# Draft Decision

## Australian Gas Networks (Victoria and Albury) Access Arrangement 2023 to 2028

(1 July 2023 to 30 June 2028)

## Attachment 5
## Capital expenditure

December 2022

AUSTRALIAN ENERGY REGULATOR

Inquiries about this publication should be addressed to:

Australian Energy Regulator
GPO Box 3131
Canberra ACT 2601
Tel: 1300 585 165

AER reference: AER212593

# Note

This attachment forms part of the AER's draft decision on the access arrangement that will apply to Australian Gas Networks (Victoria and Albury) (AGN) for the 2023–28 access arrangement period. It should be read with all other parts of the draft decision.

The draft decision includes the following documents:

Overview

Attachment 1 – Services covered by the access arrangement

Attachment 2 – Capital base

Attachment 3 – Rate of return

Attachment 4 – Regulatory depreciation

Attachment 5 – Capital expenditure

Attachment 6 – Operating expenditure

Attachment 7 – Corporate income tax

Attachment 8 – Efficiency carryover mechanism

Attachment 9 – Reference tariff setting

Attachment 10 – Reference tariff variation mechanism

Attachment 11 – Non-tariff components

Attachment 12 – Demand

Attachment 13 – Capital expenditure sharing scheme

# Contents

# 5 Capital expenditure

Capital expenditure (capex) refers to the capital costs and expenditure incurred in the provision of pipeline services.[1] This investment mostly relates to assets with long lives and these costs are recovered over several access arrangement periods.

In this attachment, we outline our assessment of AGN's capex proposal. Our draft decision consists of two parts:

- whether capex spent in the six years before the 2023-28 access arrangement period should be added to the capital base[2] and
- whether AGN's forecast of capex for the 2023-28 access arrangement period meets the conforming capex criteria in the National Gas Rules (NGR).[3]

## 5.1 Draft decision

### 5.1.1 Conforming capex for the 2017 and 2018–21 period, estimates for 2022 and January to June 2023

We approve the actual total net capex for AGN for the years 2017 and 2018–2021 as conforming capex, made up of the following:

- 2017 capex – at the time of our last decision, actual expenditure for 2017 was not known, and an estimate was included in the capital base. We now have actual expenditure for that year and have updated the capital base accordingly[4]
- 2018–21 capex – actual expenditure is available for these years, and we have assessed whether this can be included in the capital base[5]
- 2022 and the six-month extension period – actual capex is not available currently. We have included an estimate in the capital base. We will update this in the next access arrangement decision, when actual capex is available.[6] We will assess whether AGN's actual capex for 2022 and the six-month extension period is conforming capex under the NGR in the subsequent (2028–32) access arrangement review and adjust for any differences between actual and estimated capex.[7]

---

1 NGR, r. 69.

2 NGR, r. 77 sets out the process for determining the opening capital base.

3 These criteria are set out in NGR, r. 79.

4 These criteria are set out in NGR, r. 79.

5 We assess whether actual capital expenditure is conforming capital expenditure under the capital expenditure criteria in NGR, r. 79.

6 This is consistent with our obligations under NGR, rr. 77(2)(b), 79.

7 This is consistent with our obligations under NGR, rr. 77(2)(b), 79.

### 5.1.2 Conforming capex for the 2023–28 period

We accept AGN's capex forecast of $433.5 million ($2022–23) total net capex for the 2023–28 access arrangement period as conforming capex under the NGR.[8]

We assessed AGN's forecast capex against our alternative estimate of efficient capex, considering the available evidence, engineering advice from our consultants and submissions from stakeholders.

Overall, we found that most aspects of AGN's proposal were likely to be conforming capex. We determined an alternative forecast of $418.2 million ($15.3 million or 3.5% less than AGN's proposal) because we did not accept proposed expenditure on hydrogen readiness ($10 million) and a cyber security uplift in information technology ($5.3 million). On balance, our alternative estimate is not materially different from AGN's forecast capex and we accepted AGN's total capex proposal of $433.5 million as prudent and efficient.

## 5.2 AGN's proposal

### 5.2.1 Actual and estimated capex in the 2018–22 period

AGN's actual and estimated capex for the current access arrangement is $680.7 million, compared with the AER's final decision estimate of $655.1 million. AGN's mains replacement capex was higher than forecast during the period,[9] leading to the overspend.

### 5.2.1 Forecast capex in the 2023–28 period

AGN proposed forecast net capex of $433.5 million ($2022–23) for the 2023–28 access arrangement period is $221.5 million (36%) lower than its actual net capex for the 2018–22 period.[10]

8 The criteria for conforming capital expenditure are set out in NGR, r. 79.

9 AER, *Final Decision AGN Gas access arrangement 2018-22- Overview,* November 2017, p. 91.

10 AGN's capex for both 2021-22 and 2022-23 are estimates only.

Table 5.1 sets out AGN's proposed capex by category over the forecast period.

**Table 5.1 AGN's proposed capex by category over the 2023–28 access arrangement period ($million, 2022–23)**

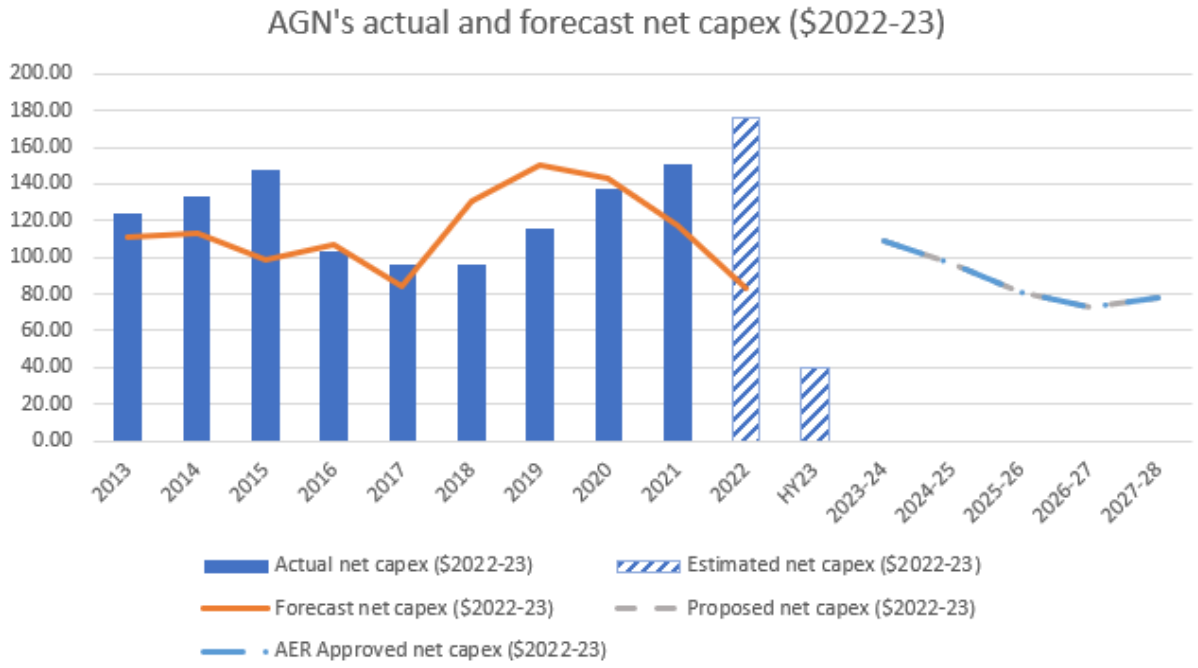
| Category | 2023-24 | 2024-25 | 2025-26 | 2026-27 | 2027-28 | Total |
|---|---|---|---|---|---|---|
| Mains replacement | 6.1 | 6.2 | 6.2 | 5.6 | 5.5 | 29.5 |
| Meter replacement | 6.9 | 8.7 | 8.7 | 7.7 | 7.8 | 39.8 |
| Augmentation | 23.1 | 18.5 | 0.8 | 0.5 | 14.8 | 57.8 |
| Telemetry | 1.1 | 0.9 | 0.8 | 0.9 | 0.8 | 4.5 |
| IT | 14.7 | 11.2 | 11.2 | 18.1 | 19.6 | 74.9 |
| Connection assets | 44.1 | 39.4 | 33.8 | 28.0 | 20.7 | 165.9 |
| Other distribution assets | 7.7 | 6.1 | 13.7 | 6.6 | 3.0 | 37.0 |
| Escalation | 0.2 | 0.5 | 0.8 | 1.1 | 1.4 | 4.0 |
| Capitalised network overheads | 4.3 | 4.1 | 4.0 | 3.8 | 3.9 | 20.1 |
| **TOTAL** | **108.1** | **95.6** | **80.1** | **72.2** | **77.5** | **433.5** |
| Customer contributions | 4.3 | 4.2 | 4.1 | 3.9 | 3.3 | 19.7 |
| **GROSS TOTAL** | **112.5** | **99.7** | **84.1** | **76.1** | **80.8** | **453.2** |

Note: Totals may not sum due to rounding.
Source: AGN submitted updated forecast capex values which reduced total net capex by $0.8 million ($2022–23). AGN, Response to AER Information request #021, 25 October 2022. AER analysis.

The major components of the forecast gross total capex over the 2023–28 period are connection assets (38%) and information technology (17%).

Figure 5.1 compares AGN's past and proposed forecast capex, and the forecasts accepted by us in our 2017–22 decision and this draft decision.

**Figure 5.1 AER's draft decision compared to AGN's past and proposed capex ($million, 2022-23)**




Source: AER analysis.
Note: Significant step down in forecast due to AGN mains replacement program nearing completion and revised new connections following Victorian Gas Substitution Roadmap.

## 5.3 Assessment approach

We must make two decisions on AGN's capex. First, we assess past capex to determine whether it is conforming capex that can be added to the opening capital base.[11] Second, we assess AGN's forecast of required capex for the 2023–28 period to determine whether it meets the new capex criteria set out in the NGR.[12]

The following sections set out our approach and the tools and techniques we employ in forming these decisions.

### 5.3.1 Capex in the 2018–22 period

We reviewed AGN's submission and supporting material to assess its actual and estimated capex for the 2018–22 access arrangement period. Where capex was higher than forecast in our final decision, we scrutinised AGN's reasons for the overspend. We also had regard to the presence of the capital expenditure sharing scheme (CESS), and the incentive this

[11] Under NGR, r. 77(2)(b), we add capital expenditure to the capital base only if it is conforming capital expenditure.

[12] NGR, r. 79.

provides to deliver efficient capex.[13] We used this information to identify whether capex over the 2018–22 period was conforming capex.

### 5.3.2 Capex in the 2023–28 period

Our draft decision is made on total forecast capex in accordance with the new capex criteria in the NGR.[14]

To make a decision, we construct an alternative estimate of efficient capex, and compare it to AGN's proposal. If our alternative estimate is not materially different to AGN's proposal, we will accept AGN's proposal. On the other hand, if there is a material difference at the total capex level, we will not accept AGN's forecast, and substitute it with our alternative estimate.

We have assessed the key drivers of forecast capex to consider whether AGN's proposed capex complies with the new capex criteria.[15] In doing so, we relied on the following information:

- the access arrangement submission and access arrangement information, which outline AGN's capex program and the main drivers of those programs
- business cases that detail the expenditure requirements for specific projects
- AGN's Regulatory Information Notice (RIN) template response
- AGN's capex forecast model
- responses to information requests
- submissions from interested parties.

For each category of capex we considered the scope, timing and cost of the proposed capex in order to form a view on whether it complies with the new capex criteria. We also considered whether cost forecasts were arrived at on a reasonable basis and represent the best forecast possible in the circumstances.[16]

Our assessment was particularly focussed on the materiality of the capex categories, whether the expenditure was significantly higher than historical expenditure, if the capex related to a new type of asset, if there was significant precedent value in our decision, or where stakeholders have raised significant issues. We also take into consideration the interrelationships between the capex forecast and other constituent components of our decision, such that our decision is likely to contribute to the achievement of the National Gas Objective (NGO).[17]

---

13 The capital expenditure sharing scheme (CESS) provides an incentive for a service provider to realise savings on its capex program by rewarding those service providers that spend less capex than forecast and penalising those that spend more than forecast. Further information can be found in the CESS section at Attachment 13.

14 NGR, r. 79(1).

15 NGR, r. 79(1)

16 NGR, r. 74(2).

17 We are required to do this under NGL, s. 28(1).

Table 5.2 shows compares AGN's capex at a total and component level from the current access arrangement period with the 2023–28 access arrangement period (including % of forecast total capex).

**Table 5.2 AGN capital expenditure proposal versus current AA actuals/estimates**

| Capex (June $2023 millions) | 2017–22 | 2023–28 | Difference ($m) |
|---|---|---|---|
| Mains Replacement | 264.7 | 29.5 (6.8%) | -235.2 |
| Connection assets | 231.6 | 165.9 (38.3%) | -65.7 |
| IT | 50.6 | 74.9 (17.3%) | 24.3 |
| Meter replacement | 35.1 | 39.8 (9.2%) | 4.7 |
| Augmentation | 15 | 57.8 (13.3%) | 42.8 |
| Telemetry | 1.8 | 4.5 (1.0%) | 2.7 |
| Other assets | 25.2 | 37.0 (8.5%) | 11.8 |
| Escalation | 0 | 4.0 (0.9%) | 4.0 |
| Overheads | 56.8 | 20.1 (4.6%) | -36.7 |
| **TOTAL** | **680.7** | **433.5** | **-247.2** |
| Customer Contributions | 24.5 | 19.7 (4.6%) | -4.7 |
| **GROSS TOTAL** | **705.2** | **453.2** | **-251.9** |

Source: AGN submitted updated forecast capex values which reduced total net capex by $0.8 million ($2022–23). AGN, *Response to AER Information request #020,* 25 October 2022.
Totals may not sum due to rounding

### 5.3.3 Interrelationships

In assessing AGN's total forecast capex, we considered other components of its access arrangement proposal, including:

- possible trade-offs between capex and operating expenditure (opex)
- any differences between capitalisation policies applied in the 2018–22 and 2023–28 periods
- the growth in the price of labour for opex and capex
- demand forecasts, particularly relating to forecast new gas connections.

## 5.4 Reasons for draft decision on 2018–22 period capex

### 5.4.1 Conforming capex for 2018–22

AGN's actual and estimated capex for the current access arrangement is $680.7 million, compared with the AER's final decision estimate of $655.1 million. The difference was driven by higher than forecast mains replacement volumes.

We reviewed AGN's submission and supporting material to assess its proposed capex for the 2018–22 access arrangement period. Where capex was higher than accepted in our 2018–22 final decision, we scrutinised AGN's reasons for the overspend. We also had regard

to the presence of the CESS, and the incentive this provides to deliver efficient capex.[18] We used this information to identify whether capex over the 2018–22 period was conforming capex.

The framework allows regulated businesses to reprioritise capex to achieve prudent and efficient outcomes, such as response to COVID and safety priorities. We accept AGN's acceleration of its mains replacement program. We note the overall overspend is modest.

## 5.5 Reasons for draft decision on 2023–28 period capex

As noted in section 5.3, we have assessed AGN's proposed total capex by constructing an alternative estimate of efficient capex. To do this we have assessed the prudency and efficiency of particularly important parts of AGN's capital expenditure. Our alternative estimate has focussed on four categories of capex that represent around 80% of forecast capex, being connections, IT, augmentation, and meter replacement. We have also focussed on other assets (including hydrogen readiness).

**Table 5.3 AGN main drivers of capex**

| Category | % of total | Increase/decrease over current period estimate ($2023, million) |
|---|---|---|
| Connection Assets | 38.3% | -65.7 |
| IT | 17.3% | 24.3 |
| Augmentation | 13.3% | 42.8 |
| Meter replacement | 9.2% | 4.7 |

Source: AGN, AGNIR026Attachment 9.3A GSR Response Capex Forecast Model 25102022 Update, 25 October 2022

### 5.5.1 New customer connections

New customer connections capex includes the cost of assets to connect a customer to the network. This includes the cost of installing new gas mains, service pipes (to connect houses/businesses to the mains) and meters to measure gas consumption.

Distribution businesses have a regulatory obligation to make a connection offer to residential and commercial/industrial customers making applications to connect to its distribution network.[19]

Because of this, the number of customers AGN will need to connect during a five-year access arrangement period – and ultimately the volume of new assets it will need to install to service these customers – mostly depends on factors outside of AGN's control. These include the number of new dwellings being constructed, prevailing regulatory standards (particularly those relating to energy efficiency and carbon reduction, which may lead to

[18] The capital expenditure sharing scheme (CESS) provides an incentive for a service provider to realise savings on its capex program by rewarding those service providers that spend less capex than forecast and penalising those that spend more than forecast. Further information can be found in the CESS section at Attachment 13.

[19] NGR, rr. 119J, 119K,119S (1).

fewer new customers installing gas appliances) and level of industrial growth in AGN's distribution footprint.

#### 5.5.1.1 AGN's proposal

AGN forecast connections capex of $165.9 million ($2022-23, direct cost) over the 2023–28 period. This is substantially lower than AGN's capex of $231.6 million in the current period. AGN reduced its connections capex in response to the Victorian Gas Substitution Roadmap (Roadmap), as it anticipated that government policies to reduce carbon emissions will see many potential new customers opting not to connect to the gas network.[20]

#### 5.5.1.2 Our assessment

Based on all the information before us, we are satisfied AGN's capex forecast of $165.9 million ($2022–23) for connections is conforming capex.[21]

We assessed AGN's connections capex by considering the likely volume of new customers, and the cost of each new connection (unit cost). Forecast connection volumes are split into two categories, depending on the amount of gas being consumed:

- Volume Tariff (Tariff V) – customers who consume less than 10 Terajoules of gas per year, usually residential and small commercial and industrial[22]
- Demand Tariff (Tariff D) – more than 10 Terajoules of gas per year, typically large commercial and industrial.[23]

AGN proposed very little connections capex for Tariff D. Our assessment focuses on Tariff V connections.

#### 5.5.1.3 Forecast volume of new connections

AGN's initial proposal used a standard forecasting model to estimate the volume of new connections in the next five years. This involved:

- using the Housing Institute of Australia's (HIA's) forecast of new dwelling construction as a proxy for the number of potential new customers
- determining the proportion of new dwellings that typically connect to the gas network, and trending this forward for the next five years (called the marginal penetration rate)
- multiplying the predicted number of new dwellings by the marginal penetration rate to give a forecast of new connections.

For small commercial and industrial Tariff V customers, AGN used a historical average of connection rates to forecast new connections. This resulted in a relatively small volume of new connections over the access arrangement period.

---

20 In line with the Roadmap, the Victorian Government will change rules to clarify that connections to new estates are not compulsory and will implement a 7-star energy efficiency rating for new dwellings. This new standard may make the installation of gas appliances less attractive than electric alternatives, as new dwellings will need to meet a carbon emission "budget".

21 NGR r. 79

22 I&C customers are generally classified under Tariff D if they consume more than 10 TJ of gas per year.

23 I&C customers are generally classified under Tariff V if they consume less than 10 TJ of gas per year.

Following the release of the Roadmap, AGN amended its volume forecast for residential customers, but did not amend its commercial and industrial customers, on the basis that it is unclear how the roadmap will affect connections in this sector. For residential customers, AGN applied an adjustment to the forecast trend, starting at a 13% reduction in new connections volumes at the start of the period, and ramping up to a 75% reduction in 2027–28.[24] This is based on the expectation that government policies to reduce carbon emissions will become steadily more effective at reducing the rate of new connections over time.

As noted in Attachment 12 on forecast demand, there is significant uncertainty in predicting how a change in government policy will affect demand for natural gas connections. However, it is reasonable to assume that the impact will be greater over time. Dwellings that have already been approved or are currently under construction are not subject to the changes, and it is also reasonable to expect there to be a lag in customer response to the changes, as customers become more familiar with the new framework.

We note that the risk to AGN and gas customers of under or over forecasting new connections is limited by the way AGN's prices are set. AGN is subject to a price cap form of control. That is, AGN's prices are set at the time of the access arrangement and, other than in limited circumstances, such as a cost pass-through, the prices are set for the full period. This contrasts to a revenue cap, where prices are adjusted each year to allow a service provider to recover its revenue allowance (which incorporates its capex forecast), irrespective of demand.

Because AGN is subject to a price cap, if its customer numbers increase above the forecast, it will retain the extra revenue from these customers, which will offset to a large extent the additional cost of connecting the new customers. Conversely, if AGN connects fewer customers than forecast, it will earn less revenue, such that existing customers do not pay for connections that are forecast but do not occur.

We accept that policies flowing from the Roadmap are likely to lead to a reduction in new connections, particularly as the access arrangement period progresses. We consider the volume adjustment proposed by AGN is reasonable and proportionate to the likely change in new dwellings connecting to the gas network, noting that there remains considerable uncertainty about the likely impact of these changes.

#### 5.5.1.4 Unit rates

AGN's proposed unit rates for new connections are higher than its historical rates. AGN has identified two drivers of increases in unit rates:[25]

- The costs of carrying out work will increase over time as additional administrative and safety standards (including access and permit requirements, third party approval processes, etc.) raise contractor costs. For example, in recent years, local authorities have designated tree protection zones, which require the use of non-destructive excavation (for example, hydro or manual excavation as opposed to mechanical).

---

[24] AGN, *Revisions to Final Plan 2023-28_Attachment 13.4_GSR Response_Revisions to Demand_PUBLIC_update,* September 2022, p. 14

[25] AGN, *Final Plan_Attachment 9.6_Unit Rates Report* July 2022, p. 14

- Road reinstatement specifications and traffic management specifications are becoming more stringent. For example, AGN states it is required to conduct full lane width profiling for roads under five years old. Specifications can also vary by local authority. This contributes to higher costs, although the impact of this cost pressure on current unit rates has been masked to some extent by volatility in the mix of work completed.

We have accepted AGN's unit rates for new connection assets on the basis that:[26]

- The current costs incurred reflect competitively tendered contractor costs. These rates are considered efficient as they have been determined through competitive market processes in line with established procurement processes.
- The forecast unit rates are reflective of the most recent 2022 contracted unit rates.
- The forecast rate for new domestic services is likely to be higher in the Central and Northern Region of Victoria which tends to be costlier due to high costs involved in breakout and reinstatement.[27] [28]

### 5.5.2 Information and communication technology

We are not satisfied that AGN's proposed $74.9 million ($2022–23) for information and communication technology (ICT) capex is conforming capex. Our decision is to include $69.6 million ($2022–23) in our alternative capex estimate of conforming capex. Our alternative estimate does not include AGN's proposed cybersecurity uplift but includes all of AGN's other ICT projects.

#### 5.5.2.1 AGN Proposal

AGN's proposed 2023–28 ICT capex of $74.9 million is $24.9 million or 50% higher than the actual and estimated ICT capex in the current access arrangement period.

The uplift compared to the current period is largely driven by Australian Gas Infrastructure Group's (AGIG) program of works to transition and bring inhouse several of its core IT systems toward the end of the 2023–28 access arrangement period.[29]

Table 5.4 sets out AGN's forecast of ICT capex over the next access arrangement period in comparison to the current period (categorised as recurrent or non-recurrent expenditure in line with our Guidance Note on ICT, discussed further below).

---

26 AGN, *Final Plan_Attachment 9.6_Unit Rates Report* July 2022.

27 AGN, *Final Plan_Attachment 9.6_Unit Rates Report July 2022*, p. 6

28 Some new estates particularly in the inner Northern region have footpaths already established and Therefore, will have additional costs associated with the breakout, excavation, plant and equipment usage and disposal. Also contributing is costly reinstatement specially if required to adhere to particular developer/estate guidelines.

29 AGN (Victoria and Albury), *Final Plan 2023–28, July 2022*, p. 98.

**Table 5.4 AGN's forecast of current and next access arrangement period ICT capex – recurrent and non-recurrent ($2022–23, million)**

| | 2018–22 Actual/Estimate | 2023–28 Proposed |
|---|---|---|
| **Recurrent** | | |
| **Application Renewal (including GIS & Mobility)** | 38.3 | 31.3 |
| **Cybersecurity** | | 5.3 |
| **Infrastructure renewal** | 3.0 | 9.1 |
| **Total recurrent** | 41.3 | 45.7 |
| **Non-recurrent** | | |
| **Digital Customer Experience** | 0.6 | 3.5 |
| **Remote & Digital metering** | | 1.3 |
| **AGIG One IT Strategy** | 7.4 | 26.1 |
| **Life support** | 1.2 | |
| **Total non-recurrent** | 8.7 | 30.9 |
| **Total capex** | **40.4** | **76.6** |

Source: AER analysis, Attachment 9.9 IT Investment Plan, Capex Forecast Model.

#### 5.5.2.2 Our assessment

Our assessment approach to ICT capex is outlined in our Guidance Note on Non-network ICT capex assessment approach (Guidance Note).[30] We require the businesses to allocate their ICT expenditure into two categories, 'recurrent' ICT and 'non-recurrent' ICT. Recurrent ICT is expenditure that is related to maintaining existing IT services, functionalities, capability and/or market benefits, and occurs at least once every five years.[31] Non-recurrent ICT is any ICT expenditure that is not 'recurrent' and generally includes major upgrades or major version transitions, complying with new obligations and new or expanded ICT functionality.[32]

We are satisfied that AGN has accurately classified its recurrent and non-recurrent ICT expenditure in accordance with the Guidance Note.

We received one submission from the Brotherhood of St. Laurence (consultants, TRAC Partners) concerning AGN's IT expenditure proposal.[33]

In assessing AGN's proposed recurrent ICT capex for the 2023–28 access arrangement period, we have analysed the information provided in AGN's proposal, including business cases, additional material provided by AGN,[34] and RIN data.

30 AER, *Non-network ICT capex assessment approach*, November 2019.

31 AER, *Non-network ICT capex assessment approach*, November 2019, p. 8.

32 AER, *Non-network ICT capex assessment approach*, November 2019, pp. 8–9.

33 TRAC Partners for Brotherhood of St. Laurence, *Response to 2023-28 access arrangement proposals*, September 2022, p. 72.

34 Including material provided in response to ICT discussions held with AGIG on 21 October 2022.

Having reviewed the cost estimates, business cases and relevant models, we consider AGN's proposed ICT capex has been largely derived on a reasonable basis. The exception is AGN's cyber security uplift which we consider is not required for gas distribution businesses.

#### *5.5.2.2.1 Recurrent ICT*

AGN's recurrent projects are consistent with its strategy of refreshing its operating systems and consists of:

- renewal of applications – 'stay in business' expenditure that involves periodic updates to critical business software applications vendor version updates, including the geospatial information systems and mobility upgrades[35]
- renewal of infrastructure – 'stay in business' expenditure that involves periodic renewal of network and end-user devices such as laptops, audio/visual equipment, telephony, internet links and servers that support critical business functions[36]
- an uplift in cybersecurity capabilities to achieve and maintain Maturity Indicator Level 3 (MIL-3) as measured against the Australian Energy Sector Cyber Security Framework (AESCSF).[37]

Our assessment of these projects is that they largely constitute conforming capex. The increase in recurrent expenditure is being driven by infrastructure renewals and AGN's cyber security uplift. The infrastructure renewal is predominantly an asset lifecycle change, with assets typically ranging from 3–7 years but also includes the insourcing of some IT infrastructure works as part of a broader program to deliver AGIG's single national consolidated platform. We considered and accepted the IT infrastructure renewal and AGIG's IT strategy in the context of the AGN(SA) decision in 2020.[38] We consider AGN's approach to infrastructure renewal is in line with good industry practice and the scope and methodology to determine costs is considered reasonable.

However, we consider AGN's proposed cyber security uplift is not prudent and efficient and does not constitute conforming capex for the reasons outlined below.

Cyber security

AGN proposed $5.3 million ($2022–23) to uplift its cyber security capabilities.[39] The proposed expenditure includes technology solutions and project implementation to uplift the capabilities to Maturity Indicator Level 3 (MIL-3)/Security Protection Level 3 (SP 3) across all its networks.[40]

---

35 AGN, *Attachment 9.9 – IT Investment Plan*, July 2022, pp. 16–17.

36 AGN, *Attachment 9.9 – IT Investment Plan*, July 2022, p. 19.

37 AGN, *Attachment 9.9 – IT Investment Plan*, July 2022, p. 18.

38 AER, Draft Decision, *Australian Gas Networks (SA) Access Arrangement 2021-26, Attachment 5 – Capital expenditure*, November 2020, pp. 30–31.

39 AGN, *Attachment 9.9 – IT Investment Plan*, July 2022, pp.19–20.

40 AGN, *Attachment 9.9 – IT Investment Plan*, July 2022, p. 19.

While we recognise MIL-3/SP 3 is an appropriate standard for transmission businesses under the *Security Legislation Amendment (Critical Infrastructure Protection) Act 2022* (Act), there is currently no obligation for AGN to achieve the capabilities of a maturity level MIL-3/SP 3 for its gas distribution business. We consider the proposal to achieve MIL-3/SP 3 capabilities for the gas distribution network is higher than the efficient investment required to meet the likely security capabilities under the under the Act.

We have not included the $5.3 million ($2022–23) of expenditure AGN proposed to uplift its business to MIL-3/SP 3.

#### *5.5.2.2.2 Non-recurrent ICT*

AGN's proposed non-recurrent ICT expenditure is primarily driven by its AGIG One IT Strategy program.

The program commenced in 2019 and seeks to consolidate IT solutions, such as moving all AGIG businesses on to a single enterprise resource planning system and to transition key operational technology systems from AGN's current third-party operational partner (APA) to an in-house AGN operations function.[41] The program has been split into two stages, with most of the stage 1 foundation work to be completed in the current period and the remainder of the transition program planned for the forecast period.[42]

The strategy is being applied across AGIG's gas networks and is consistent with our review of the AGN (SA) Access Arrangement in 2020.[43]

The Brotherhood of St. Laurence (consultants, TRAC Partners) questioned why consumers should wear the costs of transitioning IT systems inhouse and whether the existing IT systems should be removed from the capital base.[44] We consider AGIG's strategy of moving to a common enterprise-wide platform across its networks to be a prudent approach that is likely to minimise risks and enable economies of scale in operational planning as well as the costs of procuring and supporting IT. Regarding the existing IT assets, we do not remove the assets from the capital base under the gas regulatory framework in these circumstances as the business recovers the cost over time. The value of the capital base includes conforming capex, minus depreciation, and other factors such as disposals or customer contributions.

We consider the scope of proposed One IT Strategy program, including the approach of using an independent expert to develop cost estimates, supported by market and vendor quotes, industry norms and historical costing to determine project cost, to be reasonable.

### 5.5.3 Meter Replacement

Gas meters are primarily used to measure gas consumption at a particular location, such as at a residential home or business. Meter replacement is an ongoing capex activity. Over time, meters lose their ability to accurately measure consumption and may also develop

41 AGN, *Attachment 9.9 – IT Investment Plan*, July 2022, p. 2.

42 AGN, *Attachment 9.14 –IT Business Cases,* July 2022, p. 43.

43 AER, Draft Decision, *Australian Gas Networks (SA) Access Arrangement 2021-26, Attachment 5 – Capital expenditure*, November 2020, pp. 30–31.

44 TRAC Partners for Brotherhood of St. Laurence, *Response to 2023-28 access arrangement proposals*, September 2022, p.72.

other faults. Meters may be replaced as part of a planned program, usually based on age, or when meters are found to be defective. AGN has regulatory obligations to manage the integrity of meters and ensure they operate within the prescribed tolerance band for metering accuracy.

#### 5.5.3.1 AGN's proposal

AGN forecast metering expenditure of $39.8 million ($2022-23, direct cost) to replace more than 153,000 meters over the 2023–28 period is 9% of capex.

#### 5.5.3.2 Our assessment

Based on all the information before us, we are satisfied AGN's capex forecast of $39.8 million ($2022–23, direct cost) for meter replacement is conforming capex.[45]

AGN proposed $39.8 million for meter replacement post Roadmap. This is a 13% increase over the current (2018–22) period largely driven by continued replacement of time expired meters when they fall due and reflects the age profile of meters and shortage of refurbished meters. We are satisfied that AGN is following good industry practice in its replacement of meters, and that the unit rates reflect historical cost.

The unit rates for domestic meters' time expired replacement and field life extension testing are based on actual historical cost and competitively tendered contractor costs.

The primary cause of the higher-than-expected domestic meter replacement unit rate is a change in the mix of refurbished to new meters in recent years. The availability of refurbished I&C meters has decreased over the current access arrangement and refurbished domestic meters are no longer available as the manufacturer is unable to commit to the service.[46]

We consider that the proposed meter replacement expenditure is prudent and efficient.

### 5.5.4 Other Distribution Assets

Other distribution system assets are items other than mains or meter replacement, connection, augmentation, or IT and include:

- Completion of modifications of high-pressure mains to allow inline inspection
- Maintenance and replacement of a series of smaller items, regulators, valves and cathodic protection equipment
- Hydrogen readiness program

#### 5.5.4.1 AGN's proposal

AGN proposed to spend $37 million on other assets in the upcoming period, compared to the $25.2 million it spent in the current period. This includes expenditure totalling $10 million to complete modifications of high-pressure mains to allow inline inspection, maintain and replace a series of smaller items, regulators, valves and cathodic protection equipment. AGN also proposes $10 million for hydrogen readiness expenditure in the upcoming period.

---

45 NGR, r. 79.

46 AGN, *Final Plan_Attachment 9.6_Unit Rates Report,* November 2022, pp, 31,33

#### *5.5.4.1.1 Other distribution assets (not including hydrogen readiness)*

We are satisfied AGN's capex forecast of $25.2 million ($2022–23) for other distribution assets (not including hydrogen readiness) is conforming capex.[47]

AGN proposed works totalling $27 million[48] to complete modifications of high-pressure mains to allow inline inspection, maintain and replace a series of smaller items, regulators, valves and cathodic protection equipment. AGN forecasts to spend $25.2 million on other distribution assets in the current period. The program includes $10 million to complete modifications of higher-pressure transmission mains to allow inline inspection in accordance with accepted good industry practice.[49] The increase in expenditure associated with these otherwise business as usual works reflects increased unit rates which have been impacted by supply chain disruptions and skills shortages. Higher safety and administrative standards are giving rise to increased contractor costs.[50]

Based on the information before us the proposal is in line with good industry practice. We accept that the program is prudent and efficient.

#### *5.5.4.1.2 Hydrogen readiness*

AGN proposed $10 million ($2023, excluding overheads) in capex to undertake a technical assessment of the AGN network's ability to withstand exposure to hydrogen blended natural gas. AGN proposed the following:[51]

- replace incompatible parts such as some valves which use precipitation hardened steels ($2 million)
- bring sites up to a higher hazardous area classification standard ($5 million)
- implement revised in service welding procedures and reinforce existing welds where required and undertake hardness testing for a random sample of welds in each pipeline to show compliance with hardness limits ($2 million)
- a further $0.2 million for a compatibility assessment of transmission pipeline repairs undertaken with specific clamps and purchase compatible repair equipment.

AGN justified the program on the basis that it is required to maintain the safety and integrity of the services and to ensure its gas distribution networks are ready for the introduction of renewable gas.

### 5.5.4.2 Our assessment

Generally, stakeholder submissions were not supportive of the proposed expenditure:

---

47 NGR r.79 (2) (c) (i),(ii)

48 The $27 million total includes customer contributions and is therefore higher than the net capex for this category

49 AGN, *Vic Final Plan 2023-24*_July 2022, p. 100

50 AGN, *Final Plan_Attachment 9.4_Unit Rates Report*, p. 5

51 AGN, *Vic Final Plan 2023-24_July 2022,* p. 100

- Consumer Challenge Panel (CCP28) said that stakeholders held the view that accelerated depreciation is inconsistent with increased capex and proposed hydrogen expenditure
- Friends of the Earth did not support hydrogen expenditure proposals as it does not consider 100% hydrogen a reality and they consider 10% to be a delaying tactic[52]
- Energy Users Association of Australia (EUAA) asked why customers should have to effectively pay for a high-risk option that pipeline hydrogen/renewable gas will be economic in the not-too-distant future
- Brotherhood of St Laurence and TRAC partners said expenditure to accommodate hydrogen blends in the network should not be funded
- EnergyAustralia does not believe that there is any need, desire, or latent industry, that requires distribution networks to supply hydrogen to residential customers via the distribution network. EnergyAustralia believes that the AER should remove any expenditure for hydrogen readiness and communication/education. It noted that any investment in assets (hydrogen or non-hydrogen) poses a stranded asset risk
- Origin is open to hydrogen expenditure; however, it agrees with AusNet Gas Services' (AusNet) approach of applying a pass-through if a legislative requirement for hydrogen blending is introduced in the next access arrangement period.[53]

We note that expenditure on hydrogen readiness is relatively new in the context of natural gas distribution networks. The National Gas Law (NGL) has defined natural gas as being a hydrocarbon, predominantly consisting of methane. Because of this, expenditure proposed to allow the safe distribution of hydrogen has not previously been capable of being conforming capex, and therefore not capable of approval in an access arrangement. Energy Ministers from the various governing jurisdictions have proposed amending the Law to change the definition of natural gas to include hydrogen.[54] This would allow expenditure on hydrogen related assets to be approved in an access arrangement, where such expenditure met the new capex criteria. This reform is in train and may be enacted prior to the release of our final decision.

As part of this process, the Australian Energy Market Commission (AEMC) has conducted a review into including hydrogen in the regulatory framework. The final report[55] of this review outlines the AEMC's view on how the current rules will operate with a change to the definition of natural gas. In particular, the report draws a distinction between investments in hydrogen readiness that has been mandated, and where such investments are voluntary. In particular, the AEMC stated:

> If a government does not mandate that a pipeline change to transporting another covered gas, but a service provider elects to do so, then, in the case of a scheme

---

52 Friends of the Earth Melbourne, *Submission to 2023-28 gas distribution access arrangement proposals*, September 2022

53 AusNet, *Gas Access Arrangement review 2024-28 – Addendum to proposal*, 2 September 2022, p. 30.

54 Energy ministers meeting communique meeting, 28 October 2022.

55 AEMC, Review into extending the regulatory frameworks to hydrogen and renewable gases – Final report, 8 September 2022

> pipeline, the regulator would need to assess the proposal having regard to the expenditure criteria in Part 9 of the NGR. In keeping with these criteria, the regulator would need to consider whether the proposed capital expenditure:[56] [57]
>
> - satisfies the prudent and efficient test
> - is justifiable on the grounds that either the overall economic value of the expenditure is positive, or the present value of the expected incremental revenue to be generated because of the expenditure exceeds the present value of the expenditure.
> - the proposed operating expenditure satisfies the prudent and efficient test.[58]

Further, regarding safety, the AEMC noted:

> rule 79(2)(c) also provides for capital expenditure to be justifiable if it is necessary to maintain and improve the safety of services, maintain the integrity of services, comply with a regulatory obligation or requirement, or maintain the service provider's capacity to meet levels of demand for services existing at the time of the capital expenditure. A voluntary transition to another gas is not expected to be justifiable on any of these grounds.[59]

We consider the AEMC's view is that a safety case is not sufficient to justify expenditure on hydrogen readiness where a service provider has voluntarily decided to introduce hydrogen into its network. The expenditure would need to pass a positive economic benefits test to be conforming capex. AGN has not, at this stage, provided evidence that the proposed expenditure meets such a test.

Given this, we do not consider AGN's proposed $10 million of hydrogen readiness capex is conforming and have excluded this from our alternative estimate.

### 5.5.5 Augmentation

Network augmentation capex is directed at increasing the capacity of the existing network to meet the demands of existing and future customers. Augmentation capex is required to maintain gas pressure and minimise the risk of gas outages.

#### 5.5.5.1 AGN's proposal

AGN proposed $57.8 million ($2022–23, direct cost) for the 2023–28 access arrangement period compared with $15 million forecast for the current period. This compares with the pre-Roadmap proposed augmentation expenditure of $80.4 million which has largely resulted because pressure drops anticipated in the next access arrangement period are likely to be reduced in line with the revised demand forecast.

---

56 AEMC, *Review into extending the regulatory frameworks to hydrogen and renewable gases – Final report*, 8 September 2022, p29.

57 NGR, r. 79.

58 NGR, r. 91.

59 AEMC, *Review into extending the regulatory frameworks to hydrogen and renewable gases – Final report,* 8 September 2022, p. 29.

**Table 5.5 AER's AGN augmentation capex draft decision ($2022-23, millions, direct cost)**

| Project | 2023–24 | 2024–25 | 2025–26 | 2026–27 | 2027–28 | Total |
|---|---|---|---|---|---|---|
| **HP augmentation projects** | | | | | | |
| Cranbourne HP network augmentation | - | - | 380 | - | 6,078 | 6,458 |
| Thomastown HP network augmentation | 6,234 | - | - | - | 1,018 | 7,253 |
| Eltham HP network augmentation | - | - | - | - | 875 | 875 |
| Wallan HP network augmentation | - | 501 | - | - | - | 501 |
| Wodonga HP network augmentation | - | 593 | - | - | - | 593 |
| Berwick HP network augmentation | - | 1,208 | - | - | - | 1,208 |
| **Supply Regulator Capacity Upgrades** | | | | | | - |
| City Gate Upgrades | 1,086 | 388 | - | - | - | 1,474 |
| Sale City Gate Upgrade | - | 463 | 463 | 463 | - | 1,388 |
| City Gate Heater Upgrades | 893 | 426 | - | - | - | 1,319 |
| New Gate Station Pakenham | - | - | - | - | 6,820 | 6,820 |
| **Pipeline upgrade** | | | | | | |
| Dandenong - Crib Point Pipeline Duplication | 14,935 | 14,935 | - | - | - | 29,870 |
| **Total** | **23,148** | **18,513** | **843** | **463** | **14,791** | **57,758** |

Source: AER analysis, *AGN-IR026-Attachment 9.3A_GSR Response_Capex Forecast Model_PUBLIC-25102022 Update, 25 October 2022.*

### 5.5.5.2 Our assessment

AGN's augmentation capex is a significant step-up from expenditure in the last access arrangement period and is an area of focus for our assessment. We engaged Zincara to provide advice on AGN's augmentation proposal.[60]

#### *5.5.5.2.1 High pressure augmentation projects*

AGN proposed six high pressure (HP) augmentation projects over the next five years. These projects are designed to address the risk of growth-driven gas pressure drops and capacity shortages. The two key drivers of the need for network augmentation are:

- peak hourly gas demand
- number of new connections.

[60] Zincara Report, *AGN AA Review,* 21 November 2022

The Gas Distribution System Code of Practice specifies minimum delivery pressures for gas distribution networks in Victoria.[61] If gas pressures fall below the minimum HP supply threshold, the downstream gas supply to customers may be interrupted and/or gas appliances may become inoperable. This causes reliability issues and in extreme cases, safety risks.

Modelling summarised in the various business cases show that the minimum pressure during peak periods will drop below the threshold within the next five years. For each proposed augmentation, AGN has provided a detailed business case that included analysis of network flows and growth, network modelling and scoping design, cost estimates and how the proposed augmentation will rectify the issue.

We consider the projects put forward by AGN are necessary to address integrity and safety risks to the network. We have scrutinised the modelling and business cases and are satisfied with the information put forward. With respect to cost estimates, we consider these are likely to be efficient, as AGN has used a competitive tendering provides to derive costs.

#### *5.5.5.2.2 Regulator capacity upgrade projects*

AGN's proposal includes four regulator capacity upgrade projects, being:

- City Gate Upgrades
- Sale City Gate Upgrade[62]
- City Gate Heater Upgrades
- New Gate Station Pakenham

AGN has provided detailed business cases, included revised updates for each project in response to the Roadmap. Cost estimates have been mainly based on similar projects completed recently.

As with the network augmentation projects, we consider the information put forward by AGN, particularly its methodology and business cases, demonstrate the scope of the works is prudent. With respect to cost estimates, we consider that AGN's use of actual pricing from recent city gate projects provides the most efficient costs in the circumstances.

#### *5.5.5.2.3 Pipeline upgrade project – Dandenong Crib Point pipeline duplication*

The proposed project is the final stage of a progressive pipeline duplication that supplies over 140,000 customers across the Mornington Peninsula. While AGN's final plan showed significant ongoing growth, the revised forecasts in response to the Roadmap indicates a reduced net growth (new connections minus disconnections) and neutral gas loads in the next few years.

---

61 Gas Distribution System Code of Practice, March 2022, pp. 43.

62 With respect to Sale city gate, AEMO requires AGN to reduce the minimum operating pressure for this city gate in order to manage the Victorian Transmission System. This project had previously been approved for the current access arrangement period, but AEMO and AGN were able to apply a workaround that avoided the need for capex. This is no longer practical, and the pressure change augmentation is now required. However, AGN has developed a lower cost new solution that does not require pipeline duplication. As a result, the cost has been significantly reduced from $5.8 million to $1.3 million.

Zincara considered that, given the large number of customers supplied by the pipeline, any increased load from customer growth or weather events presents the risk of sizable supply interruptions with large number of customers impacted and potentially for extended periods of time. On the balance of risks, Zincara considers it prudent to complete the pipeline duplication project during the next access arrangement period.[63]

Regarding cost, Zincara advised that the detailed information put forward in support of the program and the methodology appeared sound.

We have accepted the advice of Zincara that the projects' scopes and cost are prudent and efficient, particularly having regard to the risk to supply of not completing the project.[64]

### 5.5.6 Mains Replacement

Operators of networks replace gas mains when they have significantly deteriorated and are no longer able to safely operate or are at risk of reaching this level of deterioration in the near future.[65] Typically, a mains replacement program targets the worst performing pipes on a network (measured by gas leaks). AGN's proposed mains replacement plan consists of proactive and reactive replacement programs. AGN is nearing the completion of its mains replacement program.

#### 5.5.6.1 AGN's proposal

AGN proposed expenditure of $29.5 million on mains replacement. AGN spent $264.7 million in the current access arrangement to replace 300 km of mains. The proposed expenditure is substantially lower, as AGN has completed most of its mains replacement program.

In the next access arrangement period, AGN proposes to undertake targeted, proactive replacement to manage the risk associated with natural gas assets.

Over the next five years, AGN proposes targeted replacement of 11.7 km of ageing high pressure steel mains in high-density coastal areas, 16.4 km of camera inspection and reinforcement of AGN's oldest high-density polyethylene (HDPE) mains in Albury and Wodonga, and renewal of 170 older material multi-user services.

Since 2012, AGN has replaced more than 800 km of mains, including low pressure cast iron (CI) and unprotected steel (UPS) pipes. AGN reports that by the end of the current access arrangement period, it will have removed all the CI, UPS and other identified highest risk low and medium pressure mains from its network.[66]

#### 5.5.6.2 Our assessment

AGN is nearing completion of its mains replacement program. The remaining works involve targeted, proactive replacements. The unit cost of completing the program is higher than the current period and is affected by:

---

63 Zincara report, *AGN access arrangement review,* November 2022, pp. 36,37.

64 Zincara report, *AGN access arrangement review,* November 2022, pp. 37-39.

65 Mains are defined as low pressure (1.4-7 kpa), medium pressure (15-210 kpa), and high pressure (140-515 kpa) pipes that distribute gas from the transmission system to customers.

66 AGN, *AGN Final Plan_Attachment 9.7_DMSIP,* July 2022

- the location of the steel Mains Renewal Program (MRP) being in a congested area, which increases traffic management, excavation, and reinstatement costs[67]
- the small size of the program relative to the program's fixed cost
- increasing focus on environmental concerns, including soil remediation and implementation of new excavation techniques such as non-destructive digging to improve site safety.

AGN has presented risk assessments and option analyses to support its program which demonstrating optimal replacement benefit in terms of leak reduction per mains renewal length.[68]

We accept that mains replacement is justified on the grounds that it is necessary to maintain and improve the safety of services and to maintain the integrity of services.[69] We consider AGN's proposal to be prudent and efficient. We note that the major step-down in replacements reflects the winding up of the major replacement works that have taken place over a decade, and a move to a more business as usual replacement approach. Our draft decision is to accept AGN's forecast for mains replacement capex over the 2023–28 access arrangement period of $29.5 million ($2020–23, direct cost).

### 5.5.7 Telemetry

Telemetry systems are used by distribution businesses to monitor network conditions in real time and, in some cases, for the remote control of gas flows and pressures to optimise system performance and maximise safety. Improvements in these systems will reduce the risk of major supply interruption[70] and provide more accurate, reliable and timely pressure data to better inform network capacity models.[71]

#### 5.5.7.1 AGN's proposal

AGN is proposing telemetry projects, totalling $4.5 million ($2022/23, direct costs), to assist with replacing end of life Supervisory Control and Data Acquisition (SCADA) equipment and to install additional pressure monitoring points. This is an increase compared to the current period expenditure of $1.8 million. AGN is replacing parts of its SCADA and communications fleet that are aging and at risk of failure. The projects will enable AGN to collect appropriate pressure information from its network as it grows and changes. These programs include[72] SCADA end of life replacement and fringe of grid SCADA and communications to meet regulatory obligation in the Victorian Gas Distribution System Code (Code) to use all reasonable endeavours to ensure minimum prescribed pressures are maintained at gas delivery points.[73] The program is intended also to enable the SCADA sites and monitor the

---

67 AGN *Final Plan_Attachment 9.6_Unit Rates Report*, July 2022. p. 39.

68 AGN *Attachment 9.7 distribution mains & services integrity plan,* July 2022

69 NGR, r. 79(2)(c)(i)&(ii)).

70 NGR, r. 79(2)(c)(i)

71 NGR, r. 79(2)(c)(ii)

72 AGN, *Final Plan_Attachment 9.12_Telemetry Business Cases,* July 2022

73 Gas Distribution System Code, Ver 14.0, p. 52

network to meet relevant safety and reliability standards including hazardous area compliance.

#### 5.5.7.2 Our assessment

Based on all the information before us, we are satisfied AGN's capex forecast of $4.5million ($2022–23) for telemetry is conforming capex.[74]

Our draft decision is to accept AGN's forecast telemetry capex of $4.5 million ($2022/23, direct costs). We are satisfied AGN's capex forecast for telemetry is required conforming capex that complies with rule 79.[75]

The forecast telemetry capex is higher than the current period estimates of $1.8 million, however the program is driven by equipment life and fringe network compliance requirements. The proposal is supported by risk assessments and cost build ups which we consider reasonable.

We consider that AGN's proposed Telemetry capex expenditure of $4.5 million ($2022–23) is reasonably likely to reflect prudent and efficient costs for the following reasons:

- the majority of AGN's telemetry capex projects are driven by compliance requirements which we consider is consistent with good gas industry practice
- AGN has presented risk assessments which identify the need
- we accept that aging equipment life is a driver of the program
- forecast telemetry capex is consistent with telemetry capex in other networks in Victoria.

### 5.5.8 Capitalised overheads

Overheads are costs that are not directly attributable to the output of distribution businesses but are necessary to support its operations. Examples of overhead costs include network planning, procurement and human resources.

According to the RIN, AGN only capitalises network overheads and disaggregates its capitalised overheads into the following subcategories/functions:

- operations and maintenance
- planning and system design
- procurement and fleet
- technical assurance
- network engineering
- general support.

---

74 NGR r.79 (2) (c) (i),(ii)

75 NGR, rr. 79(2)(c)(i), 79(2)(c) (ii).

In the 2018–22 period, AGN estimates it will spend $56.8 million ($2022–23, direct cost) of capitalised overheads. We accept AGN's proposal of $20.7 million ($2022–23, direct cost) of capitalised overheads in the 2023–28 period as conforming capital expenditure.[76]

AGN's proposed forecast methodology for capitalised overheads is principally consistent with our previous decisions and has come down in line with the reduced capital program.

[76] NGR, r.79(2).

# Glossary

| Term | Definition |
|---|---|
| AEMC | Australian Energy Market Commission |
| AER | Australian Energy Regulator |
| AESCSF | Australian Energy Sector Cyber Security Framework |
| AGIG | Australian Gas Infrastructure Group |
| AGN | Australian Gas Networks (Victoria and Albury) |
| AusNet | AusNet Gas Services |
| Capex | Capital expenditure |
| CESS | Capital expenditure sharing scheme |
| CI | Cast iron |
| FIR | Fracture Incident Rate |
| HDPE | High density polyethylene |
| HIA | Housing Institute of Australia |
| I&C | Industrial and commercial |
| ICT | Information and communication technology |
| IT | Information technology |
| LIR | Leakage Incident Rate |
| MIL-3 | Maturity Indicator Level 3 |
| MGN | Multinet Gas Networks |
| NGL | National Gas Law |
| NGO | National Gas Objective |
| NGR | National Gas Rules |
| NPV | Net present value |
| Opex | Operating expenditure |
| RFM | Roll forward model |
| RIN | Regulatory Information Notice |
| SCADA | Supervisory Control And Data Acquisition |
| SP 3 | Security Protection Level 3 |
| TJ | Terajoules |
| TP pipeline | Transmission pressure pipeline |
| UPS | Unprotected steel |
| Zincara | Zincara Pty Ltd |