western Australia.

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

Australia's gas transmission network covers over 20 000 kilometres. The construction of new pipelines and the expansion of existing facilities in the past decade have created an interconnected pipeline network running from Queensland to Tasmania. This investment has enhanced the competitive environment for gas producers, pipeline operators and gas retailers, and improved security of supply. While Western Australia and the Northern Territory have also had significant pipeline investment, they have no transmission interconnection with other jurisdictions.

A network of *distribution* pipelines delivers gas from demand hubs to industrial and residential customers. A gas distribution network typically consists of high, medium and low pressure pipelines. The high and medium pressure mains provide a 'backbone' that services areas of high demand and transports gas between population concentrations within a distribution area. The low pressure pipes lead off the high pressure mains to end customers. Gas is reticulated to most Australian capital cities, major regional areas and towns.

The total length of gas distribution networks in eastern Australia is around 74 000 kilometres. The networks have a combined asset value of almost $8 billion.

Figure 4.1 illustrates the routes of major transmission pipelines and the locations of major distribution networks in jurisdictions for which the AER has regulatory responsibilities; figure 3.1 includes a more extensive mapping of transmission pipelines, including those in Western Australia. Tables 4.1 and 4.2 summarise the major pipelines and networks.

4.1 Ownership

Australia's gas pipelines are privately owned. APA Group and Singapore Power International (through its subsidiary Jemena) are the principal owners in the gas transmission sector. Envestra and Singapore Power International (through its subsidiaries SP AusNet and Jemena) are the principal owners in gas distribution (tables 4.1 and 4.2).

4.1.1 Transmission pipeline ownership

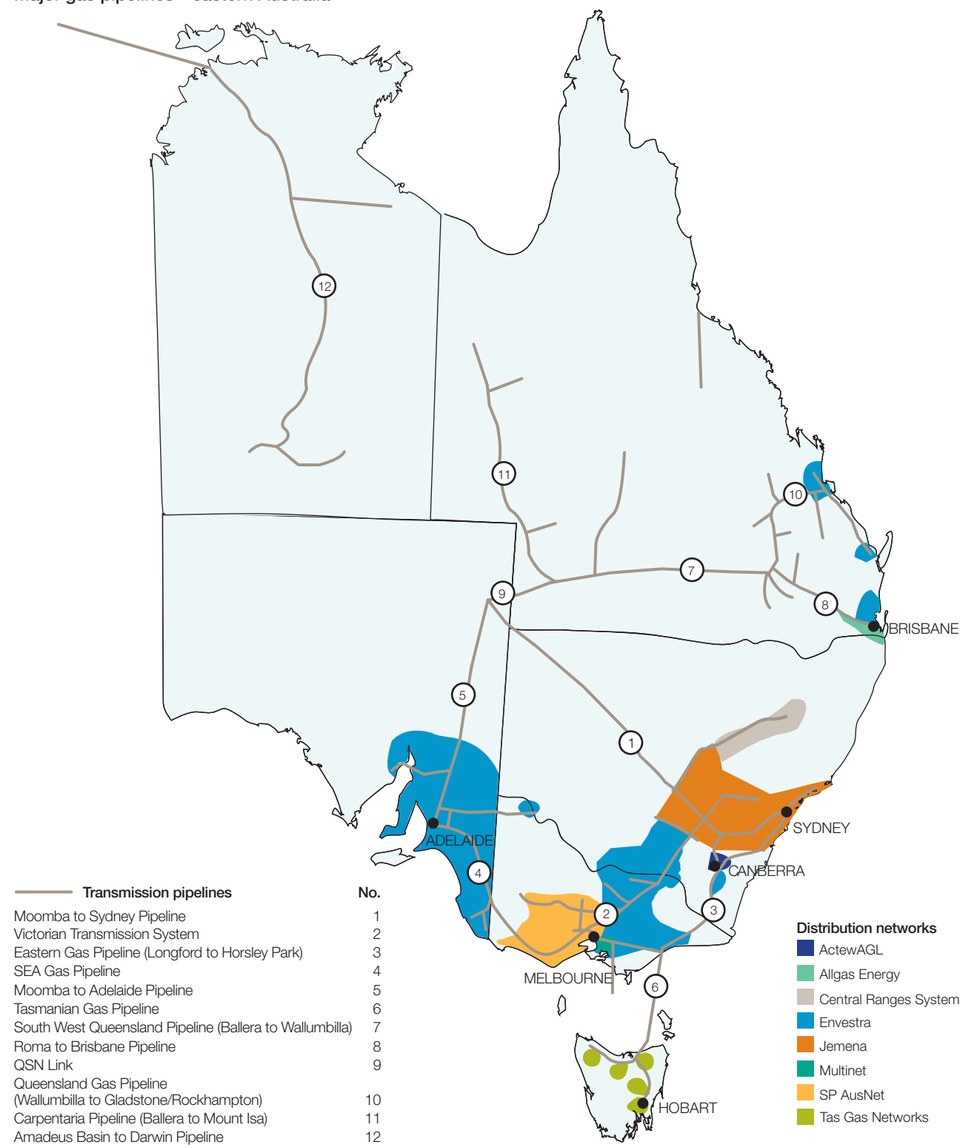
APA Group, a publicly listed company, has the most extensive portfolio of gas transmission assets in Australia. At 1 October 2012, its three largest institutional shareholders held around 34 per cent of share capital. The major foundation shareholder, Petronas, divested its 17.3 per cent stake in the company earlier in 2012.

APA Group owns three pipelines in New South Wales (including the Moomba to Sydney Pipeline), the Victorian Transmission System, five major Queensland pipelines and a major Northern Territory pipeline. It has a 50 per cent interest in the SEA Gas Pipeline. APA Group also owns gas transmission pipelines in Western Australia and has a 20 per cent interest in Energy Infrastructure Investments (EII), which owns pipelines in Western Australia and the Northern Territory.

During 2012 APA Group expanded its gas transmission portfolio via a $1.4 billion acquisition of Hastings Diversified Utilities Fund, which owned Epic Energy. The Epic portfolio included the Moomba to Adelaide Pipeline, the South West Queensland Pipeline and QSN Link, and the Pilbara Energy Pipeline (in Western Australia). The Australian Competition and Consumer Commission (ACCC) did not oppose the acquisition, after accepting a court enforceable undertaking from the APA Group to divest the Moomba to Adelaide Pipeline.

Singapore Power International, through its subsidiary *Jemena*, acquired a portfolio of gas transmission assets from Alinta in 2007. It owns and operates the Eastern Gas Pipeline, VicHub and the Queensland Gas Pipeline.

Figure 4.1
Major gas pipelines—eastern Australia



Transmission pipelines	No.
Moomba to Sydney Pipeline	1
Victorian Transmission System	2
Eastern Gas Pipeline (Longford to Horsley Park)	3
SEA Gas Pipeline	4
Moomba to Adelaide Pipeline	5
Tasmanian Gas Pipeline	6
South West Queensland Pipeline (Ballera to Wallumbilla)	7
Roma to Brisbane Pipeline	8
QSN Link	9
Queensland Gas Pipeline (Wallumbilla to Gladstone/Rockhampton)	10
Carpentaria Pipeline (Ballera to Mount Isa)	11
Amadeus Basin to Darwin Pipeline	12

Source: AER.

Table 4.1 **Major gas transmission pipelines**

PIPELINE	LENGTH (KM)	CAPACITY (TJ/D)	CONSTRUCTED	COVERED?	VALUATION ($ MILLION)	CURRENT ACCESS ARRANGEMENT	OWNER	OPERATOR
EASTERN AUSTRALIA								
Queensland								
North Queensland Gas Pipeline	391	108	2004	No	160 (2005)	Not required	Victorian Funds Management Corporation	AGL Energy, Arrow Energy
Queensland Gas Pipeline (Wallumbilla to Gladstone)	629	142	1989–91	No		Not required	Jemena (Singapore Power International)	Jemena Asset Management
Carpentaria Pipeline (Ballera to Mount Isa)	840	119	1998	Yes (light)		Not required	APA Group	APA Group
Berwyndale to Wallumbilla Pipeline	113		2009	No	70 (2009)	Not required	APA Group	APA Group
Dawson Valley Pipeline	47	30	1996	Yes	8 (2007)	2007–16	Westside 51%, Mitsui 49%	Westside
Roma (Wallumbilla) to Brisbane	440	219	1969	Yes	418 (2012)	2007–12	APA Group	APA Group
Wallumbilla to Darling Downs Pipeline	205	400	2009	No	90 (2009)	Not required	Origin Energy	Origin Energy
South West Queensland Pipeline (Ballera to Wallumbilla)	756	181	1996	No		Not required	APA Group	APA Group
QSN Link (Ballera to Moomba)	180	212	2009	No	165 (2009)	Not required	APA Group	APA Group
New South Wales								
Moomba to Sydney Pipeline	2029	420	1974–93	Partial (light)	835 (2003)	Not required	APA Group	APA Group
Central West Pipeline (Marsden to Dubbo)	255	10	1998	Yes (light)	28 (1999)	Not required	APA Group	APA Group
Central Ranges Pipeline (Dubbo to Tamworth)	300	7	2006	Yes	53 (2003)	2005–19	APA Group	Jemena Asset Management
Eastern Gas Pipeline (Longford to Sydney)	795	268	2000	No	450 (2000)	Not required	Jemena (Singapore Power International)	Jemena Asset Management
Victoria								
Victorian Transmission System (GasNet)	2035	1030	1969–2008	Yes	524 (2007)	2008–12	APA Group	APA Group/AEMO
South Gippsland Natural Gas Pipeline	250		2006–10	No	50 (2007)	Not required	DUET Group	Jemena Asset Management
VicHub		150 (into Vic)	2003	No		Not required	Jemena (Singapore Power International)	Jemena Asset Management
South Australia								
Moomba to Adelaide Pipeline	1185	253	1969	No	370 (2001)	Not required	APA Group (to be divested)	APA Group
SEA Gas Pipeline (Port Campbell to Adelaide)	680	303	2003	No	500 (2003)	Not required	APA Group 50%, REST 50%	APA Group
Tasmania								
Tasmanian Gas Pipeline (Longford to Hobart)	734	129	2002	No	440 (2005)	Not required	Palisade Investment Partners	Tas Gas Networks
NORTHERN TERRITORY								
Bonaparte Pipeline	287	80	2008	No	170 (2008)	Not required	Energy Infrastructure Investments (APA Group 20%, Marubeni 50%, Osaka Gas 30%)	APA Group
Amadeus Gas Pipeline	1512	104	1987	Yes	92 (2011)	2011–16	APA Group	APA Group
Wickham Point Pipeline	13		2009	No	36 (2009)	Not required	Energy Infrastructure Investments (APA Group 20%, Marubeni 50%, Osaka Gas 30%)	APA Group
Daly Waters to McArthur River Pipeline	330	16	1994	No		Not required	Power and Water	APA Group
Palm Valley to Alice Springs Pipeline	140	27	1983	No		Not required	Envestra (APA Group 33.4%, CKI 18.9%)	APA Group

TJ/d, terajoules per day; CKI, Cheung Kong Infrastructure; REST, Retail Employees Superannuation Trust.

Notes:

Covered pipelines are subject to regulatory arrangements under the National Gas Law.

For covered pipelines subject to full regulation, valuation refers to the opening capital base for the current regulatory period. For non-covered pipelines, listed valuations are estimated construction costs, subject to availability of data.

Coverage of the Moomba to Sydney Pipeline was partly revoked in 2003. The revoked portion runs from Moomba to the offtake point of the Central West Pipeline at Marsden. The covered portion became a light regulation pipeline in 2008. The listed valuation of the pipeline is that determined by the Australian Competition Tribunal for the regulatory period before the pipeline converted from full to light regulation.

'Current access arrangement' refers to access terms and conditions approved by the Australian Energy Regulator.

Some corporate names are abbreviated or shortened.

Sources: Capacity: National Gas Market Bulletin Board (www.gasbb.com.au); corporate websites. Other data: access arrangements for covered pipelines; EnergyQuest, *Energy Quarterly* (various issues); corporate websites, annual reports and media releases.

Table 4.2 **Gas distribution networks in eastern Australia**

NETWORK	CUSTOMER NUMBERS	LENGTH OF MAINS (KM)	ASSET BASE ($ MILLION)[1]	INVESTMENT—CURRENT PERIOD ($ MILLION)[2]	REVENUE—CURRENT PERIOD ($ MILLION)	CURRENT REGULATORY PERIOD	OWNER
QUEENSLAND							
Allgas Energy	84 400	2 900	427	134	339	1 Jul 2011–30 Jun 2016	APA Group 20%, Marubeni 40%, RREEF 40%
Envestra	89 100	2 560	319	140	312	1 Jul 2011–30 Jun 2016	Envestra (APA Group 33.4%, Cheung Kong Infrastructure 18.9%)
NEW SOUTH WALES AND ACT							
Jemena Gas Networks (NSW)	1 050 000	24 430	2 396	750	2 289	1 Jul 2010–30 Jun 2015	Jemena (Singapore Power International)
ActewAGL	124 000	4 720	288	91	292	1 Jul 2010–30 Jun 2015	ACTEW Corporation (ACT Government) 50%, Jemena (Singapore Power International) 50%
Wagga Wagga	23 800	680	62	21	50	1 Jul 2010–30 Jun 2015	Envestra (APA Group 33.4%, Cheung Kong Infrastructure 18.9%)
Central Ranges System	7 000	180	na	na	na	2006–19	APA Group
VICTORIA							
SP AusNet	602 000	9 860	1 140	367	963	1 Jan 2008–31 Dec 2012	SP AusNet (Singapore Power International 51%)
Multinet	668 000	9 960	1 070	196	906	1 Jan 2008–31 Dec 2012	DUET Group
Envestra	587 400	10 220	973	324	838	1 Jan 2008–31 Dec 2012	Envestra (APA Group 33.4%, Cheung Kong Infrastructure 18.9%)
SOUTH AUSTRALIA							
Envestra	410 700	7 890	1 024	494	1 033	1 Jul 2011–30 Jun 2016	Envestra (APA Group 33.4%, Cheung Kong Infrastructure 18.9%)
TASMANIA							
Tas Gas Networks	9 800	730	121	Not regulated	Not regulated	Not regulated	Tas Gas (Brookfield Infrastructure)
TOTALS	3 656 200	74 130	7 815	2 516	7 021		

na: not available.

1. For Tasmania, the opening capital base value is an estimated construction cost. For other networks, it is the initial capital base, adjusted for additions and deletions, as reset at the beginning of the current access arrangement period.
2. Investment data are forecasts for the current access arrangement period, typically of five years duration.

Note: Asset base, investment and revenue data are converted to June 2011 dollars.

Sources: Access arrangements for covered pipelines; company websites.

4.1.2 Distribution network ownership

The major gas distribution networks in southern and eastern Australia are privately owned, with four principal players:

- *Envestra*, a public company in which APA Group (33.4 per cent) and Cheung Kong Infrastructure (18.9 per cent) have shareholdings, owns networks in Victoria, South Australia, Queensland and the Northern Territory.
- *Singapore Power International,* through its subsidiary *Jemena*, owns the principal New South Wales gas distribution network (Jemena Gas Networks) and has a 50 per cent share of the ACT network (ActewAGL). Singapore Power International also has 51 per cent direct equity in a Victorian network (SP AusNet).
- *APA Group* has minority interests in Envestra and the Allgas Energy network in Queensland (rebranded from APT Allgas in March 2012), and owns the Central Ranges system in New South Wales.
- *DUET Group* owns Multinet in Victoria.

A series of recent ownership changes related to former Babcock & Brown assets. In December 2010 *Brookfield Infrastructure* acquired a portfolio of these assets via a merger with Prime Infrastructure. Brookfield retained ownership of Tas Gas Networks, but in July 2011 sold a minority share in Victoria's Multinet distribution network to *DUET Group* (raising DUET's equity in the network from 80 to 100 per cent).

In December 2011 the APA Group sold 80 per cent of the Allgas Energy distribution network in Queensland to *Marubeni Corporation* and *RREEF*, each of which holds a 40 per cent interest.

The ownership links between gas and electricity networks are significant. Jemena, APA Group, Cheung Kong Infrastructure and DUET Group all have ownership interests—in some cases, substantial interests—in both sectors (section 2.1.1).

4.2 Regulation of gas pipelines

The National Gas Law and Rules set out the regulatory framework for the gas pipeline sector. The AER regulates pipelines in jurisdictions other than Western Australia; the Economic Regulation Authority is the regulator in Western Australia.

The Law and Rules apply economic regulation provisions to covered pipelines. Different forms of economic regulation apply, based on competition and significance criteria.

Under *full regulation*, a pipeline provider must periodically submit an access arrangement to the regulator for approval. An access arrangement sets out the terms and conditions under which third parties can use a pipeline. It must specify at least one reference service likely to be sought by a significant part of the market, and a reference tariff for that service.

The AER regulates five transmission pipelines and 10 distribution networks under full regulation, including:

- transmission pipelines supplying Brisbane, Melbourne and Darwin (table 4.1)
- all major distribution networks in New South Wales, Victoria, Queensland, South Australia and the ACT. The Tasmanian and Northern Territory distribution networks and a number of small regional networks are unregulated.

An *Access arrangement guideline* (available on the AER website) details the regulatory process. Separate guidelines address dispute resolution and compliance with obligations under the Gas Law. Figure 4.2 sets out the regulatory timelines for AER reviews of transmission pipelines and distribution networks.

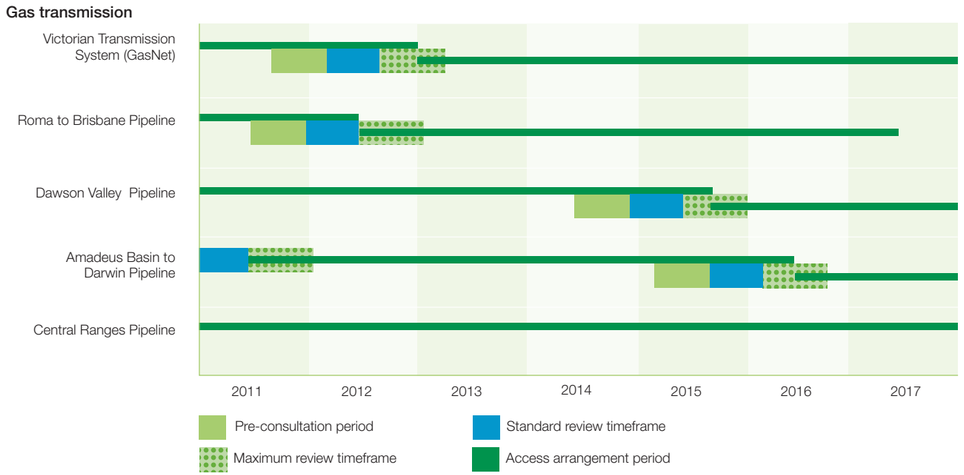
In summary, the regulator assesses the revenues needed to cover efficient costs (including a benchmark return on capital), then derives reference tariffs for the pipeline. The Rules allow for income adjustments via incentive mechanisms that reward efficient operating practices. In a dispute, an access seeker may request the regulator to arbitrate on and enforce the terms and conditions of the access arrangement. The AER's decisions on full regulation pipelines are subject to merits review by the Australian Competition Tribunal (section 4.5).

A pipeline may, in some circumstances, convert to *light regulation* without upfront price regulation. When light regulation applies, the pipeline provider must publish access prices and other terms and conditions on its website. The AER is responsible for three transmission pipelines subject to light regulation: the Carpentaria Gas Pipeline in Queensland, the covered portions of the Moomba to Sydney Pipeline and the Central West Pipeline in New South Wales. No Australian distribution network is currently subject to light regulation.

The Gas Law anticipates the potential for market conditions to evolve, and includes a mechanism for reviewing whether a particular pipeline needs economic regulation. The coverage of several major transmission pipelines has been revoked over the past decade. Additionally, only one transmission pipeline constructed in the past decade is covered.

The Gas Law also enables the federal Minister for Resources and Energy to grant a 15 year 'no coverage' determination

Figure 4.2
Indicative timelines for AER reviews of gas pipelines



Note: The timeframes are indicative. The standard review period begins when a network business submits an access arrangement proposal to the AER by a date specified in the previous access arrangement. The timeframes may vary if the AER grants a time extension for the proposal submission. An access arrangement period is typically five years, but a provider may apply for a different duration.

for new pipelines in certain circumstances. Following recommendations from the National Competition Council, the Minister granted 'no coverage' determination for two pipelines supplying LNG projects in Queensland:

- BG Group's Queensland Curtis LNG Pipeline (in July 2010)
- the Australia Pacific LNG Gladstone Pipeline, running from the Surat–Bowen Basin to Curtis Island (in August 2012).

4.3 AER Rule change proposal on pipeline regulation

Following a Rule change proposal from the AER in 2011, the Australian Energy Market Commission (AEMC) in November 2012 implemented a common approach to setting the rate of return for the electricity and gas sectors. The new Rule requires a holistic assessment of the overall rate of return required to meet the efficient costs of a benchmark entity. It also introduced a requirement for the AER to develop a guideline on its approach to estimating the rate of return. The guideline must be reviewed at least every three years in consultation with industry, consumers and other interested parties.

4.4 Recent AER decisions on gas pipelines

The AER completed an access arrangement review for Queensland's Roma to Brisbane transmission pipeline in August 2012. It released draft decisions for Victoria's gas transmission and distribution networks in September 2012.

4.4.1 Roma to Brisbane Pipeline

In August 2012 the AER released its final decision on APA Group's access arrangement proposal for the Roma to Brisbane Pipeline in Queensland. While it accepted elements of the proposal, it identified issues relating to the rate of return and operating expenditure. The AER approved a rate of return of 7.3 per cent, compared with APA Group's proposed 8.8 per cent. It approved operating expenditure over the access arrangement period of $64 million (compared with the proposed $80 million) and revenues of $263 million (compared with the proposed $325 million). APA Group did not seek a Tribunal review of the AER's decision.

The AER estimated the effect on residential gas prices will be a 1.5 per cent increase over the life of the access arrangement. The corresponding expected increase in prices for large industrial users is 10 per cent; transmission costs account for a larger proportion of energy bills for industrial users than for residential customers.

4.4.2 Victorian gas transmission system—draft decision

In September 2012 the AER released a draft decision on APA GasNet's access arrangement proposal for the Victorian gas transmission system for 2013–17. The draft decision revised many elements of the proposal. In summary, it approved:

- revenues that are 39 per cent below proposed revenues for the period
- reference tariffs that are 34 per cent below the proposed tariffs
- capital expenditure levels that are 58 per cent below proposed levels.

The differences between the draft decision and the network's proposal related mainly to the AER:

- using a lower rate of return on equity than that proposed
- having lower expectations of capital and operating expenditure requirements than those proposed. In particular, the AER found some proposed capital expenditure was neither prudent not efficient.

The AER's draft decision would significantly alter the impact on customers, compared with the impact of the network's proposal. It would result in a typical residential gas bill *falling* by $4 per year (compared with the proposed average price increase of $6 per year). The AER will make a final decision on the access arrangement (including revisions that APA GasNet may propose) in March 2013.

4.4.3 Victorian gas distribution networks—draft decisions

In 2012 the AER reviewed access arrangement proposals for Victoria's three gas distribution networks—Multinet, Envestra and SP AusNet—for the 2013–17 period. In September 2012 it released draft decisions revising many elements proposed by the distribution network service providers. The nature and degree of revision varied, depending on the circumstances and characteristics of each network. In summary, the draft decisions approved:

- revenues that are 21–32 per cent below proposed revenues for the period
- reference tariffs that are 23–34 per cent below the proposed tariffs. As a result, tariffs would fall over 2013–17 from their 2012 levels in two networks, and would rise by less than consumer price index increases in the third network
- capital expenditure levels that are 22–59 per cent below proposed levels
- operating expenditure levels that are 13–26 per cent below proposed levels.

The differences between the draft decisions and the network proposals related mainly to the AER:

- using a lower rate of return on equity than that proposed
- having lower expectations of capital expenditure requirements than that proposed, especially in relation to distribution mains replacement
- revising operating expenditure requirements to be more in line with historical levels.

The AER draft decisions would significantly alter the impact on customers, compared with the impact of the networks' proposals. They would result in a typical residential gas bill *falling* by $9 per year for customers in the Multinet and SP AusNet networks (compared with the proposed average price increases of $13–19 per year). For Envestra customers, a typical bill would rise by $7 per year on average (compared with an average $56 increase in the proposal). The AER will make final decisions for the three Victorian networks (including revisions that the network providers may propose) in March 2013.

4.5 Tribunal reviews of AER decisions

AER decisions on access arrangement proposals are subject to merits review by the Australian Competition Tribunal. Between September 2008 and October 2012, network businesses sought reviews of five decisions on gas distribution networks. Three reviews were completed in January 2012—for the Queensland and South Australian networks. The Tribunal upheld the AER's decision on returns on equity and cost of gas losses, but overturned the AER's decisions on the cost of debt and operating expenditure. Specifically, the Tribunal rejected:

- the AER's approach to calculating the allowance for the cost of debt
- the AER's decision to prevent Envestra from recovering the costs of a 'network management fee' paid to a related party.

Overall, the Tribunal increased allowable network revenues by $92 million. The decisions increased a typical residential gas bill in Queensland by around 2 per cent and in South Australia by 1 per cent. Two reviews completed before 2012—for the New South Wales and ACT networks—increased allowable network revenues by $190 million.

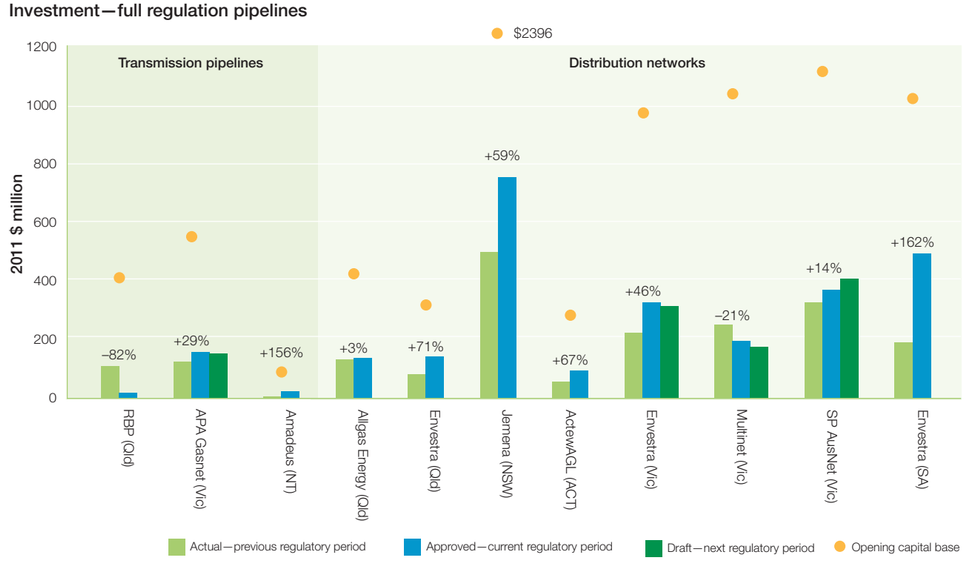
4.6 Pipeline investment

Gas *transmission* investment typically involves large and lumpy capital projects to expand existing pipelines (through compression, looping or extension) or construct new infrastructure. Significant investment in the regulated and unregulated transmission sector has occurred since 2010. Additionally, a number of major projects are under construction or have been announced for development. In eastern Australia:

- Epic Energy (acquired by APA Group in 2012) commissioned the QSN Link and expanded capacity on the South West Queensland Pipeline in 2009, to enable gas delivery between Queensland and the southern states. A $760 million stage 3 expansion of the South West Queensland Pipeline was completed in 2012. The expansion loops the existing 937 kilometre pipeline by building an adjacent pipeline that effectively doubles capacity
- a 10 per cent capacity expansion of the Roma to Brisbane Pipeline is scheduled for completion late in 2012
- a five year capacity expansion of the Moomba to Sydney Pipeline is scheduled for completion in 2013
- construction is underway on three major transmission pipelines in Queensland (each around 400 kilometres in length) to transport gas from the Surat–Bowen Basin to Gladstone for processing and export as LNG. A fourth pipeline has been announced (section 3.2.1).

Investment to augment and expand *distribution* networks in eastern Australia is forecast at around $2.6 billion in the current access arrangement periods (typically five years). The underlying drivers include rising connection numbers, the replacement of ageing networks, and the maintenance of capacity to meet customer demand. For example, a significant driver of capital expenditure for Envestra's South Australian distribution network is the replacement of cast iron and unprotected steel mains, to address leaks from older sections of the pipeline.

Figure 4.3
Investment—full regulation pipelines



Notes:

Forecast capital expenditure in the current access arrangement period (typically five years), compared with actual levels in previous periods. See tables 4.1 and 4.2 for the timing of regulatory periods. The data account for the impact of decisions by the Australian Competition Tribunal. The Victorian data include draft approvals released in September 2012 for 2013–17.

Opening capital bases are at the beginning of the current access arrangement period.

Source: AER final and draft decisions on access arrangements.

Figure 4.3 illustrates recent investment data for gas transmission pipelines and distribution networks that are subject to full regulation. The chart compares approved forecasts in current access arrangements with actual expenditure in previous periods; the Victorian data also include draft approved investment for 2013–17 (released in September 2012).

Sections 4.4.1 and 4.4.2 comment on investment outcomes for the major *transmission* pipelines under full regulation—the Roma to Brisbane Pipeline and the Victorian gas transmission system. For *distribution* networks, investment is forecast to increase in the current access arrangement periods, compared with previous periods, by an average of 45 per cent. Investment is equal, on average, to 33 per cent of the networks' opening capital bases.

Investment forecasts vary across the networks. Forecast growth in the current access arrangement periods, compared with actual expenditure in previous periods, is highest in Envestra's Queensland and South Australian networks (up 71 per cent and 162 per cent respectively). Draft decisions for Victoria's distribution networks allow for investment to rise, on average, by 1 per cent in 2013–17, compared with that in 2008–12.

4.7 Pipeline revenues and retail impacts

Figure 4.4 illustrates approved revenue forecasts for gas transmission pipelines and distribution networks that are subject to full regulation. The chart compares approved forecasts in current access arrangements with those approved in previous periods; the Victorian data also include draft approved revenues released in September 2012 for 2013–17.

Sections 4.4.1 and 4.4.2 comment on revenues for the major *transmission* pipelines under full regulation. For *distribution* networks, revenues are forecast to increase in

Figure 4.4

Revenues—full regulation pipelines

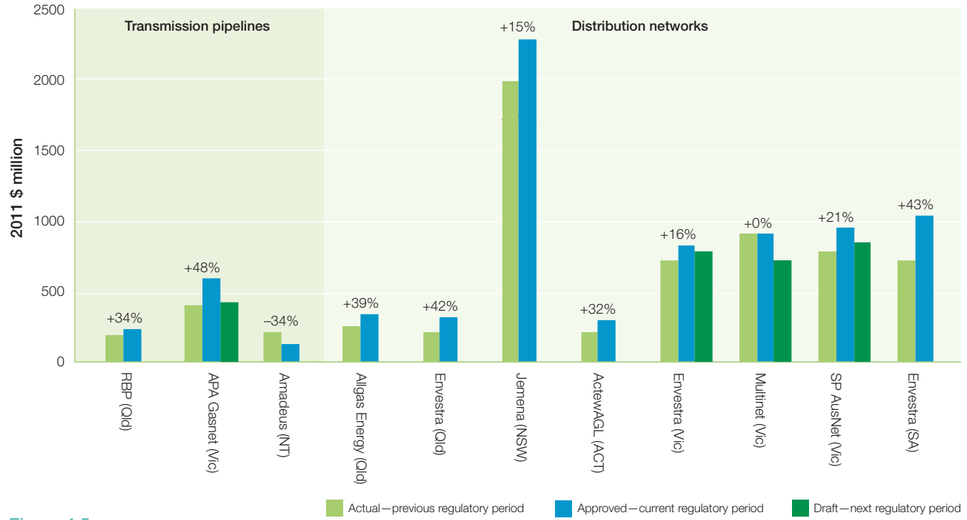
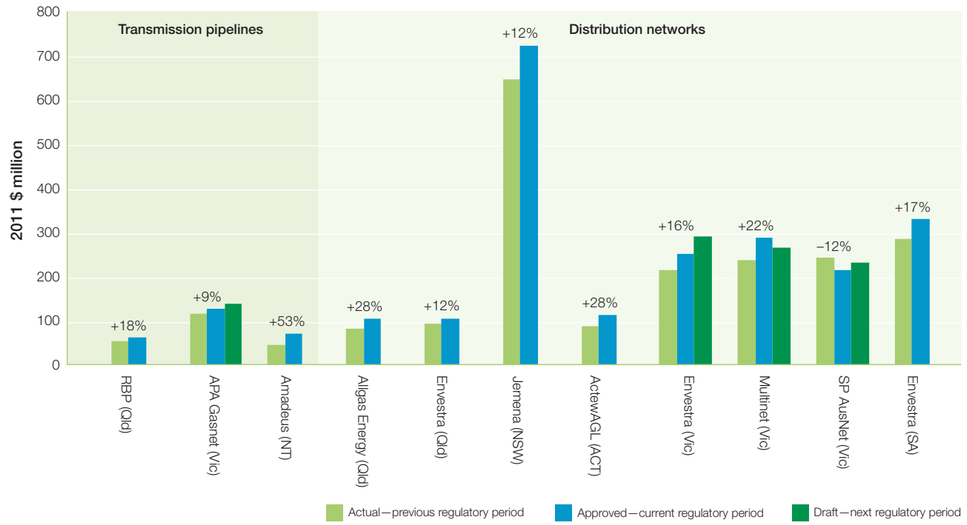


Figure 4.5

Operating expenditure—full regulation pipelines

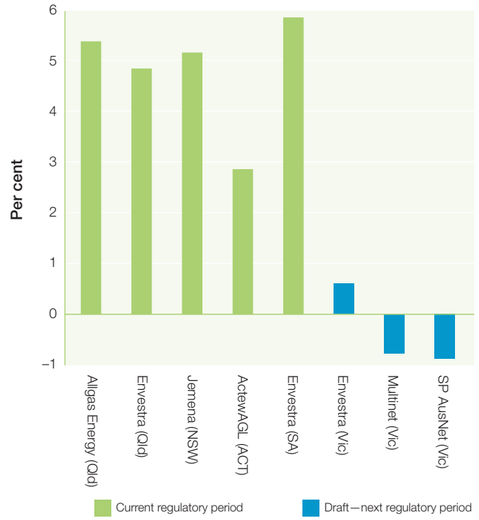


Notes (figures 4.4 and 4.5): Forecast revenues in the current access arrangement period (typically five years), compared with forecasts in previous periods; forecast operating expenditure in the current period, compared with actual levels in previous periods. See tables 4.1 and 4.2 for the timing of regulatory periods. The data account for the impact of decisions by the Australian Competition Tribunal. The Victorian data include draft approvals released in September 2012 for 2013–17.

Source: AER final and draft decisions on access arrangements.

Figure 4.6

Impact of AER decisions on residential gas charges



Note: Impact on annual gas charges for a typical residential customer in that jurisdiction in current access arrangement period. See table 4.2 for the timing of regulatory periods. The Victorian data are based on draft approvals released in September 2012 for 2013–17. The data account for the impact of decisions by the Australian Competition Tribunal.

Source: AER final and draft decisions on access arrangements.

the current access arrangement periods, compared with previous periods, by an average of 18 per cent. The largest increases are for Envestra's networks in South Australia and Queensland (43 per cent and 42 per cent respectively). The drivers include rising asset bases associated with higher levels of investment (resulting in higher returns on capital). Some decisions reflect a rise in underlying costs, including operating and maintenance expenditure and capital financing costs (section 2.3).

AER determinations made in 2012 reflect recent reductions in the risk free rate that have lowered the overall cost of capital. Draft decisions for Victoria's distribution networks would result in revenues falling, on average, by 13 per cent in 2013–17, compared with revenues in 2008–12 (section 4.4.3).

4.7.1 Operating expenditure

Operating and maintenance costs are a key driver of pipeline revenue requirements. Figure 4.5 illustrates recent data for gas transmission pipelines and distribution networks that are subject to full regulation. The chart compares approved forecasts in current access arrangements with actual expenditure in previous periods; the Victorian data also include draft approved operating expenditure for 2013–17 (released in September 2012).

Sections 4.4.1 and 4.4.2 comment on outcomes for the major *transmission* pipelines under full regulation. For *distribution* networks, real operating expenditure is forecast to increase in the current access arrangement periods by an average of 18 per cent, compared with actual expenditure in previous periods. Outcomes vary significantly across the networks, with the largest increases forecast for the Allgas Energy (Queensland) and ActewAGL (ACT) networks (28 per cent).

Draft decisions for Victoria's distribution networks allow for operating expenditure to rise, on average, by 5 per cent in 2013–17, compared with that in 2008–12.

4.7.2 Retail impacts of regulatory decisions

Gas *transmission* charges typically make up 3–8 per cent of a typical gas bill for a residential customer; the ratio is significantly higher for industrial users. In Queensland, the AER's 2012 decision on the Roma to Brisbane Pipeline is expected to cause almost no change in a typical residential customer's bill over the next five years. In Victoria, the AER's 2012 draft decision on APA GasNet's Victorian transmission pipeline would result in a typical residential bill falling by around 0.4 per cent.

Gas *distribution* charges typically make up 40–60 per cent of a typical gas bill for a residential customer. In recent years, rising capital and operating expenditure, as well as other cost drivers (including higher financing costs and the rising cost of unaccounted for gas) raised gas distribution costs, leading to retail charges for residential customers rising by 5–6 per cent (figure 4.6). The AER's 2012 draft decisions for the Victorian distribution networks would have little impact on customer charges over 2013–17.