IPART Independent Pricing and Regulatory Tribunal | NSW

Embedded Networks

Final Report

April 2024

Energy »

Acknowledgment of Country

IPART acknowledges the Traditional Custodians of the lands where we work and live. We pay respect to Elders both past and present.

We recognise the unique cultural and spiritual relationship and celebrate the contributions of First Nations peoples.

Tribunal Members

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The Independent Pricing and Regulatory Tribunal

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Executive Summary

Embedded networks are private energy networks for services such as electricity, hot and chilled water, and gas. They are typically found in apartment buildings, shopping centres and caravan parks.

As the number of embedded networks has rapidly increased, regulatory gaps in customer protection frameworks have emerged. Different pricing protections currently apply for embedded network customers depending on the type of seller, fuel, and the site where a customer is located. For some embedded network customers there are no limits on prices and it is difficult for these customers to change retailers if they are unhappy.

The NSW Government has introduced the *NSW Embedded Network Action Plan* with the objective that outcomes for embedded network customers be brought into line with those in traditional energy supply arrangements by addressing these gaps.[1]

As one of the actions in this plan, the NSW Government issued IPART *The future of embedded networks in NSW* Terms of Reference. These Terms of Reference asked IPART to make recommendations on how maximum prices should be set for electricity, gas, and hot and chilled water supplied to small customers through embedded networks. We have also been asked to make recommendations on a compliance and enforcement framework for new price protections, and whether new hot and chilled water embedded networks should be prohibited.

To do this, we have consulted widely with industry and consumer stakeholders. We released consultation papers, a consumer survey, held an online stakeholder workshop and consulted on our Draft Report. We have incorporated the feedback and insights from a range of different stakeholders into our final recommendations.

Our final recommendations maintain the same overall approach to price setting and compliance and enforcement as we set out in our Draft Report. However, we have made some refinements in response to stakeholder feedback and following further analysis. A summary of these changes is outlined in Chapter 2 and explained in detail in the relevant chapters.

Note that in this report, the term 'small customer' is used to refer to customers that consume less than 100 MWh of electricity or 1,000 MJ of gas per year (see Chapter 1 for more detail).[a] Unless otherwise stated, the term 'business customer' is used throughout this report to refer to a business customer that consumes less than these amounts.

[a] 'Small customer' is defined in the National Energy Retail Law, the Network Exemption Guideline and Retail Exempt Selling Guideline.

Maximum prices based on the prices paid by on-market customers

We recommend that maximum gas and electricity prices in embedded networks should be set by benchmarking them to publicly available retail offers being advertised on the Australian Energy Regulator's (AER) Energy Made Easy website. We recommend that the maximum electricity and gas prices be determined annually based on the median fixed and consumption tariffs of active retailers' lowest offers.

Our recommended pricing methodologies for hot and chilled water are based on the electricity and gas benchmarks. Consistent with the *NSW Embedded Network Action Plan*, we recommend that hot water be billed in the underlying energy units to better facilitate the National Energy Consumer Framework (NECF) applying in the future, once the NSW Government enacts legislative change to increase consumer protections for embedded network customers.

To ensure that there is a limit to the system inefficiencies borne by customers (which are outside of the control of tenants) we recommend a methodology for setting the maximum amount of fuel that sellers can charge per litre of hot water consumed. For gas hot water systems, sellers must not charge customers for more than 0.4 megajoules of gas per litre of water consumed.

Chilled water is one of the technologies used in embedded networks to provide centralised air-conditioning services. We recommend that sellers continue to charge based on usage or a fixed daily rate for chilled water. Where sellers bill using a fixed rate, our recommended methodology uses the benchmark electricity tariff and a benchmark consumption level (based on a typical low air-conditioning user) to set a maximum daily charge. Where customers are billed for their consumption of chilled water, we recommend that sellers must not charge more than the benchmark electricity usage tariff for the electricity used to chill the water.

We consider that the issues faced by chilled water customers are likely to be faced more broadly by all customers being supplied and billed for separately for centralised air-conditioning. Therefore, we recommend that our price protections for chilled water customers be extended to protect all centralised air-conditioning customers.

These recommendations would apply to all small customers in embedded networks except those business customers that are large corporate entities.[b]

[b] The term large corporate entity is used to refer to public companies and other legal entities that meet specified financial or size criteria – see Chapter 9 for more detail.

The DMO is not an appropriate cap for most embedded network customers

We do not consider that the Australian Energy Regulator's "default market offer" or DMO (which is a price cap for electricity) is an appropriate price cap for embedded network customers, unless they are large corporate entities. The reasons for this are two-fold:

- First, the DMO has, by design, been set higher than the efficient costs of supplying electricity to incentivise retail competition, innovation and investment and to incentivise consumers to shop around, which most embedded network electricity customers are unable to do.[c]
- Second, the DMO has in most years been significantly higher than what on-market customers are paying for electricity and so does not meet our key objective of ensuring that embedded network customers are not paying more than non-embedded network customers.

Put simply, setting the maximum price for electricity at the DMO would penalise embedded network customers who cannot easily shop around and access the competitive offers that on-market customers are able to.

In contrast to other customers, large corporate entities tend to be well-informed, sophisticated customers with similar, if not greater, bargaining power than embedded network sellers. They have the financial means to overcome the barriers to going on-market for electricity and are better able to shop around for a better deal. This also places them in a stronger bargaining position when dealing with embedded network sellers (i.e. because they can access competitive on-market offers if required). Given their stronger bargaining position, we recommend that the maximum prices for large corporate entities is no more than the local area retailer's business customer standing offer (which is capped by the DMO for electricity customers).[d]

Ensuring that customers benefit from being in an embedded network

Embedded network customers do not have access to the same level of consumer protections that are available to on-market customers. We consider that the regulatory framework should only facilitate energy to be supplied via an embedded network where there are clear **financial** benefits for most customers.

Embedded networks can be a more cost-effective way of delivering energy compared to traditional supply arrangements – mainly due to the lower distribution network costs for embedded networks. These network costs would remain significantly lower, even under the proposals to increase network prices for embedded networks over a number of years (discussed in Chapter 5). Sellers may also pay lower wholesale costs where they can access bulk supply discounts, or are able to generate electricity on-site.[e] Our recommendations would help ensure that customers benefit from these supply arrangements.

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[c] We note that the AER has made a draft decision that the 2024-25 DMO would not include an allowance to encourage competition. The AER has stated that this is a one-off adjustment to address affordability for 2024-25 only, and so the allowance is expected to be included in the DMO in future years.

[d] This is consistent with the maximum price for that currently applies to exempt sellers under the Australian Energy Regulator's (AER) Retail Exempt Selling Guideline. Our recommendation would extend this price protection to large corporate entities supplied by authorised retailers.

[e] Not all sites are suitable for on-site generation.

If sellers **charge the maximum prices allowed** under our methodology, we estimate that:

- On average, embedded network customers would typically pay about 5% less than the average electricity and gas prices being paid by an on-market customer (although there would be some variation between years).
- Some customers would still be worse off than on-market customers, as they could save around 5% more on average if they were able to access the lowest offers in the market.

However, embedded network sellers could charge less than the maximum prices allowed.

Providing flexibility for different business models

There are a number of different business models that may be employed by embedded network operators. For example, under some business models, the embedded network seller just operates the embedded network on behalf of the site owner, while under others the embedded network seller may own some of the infrastructure used in the provision of embedded network services that are located behind the parent meter (internal infrastructure). Our recommendations provide flexibility to embedded network sellers to deliver services that are valued by their customers, because our methodology is not prescriptive about which costs they can recover.

We found that most embedded network sellers are charging lower than market prices, which suggests that sellers' costs are being offset by the savings outlined above. Of the sample of 64 bills we analysed as part of our review, 90% of the electricity bills received showed customers were being charged prices which were lower than the maximum prices that would have resulted from our proposed methodology for 2022-23 and 2023-24.

However, if the total costs of the embedded network service (delivered cost of energy plus internal infrastructure costs) exceed IPART's maximum prices, embedded network sellers can seek to recover the difference from the site owners by negotiation (where permitted by legislation). We consider that it is appropriate for site owners (or Owners Corporation in the case of a strata scheme) to pay these costs, because they are better placed to manage the risks associated with such costs. For example, it is the site owner who determines what infrastructure is installed and used by the embedded network seller. The site owners can also decide to change embedded network sellers if it is concerned about the costs. In contrast, tenants have no ability to manage these costs.

Ensuring that those parties who can manage the risks face the costs provides a strong incentive to ensure that services are provided efficiently. This could help drive greater engagement in the market, increasing competition for embedded network sellers and reducing the costs of embedded network services.

However, because most sellers are already compliant with our recommendations, the impacts of our recommendations are likely to be small.[f]

[f] Some stakeholders noted that they charge an additional supply charge for hot water, whereas our maximum prices does not allow for this. However, our gas fixed supply charge (including an allowance for unmetered gas) reflects embedded network sellers' current supply charges for combined gas and hot water services.

Providing incentives to install sustainable infrastructure in embedded networks

Efficient technologies can reduce the lifecycle energy costs of supplying energy. Our recommendations on embedded network prices would allow for the sharing of costs and benefits to ensure that customers benefit from efficient technology, while also providing a financial incentive for developers and investors to install it. This is because:

- Our recommendations set maximum prices based on the prices of competitive offers in the market. These reflect the costs of supplying these customers, including the cost of purchasing the electricity from the National Energy Market, or the costs of buying gas, and the network, retail and environmental costs of this energy.
- Embedded network sellers can make operational savings, where site owners agree and the site can support the technology, by:
  - generating and storing electricity on-site, rather than purchasing it from the National Electricity Market
  - using more efficient technologies to heat water, including heat pumps.
- These operational savings can be used to offset the capital costs of the infrastructure.

This cost and benefit sharing between end-users and sellers/owners can help overcome the "split incentive" problem that would otherwise occur in traditional supply arrangements, where sellers/owners would incur higher upfront costs of installation, but end-users would receive all the benefit through lower energy costs.[g]

While embedded networks are likely to better facilitate sustainable technologies compared to traditional supply arrangements, we have heard that many embedded networks do not generate electricity on site, and there are very few sites using energy efficient electric heat pumps for hot water. One embedded network seller submitted that "while electricity-based heat pump technology is emerging, it remains an inferior option to gas centralised in the majority of developments" and that heat pumps require significantly more space and storage of large amounts of water, and have higher upfront capital costs.[2] The NSW Government could consider additional measures to increase the pace of electrification at new developments to meet climate change objectives.

Ensuring that sellers comply with pricing requirements

We considered how to ensure that embedded network sellers comply with the maximum prices. Our recommendations would provide authority for the regulator to investigate for non-compliance, and to impose penalties where the maximum price is exceeded. They would also provide authority to the Energy and Water Ombudsman NSW (EWON) to refer suspected breaches identified from customer complaints to the regulator for investigation.

[g] The split incentive problem only arises when the end-users are different parties to the owners. No split incentive problem arises in apartment buildings that are fully owner-occupied.

Increasing transparency over customer outcomes

We recommend that sellers would be required to publish their prices on their websites. In cases where the embedded network seller does not have a website, the prices would be published on the regulator's website. This transparency over prices should help develop competitive outcomes for embedded network customers by:

- providing site owners visibility over what comparable embedded network customers are being charged
- providing authorised retailers information about where they could best compete to offer on-market offers.

Price transparency would also enable regulatory oversight over price, which would provide a greater incentive for sellers to provide competitive price outcomes for customers.

We also recommend other disclosure requirements. Sellers would be required to publish on their websites:

- efficiency information on their centralised air-conditioning systems provided where they are charging for the consumption of chilled water through an embedded network
- the site addresses of their embedded networks.

These requirements will help ensure that regulators can monitor customer outcomes.

Hot and chilled water embedded networks should not be prohibited

We recommend that new hot and chilled water embedded networks should not be prohibited because there is potential for these networks to generate substantial benefits for customers. Over time, allowing for hot water embedded networks increases the likelihood that developers and building owners install low-carbon emission centralised electric hot water systems, which can be provided at a significantly lower life-cycle cost compared centralised gas systems. Where maximum prices are in place, there are greater incentives to ensure that the system is efficient, compared to a non-embedded hot water system.

Centralised hot and chilled water systems can also produce other non-monetary benefits such as better use of space, improved aesthetics and noise control.

We consider that the proposed new maximum prices under our proposed price methodologies—in combination with new transparency requirements for chilled water embedded networks--would protect hot and chilled water embedded network customers from unreasonably high prices.

Findings

Final decisions

Final recommendations

4. That IPART review its price setting methodology at regular intervals, for example, at least once every 5 years. 37

5. The NSW Government consider the arrangements for solar in embedded networks and provide guidance to embedded network operators, sellers and residents about the infrastructure needed at an embedded network site to facilitate: 38
   a. the installation of solar panels by residents 38
   b. payments, rebates, or other financial benefits that reflect the excess electricity generated from residents' solar panels that is supplied to the embedded network or distribution network. 38

6. That the maximum electricity prices for residential customers in embedded networks comprise: 51
   - a consumption charge equal to the median consumption charge of each active retailers' lowest consumption charge (inclusive of guaranteed discounts and GST) for their generally available offers 51
   - a fixed rate equal to the median supply charge of each active retailers' lowest fixed charges (inclusive of guaranteed discounts and GST) for their generally available offers. 51

   A separate price should be set for each distribution district. An active retailer is defined as any retailer with at least 1000 customers in NSW that has an active offer available at the time the benchmark is calculated. 51

7. For electricity embedded networks, an embedded network seller be permitted to apply different consumption tariffs for different time periods (i.e. time-of-use tariffs), as long as the average price does not exceed the determined consumption charge when i is weighted by the AER's Default Market Offer model annual usage profiles. 52

8. A gas consumption benchmark is set based on the weighted average consumption tariff for 12,680 MJ of annual gas usage. 58

9. Where an embedded network seller provides unmetered gas services, they can charge an additional unmetered daily fee determined by multiplying: 60
   - the consumption benchmark of 1,000 MJ per year, and 60
   - the benchmark gas consumption charge. 60

10. That the NSW Government amend the *Residential Tenancies Act 2010*, and the *Residential (Land Lease) Communities Act 2013*, to allow tenants and land lease community residents living in embedded networks to be charged for unmetered gas up to the unmetered gas charge determined by IPART. 60

11. That embedded network sellers must charge for hot water in units of energy, based on the underlying fuel source at the site (cents/kWh or cents/MJ). 70

12. That the NSW Government amend the *Residential Tenancies Act 2010* to clarify that tenants must pay charges for the supply of hot water to residential premises if the hot water consumed is individually metered. 70

13. Where gas is the underlying fuel source, sellers cannot charge more than IPART's benchmarked maximum gas consumption charge. 73

14. Where gas is the underlying fuel source, sellers cannot charge customers for more than 0.40 MJ of gas per litre of water consumed. 73

15. Where electricity is the underlying fuel source, sellers cannot charge more for hot water than the customer would have been charged if gas was the underlying fuel source. 73

16. That embedded network sellers selling hot water services from centralised gas hot water systems are allowed to recover a supply charge from hot water customers, only if that supply charge has not otherwise been recovered from a separate gas supply charge. 76

17. That regulated maximum prices for chilled water be extended to all centralised air-conditioning services sold by an embedded network seller. 79

18. That embedded network sellers of chilled water be permitted to bill customers using either a consumption charge or a fixed daily rate. Sellers must use the same charging approach for all customers at a given site. 80

19. Where an embedded network seller imposes a consumption charge for chilled water embedded networks: 84
    a. the maximum consumption charge in kWh is equal to the maximum electricity tariff for embedded networks 84
    b. no additional fixed rate charge is permitted. 84

20. Where an embedded network seller imposes a consumption charge for chilled water embedded networks, the seller must provide information on the efficiency of the centralised air-conditioning system on the seller's website. The information must include: 84
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    - The Coefficient of Performance (COP) 84
    - The energy input for the last financial year 84
    - The energy output for the last financial year 84
    - The system's brand name or model number, where available. 84

21. Where an embedded network seller imposes a fixed daily rate for chilled water embedded networks, the maximum daily rate be determined by multiplying: 89
    - the consumption benchmark of 2.5 kWh per day for a typical low air-conditioning user, and 89
    - the benchmark electricity consumption charge. 89

22. That the NSW government amend the *Residential Tenancies Act 2010*, and the *Residential (Land Lease) Communities Act 2013*, to allow tenants and land lease community residents living in embedded networks to be charged up to IPART's maximum fixed daily fee for unmetered centralised air-conditioning services. 89

23. That the NSW Government amend the *Residential Tenancies Act 2010* to clarify that tenants must pay charges for the supply of chilled water to residential premises if the chilled water consumed is individually metered. 89

24. That business customers that are large corporate entities be subject to reduced price protections, with the maximum prices based on: 103
    a. for electricity and chilled water services, the business customer Default Market Offer 103
    b. for gas and hot water services, the local area retailer's business customer standing offer. 103

25. That business customers that are not large corporate entities be subject to the same price protections as residential customers, but with the maximum prices based on: 104
    a. for electricity and chilled water services,the median of the active retailers' lowest business customer electricity consumption and supply charges 104
    b. for gas and hot water services,the median of the active retailers' lowest business customer gas consumption and supply charges. 104

26. The NSW Government impose a statutory obligation on embedded network operators and exempt sellers supplying or selling energy to business customers to become members of the Energy and Water Ombudsman NSW (EWON). 105

27. That the NSW Government enact legislation to provide for a statutory compliance and enforcement framework (statutory framework). 113

28. That the NSW Government enact legislation to require all embedded network sellers of hot and chilled water in NSW to become members of the Energy and Water Ombudsman NSW (EWON). 113

29. That the compliance and enforcement framework authorise the Energy and Water Ombudsman NSW (EWON) to: 113
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    b. provide to the regulator any supporting information or documentation regarding customer complaints it receives related to embedded network sellers not complying with the maximum price. 113

30. That the compliance and enforcement framework: 113
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    b. authorise the regulator to investigate whether an embedded network seller has complied with an embedded network pricing determination 113
    c. authorise the regulator, to require an embedded network seller to provide information, documents or evidence (by notice in writing) for the purposes of: 113
        – monitoring compliance with a price determination or 113
        – an investigation 113
    d. provide that it is an offence, subject to a monetary penalty for non-compliance, to refuse or fail to comply with a notice requiring the provision of information, documents or evidence. 113

31. That the statutory framework require embedded network sellers to publish on their websites: 115
        – their current prices 115
        – the addresses of all the sites where they provide embedded network services, and the services they provide at each site. 115

32. That embedded network sellers that do not have a website be required to submit their prices and addresses of all the sites they provide embedded network services to the regulator; for publication on the regulator's website. 115

33. That the NSW Government consider the information that owners corporations require before entering agreements with embedded network sellers. 115

34. That the statutory framework empower the regulator to take one or more of the following enforcement actions where it is satisfied an embedded network seller has not complied with an embedded network pricing determination: 117
    a. directing an embedded network seller to take specified action within a specified timeframe to remedy the non-compliance 117
    b. impose a monetary penalty on the embedded network seller and/or a person who is the director of or involved in the management of an embedded network seller. 117

35. That the statutory framework require the regulator, before issuing a direction or imposing a monetary penalty to: 117

Chapter 1

Introduction

01

IPART has been asked to make recommendations on maximum price methodologies for embedded network customers. This chapter sets out the key context for this review. It explains

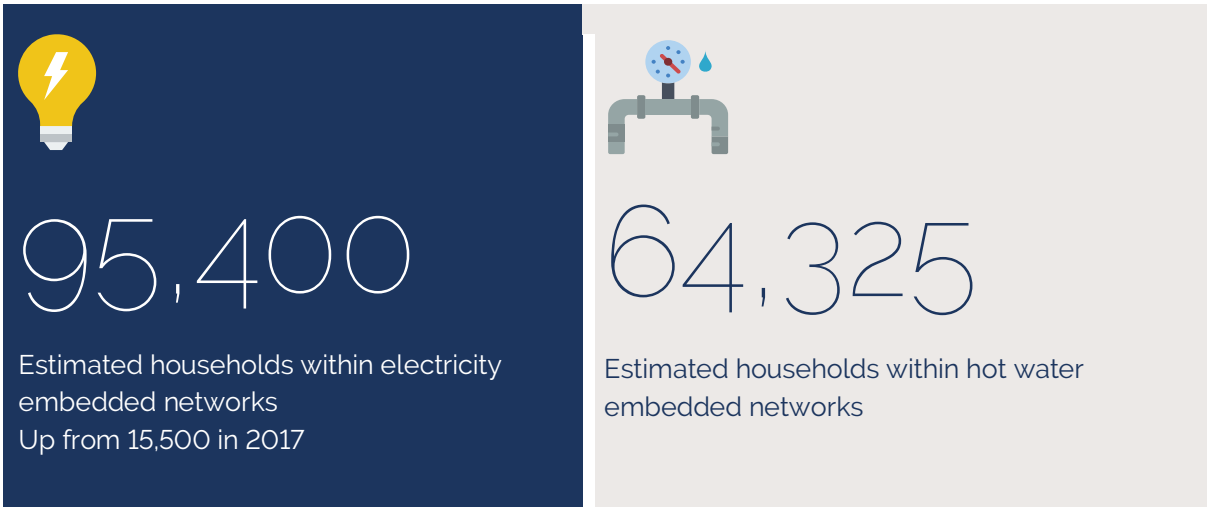
- what embedded networks are and the key issues associated with them
- what IPART has been asked to do and how we have approached the review.

1.1 What are embedded networks and why are they used?

Embedded networks are private systems that supply services like electricity, gas, and hot and chilled water. Historically there were few embedded networks that mainly existed in caravan parks and retirement villages, and shopping centres, where electricity is reticulated as part of the operations, but where it was incidental to the core business activity.

More recently, they have been established in medium and high-density residential developments, and it is estimated that as at 2022, there were:

- 95,400 households in NSW currently live in electricity embedded networks (an increase from around 15,500 households in 2017)
- 64,325 households in NSW live in hot water embedded networks.[3]



Embedded networks have been established at these new developments because they can produce more cost-effective energy solutions for developers, owners, and/or residents. Due to the network tariff structures in NSW, they have lower network distribution costs. In addition, they may allow developers to avoid the full costs of establishing internal networks and metering by contracting a third party or embedded network business to install this infrastructure. This third party then provides power to the building through the embedded network with the agreement of the owners corporation.[4]

Embedded networks can also facilitate the installation of sustainable energy solutions, such as solar panels, by allowing sellers to realise the cost savings of generating electricity on site (and potentially pass these onto end-users). In contrast, in a traditional supply arrangement, each customer at the site will have a different retailer, and these retailers cannot access the electricity generated on the common property on the site at a lower cost compared to purchasing the electricity from the National Energy Market. However, there are many embedded networks without sustainable energy infrastructure.

Embedded networks for electricity and gas services are defined under the Australian Energy Regulator's (AER) *Retail Exempt Selling Guideline*, as privately owned energy networks, connected to the distribution network by one or more meters. Energy is delivered to customers via the private network. The exemptions under those guidelines generally apply to persons who on-sell electricity or gas. On-selling (or reselling) is when a person or business purchases energy from another person or business — usually an authorised energy retailer — and then sells it to a customer through an embedded network, such as a shopping centre, apartment building, retirement village or caravan park.[5]

There is no definition for hot and chilled water embedded networks in the Exempt Selling Guideline because the guideline only applies to embedded networks for electricity and gas.

According to the major gas distribution network service provider in NSW, Jemena, hot water embedded networks occur where a third party (such as an owners corporation) owns, installs and maintains utility network infrastructure beyond a meter placed at the boundary of a high-rise residential or commercial complex.[6] This means that the distribution service provider does not provide services beyond the boundary meter. Any internal metering is owned by the third-party. This is how most common hot water systems are delivered in Australia outside of the Jemena gas distribution area. Since 2015, when Jemena introduce boundary metering and boundary tariffs,[7] many hot water systems within the Jemena region are also being configured in this way.[h]

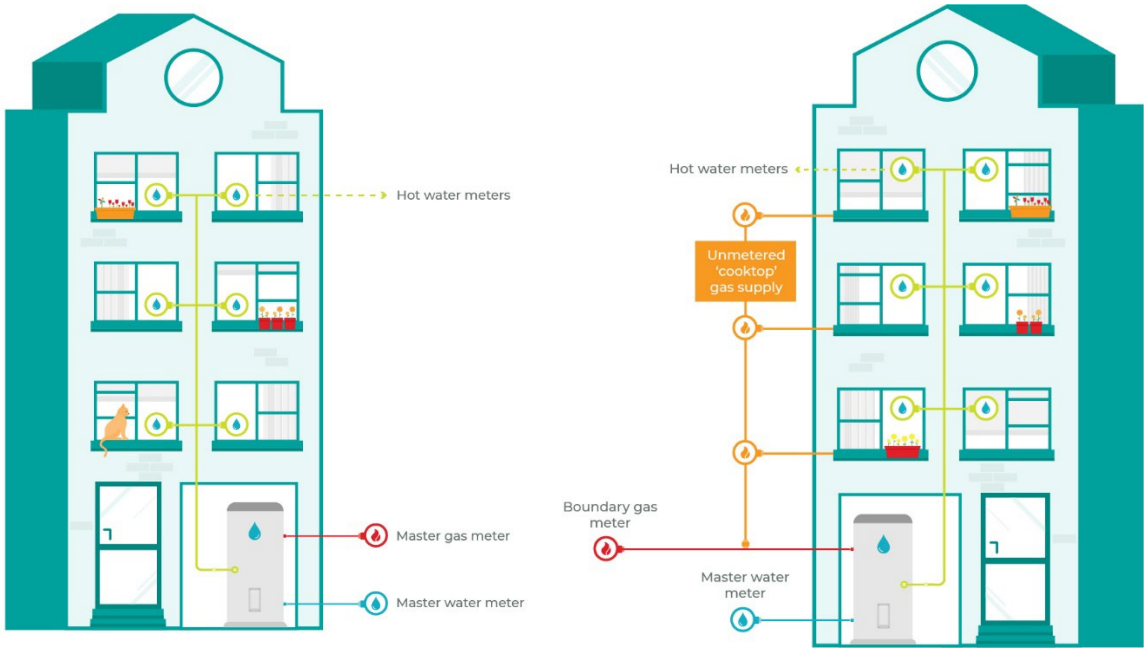
Prior to 2015, in most buildings with a gas common hot water system, Jemena owned the hot water meters for individual premises. Where Jemena owns the meters, it measures the hot water usage at the individual premise to calculate that customer's share of the gas used for the common hot water system. Customers are charged for this share of gas by their gas retailer alongside their other gas usage through their gas bill.[i]

Figure 1.1 shows the difference between a non-embedded network for hot water (left) and an embedded network (right). In the non-embedded network, the hot water meters are owned by Jemena and in the embedded network, the hot water meters are owned by the embedded network operator.

[h] A meter can be placed at the boundary of a high-rise residential or commercial complex, and represents the final point of services provided by the distributed network service provider.

[i] Gas and hot water meters are maintained and read by the gas distributor. EWON Presentation on Embedded Networks.

Figure 1.1 Non-embedded network vs hot water embedded network



Source: EWON

Chilled water networks are provided for the purposes of air-conditioning and not for direct consumption. Centralised air-conditioning systems can also use condensing gases, cooling towers and evaporative cooling units. The efficiency of these systems can vary considerably and may suit the specific requirements of different users.

Unlike hot water centralised systems, consumers often have the ability to opt-out using of centralised air-conditioning services and replace it with alternatives. Apartments are generally individually zoned, because an air-conditioning system must be capable of being deactivated when part of a building served by that system is not occupied.[8] We are aware of examples where customers have been able to easily opt-out of using the centralised air-conditioning system.

We expect that hot and chilled water embedded networks are mainly established in residential and mixed used buildings. In other types of developments where electricity and gas embedded networks exists:

- Customers have individual stand-alone systems, where the hot or chilled water is not separately metered. The energy used is metered as part of the overall electricity or gas use at the premise and is charged through the customers' energy bill.
- A centralised system is in place, but end-users are not billed directly for the service. For example, commercial buildings are likely to incur the system costs of air-conditioning without billing customers separately for this service based on their consumption. Instead, these costs could be factored into the rent paid. We understand that this is a common set up.[9]

1.2 What are the issues with embedded networks?

In 2022, the NSW Legislative Assembly Committee on Law and Safety self-referred an inquiry into embedded networks in NSW. It focused on the current legal framework on embedded networks, the effect of embedded networks on business and consumers, and identifying policy and legal solutions to address the effect of and concerns about embedded networks.

The inquiry highlighted significant consumer issues in embedded networks.[10] It found residential customers in embedded networks have fewer consumer protections and some face unjustifiably high energy costs.[11] It found that unlike for on-market customers who can benefit from retail competition for energy services by shopping around for lower prices, it is difficult for individual customers in embedded networks to switch retailers if they are unhappy with their supplier.[12]

Similar issues were raised in the survey we conducted as part of this review. 85 customers responded to the survey, and the majority of respondents commented on the high bills they receive and considered the prices they pay are high compared to consumers not in embedded networks. Customers also told us they have difficulty validating the accuracy of the charges on their bills and they do not have access to off-peak rates or are charged a continuous rate. Other issues that were raised included:

- changing providers is cost prohibitive
- difficulties accessing solar energy and solar feed in tariffs and gas rebates
- having to pay a daily charge for gas, regardless of whether it is actually used
- concerns about inefficient hot water provision, and a lack of transparency around charges
- metering issues
- not being made aware of the embedded network before moving in.

There are currently different price protections for customers in embedded networks, depending on the site, the fuel, and the type of seller. Exempt sellers can charge no higher than the applicable standing offer price of the local area retailer. There is no cap that applies to authorised retailers.

Electricity and gas embedded network customers are protected by the National Energy Customer Framework or the AER's Retail Exempt Selling Guidelines, which include hardship and life-support connection provisions. However, these don't apply to hot and chilled water embedded networks.

The inquiry recommended banning sellers being able to charge for hot and chilled water separately to their energy bills and introducing price protections for all embedded network customers.[13] Additionally, the inquiry recommended that the NSW Government ensure hot and chilled water consumers in embedded networks have equal protections as are provided under the National Energy Customer Framework.[14]

1.3 What have we been asked to do?

To protect embedded network consumers from unreasonable prices, our Terms of Reference requested IPART investigate and recommend:

- appropriate maximum price methodologies for electricity (including assessing if the DMOj is the appropriate maximum price), gas, hot and chilled water in embedded networks supplied to small customers
- a framework for ensuring compliance and enforcement of new price protections
- if the NSW Government should prohibit new hot and chilled water embedded networks.

The term 'small customer' is defined in the National Energy Retail Law (NERL) and Retail Exempt Selling Guideline as a residential customer, or a business customer who consumes less than the following at its business premises:[15]

- 100 megawatt hours (MWh) per annum of electricity
- 1 terajoule (TJ) per annum of gas.

In making our recommendations, we have considered the factors identified in the Terms of Reference. These considerations include (but are not limited to) the efficient costs of providing the relevant services, short-and long-term outcomes for consumers, the financial effects on both consumers and current embedded network operators, the differences in customer groups, and other consumer protections available. The full list of considerations is set out in the Terms of Reference.

We also used these factors in developing a set of pricing objectives in consultation with stakeholders. We then assessed several pricing approaches against these objectives. Once we had established an overall approach, we developed detailed pricing methodologies for each embedded network service to further address the pricing objectives. We then engaged Axiom Economics to provide advice on the likely impact of our recommendations, and whether it considered adjustments would be required as a result. We have taken Axiom Economics' advice into account in our final recommendations. Axiom Economics' report has been provided to the NSW Government alongside our Final Report.

Review timetable

[j] The Default Market Offer (DMO) is a maximum price that retailers can charge electricity customers on default contracts known as standing offer contracts.

1.4 The NSW Government is reviewing other protections for embedded network customers

As outlined above, there are other issues being faced by embedded network customers. We have not been able to consider them all through our review, as broader customer protections are being considered separately by the NSW Government, through its Embedded Network Action Plan. The NSW Government has committed to bring outcomes for embedded network customers in-line with those in traditional energy supply arrangements, including:

- pursuing regulatory and legislative changes to provide enforceable consumer protections to customers of hot and chilled water embedded networks
- expanding the Energy Accounts Payment Assistance scheme to ensure customers in embedded networks have equal access to emergency financial support at times of crisis
- improving disclosure and consumer awareness by ensuring prospective purchasers and tenants of an owners corporation property are aware of the existence of embedded network arrangements prior to purchase or leasing
- implementing recommendation 120 of the 'Report on the statutory review of the *Strata Schemes Development Act 2015* and *Strata Schemes Management Act 2015*', protecting electricity embedded network customers in strata schemes from long contract terms.[16]

1.5 How this report is structured

The rest of this report is structured as followed:

- Chapter 2 discusses key themes from stakeholder feedback and summarises the main changes between our draft and Final Reports
- Chapter 3 discusses the pricing objectives that we used to assess different pricing approaches
- Chapter 4 assesses different pricing approaches for residential customers against our pricing objectives
- Chapter 5 provides our proposed electricity pricing methodology
- Chapter 6 provides our gas pricing methodology
- Chapter 7 provides our proposed hot water pricing methodology
- Chapter 8 provides our proposed chilled water and centralised air-conditioning pricing methodology
- Chapter 9 discusses the pricing methodologies that should apply to business customers
- Chapter 10 discusses our proposed compliance and enforcement framework
- Chapter 11 discusses our recommendation on whether new hot and chilled water embedded networks should be prohibited.

Chapter 2

Key themes from stakeholders on our pricing methodologies

02

In undertaking this review, we consulted widely with stakeholders. This included:

- seeking submissions on the terms of reference, and releasing consultation papers and a Draft Report and seeking submissions (Table 2.1)
- inviting customers to respond to a survey, which allowed them to describe their experiences within embedded networks and submit their energy bills for analysis (85 responses received, and a sample of 64 customer bills)
- holding an online workshop (public hearing) for the Tribunal to engage directly with our stakeholders and to facilitate discussion between stakeholders (attended by 57 stakeholders)
- one-on-one meetings with stakeholders.

Following this consultation, we have conducted further analysis and refined our pricing methodologies. This chapter summarises the key themes from the feedback received and provides an overview of the key changes to our pricing methodologies in response. Our detailed analysis in response to stakeholder submissions are included in the relevant chapters of this report.

Table 2.1 Number of submissions by stakeholder group

Stakeholder group	Number of submissions			Stakeholders who made a submission to consultation paper or Draft Report
	Terms of reference	Consultation papers	Draft report	
Consumer advocacy groups	1	5	7	• Public Interest Advocacy Centre (PIAC) • Tenants Union Of NSW • Energy Consumers Australia • Owner's Corporation Network of Australia • Voices for Power – Sydney Community Forum • Combined Pensioners and Superannuants Association of NSW (CPSA) • Council of the Ageing (COTA) NSW • Arpra Limited
Embedded network sellers	2	6	7	• Energy Locals, • Origin Energy • EnergyAustralia • Austin Tourist Park • Real Utilities • Active Utilties • Altogether Group • SUPA energy
Metering providers	1	2	3	• ENM Solutions • Energy Intelligences Pty Ltd • Aquip Systems Pty Ltd
Government bodies/ regulators	2	1	1	• Energy and Water Ombudsman of NSW (EWON)
Consultants/ academics	0	1	2	• Energy Metrics Consulting • Macquarie Law School, Centre for Environmental Law, and Smart Green Cities;
Other industry stakeholders	7	5	6	• Australian Energy Council • Urban Development Institute of Australia (UDIA) NSW • Network Energy Services • Shopping Centre Council of Australia • Caravan, Camping & Touring Industry & Manufactured Housing Industry Association (CCIA) NSW, • Meriton Group

Stakeholder group	Number of submissions			Stakeholders who made a submission to consultation paper or Draft Report
				• Ausgrid, Endeavour and Essential (combined submission)
Individuals	1	8	6	
Anonymous stakeholders	6	6	6	
Total submissions	**20**	**34**	**38**	

2.1 Key themes from stakeholders

2.1.1 Approach to setting prices

Many stakeholders supported setting prices by benchmarking prices to market offers, although there were different views on the level of these benchmarks.[17] Most stakeholders also considered that prices should be updated annually rather than 6-monthly.[18]

Some stakeholders considered that the price cap should be set in line with the Default Market Offer (DMO) to:

- provide consistency with the broader regulatory framework for ease of application[19],
- provide additional headroom to recover internal network infrastructure costs[20] and
- provide a greater incentive for sellers to install sustainability infrastructure.[21]

We received several submissions from individuals stating that a 'no-worse off' clause should be included in the methodology to prevent price increases where sellers are currently charging below a maximum price.[22]

Table 2.2 Preferred pricing methodologies

Approach	Stakeholders
Benchmarking to lowest offers	EWON, PIAC, Voices for Power, Energy Consumers Australia, Energy Metrics, NSW DNSPs, Real Utilities
Benchmarking to higher offers in the market	EnergyAustralia
Combination of benchmarking and DMO	Origin
Equal to Default Market offer	Altogether Group, Caravan, Camping & Touring Industry & Manufactured Housing Industry Association of NSW Ltd (CCIA), the Shopping Centre Council of Australia
+ Additional supply charge for hot water	Active Utilities, Altogether Group, Australian Energy Council, Energy Australia, Energy Locals, Energy Metrics Consulting

Many stakeholders supported in principle our recommendations that maximum prices should be set by benchmarking them to retailers' lowest offers. These included all of the consumer advocacy groups, EWON, a supplier, and Energy Metrics Consulting.[23] It was noted that:

- embedded networks customers would have had an opportunity to access these offers had they been an on-market customer[24]
- prices should be lower for embedded network customers to reflect the detriments of being an embedded network customer, including reduced protections and access to supports [25]
- sustainable energy solutions should not leave customers worse off.[26]

Energy Metrics Consulting, a consultant that offers technical advice and support to developers, building committees and strata managers for embedded networks, submitted that our recommended electricity methodology is above the tariff it recommends to its clients, and it has not encountered a situation where its recommendations are not achievable.[27]

On the other hand, most of the embedded network sellers also submitted that benchmarking to the median of the lowest offers is not appropriate because:

- it results in maximum prices that are lower than what relatively engaged on-market customers are paying[28] and
- the lowest offers are often not cost reflective and are only intended to be offered for a short period.[29]

Stakeholders submitted that there a number of costs that need to be recovered through prices, including:

- the likely increases to their network costs as a result of the NSW Distributed Network Service Providers' (DNSPs) proposals to replace the current commercial tariffs with new higher embedded network tariffs for these sites[30]
- customer retention and acquisition costs that are incurred at a site-wide level[31]
- the potential for higher wholesale costs compared to on-market customers[32]
- the costs of developing sustainable and efficient solutions, such as heat pumps for hot water and solar panels[33]
- additional costs compared to on-market retailers, such as providing and maintaining the infrastructure on the customers' side of the meter.[34]

They supported approaches that would lead to price caps for electricity that would be between 6% and 12% (with 12% being the DMO) higher than our proposed benchmarks.[35]

There were mixed views on whether hot and chilled water prices should be set to recover the internal infrastructure costs at the site, with many stakeholders submitting that the hot water prices should include a daily fixed supply charge to recover these costs.[36] Origin agreed that customers should not pay multiple supply charges for the same fuel (gas).[37] Several stakeholders sought clarification on what the gas supply charge covers.[38]

There was also disagreement over which party should bear the costs of inefficient hot water systems. Some stakeholders did not agree with prescribing a maximum common factor.[39]

Most stakeholders did not comment on our approach on chilled water. Origin submitted that our proposed fixed rate for chilled water should be higher to reflect the average level of consumption, and it should vary by the number of bedrooms in the apartment.[40] Stakeholders also have mixed views on publishing information on the efficiency of the operating system.[41]

2.1.2 Different views on whether prices should allow for the recovery of capital costs

We received mixed views on whether capital costs should be recovered through embedded network customers' energy bills. Some submissions strongly argued that no infrastructure costs should be recovered through energy bills:

- to ensure there is an equal playing field between embedded network and non-embedded network customers (because non-embedded network customers do not pay for any infrastructure costs on their side of the meter through their energy bills) and [42]
- because most of this infrastructure forms part of the common property of the site and therefore is already owned and paid for by the owners.[43]

Others strongly consider that sellers should be able to recover capital costs through prices.[44] Stakeholders submitted that where these costs are not able to be recovered through prices, and they were transferred to other parties, that this would have significant impacts on cost of living, including:

- an increase in strata costs, which could lead to increased rents[45] and
- increases to housing construction costs, leading to increased house prices.[46]

Professor Sherry of the Macquarie Law School disagreed that house prices would increase as a result of our recommendations. The Professor submitted that "Developers do not discount apartment sales because the developer did not pay for the infrastructure; developers charge purchasers as much as the market will bear for apartments."[47]

Several stakeholders submitted that owners would not be prepared to pay additional costs for more sustainable solutions, which are typically more capital intensive.[48]

2.1.3 Different pricing methodologies for different customer types

Some stakeholders consider that our recommendations should be targeted to residential customers only, given their views that:

- many of the issues identified through different reviews (such as the NSW Parliamentary Inquiry) relate to residential customers[49]
- for long-term casual occupants of holiday parks[50]:
  - holiday parks and residential land lease communities that are mixed-use caravan parks are tourism businesses and these customers are not residents or tenants,
  - if customers use and pay for metered energy separate to their accommodation tariff, it is on a temporary basis

  - customers can shop around for alternative accommodation if they are not happy with the price.
- for business customers:
  - average prices for business customers are below the DMO[51]
  - many shopping centre tenants are large organisations which are not vulnerable[52]
  - there are fewer barriers to get an "on-market" offer from within an embedded network.[53]

2.1.4 Compliance and enforcement

Most stakeholders supported our draft recommendations on the proposed compliance and enforcement framework.[54] EWON agreed that it is not the appropriate enforcement body for maximum prices.[55] Some stakeholders considered that the AER should be the compliance regulator for electricity prices.[56] Most stakeholders supported a complaints-based compliance system with monetary penalties for non-compliance, although with some sort of clarity as to the quantum of the penalties.[57]

2.1.5 Future of hot and chilled water embedded networks

Most stakeholders agreed with our draft recommendation that new hot and chilled water embedded networks are not prohibited in NSW.[58] For hot and chilled water embedded networks, stakeholders generally considered there were many potential benefits, but called for improved price protections and service quality.[59] A few stakeholders considered that new gas hot water systems should be prohibited.[60] Energy Consumers Australia considers new embedded networks should only be established if the embedded network operator is able to provide clear evidence of consumer benefit.[61]

2.2 Overview of changes to our pricing methodologies between our Draft and Final Reports

We have refined the detailed methodologies in response to stakeholder feedback and following further analysis, while maintaining the same overall approach between our Draft and Final Reports. Changes between our draft and final recommendations include:

- Prices would be updated annually instead of every 6 months (Chapter 4).
- Clarifying that IPART would review the pricing methodology at regular intervals, for example, at least once every 5 years (Chapter 4).
- A new recommendation that the NSW Government ensures that the regulatory framework allows embedded network sellers to renegotiate their supply contracts for embedded network services in the 6 to 12 months prior to the application of the new maximum prices (Chapter 4).

- Changes to how the median lowest prices are calculated, including:
  - using tariffs after guaranteed discounts, but before conditional discounts and
  - excluding certain targeted offers such as offers for frequent flyers and organisation members, special offers for usage over a certain amount, offers that are only available to battery and solar customers, and offers with upfront membership fees (Chapter 5)
- For the maximum price for gas:
  - The consumption charge would be set based on a typical user using 12,680 MJ per year instead of 10,000 MJ per year. This reflects that we are allowing sellers to charge for up to 0.4 MJ of gas per litre of hot water used, and that a typical user consumes at least 80 L of water per day, plus up to 1,000 MJ per year for other appliances. Because retailers use declining block tariffs, the higher the consumption, the lower the average unit cost. Therefore, increasing our consumption benchmark reduces the consumption charge slightly (for example, applying our methodology to the Jemena coastal distribution district as at August 2023, this changes the price from 3.91 c/MJ to 3.82 c/MJ (or by around $11 per year)).
  - We are including an additional allowance where gas is unmetered based on what a typical low user would pay. Applying our methodology using current prices for the Jemena Coastal distribution district, sellers would be able to charge up to 10.5 cents per day for unmetered gas, in addition to the maximum daily gas supply charge (or around $40 per year) (Chapter 6),
- Embedded network sellers must charge customers for the consumption of hot water in the underlying energy units, rather than also being able to charge in water units. We have updated how our hot water price methodology is expressed to reflect this, but it would not result in any changes to the maximum amount that a customer could be charged (given the same level of consumption) (Chapter 7).
- The maximum price for unmetered chilled water would be based on a typical low user consuming 2.5 kWh per day for air-conditioning, instead of 2 kWh. We consider that this better reflects how much energy is likely to be consumed by a low-use air-conditioning customer. Using current prices results in a fixed daily rate of 83.25 cents for unmetered chilled water, instead of 64 cents in our Draft Report (a difference of around $70 per year). (Chapter 8).
- A different pricing methodology would apply to business customers that are large corporate entities. For large corporate entities, we recommend that sellers could charge no more than the standing offer of the local area supplier (which is capped by the DMO for electricity), consistent with the current pricing protections in the AER's exempt seller guideline (i.e. these protections should be extended to all large corporate entities in embedded networks, not just those being supplied by an exempt seller) (Chapter 9).
- Including an additional requirement for sellers to include the addresses of their embedded network sites on their website (Chapter 10).

Detailed responses to stakeholders' feedback and explanations for these changes are set out in the relevant chapters.

Chapter 3

Pricing objectives

03

We have consulted with stakeholders on what a methodology for determining maximum prices for embedded networks should achieve.

This chapter explains how we have considered stakeholder feedback to develop a price setting objectives for assessing different price setting approaches. It also considers how we would apply the objective of ensuring that an embedded network seller is able to recover its efficient costs of supply.

3.1 Overview of our decisions on pricing objectives

Our overarching objective in recommending methodologies for setting maximum prices is to ensure that embedded network customers are not paying more than non-embedded network or 'on-market' customers. We have also developed a list of 9 other pricing objectives outlined below.

These pricing objectives are generally focused on either outcomes for customers, outcomes for sellers, or outcomes for the regulator. Therefore, some objectives will work in opposition to each other (for example, responsiveness to cost changes, and price stability). We have considered these objectives and the views from our stakeholders in developing our final recommendations.

With regards to the objective of ensuring that an embedded network seller is able to recover its efficient costs of supply, we consider it is sufficient for our pricing methodology to ensure that providers can recover the efficient costs of energy alone (including the cost of transporting the energy to the embedded network site). This does not include the costs of installing and maintaining the internal embedded network infrastructure. This ensures that embedded network customers are not worse off than on-market customers, who do not pay for internal infrastructure costs through their energy prices.

Final decision

1. That the pricing methodologies be assessed according to the following objectives:
   a. ensures that embedded network customers are not paying more than non-embedded network customers
   b. provides price stability for customers
   c. is transparent, simple for customers to understand and easy to apply
   d. ensures that an embedded network seller is able to recover its efficient costs of supply
   e. is responsive to changes in the efficient costs of supplying customers
   f. incentivises embedded network sellers to supply energy efficiently and enable the efficient use of energy
   g. allows for cost-reflective pricing
   h. encourages sustainable energy solutions and accommodates innovation and investment in the energy sector
   i. involves regulatory costs that are proportionate to the problem
   j. results in prices that are enforceable and capable of being monitored.

3.2 We revised the proposed pricing objectives in response to stakeholder feedback

We received significant feedback from stakeholders on the proposed pricing objectives for assessing different pricing methodologies that we included in our industry consultation paper. As a result of the stakeholder feedback, we included 3 additional objectives, and have removed one. We have also made some minor wording changes based on stakeholder feedback. The marked up objectives are included below, with the additions (compared to the proposed objectives in the consultations paper) included in red text.

3.2.1 Final price setting objectives

We consider that a methodology for setting maximum prices for embedded network customers, where practical, should:

1. Ensure embedded network customers are not paying more than non-embedded network customers.
2. ~~Ensure there is no interruption to supply~~
3. Ensure an ~~efficient~~ embedded network seller is able to recover its efficient costs of supply
4. Ensure the regulatory costs are proportionate to the problem
5. Respond to changes in the efficient costs of supplying customers
6. Incentivise ~~customers and~~ embedded network sellers to supply ~~and use~~ energy efficiently and enable the efficient use of energy
7. Be transparent, simple for customers to understand and easy to apply
8. Provide price stability for customers.
9. Allow for cost-reflective pricing
10. Be enforceable and capable of being monitored
11. Encourage sustainable energy solutions and accommodate innovation and investment in the energy sector

The additional objectives include:

- **Ensuring the regulatory costs associated with a pricing methodology are proportionate to the problem that we are solving.** Not placing unnecessary regulatory burdens on taxpayers or stakeholders is a key factor when weighing up approaches that may result in similar outcomes.
- **Ensuring a pricing methodology encourages sustainability, innovation, and investment.** Various stakeholders provided feedback that our objectives should consider investment in the energy sector, and additional objectives were suggested to encourage sustainability and allow for innovation.62 We agree that it is worth having an explicit criterion on sustainability in addition to the objective to incentivise embedded network operators to supply energy efficiently.

- **Providing price stability for customers.** Some stakeholders provided feedback that customers value consistency in their energy bills and that our objectives should reflect this.[63] We agree that consumers value price stability and that it will be important to consider this alongside our existing criterion, that a methodology should be responsive to changes in supply costs.

We have removed the criterion to 'ensure continued energy supply', which caused confusion amongst stakeholders.[64] This objective was targeted at allowing suppliers to recover their efficient costs (which is already a separate objective).

In addition, we have:

- Removed 'efficient' from criterion 3. We agree with stakeholders that the inclusion of 'efficient' twice in the criterion is unnecessary.[65] One stakeholder submitted that is not appropriate to consider the costs of supply in determining a price for customers.[66] We disagree.
- Added 'efficient' to criterion 5 to ensure that the pricing methodology is capable of responding to changes in efficient costs of supply that may arise with new technologies.
- Removed 'customers' from criterion 6. Some stakeholders suggested this change because the criterion may impose an unfair burden on customers, who have little control over the efficiency of the systems in their buildings.[67] We agree that there can be significant constraints on tenants in controlling their energy usage. As suggested by some stakeholders, we have included 'enable the efficient use of energy' to allow for a methodology that would incentivise operators to enable the efficient use of energy by customers.[68]
- Added 'transparent' to criterion 7. This is in response to stakeholder feedback that protection for customers in the form of transparent prices and bills should be considered in the objectives.[69]
- Included 'capable of being monitored' in criterion 8. We agree with stakeholders that for a pricing methodology to be enforced it needs to be capable of being monitored.[70]

3.3 Ensuring sellers can recover the efficient costs of supply

One of our key objectives it to ensure that embedded network sellers can recover their efficient costs of supply.

For both non-embedded networks, and embedded networks, there are 2 types of costs associated with a customer's energy and hot and chilled water use:

- The energy (including the costs of transporting the energy to the parent connection at the site)
- The costs of the infrastructure onsite beyond the network meter (wiring, metering, and other plant such as solar, and hot water systems). These may include capital, operating and maintenance costs.

For non-embedded network customers, only the cost of energy is recovered through retail energy prices. The other costs are incurred upfront, initially by the builder and recovered through the sale of the property, or by the owner of the property.

Several stakeholders indicated that for embedded networks, customers should pay a share of the cost of the embedded network operator's investment in the infrastructure required.[71] Energy Locals submitted that if investments made are not considered in the cost of supply, operators could be deterred from providing the current level of investment.[72]

On the other hand, Professor Sherry submitted that most of the embedded network infrastructure forms part of the common property of the site, and therefore is already owned and paid for by the owners.[73] The Shopping Centre Council of Australia submitted that the Retail Leases Act 1994 does not permit shopping centres to recover capital costs from their tenants.[74]

We consider that it is sufficient for our pricing methodology to ensure that providers can recover only the costs of the energy (delivered to the parent connection) (and just the efficient costs). This helps ensure that embedded network customers are not required to pay more for their energy through their energy bills than on-market customers.

This approach is consistent with what embedded network customers would pay if they went "on-market." Under the AER's Electricity Network Service Provider Registration Exemption Guideline an embedded network operator may only charge an on-market customer for external network charges:

- based on actual cost (where clearly attributable to the customer)
- on a pro rata basis based on their metered consumption or
- be no more than the published regulated charge that would have applied had the distributor served the customer directly (the AER calls this a form of 'shadow pricing').[75]

We also note that the Electricity Network Service Provider Registration Exemption Guideline Version 6 for embedded networks does not allow charges to recover of internal network development and other capital costs. The Guideline outlines:

> **4.6.3 Internal network charges**
>
> We do not encourage separate network charges for exempt networks. Few, if any, situations currently exist where such charges are warranted. The formal determination of network charges by the AER is a complex and involved process, the costs of which will usually be disproportionate to the scale of an exempt network.
>
> Where an exempt network exists within a commercial building, shopping centre, airport, residential apartment building, retirement village or the like, the AER considers the network development costs to have been met in the initial establishment of the facility. Such costs are capital in nature and are normally recoverable through lease payments, fit–out charges or the like. A charge for network services is not appropriate as it may result in the customer being charged twice for the same facility.
>
> Accordingly, no charge is permitted for internal network services except where the parties have entered into an agreement on mutually agreed terms and both parties are:
>
> - large customers; or
> - large corporate entities

Small customers (excluding large corporate entities)

Exempt Network Operators are prohibited from billing for exempt network service charges. Network installation charges are only permissible where specified in a residential or commercial lease, tenancy agreement or similar instrument but only where such charges are permitted under relevant jurisdictional legislation.[76]

Energy prices are not the only mechanism available to sellers supplying residential customers for recovering costs. They can also charge the owners corporation for their services if they are permitted under relevant legislation (see Table 3.1 of the accompanying Axiom Economics report which sets out its understanding of this legislation).[k],[77] This means that a regulated price would not cap a providers' ability to recover its costs (including a profit margin).

Where the total costs of providing an embedded network (energy plus internal infrastructure) exceed the costs that can be recovered through regulated prices, it is appropriate for owners corporations to incur the internal infrastructure costs, because they are better able to manage these costs. In contrast, tenants have no ability to manage these costs. Ensuring that the parties who can manage the risks face the costs provides a much greater incentive for them to ensure that services are provided efficiently. To the extent that this drives greater engagement in the market, this should help increase competition and reduce the costs of embedded network services.

A detailed discussion of the types of costs of providing an embedded network, and how they should be recovered and from whom is provided in the Axiom Economics report.

[k] For example, under the Retail Leases Retail Leases Act 1994, shop lessees cannot be required to pay for outgoings, unless disclosed in the lessor's disclosure statement for the lease. They also cannot be required to pay the capital costs of the building, but can be required to pay for plant and equipment capital costs, repairs and maintenance of building, plant and equipment and contributions for fixtures, equipment or services.

Chapter 4

Pricing approach for residential customers

04

Our Terms of Reference requires us to consider whether the Commonwealth Government's Default Market Offer (DMO) is the appropriate maximum price for electricity embedded networks. This is the price cap set by the Australian Energy Regulator (AER) that applies to "standing offers" for on-market customers.[78]

We have also considered other options for setting maximum prices for embedded network customers:

- adjusted DMO (electricity only)
- embedded network specific cost-build-up
- benchmarking to the prices paid by on-market customers.

This chapter considers which of these approaches best meet the price setting objectives set out in Chapter 2. It also considers the form that any maximum price should take – in particular, whether the methodology would produce maximum unit prices or maximum annual bill caps.

This chapter and chapters 5 to 8 set out our final recommendations on the maximum pricing methodologies for **residential customers** in embedded networks. Chapter 9 sets out our final recommendations for business customers that are small customers.

4.1 Overview of our findings and decisions

We have found that the DMO is not an appropriate maximum price for residential customers in electricity embedded networks. The DMO is designed to be set higher than the efficient costs of supplying electricity to maintain incentives for competition, innovation and investment by retailers, and incentives for consumers to engage in the market. A price cap that is set to achieve competition outcomes is not suitable for embedded networks where most customers cannot easily shop around.

We consider that the DMO does not meet our overarching objective to ensure that embedded network customers are not paying more than non-embedded network customers because it is typically higher than most offers available in the market. Setting a maximum price at the DMO would penalise many embedded network customers who cannot influence the price that they pay in the same way that on-market customers are able to.

Our final decision is that setting maximum prices by benchmarking them to what on-market customers are paying best meets our pricing objectives. In particular, it directly solves the main objective of ensuring that customers are not worse off than on-market customers. In a reasonably efficient market, market prices are also a better indicator of the efficient costs of supplying electricity than regulator estimates and forecasts.

Setting prices using a market-based benchmark would allow providers to recover the efficient energy costs, because the efficient costs of supplying embedded network customers are significantly lower than the efficient costs of supplying an equivalent on-market customer. This means that it also allows them to offset additional costs (such as the upfront costs of sustainable technologies, or ongoing operating and maintenance costs of the other infrastructure). This provides flexibility for existing business models to continue, and also provides an incentive for

sellers to install on-site sustainable generation as they can recover the upfront capital costs through prices.

As market prices are readily available for analysis, benchmarking also comes at a significantly lower regulatory cost compared to producing an embedded-network cost build-up. Unlike DMO-based options, which are only available for electricity, market benchmarks are also available for gas.

Table 4.1 summarises our assessment of the options considered against our pricing objectives.

Table 4.1 Assessment of pricing approaches against the objectives

Objectives	Price-setting options			
	Benchmark to market prices	**DMO**	**Adjusted DMO**	**Embedded-network cost build up**
Ensure embedded network customers are not paying more than non-embedded network customers	High	Low	Medium	Medium to High (depending on costs included)
Provide price stability for customers	Medium, depending on frequency of updates	Medium	Medium	Medium, depending on frequency of updates
Is transparent, simple for customers to understand and easy to apply	High	High	High	Low
Ensure an embedded network provider is able to recover its efficient costs of supply	High	High	Medium	Medium
Is responsive to changes in the efficient costs of supplying customers	High	Medium	Medium	Medium
Incentivise embedded network operators to supply energy efficiently and enable the efficient use of energy	High	Medium	High	High, depending on detailed methodology
Allows for cost-reflective pricing	Depends on detailed methodology rather than overall approach	Depends on detailed methodology rather than overall approach	Depends on detailed methodology rather than overall approach	Depends on detail ed methodology rather than overall approach
Encourages sustainable energy solutions and accommodates innovation and investment in the energy sector	High	Medium	High	High, depending on detailed methodology
Involves regulatory costs that are proportionate to the problem	High	High	High	Low
Results in prices that are enforceable and capable of being monitored	High	High	High	Medium

We recommend that the maximum prices would be benchmarked by the regulator annually in July to capture the annual changes in network costs and new prices would apply from August each year. In addition, to ensure that the price setting methodology remains fit for purpose as energy markets change, we recommend that IPART review its methodology at regular intervals, for example, at least once every 5 years.

We consider that the methodology should result in maximum unit prices. We consider that compared to a bill cap for a given level of consumption, unit rates are easier for customers and sellers to understand and apply and will better protect customers with less typical consumption profiles.

4.2 The DMO is not an appropriate maximum price for electricity embedded networks

The AER sets the DMO based on its forecasts of the efficient costs of supplying electricity including headroom to facilitate competition.

In response to our consultation papers, many industry stakeholders supported using the DMO as the maximum price.[79] Most of stakeholders considered this would maintain consistency with the broader energy framework. In addition, several stakeholders have submitted that the additional headroom (and higher prices) allowed by the DMO is necessary so that embedded network sellers can recover the site-specific internal network costs, including sustainability initiatives (e.g. solar and EV charging).[80]

We do not consider that setting maximum prices using the DMO meets our overarching objective to ensure embedded network customers are not paying more than non-embedded network customers. This is because the DMO is typically higher than most offers available in the market. As discussed further in Chapter 5 and 9 of our report, since the DMO was introduced in 2019, residential customers on market offers have paid an average of 15% less than the DMO and business customers have paid an average of 13% less.[81] However, we note that 2023-24 has been an exception, where the ACCC found that 47% of residential customers were paying prices at or more than the DMO in August 2023.[82]

We have also considered how well the DMO is able to reflect the efficient costs of supplying customers and respond to changes in these costs. The AER sets the DMO based on its best forecasts of the efficient costs of supplying electricity (including headroom). However in an increasingly volatile market, it is difficult to accurately forecast costs. For example, in 2021-22, the DMO was set prior to a very high price event and several retailers left the market largely because they could not recover their energy costs.

One of the key objectives of the DMO is to maintain incentives for competition, innovation and investment by retailers, and incentives for consumers to engage in the market.[83] To facilitate this objective, the DMO includes customer acquisition and retention costs and an additional competition allowance which allows retailers to compete to offer lower retail prices.

We consider that setting a maximum price at the DMO which includes a competition allowance would penalise many embedded network customers because they are not able to shop around for a better offer, as discussed in Box 4.1. A price cap that is set to achieve competition outcomes is not suitable for these customers.

We have also considered whether the additional headroom (and higher prices) allowed by the DMO is needed to recover the capital costs incurred by sustainability initiatives. Our view is that sustainable technologies such as solar and heat pumps should reduce the lifecycle energy costs. Customers should not be paying more over the asset life of the added infrastructure compared to if it was not installed. Further, in the absence of strong competition, a higher price cap may be less likely to result in innovation because there is less pressure on sellers to ensure the services are delivered efficiently.

We note that the AER's draft decision for its 2024-25 DMO does not include a competition allowance[l] "as a result of economic and market conditions, and the weight of concerns about cost of living".[84] While the AER's draft decision on the competition allowance for 2024-25 goes some way to addressing our concerns with the DMO for embedded network customers, it is clear from the decision that the AER sees the cost of living crisis as an exceptional circumstance and that it intends to revert back to including such an allowance unless there are similar pricing pressures.

When coupled with the fact that the DMO includes a range of other allowances that are less relevant to embedded networks, such as customer acquisition and retention costs, we do not consider it appropriate to use as the basis for setting maximum prices for embedded network customers that are unable to shop around.

Box 4.1 Barriers to electricity embedded networks accessing offers from a different supplier

In recent years, the National Electricity Rules have been amended to improve the process for consumers in an embedded network accessing on-market offers. However, several reviews have found material practical barriers continue to exist, including the ability to install the required metering, and getting access to an "energy-only offer."

Metering related barriers

If an electricity embedded network customer wants to go on-market, it must have appropriate metering in place. The metering must, for instance, be compliant with National Energy Market (NEM) requirements (which, amongst other things, requires the use of a 'smart meter'), be assigned an NMI (national meter identifier) and registered in the Australian Energy Marker Operator's (AEMO) systems.

The upfront costs associated with installing this metering equipment and associated infrastructure (e.g. metering panels, surrounds and enclosures) or retrofitting existing equipment to be compliant can be significant, particularly if the required associated infrastructure has not already been installed.

In this regard, we understand that there may be some shopping centres and other sites where the associated infrastructure has already been installed (either by the developer or by other customers that have gone on-market). While a customer located at such a site that wanted to go on-market would still need to pay for a compliant meter to be installed, the costs would be a lot lower than they would otherwise be.

At other sites where this has not occurred, the costs of installing the metering and associated infrastructure could outweigh the benefits of switching (particularly if the amount of electricity consumed is quite low). Even if the benefits do outweigh the

[l] These reductions were offset to some extent by higher network, environmental and retail costs.

Box 4.1 Barriers to electricity embedded networks accessing offers from a different supplier

costs, if the embedded network customer does not have the financial means to pay the upfront costs, this can act as a barrier to switching.

Constraints on the availability of space to install compliant metering may also act as a barrier to switching at some sites. This could, for instance, mean that an embedded network customer is either unable to switch or that additional upfront costs must be incurred to create the additional space (where that is a feasible option).

Energy-only offer related barriers

To offer electricity to customers in embedded networks, an authorised retailer must:

- develop an energy-only plan
- have the processes in place to ensure that embedded network customers are not charged twice for external distribution charges (i.e. by the embedded network seller and the authorised retailer).

Several reviews have found the additional costs and complexities associated with these arrangements may either discourage, or act as a barrier to, authorised retailers making energy-only offers. That is, unless it is in their commercial interest to do so. The NSW Parliament Committee on Law and Safety, for instance, observed that:

> "Retailers typically bill for both energy and network charges, and it can be hard to find one willing to provide an energy-only offer to a consumer in an embedded network. Additionally, some retailers may be unwilling to streamline their billing process." [85]

The AER has similarly observed that many authorised retailers are unwilling to make 'energy only' offers.[86]

A number of reviews and submissions to these reviews have also noted that when embedded network customers do contact retailers seeking energy-only offers:

- the authorised retailer may not have information readily available on the metering requirements or the process for transferring to an on-market energy only offer
- the embedded network customers can experience long wait times for responses to questions about energy-only offers (if they are available).

Such experiences can also discourage embedded network customers from going on market.

Source: AEMC, Review of regulatory arrangements for embedded networks Final Report, 28 November 2017, p 69; AEMC, Updating the regulatory frameworks for embedded networks Final Report, 20 June 2019, p iii; NSW Legislative Assembly Committee on Law and Safety, Embedded Networks in New South Wales, November 2022, p 44; and AER, Review of the AER exemptions framework for embedded networks, November 2023, p 21.

Finding

1. The Default Market Offer is not an appropriate maximum price for electricity embedded networks.

4.3 We are not recommending using an adjusted Default Market Offer

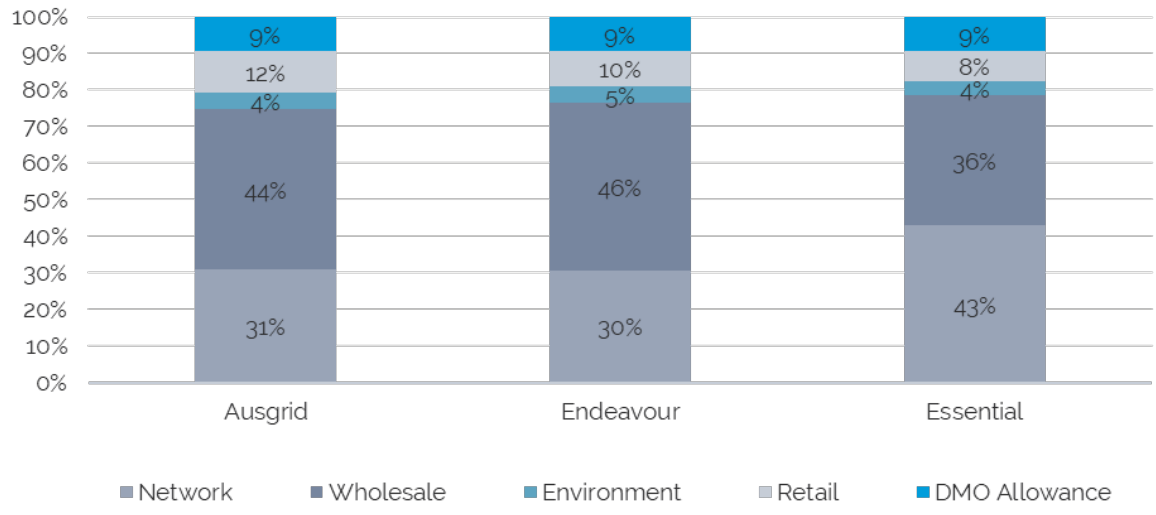
Another option put forward by stakeholders in response to our consultation papers and at the public hearing is an adjusted DMO. 2 variations of this option were suggested:

1. A small percentage discount reflecting the discounts on-market customers are typically receiving relative to the DMO.
2. Adjusting the DMO to remove the cost components that are not as relevant to embedded network customers (i.e. costs of competition and customer acquisition and retention costs). This option was suggested by the network distributors, Ausgrid, Endeavour and Essential Energy.[87]

Figure 4.1 shows that currently the 'DMO allowance', makes up around 9% of the DMO. Additionally, some of the retail cost component includes customer acquisition, and retention costs. As at September 2023, a 9% discount to the DMO was equivalent to the median market offer. Therefore, an adjusted DMO which removes these costs or applies a discount, for example 10%, would achieve prices in-line with the median market offer in the current market.

While this approach is simple to apply and easy to understand, we consider it has the same key shortfall as the DMO. In particular, for it to be cost-reflective, it would need to rely on accurate forecasts of costs which will not always be available. In highly volatile periods such as 2021-22, the adjusted DMO would have been lower than efficient costs of supply.

Figure 4.1 Default Market Offer cost components (2023-24)



Source: IPART analysis, based on AER, Default market offer prices 2023-24 -Final determination, p 67.

4.4 We are not recommending using an embedded network cost-build-up

We did not receive any submissions that advocated for an embedded network specific cost-build up for electricity and gas embedded networks. However, some industry stakeholders supported a methodology for hot and chilled water that considers energy costs, ongoing costs, capital cost and profit.[88]

To be effective, a cost-build up approach would require us to accurately estimate the various costs involved. In our view, it is very costly to accurately predict costs. For example, for gas prices, there is very limited transparency over the energy costs, particularly the wholesale and distribution costs. As noted by Energy Australia in its submission to our consultation papers:

> Unlike electricity, there is negligible precedent for a regulated gas retail tariff which means extra regulatory cost for IPART to develop. Setting a retail price cap for gas would be complex and costly – due to a lack of transparency over wholesale gas supply contracts (unlike electricity where wholesale costs can be pegged to public ASX contract data) and non-transparent network/pipeline costs. This cost/complexity should be weighed against any benefit which seems to be small given the scale of embedded networks in terms of low customer numbers (potentially even lower numbers with metered supply), and the actual amount of gas the regulated price would apply to e.g. only used for stove top gas not heating.[89]

A cost-build up approach would require us to specify which costs could be recovered through prices. If we were to allow only the efficient delivered energy costs of an embedded network, it would have very large impacts on many of the existing embedded network sellers. Some of the business models we have observed are based on the savings arising from the difference in network costs for large sites versus residential customers, and so many would no longer be viable. On the other hand, setting prices to recover capital costs would make embedded network customers worse off than on-market customers who do not contribute to internal capital costs (such as wiring and other infrastructure) through their electricity prices.

There is also a very large variation in the types of embedded networks and network configurations, which make determining the representative efficient costs of any internal generation infrastructure (such as solar and batteries) very difficult. The opportunities for generation are very site specific which makes it difficult to set a single efficient cost and price level. If generation infrastructure is installed on site, then the efficient energy costs will also vary significantly between sites.

4.5 Benchmarking to market prices

We consider benchmarking to market offers directly addresses our overarching objective that embedded network customers should not be worse-off compared to on-market customers. It allows for a consistent price setting approach across electricity, gas, and hot and chilled water. This is unlike the DMO, which is only available for electricity. In addition, it:

- ensures that sellers can recover the delivered costs of supplying energy to customers
- allows existing business models to continue
- provides an incentive for sellers to install sustainable infrastructure.

Although there were various stakeholder views on the level of any benchmark, most stakeholders supported setting prices by benchmarking prices to market offers.[90]

4.5.1 The costs of supplying embedded network customers are lower than on-market customers

The efficient costs of supplying energy to embedded network customers are significantly lower than the efficient costs of supplying an equivalent on-market customer. As a result, by benchmarking to the prices paid by on-market customers, sellers can recover their costs.

The lower costs are mainly due to lower network costs because the parent or boundary meter connection to the grid is treated as a large energy customer. Depending on the size of the site, the network cost for large customers can be significantly lower than the combined costs of all the individual small customers. For a relatively small site with 40 dwellings, this results in costs that are around:

- $100 lower for embedded network electricity customers
- $80 lower for embedded network gas customers.

The cost savings are significantly greater for larger sites. For example, a larger site with 300 dwellings would save around $400 in electricity and gas costs combined. The next chapters provide details on the network cost savings available for supplying gas and electricity.

In addition, embedded network sellers may face lower efficient customer acquisition and retention costs. While embedded network sellers must compete to supply and retain a site, they do not compete to supply and retain the individual customers supplied. Sellers can also further reduce their costs of supplying electricity by installing generation assets at the site (where the site allows for this).

Many sellers submitted that there are additional costs of supplying embedded network customers that are not incurred by retailers when they supply on-market customers. As discussed in the previous chapter, these costs (such as wiring costs, maintenance costs, the costs of hot water systems) also exist outside of embedded networks, however, they are not recovered through energy prices. They are borne by the home owners or site owners. Our recommendations are consistent with how costs are recovered for on-market customers and ensure that embedded network sellers can recover:

- the delivered cost of energy through energy prices
- the costs that exceed the energy prices from the site owners by negotiation (where permitted by legislation).

4.5.2 Benchmarking would allow different business models to continue

Different embedded network business models have emerged because of the energy cost savings available to them. For example, some have used the difference in the energy costs to compete by providing capital contributions to developers.

Contributions are provided in exchange for the establishment of a contract with the owners corporation that is then executed at the first annual general meeting. These contributions are then recovered from the embedded network customers over the life of the contract. Capital contributions may be relatively large to secure the contract with the developer and may lead to situations where the owners corporation does not own all of the embedded network infrastructure.

At our public hearing, we heard that under an embedded network 'service' model the embedded network provider is responsible for any ongoing capital costs which are recovered from customers on a smoothed basis through prices. Stakeholders expressed the following views about this business model:

- Origin stated that owners corporations typically want to recover capital costs through the energy prices
- one stakeholder noted that recovering the costs of the embedded networks through bills can reduce costs for owners corporations
- an individual said that it is a positive that a service model reduces the responsibility that a owners corporation has to take to maintain part of the asset.[91]

Unlike cost-based approaches, which are prescriptive about which costs are recovered and the level of cost recovery, an approach based on benchmarking to market prices would allow these existing business models to continue. Where energy costs are lower than the market prices, sellers could continue to use the savings to offset other costs. This makes it well suited to the existing market as described by Energy Locals, which stated that "there is no single approach to capital investment in embedded networks, meaning there may not be a one-size-fits-all methodology" to factor investment into the cost of supply to a customer.[92]

We understand that most embedded network sellers already benchmark their embedded network prices to market offers. For these sellers, using the benchmarking approach to set maximum prices should not result in significant changes in their expected revenues available to manage their costs.

As noted above, where embedded network sellers are charging more than our benchmarks, they can recover these from the site owners by agreement. However, the contracting model employed by most embedded network providers to date has assumed that the costs will be recovered from embedded network customers.

We expect embedded network supply contracts to have change of law provisions that would allow sellers renegotiate with site owners to require site owners to pay some of the costs. However, to ensure that new maximum prices do not pose a threat to the financial viability of embedded network sellers, we recommend that the NSW Government ensure that the regulatory arrangements would allow sellers to renegotiate their supply contracts for embedded network services in the 6 to 12 months prior to any new requirement that require sellers to comply with maximum prices, and that any arrangements would require parties would be required to negotiate in good faith.

4.5.3 Benchmarking to market prices provides an incentive to install sustainable technologies

Many sustainable technologies such as solar and heat pumps can reduce the lifecycle energy costs of supplying energy. However, a 'split incentive' problem arises where an occupier accrues the benefits through lower bills (for example, because less energy needs to be purchased from the grid), but developers/owner investors bear the upfront costs of installation.

As discussed above, the efficient costs of supplying embedded network customers are significantly lower than the efficient costs of supplying an equivalent on-market customer. Therefore, setting prices based on a market based benchmark provides an opportunity for embedded network sellers to use the savings to offset the capital costs of sustainable technologies. A price-based benchmark also benefits occupiers by providing assurance that they are not worse off than on-market customers.

Box 4.2 illustrates how this helps solve the problem of split incentives, using an example of 2 integrated heat pumps and storage units that were installed in a 15-apartment North Sydney building.

Box 4.2 The problem of split incentive in a 15-unit apartment complex

In this case study, heat pumps were installed to replace gas metered systems that were previously used in the apartments. Since the payback period is about 5 years, with a lifecycle of 15 years, it is economically beneficial for tenants and owner-occupiers to retrofit the building with the heat-pumps.

However, if the owner-investors do not share in the benefits of savings on the energy bill of $5,900 per year, there is no clear incentive for them to invest the required $30,000 capital outlay. Therefore, the building may not be retrofitted with the heat pumps, despite the project's positive net present value and sustainability benefits.

In this example, if prices were benchmarked to the market offer prices, the embedded network seller would recover its capital costs over 5 years. They would then incur significantly lower costs thereafter, providing an incentive to install the heat pumps. These cost savings could be shared with end-use customers.

Upfront costs	$30,000
Savings on the building's annual energy bill	$5,900
Heat pump life-cycle (years)	15
Payback period for residents (years)	5.1

4.6 The pricing benchmarks should by updated annually by IPART

A benchmarking approach has the capacity to be very responsive to changes in efficient costs. Unlike the default market offer, market offers can adjust immediately in response to changes in costs. A benchmark is able to be easily adjusted to reflect these changes.

In our Draft Report, we proposed adjusting prices every 6 months, because we considered that this would allow maximum prices to be responsive to cost changes during periods of high volatility in gas and electricity markets.

However, most of the embedded network sellers that responded to our draft recommendations told us that they would prefer prices to be adjusted annually. In doing so, they noted that adjusting prices every 6 months would result in:

- more volatile prices for embedded network customers, which a number noted would be viewed unfavourably by their customers and potentially cause customers financial stress[93]
- disproportionate regulatory costs (primarily as a result of the customer notification requirements) that would ultimately be passed through to customers.[94]

A number of submissions to our Draft Report also noted that it may result in embedded network sellers becoming more exposed to energy market volatility and financial instability because they would have to transition away from using longer-term fixed price supply contracts to shorter-term contracts aligned with the 6-monthly price changes.[95] Altogether, for example stated that:

> "A six monthly adjustment in maximum price for embedded networks would result in fewer long term supply contracts, and consequently would reduce the capacity for operators to offer competitive pricing within embedded networks particularly when market events result in significant increases in the wholesale price of electricity as was seen in 2022." [96]

EnergyAustralia also noted the potential for 6-monthly updates to have a range of other unintended consequences. These included "entrenching competitive advantages of existing large, embedded network incumbents who are better able to endure fluctuations in price and frequency of updates" and "reducing competition in the long term" by deterring new entry and potentially prompt some suppliers to exit the market.[97] It therefore recommended the use of an annual price adjustment.

PIAC and Origin were the only stakeholders to express a contrary view, with both supporting the draft recommendation, but not pointing to any specific benefits of bi-annual adjustments.[98]

Having considered the feedback provided by stakeholders, we now consider that that the adoption of 6 monthly price adjustments could have the opposite effect of what we intended. That is, it could increase the costs that embedded network sellers incur in supplying embedded network customers and result in higher prices and greater price instability for these customers, contrary to our price setting objectives. We have therefore decided to amend this aspect of our draft recommendations, by recommending prices be adjusted on an annual basis.

Our final recommendations are that IPART would determine maximum prices for the sale of electricity, gas, hot and chilled water to small customers[m] in embedded networks in NSW, and that it would update the maximum prices for residential customers based on retailers' market offers available in July of each year, with the new maximum prices to apply from August.

This timing has been adopted to ensure that the market offers used in the calculation of the gas and electricity benchmarks reflect the effects of any changes in the DMO (for electricity offers) and network tariffs, both of which occur on 1 July of each year.[n] We consider that the frequency and timing of these price changes strike the appropriate balance between the following price setting objectives:

- providing price stability for embedded network customers
- enabling embedded network sellers to recover their efficient cost of supply
- ensuring regulatory costs are proportionate.

[m] Small customers means:
- For customers of retailer, the definition in National Energy Retail Law.
- For customers of exempt sellers, the definition in the *Retail Exempt Selling Guideline.*
- For hot and chilled water, customers that meet those definitions for their usage of electricity or gas (whichever is the underlying fuel source).

[n] Ausgrid, Endeavour, Essential and Jemena's prices, are revised on 1 July of each year.

Final decision

2. Setting maximum prices by benchmarking them to what on-market customers are paying best protects embedded network customers and meets our pricing objectives.

Final Recommendations

1. That the NSW Government enact legislation to authorise IPART to determine maximum prices for the sale of electricity, gas, hot and chilled water to small customers in embedded networks in NSW.

2. That the maximum prices would be updated annually based on retailers' market offers available in July of each year, with the new maximum prices to apply from August each year.

3. That the NSW Government ensure that the regulatory arrangements allow embedded network sellers to renegotiate their supply contracts for embedded network services in the 6 to 12 months prior to the introduction of a requirement that sellers to comply with maximum prices, and require both parties to negotiate in good faith.

4.7 We propose setting maximum unit prices

In setting the benchmarking methodology, we considered two main forms that the maximum price could take:

- A bill cap for a given level of usage, for example, $2,000 for 4,000 kWh of annual usage.
- Maximum unit prices, for example, a maximum daily supply charge of 100 cents per day and a maximum consumption charge of 40 cents per kWh.

In our view, the bill cap has several drawbacks which means that it is less transparent and less simple for customers to understand. We consider it is more difficult for customers to relate a bill cap to their own bill, which in most cases will be for a consumption level that differs from the typical customer profile. To understand how their offer relates to the bill cap (and check if the offer is compliant), they will need to multiply out their tariffs to calculate a total bill at the representative consumption level and comparing it to the bill cap.

A bill cap could also be misinterpreted as an absolute cap on bills for all levels of consumption. Some customers may think their bills cannot exceed the bill cap figure regardless of their consumption.

A bill cap would require setting a model consumption profile. To set the DMO, the AER determines a different model annual usage and reference price for each distribution region and each type of small customer (residential/small business customers). The model annual usage is determined based on how much electricity a broadly representative small customer of a particular type in a particular distribution region would consume in a year and the pattern of that consumption.

For 2023-24, the AER used a consumption level of 3,911 kWh to 4,913 kWh in NSW, (depending on the distribution region), reflecting the average consumption of all customers. The average consumption of embedded network customers is likely to be lower than for all customers because most embedded network customers live in apartments. A significant mismatch between the model consumption and the actual average consumption for a particular group can lead to higher bill outcomes for consumers as illustrated in Box 4.3. To overcome this issue, we could set different benchmarks for different premise types based on the typical consumption for each (for example, caravans, apartments, and townhouses separately).

However, we consider that maximum unit prices are simpler for customers to understand and are less complex because the same maximum benchmark can be applied for all residential customers without disadvantaging any particular group. Our decision to set a benchmarking methodology for maximum unit prices is consistent with the Department of Customer Service's (DCS) recommendation for maximum prices for land lease communities.[99] We recommend that prices would be set in cents to 2 decimal places.

Box 4.3 Mismatch between model and actual consumption leading to high bill outcomes

As illustrated in the Table below, there are various combinations of supply and consumption charges that would be compliant with a maximum price cap.

For example, if an embedded network operator has a majority of customers whose electricity consumption is around 2,000 kWh/year, the operator can choose to charge the supply and consumption charges represented by offer B to maximise their revenue.

While still being a compliant offer which would not exceed the maximum price of $2000 for 4,000 kWh/year, this would disadvantage these customers whose actual annual consumption levels vary significantly from the model consumption.

			Customer bill at different levels of consumption			
Offer	**Supply charge ($/day)**	**Consumption charge ($/kWh)**	1,000 kWh/year	2,000 kWh/year	3,000 kWh/year	4,000 kWh/year
A	1.00	0.4088	$773.75	$1,182.50	$2,000	$2,817.50
B	2.00	0.3175	$1,047.50	$1,365.00	$2,000	$2,635.00

Source: IPART analysis

Final decision

3. The pricing methodology determines maximum unit prices, rather than annual bill caps at specified levels of consumption.

4.8 IPART would review its maximum price setting methodology at regular intervals

As the energy market transitions to low carbon technologies there will be significant changes to how energy is delivered to customers, the market for energy services and how costs are recovered from customers. This will impact on how embedded network services are provided, and the economics of these services. For example:

- almost all centralised hot water systems currently use gas, but over time, these will be electrified
- sustainable technologies such as batteries and heat pumps will continue to fall in cost as their uptake increases
- Ausgrid and Endeavour Energy have proposed transitioning to new higher network tariffs for embedded networks (discussed further in Chapter 5).

Consistent with its approach to other price setting functions, IPART should ensure that its price setting methodology remains fit for purpose as the markets change. We recommend that IPART review its methodology at regular intervals, for example, at least once every 5 years including whether it remains appropriate and whether improvements can be made.

Final Recommendation

4. That IPART review its price setting methodology at regular intervals, for example, at least once every 5 years.

4.9 Solar for embedded network customers

As discussed in Chapter 1, we have not been able to consider all issues relating to embedded networks as part of our review. One of the issues that was raised with us through submissions that we were not asked to consider by the NSW Government is around the installation of solar at embedded networks.[100]

In many embedded networks, such as apartment towers, embedded network residents will not individually own the roof space or other common spaces and the arrangements would be a matter for the owners corporation. However there may be other sites, such as retirement villages and residential land lease communities (such as caravan parks), where the dwellings are separated and residents own the roofs of their home. At these sites, the consent of the operator of the retirement village or community is required for residents to install solar panels, as it is considered an alteration or addition to the home. The operator's consent cannot be unreasonably withheld.[101]

However, according to the Tenants Union:[102]

- Many operators of residential land lease communities are finding that their electricity infrastructure cannot cope with the installation of solar panels because it is old and poorly maintained, and they have not put the necessary centralised protection systems in place.[o] In those communities, home owners are being refused consent.
- Some residential land lease communities have a term in the site agreement about solar panels, to the effect that no payment will be made for electricity fed back into the embedded network and solar panels may be disconnected if they are contributing to a deterioration of the infrastructure at the site, or placing an unacceptable load on the infrastructure (with disconnection costs being borne by the resident).

Given these practical and technical difficulties, we consider that sellers and residents would benefit from further guidance from the NSW Government about the arrangements for solar in embedded networks.

Final Recommendation

5. The NSW Government consider the arrangements for solar in embedded networks and provide guidance to embedded network operators, sellers and residents about the infrastructure needed at an embedded network site to facilitate:
   a. the installation of solar panels by residents
   b. payments, rebates, or other financial benefits that reflect the excess electricity generated from residents' solar panels that is supplied to the embedded network or distribution network.

[o] According to the Tenants Union, under Australian Standard AS/NZS477.1. a centralised protection system is required at a site if the solar inverter capacity exceeds 30 kW (with the threshold applying to both an individual home owner's solar capacity and the total capacity of all solar installations in the community sharing the cabling and point of connection). Tenants Union, Sustainable Energy should be an option for all residents, accessed 19 April 2024.

Chapter 5

Maximum price methodology for electricity

05

Chapter 4 explained our recommendation to use a benchmarking approach for setting maximum prices for electricity, gas, and hot and chilled water. It also considered the form of the price cap, and how frequently prices would be adjusted.

This chapter details our recommended methodology for setting the benchmark level for electricity sold to residential customers in embedded networks.

5.1 Overview of our recommendations

We recommend that a maximum electricity price for embedded network customers would comprise:

- a consumption charge equal to the median consumption charge of the lowest consumption charges from the offers of active retailers in the market
- a daily supply charge equal to the median supply charge of the lowest supply charges from the offers of active retailers in the market.

The lowest median tariffs would be calculated using single rate tariff offers, using available offer data on the Australian Energy Regulator's (AER) Energy Made Easy website:

- after guaranteed discounts, but before conditional discounts
- excluding certain targeted offers such as:
  - offers for frequent flyers
  - offers for organisation members
  - special offers for usage over a certain amount.,
  - offers that are only available to battery and solar customers
  - offers with upfront membership fees.

Under our recommended pricing methodology, embedded network sellers would be able to charge a flat-rate tariff or charge different consumption tariffs from different times of the day (a 'time-of-use tariff') as long as the average consumption tariff does not exceed the determined consumption charge (weighted by the AER's Default Market Offer (DMO) model annual usage profiles).

Historical data shows that the median of active retailers' lowest offers is around the 20th percentile of all market offers. On average across the last 4 years, this level is about 5% below the prices paid by the average on-market customer. We consider this provides the right balance to help ensure that:

- most embedded network customers would not pay more than on-market customers
- sellers are able to recover their energy costs.

A different benchmark would apply in each of the 3 electricity distribution districts in NSW: Ausgrid, Endeavour Energy and Essential Energy. This is in line with how the AER sets the DMO and largely reflects the difference in network prices especially between the rural and regional Essential Energy network and Ausgrid and Endeavour Energy, which supply to mostly urban areas. Applying our methodology, Table 5.1 shows the maximum daily supply and consumption charges when our methodology is applied to August 2023 Energy Made Easy offers.

Table 5.1 Maximum electricity daily supply and consumption charges for residential customers (August 2023)

Distribution district	Consumption charge (c/kWh)	Daily Supply charge (c/day)
Ausgrid	33.30	87.06
Endeavour	33.61	96.29
Essential	37.02	161.94

5.2 We propose benchmarking to the offers advertised on Energy Made Easy

As discussed in the previous chapter, we are recommending that prices be benchmarked to the generally available offers published on Energy Made Easy.

The ACCC refers to offers published on Energy Made Easy as 'acquisition offers' as retailers use them to compete for new customers and therefore typically set them below the default offer.[103] They can be different to the prices that retailers charge for existing customers, because the prices retailers charge for existing customers are not required to be published on Energy Made Easy. Prices can change over the duration of the plan, subject to notice requirements.[p, 104]

In its December 2023 Electricity Inquiry report, the ACCC concluded that retailers recoup their costs over a customer's lifetime, by setting attractively low acquisition offers and then making unilateral price increases for their existing customers over time.[105] A similar point was made by many embedded network sellers in submissions to our review. Origin and Energy Locals submitted that offers on Energy Made Easy are often introductory offers and do not reflect the true cost of supplying customers.[106] In particular, Origin noted practices where some retailers acquire customers using below cost market offers before re-pricing them at more sustainable levels.[107] ENM Solutions suggested we should benchmark to real market data on existing price plans that customers are signed up on.[108]

We agree with stakeholders' views that the lowest offers on Energy Made Easy (which offer discounts as much as 30% to the DMO, and are most likely to be taken up by customers switching to reduce their energy bills) may not reflect the true cost of supplying customers. We also agree with ENM Solutions that, ideally, we could benchmark prices to what customers are actually paying. However, because there is no real time data on this, we have analysed the historical relationship between advertised offers on Energy Made Easy and what customers on existing plans are actually paying, using actual customer bill data reported by the ACCC.

[p] Retailers are able to offer ongoing market retail contracts and increase prices at any time with at least 5 business days' notice to consumers, National Energy Retail Rules, rule 46(3)-(4C).

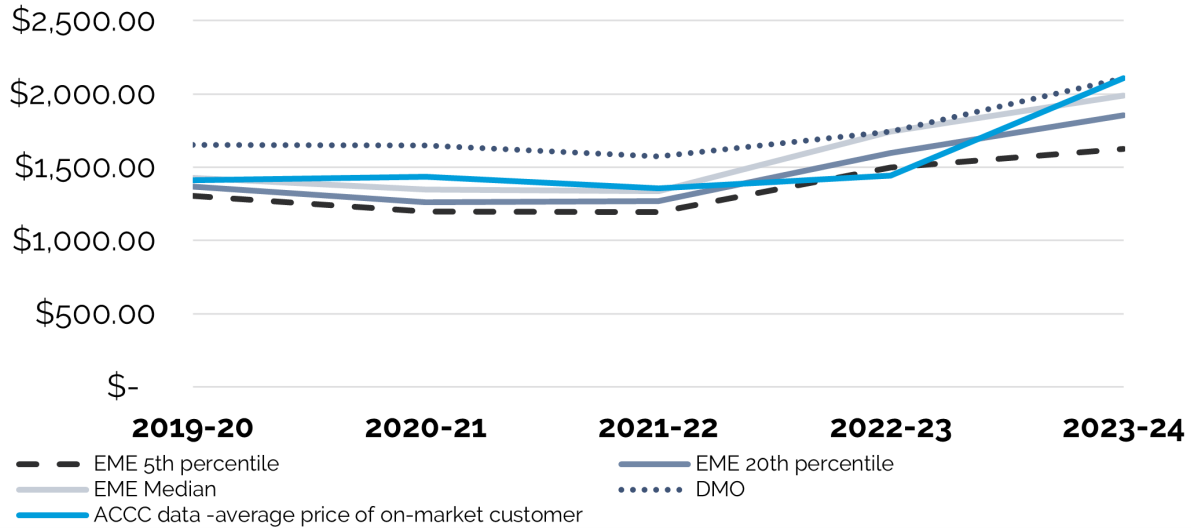
Figure 5.1 shows that Energy Made Easy offers broadly reflect what these on-market customers on existing plans are paying. It shows that over the period from 2019-20 to 2021-2022, the median offer in the distribution of the "acquisition offers" available on Energy Made Easy, is very similar to the average price that on-market customers pay. Between 2019-20 and 2021-22, this was around 15% less than the DMO.

In its December 2023 Market Monitoring Report, the ACCC compared prices for customers on existing offers as at 1 August 2022 and 1 August 2023. It found that in August 2023, 47% of all residential customers were paying prices at or higher than the DMO.[109] This is equal to a 1% discount on the median plan for existing customers (relative to the DMO). This is a significant change compared to the year before, in which 57% of NSW customers were on plans with a discount to the DMO of at least 10% (assuming 100% achievement of conditional discounts).

However, our view is that both of these years are unusual. In both years, the relationship between what customers on existing plans are paying, the DMO and advertised offers on Energy Made Easy is different to the years before the volatile market conditions of 2022. Refer to Appendix C for more detailed analysis of how the prices for existing plans reported by the ACCC relate to our proposed benchmark.

Figure 5.1 shows that benchmarking to Energy Made Easy offers will lead to variations around the DMO from year to year, particularly in volatile conditions. While these offers can be above or below price for existing plans for any given year (as shown by 2022-23 and 2023-24), on average, the median offers on Energy Made Easy reflect the prices that on-market customers are paying.

Figure 5.1 Annual prices paid by existing customers compared to prices advertised on Energy Made Easy (average consumption level, statewide)



a. The ACCC data – average price of on-market customer combines data from previous ACCC reporting (2019-20 to 2022-23) and from the ACCC December report (2023-24)
b. Annual prices and DMO levels of consumption are weighted according to number of customers in each distribution to calculate statewide figures

Source: ACCC Electricity Market Monitoring Inquiry Reports and IPART analysis

5.3 We propose benchmarking to the median of the lowest tariffs

As can be seen in Figure 5.1 above, for any given area and customer type, there is a range of market offers advertised on Energy Made Easy. We considered where in the range of offers we should set the benchmark. Stakeholders suggested the following benchmarks:

- Energy Consumers Australia recommended benchmarking to the average of the three lowest retail offers on Energy Made Easy. It noted that many embedded network customers tend to live on lower incomes (e.g. residents living in retirement villages, caravan parks and social housing) and that these customers tend to be amongst the most active and engaged in the market as they have the incentive to engage and find lower retail offers. Since those living in embedded networks do not have this opportunity, Energy Consumers Australia submitted that it is appropriate to benchmark to the lowest offers in the market (which many of these customers would seek out if they could).[110]
- Origin suggested using the midpoint between the median of the lowest offers of the largest five retailers and the DMO.[111] Origin noted that some of the lowest prices in the market represent short term discounts that are below cost. It considered that benchmarking to the lowest offers could result in maximum prices that are below the efficient costs of supply.[112]
- Active Utilities suggested using the average discount to the DMO from offers for Tier 1 retailers (Origin, Energy Australia and AGL). It considered this is easily definable and reflects the price paid by majority of NSW customers.[113]

In the *Residential (Land Lease) Communities Act 2013* Statutory Review in 2021, DCS considered that the maximum price for customers in land lease communities should be capped at the median on-market offer.[114]

We consider there is a significant drawback associated with setting prices at a given percentile such as the median or 20th percentile offers. It creates an opportunity for retailers to influence the price level by placing a lot of offers at the top price range regardless of whether customers are taking them up. The data does not provide visibility over how many customers are on various market offers, and so we are not able to calculate a weighted average market offer price.

To overcome these issues, we recommend setting prices by using the median lowest tariffs from each active retailer in the market. This is similar to the offer at the 20th percentile of all offers.

Our view in our Draft Report was that benchmarking to the lowest median offer reflected the average price being paid by on-market customers. Our additional analysis now shows that, on average, the median of the lowest prices is around 5% lower than the average prices being paid by customers on existing market offers (see Box 5.1).

However, we consider that maximum prices that are moderately lower than the average price paid by customers would ensure that most embedded network customers benefit from being in an embedded network while allowing retailers to recover the efficient costs of supplying energy.

Box 5.1 Our benchmark prices are around 5% lower than average market prices

In our Draft Report, we stated that our proposed benchmark (the median of lowest offers) was in line with the average prices being paid by non-embedded network customers. In their submissions to the Draft Report, several retailers including Origin and Energy Locals submitted that the benchmark would result in prices well below what a relatively engaged non-embedded network customer would pay.[115]

In response to stakeholder feedback on this issue, we have undertaken further analysis of the ACCC data on the difference between what customers on existing market and standing offers were paying between September 2019 and September 2022. Previously, we had compared the reported effective prices[a] for the offers, which we consider overstated the difference between them as standing offer customers typically use less energy than market offer customers. Consequently, this means that even for the same prices, the effective price would be higher for standing offers (given that the fixed component of the bill is divided by less units of consumption).

We have therefore made an adjustment to the data to compare the offers at the same level of consumption. This has resulted in a reduced difference between market offers and standing offers of 15% rather than 19% as we stated in the Draft Report.

Based on this analysis, we agree with stakeholders that the lowest of median offers benchmark results in prices below what an average on market customer pays. Our analysis of the historical data shows that:

- the average on-market customer has been paying prices about 15% below the DMO, which corresponds to the median offers on Energy Made Easy.
- our proposed benchmark, which corresponds to the 20th percentile of offers on Energy Made Easy is approximately 5% below the prices paid by the average on-market customer.

a. An effective price is how much each customer pays per kWh of electricity on average, calculated by dividing customer bills by consumption, based on the ACCC's reported median level of consumption for NSW consumers by year and offer type.

Source: IPART analysis.

5.4 Ensuring customers do not pay more than on-market customers

As set out in Chapter 2, our overarching pricing objective is to ensure that embedded network customers do not pay more than on-market customers.

Some stakeholders were concerned that our recommendations would lead to lower prices than the average price paid by on-market customers.[116] Consumer groups provided a different view on how the electricity benchmark should satisfy the overarching pricing objective. They argued that a fair price should not just ensure embedded network customers are not worse off, but also contribute to offsetting other disadvantages currently experienced by embedded network customers. PIAC supported our proposed bench, stating that it will:

> … provide a strong incentive for existing and prospective embedded network operators to only consider operating an embedded network where they can deliver demonstrable price benefits to consumers, or where the structure of an embedded network is key to delivering demonstrated benefits.[117]

Similarly, Energy Metrics Consulting said that embedded networks should provide savings to users relative to the competitive tariffs offered by major on-market retailers.[118]

Given the disadvantages for embedded network customers in terms of customer protections and access to competition, we agree with PIAC that embedded networks should only be encouraged in cases where they are more cost-effective, leading to better pricing outcomes for customers.

Noting that there is a wide distribution of pricing outcomes for on-market customers, under our recommendations:

- most embedded network customers would pay lower prices than the average on-market customer,
- however, the most engaged customers would still be worse off than on-market customers, as they could save an additional 6% if they could access the lowest offers in the market.

5.4.1 Our benchmark would ensure retailers can recover their efficient costs of supply

The efficient costs of supplying embedded network customers are significantly lower than the efficient costs of supplying an equivalent on-market customer. This is mainly due to lower network costs because the parent or boundary meter connection to the grid is treated as a large energy customer. Depending on the size of the site, the network cost for large customers can be significantly lower than the combined costs of all the individual small customers.

In addition, an embedded network seller is likely to incur lower customer acquisition and retention costs. Sellers can also further reduce their costs of supplying electricity by installing generation assets at the site.

5.4.2 Network costs for embedded network sites

Electricity embedded network sites are currently charged commercial network tariffs for the parent connection point. These tariffs are normally cheaper than the sum of the residential network tariff at each premise for the equivalent electricity. Further, the fixed supply charge at the parent connection point can be spread across all child connection points in the embedded network. This means that the higher number of consumers within an embedded network, the lower their share of the fixed supply charge.

Ausgrid and Endeavour Energy have sought to reduce the cost differential in their 2024-2029 pricing proposals by introducing specific tariffs for embedded networks. Under the proposal, after a 4 year transition period, network costs would remain lower for embedded network sites. As shown in Table 5.2, which is based on information provided in Ausgrid's Tariff structure statement for its 2024-2029, at large sites (315 customers), the tariff would still be almost 50% lower than the equivalent residential tariff for an average site.[q,119]

Table 5.2 Ausgrid's comparative analysis of network charges per dwelling for a residential embedded network

	Normal customer billing on EA116	Embedded network on EA310	With proposed embedded network tariff
Total consumption, (kWh)	3,142.58	-	-
Fixed – network access charges	$144.38	$38.27	$38.27
Energy consumption charge	$70.40	$43.63	$43.63
Capacity charge	$318.31	$136.99	$205.49
Total network bill (per annum)	$533.09	$218.90	$287.39
Difference compared to normal customer ($)	-	-$314.2	-$245.70
Difference compared to normal customer (%)	-	-59%	-46%

Source: Ausgrid, Our TSS Explanatory Statement for 2024-29, p 23, IPART calculations.

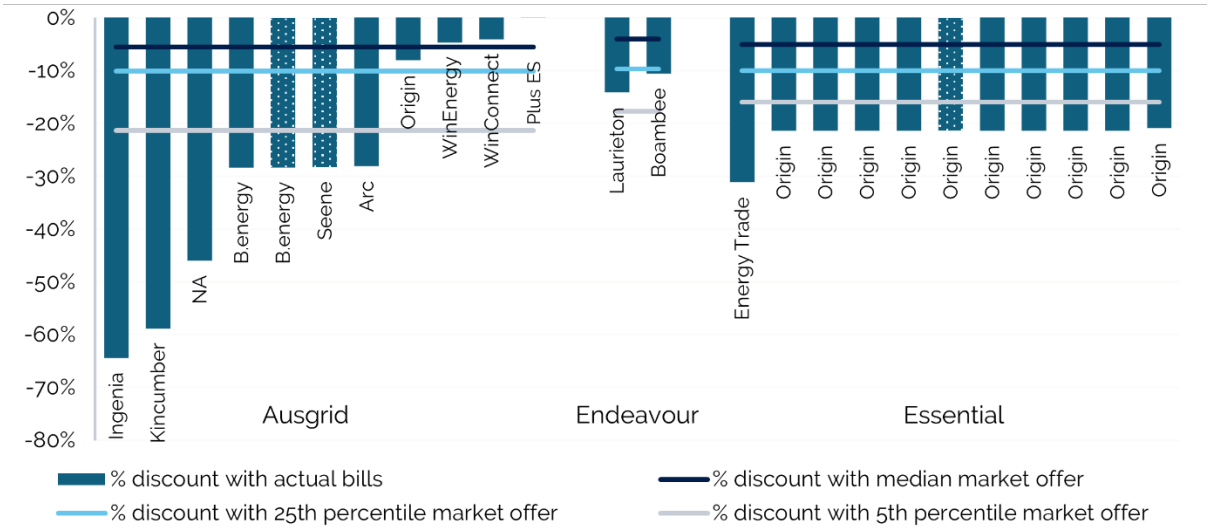
5.4.3 Our benchmark reflects prices being charged by embedded network sellers

We received 40 electricity bills from embedded network customers in response to our consumer survey. When the prices are compared at the DMO level of consumption for the applicable time periods, they show higher discounts to the DMO compared to our recommended methodology during 2022-23 and 2023-24 (Figure 5.2). This is consistent with Energy Metrics' submission to the Draft Report that our recommended methodology would achieve price outcomes in the range of the prices that embedded network operators currently charge.[120]

[q] Ausgrid's proposal for new embedded network tariffs would not result in earning more revenue because it is subject to a revenue cap but will result in lower charges for other network customers.

Noting the small sample size, this also indicates that sellers would be able to recover the efficient costs of supply under our recommended methodology. Refer to Appendix E for more detailed analysis of the discounts to the DMO shown the customer bills we analysed.

Figure 5.2 Discount of bills on embedded network tariffs relative to the DMO price 2023-24



a. The median "actual bill" sample for each distribution network is patterned with additional dots

Source: Customer bills where the bill start data is after 1 July 2023; EME market offers as at August 2023

5.5 We recommend using the median tariffs, rather than offers

In their submissions to the Draft Report, several retailers expressed concern over the recommended approach of calculating the median of the lowest supply charge and lowest consumption charge separately. This approach means the combination of these charges can be derived from different offers (and different retailers).

Origin considers this approach is not representative of the median of the lowest market offer because most active customers could not practically obtain these rates as they have no ability to mix and match tariffs from different offers and retailers.[121] Energy Locals noted that a retailer may be able to offer a low daily supply charge because it is subsidised by a higher consumption charge, and vice versa.[122] Our analysis of the prices that would have resulted from our proposed methodology show there is little difference in the overall price level, when offers are considered compared to tariffs separately (approximately 1% difference in the discount to the DMO).

However, when we consider the median of the lowest offers for the last 3 years, there are material differences in tariffs' relativities from year to year. As shown in Table 5.3, there was a 12% decrease in the daily supply charge included in the median of the lowest offer from July 2021 to July 2022 for Endeavour (even though there was an 28% increase in the total bill at the DMO consumption level between the 2 years). We consider it would not be simple for customers to understand such changes in the underlying tariffs from year to year.

In contrast, there are corresponding increases in the median tariffs as the total bill at the DMO consumption increases over the last 3 years, in every network. This would be simple for customers to understand and easy to apply.

We therefore recommend setting the consumption charge and daily supply charge independent of the offer, since the alternative method suggested by stakeholders would lead to significant price volatility at different consumption levels given the material differences in tariff relativities. Refer to Appendix D for a detailed comparison of the 'individual tariffs' and 'actual offers' approaches to setting the benchmark.

Table 5.3 Underlying tariffs – median of lowest tariffs vs median of lowest offers methodologies since 2021 (Endeavour)

	Median of lowest tariffs			Median of lowest offers		
Period	Daily supply charge (cents/day)	Consumption charge (cents/kwh)	Overall price change	Daily supply charge (cents/day)	Consumption charge (cents/kwh)	Overall price change
July 2021	78.42	21.12		97.90	20.02	
July 2022	88.38	28.02	28%	86.53	28.03	28%
July 2023	96.83	33.61	18%	92.24	34.39	18%

Note: Overall price changes are considered at the DMO level of consumption: 4900 kWh for July 2021 and July 2022 and 4913 kWh for July 2023.

5.6 We recommend excluding some offers when calculating the benchmark

Given the offers advertised on Energy Made Easy have been broadly reflective of the prices being paid by on-market customers since 2019, we consider it is appropriate to benchmark embedded network prices to these offers.

In the Draft Report, we stated the benchmark would be calculated using single rate tariff offers, using available offer data on Energy Made Easy. In response, several stakeholders suggested adjustments to the Energy Made Easy data included in our benchmark calculation to better reflect the prices on-market customers pay.[123] We have remodelled the data accordingly, making some of the adjustments suggested by stakeholders. For example,

- We included tariffs before conditional discounts are applied. Conditional discount must not exceed a reasonable estimate of the costs of that condition not being met. This means that conditional discounts will reflect the costs of meeting that discount condition, rather than the general costs of supply.
- We excluded offers with annual membership fees. For our Draft Report, annual membership fees were not being considered as part of our bill calculations, understating the bill for that offer.
- We excluded restricted offers: we continued to exclude battery/solar only fees as per the Draft Report. Since the Draft Report, we have ensured certain targeted offers such as offers for frequent flyers, organisation members and special offers for usage over a certain amount are also excluded from the data we analyse.

Table 5.4 illustrates the range of residential flat-rate tariffs in the Ausgrid distribution area in August 2023, having made the above adjustments to the data. It calculates the annual bill for these tariffs at the DMO consumption level and compares it to the respective DMO's for each distribution area. Refer to Appendix B for the distribution of residential offers in the Endeavour and Essential distribution areas.

5.6.1 We recommend only including active retailers

In calculating the median lowest tariffs, our recommendation is to only include retailers with more than 1000 customers ('active retailers') that have an active offer available on the benchmark day. This:

- ensures that all relevant market offers that may be taken up by on-market customers are used to calculate the median, including those from smaller retailers
- provides a safeguard against retailers setting up subsidiary retail operations intended to influence the price cap (but may not supply many customers).

Some retailers suggested we make changes to the number of retailers considered. Energy Metrics considered the definition of active retailers should be higher than 1,000 customers, while Active Utilities submitted we should consider only Tier 1 retailers.[124] Similarly, Austin Tourist Park suggested the maximum price could be set according to the median tariff from the 5 largest retailers offering services in NSW (it also supported using the DMO).[125]

As shown in Table 5.4 below and Appendix B, for our recommended methodology (the median of the lowest tariffs) there is no material difference between including retailers with:

- at least 1,000 customers
- at least 10,000 customers
- 90% of the market
- 95% of the market.

Considering these different retailer groups would result in a benchmark that is 10%-12% below the DMO for Ausgrid, 10-11% for Endeavour Energy and 9-10% Essential Energy.

We consider the methodology is more robust with the inclusion of active retailers with more than 1000 customers as it prevents wide variations between periods due to the impacts of changed prices from a small number of retailers.

Table 5.4 Distribution of residential flat-rate market offers (August 2023) for Ausgrid

Benchmark level	Offers included	Total bill or individual tariffs	Retailer grouping	Daily Supply charge (c/day)	Consumption charge (c/kWh)	Total annual bill[a]	Discount to the DMO[b]
Minimum	All	Tariffs	All	66.00	26.13	$1,262.65	-31%
10th percentile	All	Tariffs	All	78.87	31.49	$1,519.28	-17%
20th percentile	All	Tariffs	All	84.54	32.97	$1,597.92	-13%
25th percentile	All	Tariffs	All	86.17	33.18	$1,612.25	-12%
Median	All	Tariffs	All	91.87	34.47	$1,683.49	-8%
Median	All	Total bill	All	91.93	35.30	$1,725.39	-6%
Median	All	Total bill	Big 3 retailers	91.93	35.30	$1,725.39	-6%
Median	All	Total bill	With 90% of the market	88.52	36.09	$1,725.39	-6%
Median	Lowest offer of each retailer	Total bill	(retailers with >1000 customers)	83.85	34.19	$1,643.28	-10%
Median	Lowest offer of each retailer	Tariffs	(retailers with >1000 customers)	87.06	33.30	$1,619.98	-11%
Median	Lowest offer of each retailer	Tariffs	retailers with >10,000 customers	87.08	33.17	$1,615.05	-12%
Median	Lowest offer of each retailer	Tariffs	Largest retailers that have 90% of the market	86.13	33.98	$1,643.40	-10%
Median	Lowest offer of each retailer	Tariffs	Largest retailers that have 95% of the market	87.04	33.17	$1,614.92	-12%
75th percentile	Lowest offer of each retailer	Total bill	(retailers with >1000 customers)	142.45	31.57	$1,751.83	-4%
75th percentile	Lowest offer of each retailer	Tariffs	(retailers with >1000 customers)	97.35	34.31	$1,697.26	-7%

a. Using the DMO consumption o f 3,911 kWh per year.

b. Compared to the DMO price in Ausgrid's distribution district of $1,827 (no controlled load)

Final recommendation

6. That the maximum electricity prices for residential customers in embedded networks comprise:
   - a consumption charge equal to the median consumption charge of each active retailers' lowest consumption charge (inclusive of guaranteed discounts and GST) for their generally available offers
   - a fixed rate equal to the median supply charge of each active retailers' lowest fixed charges (inclusive of guaranteed discounts and GST) for their generally available offers.

A separate price should be set for each distribution district. An active retailer is defined as any retailer with at least 1000 customers in NSW that has an active offer available at the time the benchmark is calculated.

5.7 Our proposed methodology allows for time-of-day pricing

One of our pricing objectives is to allow for cost reflective time-of-day pricing. Stakeholders have told us that currently flat rate tariffs are mostly being used,[126] but time-of-use tariffs are being used for some customers.[127]

Cost-reflective prices allow consumers to compare the value they place on using electricity networks with the costs of using them. This can help ensure the overall use of the network is sustainable over time and can avoid large future bill impacts.

In addressing this objective, we have considered how the benchmark maximum price could allow for time of use tariffs. Time of use tariffs have different consumption rates at different times of the day. Specifically, time is divided into peak, shoulder and off-peak periods which reflect the level of demand on the electricity network.

The cost of providing electricity networks is driven by the capacity needed to meet generally short peaks in usage, rather than just the amount of electricity customers use over time. Higher peak period tariffs allow the recovery of the higher costs involved in building and maintaining networks with the capacity to support customers' consumption during times of peak demand.[128] Time of use tariffs are therefore generally considered to be more cost-reflective than flat rate tariffs as customers are charged for how and when they use the network.

We considered the option of setting maximum tariffs for each tariff period based on the time-of-use offers on Energy Made Easy. However, retailers have flexibility over the times that they apply these different charges. This means the prices for 'peak periods' may not allow for a like for like comparison if they relate to different hours of the day. It can be difficult from the data to determine the comparable pricing periods and prices.

We consider it is more practical to allow for cost-reflective pricing by setting our maximum consumption charge in each distribution district as the maximum average consumption tariff in cases where customers are being charged time-of-use tariffs. The consumption tariffs would be weighted according to the flexible tariffs daily usage profiles determined by the AER for each distribution district.[129] This is the same usage profile used to determine:

- whether time-of-use standing offers are compliant with the DMO
- the discount for time-of-use offers relative to the DMO.

ENM Solutions and Real Utilities supported this recommendation.[130] On the other hand, Altogether Group submitted that in its view, the recommendation is at odds with the recommendation not to use the DMO.[131] We note that we are only proposing to use the representative daily usage profiles published in the AER's DMO determination each year; not the DMO itself. The AER's daily usage profiles allow sellers to establish the average consumption tariff being charged where they have time-of-use prices.

Final recommendation

7. For electricity embedded networks, an embedded network seller be permitted to apply different consumption tariffs for different time periods (i.e. time-of-use tariffs), as long as the average price does not exceed the determined consumption charge when it is weighted by the AER's Default Market Offer model annual usage profiles.

5.8 Residential land lease customers

Currently, residents in land lease communities supplied through an embedded network cannot be charged more for a utility than the operator of the community has been charged for the supply or use of the utility.[132]

In its *Residential (Land Lease) Communities Act 2013* Statutory Review, the Department of Customer Service considered that operators should be able to charge up to the median market tariffs.[133] This is similar to our final recommendation.

Under the *Residential (Land Lease) Communities Regulation 2015*, residents who receive less than 60 amps of electricity are entitled to discounts on their service availability charge.[134] Low amperage is estimated to be experienced by at least 93% of residents.[135]

In their submissions to our review, the Tenants Union NSW and PIAC consider that the discounts provide incentives for network operators to upgrade infrastructure to improve the quality of supply of electricity to customers.[136] In its report, the Department of Customer Service considered that it was appropriate that customers experiencing poor amperage should not be required to pay the full price for a utility which is not delivered in full.[137]

5.8.1 We recommend that our proposed price caps apply to occupants of holiday accommodation

The Caravan & Camping Industry Association NSW (CCIA) has sought clarification on whether our embedded network review pricing recommendations would apply to long-term casual occupants of holiday parks. Park owners may charge long-term casual occupants for utilities separately to occupation fees for the accommodation costs provided the occupant has agreed to pay these charges under their occupation agreement.

CCIA considers that our recommendations should not apply to these customers because:

- these customers are holiday makers rather than residential customers
- energy charges apply on a temporary basis
- these customers can shop around for alternative accommodation if they are not happy with the energy prices.

The CCIA considers that the current maximum prices that apply to these customers as set out in the AER Retail Exempt Selling Guideline (i.e. the local area standing offer prices, which are capped by the DMO for electricity) remain sufficient for these types of embedded network customers, and have worked well in the past.[138]

We consider that our proposed methodology should apply to all small customers in embedded networks, except for large corporate entities (discussed in Chapter 9).[r] This would provide consistency across all customers at mixed-use sites (for example, between long term and short-term occupiers).

It is difficult for people to assess the value of different goods and services where they have to compare a number of different fees and charges for a given service. For short-term holiday accommodation, decisions are more likely to be made based on the accommodation fees alone.

Our price caps would provide certainty for customers of embedded networks that they would not pay more than on-market customers for energy. If sellers are currently charging more for energy than is allowed under our recommendation, they could recover the difference by increasing site fees. Reflecting price differences in site fees is more transparent, making it easier for customers to effectively compare accommodation options.

[r] 'Small customer' is defined in the National Energy Retail Law, the Network Exemption Guideline and Retail Exempt Selling Guideline.

Chapter 6

Pricing methodology for gas

06

Our Terms of Reference asks us to investigate and make recommendations on an appropriate methodology for IPART to use in setting maximum prices for gas supplied through embedded networks.

This chapter sets out our methodology for residential customers and discusses several issues that are specific to gas, including:

- whether we should set a single consumption charge for gas or different benchmark consumption rates for different tariff blocks and
- unmetered gas consumption.

Chapter 9 sets out our final recommendations for business customers.

6.1 Overview of our recommendations

We recommend using the same benchmarking methodology for gas as we are recommending for electricity (as set out in the previous chapter). That is, benchmarking to the median of active retailers' lowest tariffs published on Energy Made Easy, including a single consumption charge and a daily supply charge.

Where gas is not metered, we recommend that embedded network sellers are permitted to charge customers an additional unmetered gas charge. This would be the equivalent amount that a typical low user would be charged for gas if they were metered. Under our methodology the unmetered gas charge is calculated by multiplying an annual consumption benchmark of 1,000 MJ multiplied by IPART's benchmarked gas consumption charge.

Table 6.1 applies our methodology to the publicly available offers in August 2023 for the Jemena regions, where around 95% of customers (about 1.5 million) are located.[139] Appendix A applies our methodology to the other distribution districts for both residential customers and business customers who are small customers.

Table 6.1 Maximum gas daily supply and consumption charges for residential customers (August 2023)

Supply area	Usage charge (c/MJ)	Supply charge (c/day)	Unmetered gas charge (c/day)
Jemena – Coastal Region	3.82	63.69	10.47
Jemena – Capital Region	3.98	66.67	10.90
Jemena – Country Network	4.29	74.26	11.75

Note: These figures differ slightly from the maximum gas daily supply and consumption charges in our Draft Report. In our Draft Report we used the median of active retailers' lowest tariffs for November 2023 but for consistency with other chapters in this report, we have used the median of active retailers' lowest tariffs for August 2023. As discussed in Chapter 5, we also made some adjustments to our model as a result of stakeholder feedback (i.e. calculating offer tariffs before conditional discounts and excluding offers with annual membership fees and certain targeted offers).

6.2 Using a single consumption charge for gas

Currently, the network tariffs of most gas distributors in NSW, including Jemena, AGN and Evoenergy, use 'declining block structures'.[140] For each gas usage threshold met within a billing period customers pay lower per unit prices. This means that the average unit price of gas falls as gas use increases.

We considered whether we should set different maximum prices for each distribution consumption block. Our view is that this can be problematic to benchmark to market offers because retailers may use different consumption blocks. For example, not all retailers in Jemena's distribution district offer all the blocks offered by Jemena, preferring to adopt simpler tiered structures to reduce transaction costs and enhance customer's understanding of bills.[141]

We recommend using a single weighted average consumption charge, based on an annual representative consumption benchmark of 12,680 MJ for a gas embedded network customer in NSW using:

- 11,680MJ for hot water
- 1,000 MJ for other gas appliances.

We consider that a single consumption tariff is easier to understand than multiple tariffs at different consumption thresholds, and is more suitable for embedded network customers, who use a relatively low amount of gas.

Origin's submission to our Draft Report suggests that it considers that a typical embedded network customer uses 8,000MJ to 9,000 MJ of gas.[142] The AER's residential energy consumption benchmarks show that a 1-person household size in NSW consumes 9,835 MJ of gas per year and a 2-person household consumes around 16,945 MJ per year.[143]

In our Draft Report we used a lower annual representative consumption of 10,000 MJ. We have changed this to 12,680 MJ, taking into account feedback from stakeholders regarding the typical hot water consumption of embedded network customers. As discussed in the following chapter, in response to our Draft Report, we heard from stakeholders that a typical embedded network customer is likely to use at least 80 L of hot water per day.[144] We are recommending embedded network sellers be allowed to charge for up to 0.40 MJ of gas per litre of hot water consumed. This equates to consumption of up to 11,680 MJ per year for 80 L of hot water consumed per day.

In addition, a typical embedded network customer would also have gas for cooking. Jemena has advised that a typical apartment uses around total 13,000 MJ of gas per year (for both hot water and cook top) and around 1,000 to 2,000 MJ of gas per year for the cook top only.[145] We have also heard from stakeholders that unmetered gas services such as gas cooktops usually make up around 10-20% of total gas usage (with hot water using 80 to 90% of the total gas usage).[146]

Table 6.2 shows that in the Jemena distribution district, 12,680 MJ per year spans across the first 2 distribution tariff blocks. This is similar to Energy Metrics Consulting's suggestion that the benchmarked gas price should be calculated using a weighted average of the first two tariff blocks.[147]

Table 6.2 Jemena coastal consumption blocks

Block		Threshold (MJ per month)	Annual threshold (MJ per year)	Cumulative annual threshold (MJ)
Block 1	First	630	7,560	7560
Block 2	Next	620	7, 440	15,000
Block 3	Next	1,500	18,000	33,000
Block 4	Next	80,750	969,000	1,002,000
Block 5	Next	333,500	4,002,000	5,004,000
All additional		Above 333,500	Above 4,002,000	Above 5,004,000

Source: Jemena Gas Networks (NSW), JGN reference tariff schedule, 14 April 2023, p 13.

Box 6.1 provides a worked example of how the weighted average unit charge is calculated.

Box 6.1 Worked example - calculating the weighted average consumption charge

Table 6.3 shows how we would calculate the weighted average consumption charge of an offer for a customer using 12,680 MJ of gas in a year.

We calculate the annual usage costs for an offer at 12,680 MJ per year and divide the annual costs by 12,680 MJ.

In this example, a customer pays a total of $456 in consumption charges for 12,680 MJ. Dividing this by 12,680 gives an average unit cost of 3.60 c/MJ.

Table 6.3 Weighted average consumption charge

	Price schedule			Annual charges	
		Threshold (MJ per year)	c/MJ	Units (MJ per year)	Annual cost ($/year)
Block 1	First	7,560	4	7560	$302.40
Block 2	Next	7,440	3	5120	$153.60
Block 3	Next	18,000	2	0	0
Total ($)				12,680	$456.00
Average unit charge (c/MJ)					3.60

Source: Jemena Gas Networks (NSW), JGN reference tariff schedule, 14 April 2023, p 13; IPART calculations.

Final Recommendation

8. A gas consumption benchmark is set based on the weighted average consumption tariff for 12,680 MJ of annual gas usage.

6.3 Maximum fixed daily fee for unmetered gas consumption

It is common for gas customers in embedded networks to be provided an unmetered 'cooktop service' when they are also being supplied hot water through an embedded network. Customers are usually charged a fixed daily rate for this service. The AER's Retail Exempt Selling Guideline allows embedded network sellers to sell unmetered gas where the gas is used for a limited purpose such as for cooking appliances.[148]

In response to our Draft Report, EnergyAustralia requested further clarification on whether our methodology included an unmetered gas charge.[149] Under our draft methodology, sellers could charge up to the daily supply charge for gas but no additional allowance for unmetered consumption was allowed.

We consider that billing customers in accordance with their metered consumption is important to ensure that customers face the costs of their consumption decisions. However, we have further considered this issue and we consider it is reasonable to allow for sellers to charge for unmetered gas as a fixed daily fee based on what a low user of gas would pay if the service was metered. This would ensure that consumers with low consumption are not worse off compared to if they were metered, and it would also ensure that sellers can recover their costs without adding metering costs which may be disproportionate compared to the costs of the service.

We recommend an unmetered gas charge would be determined using IPART's maximum benchmarked gas price, multiplied by an annual consumption benchmark of 1,000 MJ. At current prices, this would result in a maximum unmetered gas charge equal to around 10.5 cents per day (or around $40 per year).

Box 6.2 shows a worked example of the maximum unmetered gas charge, using the benchmarked gas prices for August 2023 for the Jemena Coastal region.

Box 6.2 Worked example – unmetered gas charge

Maximum unmetered gas charge =

$$= \frac{1000\ MJ^{a}}{365\ days} \times 3.82\ cents/MJ^{b}$$

$$= 10.47\ cents/day$$

a. Equal to the maximum benchmarked price of gas that is calculated for each review period. This worked example uses the price shown in Table 6.1 for the Jemena Coastal region.
b. Benchmarked maximum annual gas consumption for unmetered gas services.

Source: IPART calculations.

We note that there are currently some legal restrictions on charging tenants and land lease community residents (home owners and tenants) for unmetered energy at residential sites in NSW:

- the *Residential Tenancies Act 2010* requires landlords to pay for electricity and gas supplied to residential tenants that is not separately metered[s] and
- the *Residential (Land Lease) Communities Act 2013* only allows operators to separately charge residents for gas and electricity if the use of gas or electricity is separately metered or measured.[150]

We recommend that the NSW government amend the *Residential Tenancies Act 2010*, and the *Residential (Land Lease) Communities Act 2013*, to allow tenants and land lease community residents living in embedded networks to be charged for unmetered gas up to IPART's unmetered gas charge.

At other types of sites where the restrictions outlined above do not apply (e.g. retirement villages and shopping centres), the way in which unmetered gas costs are recovered will depend on the terms of the embedded network customer's lease or contract with the embedded network seller.

[s] The same rules apply to embedded network customers, if their meter does not have a MIRN, NMI or delivery point identifier assigned because it is in an embedded network but otherwise meets the definition of separately metered: *Residential Tenancies Act 2010*, ss 38 and 40; *Residential Tenancies Regulation 2019*, cl 34 and 35.

Final recommendations

9. Where an embedded network seller provides unmetered gas services, they can charge an additional unmetered daily fee determined by multiplying:
   - the consumption benchmark of 1,000 MJ per year, and
   - the benchmark gas consumption charge.

10. That the NSW Government amend the *Residential Tenancies Act 2010*, and the *Residential (Land Lease) Communities Act 2013*, to allow tenants and land lease community residents living in embedded networks to be charged for unmetered gas up to the unmetered gas charge determined by IPART.

6.4 Our methodology allows sellers to recover their costs of supply

As shown in Table 6.4 in the section above, applying our methodology to the publicly available offers in August 2023 produces the following maximum tariffs for the Jemena Coastal distribution district:

- a usage charge of 3.82 c/MJ
- a daily supply charge of 63.69 c/day

For a customer using 12,680 MJ a day, our methodology results in an offer equal to the 20th percentile of all gas offers on Energy Made Easy for the Jemena Coastal region.

The usage charge produced by our methodology may be slightly higher than what is currently being charged by some embedded network sellers. Active Utilities submitted that a gas benchmark of 3.75 c/MJ (based on the indicative prices our methodology produced for November 2023) is appropriate and that it corresponds to its average gas prices as of January 2024.[151]

As discussed in Chapter 4, setting prices using a market-based benchmark allows sellers to recover the efficient delivered energy costs (i.e. including distribution costs to the parent connection), and provides additional headroom. This is because the efficient network costs of supplying embedded network customers (which make up around 50% of the costs of supplying gas)[152] are significantly lower than the network costs of supplying an equivalent on-market customer, as shown by Table 6.4. Network costs make up roughly 50% of the total costs of supplying gas customers (with gas wholesale costs and retail costs making up the other 50%).[153]

Table 6.4 compares the annual network costs for an individual on-market customer and to an embedded network customer. For customers using 12,680 MJ per year, the cost of supplying an embedded network customer is between around $75 to $170 lower, depending on the size of the site.

Table 6.4 Gas network costs per customer for non-embedded and embedded networks (12,680 MJ per year, Jemena, 2023-24).

		Non-embedded network customer	Embedded network customer		
			40-unit apartment complex	100-unit apartment complex	300-unit apartment complex
Fixed charge	($ per annum)	53.02	36.02	14.41	4.80
Usage charge	($ per annum)	196.68	137.18	93.93	73.64
Total network tariff	($ per annum)	249.70	173.20	108.34	78.44
Difference compared to non-embedded network customer	($)		-76.50	-141.37	-171.27
Difference	(%)		-31%	-57%	-69%

Source: Jemena Gas Networks (NSW), JGN reference tariff schedule, 14 April 2023, p 13; IPART calculations.

Chapter 7

Maximum pricing methodology for hot water

07

Our Terms of Reference asks us to investigate and make recommendations on an appropriate methodology for IPART to use in setting maximum prices for hot water supplied through embedded networks.

This chapter sets out our pricing methodology for hot water, and discusses whether:

- prices should be set in water units or energy units or both
- the efficiency of hot water systems should be addressed through prices
- there should be different prices for different types of hot water systems, including gas and electric hot water systems.

7.1 Overview of our recommendations

We recommend that embedded network sellers bill their customers for hot water in units of energy, based on the underlying fuel source at the site (cents/kWh or cents/MJ).

Where gas is the underlying fuel source, sellers:

- cannot charge more than IPART's benchmarked maximum gas consumption charge and
- must not bill customers for more than 0.40 MJ of gas per litre of hot water consumed (the amount of gas to heat a litre of water is known as a 'common factor').

Where electricity is the underlying fuel source, sellers must not charge more for the hot water consumed than the customer would have paid if gas was the underlying fuel source.

Embedded network customers are likely to pay more for their hot water than on-market customers, because they are generally supplied by centralised hot water systems. Centralised hot water systems usually require more energy. We recommend limiting the inefficiencies borne by customers by prescribing a maximum common factor of 0.40 MJ/L as part of our methodology. 0.40 MJ/L is the maximum common factor required by Jemena for the design and certification of new centralised hot water systems to ensure that the system's efficiencies are comparable to that of other gas hot water systems.[154]

Our final recommendation, that sellers must bill in units of energy, is different to our draft recommendation that embedded network sellers be permitted to charge in either water or energy units. However, the annual dollar amount that embedded network sellers would be able to charge for a customer's water usage would be the same.

We made this change because we consider that it would better facilitate the National Energy Consumer Framework applying in the future, consistent with the NSW Government's Embedded Network Action Plan.[155] In addition, we no longer consider that sellers would incur additional metering costs by charging in the energy unit (which was something that we were concerned about at the time of our Draft Report).

Under our recommendations, embedded network customers would not pay more than a typical on-market customer with a centralised hot water system.[t] For a typical customer using 80 L of hot water per day, an embedded network customer would pay around $450 a year under our methodology (applied in August 2023); or a combined water and gas bill of $720 a year (where an additional 1,000 MJ of gas is used for appliances such as a cooktop).

For the same level of hot water and gas usage, our recommended methodology produces a bill that:

- falls within the range of the small sample of embedded network customer bills and prices we have seen, of around $500 to $880 (for the combined gas and hot water costs)
- is almost equal to the average bill of around $730
- would result in bill savings of around $160 (or around 20%) for the sample customer currently paying the highest bill.

Sellers can continue to charge lower prices, but they cannot exceed our maximum prices.

7.2 Customers with centralised hot water systems often pay more for hot water

There is significant variation in how much on-market customers pay for hot water. Costs vary depending on the type of hot water system and whether it is shared or an individual system, and the fuel type (including whether solar is used). Where the customer has an electric hot water system, costs also vary depending on whether the customer has access to an off-peak 'controlled load' tariff where the distribution network controls the times when the water is heated (usually at night). Where customers do not have access to controlled load tariffs, costs can also depend on whether customers are charged different prices at different times of the day, and when they heat their hot water.

While we expect that most on-market customers in a 1-to-2-bedroom apartment would pay less than $400 per year for hot water, some customers with a centralised system could pay slightly more than this. For apartment buildings, centralised systems are cheaper to install and provide space savings compared to installing individual systems for each dwelling on the site, but they use more energy. Reasons for this may include that:

- the water needs to travel further, which leads to greater energy losses,
- greater volumes of water are heated and stored compared to the water used and
- the water is heated to a higher temperature for safety (hygiene) reasons.

[t] Assuming the same hot water common factor as our maximum recommended common factor of 0.4MJ/L.

Table 7.1 Hot water costs for a typical 1-to-2-bedroom household (on-market customer using 80 L of water per day)

Type of hot water system	Tariff[a]	Distribution region	Fuel price[b]	Annual energy consumption[c]	Conversation factor[d]	Price (cents/L)	Annual price of hot water
Centralised system							
Gas	-	Jemena	3.82 c/MJ	8870 MJ	0.30 MJ/L	1.15	$335
Gas	-	Jemena	3.82 c/MJ	11, 680 MJ	0.40 MJ/L	1.53	$446
Individual hot water system							
Gas storage	-	Jemena	3.82 c/MJ	7,185 MJ	0.25 MJ/L	0.94	$274
Gas instantaneous	-	Jemena	3.82 c/MJ	6,556 MJ	0.22 MJ/L	0.86	$250
Solar with gas booster	-	Jemena	3.82 c/MJ	2,515 MJ	0.09 MJ/L	0.33	$96
Electric storage	Continuous	Endeavour	33.61 c/kWh	1596 kWh	54.7 kWh/kL	1,82	$536
	Controlled load 1	Endeavour	22.60 c/kWh	1647 kWh	56.4 kWh/kL	1.88	$405[e]
Electric storage	Continuous	Ausgrid	33.30 c/kWh	1596 kWh	54.7 kWh/kL	1,82	$532
	Controlled load 1	Ausgrid	16.30 c/kWh	1647 kWh	56.4 kWh/kL	1.88	$274
Electric instantaneous	Continuous	Ausgrid	33.30 c/kWh	1184 kWh	40.5 kWh/kL	1.35	$394
	Controlled load 1	Ausgrid	16.30 c/kWh	1184 kWh	40.5 kWh/kL	1.35	$197
Solar with electric booster	Continuous	Ausgrid	33.30 c/kWh	558 kWh	19.1 kWh/kL	0.64	$186
	Controlled load 1	Ausgrid	16.30 c/kWh	576 kWh	19.7 kWh/kL	0.66	$96
Heat pump	Continuous	Ausgrid	33.30 c/kWh	532 kWh	18.2 kWh/kL	0.61	$177
	Controlled load 1	Ausgrid	16.30 c/kWh	549 kWh	18.8 kWh/kL	0.63	$91

a. A controlled load is a tariff that customers can access for high energy appliances such as hot water systems. Where a customer has a controlled load tariff for their hot water system, the hot water system will be separately metered. Controlled load tariffs are generally lower as these appliances operate during off-peak hours, usually overnight.
b. The gas fuel price and electricity fuel prices are based on prices in August when our benchmarking methodology is applied. The controlled load 1 price is based on market prices.
c. Calculated for a consumption of 80 L per day using the conversion factors specified.
d. Derived from the results of Ausgrid's hot water calculator.
e. Includes controlled load fixed charge of 9 cents per day.

Source: Ausgrid hot water calculator, accessed 25 March 2024; Energy Made Easy data, IPART analysis.

7.3 The system inefficiencies borne by customers should be limited

For centralised hot water systems, efficiency depends on a number of variables such as the occupancy of the building, the type of system, and the maintenance of the system.[156] Customers have little control over these variables.[157]

The efficiency of a centralised hot water system can be measured by the 'common factor' or 'conversion factor.' It is calculated by dividing the amount of gas used to heat the water for the centralised hot water system, by the total amount of hot water consumed by the building. The more efficient a system is, the lower the common factor.

The common factor can be used in billing to apportion the share of energy used to heat the water to an individual premise, based on their share of the building's overall hot water usage.[158] It is the standard way of determining the gas consumption for non-embedded network customers with centralised gas hot water systems.[159] This approach passes any system inefficiencies directly onto customers.

Many stakeholders submitted that system inefficiencies should not be passed onto customers.[160] They did not support the use of site-specific common factors because:

- they penalise customers where systems are not efficient,[161]
- there is no incentive for operators to ensure that the common factor is low,[162]
- they are not regulated and[163]
- they lead to variability in bills.[164]

We also heard that where centralised hot water is supplied through an embedded network, some sites do not have energy meters installed on centralised hot water systems and so they are unable to calculate actual common factors.[165] These embedded network sellers bill their customers in water units.

Some stakeholders submitted that pricing needs to reflect that customers do not have control over the system efficiency. For example, prices could be set so that the actual common factor could be combined with an efficiency factor so that that customers are not penalised for an inefficient system.[166]

We consider that embedded network customers should not pay more than on-market customers being supplied from a centralised hot water system. This may mean that embedded network customers pay for more energy compared to if they had an individual hot water system. However, in our view, embedded network customers should not further bear the costs of an inefficient *centralised* system. The costs of system inefficiencies should be borne by the owners of the site (via the body corporate, in strata properties) who are better able to influence the efficiency of the system (for example, because they can determine how it is maintained or whether to upgrade the system).

Therefore, we consider that the methodology for hot water should set a maximum common factor. Setting a maximum common factor is consistent with the approach taken in Victoria for the sale of bulk hot water (Box 7.1). Where the actual common factor at a site exceeds the maximum common factor (for example, for a low-efficiency legacy system), embedded network sellers would be able to recover the additional gas costs from the owners corporation.

Not all stakeholders agree that a maximum common factor should be prescribed. Active Utilities noted that a common factor is not prescribed for non-embedded networks.[167]

In our view, a maximum common factor should also be prescribed for non-embedded network sites.[u] While a maximum common factor is not currently prescribed for centralised systems for non-embedded networks, Jemena's NSW Gas Networks Design Guide provides that all gas centralised hot water systems should be designed, installed, and maintained to achieve a common factor of no more than 0.40 MJ/L. Where the calculated common factor for a system is greater than 0.40 MJ/L, the guide states that the design must be modified to increase efficiency.[168]

Box 7.1 Regulation of hot water in Victoria

Where customers are currently billed using a lower electric bulk hot water conversion factor, or a lower electric bulk hot water conversion factor for the site is assessed, retailers must bill customers using the lower electric bulk hot water conversion factor.

The Energy Retail Code allows retailers to charge customers a supply charge for gas bulk hot water supplied from gas hot water systems This is calculated as the supply charge under the tariff applicable to the relevant gas bulk hot water unit, divided by the number of customers supplied by the gas bulk hot water unit. Retailers may decide not to charge the supply charge or may decide to roll-in the supply charge into the gas bulk hot water price. There is no supply charge for electric bulk hot water.

The Energy Retail Code also outlines specific information that must be included in hot water bills including the water consumed and the conversion factor (common factor) used to calculate the hot water charge.

Source: Essential Services Commission, *Energy Retail Code of Practice*, clause 58 and Schedule 4.

7.4 Embedded network sellers must charge in the underlying energy unit

There were mixed views amongst stakeholders on whether energy or water units are more suitable for billing customers for their hot water consumption.

Some stakeholders preferred billing in the water unit:

- Energy Metrics considered that billing in water units benefits consumers because the embedded network operator bears the risk of system inefficiencies and low occupancy.[169]
- Some stakeholders told us that most of their existing embedded networks do not have the infrastructure (i.e. gas meters on their centralised hot water systems) that would enable customers to be billed in the energy units.[170]

[u] Legislative change and new arrangements would be required to facilitate this. For example, it may require owners corporations to appoint a retailer who would bill them for the excess gas, as measured by the distributor.

- Energy Locals submitted that it disagrees with mandating hot water services be charged in energy units because centralised hot water services are "…fundamentally different to the provision of electricity, gas or mains water".[171]

Other stakeholders submitted that we should set prices in energy units:[172]

- Some stakeholders believed that this would allow the National Energy Customer Framework to apply.[173]
- A customer who is billed in cents/L told us that they cannot compare the price they are receiving to the gas prices and also, residents do not have access to water meters to verify their consumption.[174]

Our draft recommendation was that embedded network sellers be permitted to charge for the consumption of hot water in either units of water (cents/Litre) or units of energy (cents/kWh or cents/MJ). This recommendation was well-received by embedded network sellers and other industry stakeholders.[175] We made our draft recommendation because, by reflecting existing charging practices (whereby sellers typically charge for cents/L) it provided flexibility to embedded network sellers, and it would not require the installation of additional metering to measure the underlying fuel used.

However, our final recommendation is that embedded network sellers be required to charge customers for hot water in the underlying energy unit (i.e. cents/MJ or cents/kWh). We have changed our recommendation because:

- we no longer consider that sellers could incur additional metering costs
- we consider that it would better facilitate the National Energy Consumer Framework applying to these services in the future, consistent with the NSW Government Embedded Network Action Plan which commits to regulatory and legislative change to provide consumer protections to customers of hot water embedded networks
- it is consistent with the billing of hot water services for non-embedded network customers (who are billed for the underlying energy).

Because our methodology involves prescribing a maximum common factor, it would not be necessary for embedded network sellers to install additional metering to calculate the actual common factor at the site to convert hot water consumption in litres to energy consumption. In addition, it means that embedded network operators would bear the risk of system inefficiencies and low occupancy (discussed further in the sections below).

While the AER considers that the National Energy Customer Framework does not apply to the sale of hot water (regardless of billing units used)[176], the NSW Government has outlined the Government's expectations that:

- hot water embedded networks customer should have access to equivalent consumer protections to on-market customers (who have access to consumer protections under the National Energy Customer Framework), and
- hot water embedded network operators should bill customers for the energy input to hot water supply (cents/kWh or cents/MJ).[177]

Our final recommendations are consistent with this stated policy intention. In addition, the NSW Government could stipulate that sellers could only sell the electricity or gas used to heat the hot water, rather than hot water as a bundled product. This is consistent with how customers with centralised hot water systems are charged outside of embedded networks, where the National Energy Customer Framework is generally considered to apply (see Box 7.2).

Box 7.2 Consumer protections for the supply of hot water from centralised systems

As explained in Chapter 1, outside of embedded networks, where customers are supplied by gas centralised hot water systems in the Jemena gas distribution network, customers have individual hot water meters which are maintained and read by Jemena. Jemena calculates the gas consumption based on the common factor at the site (as explained further below), and customers are billed for this gas consumption by their authorised gas retailer, along with any additional gas they have consumed (e.g. for a cooktop).

The National Energy Customer Framework applies to non-embedded network gas customers, and it is generally accepted that this is the case for all components of the gas bill (the gas consumed by the customers for their cooking and heating, and also the share of gas allocated to them for the centralised hot water system, based on their hot water usage).

Source: Energy & Water Ombudsman NSW, Hot water embedded networks, accessed March 2024 and Energy & Water Ombudsman NSW, Common hot water systems, June 2021, p 1.

We note that it is currently unclear whether residential tenants can be charged for the supply of hot water[v], regardless of whether customers are charged for the litres of water or the underlying energy source used to heat it, and even if the water is individually metered. This is because metering of hot water may not satisfy the requirements for separate metering of electricity or gas, such that charges can be imposed on tenants under the *Residential Tenancies Act 2010*.[w]

Where hot water usage for each individual dwelling is measured (as is the standard practice) we consider that it is important that the end-users pay for the usage of the service they consume (in accordance with IPART's recommended pricing methodology) to ensure the efficient consumption of services. The NSW Government should ensure that residential tenancies legislation and other site-specific legislation that may apply to embedded networks (e.g. for residential land lease communities) facilitates this.

[v] Under the *Residential Tenancies Act 2010* there are two types of charges for electricity and gas:
- charges for the supply of electricity or gas, which relates to the metered use of the energy (typically considered a 'usage' charge), and
- service availability charges, which relate to the provision of gas or supply of electricity (typically considered a 'supply' charge).

[w] Hot water charges are also unlikely to be water usages charges for the purpose of that Act.

Final recommendation

11. That embedded network sellers must charge for hot water in units of energy, based on the underlying fuel source at the site (cents/kWh or cents/MJ).

12. That the NSW Government amend the *Residential Tenancies Act 2010* to clarify that tenants must pay charges for the supply of hot water to residential premises if the hot water consumed is individually metered.

7.5 Maximum price methodology

Where gas is the underlying fuel source, sellers cannot charge more than IPART's benchmarked maximum gas consumption charge, and they must not bill customers for more than 0.4 MJ of gas per litre of hot water consumed. Where electricity is the underlying fuel source, sellers must not charge more for the hot water consumed than what the customer would have paid if gas was the underlying fuel source.

Box 7.3 provides a worked example of our methodology by calculating the maximum hot water charge of a typical customer who consumes 80 L of hot water per day.[x]

[x] Energy Metrics submitted than an average embedded network customer uses around 60 to 90L of hot water per day and Active Utilities submitted that the average hot water consumption for an apartment is around 87L per day. Energy Metrics Consulting submission to IPART Draft Report, p 7; Active Utilities, submission to IPART Draft Report, p 16.

Box 7.3 Worked example – Maximum hot water bill

If a customer being supplied via a centralised gas hot water system consumes 80 L of hot water per day (equal to 29,200 L per year), the annual gas consumption would be calculated by:

$$\begin{aligned} &Gas\ consumption\ (MJ) \\ &= annual\ hot\ water\ consumption\ (L) \times maximum\ gas\ common\ factor\ (MJ/L) \\ &= 29{,}200\ L\ x\ 0.40\ MJ/L \\ &= 11{,}680\ MJ \end{aligned}$$

Under our recommendations, the maximum allowable annual hot water bill for this customer would be calculated by:

$$\begin{aligned} &Maximum\ annual\ bill \\ &= gas\ consumption\ (MJ) \times IPART's\ maximum\ gas\ consumption\ benchmark \\ &= 11{,}680\ MJ\ x\ 3.82\ cents/MJ^{a} \\ &= \$446.18 \end{aligned}$$

The maximum bill for a customer with an electric hot water system cannot exceed what they would have paid if gas was the underlying fuel source. In this example that is $446.18 to heat 29,200 L of water for the year.

To illustrate, a hot water charge of 20 cents per kWh, and a conversion factor of 70 kWh/ML would produce a hot water bill of $409 and would be compliant with the maximum price.

a. IPART's maximum gas consumption charge for the Jemena Region.

Source: IPART analysis.

7.5.1 Using the benchmark gas price

Our recommendations require sellers to use the maximum gas consumption charge for embedded network customers to bill for the gas used.

Energy Metrics Consulting submitted to our Consultation Paper that:

- a maximum price for hot water equal to standing offers from major retailers would encourage operators to ensure that their systems are as efficient as possible
- if a maximum price was set below an equivalent gas standing offer, then embedded network sellers would need to ensure that systems are as efficient as possible to recover the cost of the capital they outlay to supply the plant

- setting a maximum price lower than the discounted gas tariffs offered in the market may cause embedded network operators to withdraw hot water services from their offerings or compel them to introduce capital recover charges.[178]

As set out In Chapter 6, our gas benchmarks use the on-market median of retailers' lowest gas prices.[y] This is in line with what on-market customers with centralised hot water systems pay for their gas, and therefore allows sellers to recover their costs.

7.5.2 We recommend a common factor of 0.4 MJ/L.

Where gas is the underlying fuel source, we recommend that sellers cannot charge customers for more than 0.40 MJ of gas per litre of water consumed. As set out in the section above, 0.4 MJ/L is consistent with the upper limit in Jemena's Gas Networks Design Guide. Jemena states that this "…ensures that the system delivers comparable energy efficiencies to that of other gas fired hot water systems".[179]

Energy Metrics Consulting, Real Utilities and EWON all supported a maximum common factor of 0.4 MJ/L.[180] Active Utilities submitted that a marginally higher common factor would represent a fairer outcome.[181]

A common factor of 0.40 MJ/L is lower than the prescribed conversion factor in Victoria for gas hot water of 0.497 MJ/L.[182] This common factor was introduced in around 2005.[183] It is likely that there have been improvements in the efficiency of gas water heat technology over the last 18 years. We understand that the Victorian Essential Services Commission will be reviewing its prescribed conversion factors in the coming years.[184]

Origin suggested that an exemption process may be sensible for buildings where achieving a common factor of 0.40 MJ/L is not possible, or where the cost of achieving 0.40 MJ/L exceeds the resources of the owners corporation.[185] We consider that customers should not bear the costs of additional inefficiencies where the common factor is higher than 0.40 MJ/L, and therefore we do not support an exemption framework. As explained in the earlier section of this chapter, customers supplied by centralised systems are already likely to pay more for their hot water, and embedded network sellers are able to recover any additional costs through other negotiated arrangements outside of customers' energy and hot water bills.

[y] i.e. our recommended maximum gas price for embedded network customers discussed in detail in Chapter 4.

7.5.3 Customers pay the same for electric hot water systems

Consistent with the approach taken in our Draft Report, we recommend that where electricity is the underlying fuel source, sellers must not charge more for the hot water consumed than the customer would have paid if gas was the underlying fuel source. We are not recommending a separate methodology for electric hot water systems at this time, because there are very few hot water embedded network sites that use electricity, and there are wide variations in the efficiency of these systems and also the cost of the underlying electricity (depending on the times when the water is heated). Origin submitted that it considers that "While electricity-based heat pump technology is emerging, it remains an inferior option to gas centralised in the majority of developments." Origin noted that electric hot water systems require significantly more space and that currently the capital investment for heat pumps is significantly more than for gas centralised systems. [186]

We consider that it is sufficient that customers do not pay more than they would pay if they were being supplied with a centralised gas hot water system. Stakeholders did not raise any concerns with this approach.

We would review our methodology for setting hot water prices in the future as the pace of electrification accelerates. As set out in Chapter 4, we are recommending that the regulator would have the authority to set prices, and that it would conduct a major review of its embedded network pricing methodology at regular intervals, for example, at least once every 5 years.

Final recommendation

13. Where gas is the underlying fuel source, sellers cannot charge more than IPART's benchmarked maximum gas consumption charge.

14. Where gas is the underlying fuel source, sellers cannot charge customers for more than 0.40 MJ of gas per litre of water consumed.

15. Where electricity is the underlying fuel source, sellers cannot charge more for hot water than the customer would have been charged if gas was the underlying fuel source.

7.6 Customers should not pay an additional supply charge for hot water

On-market customers are not billed separately for hot water. They are charged a fixed daily supply charge for their electricity and, where they are connected to gas, a fixed daily supply charge for their gas.[z] To ensure that embedded network customers do not pay more than on-market customers, we recommend that:

- For sites being supplied by centralised gas hot water systems, if the customer does not receive other gas services (e.g. cooktop), then sellers can charge a fixed supply charge for hot water (up to IPART's fixed gas supply charge).
- Embedded network customers cannot be charged a fixed daily supply charge for hot water for where they are being supplied by a centralised electric hot water system. These customers will always have an electricity bill and will incur a fixed daily supply charge accordingly.

Origin agrees that customers should not pay multiple supply charges for the same energy (fuel).[187] However, most embedded network sellers did not support this recommendation. They considered that an additional hot water supply charge should be allowed so that they can recover the costs associated with the costs of the hot water systems and meters installed at the site.[188]

Active Utilities submitted that currently it charges a small daily supply charge to recover the cost of the upkeep of the system to ensure optimal operation. It considers this is often missed in the contestable market, resulting a higher percentage of units running in an inefficient manner. It also submitted this approach assists in the reduction of consumption charge prices for usage, which assists in the stabilisation of pricing in less efficient systems.[189]

Energy Metrics Consulting submitted that our methodology should ban the recovery of additional capital recovery charges for gas hot water.[190]

Under our recommendations, embedded network sellers are able to charge fixed supply charges for the underlying fuel used to heat the hot water. This ensures that sellers can recover the costs incurred from the gas distribution networks at the parent connection point, network administration, billing, and meter reading for gas through prices. These are the same costs recovered from on-market customers for their hot water usage through their energy bills.

Our recommendations lead to similar price outcomes for a typical customer[aa] to what embedded network sellers are currently charging (based on a sample of bills received).[bb] We compare combined hot water and gas bills because these are usually provided as a combined service, and when looked at in isolation, billing outcomes for one fuel can vary significantly depending on how the charges are structured.

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[z] Where customers with electric hot water systems are on a controlled load tariff for hot water, this may be combined with an additional fixed charge, averaging 7 to 10 cents per day in the Endeavour region, and around 14 cents per day in the Essential region. However, customers on controlled load tariffs with a fixed supply charge still pay less than our benchmark, and significantly less than customers on the standard continuous electricity tariff (see Table 7.1).

[aa] Consuming 80 L of hot water and using 1,000 MJ of unmetered gas.

[bb] The 2022 NSW Parliamentary Inquiry found evidence of some embedded network customers receiving very high hot water bills. Several examples were cited including a customer who received a bill of $2,000 for a period of 9 months,

Table 7.2 shows that our recommended gas and hot water maximum prices are close to the average price in the sample of 10 bills that we received.[cc] However, there are a range of prices charged by the different embedded network sellers (for example, sample bill G is around 30% lower than an estimated bill under our maximum benchmark prices, while sample bill price J is around 23% higher). Customer J would save around $165 as a result of our recommendations. Sellers can continue to charge lower prices, but they cannot exceed our maximum prices.

Table 7.2 shows that while IPART does not allow a fixed supply charge for hot water, the fixed charge for gas (including a fixed component for unmetered gas) is close to the combined fixed supply charges for gas and hot water currently being charged by embedded network sellers. In addition, there is likely to be significant headroom available that could be used to offset additional costs above the delivered costs of energy (for example, metering and maintenance costs). This is because:

- Depending on the size of the site, the costs of delivering gas to the parent meter (the distribution costs) can be significantly lower for embedded network customers (discussed in more detail in the previous chapter).
- Our methodology allows for a common factor of 0.40 MJ/L, but some sites may be significantly more efficient. This means that these sites will incur lower gas costs compared to what is allowed under our methodology.

If the internal hot water embedded network costs are not otherwise recovered (for example, through this available headroom, or as part of the upfront development costs) embedded network sellers are able to negotiate to recover these costs from the site owners where permitted by legislation.[dd]

As explained in Chapter 3, we consider it appropriate for site owners (such as, owners corporations) to incur capital costs as they are better able to manage these costs (because tenants have no ability to manage capital costs).

and their neighbour, who received a bill of $9,700 for a period of 14 months, and customers paying between $200 and $300 per month for hot water. During the course of our review, we have asked embedded network sellers for their hot water prices and have obtained a small sample of bills from customers and from EWON. We agree with the observations made by Energy Metrics, that the bills observed in the inquiry are likely due to excessive consumption or metering problems. Report on proceedings before the NSW Legislative Assembly Committee on Law and Safety, 12 August 2022, p 34; Energy Metrics Consulting submission to IPART Draft Report, p 8.

[cc] These prices are also similar to the prices that we have received confidentially.

[dd] Whether an embedded network seller can recover these costs will depend on the legislation that governs the site on which the embedded network is located. For example, the *Retail Leases Act 1994* applies to shopping centres, the *Residential (Land Lease) Communities Act 2013* applies to land lease communities (such as caravan parks), the *Strata Schemes Management Act 2015* applies to strata schemes, and the *Retirement Villages Act 1999* applies to retirement villages.

Table 7.2 Comparison of indicative annual bills for combined hot water and gas services for a typical embedded network customer

Current embedded network operator prices	**Fixed supply charge**			**Consumption charge**		**Annual bill[b] ($/year)**		
Sample bills:	Gas fixed supply charge (c/day)	Hot water fixed supply charge (c/day)	Combined supply charge	Gas c/MJ	Hot water (c/L)	Gas	Hot water	Combined
A	22.49	62.38	84.87	-	1.09	82.07	546.26	628.33
B	35.20	61.60	96.80	-	1.50	128.48	661.67	790.15
C	23.67	29.50	53.17	-	1.60	86.38	574.88	661.26
D	26.00	39.00	65.00	-	1.65	94.90	624.15	719.05
E	7.31	75.57	82.88	-	1.78	26.66	795.30	821.96
F	23.67	29.50	53.17	-	1.99	86.38	688.76	775.14
G	59.00	-	59.00	-	0.99	215.35	289.08	504.43
H	-	61.60	61.60	-	1.50	-	661.67	661.67
I	28.30	75.57	103.87	-	1.61	103.30	745.95	849.25
J	-	84.04	84.04	-	1.98	-	884.91	884.91
Average bill	**28.02**	**57.64**	**74.30**	**-**	**1.57**	**102.94**	**647.26**	**729.61**
Maximum price under IPART's methodology	74.16[a]	Nil	74.16	3.82	-	270.67[c]	446.18[d]	716.86

a. Includes the daily fixed charge for unmetered gas of 10.47c/day (1,000MJ unmetered gas x IPART's maximum benchmark gas consumption charge)

b. For the purposes of estimating an indicative annual bill, we consider a typical embedded network customer as a 1 to 2 bedroom apartment household using 80L/day hot water and an additional 1,000 MJ of gas for other appliances.

c. Assuming gas is not metered.

d. Estimated using a maximum common factor of 0.4MJ/L and 80L/day hot water usage.

Source: Sample bills from customer surveys (August 2023 – March 2024);Evergy, prices for centralised services for Rhodes Central Residents Offer, accessed 15 March 2024, IPART calculations.

Final recommendation

16. That embedded network sellers selling hot water services from centralised gas hot water systems are allowed to recover a supply charge from hot water customers, only if that supply charge has not otherwise been recovered from a separate gas supply charge.

Chapter 8

Maximum pricing methodology for chilled water

Our Terms of Reference asks us to investigate and make recommendations on an appropriate methodology for setting maximum prices for chilled water supplied through embedded networks. Chilled water is used in centralised air-conditioning systems.

This chapter sets out our pricing methodology for chilled water. It considers how to set prices given the different metering arrangements in place for chilled water systems (including sites where consumption is not metered). It also considers whether customers are being charged too much due to system inefficiencies and whether this should be addressed through maximum prices.

8.1 Overview of our recommendations for chilled water

Our final recommendation is to use the maximum electricity price for embedded network customers to set maximum prices for chilled water embedded networks. This is because electricity is the underlying fuel source at existing sites.

Our methodology allows embedded network sellers of chilled water embedded networks to charge either:

- A consumption charge equal to or less than our electricity market price benchmark (cents/kilowatt hour (kWh)).
- A fixed daily fee equal to or less than the retail market price benchmark multiplied by a daily consumption benchmark of electricity used for air-conditioning. The consumption benchmark of 2.5 kWh/day is based on the electricity used for air-conditioning to that of 2 small air-conditioners, using the Commonwealth Government's energy ratings website.[191]

This methodology would achieve our overarching objective of ensuring that embedded network customers are not worse off than on-market customers.

When our methodology is applied using our benchmark electricity prices, it would result in a daily chilled water price of 83.25 cents per day (or just over $300 per year) for a typical low air-conditioning user (using around 2.5 kWh per day or 900 kWh per year). This is similar to the prices currently being charged by embedded network sellers for chilled water (for example, we have seen prices that range from around 80 to 100 cents per day).

This price is higher than the estimated price in our Draft Report of around 64 cents per day (or $230 per year) because:

- our benchmark electricity price has increased, as explained in Chapter 5, and
- for the fixed rate methodology, we are recommending a slightly higher consumption benchmark of 2.5 kWh per day instead of 2 kWh per day.

We consider that our final recommended maximum daily benchmark price of 83.25 cents per day is still conservative and based on a low usage consumption profile to protect embedded network customers of low usage.

Most stakeholders did not raise issues in their submissions in response to our draft methodology on chilled water. The Public Interest Advocacy Centre (PIAC) broadly supported our recommendations[192], while Altogether Group did not support regulating pricing for chilled water due to the complexity that exists relating to varying technology, energy efficient models, maintenance schedules and technology used to support chiller capacity, age, location in the building, predicted control algorithms, occupancy impacts and metering arrangements. Altogether Group considers that to successfully regulate centralised air-conditioning services, a metering device must be available for verification of usage, ability to report readings, repair and maintenance however it is not common for chilled water devices to be easily accessible.[193]

PIAC and the Combined Pensioners & Superannuants Association (CPSA) emphasised that sellers should be required provide opportunities for customers to opt out of centralised air-conditioning.[194, 195] We understand that customers currently can opt-out using of centralised air-conditioning services and replace it with alternatives (discussed in Chapter 1).

While we have been asked to recommend a maximum price methodology for chilled water embedded networks, we are recommending that a maximum price cap should be set for all centralised air-conditioning delivered through embedded networks. This is because we do not consider there are material differences in the potential issues faced by chilled water and other centralised air-conditioning customers.[196] PIAC agreed with this recommendation.[197] Therefore, for the purposes of this report, we have intended the terms 'chilled water' and 'chilled water embedded networks' to be inclusive of all centralised air-conditioning systems delivered through embedded networks.

Final recommendation

17. That regulated maximum prices for chilled water be extended to all centralised air-conditioning services sold by an embedded network seller.

8.2 Setting 2 separate methodologies for chilled water

Currently, chilled water embedded network customers are charged for centralised air-conditioning and chilled water either through:

- an electricity tariff (cents/kWh) for the consumption of energy, or
- a fixed daily rate, or
- an electricity tariff (cents/kWh) for the consumption of energy and a fixed daily or monthly supply charge.

We have heard that meters for measuring chilled water consumption can be unreliable, which is one of the reasons why some sellers are charging a fixed daily rate.[198] However, Intellihub submitted that it has worked with a number of embedded network operators to install energy meters to measure energy consumption of the common chilled water system as well as individual water meters for customers. It told us that the customers are billed for the energy used in proportion to the measured chilled water used.[199]

The Combined Pensioners & Superannuants Association and Altogether Group submitted that they consider that the use of a fixed daily fee is not fair or equitable and does not promote responsible use of chilled water.[200]

We consider that billing customers in accordance with their metered consumption is important to ensure that customers face the costs of their consumption decisions. However, the cost of metering the service should not be more than the service itself. On balance, we consider it is reasonable to allow for sellers to charge for chilled water as a fixed daily fee to avoid metering costs where it is economic to do so (for example, where there are low costs of providing the service). However, consumers with low consumption should not be penalised by being charged a high fixed daily rate.

Therefore, we recommend 2 separate pricing methodologies for chilled water: a consumption-based methodology, and a methodology for determining a maximum fixed daily rate.[ee]

Embedded network sellers would be able to charge either a price per unit of consumption or a fixed daily rate – but not both. This approach provides price protections for customers and flexibility for sellers to continue the current billing practices.

Under our methodology, embedded network sellers must use the same method for charging all customers at a given site, to prevent sellers from choosing to charge customers at the same site in different ways. This is to protect customers who have low consumption rates (i.e. lower than benchmarked consumption for the fixed daily fee) from being charged the fixed daily fee to maximise the seller's profit. Origin submitted to our Draft Report that it agrees that embedded network providers must use the same method for charging all customers at a given site.[201]

Final recommendation

18. That embedded network sellers of chilled water be permitted to bill customers using either a consumption charge or a fixed daily rate. Sellers must use the same charging approach for all customers at a given site.

8.3 Consumption-based methodology

Where embedded network sellers choose to impose a consumption charge for chilled water, our recommendation is that the maximum consumption charge (in kWh) is equal to the maximum benchmarked electricity consumption tariff for embedded networks.[ff] This is the same way that on-market customers are charged when they use air-conditioning. We recommend that where embedded network sellers impose a consumption charge, the seller must not impose an additional fixed daily rate (or daily supply charge).

[ee] Under the *Residential Tenancies Act 2010*, tenants cannot be charged for electricity or gas that is not separately metered or otherwise metered in accordance with the requirements of that Act. In these cases the landlord is responsible for these costs. There is a lack clarity around how these provisions apply to chilled water.

[ff] The methodology for the benchmarked electricity price for embedded networks is discussed in Chapter.4.

Altogether Group considers that embedded network sellers should be allowed an additional fixed service charge for chilled water. It submitted that if metering is available, then there are additional costs to gather and process data and respond to customer service queries for air-conditioning usage, which is more complex than electricity usage, and that this is particularly true when chilled water is the only service provided by the seller. In the case where chilled water is a secondary service, it recommends a lower additional fixed rate to cover the additional service.[202]

We consider that our recommendations would ensure that embedded network customers would not be worse off than on-market customers, who do not incur separate fixed supply charges through their electricity bills for air-conditioning.

8.3.1 The efficiency of chilled water and centralised air-conditioning systems

Energy for centralised air-conditioning is often measured in thermal kilowatt hours (thermal kWh) rather than electrical kilowatt hours (electrical kWh). Thermal kWh refers to the energy required for heating, and electrical kWh refers to the total electrical energy consumed for the heating.

As submitted by Altogether Group, thermal energy is not a one-to-one ratio to the energy used by the air-conditioning system.[203] The electrical kWh to obtain one thermal kWh may vary. For example, a more efficient system (higher co-efficient of performance) will produce a higher amount of thermal kWh for the same number of electrical kWh.

The Urban Development Institute of Australia NSW advised that its members operate sites where charging for centralised cooling and heating air-conditioning services are based on metered thermal kWh (not electrical kWh) and they charge a tariff in $/thermal kWh.[99]

While individual premises may measure usage in different measurement units, we consider that embedded network sellers can apportion these units to the total electrical kWh used in the building. Box 8.1 below provides a worked example.

[99] For example, their charging methodology is calculated based on various measurements:

- For centralised cooling air-conditioning - $/electrical kWh for cost of electricity to run the electric chiller(s)
- For centralised heating air-conditioning, it is based on $/electrical kWh for the cost of electricity to run the electric heat pump(s) or $/MJ for the cost of gas to run the gas boiler(s). UDIA's submission to IPART's Draft Report, page 6.

Box 8.1 Worked example – apportioning energy total usage to units

A building consists of 4 apartments and has a centralised air-conditioning system. The system uses electricity to generate thermal energy which is used to cool/heat the coolant used by the individual unit.

The total electricity used to operate the system in the building is measured via a master electricity meter. Separate meters are on each of the 4 units' air-conditioning condensers which record the usage for each unit.

The electricity usage (measured via the approved master meter) can then be apportioned to the appropriate usage of each unit. This can be calculated using the formula below:

$$Electricity\ usage\ at\ individual\ apartment\ (electrical\ kWh) =$$

$$Total\ master\ meter\ energy\ usage\ (electrical\ kWh)\ x\ \frac{Individual\ usage\ (eg, thermal\ kWh)}{Total\ usage\ (eg, thermal\ kWh)}$$

The below shows how each apartment's usage would be apportioned if the master meter records 400kWh (electrical) for the month. Apartment 1 uses 15% of the total building usage which equates to 62kWh (electrical) (15% multiplied by 70).

Apartment No.	Individual condenser check meter usage (thermal kWh)	Percentage of usage in building (%)	Apportion to master meter usage (electrical kWh)
1	70	15%	62
2	130	29%	114
3	95	21%	84
4	160	35%	141
Total	**455**	**100%**	**400**

Source: IPART analysis

We considered whether the consumption-based methodology needs to ensure that customers are not penalised for system inefficiencies, similar to our methodology for hot water. The Tenants Union submitted to our consultation paper that "using the common factor to calculate a customer's electricity bill for heating and chilling water is appropriate but pricing needs to reflect it is entirely outside of the control of the customer. The variables that determine the common factor are in control of the owner of the embedded network and as they don't pay for the usage there is no incentive for them to ensure the common factor is low and therefore the system is energy efficient".[204] Altogether Group also commented that the embedded network seller has limited control over the replacement of asset items related to the infrastructure as the centralised air-conditioning system is usually owned by the building owner.[205]

In response to our Draft Report, the Urban Development Institute of Australia NSW and Real Utilities submitted that a conversion factor for thermal kWh to electrical kWh should be prescribed.[206, 207]

While efficiency can be compromised when only a small proportion of residences use centralised air-conditioning,[208] we consider that it would be unlikely for well-designed centralised air-conditioning systems to be significantly less efficient than stand-alone units. We note that the efficiency of centralised heating and cooling systems is assessed as part of the Building Sustainability Index (BASIX) standards during the development application process.[209]

As a result, we do not recommend prescribing a maximum common factor for chilled water to set a standard for efficiency as part of our pricing setting methodology at this time. However, we are proposing new requirements that would provide greater transparency over the efficiency of centralised air-conditioning systems. These requirements would allow the efficiency of centralised air-conditioning systems to be monitored over time by the pricing and compliance regulator(s). If there is evidence of customers being charged for a high level of consumption due to inefficient centralised systems, then a common factor could be introduced into future pricing methodologies.

8.3.2 Disclosure of information on the efficiency of chilled water and centralised air-conditioning systems

We recommend that where embedded network sellers charge customers for their metered chilled water consumption, they would need to disclose efficiency information to customers and owners corporations.

The relevant information for the system includes the following:

- Energy Efficiency Ratio (EER)
- Coefficient of Performance (COP)
- energy input for the last financial year
- energy output for the last financial year
- system's brand name and model number, where available (to cross check reported efficiencies against the Greenhouse and Energy Minimum Standards (GEMS) registry).

We propose that this information would be required to be disclosed on the embedded network seller's website.[hh] This would protect customers by providing them with the information to make an informed decision about whether to opt into or out of a chilled water network. Publishing efficiency information will also allow owners corporations to be informed of efficiency when entering into contracts or re-negotiating contracts.

Stakeholders had mixed views on publishing information on operating efficiency. The Urban Development Institute of Australia NSW and Real Utilities disagree with publishing information on efficiency of air-conditioning systems as they consider it an unnecessary compliance obligation.[210, 211]

However, Altogether Group agrees with publishing information on their operating efficiency data, noting that the ownership of the centralised air-conditioning system is usually the responsibility of the building owner. It also recommended that the embedded network seller be required to add air-conditioning sale methodology to websites or shared information at the point of registration for the service, as well as implement strategies to educate and promote responsible use of centralised air-conditioning services.[212] We agree that there should be increased transparency and clear disclosure of necessary information to customers and this is further discussed in Chapter 10.

Final recommendation

19. Where an embedded network seller imposes a consumption charge for chilled water embedded networks:
    a. the maximum consumption charge in kWh is equal to the maximum electricity tariff for embedded networks
    b. no additional fixed rate charge is permitted.

20. Where an embedded network seller imposes a consumption charge for chilled water embedded networks, the seller must provide information on the efficiency of the centralised air-conditioning system on the seller's website. The information must include:
    - The Energy Efficiency Ratio (EER)
    - The Coefficient of Performance (COP)
    - The energy input for the last financial year
    - The energy output for the last financial year
    - The system's brand name or model number, where available.

[hh] Publication requirements may vary depending on the embedded network seller. See Chapter 10 for details.

8.4 Methodology for a maximum fixed daily fee

We are recommending a methodology for setting a maximum flat daily fee for chilled water based on what a typical low user of air-conditioning would pay if they were on-market customer (see Box 8.2).

Our recommended methodology is to use the maximum benchmarked electricity price for embedded networks and a daily consumption benchmark of electricity used for air-conditioning, as per the following formula:

$$\text{Maximum fixed daily rate (cents)} = \text{benchmarked electricity tariff (cents/kWh)} \times \text{benchmarked daily consumption (kWh)}$$

where:

- The benchmarked price of electricity is equal to the median of active retailers' lowest electricity prices (i.e. our recommended maximum electricity price for embedded network customers).
- The benchmarked daily consumption of electricity is equal to 2.5 kWh.
- This methodology was supported by the Urban Development Institute of Australia in response to our Draft Report.[213]
- Box 8.2 below shows a worked example of this calculation using the benchmarked electricity price for August 2023.
- Box 8.3 shows what an on-market customer is likely to pay for air-conditioning. It shows there is a large degree of variation in costs depending on the energy rating of the air-conditioner.

Box 8.2 Worked example - maximum flat daily fee

Maximum flat daily fee =

$$33.30 \text{ cents/kWh}^{a} \times 2.5 \text{ kWh}^{b}$$

$$= 83.25 \text{ cents/day}$$

a. Equal to the maximum benchmarked price of electricity that is calculated for each review period. This worked example uses the prices shown in Table 5.1
b. Benchmarked maximum daily electricity consumption.

Source: IPART calculations.

Box 8.3 What does an on-market customer pay for air-conditioning?

The Table below shows what on-market customers are likely to pay for air-conditioning in an "average climate" (such as Sydney) where they have 2 small air conditioners. These costs vary, depending on the cooling energy ratings (between 3 – 6) at 2-3 kW. The running cost will also differ depending on the model of air-conditioner and capacity selected. In this sample, we have held the heating rating constant at 3 stars, and have calculated the cost to consumers based on an electricity price of 33.30 c/kWh (equal to our benchmark when our electricity methodology is applied as at August 2023).

Running cost of 2 small sized air-conditioners in Sydney

Cooling rating	Energy consumption (kWh)		Cost to customer	
	Annual	Daily	Annual	Daily
3	1,096	3.00	364.97	$1.00
4	1,056	2.89	351.65	$0.96
5	932	2.55	310.36	$0.85
6	858	2.35	285.71	$0.78

Source: Energy Ratings Calculator, accessed 12 March 2024, IPART analysis.

8.4.1 Our updated consumption benchmark is based on larger sample of air-conditioning units

Our draft methodology used a consumption benchmark of 2 kWh per day based on the annual usage of 2 small air conditioners with a 5 star rating for cooling (out of a maximum of 7) as per the Australian Government's energy ratings website.[214]

We consider that 2 small air conditioners is typical of the air-conditioner size needed to service an apartment which has 1 to 2 bedrooms with a minimum area of 9m^2.[215] Small air-conditioners are generally capable of cooling room sizes of up to 25m^2.[216] We benchmarked daily electricity consumption to a system that is rated 5-stars for cooling to ensure that customers are not paying more than on-market customers who can choose the efficiency of their cooling system.

Our final recommendation uses a slightly higher consumption benchmark compared to our draft recommendation, at 2.5 kWh per day instead of 2 kWh (Box 8.4). This difference is because we have used an expanded range of air-conditioning appliances available on the Australian Government's energy ratings website to set the benchmark.[217] The range reflects the model specifications for small air conditioners, including some of the major air-conditioning brands (from 2 to 2.5kW cooling/heating capacity to 2 to 3 kW capacity).[ii]

[ii] In our Draft Report we looked at the small air-conditioners on the energy ratings website with a 2-2.5 kW cooling capacity and 2.-2.5kWh heating capacity, in an average climate with a 3-3.5-star heating rating and 5-star cooling rating.

Box 8.4 Calculation of benchmarked daily consumption of electricity

Benchmarked daily consumption of electricity =

$$\frac{2 \times average\ annual\ consumption\ of\ small\ air\ conditioners\ (kWh)}{365\ days}$$

$$= \frac{2\ x\ 450\ kWh}{365\ days}$$

$$= \sim 2.5\ kWh$$

Note: Based on small air conditioners with cooling 3-3.5-star ratings and heating 5-star ratings with a size of 2-3 kw in an average climate. The annual energy consumption for most air conditioners ranged roughly from around 400 to 500 kwh per year.

Source: Energy Rating Calculator, accessed 12 March 2024; IPART analysis.

8.4.2 Our consumption benchmark is based on typical consumption of a low air-conditioning user

Origin submitted that the consumption benchmark used in our Draft Report was too low, because:

- the ratings per the Commonwealth Government's Energy Ratings Calculator are applicable for new appliances and do not consider legacy assets and systems that become more inefficient over time
- apartment buildings and individual units can also vary widely with average air-conditioning usage depending on the size of the apartment, number of rooms with air con vents, number of windows, etc.

Origin submitted that at a benchmarked usage rate of 2 kWh per day, some buildings will not be economic for an embedded network seller to offer air-conditioning services. It noted that embedded network operators cannot control the efficiency of the system as the owner's corporation owns the air-conditioning systems.

Origin suggested there should be an exemption application process for buildings where the average usage amount is well above IPART's consumption benchmark.

Origin also suggested different fixed daily prices for apartment buildings depending on the number of bedrooms. This is Origin's current approach to pricing, and it considers it is well understood and accepted by its customers.[218]

We agree that depending on various factors (such as the type of air-conditioning system, its co-efficient of performance, capacity and ratings, level of system losses), the average daily usage can differ, and is likely to be higher than our updated benchmark consumption of 2.5 kWh per day. However, we consider that our fixed rate pricing methodology should not penalise consumers with low consumption. Therefore, our usage benchmark should reflect the typical usage for a low air-conditioning user, rather than an average user.

We consider that embedded networks sellers currently take a similar approach, as their prices are similar to the current chilled water fixed daily rate under our recommended methodology. We also note that at these sites, embedded network sellers may have access to lower wholesale costs due to solar panels and storage on the site which can reduce the costs of supplying these customers.

As explained in the previous section, our starting point is that customers should be billed in accordance with their metered consumption to send the right signals about the costs of their decision to use air-conditioning. However, we consider that it is reasonable to allow sellers to charge a fixed daily rate to avoid metering costs where it is economic to do so. In the case where an embedded network seller is bearing higher costs, they can install meters and charge customers according to their actual consumption.

As discussed in the Chapters 6 and 7, there are currently legal restrictions on charging tenants and land lease community residents (home owners and tenants) for unmetered energy at residential sites in NSW. We recommend that the NSW Government amend the *Residential Tenancies Act 2010*, and the *Residential (Land Lease) Communities Act 2013*, to allow tenants and land lease community residents living in embedded networks to be charged for unmetered electricity for centralised air-conditioning up to IPART's maximum fixed daily fee.

In addition, as discussed in Chapter 7, it is currently unclear whether residential tenants can be charged for the supply of chilled water (even if the water usage is individually metered). This is because metering of chilled water may not satisfy the requirements for separate metering of electricity or gas, such that charges can be imposed on tenants under the *Residential Tenancies Act 2010*.

Where chilled water usage for each individual dwelling is measured, we consider that it is important that the end-users pay for the usage of the service they consume (in accordance with IPART's pricing methodology) to ensure the efficient consumption of services. The NSW Government should ensure that residential tenancies legislation and other site-specific legislation that may apply to embedded networks (e.g. for residential land lease communities) facilitates this.

Final recommendations

21. Where an embedded network seller imposes a fixed daily rate for chilled water embedded networks, the maximum daily rate be determined by multiplying:
    - the consumption benchmark of 2.5 kWh per day for a typical low air-conditioning user, and
    - the benchmark electricity consumption charge.

22. That the NSW government amend the *Residential Tenancies Act 2010*, and the *Residential (Land Lease) Communities Act 2013*, to allow tenants and land lease community residents living in embedded networks to be charged up to IPART's maximum fixed daily fee for unmetered centralised air-conditioning services.

23. That the NSW Government amend the *Residential Tenancies Act 2010* to clarify that tenants must pay charges for the supply of chilled water to residential premises if the chilled water consumed is individually metered.

Chapter 9

Pricing methodology for business customers

Chapters 4 to 9 set out our final recommendations on the maximum pricing methodologies to apply to residential customers in embedded networks for different energy services. This chapter considers whether the same approaches should apply to business customers that are small customers. That is, business customers that consume less than 100 MWh per annum of electricity, or less than 1,000 MJ per annum of gas, at their business premises.

For ease of reference in this chapter, the term 'business customer' is used to refer to a business customer that either:

- is a 'small customer' as defined in the *National Energy Retail Law (NSW)* (NERL) or AER's Retail Exempt Selling Guideline (as applicable)
- receives hot or chilled water services and would be a small customer of an embedded network seller if the NERL or Exempt Selling Guideline applied.

9.1 Overview of our recommendations for business customers

Our final recommendations for business customers, which are summarised in Table 9.1, provide for a distinction to be drawn between the prices to be used in the calculation of maximum prices for business customers that are large corporate entities and those that are not:

- for large corporate entities we recommend that the maximum prices for:
  - electricity and chilled water services be based on the local area retailer's business customer standing offer (capped at the default market offer (DMO))
  - gas and hot water services be based on the local area retailer's business customer standing offer.
- for business customers that are **not** large corporate entities, we recommend that maximum prices for:
  - electricity and chilled water services be based on the median of the active retailers' lowest business customer electricity consumption and supply charges
  - gas and hot water services be based on the median of the active retailers' lowest business customer gas consumption and supply charges.

We have decided to draw this distinction because, in contrast to other business customers, large corporate entities tend to be well-informed, sophisticated customers with similar, if not greater, bargaining power than embedded network sellers. In the case of electricity, they also have the financial means to overcome the barriers to going on-market. They are therefore better placed than other business customers to negotiate with embedded network sellers and to bypass the embedded network seller if it attempts to engage in monopolistic pricing or to otherwise exercise its market power. We have therefore decided to apply reduce price protections to this subset of business customers.

As discussed in Chapter 10, we also recommend that embedded network sellers publish their prices. Apart from improving the negotiating position of business customers, greater price transparency could encourage authorised retailers to start competing with embedded network sellers. If this were to occur, and over time competition started to pose a more effective constraint on the prices payable by all business customers, then the NSW Government could consider removing, or otherwise winding back the application of, maximum prices to business customers.

Table 9.1 Final recommendations for business customer maximum prices

Business customer type	Electricity	Gas	Hot water	Chilled water
Large corporate entities	Business customer DMO	Local area retailer's business customer gas standing offer	Calculated using the methodology in Chapter 7 but with the gas price based on the local area retailer's business customer gas standing offer	Calculated using the methodology in Chapter 8 but with electricity price based on the business customer DMO
Business customers that are **not** large corporate entities	Median of the active retailers' lowest business customer electricity consumption and supply charges	Median of the active retailers' lowest business customer gas consumption and supply charges	Calculated using the methodology in Chapter 7 but with the gas price based on the median of the active retailers' lowest business customer gas charges	Calculated using the methodology in Chapter 8 but with the electricity price based on the median of the active retailers' lowest business customer electricity charges

9.2 We have considered whether there is a case for treating business customers and residential customers differently

In our Draft Report, we proposed using the same maximum price methodologies for both residential and business customers (noting that different maximum prices would apply because retailers offer different prices for business and residential customers).

The proposal to apply maximum prices to business customers was questioned by the Shopping Centre Council of Australia, who stated that no "genuine or substantiated problems, failures or harms have been identified in relation to non-residential [embedded networks]". Elaborating on this further, the Shopping Centre Council of Australia stated that:[219]

> "The shopping centre [embedded network (EN)] market is different to residential ENs in several distinct ways, and common residential EN issues are certainly not automatic issues in non-residential ENs; notwithstanding that our tenants (and EN customers) are in leasehold premises versus freehold premises, and that we are in a business to business environment."
>
> "The current approach under the AER framework (including with reference to the DMO) is the most appropriate price control metric due to its foundation in a transparent, bottom-up build of full economic costs at the retail level, and its relative price stability…"

> "One hundred percent (100%) of business customers from sampled ENs are on contracts that are below the DMO, and they are on average 3 times lower than the volume weighted average retail market outcomes shown in the ACCC data…."

While not commenting directly on the application of maximum prices to business customers, Energy Intelligence and Active Utilities also suggested that business customers in embedded networks may not face the same barriers to going on-market as residential customers.[220] Energy Intelligence, for instance, noted that unlike the difficulties residential customers can experience, business customers "can exercise their rights to choose their retailer."[221] It also noted that it had seen an increase in on-market retailers "offering SME tenants energy-only offers".[222] Active Utilities similarly stated that "Authorised Retailers currently service the small business (SME) market in Shopping Centre embedded networks without issue and without technical difficulties".[223]

Other stakeholders, including those that operate embedded networks in shopping centres, such as Real Utilities, did not raise any concerns with the proposed application of maximum prices to business customers.[224]

We have further considered whether the same maximum price methodologies should apply to both residential and business customers. In particular, we have considered whether business customers are able to access on-market offers, such that competition would be effective in protecting them from excessive prices.

As discussed in Chapter 4, prior reviews have found that competition in embedded networks may be impeded by the barriers that these customers can face going 'on-market'. However, these reviews have tended to focus on the experience of residential customers. We have therefore considered whether business customers (or a subset of them) are likely to face the same barriers to going on-market to access competitive energy offers as residential customers.

Of the four embedded network services being considered in this review, electricity is the only one where competition from on-market authorised retailers is currently supported by the regulatory framework. Consequently, the discussion in section 9.3 focuses on the ability of business customers to go on-market to access electricity offers.

While we understand that most business customers are only in embedded electricity networks, it is possible that some are also located in embedded gas, hot water and/or chilled water networks. For these embedded network services, we have considered whether business customers are likely to have sufficient bargaining power to negotiate with embedded network sellers. The results of this consideration are set out in sections 9.4 and 9.5.

To help inform the discussion that follows, Box 9.1 provides an overview of the types of business customers we are considering as part of this review.

Box 9.1 Business customers we are considering in this review

In keeping with the Terms of Reference for this review, we are considering the maximum prices that should apply to business customers that are small energy consumers serviced by an embedded network (e.g. business customers located in shopping centres, airports or residential complexes with commercial space). That is, business customers consuming less than 100 MWh per annum of electricity, or less than 1,000 MJ per annum of gas, at their business premises.

A business customer that is a small energy consumer in an embedded network can take a number of forms, ranging from sole trader all the way through to large corporate entity (see Box 9.2 for what we mean by this term).[jj]

For example, a business customer that is a small energy consumer at the business premises in an embedded network could be:

- a sole trader operating a café, convenience store, chemist, florist, hairdressing salon, dry cleaning store, alterations store or newsagency
- a partnership operating a medical or dental practice
- a government agency or enterprise operating a service centre (e.g. Service NSW, Services Australia or Australia Post outlet)
- a large corporate entity with a branch or store located in a shopping centre (e.g. an ANZ bank branch, a Medibank service centre, a Telstra store, a Flight Centre travel agency, a Cotton On store, to name a few).

As these examples highlight, what matters in this context is not the ownership structure or financial size of the business. Rather, it is how much energy the business consumes at the premises, which may be quite low for some entities that may ordinarily be thought of as a 'large business customer' based on their corporate structure or financial size.

[jj] It also includes government entities. For example, Service NSW and Services Australia, who have outlets in shopping centres.

9.3 Some business customers are likely to face lower barriers to going on-market

Under the current arrangements, an embedded network electricity customer can only go on-market if its metering installation complies with the National Energy Market requirements and if the meter is registered in the Australian Energy Market Operator's (AEMO) systems with a National Metering Identifier (NMI). If the customer has the appropriate metering in place then it can contact an on-market retailer (an authorised retailer) and seek an 'energy only' offer (a retail contract that excludes network charges).

While in principle it is possible for embedded electricity network customers to go on-market, in practice very few have done so. Data provided by AEMO, for instance, indicates that as of January 2024, there were just 512 business customers[kk] and 570 residential customers within embedded networks in NSW that were on competitive on-market offers. To put these numbers into context, 512 business customers equates to around 2% of business customers in embedded networks in NSW, while 570 residential customers equates to around 0.6% of residential customers in embedded networks, both of which are very low.[ll] In contrast to these relatively low numbers, around 66% of large energy consuming business customers (i.e. those consuming over 100 MWh per annum) in embedded networks appear to have gone on-market.[mm]

Of course, an embedded network customer may not actually have to switch to an authorised retailer for competition to pose a constraint. That is, if the barriers to switching are relatively low, then the threat of switching may be enough in some cases for competition to still pose a constraint on the behaviour of embedded network sellers. We have therefore examined the barriers that business customers can face going on-market.

[kk] The data provided by AEMO indicates that these customers were located across 135 embedded network sites, with 75 sites (over 55% of the sites) having just 1 business customer on an on-market offer. Of the remaining 60 embedded network sites, 32 have 2 business customers on on-market offer, 25 have 3-13 customers on an on-market offer and 1 has 71 business customers on an on-market offer. Most of the business customers that have gone on-market are located in Ausgrid's distribution network (~83%), with the remainder located in the Endeavour (16%) and Essential (1%) distribution networks.

[ll] The 2% has been calculated based on an assumption that there are around 25,000 embedded network business customers in NSW, while the 0.6% based on an assumption that there are around 100,000 embedded network residential customers in NSW.

[mm] The 66% has been calculated based on an assumption that there are around 1,315 large energy consuming business in embedded networks in NSW (representing around 5% of all business customers in embedded networks), with data provided by AEMO indicating that around 810 of these businesses have gone on-market.

9.3.1 What are the barriers to switching to an on-market offer?

While in principle embedded electricity network customers can go on-market, several reviews, including those undertaken by the Australian Energy Market Commission (AEMC), the NSW Parliamentary inquiry into embedded networks (NSW Inquiry) and the Australian Energy Regulator (AER), have found material practical barriers to accessing these offers. The AER, for instance, in its review of the embedded networks exemptions framework, observed that:[225]

> "Under rule changes made in 2015, embedded network customers were provided the right to access retail competition … However, in practice, there are significant challenges for most customers in achieving this.
>
> For example, an embedded network customer's child meter may not have an NMI and is therefore invisible in AEMO's settlement system (which is necessary for retailers to be able to make offers). If customers are unable to access energy offers, they cannot switch to a retailer of their choice if they consider they are paying too much or are dissatisfied with the service they are receiving. Further, there is little incentive for suppliers to offer low prices or quality services. Changing such metering arrangements is usually impractical and may be prohibitively expensive, a cost usually borne by the customer.
>
> Even if the metering arrangements allow for customers to access other retailers, many are unwilling to make 'energy only' offers (that is, retail contracts that exclude network charges) to consumers in embedded networks because it is not in their commercial interests to do so, or because their systems and processes cannot facilitate 'energy only' contracts.
>
> The lack of competition creates a risk that exempt sellers can charge higher prices than those available to on-market customers."

Similar observations were also made by the AEMC and the NSW Inquiry.[226] As these prior reviews have observed, embedded network customers can face a number of barriers to switching to on-market offers. These barriers include, but are not limited to, the following:

- the significant costs, time and other constraints that can be associated with having the required metering and associated infrastructure installed, which may pose a very high barrier for embedded network customers unless they have the financial means to overcome this barrier
- the costs and complexities associated with making energy-only offers, which may discourage, or otherwise act as a barrier to, authorised retailers making such offers to embedded network customers, unless it is in their commercial interest to do so.

Further detail on these barriers can be found in Box 6.1. While the barriers listed above may limit the ability of embedded network customers to go on-market, there are some business customers that are likely to be better placed to overcome these barriers. This includes business customers that, while consuming less than 100 MWh of electricity at their business premises, are:

- **Large corporate entities** (see Box 9.2 for what we mean by this term): These types of business customers tend to be well-informed, sophisticated customers with similar, if not greater, bargaining power than the embedded network seller. They also have the financial resources required to overcome the cost-related metering barriers outlined above and are likely to be considered a more attractive commercial prospect for authorised retailers, particularly if they are supplying the customer at other sites.
- **Relatively large electricity users** (e.g. because they consume close to 100 MWh at that premises, or their consumption across a number of premises exceeds 100 MWh): For these business customers, the benefits of going on-market are more likely to outweigh the costs, so they may be more willing than other business customers to incur the upfront meter installation costs, if they have the financial means to do so. They are also likely to represent a more attractive commercial prospect for authorised retailers than other business customers.

We understand that the metering and associated infrastructure barriers may also be lower at shopping centres and other sites where either:

- provision was made during development for the installation of the metering infrastructure required for customers to go on-market
- other customers have already gone on-market and had this infrastructure installed.

While a customer located at such a site that wanted to go on-market may still need to pay for a compliant meter to be installed, they would not have to pay for the associated infrastructure, which could help to reduce this barrier.

On the first of the points listed above, it is worth noting that the Shopping Centre Council of Australia has previously stated that in 2017 around 80% of its members' retail tenants were large corporate entities.[227] If that is still the case, then it may help to explain some of the observations made by the Shopping Centre Council of Australia, Energy Intelligence and Active Utilities in section 9.2.

It is, however, important to recognise that while a large number of shopping centre tenants may be large corporate entities (particularly in bigger shopping centres), there are still a material number of business customers in shopping centres and other embedded networks that may not have the financial means to overcome the barriers. This is likely to be a more material issue in those shopping centres and other sites where the metering related infrastructure required to go on-market has not already been installed.

The types of business customers that may be in this position include, amongst others, sole traders that operate cafes, fast food outlets, clothing and shoe stores, fresh food and grocery stores, florists, hairdressers, beauty and wellness therapists, dry cleaners, electronic stores and newsagencies. The AEMC made a similar observation in its 2017 embedded networks review, noting that:[228]

> "While the large corporate entities in shopping centres may currently be able to overcome barriers to accessing competition, including metering issues … this may not be the case for small businesses or sole traders that are tenants in the same embedded network."

If there is no clear means to overcome the identified barriers, then those business customers that are not large corporate entities, larger energy users, or located in sites where the metering infrastructure has already been installed, are likely to be in a similar position to residential customers. That is, they will be susceptible to monopolistic pricing and other potential exercises of market power by embedded network sellers, because the embedded network seller does not face effective competition.

Further support for this view can be found in the following section, which provides an overview of some of the more recent observations that have been made about the challenges business customers can face in electricity embedded networks and more generally.

Box 9.2 What do we mean by the term 'large corporate entity'

The term 'large corporate entity' is used in the AER's Electricity Network Service Provider Registration Exemption Guideline (Network Exemption Guideline) to distinguish between those business customers that are likely to be well informed, sophisticated customers with similar bargaining power to the embedded network service provider and those that are not.

In those cases where a business customer is a large corporate entity, the restrictions on internal network charges set out in the AER's Network Exemption Guideline that apply to other business customers do not apply. In drawing this distinction, the AER noted that:

> "The principle which applies here is that commercial arrangements between parties with similar bargaining power should not be regulated."

The AER's definition of 'large corporate entity', which we have also adopted, is:

- a 'large proprietary company' as defined under s. 45A(3) of the *Corporations Act 2001* (Cth) (Corporations Act)
- if not a reporting entity under the Corporations Act, a public company as defined in s. 9 of this Act
- an unlisted company, trust, or other legal entity which otherwise fulfils any two of the financial and/or staffing criteria in s. 45A(3) of the Corporations Act.

Box 9.2 What do we mean by the term 'large corporate entity'

Broadly, a large corporate entity is either:

- a public company[a] (not a proprietary company)
- a proprietary company (including the entities it controls), an unlisted company, trust or other legal entity that meets 2 of the following criteria for a financial year:
  - consolidated revenue is $25 m or more
  - value of consolidated gross assets at the end of the financial year is $12.5 m or more
  - 50 or more employees at the end of the financial year.

A public company can raise money from the public. Proprietary companies are privately owned.

Source: AER, Electricity Network Service Provider – Registration Exemption Guideline, V. 6, March 2018, pp. 7 and 62; *Corporations Act 2001* (Cth).

9.3.2 Are there any other indicators that business customers in electricity embedded networks require additional price protections?

While most of the recent reviews of embedded networks have focused on the experience of residential customers, the submissions made by a number of independent parties to the recent embedded network reviews, provide some useful insights in the business customer experience.

The Energy and Water Ombudsman NSW (EWON), for example, in its submission to the NSW Inquiry, noted that:[229]

> "Many small businesses in an embedded network lease shops from a shopping centre where the landlord is also the energy provider. This adds additional complexity to disputes and may further weaken consumer protections as a customer may be fearful of repercussions of their lease agreement, should they dispute or have difficulty paying their energy bills."

The Ethnic Communities' Council of NSW made a similar point at a hearing conducted as part of the NSW Inquiry, noting the potential for culturally and linguistically diverse (CALD) businesses in embedded networks to be "exploited", because energy charges are often bundled into rent.[230] The NSW Inquiry also noted that CALD business may represent more than 40% of small businesses in NSW.[231]

The City of Melbourne made similar observations about the vulnerability of many business customers and the difficulties they can face in embedded networks in its submission to the Victorian review of embedded networks:[232]

> "Many of the commercial tenants within embedded networks are small energy users and do not typically possess a detailed understanding of the energy market. As such many are vulnerable to the same price gouging and inflating margins occurring within the residential market."

Further insight into the vulnerabilities and challenges business customers can face in embedded networks can be found in the complaints that have been lodged with EWON (see Box 9.3).

Other indicators suggest that business customers in general (i.e. in embedded and non-embedded networks) tend to be less engaged in the electricity market than residential customers. For instance, data recently published by the AER shows that the number of business customers in non-embedded networks in NSW that are on standing offers is more than double that of residential customers (18.2% for business customers, 8.6% for residential customers).[233]

In its 2018 Retail Electricity Pricing Inquiry, the Australian Competition and Consumer Commission (ACCC) attributed the higher rates of business customers on standing offers to business customers typically being time-poor sole traders, with no staff to dedicate to energy procurement. They also noted that business customers' engagement with retailers (e.g. searching for offers or dealing with day-to-day issues like billing) was likely to be just as difficult as their residential counterparts.[234]

These observations prompted the ACCC to recommend the implementation of similar measures to help business and residential customers find better deals, including implementing a DMO specific to business customers.

Box 9.3 Complaints lodged with EWON

EWON can receive complaints from business customers who are:

- customers of authorised retailers
- customers of those exempt network operators and exempt sellers that are members of EWON.

Under the AER's:

- Network Exemption Guideline, exempt network operators only have to be a member of EWON if they supply metered or unmetered energy to (a) residential customers at a site that they own, occupy or operate; (b) residential customers in retirement villages; or (c) in residential land lease communities to residents who principally reside there.
- Retail Exempt Selling Guideline, exempt sellers only have to be a member of the energy ombudsman scheme if they sell metered energy to: (a) residential customers at a site they own, occupy or operate; (b) residential customers in retirement villages; or (c) in residential land lease communities to residents who principally reside there.

Box 9.3 Complaints lodged with EWON

EWON does not therefore have full visibility of the challenges that business customers may be facing in embedded networks. That said, the sample of complaints that EWON has provided us, which it has received from business customers in embedded networks over the last two years, do provide some useful insights into these challenges.

The sample, for example, includes a number of complaints by business customers that are not large corporate entities about:

- higher than expected energy bills
- increasing energy rates without notice and, in some cases, the retrospective application of higher rates
- the impacts on customers of site owners deciding to change the site to an embedded network
- the receipt of bills from both an authorised retailer and embedded network seller for external network charges.

These complaints are similar in nature to those raised by residential customers in embedded networks, which suggests that they are not in a materially different position to residential customers.

9.4 A different approach to price regulation is warranted for large corporate entities

As the preceding discussion highlights, large corporate entities are likely to be in a better position than residential and other business customers to negotiate with embedded network sellers on the price and other terms and conditions of supply for embedded network electricity, gas, hot and chilled water services. This is because large corporate entities tend to be well-informed, sophisticated customers with similar, if not greater, bargaining power than embedded network sellers.

Large corporate entities are also more likely to have the financial means to overcome the barriers to going on-market for electricity, so are able to bypass embedded network sellers if they engage in monopolistic pricing, or otherwise try to exercise their market power.

These characteristics clearly set large corporate entities apart from other embedded network customers, as the AER has recognised in its Network Exemption Guideline (see Box 9.2). They also mean that reduced price protections can be applied to this subset of business customers, which have previously been estimated to account for around 80% of tenants in shopping centres.[235]

Under this alternative approach, the maximum prices for large corporate entities would be based on the following:

- electricity would be based on the business customer DMO
- gas would be based on the local area retailer's business customer gas standing offer
- hot water services would be calculated using the same methodology as that set out in Chapter 7 but using the local area retailer's business customer gas standing offer
- chilled water services would be calculated using the same methodology as that set out in Chapter 8 but using the business customer DMO.

In the case of gas and electricity, this approach is consistent with the price cap currently applicable to exempt sellers under the AER's Retail Exempt Selling Guideline.[nn, 236] However, while the AER's Retail Exempt Selling Guideline only applies to exempt sellers, our recommendations provide for the maximum prices to apply to large corporate entities supplied by both exempt sellers and authorised retailers supplying embedded networks.

While we have considered whether a similar approach could also apply to relatively large energy users that are not large corporate entities, or sites where the metering infrastructure required to go on market has already been installed, the case for doing so is not as strong. The reasons for this can be summarised as follows:

- **Relatively large energy users:** While this subset of business customers may have a greater incentive to go on-market for electricity given their higher energy consumption, they may not have the financial means to do so. They are also unlikely to have the same level of bargaining power as large corporate entities. When coupled with the fact that it could be difficult for embedded network sellers to objectively identify whether a business customer is a relatively large energy user, we have decided to limit the application of the reduced price protections to large corporate entities.
- **Sites where the metering infrastructure required to go on-market is already installed:** While the cost related barriers to going on-market at these sites are likely to be lower, customers will still have to pay some upfront costs (including for the compliant meter). There are also likely to be limits on how many meters can be installed using the existing equipment and once that limit has been reached, the barriers will increase again. As the analysis in section 9.3.2 highlights, there are also likely to be a range of sole trader and other business customers at these types of sites that are quite vulnerable and require additional price and consumer protections.

[nn] Condition 7 of the AER's Retail Exempt Selling Guideline prohibits an exempt seller from charging tariffs higher than the standing offer price of the relevant local area retailer for new connections if the retailer were to supply the exempt customer. The *Competition and Consumer (Industry Code – Electricity Retail) Regulations 2019* (Cth) caps the standing offer prices that retailers can charge at the 'reference price' (the DMO) determined by the AER for the relevant customer type and region.

Final recommendation

24. That business customers that are large corporate entities be subject to reduced price protections, with the maximum prices based on:
    a. for electricity and chilled water services,[oo] the business customer Default Market Offer
    b. for gas and hot water services,[pp] the local area retailer's business customer standing offer.

9.5 Business customers that are not large corporate entities should be treated in the same way as residential customers

While there is a clear case for applying reduce price protections to large corporate entities, the same cannot be said for other business customers in embedded networks.

This is because, in contrast to large corporate entities, these business customers do not have the same level of bargaining power that they can rely on when negotiating the price and other terms and conditions of supply for embedded network electricity, gas, hot and chilled water services. As EWON and the Ethnic Communities Council of NSW have observed, they are also likely to face a range of other challenges when trying to negotiate energy charges, particularly in those cases where the landlord is also the embedded network seller (see section 9.3.2).[237]

In addition to lacking bargaining power, business customers that are not large corporate entities are likely to face more challenges trying to go on-market for electricity. When coupled with the observations set out in section 9.3.2 regarding the vulnerabilities and challenges that many of these business customers can face, they are likely to be as susceptible as residential customers to monopolistic pricing and other exercises of market power by embedded network sellers.

We therefore recommend that the maximum prices for electricity, gas, hot water and chilled water embedded network services apply equally residential and business customers that are **not** large corporate entities. Specifically, we recommend that:

- the maximum price for electricity be based on the median of the active retailers' lowest business customer electricity consumption and supply charges
- the maximum price for gas be based on the median of the active retailers' lowest business customer gas consumption and supply charges
- the maximum price for hot water be calculated using the same methodology as that set out in Chapter 7 but using the median of the active retailers' lowest business customer gas consumption charges

[oo] In the case of chilled water services, the maximum price would be calculated using the same methodology set out in Chapter 8.
[pp] In the case of hot water services, the maximum price would be calculated using the same methodology set out in Chapter 7.

- the maximum price for chilled water be calculated using the same methodology as that set out in Chapter 8[qq] but using the median of the active retailers' lowest business customer electricity consumption.

Final recommendation

25. That business customers that are not large corporate entities be subject to the same price protections as residential customers, but with the maximum prices based on:
    a. for electricity and chilled water services,[rr] the median of the active retailers' lowest business customer electricity consumption and supply charges
    b. for gas and hot water services,[ss] the median of the active retailers' lowest business customer gas consumption and supply charges.

9.6 Greater price transparency could lead to changes in the pricing methodology over time

As outlined in more detail in chapter 10, our final recommendations also require embedded network sellers to publish the prices being offered.

Apart from improving the negotiating position of business customers, greater price transparency could encourage authorised retailers to compete to supply customers at these sites. If, for example, authorised retailers could see that the prices being offered in embedded networks were high, then it could encourage them to develop energy-only offers and to find other ways to help business customers overcome the other barriers identified above.

If this were to occur, and competition started to pose a more effective constraint on the prices payable by all business customers (at least for electricity), then the NSW Government could consider removing, or otherwise winding back the application of, the maximum prices to these business customers. The publication of prices would also help in this regard, by enabling us to monitor what is happening with prices over time. It will also enable us to monitor compliance with the maximum prices more effectively.

Finally, we have found that business customers of exempt sellers in shopping centres and other sites that the exempt sellers own, occupy or operate, do not have access to EWON (unlike for on-market business customers). This is because embedded network operators and exempt sellers at these sites are not subject to the requirement in the AER's Network Exemption Guideline and the Retail Exempt Selling Guideline to be a member of an energy ombudsman scheme.

[qq] The maximum pricing methodology for chilled water services allows the embedded network seller to charge on the basis of either metered consumption, or a fixed daily rate based on a benchmark consumption level. If an embedded network seller is using a fixed daily charge approach and it finds the benchmark consumption level too low for the business customer, then it could install a meter so that it can charge on the basis of actual consumption. Alternatively, where permitted by legislation, it could seek to recover the differential through rental charges.

[rr] In the case of chilled water services, the maximum price would be calculated using the same methodology set out in Chapter 8.

[ss] In the case of hot water services, the maximum price would be calculated using the same methodology set out in Chapter 7.

In our view, this is a gap in the consumer protections available to smaller business customers in embedded networks that the NSW Government should consider addressing.

Final recommendation

26. The NSW Government impose a statutory obligation on embedded network operators and exempt sellers supplying or selling energy to business customers to become members of the Energy and Water Ombudsman NSW (EWON).

Chapter 10

Compliance and enforcement framework

10

For our recommended price protections to be effective, embedded network sellers of electricity, gas and hot and chilled water need to comply with the maximum prices set by the regulator. To protect consumers, enforcement mechanisms are also required to ensure responsible parties meet their obligations.

The Terms of Reference require us to make recommendations on the compliance and enforcement framework for any new price protections.

In line with the Terms of Reference, this chapter considers:

- issues with capturing which entity should be required to comply with the maximum price for each embedded network
- how the regulator should monitor compliance with the maximum price requirements
- whether embedded network sellers should be required to publish prices
- which regulator is best placed to enforce the maximum prices for energy sold in embedded networks in NSW.

10.1 Overview of our recommendations

We propose that any entity that sells electricity, gas, hot or chilled water to embedded network customers (embedded network sellers) be prevented from charging small customers prices that exceed the maximum price determined by the price regulator.

In addition, we recommend that the statutory framework include the following:

- a requirement for all embedded network sellers to publish on their websites:
  - the prices for the services they provide. In cases where the embedded network seller does not have a website, the prices would be published on the regulator's website
  - the addresses of all the sites where they provide embedded network services, and the services they provide at each site.
- the authority for the regulator to:
  - require information from embedded network sellers to determine whether they comply with the pricing determination
  - direct embedded network sellers to remedy non-compliance and/or impose monetary penalties.

Under our recommendations, the Energy and Water Ombudsman NSW (EWON) would be authorised to report any suspected breaches of maximum prices to the regulator for further investigation. As the pricing regulator in NSW, we consider IPART would be an appropriate pricing and compliance regulator of embedded network sellers. IPART also has certain compliance functions within the energy and water sectors.

10.2 Monitoring compliance with the maximum price requirements

The 2022 NSW Parliamentary Inquiry into embedded networks (the NSW Inquiry) found that under the current framework, it is difficult for the Australian Energy Regulator (AER) to monitor and enforce compliance of electricity and gas embedded network operators with customer protections. This is because the embedded network operators are not required to undertake compliance reporting or self-report breaches of their obligations.[238]

We consider that to enforce compliance with maximum prices that would apply in NSW, there needs to be mechanisms for identifying any discrepancies between the maximum prices and actual charges.

Options suggested by stakeholders in response to our consultation papers and Draft Report include:

- a proactive approach such as a licencing framework or a requirement for all embedded network sellers to register and report prices
- a complaints-reliant approach which relies on customers to raise complaints about non-compliance with the maximum price charged by the embedded network seller
- a system of regular audits being undertaken by the regulator.

Energy Consumers Australia and the Public Interest Advocacy Centre (PIAC) submitted that enforcement of the maximum price should be proactive, rather than waiting for complaints to alert regulators where there is an issue.[239] Our view is that a requirement for the regulator to proactively monitor all prices is disproportionately burdensome.

We consider it is preferable to monitor compliance through customer complaints supported by a risk-based monitoring of prices by the regulator. Breaches of the maximum prices can be investigated by a regulator that has the authority to obtain infaormation from embedded network sellers and take action for non-compliance.

10.2.1 A new licencing framework or registration of all embedded network sellers would largely duplicate the existing systems

In response to our consultation papers, Energy Locals submitted that all embedded network suppliers of electricity or gas should be required to hold a retail licence which would allow enforcement to occur via the retail licence.[240] Origin also supported a licencing requirement for all embedded network suppliers in its response to our Draft Report.[241]

Our view is that a licencing framework is not appropriate for the enforcement of price protections only. A licencing framework might be more appropriate if our review was addressing embedded network issues more holistically and considering issues beyond just price protections.

Embedded network sellers that sell electricity or gas in NSW are already subject to the national regulatory framework that applies to authorised retailers and exempt sellers. Introducing a NSW licensing regime may introduce duplication or inconsistency with the national regime.[tt]

For electricity and gas embedded networks, embedded network sellers can either be exempt sellers or authorised retailers.[242] The AER's current registration of these types is as follows:[243]

- Exempt sellers: There are three types of exemptions: deemed, registrable and individual. Registrable and individual exemptions require application and registration with the AER and, through this process, the AER collects information on which embedded network site each exemption applies to. However, deemed exemptions apply automatically to certain types of energy sellers (e.g. caravan parks) which means there is no record of the exempt sellers or sites they sell to.
- Authorised retailers: Some embedded network operators contract authorised retailers to on-sell electricity or gas to customers. However, the AER's public register of authorised retailers does not record which sites they are responsible for.[244]

The AER's registration framework does not apply to hot and chilled water embedded networks, because it does not regulate the sale of hot water nor the chilling of water for air-conditioning services.[245]

However, exempt sellers and retailers are also required to be members of EWON.[uu] [246] Like the AER's registrations, EWON membership does not capture hot and chilled water embedded network sellers, because sellers of hot and chilled water are not required to be members of EWON. However, currently there may only be very few (if any) embedded networks that only provide hot and chilled water embedded networks, without also providing gas and electricity embedded networks which means that the EWON members should capture almost all sellers.[247] We agree with the recommendation made by the NSW Inquiry to ensure that all hot and chilled water embedded network operators be required to become members of EWON (Box 10.1).

[tt] The Victorian embedded networks review recommended introducing a licencing framework for embedded networks. However the National Energy Retail Law does not apply there, and so the AER's registration requirements do not apply. Victoria State Government, Embedded Networks Review Expert Panel, Embedded Networks Review Final Recommendations, January 2022, p 29.

[uu] Although sellers have only been required to be EWON members since 2018 and the membership process is continuing, The NSW Inquiry noted that many exempt entities are not complying with the requirement to become EWON members. Some have delayed their application indefinitely or have simply refused to join. However, we consider EWON's membership will capture most sellers in NSW. NSW Government, Committee on Law and Safety, Embedded Networks in New South Wales, November 2022, p 5

Box 10.1 Some embedded network customers do not have access to EWON

The NSW Inquiry found that some consumers in embedded networks have limited access to EWON due to regulatory gaps related to the National Energy Customer Framework (NECF).

Currently, there is no requirement for hot or chilled water embedded networks to be members of EWON and some exempt sellers of electricity and gas have not complied with the requirement to become EWON members.[248] EWON has no authority to enforce its decisions relating to non-members.[249] Additionally, EWON told the NSW Inquiry it cannot make binding decisions regarding small businesses as these are not included in the dispute resolution requirements in the AER's Retail Exempt Selling Guidelines.[250]

The Inquiry recommended that the NSW Government:

- Ensure consumers in hot water embedded networks have the same access to EWON (which would require sellers of hot and chilled water to become members of EWON)[251]
- Increase the enforcement of the requirement for authorised retailers and exempt sellers of electricity and gas to become EWON members.[252]

While the information that is currently available[vv] is not sufficient to identify all embedded network sellers, we consider it would allow most embedded network sellers to be identified. Further, the AER's systems of registration is currently under review, and depending on the outcome of that review, may capture more embedded networks in the future. For instance, one of the options the AER consulted on in its Issues Paper is a requirement for all current and future embedded network service providers to be registered on its public register of exemptions.[253]

Therefore, we consider that an additional registration framework would impose significant duplication for embedded network sellers that are registered with the AER and/or are members of EWON.

Our recommendation is therefore to not recommend a compliance and enforcement framework that requires embedded network sellers to obtain a licence or register with the regulator. As discussed below, we propose a complaints-based system supported by a risk-based monitoring of prices by the regulator.

[vv] Currently, we would be able to identify embedded network sellers through the AER's registration lists and EWON's membership list.

10.2.2 The regulator would investigate potential non-compliance

Authorised retailers in NSW are required to be members of EWON and must inform customers of their right to refer unresolved complaints to EWON.[254] Since 2018, exempt sellers have also been required to be members of EWON.[255] EWON receives complaints from and provides free and independent dispute resolution services for its members' customers.[256] However, as discussed in Box 10.1, we found that some embedded network customers do not have access to EWON.

We recommend the NSW Government enact legislation to:

- require embedded network sellers of hot and chilled water to be members of EWON
- authorise EWON to refer potential embedded network pricing breaches and supporting information to the regulator
- empower the regulator to:
  - monitor and investigate compliance with pricing determinations of any embedded network seller, and
  - obtain information (including documents and other evidence) from embedded network sellers for those purposes.

Energy Metrics Consulting supported a complaints-based system for compliance monitoring, submitting that it is the only feasible system to avoid undue regulatory costs.[257] Several consumer groups including PIAC and Combined Pensioners and Superannuants Association of NSW (CPSA) considered a complaints-based system is not sufficient.[258] They expressed concern that a complaints-based system would disadvantage embedded network customers who:

- do not know where/how to make a complaint or face barriers such as social isolation, digital exclusion or language barriers
- may have an asymmetrical relationship with their embedded network operator and could fear potential consequences from the embedded network operator or believe there is nothing to be gained
- are in smaller embedded networks where there are less residents and therefore it is less likely that a complaint will be made.

CPSA suggested that alongside the complaints-based system, the regulator should conduct compliance spot-checks to benefit customers who may not be able to make complaints.[259]

We recommend the regulator would be able to exercise its powers to monitor, investigate and obtain information to assess compliance with a pricing determination of its own initiative. The regulator could use these powers to check the compliance of any embedded network site and commence an investigation where it considers there may be a breach (e.g. based on information that it obtains from its monitoring activities). It should be an offence for an entity to refuse or fail to comply with a requirement to provide information, subject to penalties for non-compliance.[ww]

[ww] For example, under the *Independent Pricing and Regulatory Tribunal Act 1992 (IPART Act)*, in connection with its pricing determination monitoring and compliance functions, IPART may issue notices to an officer of a government agency requiring that person to produce information or documents or give evidence. Failure to comply with such a notice without reasonable excuse is an offence subject to a maximum penalty of $11,000 or 6 months imprisonment or both (IPART Act, ss 24AB and 24AC).

For the proposed compliance and enforcement system to be effective, all embedded network customers will need to be aware that EWON is the dispute resolution body. Many stakeholders, including EWON, ENM Solutions and Real Utilities supported the recommendation for embedded network sellers of hot and chilled water to become members of EWON in their submissions to our Draft Report.[260]

We note that under the National Energy Retail Law, authorised retailers and exempt sellers have the following obligations for electricity and gas customers:

- authorised retailers are required to provide EWON contact details on their website[261]
- exempt sellers are required to advise customers of their right to access EWON at the commencement of their tenancy or residency.[262]

We propose that these obligations be extended to all services provided by embedded network sellers, including hot and chilled water. Over time, we would expect all embedded network sellers to become members of EWON and for their customers to be made aware through these obligations that they can contact EWON if they have complaints.

These recommendations would allow the regulator to review the compliance of embedded network sellers in respect of any customer complaints received. For example, where EWON reports a potential breach of an embedded network pricing determination to the regulator, the regulator could require the embedded network seller to provide more information about the complaint that has been referred by EWON, and any other customer bills for the pricing determination period in question. Non-compliance with a notice to produce information issued by the regulator should be an offence.

The regulator would also be able to publish on its website a register of embedded network sellers that have been found to be in breach of maximum prices and the enforcement action (if any) taken.

EWON regularly undertakes compliance reporting to the AER, where it identifies potential breaches of the National Energy Retail Law for further investigation.[263] Similarly, we consider that complaints about embedded networks would be a key surveillance mechanism for identifying non-compliances with any maximum prices.

As most embedded network sellers are now members of EWON, we consider the proposed complaints-based system would address the majority of cases of non-compliance with the maximum prices.

Final recommendations

27. That the NSW Government enact legislation to provide for a statutory compliance and enforcement framework (statutory framework).

28. That the NSW Government enact legislation to require all embedded network sellers of hot and chilled water in NSW to become members of the Energy and Water Ombudsman NSW (EWON).

29. That the compliance and enforcement framework authorise the Energy and Water Ombudsman NSW (EWON) to:
    a. refer to the regulator any complaints that EWON reasonably suspects indicate an embedded network seller may have breached an embedded network pricing determination
    b. provide to the regulator any supporting information or documentation regarding customer complaints it receives related to embedded network sellers not complying with the maximum price.

30. That the compliance and enforcement framework:
    a. authorise the regulator to monitor compliance with a price determination (not related to complaints)
    b. authorise the regulator to investigate whether an embedded network seller has complied with an embedded network pricing determination
    c. authorise the regulator, to require an embedded network seller to provide information, documents or evidence (by notice in writing) for the purposes of:
        - monitoring compliance with a price determination or
        - an investigation
    d. provide that it is an offence, subject to a monetary penalty for non-compliance, to refuse or fail to comply with a notice requiring the provision of information, documents or evidence.

10.3 Requirement for embedded networks to publish prices

We recommend that embedded network sellers be required to publish their current prices on their websites. This recommendation is consistent with the recommendation made by the Victorian embedded networks review that recommended that energy providers in embedded networks should not only provide the same sort of rates/tariff information on their bills as on-market retailers, but also publish this information on their websites. The review considered this would enable customers to readily compare the price they pay with offers of on-market retailers.[264]

Although in practice it is difficult for embedded network customers to choose a different provider, we consider there are benefits to requiring embedded network sellers to publish their prices on their websites. These include:

- enabling prospective customers to check prices before they become part of an embedded network and compare prices with what they currently pay and with available market offers
- visibility of what comparable embedded networks are being charged may facilitate competition at the building/owners corporation level when they renegotiate contracts or seek to change providers.

Several stakeholders supported the requirement for sellers to publish prices on their websites. EWON submitted that this is a practical solution which will increase the awareness of consumers and make new disclosure requirements impactful.[265] Origin considered this will provide the regulator with a clear reference to assess the compliance of proposed prices and whether customers are actually being charged the published prices.[266]

Some stakeholders, including Altogether Group, Network Energy Services and Energy Intelligence did not support the recommendation to publish prices, arguing that publishing prices on embedded network sellers' website would lead to confusion for customers.[267] Altogether Group considered this would be the case especially for customers who already recognise Energy Made Easy as the website where prices are published.[268]

We disagree that publishing prices for embedded networks on sellers' website would cause confusion for customers. These prices would be specific for each embedded network and would not cause confusion with the Energy Made Easy website given that only prices for market offers are published there.

Austin Tourist Park and the Caravan & Camping Industry Association NSW (CCIA) noted there are cases where the embedded network seller does not have a website, or the website does not provide information for long-term residents.[269] In these instances, we consider it is appropriate for the prices to be submitted to the regulator and published on its website.

Along with prices, we also recommend that embedded network sellers be required to publish on their websites the addresses of all the sites where they provide embedded network services, and the services they provide at each site. This will allow the regulator to investigate compliance at smaller embedded network sites where complaints are less likely to be made.

Final recommendations

31. That the statutory framework require embedded network sellers to publish on their websites:
    - their current prices
    - the addresses of all the sites where they provide embedded network services, and the services they provide at each site.

32. That embedded network sellers that do not have a website be required to submit their prices and addresses of all the sites they provide embedded network services to the regulator; for publication on the regulator's website.

10.4 Disclosure of other information

In addition to publishing prices on their websites, we consider embedded network sellers should also be required to provide other information. For example, prior to entering an agreement with an owners corporation, embedded network sellers should be required to provide a plain English document that explains:

- How the embedded network seller will operate the embedded network to the benefit of homeowners, future homeowners, and residents.
- What assets form the embedded network (for example, including the meters, the hot water system, air-conditioning systems system, and solar power units), and which party owns the assets. If these assets will continue to be owned by the seller, they should explain how they will be depreciated over the term of the agreement.
- The consequences if an agreement is not entered into (for example, in relation to the ownership of the assets) at the first owners corporation Annual General Meeting and for subsequent contract renewals.

These types of information requirements would help owners corporation committees understand what they are signing up for when they first enter into an embedded network agreement. We recommend that the NSW Government investigate this as part of its review of disclosure and consumer awareness objective under the Embedded Network Action Plan.

Final recommendation

33. That the NSW Government consider the information that owners corporations require before entering agreements with embedded network sellers.

10.5 Enforcement mechanisms

Effective enforcement mechanisms would enable the regulator to compel compliance and deter non-compliance. We recommend that the following enforcement options are made available to the regulator if embedded network sellers are found to contravene an embedded network pricing determination:

- directing an embedded network seller to take specified action within a specified timeframe to remedy non-compliance (such as, reducing prices and/or providing information to customers)
- imposing monetary penalties (proportionate to the level of non-compliance) on:
  - the embedded network seller and/or
  - a person who is the director of or involved in the management of an embedded network seller.

The regulator should have discretion to use either or both options, depending on the level of non-compliance. For example, failure to comply with a direction to remedy a contravention could result in monetary penalties being imposed. Imposing monetary penalties should be considered for more serious instances of non-compliance.

Before issuing a direction or imposing a monetary penalty for non-compliance, the regulator should:

- consider the action the embedded network seller has taken or is likely to take in respect of the non-compliance, and be satisfied it is nevertheless appropriate to issue a direction/impose a penalty
- consider whether the contravention has been or is likely to be the subject of any other penalty or action or any claim for compensation, and it is nevertheless appropriate to issue a direction/impose a penalty.

Failure to comply with a direction issued by the regulator should be an offence, subject to monetary penalties. In addition, the regulator would also publicise fines imposed for failure to comply with a direction on its website and through a media release.

Stakeholders, including Altogether Group supported monetary penalties being imposed for serious instances of non-compliance.[270] Other stakeholders further commented on the severity of the monetary penalties:

- PIAC submitted the monetary penalties should be high enough to act as a deterrent for non-compliance, and not just be a cost of doing business[271]
- Origin suggested we should be explicit on exactly what the monetary penalty should be for specific breaches.[272]

We agree with PIAC's view that monetary penalties should be high enough to deter non-compliance. We consider the NSW Government will need to determine the exact monetary penalties to be applied.

In addition to applying these enforcement mechanisms, the regulator would also report publicly on non-compliance and the enforcement actions taken.

Final recommendations

34. That the statutory framework empower the regulator to take one or more of the following enforcement actions where it is satisfied an embedded network seller has not complied with an embedded network pricing determination:
    a. directing an embedded network seller to take specified action within a specified timeframe to remedy the non-compliance
    b. impose a monetary penalty on the embedded network seller and/or a person who is the director of or involved in the management of an embedded network seller.

35. That the statutory framework require the regulator, before issuing a direction or imposing a monetary penalty to:
    a. consider the action the embedded network seller has taken or is likely to take in respect of the non-compliance and be satisfied it is nevertheless appropriate to issue the direction/impose the penalty
    b. consider whether the non-compliance has been or is likely to be the subject of any other penalty or action or any claim for compensation, and be satisfied it is nevertheless appropriate to issue the direction/impose the penalty.

36. That the statutory framework provide that failure by an embedded network seller to comply with a compliance direction of the regulator is an offence and is subject to a monetary penalty.

10.6 IPART as the regulator

We recommend that IPART should be the regulator responsible for compliance and enforcement of the maximum price because:

- unlike the AER, which does not regulate the sale of hot and chilled water, IPART would be able to regulate all energy services sold through embedded networks
- our recommended maximum prices are NSW specific
- IPART has the relevant expertise and experience in monitoring compliance for energy networks and determining prices in other sectors. IPART also currently performs the energy market monitoring function which will have synergies with establishing the price cap for electricity.

Many stakeholders submitted the AER should be regulator to achieve consistency with the national energy framework, including Energy Australia and ENM Solutions.[273] While we agree that consistency with the national framework is important, the AER does not regulate the sale of hot and chilled water services. This means a different regulator would be required just for these services in NSW. In our view, IPART is a more suitable regulator compared to the AER for NSW embedded networks as IPART would be able to regulate and enforce maximum prices for electricity, gas and hot and chilled water.

Other stakeholders submitted that EWON should be responsible for enforcing the maximum prices since both exempt sellers and authorised retailers are required to be members of EWON.[274] We do not consider that a general compliance role is appropriate for EWON because it is not well aligned with its current function. EWON only has the power to make binding decisions to resolve specific customer complaints. It cannot apply enforcement measures more broadly. As noted in the sections above, it currently reports to the AER, who can take compliance and enforcement activity.

Final recommendation

37. That IPART be the regulator that determines and enforces compliance with the maximum prices for the sale of electricity, gas, hot and chilled water to customers in embedded networks in NSW.

Chapter 11

Future of hot and chilled water embedded networks

Should new hot and chilled water embedded networks be prohibited in NSW?

11

The 2022 NSW Parliamentary Inquiry into Embedded Networks (the Inquiry) found that consumers within hot and chilled water embedded networks have fewer protections than other consumers.[275] This is because these embedded networks fall outside the current definitions for 'energy' under the National Energy Retail Law. Consumers are therefore unable to access the consumer or price protections provided by the National Energy Consumer Framework (NECF).[276]

The Inquiry also heard instances of customers in hot water embedded networks receiving high and incorrect bills, with the bills often based on water usage, not the energy to heat it.[277]

To address these issues, the Inquiry recommended that the NSW Government immediately ban the separate charging of hot and chilled water services in embedded networks and implement "fulsome price protection measures to prevent the unreasonable and unfair pricing of these essential services".[278]In response to this recommendation, the NSW Government asked IPART to investigate and consider whether new hot and chilled water embedded networks should be prohibited in NSW.[279]

This chapter sets out our final recommendations on these issues, which have been developed having regard to the benefits hot and chilled water embedded networks can offer customers and how the concerns that have been identified with these networks could be addressed.

11.1 Overview of our recommendations

Rather than prohibiting hot and chilled water embedded networks in NSW, we recommend that the price and consumer protection related concerns that have been identified with these embedded networks, be addressed by:

- implementing the maximum prices for hot water and chilled water services, including setting prices in the underlying energy unit (see Chapters 7-8)
- requiring embedded network sellers of hot and chilled water in NSW to become members of EWON (see Chapter 10)
- proceeding with the other consumer protection measures set out in the NSW Government's Embedded Network Action Plan.

This recommendation, which is consistent with stakeholder feedback[280], recognises that these types of embedded networks are capable of delivering cost savings and energy efficiency benefits to customers, if coupled with effective price and consumer protections.

We also considered whether hot water embedded networks using gas should be banned to help ensure that more efficient heat pump systems are installed instead. We have not recommended banning these systems because this may entrench gas hot water systems under the current non-embedded network model in the Jemena distribution network.[281] In the long term, this could lead to higher carbon emissions and higher costs to customers because under this model, there is a weaker incentive to ensure hot water is provided efficiently.

11.2 Benefits of hot and chilled water embedded networks

Almost all hot and chilled water embedded networks use centralised heating and cooling systems, although we are aware of one embedded network where embedded network where customers have their own individual unit (Box 11.1).[282]

Centralised systems can be more cost-effective relative to stand-alone systems, and provide non-monetary benefits such as reduced floor space usage, lower noise output, safety[xx], and aesthetics[yy]. If energy efficient centralised systems are installed, then they can also help deliver on the NSW Government's net zero by 2050 objectives.

Centralised hot and chilled water systems can be operated through embedded networks or non-embedded networks. Jemena's centralised hot water non-embedded network model is a good example of this (see Figure 1.1). However, when installed as part of an embedded network, centralised hot water and chilled water systems can offer the following additional benefits:

- increased investment in capital intensive and sustainable energy solutions, such as heat pumps, because the upfront cost burden can be shared by end-users through energy prices[zz,283,284]
- lower operating costs where energy efficient solutions are installed
- lower operating costs due to economies of scale and the ability of the embedded network seller to buy water and energy in bulk.[285]

Depending on the terms of the contract, embedded networks can allow cost savings to be shared between the embedded network seller, customers and/or the site owner (or owners corporation in strata schemes).

Table 11.1 provides further detail about the differences between the available outcomes under the different centralised hot water system models. It shows that centralised systems in embedded networks can deliver additional financial and energy efficiency related benefits relative to the non-embedded network model, particularly when coupled with effective price and consumer protections. While this table focuses on centralised hot water systems, many of the same outcomes can be expected to apply to chilled water systems.

[xx] Where heat and gaseous by-products of instantaneous gas boilers are removed from balconies.
[yy] Where there is less individual infrastructure visible (individual water heaters and air-conditioning units).
[zz] Being able to split the costs across multiple customers may also help to overcome the split incentive problem (where the owners and consumer's economic objectives do not align).

Table 11.1 Comparing outcomes under different centralised hot water models

	Non-embedded network centralised hot water	Embedded network centralised hot water, under:	
		(a) current regulation	(b) our recommendations
Financial benefits	n.a.	Lower costs due to economies of scale and the ability of the embedded network seller to buy water and energy in bulk	
Pricing outcomes	Customers can access retail price competition to manage costs. However, they cannot easily invest in more efficient systems to reduce ongoing costs over time.	Price determined through negotiation with embedded network seller. No current price protections and no ability to access retail competition.	Maximum price applies and there is greater transparency on how consumer bills are determined.
Consumer protection outcomes	NECF protections apply	No NECF or exempt seller protections, until NSW Government enacts legislation to impose equivalent NECF protections.[aaa]	No NECF or exempt seller protections, until NSW Government enacts legislation to impose equivalent NECF protections.
Managing system efficiency	Jemena guidelines provide guidance on system efficiency. However, there may not be a strong financial incentive to comply with these guidelines where a site is not predominantly owner occupied, as all costs of any upgrades are borne by the Owners Corporation, while the benefits are realised by the residents.	There is some incentive to manage the system efficiently. Embedded network sellers benefit from any cost savings they can achieve, however if embedded network sellers do not manage the system efficiency, they can pass these costs onto the residents.	Strongest incentive to manage system efficiencies as: • Embedded network sellers benefit from making cost savings (but any maintenance or upgrades will reduce the profit of the embedded network operator in the short term). • Inefficiencies cannot be passed onto customers.
Incentive to install energy efficient systems	There is a weak incentive to install heat pumps as an efficient and low emissions option, because without an embedded network, costs could only be recovered from owners, who are not necessarily the end user.	Weak to medium incentive to install more efficient systems as the embedded network operator has little incentive to invest in capital costs which may reduce their profit margin in the medium term.	Higher incentive for both embedded network operators and sellers to install more efficient systems to maximise profit within the price cap. Capital costs of installing more efficient systems can be recovered through separate contractual arrangements with the owners corporation.

Finding

2. Embedded networks can incentivise the delivery of cost-effective hot water and air-conditioning services (over the life-cycle of the infrastructure), including the installation of low-emission infrastructure. However, there are currently many embedded network sites without low-emission infrastructure.

[aaa] This is an action of the NSW Government's Embedded Network Action Plan.

Box 11.1 Embedded networks with non-centralised systems

In a non-centralised hot water embedded network, consumers are supplied with hot water by their own individual hot water unit. The Combined Pensioners & Superannuants Association of NSW noted in its submission that these types of embedded networks are unlikely to benefit consumers and that unless there are tangible and significant benefits associated with such a model they should not be permitted.

ENM Solutions, EnergyAustralia and Origin Energy, on the other hand, were opposed to a prohibition on new non-centralised hot water systems. Origin, for example, noted that in some embedded networks, it may not be possible to install a centralised system because there is insufficient space or for other design reasons. ENM Solutions also noted that further work would be required before this type of embedded network is banned.

The use of individual hot water units in these types of embedded networks means that most of the cost savings and other non-financial benefits are not available under this model. From the submissions received, it appears that there may be practical reasons for this option in some cases and while this model may not deliver all of the benefits that a centralised system can, there may still be some cost savings associated with the bulk purchase of water and energy.

Source: Submission from Combined Pensioners and Superannuants Association of NSW, Submission to IPART Future of Embedded Networks in NSW, January 2024, p 5; ENM Solutions, Submission to IPART Embedded Networks Draft Report, January 2024, p 3; EnergyAustralia, Submission to Draft Decision: Energy Prices in embedded networks, 22 January 2024; Origin, Submission Embedded Networks Draft Report, 26 January 2024, p 6.

11.3 Overcoming concerns with hot and chilled water embedded networks

As outlined above, the Inquiry recommended that separate charging for hot and chilled water in embedded networks be prohibited, because it found several material shortcomings in the pricing and consumer protections available to customers in these embedded networks. The Inquiry, for instance, found that these customers do not have access to the same consumer and price protections as those available under the NECF. It also found that some residential customers had faced very high hot water bills and incorrect charges.[286]

As part of this review, we asked stakeholders if they think hot and chilled water embedded networks should be prohibited. Stakeholders told us that they don't think it is necessary to ban these networks, particularly if appropriate price and consumer protections are put in place.[287] Stakeholders also made the following observations:

- The Combined Pensioners & Superannuants Association of NSW and others stated that embedded networks should focus on technological innovation and cost savings, not just profit for the embedded network seller. [288]
- The Tenants' Union and PIAC, among others, suggested that new hot and chilled water embedded networks only be allowed if they offer tangible customer benefits (e.g. lower prices) and are backed by robust regulation that provides for effective consumer rights and protections.[289]
- EnergyAustralia noted that while high prices have been an area of concern, the maximum prices proposed in the draft report should be sufficient to address this issue. [290]

As EnergyAustralia observed, the maximum pricing methodologies we have developed for hot and chilled water embedded network customers (see Chapters 7 and 8) are intended to address the concerns that have been raised about the lack of adequate price protections for hot and chilled water embedded network customers. That is, they are intended to protect customers from paying unreasonable prices and ensure they are no worse off than on-market customers. Our recommended pricing methodologies will also limit the system inefficiencies borne by hot water customers (see Chapter 7 for more detail).

In addition to these price protections, the NSW Government has committed to the following consumer protection measures through the Embedded Network Action Plan:

- releasing a Ministerial Statement of Expectations that outlines the NSW Government's expectations that hot and chilled water embedded networks customer should have access to equivalent consumer protections to on-market customers under the NECF
- pursuing regulatory and legislative changes to provide enforceable consumer protections to customers of hot and chilled water embedded networks, giving effect to the Ministerial Statement of Expectations
- national advocacy with the view to amend the AER Retail Exempt Selling Guideline to improve consumer protections for embedded network customers.[291]

The Embedded Network Action Plan also proposes changes to contracting arrangements for embedded networks, which could provide further protections for site owners (or owners corporations in strata schemes). This includes applying the 3-year limit to utility contracts between an owners corporation and electricity embedded network provider.[bbb] Together with our recommendation that embedded network sellers of hot and chilled water become members of EWON (see Chapter 10), we expect these consumer and price protection measures to address the problems that have been identified, without the need for a prohibition.

Implementing these measures will also mean that consumers can benefit from the range of cost savings and other benefits that may be associated with hot water and chilled water embedded networks, as outlined above. Further detail on how these measures will address the identified shortcomings is provided in Table 11.2 below.

[bbb] Recommendation 120 of the Statutory Review of the Strata Schemes Development Act 2015. Under the *Strata Schemes Management Act 2015* contracts entered prior to 1 October 2019 are limited to 10 years, with renewals or new contracts entered after that period subject to the 3-year limit. Currently agreements to supply electricity to residents in a strata scheme through an embedded network are excluded from these limits.

Table 11.2 Addressing the identified concerns with hot and chilled water embedded networks

Concern	How the concern is addressed by our recommendations or other reforms underway
Higher prices as customers do not have access to retail price competition. Ambiguity in how the prices/costs for the services provided are determined.	We have recommended maximum regulated prices for how and chilled water with a requirement for the embedded network seller to provide transparency on the prices charged.
Customers (typically tenants) may not have control over the infrastructure to produce hot or chilled water, i.e. they cannot change systems to meet their requirements.	Our maximum price methodology will ensure that the is a limit to the costs of inefficient systems incurred by customers.
Some retailers charge a daily access fee for chilled water rather than charge customers based on their consumption. For some users, their annual bill might be significantly higher than what they would have otherwise been charged for their metered use.	Our methodology sets a maximum daily fee for chilled water to ensure that low users are not penalised. Furthermore, as is the case now, chilled water customers may be able to opt out of using the network, and install their own infrastructure, or equipment such as fans.
There are many factors that affect the energy-efficiency of centralised air-conditioning and there is little transparency over the overall efficiency at a particular site. This means it is possible that customers are being charged more for inefficient systems. It also means it is difficult to determine an "efficient" system, and therefore a benchmark for air conditioning services.	The efficiency of centralised hot water and air-conditioning systems is assessed as part of the BASIX system. This ensures that a minimum efficient system is being installed. In Chapter 8 we also recommended that embedded networks sellers be required to report the efficiency of their system on their website. If the regulator finds that the efficiency of chilled water embedded networks is a systemic problem, it could adjust the pricing methodology to include an efficiency factor similar to the recommendation for the hot water pricing methodology.
The customer protections under NECF do not apply.	The NSW Government is considering how these protections could apply under the Embedded Network Action Plan.
Owners may be locked into long term contracts with onerous conditions.	This issue is being considered by the NSW Government under the Embedded Network Action Plan.
It is difficult for owners corporations to understand if they have an unfavourable contract.	Maximum regulated prices will help ensure end-use customers are not locked into high prices. In addition, as discussed in Chapter 10, we consider that owners corporations should be provided with information about commercial arrangements and the infrastructure within the embedded network.

Final Recommendation

38. That the NSW Government should not prohibit the installation of new hot and chilled water embedded networks in NSW.

11.4 We are not recommending a ban on inefficient hot water embedded networks

We considered whether we should recommend a ban on gas and inefficient hot water embedded networks in new developments to encourage developers to install more cost effective, energy efficient and sustainable hot water systems, such as heat pumps, which could assist in NSW achieving its net-zero by 2050 commitment.[292] Such a ban would be consistent with the steps recently taken by the Victorian and ACT governments[293] to ban gas in new developments.[294]

The Combined Pensioners and Superannuants Association of NSW and PIAC supported a prohibition on gas hot water systems in new developments. In doing so, they noted that a ban would ensure consumers are not left with outdated technology, and that a ban could assist in achieving the NSW emissions targets.[295]

While ENM Solutions and EnergyAustralia supported electrification as the best path to meeting the NSW emission targets, they noted that electric hot water systems are higher cost, which may make the investment unviable at this time.[296] Origin made a similar point, noting that the current heat pump capital investment is significantly more than that required for gas centralised systems. Origin also noted that in some cases electricity is not appropriate for water heating because it requires significantly more space and storage of large amounts of water.[297]

We understand from stakeholder feedback and our own analysis that centralised heat pump hot water systems are currently the most efficient stand-alone systems.[298] They produce hot water at a lower cost per litre when compared to gas boilers. The greenhouse gases per litre of hot water are also lower for heat pumps and will continue to decline as NSW reaches the goal of carbon free electricity grid.[299] Heat pumps can also use heat or renewable energy (solar, wind, biomass) that is generated on site.

While a ban on gas or inefficient hot water embedded networks in new developments could potentially help drive heat pump investment, there is also a risk that it could encourage developers to use Jemena's non-embedded network centralised gas boiler system model.[ccc] This could lead to poorer outcomes because there is a weaker incentive to ensure hot water is provided efficiently under this model, including upgrading to a more efficient hot water system in the future (see Table 11.1). Given this risk, we have decided not to recommend a ban on the installation of gas or inefficient hot water embedded networks in new developments.

To increase the pace of electrification of new hot water systems to meet climate change objectives, the NSW Government could consider other measures that could apply at all new developments (regardless of whether the hot water is provided through an embedded network).

[ccc] Jemena's 2020 Gas Network Plan proposal to exit the hot water provision was declined by the AER. No other gas distribution network service provider in Australia offers a similar service. P.g. 64

Appendices

Appendix A

Indicative maximum gas prices

In Chapter 6 we set the indicative maximum gas supply charges and consumption charges for residential customers in the Jemena distribution regions using our recommended methodology. In Chapter 9 we discussed our final recommendations for business customers.

This table applies our methodology to the publicly available offers in August 2023 for each of the distribution networks in NSW and sets out the maximum gas charges for residential customers and business customers who are small customers.

Table A.1 Maximum gas daily supply and consumption charges for residential and business customers (August 2023)

Supply area	Residential usage charge (c/MJ)	Residential supply charge (c/day)	Business usage charge (c/MJ)	Business supply charge (c/day)
Jemena – Capital Region	3.98	66.67	3.00	71.00
Jemena – Coastal Region	3.82	63.69	3.27	71.00
Jemena – Country Network	4.29	74.26	3.23	77.26
AGN Adelong, Gundagai and Tumut	3.61	96.80	2.99	101.27
AGN Albury	2.79	71.98	2.68	67.92
AGN Bombala and Cooma	3.67	82.63	3.18	96.77
AGN Murray Valley (NSW)	4.08	80.31	2.92	89.53
AGN Temora, Culcairn, Holbrook, Henty, and Walla Walla	3.58	86.77	2.99	74.44
AGN Wagga Wagga	3.23	106.86	2.52	133.78
Allgas Energy NSW	4.11	129.39	3.26	136.90
Central Ranges Pipeline Tamworth	4.82	76.30	4.21	98.42
Evoenergy Queanbeyan	3.66	76.92	3.93	121.77
Evoenergy Shoalhaven	3.77	95.13	N/A	N/A

Note: These figures differ slightly from the maximum gas daily supply and consumption charges in our Draft Report. In our Draft Report we used the median of active retailers' lowest tariffs for November 2023 but for consistency with other chapters in this report, we have used the median of active retailers' lowest tariffs for August 2023. As discussed in Chapter 6, we also made some adjustments to our model as a result of stakeholder feedback (i.e. excluding conditional discounts and offers with annual membership fees and certain targeted offers).

Appendix B

Distribution of electricity offers for Endeavour Energy and Essential Energy

Chapter 5 presented the distribution of residential flat-rate market offers for Ausgrid. This appendix presents the distribution of offers for Endeavour Energy and Essential Energy, at various benchmark levels, for different offers and retailer groupings, and calculated using the total bills or individual tariffs.

Table B.1 Distribution of residential flat-rate market offers (August 2023) for Endeavour Energy

Level	Offers included	Total bill or individual tariffs	Retailer grouping	Daily Supply charge (c/day)	Consumption charge (c/kWh)	Total annual bill[a]	Discount to the DMO[b]
Minimum	All	Tariffs	All	79.75	27.61	$1,647.57	-26%
10th percentile	All	Tariffs	All	85.80	31.30	$1,850.96	-17%
20th percentile	All	Tariffs	All	89.78	33.00	$1,948.98	-13%
25th percentile	All	Tariffs	All	91.77	33.36	$1,973.74	-11%
Median	All	Tariffs	All	99.10	35.27	$2,094.53	-6%
Median	All	Total bill	All	164.12	31.35	$2,139.26	-4%
Median	All	Total bill	Big 3 retailers	127.47	34.22	$2,153.19	-3%
Median	All	Total bill	With 90% of the market	127.47	34.22	$2,130.76	-4%
Median	Lowest offer of each retailer	Total bill	(retailers with >1000 customers)	92.24	34.39	$2,034.70	-9%
Median	Lowest offer of each retailer	Tariffs	(retailers with >1000 customers)	96.29	33.61	$2,002.61	-10%
Median	Lowest offer of each retailer	Tariffs	retailers with >10,000 customers	97.41	33.54	$2,003.60	-10%
Median	Lowest offer of each retailer	Tariffs	Largest retailers that have 90% of the market	92.24	33.59	$1,987.13	-11%
Median	Lowest offer of each retailer	Tariffs	Largest retailers that have 95% of the market	96.29	33.54	$1,999.51	-10%
75th percentile	Lowest offer of each retailer	Total bill	(retailers with >1000 customers)	164.12	31.35	$2,135.94	-4%
75th percentile	Lowest offer of each retailer	Tariffs	(retailers with >1000 customers)	114.95	35.26	$2,151.74	-3%

a. Using the DMO consumption of 4,913 kWh per year.
b. Compared to the DMO price in Endeavour's distribution district of $2,228 (no controlled load).

Table B.2 Distribution of residential flat-rate market offers (August 2023) for Essential Energy

Level	Offers included	Total bill or individual tariffs	Retailer grouping	Daily Supply charge (c/day)	Consumption charge (c/kWh)	Total annual bill[a]	Discount to the DMO[b]
Minimum	All	Tariffs	All	147.40	31.90	$2,009.56	-20%
10th percentile	All	Tariffs	All	152.90	36.16	$2,226.24	-12%
20th percentile	All	Tariffs	All	154.18	36.72	$2,256.54	-11%
25th percentile	All	Tariffs	All	158.12	36.96	$2,282.10	-10%
Median	All	Tariffs	All	165.22	38.50	$2,379.06	-6%
Median	All	Total bill	All	167.27	38.75	$2,398.20	-5%
Median	All	Big 3 retailers	All	167.27	38.75	$2,398.20	-5%
Median	All	with 90% of market	All	160.79	38.74	$2,373.75	-6%
Median	Lowest offer of each retailer	Total bill	(retailers with >1000 customers)	153.95	37.09	$2,285.28	-10%
Median	Lowest offer of each retailer	Tariffs	(retailers with >1000 customers)	161.94	37.02	$2,298.99	-9%
Median	Lowest offer of each retailer	Tariffs	retailers with >10,000 customers	161.94	36.86	$2,291.42	-9%
Median	Lowest offer of each retailer	Tariffs	Largest retailers that have 90% of the market	158.12	36.72	$2,270.93	-10%
Median	Lowest offer of each retailer	Tariffs	Largest retailers that have 95% of the market	161.94	36.61	$2,279.82	-10%
75th percentile	Lowest offer of each retailer	Total bill	(retailers with >1000 customers)	182.27	38.17	$2,421.79	-4%
75th percentile	Lowest offer of each retailer	Tariffs	(retailers with >1000 customers)	172.98	38.10	$2,388.81	-5%

a. Using the DMO consumption o f 4,613 kWh per year.
b. Compared to the DMO price in Essential's distribution district of $2,527 (no controlled load).

Appendix C

How prices for prices for customers on existing plans relate to our proposed benchmark

As discussed in Chapter 5, stakeholders submitted that IPART's benchmark is lower than what is being paid by on-market customers. Several highlighted observations made by the ACCC in its December 2023 Market Monitoring Report about what on-market customers on existing offers are paying, relative to the offers being advertise on Energy Made Easy.

In its December 2023 report, the ACCC compared prices for customers on existing plans as at 1 August 2022 and 1 August 2023.[ddd] It found that in August 2023, 53% of NSW residential customers were paying prices at or higher than the DMO. This is a significant change compared to the year before, in which was 20% of customers were paying prices at or higher than the DMO. (Table C.1). As shown in more detail in Chapter 5, both of these years were unusual. In both years, the relationship between what customers on existing plans are paying, the DMO and advertised offers on Energy Made Easy is different to the years before the volatile market conditions of 2022. These years are discussed in detail below.

Table C.1 What customers on existing plans are paying compared to the DMO and EME offers (from the December 2023 ACCC Market Monitoring Report)

Metric	August 2022	August 2023
Proportion of NSW customers on plans with a calculated annual cost equal or higher than the DMO	20%	53%
Proportion of NSW customers on plans with a discount to the DMO of 10% and above	57%	13%
Proportion of customers paying less than the median bill on Energy Made Easy	63%	22%
Proportion of customers paying below the 75th percentile of EME offers	71%	47%

Note: Assumes 100% achievement of conditional discounts

Source: ACCC Inquiry into the National Electricity Market December 2023 Appendix C and IPART analysis

In 2022-23: Energy Made Easy offers were higher than on-market offers

According to the ACCC, in 2022-23, 63% of customers were paying less than the median offer being advertised on Energy Made Easy. We consider that this reflects that retailers were able to more quicky adjust their new offers on Energy Made Easy in response to large increases in wholesale costs between June and August 2022 compared to existing offers.

In that year, our proposed methodology would have resulted in prices higher than what was being paid by customers on existing plans (i.e. a benchmark about 7% below the DMO, while according to the ACCC, 57% of customers in NSW were on plans with a discount to the DMO of 10% and above).

[ddd] This is the first time this analysis had been undertaken by the ACCC. The ACCC collected data from retailers which enabled it to analyse the prices of existing market offer customers. The ACCC's previous reporting on what on-market customers pay (which we considered for our draft recommendations) was based on the effective prices for median market offers compared to standing offer prices (using billing and consumption data).

In 2023-24: Energy Made Easy offers were lower than on-market offers

In 2023-24, only 22% of customers were paying less than the median bill on Energy Made Easy. For 2023-24, increases in Energy Made Easy offers were broadly in line with the determined increases in the DMO. On the other hand, prices for existing customers increased by more than the increase in the DMO price as illustrated by Table C.2. This resulted in 53% of customers on existing offers paying prices at or above the DMO in NSW.

Table C.2 Year-on-year changes in DMO prices (1 July 2022 to 1 July 2023) and customer-weighted average unconditional prices (1 August 2022 to 1 August 2023)

	Flat rate		Flat rate with controlled load	
Distribution Region	**DMO increase**	**Average price increase**	**DMO increase**	**Average price increase**
Ausgrid	20.8%	35.7%	20.7%	39.6%
Endeavour Energy	21.4%	33.4%	24.9%	38.0%
Essential Energy	20.8%	30.0%	19.6%	30.1%

Source: ACCC Inquiry into the National Electricity Market December 2023 Report, p 50.

Overall, we consider benchmarking to market offers will lead to variations around the DMO from year to year, particularly in volatile conditions. EME offers can be above or below prices for existing plans for any given year (as shown by 2022-23 and 2023-24). Despite these variations from year to year, EME offers broadly reflect the prices that on-market customers are paying.

Appendix D

Comparison of individual tariffs and actual offers methodologies

As discussed in Chapter 5, we recommend setting the consumption and supply charges independent of the offers. To determine whether our recommended methodology should consider the median of the lowest tariffs separately or the median of the lowest offer (setting the consumption and supply charges that make up the median lowest offer), we have considered:

- whether the two methods would result in different price levels
- the changes between the individual tariff levels that would result from year to year
- which method is simple for customers to understand and easy to apply.

D.1 Price level

We have compared the prices that would have resulted from the two approaches over the last 3 years. Overall, the results show minimal differences in the overall price level when active retailers lowest offers considered, compared to the lowest tariffs separately.

As illustrated in Table D.1, which compares the prices and discounts relative to the DMO that would have resulted from the two approaches in each distribution area, there is an approximately 1% difference in the discount to the DMO (on average).

Table D.1 Tariffs vs Offers comparison for our recommended methodology (median of lowest tariffs/offers)

Period	Network	Median of lowest tariffs		Median of lowest offer	
		Bill at DMO consumption level	Discount to the DMO	Bill at DMO consumption level	Discount to the DMO
July 2021	Ausgrid	$ 1,140.84	-18%	$1,144.05	-18%
	Endeavour	$1,323.93	-18%	$1,347.66	-16%
	Essential	$1,592.11	-17%	$1,604.94	-16%
July 2022	Ausgrid	$ 1,389.56	-8%	$1,468.05	-3%
	Endeavour	$1,699.05	-7%	$1,719.88	-6%
	Essential	$1,962.87	-6%	$1,981.77	-5%
July 2023	Ausgrid	$1,627.27	-11%	$1,643.31	-10%
	Endeavour	$2,004.57	-10%	$2,034.70	-9%
	Essential	$2,298.99	-9%	$2,285.28	-10%

Note: DMO consumption levels in July 2021 and July 2022 were 3,900 kWh for Ausgrid, 4,900 kWh for Endeavour and 4,600 kWh for Essential. DMO consumption levels in July 2023 were 3,911 kWh for Ausgrid, 4,913 kWh for Endeavour and 4,613 kWh for Essential.

D.2 Tariff movements from year to year

While the price levels that result from the two approaches are similar, our analysis shows there are material differences in the underlying tariff relativities from year to year.

Table D.2 shows the tariffs that would have been set using the median of lowest offers approach over the last 3 years (i.e. the consumption and supply charges that make up the median lowest offer from active retailers). We see that the total bill at the DMO level of consumption in each distribution area would have increased each year. However, the changes in the underlying tariffs from year to year are not always in the same direction as the changes in price (i.e. consumption charge could decrease, while overall price is increasing). For example, there would have been a 25% decrease in the daily supply charge from July 2022 to July 2023 for Ausgrid (even though there would have been an 12% increase in the total bill at the DMO consumption level between the 3 years).

It would not be easy for customers to understand such changes in the underlying tariffs from year to year and how they relate to changes in the overall price level.

We therefore recommend setting the consumption charge and daily supply charge independent of the offer, since the method suggested by stakeholders would lead to significant price volatility.

Table D.2 Underlying tariffs from the median of lowest offers methodology since 2021

	Daily supply charge (cents/day)	Consumption charge (cents/kwh)	Total Bill	Overall price change
Ausgrid				
July 2021	81.95	21.60	$1,144.05	
July 2022	107.78	27.48	$1,468.05	28%
July 2023	86.13	33.98	$1,643.31	12%
Endeavour				
July 2021	97.90	20.02	$1,347.66	
July 2022	86.53	28.03	$1,719.88	28%
July 2023	92.24	34.39	$2,034.70	18%
Essential				
July 2021	133.17	24.26	$1,604.94	
July 2022	189.54	27.35	$1,981.77	23%
July 2023	153.95	37.09	$2,285.28	15%

In contrast, when we calculate the median of the lowest consumption and daily supply charges separately, the changes in the tariffs are much more consistent with the direction of price increases from year to year (Table D.3). This is much easier for customers to understand.

Table D.3 Underlying tariffs – median of lowest tariffs methodology since 2021

	Daily supply charge (cents/day)	Consumption charge (cents/kwh)	Total Bill	Overall price change
Ausgrid				
July 2021	81.07	21.60	$1,140.84	
July 2022	84.79	27.62	$1,389.56	22%
July 2023	87.06	33.48	$1,627.27	17%
Endeavour				
July 2021	78.42	21.12	$1,323.93	
July 2022	88.38	28.02	$1,699.05	28%
July 2023	96.83	33.61	$2,004.57	18%
Essential				
July 2021	131.74	24.09	$1,592.11	
July 2022	151.83	30.54	$1,962.87	23%
July 2023	161.94	37.02	$2,298.99	17%

Appendix E

Discounts to the DMO on customer bills received in customer survey

E

In chapter 5, we stated that the customer bills we received in response to our consumer survey showed higher discounts to the DMO compared to our recommended methodology. This appendix details our analysis of the prices and discounts to the DMO shown on the bills we received for 2022-23 and 2023-24.

We received 40 electricity bills as part of the responses to our consumer survey[eee] which we published along with our consultation papers in August 2023. For electricity, we received bills from all 3 distribution areas (Ausgrid, Endeavour and Essential) and for different billing periods ranging from 2 weeks to 90 days.

We used the underlying daily supply and consumption charges to analyse the bills at the DMO level of consumption for 2022-23 and 2023-24 in each distribution network. The results provide an indication of the prices and discounts to the DMO that embedded network customers have been receiving (noting that the sample size is small).

E.1 Customer bills for 2022-23

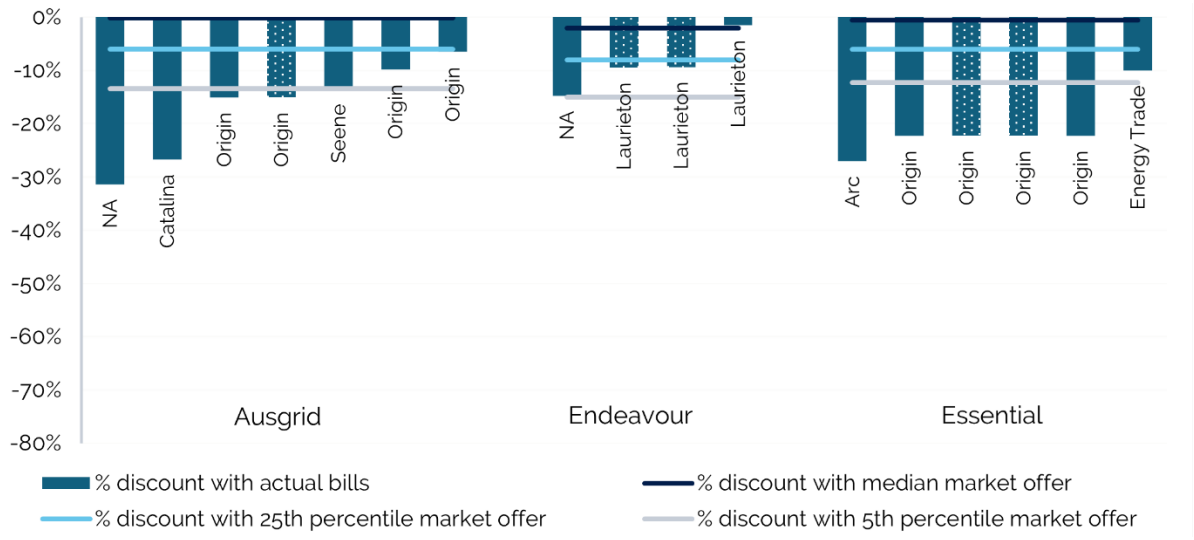
We received 17 electricity bills where the bill end date was before 1 July 2023 and therefore were comparable to the 2022-23 DMO prices. In 2022-23, offers advertised on Energy Made Easy were offering smaller discounts to the DMO, as retailers adjusted new offers quickly in response to large increases in wholesale costs in 2022. Accordingly, as shown in Figure E.1, the median offer on Energy Made Easy was sitting very close to the DMO price level in all distribution networks.

Figure E.1 shows that generally, the bills we received had prices significantly lower than most offers on Energy Made Easy in 2022-23. In particular:

- For the median bill that we received in each network area, the discount was much higher than the ~6% discount under our recommended methodology for 2022-23 (-15% for Ausgrid, -9% for Endeavour Energy, -22% for Essential Energy).
- 16 out of the 17 bills for the 2022-23 had discounts to the DMO that were exceeded the discounts for on-market offers at the 25th percentile (offers at the 25th percentile are priced similarly to the prices that would apply under our recommendations).

[eee] In total, we received a sample of 64 customer bills in response to our consumer survey which included bills for gas and hot water.

Figure E.1 Discount of bills on embedded network tariffs relative to the DMO price 2022-23



a. The median 'actual bill' sample for each distribution network is patterned with additional dots.

Source: Customer bills received where the bill end date is before July 2023; Energy Made Easy offers as at August 2022.

E.2 Customer bills for 2023-24

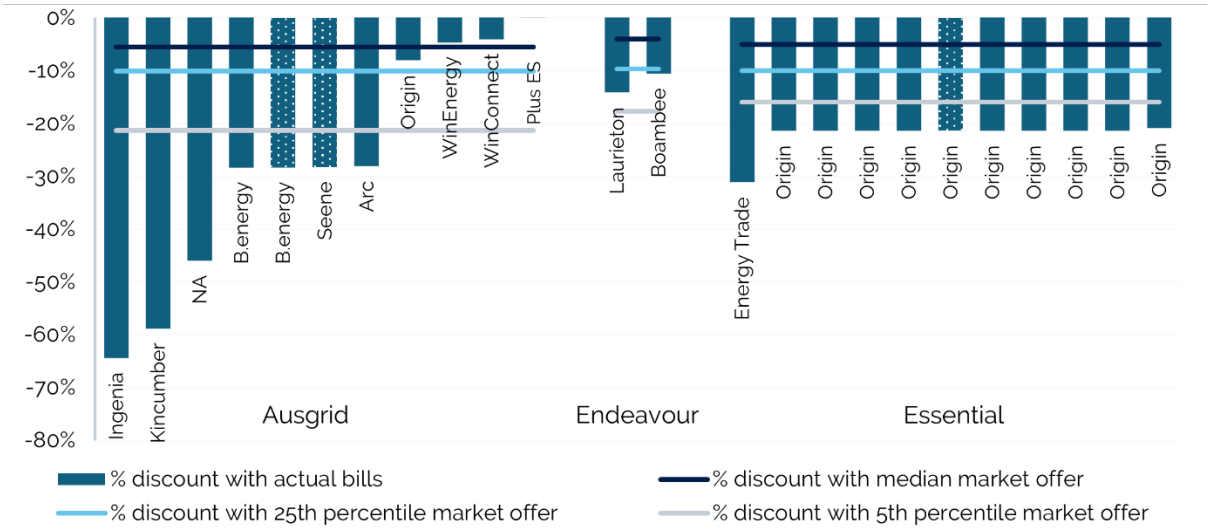
We also received 23 bills where the bill start date was after July 2023, which we compared to the 2023-24 DMO prices.

Figure 2 shows that for 2023-24:

- 18 out of the 23 bills have significantly high discounts relative to the DMO (higher discounts than the 5th percentile offers on Energy Made Easy)
- For the median bill that we received in each network area, the discounts are higher than the ~10% discount under our recommended methodology (-28% for Ausgrid, -12% for Endeavour, -21%)
- Over 90% of the bills showed discounts to the DMO significantly higher than the median offer on Energy Made Easy (about 6% discount to the DMO).

Overall, although the sample size is small, the customer bills we received indicate that the majority of embedded network customers are likely being charged prices that are lower than our recommended methodology.

Figure E.2 Discount of bills on embedded network tariffs relative to the DMO price 2023-24



a. The median "actual bill" sample for each distribution network is patterned with additional dots

Source: Customer bills where the bill start data is after 1 July 2023; EME market offers as at August 2023

Glossary

ACCC	Australian Competition and Consumer Commission
AEMC	Australian Energy Market Commission
AER	Australian Energy Regulator
Active retailer	any retailer with at least 1000 customers in NSW that has an active offer available at the time the benchmark is calculated
AGN	Australian Gas Networks Limited
ASX	Australian Securities Exchange
Big 3 retailers	the three largest electricity retailers in NSW (Origin Energy, EnergyAustralia and AGL Energy)
CALD	culturally and linguistically diverse
CCIA	Caravan, Camping & Touring Association and Manufactured Housing Industry Association NSW
c/day	cents per day
Child connection point	a connection point within an embedded network that is supplied via the parent connection point
c/kWh	cents per kilowatt hour
c/MJ	cents per megajoule
COTA	Council of the Ageing
Common factor	the amount of energy used to heat a litre of water (calculated by dividing the amount of energy used to heat/cool the water for a centralised water system, by the total amount of water consumed by the building)
COP	coefficient of performance
CPSA	Combined Pensioners and Superannuants Association of NSW
DCS	Department of Customer Service
DMO	default market offer
DNSP	distributed network provider
EER	energy efficiency ratio

EME	Energy Made Easy
Embedded network seller	the person(s) who are responsible for procuring the energy (including external network services) required to supply embedded network services, on-selling those services to embedded network customers and servicing those customers
Embedded network operator	the person(s) who are responsible for controlling or operating the embedded network
ESC	Essential Services Commission (Victoria)
Exempt seller	a person who is exempted by the AER under a deemed, registrable, or individual exemption from the requirement to hold a retailer authorisation
EWON	Energy and Water Ombudsman NSW
GEMS	greenhouse and energy minimum standards
IPART	Independent Pricing and Regulatory Tribunal
kL	kilolitre
kWh	kilowatt hour
kWh/kL	kilowatt hour per kilolitre
MJ	megajoule
MJ/L	megajoule per litre
NECF	National Energy Customer Framework
NEM	National Electricity Market
NER	National Electricity Rules
NERL	National Energy Retail Law
NMI	national meter identifier
Parent connection point	the connection point between an embedded network and a Network Service Provider's network
PIAC	Public Interest Advocacy Centre
Split incentives	a recognised form of market failure that arises when those paying for energy differ from the entity responsible for making capital investment decisions that directly affect energy usage
UDIA	Urban Development Institute of Australia

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[25] Public Interest Advocacy Centre, Submission to IPART Draft Report, September 2023, p 10.
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