# IPART review of the future of embedded networks in NSW

## Financial viability and investment effects of draft recommendations

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# Project Team

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# Acronyms and glossary

| Term | Definition |
|---|---|
| AER | Australian Energy Regulator |
| DMO | Default market offer |
| ENO | Embedded network operator: Used to refer to the person(s) who is responsible for controlling or operating the embedded network |
| ENOAP | Embedded network other asset provider: Used to refer to the person(s) who owns the meters and any other assets used in the provision of embedded network services; |
| ENS | Embedded network seller or embedded network supplier: Used to refer to the person(s) who is responsible for procuring the energy (including external network services) required to supply embedded network services, selling those services to embedded network customers and servicing those customers (e.g. contracting, billing, customer service provision, debt collection, regulatory compliance |
| ENSP | Embedded network service provider: Used to refer to the person(s) who owns the embedded network conveyancing infrastructure |
| Embedded network providers | Used to jointly refer to the ENSP, ENOAP, ENO and ENS in an embedded network. |
| EV | Electric vehicle |
| NEL | National Electricity Law |
| NER | National Electricity Rules |
| NERL | National Energy Retail Law |
| NERR | National Energy Retail Rules |
| NGR | National Gas Rules |

# Summary of advice

### Ability of embedded network providers to respond to remain financially viable

While there is always a risk that the introduction of price caps could adversely affect the financial viability of suppliers, this risk appears to have been largely ameliorated under IPART's draft recommendations, by allowing embedded network providers to recover:

- the efficient cost of supply of energy and some 'headroom' through the proposed maximum price methodologies; and
- any costs associated with the embedded network conveyancing infrastructure, meters and other assets used in the provision of embedded network services from site owners, where permitted by legislation and where they have not otherwise been recovered (e.g. through headroom, any direct or indirect charges or any other sources of revenue or benefit).

On the latter of these points, the only potential impediment to embedded network providers recovering these costs that we have identified, is a contractual impediment. This is because the contracting model employed by most embedded network providers to date has assumed that the costs associated with these assets (with the exception of embedded network conveyancing infrastructure) will be recovered from embedded network customers.

While suppliers may be able to use the 'Change in Law' provisions in their agreements to overcome this impediment (i.e. to require site owners to pay some of the costs), we cannot rule out the possibility that there may be some existing agreements where this would not be possible. Transitional arrangements are therefore likely to be required to overcome this impediment, which could otherwise pose a threat to the financial viability of embedded network providers that cannot amend their existing agreements or otherwise recover the costs associated with these assets.

### Potential impact on incentives to install efficient energy infrastructure in embedded networks

In a similar manner to financial viability, the risk that a price cap could otherwise pose to innovation and investment in sustainable and efficient energy infrastructure has been ameliorated under IPART's draft recommendations. That is, by allowing embedded network providers, where permitted by legislation, to recover from site owners any costs associated with such investments (including a reasonable rate of return) that have not otherwise been recovered.

In our view, this proposed cost-recovery model is the most effective and transparent way to jointly ensure that:

- embedded network providers continue to have an incentive to invest in sustainable and efficient energy solutions (if feasible); and
- embedded network customers are treated in a consistent manner to non-embedded network customers (in terms of responsibility for behind the parent connection point assets) and are not paying allowances for innovations or investments that may not even be feasible at their sites.

Together with the proposed maximum price methodologies, this cost recovery-model should also provide site owners and embedded network customers with stronger incentives to install efficient energy solutions, if feasible.

The term 'if feasible' is used above, because it is clear from our review that investment in sustainable and efficient energy solutions, particularly in existing sites, is likely to face a number of physical, financial and split incentive barriers, some of which may be insurmountable under current technologies and policy settings.

It is also clear from our review that although embedded network charges are important from an investor's perspective, they have not been the primary driver of innovation or investment in sustainable and efficient energy solutions in embedded networks. Rather, they appear to play more of a second order role, with building rating and certification schemes and the physical, financial and split incentive barriers referred to above, playing a more fundamental role in determining whether innovation and investment will occur in embedded networks.

# 1. Introduction

Through a series of reviews undertaken over the last 5 years, it has become clear that there are a number of gaps in the regulatory framework currently applying to embedded networks, with customers in these networks unable to access the same retail competition related benefits, consumer and price protections, as their non-embedded network counterparts.

The most recent review was undertaken by the NSW Legislative Assembly's Committee on Law and Safety. In short, the Committee found evidence of "unreasonable and unfair pricing of these essential services" and a range of other systemic consumer protection related issues in embedded networks.[1] The Committee concluded that the existing regulatory arrangements are "no longer fit for purpose" and recommended a range of changes to the regulatory framework.[2]

In response to these recommendations, the NSW Government released its Embedded Network Action Plan in February 2023, the stated objectives of which are to:[3]

> *"bring outcomes for embedded network customers in-line with those in traditional energy supply arrangements"*
>
> *"…provide more equitable consumer and price protections for embedded network customers."*

One of the medium term actions identified in the Action Plan was to initiate a review by IPART to, amongst other things, determine the appropriate method for setting the maximum prices for embedded network services in NSW. This review was initiated in mid-2023, when the NSW Premier provided IPART with a terms of reference for the *Future of embedded networks in NSW* review.

The terms of reference require IPART to, amongst other things, investigate and make recommendations on the following:[4]

(a) an appropriate methodology (or methodologies) to be used to set maximum prices for electricity, gas, hot and cold chilled water supplied through embedded networks;

(b) whether new embedded networks for hot and chilled water should be prohibited in NSW; and

(c) the compliance and enforcement framework for any new price protections.

IPART published its draft recommendations in December 2023.[5] To help inform its final recommendations, IPART has sought advice on the potential financial and incentive related impacts that its draft recommendations on the maximum price methodologies may have on embedded network providers. Specifically, IPART has sought advice on:

- the ability of embedded network providers to respond to the proposed maximum price methodologies to remain financially viable and the mechanisms that would enable them to do so (taking into account existing and proposed changes to statutory limits on supply terms); and
- the impact that the proposed maximum prices could have on embedded network providers' incentive to install efficient energy infrastructure in embedded networks.

These matters are considered in the remainder of this report, which is structured as follows:

- Section 2 sets out a number of contextual matters that are relevant to the advice;
- Section 3 sets out our findings on the ability of embedded network providers to respond to the proposed maximum price methodologies to remain financially viable and how they can do so; and
- Section 4 sets out our findings on the impact of the proposed maximum price methodologies on the incentive to install efficient energy infrastructure in embedded networks.

Note that in a number of places we set out our understanding of relevant legislation or regulatory instruments. This has been required to inform our economic advice but is **not** intended to constitute legal advice.

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1 Legislative Assembly's Committee on Law and Safety, *Embedded Networks in New South Wales*, 2022, p. iv.
2 Ibid.
3 NSW Government, Embedded Network Action Plan, February 2023, see here.
4 NSW Premier, Terms of Reference – The future of embedded networks in NSW, 5 June 2023.
5 IPART, Draft Report: Embedded Networks, December 2023.

# 2. Context for the advice

This section sets out a number of matters that have informed the advice in sections 3-4, including:

- the services provided by embedded networks, the assets involved in the provision of those services and the differing ownership and service delivery models employed in these networks;
- the regulatory arrangements currently applying to embedded networks in NSW; and
- IPART's draft recommendations on the maximum prices for embedded network services and the feedback stakeholders provided in response to those draft recommendations.

## 2.1 What services are supplied by embedded networks and how are they provided?

Embedded networks are private networks that are often found in residential complexes (e.g. apartments, townhouses and duplexes), retirement villages, caravan parks, shopping centres and airports. Depending on the assets installed, an embedded network may be used to supply embedded network customers energy (electricity or gas), hot water and/or chilled water (centralised air conditioning) services (see Box 2.1 for more detail on how embedded network services may be sold).

**Box 2.1: Sale of embedded network services**

The manner in which services are sold in embedded networks will depend on the type of embedded network that is in operation. For example:

- In electricity embedded networks, an embedded network supplier may offer either:
  - a bundled service, involving both the on-sale and distribution of electricity to the embedded network customers; or
  - a distribution only service, involving the distribution of electricity to its embedded network customers.

  A distribution only service will only be offered where there is appropriate metering in place and an embedded network customer has procured an 'energy only' product 'on market' from an Authorised Retailer. In such cases, the embedded network supplier will still be responsible for having the energy transported to the parent connection point and then distributing the electricity through the embedded network, which is why it still has a role to play in providing a 'distribution only service'.
- In gas, hot and cold chilled water embedded networks, it is not possible for embedded networks to go 'on market' to procure the relevant services. Embedded network providers in these networks therefore offer a single service (i.e. the sale and distribution of gas, hot water and/or chilled water services).

### 2.1.1 Assets used in the provision of embedded network services

Table 2.1 provides an overview of the types of assets that may be used in the provision of embedded network services and the types of costs that may be incurred in their provision. Before examining this table, it is worth noting that the term 'embedded network' is defined in the National Electricity Rules (NER or Rules) as: [6]

> *a distribution system, connected at a parent connection point to either a distribution or transmission system that forms part of the national grid (i.e. the National Electricity Market (NEM)), and which is owned, controlled, or operated by a person who is not a Network Service Provider.*

A distribution system is, in turn, defined as:[7]

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6 See Chapter 10 of the National Electricity Rules (NER).

7 See section 2 of the National Electricity Law (NEL) and also Chapter 10 of the NER. Chapter 10 of the NER, further defines:

- **distribution system** as each of the following:
  - (a) a *distribution network*, together with the *connection assets* associated with the *distribution network*, which is connected to another *transmission system* or *distribution system*; and
  - (b) a *stand-alone distribution system* in a *regulated SAPS*.
- a **distribution network** as a *network* which is not a *transmission network*.
- **a network** as the apparatus, equipment, plant and buildings used to convey, and control the conveyance of, electricity excluding any *connection assets*. In relation to a *Network Service Provider*, a *network* owned, operated or controlled by that *Network Service Provider*.

*…the **apparatus, electric lines, equipment, plant and buildings used to convey or control the conveyance of electricity** that the Rules specify as, or as forming part of, a distribution system and includes a regulated stand-alone power system to the extent provided by the Rules.*

Together with operative terms of the AER's Network Service Provider Registration Exemption Guideline (**Network Exemption Guideline**), these definitions suggest that a distinction can be drawn, at least in the electricity context, between:

- the embedded network conveyancing infrastructure (referred to by the AER as 'internal network' in the Network Exemption Guideline), which are those assets used in the conveyance, or control of the conveyance, of the relevant service between the parent and child connection points; and
- other assets that are located within an embedded network, but do not 'form part of the embedded network' (i.e. because they are not used in the conveyance, or control of the conveyance of the service), including:
  - the meters used to measure the quantity of service received at the parent, child and/or common property connection points; and
  - assets that may be used in the provision of embedded network services, such as electricity generation and storage equipment, electric vehicle (EV) charging stations, hot water systems and associated infrastructure, and equipment used in the production of chilled water services.

**Table 2.1: Types of assets & costs associated with owning and operating embedded networks**

| | | Electricity | Gas | Hot water | Chilled water |
|---|---|---|---|---|---|
| Assets used in provision of embedded network services | Embedded network conveyancing infrastructure | Cables, wires, switchboards, substations, gate connection point, child connection points and other assets used to convey, or control the conveyance, of electricity within the network | Gas pipes, gate connection point, child connection points and any other assets used to reticulate gas, or control the reticulation of gas, in the network. | Water pipes and other assets used to reticulate hot water, or control the reticulation of hot water, in the network | Centralised air-conditioning system and any other assets used to convey, or control the conveyance, of chilled water services, in the network. |
| | Meters | Parent (boundary or gate) meters, child meters, common property meters | Parent (boundary or gate) meters, child meters, common property meters | Hot water meters | Meters if installed |
| | Other assets that may be located in an embedded network | ▪ Onsite generation & storage equipment and associated equipment.<br>▪ EV charging stations.<br>▪ Other fittings and equipment located in common property | Other fittings and equipment located in common property | Centralised hot water plant (gas or electric) and associated infrastructure | Chilled water plant (e.g. chiller, compressors and pumps) |
| Types of costs associated with owning and operating an embedded network | | (a) Costs of procuring energy in those cases where the embedded network seller procures the energy.<br>(b) Costs of having the energy supplied to the parent connection point (i.e. external network service charges).<br>(c) Cost to serve embedded network customers (e.g. customer service related costs, including the costs associated with contracting with customers, billing and collecting payments, managing enquiries and complaints, etc and the cost of complying with any regulatory obligations).<br>(d) Cost of meter reading.<br>(e) Cost of installing, operating, maintaining, upgrading or replacing the embedded network conveyancing infrastructure, meters and other assets used in the provision of the embedded network services. | | | |

- a **transmission network** as a *network* within any *participating jurisdiction* operating at nominal *voltages* of 220kV and above plus:
  (a) any part of a *network* operating at nominal *voltages* between 66 kV and 220 kV that operates in parallel to and provides support to the higher voltage *transmission network;*
  (b) any part of a *network* operating at nominal *voltages* between 66kV and 220 kV that is not referred to in paragraph (a) but is deemed by the AER to be part of the *transmission network*.

### 2.1.2 Ownership and service delivery models used in embedded networks

It would appear from our review of submissions to IPART's draft recommendations that:

- **embedded network conveyancing infrastructure** (i.e. the infrastructure used in the conveyance, or control of the conveyance, of the embedded network services) will always be owned by the site owner;[8]
- **other assets used in the provision of embedded network services** (e.g. meters, generation and storage assets, EV charging stations, centralised hot water systems and chilled water plant) may be owned by the site owner and/or third parties;
- the **embedded network seller (ENS) function** (i.e. selling services to embedded network customers) and/or the embedded network operator (**ENO**) function (i.e. the function of controlling or operating an embedded network) may be performed by the site owner or a third party; and
- in sites with **multiple embedded networks** (e.g. a site with electricity and hot water embedded networks), different asset ownership and service delivery models may be used in each network and different parties may be responsible for carrying out the ENO and/or ENS function in each network.

As these points highlight, there are a number of **different ownership and service delivery models** that may be employed in embedded networks, including the following:

(a) All assets used in the provision of embedded network services are wholly owned by the site owner (or the Owners Corporation in the case of a strata scheme (jointly referred to as 'site owner' in this report)), with the ENO and ENS functions performed by either:

  (i) the site owner; or

  (ii) a third party.

(b) The assets used in the provision of embedded network services are partially owned by the site owner and partially owned by a third party, with the ENO and ENS functions performed by:

  (i) the site owner;

  (ii) the same third party that owns some of the assets; or

  (iii) a different third party. [9]

To aid the discussion that follows, the following terminology is used to distinguish between the functions that may be performed by the various parties potentially involved in the supply of embedded network services (note that a person may perform multiple functions):

- the term **ENSP** (embedded network service provider) is used to refer to the person(s) who owns the embedded network c**onveyancing** infrastructure;
- the term **ENOAP** (embedded network other asset provider) is used to refer to the person(s) who owns the meters and any other assets used in the provision of embedded network services;
- the term **ENO** (embedded network operator) is used to refer to the person(s) who is responsible for controlling or operating the embedded network;
- the term **ENS** (embedded network seller or embedded network supplier) is used to refer to the person(s) who is responsible for procuring the energy (including external network services) required to supply embedded network services, selling those services to embedded network customers and servicing those customers (e.g. contracting, billing, customer service provision, debt collection, regulatory compliance); and
- the term **embedded network providers** is used to jointly refer to the ENSP, ENOAP, ENO and ENS in an embedded network.

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[8] Note that this is also consistent with the *Strata Schemes Development Act 2015*, which defines 'common property' as including 'common infrastructure', which includes the pipes, wires, cables or ducts that are not for the exclusive benefit of one lot.

[9] This could, for example, occur if a site owner leases some assets from a third party who still owns the assets, and the site owner engages another third party to operate the assets and perform the ENS function.

The table below sets out who would perform each of these functions in the ownership and service delivery models set out in (a)-(b) and who would be responsible for the various costs associated with the supply of embedded network services. As it highlights, different parties could be responsible for the costs listed at the bottom of Table 2.1. The implications of this for the setting of maximum prices and the recovery of costs associated with the assets used in the provision of embedded network services is considered in further detail in section 3.

**Table 2.2: Functions performed in embedded networks and costs they are responsible for**

| | | ENSP | ENOAP | ENO | ENS |
|---|---|---|---|---|---|
| **Costs the function is responsible for** | | Cost of installing, maintaining, upgrading or replacing embedded network conveyancing infrastructure | Cost of installing, operating, maintaining, upgrading or replacing meters & other assets used in provision of embedded network services. | Cost of operating embedded network conveyancing infrastructure | (a) Cost of procuring energy<br>(b) Cost of supplying energy to parent connection<br>(c) Cost to serve embedded network customers. |
| Model (a) | (i) | Site owner | Site owner | Site owner | |
| | (ii) | | | Third party | |
| Model (b) | (i) | Site owner | Site owner and/or Third party | Site owner | |
| | (ii) | | | Third party that is ENOAP | |
| | (iii) | | | Other third party | |

## 2.2 How are embedded network services currently regulated in NSW?

The provision of embedded network services in NSW is currently subject to regulation under:

- the national energy regulatory framework (i.e. the National Electricity Law (NEL), National Electricity Rules (NER), National Energy Retail Law, National Energy Retail Rules and other subordinate instruments, including AER Guidelines); and
- NSW site-specific legislation.

### 2.2.1 National energy regulatory framework

Table 2.3 provides an overview of the national energy regulatory framework as it applies to the distribution and retail sale of electricity, gas, hot water and chilled water in embedded networks. As it highlights:

- the **distribution** of electricity by an embedded network is subject to regulation (including price regulation Box 2.2: ), but the distribution of gas,[10] hot water or cold chilled water by an embedded network is **not** subject to any form of regulation; and
- the **retail sale** of:
  - electricity and gas to small customers[11] located in an embedded network is subject to regulation, although the form of regulation will differ depending on whether an ENS is:
    - an **Authorised Retailer**, in which case it will be subject to more fulsome consumer protections but **not** subject to any form of price regulation; or
    - an **Exempt Seller**, in which case it will be subject to lighter handed consumer protections and price regulation; and
  - hot water and cold chilled water are **not** currently subject to any form of regulation.

[10] See Johnson Winter & Slattery, Embedded Gas Networks – Report to the AEMC, 28 May 2019.

[11] A small customer is defined in the National Energy Regulations as an electricity customer consuming up to 100 MWh per annum and a gas customer consuming up to 1 TJ per annum.

## Table 2.3: National energy regulatory framework*

<table>
<tr><th></th><th></th><th>Electricity</th><th>Gas</th><th>Hot water</th><th>Chilled water</th></tr>
<tr><td>Distribution services</td><td></td><td>The NEL and NER prohibit a person from owning, operating or controlling an electricity distribution system that forms part of the NEM unless:[12]<br>▪ the person is registered with AEMO as a network service provider; or<br>▪ the person is subject to an exemption derogation, or otherwise exempted by AER.</td><td rowspan="2">✗</td><td colspan="2" rowspan="2">✗</td></tr>
<tr><td></td><td>The AER's Network Exemption Guideline allows embedded networks to obtain an exemption from registration and the obligations ordinarily applying to distribution networks.[13]<br>Exempt ENSPs must, however, comply with the following conditions in this Guideline:[14]<br>▪ The embedded network must be kept safe.<br>▪ A dispute resolution mechanism must be in place.<br>▪ Electricity meters must comply with relevant standards.<br>▪ Ready access must be provided to retail competition if it is available (which includes a prohibition on imposing any measures that would impede or penalise a customer seeking access to retail competition).<br>▪ Network prices must comply with pricing provisions that regulate the recovery of meter reading charges, external and internal network service charges (see Box 2.2).</td></tr>
<tr><td rowspan="3">Retail supply</td><td>General</td><td colspan="2">The NERL and NERR prohibit a person from selling electricity or gas unless the seller holds a retailer authorisation (Authorised Retailer) or is an exempt seller.[15]</td><td colspan="2" rowspan="2">✗<br>(no consumer protection framework)</td></tr>
<tr><td></td><td colspan="2">The AER's Retail Exempt Selling Guideline enables persons selling energy in an embedded network to obtain an exemption from being an Authorised Retailer.<br>Exempt sellers must, however, comply with 26 conditions set out in the Retail Exemption Guideline, which provide for minimum customer protections[16] and a cap on retail prices (see below).</td></tr>
<tr><td></td><td>Price regulation</td><td>Exempt seller</td><td>Authorised retailer supplying within the embedded network</td><td colspan="2">✗<br>(no price regulation)</td></tr>
<tr><td></td><td></td><td>The prices charged to 'exempt customers' must:[17]<br>▪ be no higher than the local area retailer's standing offer price for new connections for an equivalent volume of energy as that sought by the customer; and<br>▪ not include any charges that are not charged by the local area retailer for new connections under a standard retail contract.</td><td>✗ (the Default Market Offer does not apply in embedded networks)[18]</td><td colspan="2"></td></tr>
</table>

* Note that this reflects our understanding of the relevant regulatory instruments and is not intended to constitute legal advice.

12 Section 11(2) of the NEL and rule 2.5.1 of the NER.

13 A deemed exemption is available where there are fewer than 10 small customers on a site owned, occupied or operated by the exempt ENSP, or for short term accommodation in caravan and holiday parks, among other exemption classes. A registrable exemption is available where there are more than 10 small customers or permanent residents of retirement villages and caravan parks, among other exemption classes. An individual exemption can be sought in all other cases, or where an exempt ENSP is unable to conform to the conditions in the guideline.

14 AER, Electricity Network Service Provider – Registration Exemption Guideline V. 6, March 2018, pp. 36-79.

15 Section 88 of the NERL.

16 The conditions, for example, deal with the obligation to supply, billing and payment arrangements, disconnections, reconnections, payment plans, concessions and rebates, supply interruptions, dispute resolution, life support customers, hardship policies and ombudsman schemes.

17 AER, Retail Exempt Selling Guideline v. 6, July 2022, Condition 7, p. 39.

18 Small customers supplied by means of an embedded network have been expressly excluded from the operation of the Competition and Consumer (Industry Code – Electricity Retal) Regulations 2019, which provides for the application of the cap on standing prices (the default market offer (DMO)) (see cl. 6(3)).

### Box 2.2: Regulation of metering, external and embedded network charges in exempt networks

The AER's Network Exemption Guideline requires exempt network operators to comply with the following:

1. **Meter reading charges** can only be levied once per billing cycle (or no more than once per month).[19]
2. **External network service charges** (i.e. the network use of system charges incurred in having electricity supplied to the parent meter) can be recovered from customers.[20] The guideline allows for these to be recovered on:

   (a) a pass through basis if the external cost is clearly attributable to a specific customer;

   (b) a pro-rata basis based on metered consumption; or

   (c) a shadow price basis, using the tariff that would have applied if the customer obtained supply directly from the local distribution (or if relevant, transmission) network service provider.
3. **Internal network service charges,** which **cannot** be charged unless the parties have entered into an agreement on mutually agreed terms and both parties are large customers (consuming ≥ 100 MWh p.a.) or large corporate entities.[21] Elaborating further on this restriction, the AER has stated that:[22]

   *"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."* [emphasis added]

While the term 'internal network' is not defined in the AER's Guideline, it appears from other parts of the Guideline to refer to the assets used in the conveyance and control of electricity through the embedded network but not any other assets that may be located within an embedded network, such as meters or the other assets listed in Table 2.1. The Guideline, for example, states that:[23]

*"In this Guideline the terms 'embedded network' and 'exempt network' are generally interchangeable….*

*The terms all refer to the physical assets that deliver electricity from one person to another person or party. They include any privately owned wires, switches, transformers or other electrical equipment owned, operated or controlled by the applicant. While meter installations are used to deliver electricity and may form part of a registrable exempt network, we deem them to be exempt from AER registration given that they are essential to provide access to competitive energy services under the NER."*

**What can exempt ENSPs charge small customers?**

The Guideline states that ENSPs can charge small customers: [24]

- a bundled energy and external network tariff (with the distribution charge to be no greater than the charge the distributor would have made to the customer had the distributor serviced the customer directly (i.e. the shadow price));
- actual costs incurred in making metering changes or service capacity upgrades requested by the tenant; and
- charges specified in a residential or commercial lease, tenancy agreement or similar instrument but only where such charges are permitted under relevant jurisdictional legislation.

In relation to the latter item, it is worth noting that while an exempt ENSP is prohibited from billing small customers for internal network service charges, the Guideline states that **network installation charges** may be permissible where specified in a residential or commercial lease, tenancy agreement or similar instrument and permitted under jurisdictional regulation.[25]

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19 AER, Electricity Network Service Provider – Registration Exemption Guideline V. 6, March 2018, Condition 4.6.4.1, p. 65.

20 ibid, Condition 4.6.2, pp. 63-64.

21 ibid, Condition 4.6.3, p. 64.

22 ibid, p. 64.

23 ibid, p. 16.

24 ibid, p. 66.

25 ibid, p. 64.

### 2.2.2 NSW site-specific legislation

In addition to the national energy regulatory arrangements, there are a number of site-specific legislative regimes that both empower and impose restrictions on the ability of certain persons (e.g. land lease community operators, Owners Corporations, retirement village operators and landlords), to charge customers that may be connected to an embedded network, including the following:

- *Residential Tenancies Act 2010*;
- *Strata Schemes Management Act 2015* and *Strata Schemes Development Act 2015*;
- *Retirement Villages Act 1999;*
- *Residential (Land Lease) Communities Act 2013; and*
- *Retail Leases Act 1994.*

Table 2.4 provides a high level overview of our understanding of how these legislative instruments apply to the types of sites that embedded networks may be located in.

**Table 2.4: Site-specific legislation***

| Site type | Legislation | Relevant provisions |
|---|---|---|
| Strata schemes (e.g. apartments, townhouses, commercial or industrial) | *Residential Tenancies Act 2010* | This Act requires tenants to pay the supply charges for electricity and/or gas if the premises are separately metered. If these services are not separately metered, the landlord must pay the charges.<br>This Act also requires landlords to pay the installation costs and charges for the initial connection of a premises to electricity and/or gas. |
| | *Strata Schemes Management Act 2015* | This Act does not appear to contain any specific restrictions on the supply of utilities or the charges that can be levied.<br>Section 132A does, however, state that an agreement with an Owners Corporation for the supply of electricity, gas or any other utility will expire 3 years after the date on which the agreement commenced (if the agreement does not end earlier or is not ended earlier for any other reason). It also states that if an agreement was in place prior to the commencement of this section (Oct 2019), the agreement will expire 10 years after the date on which the agreement commenced (unless the term of the agreement ends earlier, or is ended earlier for any other reason).<br>While s. 132A does not currently apply to electricity embedded networks, it does apply to gas, hot water and chilled water contracts. It would also appear from the NSW Government's Action Plan that it intends to remove the current exclusion of embedded electricity networks from s. 132A.[26] |
| | *Strata Schemes Development Act 2015* | Under this Act, the Owners Corporation is responsible for common property, which includes common infrastructure (including pipes, wires, cables or ducts that are not for the exclusive use of one lot). |
| Retirement villages | *Retirement Villages Act 1999* | This Act does not appear to contain any specific restrictions on the supply of utilities by retirement village operators, or the charges that can be levied.<br>There are, however, some restrictions on the extent to which recurrent charges (which may be used for the payment of utilities) can be increased. |
| Land lease communities (e.g. caravan & holiday parks) | *Residential (Land Lease) Communities Act 2013* | This Act poses a cap on the prices that a land lease operator can charge for gas, electricity and water, with operators only being able to require the payment of separate utility charges if the home owner has agreed to do so in the site agreement, there is metering in place (which must be paid for by the operator) and the operator can provide an itemised account.<br>If the operator does impose separate utility charges for gas and electricity, the legislation states that the prices must not exceed what the operator has been charged by the retailer or utility service provider, with restrictions also applying to the service availability charge. [27] |
| Shopping Centres and airports | *Retail Leases Act 1994* | Under this Act, retail 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 related capital costs, repairs and maintenance of building, plant and equipment and contributions to fixtures, equipment or services. |

* Note that this reflects our understanding of the relevant regulatory instruments and is not intended to constitute legal advice.

[26] Office of Energy and Climate Change, Embedded Network Action Plan, February 2023.

[27] For instance:

- Electricity: The service availability charge is capped at what would have been payable if the electricity had been supplied to a small customer under a standard retail contracts at standing offer prices (with discounts applicable if less than 60 amps).
- Gas: The service availability charge is capped at what the operator is charged divided by the number of residential places.

## 2.3 What has IPART recommended in relation to the maximum price methodologies and what feedback have stakeholders provided?

### 2.3.1 IPART's draft recommendations

IPART commenced its *Future of embedded networks review* in mid-2023 and published its draft recommendations in December 2023. At a high level, the draft recommendations on the maximum price methodologies provide for:

- The maximum prices for each embedded network service to be based on a benchmark price for the electricity and/or gas involved in the supply of the embedded network services up to the parent connection point, with any other embedded network related infrastructure costs that may not be recovered through these prices to, where permitted, be recovered through:
  - the difference between the maximum price and the costs actually incurred in providing the service (referred to as '**headroom**'); and/or
  - separate charges to the site owner.
- The benchmark prices for gas and electricity to be based on the median of the lowest charges offered by all active retailers in the relevant distribution area, with separate benchmarks calculated for residential and business customers that are small customers in each distribution area.

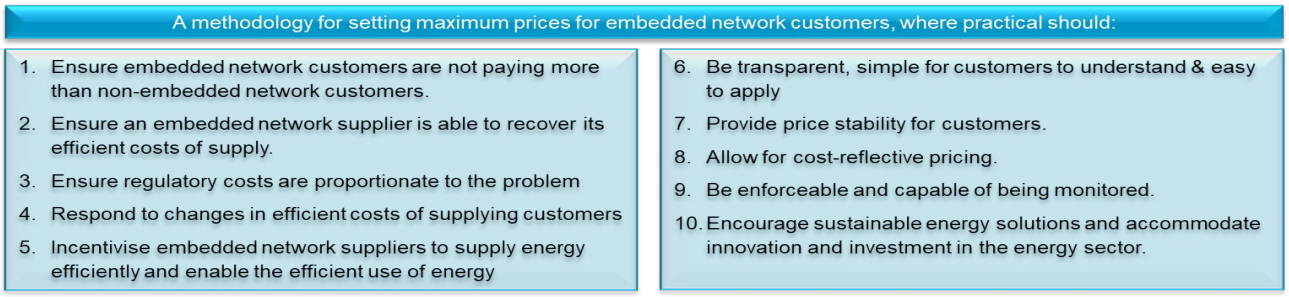
IPART's rationale for these recommendations is reflected in the following extract from the draft report:[28]

> *"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 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.*
>
> *...*
>
> *We consider that it is sufficient for our draft pricing methodology to ensure that providers can recover only the costs of the energy (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 the Electricity Network Service Provider Registration Exemption Guideline Version 6 for embedded networks, which does not allow for the recovery of internal network development and other capital costs*
>
> *...*
>
> *We consider that energy prices are not the only mechanism available to sellers for recovering costs. They can also charge the owners corporation for their services. 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.*
>
> *...*
>
> *Our draft decision is that setting maximum prices by benchmarking them to what on-market customers are paying best meets our draft pricing objectives. In particular, it directly solves for 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. 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.*
>
> *A benchmarking approach ensures that the costs of energy can be recovered through prices, while allowing flexibility for other costs to also be recovered through prices (such as the upfront costs of sustainable technologies, or ongoing operating and maintenance costs of the other infrastructure).*
>
> *...*
>
> *Historical data shows that the median of active retailers' lowest offers is around the 20th percentile of all market offers. We consider that this level provides the right balance of customers not being worse off than on-market customers, and sellers being able to recover their energy costs."*

[28] IPART, Embedded Networks – Draft Report, December 2023, pp. 23-24, 26 and 39.

Table 2.5 provides further detail on IPART's draft recommendations on the maximum price methodologies, which were developed having regard to the price setting objectives in Figure 2.1.

### Figure 2.1: IPART draft price setting objectives




Source: IPART, Embedded Networks – Draft Report, December 2023, Section 2.2.1.

### Table 2.5: IPART's draft recommendations on maximum price methodologies

| | Methodology |
|---|---|
| **Electricity and Gas** | **Maximum prices:** To be separately calculated for residential and business customers that are small customers in each distribution area, based on the **median of the lowest tariffs of all active retailers** (retailers with ≥ 1,000 customers in NSW that have an active offer at the time the benchmark is calculated) in the relevant distribution area, with the:<br>▪ **Consumption charge** to be set equal to the median consumption charge of each active retailers' lowest consumption charge (inclusive of discounts and GST) for their generally available offers; and<br>▪ **Fixed charge** to be set equal to the median supply charge of each active retailers' lowest fixed charges (inclusive of discounts and GST) for their generally available offers.<br>**Other elements:** IPART's draft recommendations also provided for:<br>▪ electricity embedded networks to use time of use tariffs, subject to the average consumption tariff not exceeding the consumption charge when weighted by the AER's DMO model annual usage profiles; and<br>▪ the use of a single maximum consumption charge for gas in each distribution area based on a representative annual consumption of 10,000 MJ for a gas embedded network customer in NSW. |
| **Hot water** | **Maximum price:** To be based on the maximum gas consumption charge for the distribution area in which the hot water system is located, multiplied by a common factor of 0.4 MJ per Litre (i.e. to take into account a standard for efficiency of systems), with no supply charge permitted.<br>Maximum hot water price (cents/L) = gas common factor (MJ/L) × benchmarked gas price (cents/MJ)<br>An ENS may elect to charge for hot water services on a units of energy basis, but if it does so, the maximum price cannot exceed the price set out above (converted from cents per litre to cents per MJ).<br>**Exclusion of additional supply charge:** In its draft report, IPART noted that the maximum price for hot water should **not** include an 'additional supply charge', because on-market customers do not incur separate supply charges for the energy used to heat hot water and energy supplied for other purposes.[29]<br>**Use of gas benchmark:** In its draft report, IPART noted that while hot water may be produced using gas or electricity, the maximum price for hot water should be based on gas, because:<br>▪ almost all existing sites use gas and there is good data for calculating a common factor; and<br>▪ its use could provide an incentive for sites to install efficient electric systems such as, heat pumps, with lower operational costs. |
| **Chilled water** | **Maximum price:** An ENS can elect to charge customers on either a consumption or fixed daily rate basis, but the same approach must apply to all customers at a site. If the ENS charges on the basis of:<br>▪ **Consumption**, the maximum price must be equal to the maximum electricity consumption charge for the distribution area the network is located in and, for similar reasons to those set out for hot water, no additional fixed rate charge is permitted. If this approach is employed, the ENS must publish information on the efficiency of its centralised air-conditioning on its website.<br>▪ **Fixed daily rate**, the maximum price must be determined by taking the annual consumption benchmark for a comparable individual air conditioning unit[30] dividing it by 365 and multiplying it by a benchmark electricity consumption charge. If an ENS chooses to charge above the maximum fixed daily fee, it must have metering infrastructure in place to measure individual consumption.<br>**Exclusion of additional supply charge:** For the same reasons as those set out for hot water, IPART stated in its draft report that the maximum price for chilled water should **not** include an 'additional supply charge'. |

Source: IPART, Embedded Networks – Draft Report, December 2023, Chapters 4-6.

29 IPART, Embedded Networks - Draft Report, December 2023, p. 61.

30 For a given system size and star rating, as per the products listed on the Commonwealth Government's Energy Rating website.

### 2.3.2 How did stakeholder respond to IPART's draft recommendations?

IPART received 37 submissions in response to its draft report. These submissions were received from a range of stakeholders, including a number of ENSs, consultants, industry associations, energy consumers, consumer peak bodies, academics, other industry stakeholders and the Energy & Water Ombudsman.

The feedback received on the maximum price methodologies and, in particular, the proposal to employ a benchmark approach based on retailer prices rather than the Default Market Offer (**DMO**), was generally positive and supported by most stakeholders.[31]

Concerns were, however, raised by some ENSs, consultants and industry associations about the impact the maximum price methodologies could have on:

- the ability of ENSs to recover the efficient cost of supply; and
- the incentive to innovate and invest in sustainable energy solutions in embedded networks.

To address these concerns, a number of these stakeholders suggested that the maximum prices be increased. Some, for example, suggested that the benchmark gas and electricity prices be based on the average price paid by customers of Tier 1 retailers,[32] the average of existing pricing plans that customers are signed up on (excluding outliers),[33] or the mid-point between the DMO (or the standing offer for gas) and the median of the lowest retailer offers by the largest 5 retailers.[34] Others, suggested the electricity price benchmark be based on a discount to the DMO,[35] or the DMO.[36]

In contrast to these stakeholders, Energy Metrics Consulting and Real Utilities supported IPART's proposed benchmarking approach. Energy Metrics, for example, stated that: [37]

> *"While the methodology selected differs from those used by us with our clients, we note that the draft examples sit approximately 2% lower than our own methods.*
>
> *Energy Metrics Consulting's typical advice to a client is a reasonable embedded electricity tariff is 5 – 10% lower than our on-market benchmarks, and we have not encountered a situation where that was not achievable. Given IPART's methodology is above those expected embedded tariffs, we feel that IPART's electricity maximum price methodology is appropriate and achievable."*

Real Utilities similarly stated that the: [38]

> *"proposed maximum pricing framework is an appropriate approach to protecting customers".*

Table 2.6 provides further detail on the feedback provided by stakeholders on the impact the draft recommendations could have on the ability of embedded network providers to recover their costs and their incentive to innovate and invest in sustainable energy.

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31 EWON, PIAC, Voices for Power, Energy Consumers Australia, NSW DNSPs, Active Utilities, Austin Tourist Park, ENM Solutions, Network Energy Services, Origin, Real Utilities, Energy Intelligence and Energy Metrics Consulting.
The exceptions to this were Altogether Group, Energy Locals, Caravan, Camping & Touring Industry & Manufactured Housing Industry Association of NSW, the Shopping Centre Council of Australia and the Australian Energy Council, all of whom supported the use of the DMO.

32 Active Utilities, Submission to IPART Embedded Networks Draft Report, January 2024, p. 11.

33 ENM Solutions, Submission to IPART Embedded Networks Draft Report, January 2024, p. 5.

34 Origin. Submission to IPART Embedded Networks Draft Report, January 2024, p. 3.

35 Network Energy Services, Submission to IPART Embedded Networks Draft Report, January 2024, p. 2 and Energy Intelligence, Submission to IPART Embedded Networks Draft Report, January 2024, p. 3.

36 Altogether Group, Submission to IPART Embedded Networks Draft Report, January 2024, p. 2, Australian Energy Council, Submission to IPART Embedded Networks Draft Report, January 2024, p. 1, Caravan, Camping & Touring Industry & Manufactured Housing Industry Association of NSW, Submission to IPART Embedded Networks Draft Report, January 2024 and the Shopping Centre Council of Australia, Submission to IPART Embedded Networks Draft Report, January 2024.

37 Energy Metrics Consulting, Submission to IPART Embedded Networks Draft Report, January 2024, p. 6.

38 Real Utilities, Submission to IPART Embedded Networks Draft Report, January 2024, p. 6.

## Table 2.6: Submissions on cost recovery and incentives to innovate and invest in sustainable energy solutions

| | Topics | Feedback |
|---|---|---|
| A. Impact on cost recovery | 1. General | A range of ENSs, consultants and industry associations claimed the maximum prices would not allow embedded network providers to recover the efficient costs of supplying energy to the parent connection and pointed to a range of potential reasons for this (Active Utilities, Austin Tourist Park, Energy Intelligence, Energy Locals, Network Energy Services, Origin, Shopping Centre Council of Australia (SCCA)), including:<br>▪ The NSW Distribution Network Service Providers' **embedded network parent connection point tariffs** are expected to increase, which will reduce the cost differential available to electricity embedded networks (Active Utilities, Energy Intelligence).<br>▪ ENSs incur a range of **customer acquisition and retention costs** (e.g. on-boarding costs, customer service costs + costs of incentive programs) (Energy Intelligence and Energy Locals).<br>▪ The potential for ENS' to face **higher wholesale costs** than what is assumed in the benchmark (Network Energy Services, SCCA). |
| | 2. Electricity and gas maximum prices | A number of ENSs, consultants and industry associations identified some potential issues with the methodology and assumptions used by IPART to determine the maximum prices for electricity and gas prices and the underlying assumptions. We understand that IPART is separately considering this feedback. |
| | 3. Hot water maximum price | A number of ENSs, consultants and industry associations claimed the hot water maximum prices may not provide for the recovery of efficient costs, with specific concerns raised about:<br>▪ The impact the exclusion of **supply charges** would have on their ability to recover the costs associated with the hot water systems and meters installed at the site (Active Utilities, Altogether Group, Australian Energy Council (AEC), Energy Locals, UDIA).<br>– Origin, on the other hand, agreed that customers should not pay multiple supply charges for the same fuel, but noted that supply charges are a legitimate cost that should be recovered through a fixed charge on all premises in an embedded network.<br>– Energy Metrics also suggested that ENSs should still be permitted to charge hot water system accounts a daily supply charge and that ENSs should also be able to recover unmetered gas (Active Utilities and Altogether Group also noted the need for unmetered gas to still be able to be recovered).<br>▪ The **conversion factor**, which some claimed would result in ENSs bearing the cost of inefficient hot water systems and suggesting an alternative approach be employed (Active Utilities, Altogether Group, Energy Locals, Origin, UDIA).<br>▪ The representative **annual consumption** used to determine the gas consumption tariff block (see above) and the average consumption of hot water per embedded network customer, which they consider to be too high (Active Utilities, Energy Metrics Consulting, Origin). |
| | 4. Chilled water maximum price | Few comments were provided on the impact the chilled water maximum price would have on cost recovery. Concerns were, however, raised about:<br>▪ setting the **maximum consumption charge** equal to the maximum electricity tariff because thermal energy sold to customers is not always a one-to-one proportion to energy used by the system and the implicit assumption that the ENS has some control over the efficiency of the air conditioning unit, which is often owned by the building operator (Altogether Group)<br>▪ the exclusion of a **fixed service charge**, because there are costs that need to be recovered and the chilled network may be the only service provided by the ENSs (Altogether Group)<br>▪ the **maximum daily fee rate** assumed in this calculation being too low because it is based on an **annual consumption benchmark** for new appliances rather than recognising that sites may have legacy assets and become more inefficient over time (Origin).<br>Real Utilities and UDIA also noted the need for a co-efficient for those charging for chilled water services on a $/kW thermal basis. |
| | 5. Financial viability and other impacts | A small number of ENSs noted the potential for the maximum prices to affect the financial viability of embedded network providers. For example:<br>▪ Active Utilities claimed the change in embedded network parent connection point tariffs, coupled with the draft recommendations, would *"make almost every embedded network in NSW unviable"* and *"result in the collapse of many embedded network operators in NSW",* with consequential effects for site owners and reduced competition (SCCA also noted competition).<br>▪ Network Energy Services claimed that *"A benchmark tariff that is too low will be beyond the capacity for some small embedded networks to afford." "..it has the potential to send some embedded network operations into administration. This would create enormous problems for consumers in these embedded networks."*<br>▪ Origin stated that *"..we believe IPART's proposed maximum price of the median of lowest market offers will result in prices well below what a relatively engaged non-embedded network customer would pay and may result in embedded network operators not being able to recover their efficient costs."* |

| Topics | | Feedback |
|---|---|---|
| | 6. Treatment of embedded network costs & other infrastructure in embedded networks | A number of ENSs and industry associations expressed concerns about:<br>▪ The proposal not to make any provision in the **maximum price** for the costs of installing, operating, maintaining and/or replacing assets used in the provision of embedded network services (i.e. the embedded network conveyancing infrastructure, meters and other types of assets listed in Table 2.3) (Active Utilities, Altogether Group, Austin Tourist Park, AEC, Energy Locals, ENM Solutions, UDIA):<br>– Austin Tourist Park noted that to *"ask the operator to cover those costs is unsustainable and not something that will ensure the ongoing viability of the business or operation".*<br>– Energy Locals noted the inability to recover hot water plant costs through customer tariffs (or other means) could lead to networks becoming commercially unfeasible, resulting in the site owner having to purchase the equipment or have it removed, or third parties refraining from investing or ceasing to contribute to the maintenance and replacement costs.<br>▪ The suggestion that these costs could potentially be **recovered from site owners** (if not recovered through the headroom), with some noting that this could have a significant impact on the cost of living, by increasing strata costs and housing construction costs, which they claimed could lead to higher rents and higher house prices (Energy Locals, UDIA). Some also noted that it may be difficult for ENSs to try and recover any such costs from site owners under existing agreements (Energy Locals, UDIA), while SCCA noted that NSW shopping centres cannot recover capital costs from tenants under the *Retail Leases Act 1994*.<br>▪ The risk of a misalignment of interests if an Owners Corporation owns the infrastructure, because they may have an incentive to install cheaper inefficient infrastructure (Energy Locals). Energy Locals also stated it did "*not believe that blending charges for embedded network electrical infrastructure into strata fees is consistent with the principle of cost reflective pricing.'*<br>In contrast to these stakeholders, Energy Metrics Consulting agreed with the proposal not to allow capital costs to be recovered through energy bills, but suggested that the final report be clearer about what is permissible and what is not. |
| | | The need for greater clarity was also raised by Owners Corporation Network of Australia, who noted it was unclear in parts of the draft report whether IPART supports such costs being passed on to 'unsuspecting owners and tenants' in the case of developer initiated embedded networks.<br>Professor Sherry from the Macquarie Law School also expressed concerns about the treatment of such costs in the context of developer initiated networks, stating that such infrastructure forms part of a site's common property, which is legally owned by the site owner and so should not be able to be recovered. |
| | 7. Transitional arrangements | A small number of ENSs suggested that transitional arrangements may be required, to:<br>▪ exempt from the maximum prices existing embedded networks and those under construction that have already entered into an agreement with an ENS (Active Utilities)<br>▪ ensure the new arrangements do not have retrospective application (Energy Locals); or<br>▪ provide embedded network providers a reasonable period to comply with the new arrangements (EnergyAustralia). |
| B. | Impact on incentive to innovate and invest in sustainable energy | A number of ENSs, consultants and industry associations claimed that the proposed maximum prices could adversely affect the incentive to innovate and invest in sustainable energy infrastructure, such as heat pumps, solar panels, battery storage and EV charging (Active Utilities, AEC, Energy Locals, ENM Solutions, UDIA) in embedded networks. Some also suggested they could encourage the adoption of inefficient equipment (AEC and Energy Locals).<br>The AEC, for example, stated that:<br>"…*if correctly incentivised by sufficient allowance, embedded networks can facilitate the occupants access to renewable energy and innovation, to onsite renewable generation, and to other technologies shared throughout an entire building…. Any insecurity in cost recovery is likely to lead to lower upfront capital solutions being installed instead, such as gas heating, cooktops and hot water systems. In practice this undermines the objective of encouraging lower carbon energy solutions and appliance innovation that IPART and the NSW government have made policy priorities.*<br>ENM Solutions and Altogether Group, similarly stated that:<br>*"Restricting EN customers to the lowest prices in the market may not allow these networks to facilitate innovative building, network and renewable solutions that can be reflected within a marginally higher price than market floor level."* [ENM Solutions]<br>*"…over the longer term, price ceilings can disincentivise investment and innovation, particularly in industries where high costs are incurred in the development and delivery of products or services. This can lead to slower technological progress and reduced service quality over time. Within embedded networks, consumers obtain access to technological solutions that may not otherwise be available."* [Altogether Group]<br>Active Utilities noted in new developments, the decision to invest in sustainable energy infrastructure was largely being driven by the desire of developers to obtain a 5 Star Green Star rating from the Green Building Council of Australia and certification under other schemes, with third party embedded network providers providing funding to enable this to occur. Energy Locals made a similar observation about the key drivers for the decision to install efficient and sustainable solutions. Energy Locals also claimed that:<br>*"…if embedded network operators are not installing equipment on site, then the long-term design efficiencies of embedded network operators would also disappear. It is also likely that new apartments would increasingly move to decentralised hot water which is less efficient and imposes a material impact on usable space within apartments".* |
| | | Rather than trying to use embedded network charges to incentivise innovation and investment, Professor Sherry from the Macquarie Law School stated that:<br>"*Ultimately, the best way to ensure that sustainability infrastructure is included in new development is to mandate it as a condition of development consent*":<br>*"…the 'innovation' that some participants claim that the current market fosters is often not innovation at all. It is nothing more than developers identifying new ways to make profit at the expense of bodies corporate through long used contractual means."* |

# 3. Ability of embedded network providers to remain financially viable

**Summary of advice:** While there is always a risk that the introduction of price caps could adversely affect the financial viability of suppliers, this risk appears to have been ameliorated under IPART's draft recommendations, by allowing embedded network providers to recover:

- the efficient cost of supply of energy and some 'headroom' through the proposed maximum price methodologies; and
- any costs associated with the embedded network conveyancing infrastructure, meters and other assets used in the provision of embedded network services from site owners, where permitted by legislation and where they have not otherwise been recovered.

On the latter of these points, the only potential impediment to embedded network providers recovering these costs that we have identified, is a contractual impediment. This is because the contracting model employed by most embedded network providers to date has assumed that the costs associated with these assets (with the exception of embedded network conveyancing infrastructure) will be recovered from embedded network customers.

While suppliers may be able to use the 'Change in Law' provisions in their agreements to overcome this impediment (i.e. to require site owners to pay some of the costs), we cannot rule out the possibility that there may be some existing agreements where this would not be possible.

Transitional arrangements are therefore likely to be required to overcome this impediment, which could otherwise pose a threat to the financial viability of embedded network providers that cannot amend their existing agreements or otherwise recover the costs associated with these assets.

The first question that IPART has sought advice on relates to the ability of embedded network providers to remain financially viable under the draft recommendations. That is, their ability to generate sufficient income to meet operating payments, debt commitments and to maintain service levels. The specific question IPART has sought advice on is:

> *Will embedded network providers be able to respond to the proposed maximum prices to remain financially viable and, if so, what mechanisms will enable them to do so (taking into account existing and proposed changes to statutory limits on embedded network supply terms)?*

As items 1-5 in Table 2.6 reveal, a number of ENSs and industry associations have noted the *potential* for the proposed maximum prices to be set at levels that do not enable embedded network providers to recover the efficient cost of supply, which a small number noted could pose a risk to the financial viability of some suppliers.[39] A number of these stakeholders also questioned the proposed treatment of the embedded network conveyancing infrastructure, meters and other assets used in the provision of embedded network services, with most suggesting that the costs associated with these assets should be recovered through the maximum price rather than from site owners (see item 6 in Table 2.6).

Given the feedback provided by stakeholders, we have considered the following sub-questions as part of our broader consideration of the question set out above:

- How should the costs associated with providing embedded network services be recovered and from whom should they be recovered (i.e. what cost-recovery model should be employed)?
- Are the proposed maximum price methodologies likely to enable embedded network providers to recover the efficient cost of supply to the parent connection point, or could they pose a financial viability risk?

[39] Active Utilities, Submission, 22 January 2024, pp. 1 and 17, Network Energy Services, Submission, 17 January 2024, p. 2, Origin, Submission, p. 1.

- How would embedded network providers recover the costs associated with the assets used in the provision of embedded network services from site owners and are there any potential impediments to doing so that could pose a risk to their financial viability?
- Are any transitional arrangements likely to be required to support the transition to the new regulatory arrangements and to overcome any constraints on the ability of embedded network providers to recover costs that may otherwise affect their financial viability?

These questions are considered, in turn, in the remainder of this section.

Before moving on, it is worth noting that one of the objectives in implementing maximum prices for embedded network services is to address the concerns that have been raised about the potential for some embedded network providers to engage in monopoly pricing.[40] The introduction of maximum prices will therefore invariably result in some embedded network providers recovering less than what they have in the past. Whether or not the introduction of the proposed maximum prices poses a threat to the financial viability of embedded network providers, is of course, a very different question, which is considered below.

It is also worth noting that one of the NSW Government's stated objectives of implementing maximum prices is to "bring the outcomes for embedded network customers in-line with those in traditional energy supply arrangements".[41] The arrangements applying to customers in non-embedded networks are therefore an important reference point for this assessment, as are IPART's draft pricing objectives set out in Figure 2.1.

## 3.1 How should the costs of providing embedded network services be recovered and from whom?

**Summary:** Consistent with the approach adopted in IPART's draft recommendations:

- the maximum prices for embedded network services should only seek to compensate ENSs for the efficient costs of procuring and supplying the energy required to provide the embedded network services to the parent connection point and the cost to serve embedded network customers; and
- where not otherwise recovered and if permitted under relevant legislation, third party ENOAPs and/or ENOs should be able to recover the efficient costs associated with the assets used in the provision of embedded network services (i.e. behind the parent connection point) from site owners.

This approach, which is consistent with what occurs in non-embedded networks, appropriately recognises the different ownership and service delivery models that may be employed in embedded networks and will:

- ensure that the maximum prices only compensate ENSs for the functions they perform; and
- enable third party ENOAPs and/or ENOs to recover the costs associated with any other assets used in the provision of embedded network services from site owners that are not otherwise recovered (e.g. through headroom, direct charges, and other charges or revenue) and where permitted by relevant legislation.

The first sub-question that we have considered is: How should the costs incurred in providing embedded network services be recovered and from whom?

This is of particular importance given the diversity of ownership and service delivery models that may be employed in embedded networks, and the potential for an ENS not to have an interest in any of the embedded network related infrastructure (see section 2.1.2). In considering this question, we have separately considered how the costs that ENSs incur in selling embedded network services to embedded network customers should be recovered, as well as the costs that ENSPs, ENOAPs and ENOs incur in owning and/or operating any behind the parent connection point assets.

[40] See AER, Review of the AER exemptions framework for embedded networks, November 2023, p. 5.
[41] NSW Government, Embedded Network Action Plan, February 2023, see here.

### 3.1.1 How should the costs that ENSs incur be recovered?

As outlined in section 2.1.2, the core function of ENSs is to procure the energy required to provide the relevant embedded network services and to supply those services to embedded network customers. It is the performance of this function, which is akin to the function performed by on-market retailers, for which the maximum price for embedded network services should seek to compensate ENSs.

Put simply, the **maximum price for embedded network services** should only seek to compensate an ENS for the efficient costs associated with undertaking this function, which includes the costs of:

- procuring the energy required to provide the relevant embedded network services;
- having the energy transported to the parent connection point; and
- servicing embedded network customers, which includes customer service-related costs (e.g. the costs associated with contracting, billing and collecting payments, managing enquiries and complaints etc) and the costs of complying with regulatory obligations (jointly 'cost to serve').

It is appropriate for these costs to be recovered from embedded network customers because they are best placed to manage their use of the services (e.g. their consumption of gas, electricity, hot water and/or chilled water services). It is also consistent with what their non-embedded network counterparts are required to pay.

### 3.1.2 How should the costs that ENSPs, ENOAPs and/or ENOs incur be recovered?

The costs that ENSs incur in performing their function are not the only costs associated with the provision of embedded network services. Rather, as Table 2.2 highlights, ENSPs, ENOAPs and ENOs can incur a range of other costs. These include the costs of installing, operating, maintaining, upgrading and/or replacing embedded network conveyancing infrastructure, metering assets and other assets used in the provision of embedded network services, such as generation and storage assets, hot water systems and chilled water plants.

In our view, these are legitimate capital related costs that ENSPs, ENOAPs and/or ENOs should be able to recover if they are **permitted under relevant legislation**[42] (see Table 3.1 which sets out our understanding of this legislation) **and have not been recovered through other means.** That is, if they have not otherwise been recovered through:

- The **headroom** provided by the difference between the maximum price for the embedded network services and the actual costs incurred by ENSs in providing the service. For example:
  - the difference between the distribution charges the ENS incurs in having energy delivered to the parent connection point and those assumed in the benchmark price (which is based on supply to an individual customer site), will enable some of these costs to be recovered;
  - in those cases where an efficient decision[43] has been made to install on-site generation and/or storage, the difference between the electricity supply costs the ENS actually incurs and the wholesale electricity cost assumed in the benchmark price, should enable the costs associated with these assets to be recovered over the life of the assets; and
  - in those cases where an efficient decision has been made to install a more efficient centralised hot water system and/or chilled water plant than assumed in the benchmark, the difference between the energy costs the ENS actually incurs and the costs assumed in the maximum price for these services, should enable the costs associated with these assets to be recovered over the life of the assets.

  Note one potential complexity with relying on 'headroom' for the recovery of these costs is that the ENS and the ENSP, ENOAP and/or ENO may not be one and the same. There is a risk therefore in these cases that the ENS will capture all the 'headroom' unless there is some form of

[42] If legislation prohibits or prevents the recovery of such costs then, naturally, they cannot be recovered.

[43] From an efficiency perspective, on-site electricity generation and/or storage assets should only be installed if it is expected to result in lower costs of supply than procuring energy from the wholesale market over the life of the assets.

contractual arrangement in place to require the ENS to pay some of the maximum price to these parties. Such an agreement could be encouraged by the site owner, when entering into any relevant agreements.

- Any **direct charges** levied by the ENSP on embedded network customers, in those cases where costs are directly attributable to the customer and are permitted. For example, the AER's Network Exemption Guideline allows ENSPs to charge small customers for metering changes or service capacity upgrades that are requested by an embedded network customer (see Box 2.2).
- **Other charges**, levied by the site owner in residential or commercial lease, tenancy agreement or similar instrument, where permitted under relevant jurisdictional legislation. The AER's Network Exemption Guideline also recognises the potential for these types of charges (see Box 2.2).
- **Other sources of revenue or benefits** (for example, in the case of on-site renewable energy, the ENOAP or ENS may benefit from rebates, credits, offsets, allowances, entitlements, deductions, benefits or certificates associated with renewable energy sources or greenhouse gas reductions).

As to who these costs should be recovered from, in our view, the **site owner should be responsible** for any costs associated with the embedded network related assets that are not otherwise recovered.

This is because the site owner is the only one that can take the actions required to manage the costs associated with installing, operating, maintaining, upgrading or replacing the embedded network related assets. It is, for example, the site owner that is responsible for contracting with any third party providers of these assets and services. It is also the site owner that is responsible for determining when an asset should be replaced and, if so, what it should be replaced with. They are therefore better placed to manage the costs that may be associated with these assets than embedded network customers and requiring them to pay should accord them a strong incentive to do so.[44]

Requiring the site owner to pay these costs is also more transparent and is consistent with what applies in non-embedded networks. For example, the owner of a free-standing house subject to Torrens Title would be responsible for all the costs associated with the infrastructure sitting behind the meter, including the internal wiring, and any solar panels, battery storage, hot water system and/or air conditioning attached to the house. If the homeowner was to lease the house to a tenant, then it would remain responsible for these costs, with the tenant just having to pay a retailer for the supply of energy to the house. Similarly, in an apartment block that does not have an embedded network, the Owners Corporation would be responsible for the 'behind the meter' costs, not the tenants in that block.

As IPART noted in its draft report, to the extent that making the site owner responsible for these costs drives greater engagement in the market for third party services, it could also stimulate more competition in the market and potentially reduce the costs of embedded network services.[45]

The precise means by which these costs could be recovered from site owners and how site owners may respond is considered in further detail in section 3.3. It is, however, worth noting that the only costs that would need to potentially be recovered from site owners are those incurred by:

- **third party ENOs** (i.e. third party operators of the embedded network conveyancing infrastructure - as outlined in section 2.1.2, the embedded network conveyancing infrastructure itself should already be owned by the site owner (the ENSP), so there should be no need to recover these costs); and
- **third party ENOAPs** (i.e. third party owners and/or operators of the metering equipment and any other assets used in the provision of embedded network services, such as on-site generation and storage, EV charging stations, hot water systems and chilled water plants).

[44] For example, if the costs of operating and maintaining a centralised hot water system are starting to exceed the headroom provided by the maximum price for this service, because the asset is nearing the end of its life, then the site owner could consider replacing the asset. If, on the other hand, the higher costs were a result of an ENOAP/ENS' costs being too high, then the site owner could consider switching to another third party provider.

[45] IPART, Draft Report: Embedded Networks, December 2023, p. 24.

## Table 3.1: Restrictions on cost recovery under relevant legislation*

| Infrastructure | | Energy Laws | | | | NSW Site Specific Legislation | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Electricity | Electricity & Gas | | | | | | | |
| | | Network Exemption Guideline (Restrictions on cost recovery) | Retail Exempt Seller Guidelines (Restrictions on energy prices) | | Hot water or chilled water | Strata schemes | Residential tenancies | Retirement villages | Land lease communities | Retail leases |
| | | | Authorised Retailer | Exempt Seller | | | | | | |
| Embedded network conveyancing infrastructure | Existing embedded network conveyancing infrastructure | Exempt ENSPs are prohibited from billing small customers (excluding large corporate entities) internal network service charges. | No restriction on energy prices. | An exempt seller **must not:**<br>▪ charge embedded network customers tariffs that are higher than the standing offer price that would be charged by the relevant local area retailer for new connections if the local area retailer were to supply that quantity of energy directly to the customer; and<br>▪ impose any charges that are not charged by the local area retailer for new connections under a standard retail contract (a charge includes, but is not limited to, account establishment fees, late payment fees, debt collection fees etc). | No restrictions on cost recovery or energy prices. | No restrictions on cost recovery or energy prices.<br><br>Note though that the existing embedded network conveyancing infrastructure (i.e. pipes, wires, cables, or ducts that are not for the exclusive benefit of one lot) is likely to be considered 'common property' in strata schemes and so should already be owned by the Owners Corporation. There should therefore be no need to recover these costs. | Tenants can only be required to pay for electricity and/or gas if the premises are separately metered. If they are not separately metered, the landlord must pay the charges.<br>Landlords are also required to pay the installation costs and charges for the initial connection of a premises to electricity and/or gas. | No restrictions on cost recovery or energy prices. | Home owners cannot be required to pay separate utility charges unless they have agreed to do so in the site agreement, there is metering in place (which must be paid for by the operator) and the operator can provide an itemised account.<br>If an operator levies separate utility charges, the prices must not exceed what the site owner has been charged by the retailer or utility service provider, with restrictions also applying to the service availability charge. | Retail 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. |
| | New embedded network conveyancing infrastructure or upgrades | Exempt ENSPs can only recover these costs from small customers if specified in a lease, tenancy or similar instrument and if permitted under relevant jurisdictional legislation. | | | | | | | | |
| Meters | Existing meters | Exempt ENSPs are required to pay these costs. | | | | | | | | |
| | New meters or upgrades requested by small customers | Exempt ENSPs can charge small customers for the actual costs incurred in making metering changes if requested by the customer. | | | | | | | | |
| Other assets | Electricity generation & storage | No restrictions on cost recovery. | | | | | | | | |
| | EV charging stations | | | | | | | | | |
| | Centralised hot water system & associated infrastructure | [redacted] | | | | | | | | |
| | Chilled water plant & associated infrastructure | | | | | | | | | |

* Note that this reflects our understanding of the relevant regulatory instruments and is not intended to constitute legal advice.

### 3.1.3 Why is this cost-recovery model preferable to recovering all costs through a maximum price?

We understand from the feedback received in response to the draft recommendations (see item 6 in Table 2.6), that a number of ENSs, consultants and industry associations disagree with the cost-recovery model outlined above and believe that the maximum prices should provide for the recovery of all the costs associated with the provision of embedded network services. For example:

- A number of ENSs and industry associations suggested that the maximum price for hot water embedded network services should include an allowance for the costs of operating, maintaining, upgrading and/or replacing a hot water systems.[46] While these may be legitimate costs involved in the supply of hot water services, it is important to recognise that an ENS will not always own these assets.[47] Including an allowance for these costs in the maximum prices would therefore provide compensation to some ENSs for assets that they do not own, the cost of which would then be borne by embedded network customers.
- The AEC has suggested that the maximum prices should be based on the DMO so that it includes an allowance to incentivise innovation and investment.[48] Like the hot water system example, including such an allowance in the maximum prices would provide an implicit return on assets that, in the case of some ENSs, they do not own and for which they have no responsibility. The costs of this would again be borne by embedded network customers. This is discussed in further detail in section 4.

Even in those cases where an ENS also owns and/or operates some of the assets used in the provision of embedded network services (i.e. it is also an ENOAP and/or ENO), trying to compensate it for this through a higher maximum price would be an opaque and imprecise way to do so. It would also provide no guarantee that the costs associated with the assets will be recovered. This is because the ENS would be relying on headroom to recover the costs incurred by the ENOAP and/or ENO, which could vary over time depending on changes in the maximum prices and the ENS' underlying costs.

The risk of an ENOAP being unable to recover the costs associated with any assets that it owns can be expected to be higher in those cases where:

- the term of the embedded network service agreement is shorter than the life of the assets, which:
  - is currently a risk for gas, hot water and chilled water embedded networks in strata schemes where the maximum term of any agreements entered into after October 2019 is 3 years;[49],[50]
  - may also be a risk for electricity embedded networks if the NSW Government removes the current exclusion;[51] or
- there is a greater likelihood of small customers being able to switch to on-market retailers (e.g. in electricity embedded networks), or not use the service (e.g. in chilled water embedded networks).

In the event an ENOAP and/or ENO is unable to recover its costs, it could adversely affect their financial viability. This could, in turn, result in them either failing to properly operate or maintain the assets, or terminating the agreement, which would act to the detriment of embedded network customers.

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46 For example, Active Utilities, Altogether Group, AEC, Energy Locals and UDIA.

47 For example, in a number of strata schemes it is the owners corporation that owns these assets and is responsible for the operation and maintenance of this asset, while a third party ENS is responsible for selling the services. .

48 AEC, Submission, 20 January 2022, pp. 1-2.

49 *Strata Schemes Management Act 2015.*

50 While it is possible the agreements could be renewed, there is no guarantee of this.

51 In the Embedded Network Action Plan the NSW Government has also indicated its intention to remove the current exception for embedded electricity networks from this requirement, so this risk is likely to affect more embedded network providers over time.

Another problem with the suggestion that all of the costs associated with an embedded network be recovered through the maximum price is that it could result in prices exceeding what would be available on-market. If this were to occur, then it could prompt those embedded network customers that are able to switch to an on-market supplier (or those that are able to not use the service) to do so and result in the embedded network related costs having to be recovered from a much smaller customer base. This could result in a range of inequitable outcomes for those who are unable to switch (or are unaware of their ability to switch), which could include vulnerable customers in residential complexes, sole traders and other businesses that are small energy consumers in shopping centres or other sites.

Consequently, using the maximum price to try and compensate embedded network providers for all the costs associated with the provision of embedded network services, would be problematic and could have a range of adverse effects on both embedded network customers and suppliers. We therefore recommend against this proposed course of action.

Rather, we recommend that IPART retain the cost-recovery model that it proposed in the draft report, which appropriately recognises the different ownership and service delivery models that may be employed in embedded network and will:

- ensure that ENSs are only compensated for the functions that they perform through maximum prices; and
- enable third party ENOAPs and/or ENOs to recover any of the other costs associated with the provision of embedded network services from site owners, where they are permitted to do so under relevant legislation and have not otherwise recovered those costs.

## 3.2 Are the proposed maximum price methodologies likely to enable embedded network providers to recover the efficient cost of supply to the parent connection point?

**Summary:** In principle, the draft recommendations on the gas and electricity maximum price methodologies should provide ENSs the opportunity to recover the efficient costs of performing their functions, plus headroom.

As to the maximum prices for hot water and chilled water embedded network services, we have identified two potential circumstances in which an ENS may be unable to recover the efficient cost of supply for these services and have suggested some ways that these could be addressed.

A number of ENSs and industry associations have noted the *potential* for the draft recommendations on the proposed maximum prices to be set at levels that do not enable embedded network providers to recover the efficient cost of supply, thereby posing a potential risk to the financial viability of some providers. In doing so, they have pointed to a number of potential issues with the maximum price methodologies for gas and electricity.

While we understand that IPART has separately considered those issues, we would observe that the analysis IPART has carried out on the electricity and gas prices charged by a sample of ENSs relative to the proposed maximum prices suggests that the proposed prices do not pose a risk to the financial viability of ENSs. Even with the proposed changes to the NSW electricity distribution networks' charges for embedded network parent connections, ENSs appear well-placed to recover the efficient cost of performing the ENS function (i.e. the efficient cost of procuring the energy and external network services required to provide the embedded network services and the cost to serve) with some headroom to spare.

The only other observation we would make about the maximum price methodologies is that basing them on a benchmark of what on-market retailers charge non-embedded network customers, implicitly allows the embedded network providers to capture all of the scale and other benefits that may be associated with embedded networks. This is not a problem with the methodologies *per se*, because what IPART is being asked to determine is the **maximum** prices that can be charged. It would be

open therefore to site owners to negotiate lower prices with third party ENS for the provision of embedded network services so some of the benefits are shared with embedded network customers.

In addition to the issues raised about gas and electricity maximum price methodologies, a number of stakeholders noted the potential for the following aspects of the proposed methodologies for hot water and chilled water to result in ENSs failing to recover the efficient cost of supplying those service (items 3-4 in Table 2.6):

- the exclusion of an 'additional supply charge' from the maximum prices for these services; and
- the efficiency of the hot water infrastructure assumed in the calculation of the maximum prices.

Questions were also raised about how ENSs will recover the costs associated with 'unmetered gas'.

We have therefore given further consideration to whether these aspects of the draft recommendations could pose a risk to the financial viability of ENSs offering these services.

### 3.2.1 Exclusion of 'additional supply charge' from hot water & chilled water maximum prices

In IPART's draft recommendations, it noted that the maximum price for hot water and chilled water embedded network services should **not** include an 'additional supply charge'. In doing so, IPART noted that on-market customers do not incur separate supply charges for the energy used to produce hot water (or chilled water services) and the energy supplied for other purposes.[52]

While the intent of this draft recommendation is clear (i.e. embedded network customers should not pay the same supply charge twice),[53] it would appear from a number of the submissions that they have understood this to mean that hot water and chilled water embedded network service providers would be prohibited from charging a supply charge in **all instances**. That is, even in those cases where the supply charges are not otherwise recovered from embedded network customers (i.e. so it is not an 'additional supply charge').

This could, for example, occur if a site has a gas hot water embedded network, but not a gas embedded network (or a chilled water embedded network, but not an electricity embedded network).[54] While we understand that there may not be many such sites, there could still be value in clarifying in the final recommendations what is to occur in this situation.

The final recommendations could, for example, allow ENSs selling hot water (chilled water) services to recover a supply charge from hot water (chilled water) customers if that supply charge has **not** otherwise been recovered from embedded network gas (electricity) customers. This change would address the financial viability risk that hot and chilled water ENSs may otherwise be exposed to, while also ensuring embedded network customers only pay a single supply charge for the energy involved in the provision of the service, consistent with the intent of IPART's draft recommendations.

This change could also address the concerns that have been raised by some ENSs about the potential for some sites where all the embedded network customers are procuring hot water services,

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52 IPART, Embedded Networks - Draft Report, December 2023, p. 61.

53 IPART's draft report expressed this slightly differently, noting that non-embedded network customers do not incur separate supply charges for the energy used to heat or chill water, rather they incur a single supply charge for the energy consumed, irrespective of what it is used for.

54 Another potential example that we have identified is where a site has multiple ENSs and the ENS responsible for the supply of gas (or electricity) embedded network services differs from the ENS responsible for the supply of hot water (or chilled water) embedded network services. In this example, both ENSs would incur the commodity and supply charges associated with supplying the energy to the parent connection point.

While there is a risk in this example that the ENS supplying hot water (or chilled water) services would be unable to recover the costs it incurs, it is important to recognise that this type of service delivery model is unlikely to be efficient given the fixed cost nature of distributors' supply charges. The more efficient outcome in this instance would be for a single ENS to provide the services, or for the two ENSs to agree that one will be responsible for the supply of gas to the site (i.e. so the supply charge is only incurred once). We do not therefore recommend any changes to the final recommendations to accommodate this scenario.

but only a sub-set are procuring gas.[55,56] That is, by allowing the ENSs to recover the embedded network gas customers' share of the supply charge from those customers and the residual from embedded network hot water customers.

### 3.2.2 Assumed efficiency of the hot water infrastructure

The proposed maximum prices for hot water embedded network services assumes a certain level of efficiency of the hot water system. Specifically, it assumes a maximum common factor of 0.4 MJ/L, which reflects the common factor required by Jemena for the design and certification of new centralised hot water systems.[57]

While this benchmark approach makes sense in the context where the ENS owns the hot water system (i.e. the ENS is also an ENOAP) and appropriately allocates the costs of inefficiencies to the ENS/ENOAP,[58] it could be problematic in those cases where the site owner, rather than the ENS, owns this infrastructure.[59] This is because, the infrastructure owned by the site owner may be either:

(a) **less efficient** than the assumed infrastructure, in which case an ENS may be unable to recover the efficient cost of supply, which could, in turn, result in that ENS deciding to cease supplying the service to the site and other ENSs also refusing to do so; or

(b) **more efficient** than the assumed infrastructure, in which case the ENS would capture all the benefits of the more efficient infrastructure for which the site owner has paid.

The risk to embedded network customers posed by (b) could, of course, be addressed by the ENS supplying its services at a discount to the maximum price, or otherwise using the difference to offset any other costs it incurs. The same approach could not, however, be employed to address the risk to ENSs posed by (a), because the maximum price caps what embedded network customers can be charged.

We have therefore given further consideration to how this financial viability risk could be addressed **in those cases where the site owner owns the infrastructure**. Note that we are not suggesting any changes be made where the ENS owns the hot water system or air conditioning system, because in our view it is appropriate that the ENS incurs the costs of any inefficiencies in these situations. The following discussion therefore focuses on those situations where the site owner owns this infrastructure.

#### Options for addressing the financial viability risk where site owners own the infrastructure

We have identified two potential options to address the financial viability risk that may arise where the **site owner owns the hot water system** and the infrastructure is less efficient than the benchmark assumed by IPART. The two options are set out in Table 3.2.

55 For example, some customers may not have gas appliances installed.

56 This issue was alluded to by both Energy Metrics and Origin in their respective submissions, with Energy Metrics suggesting the daily supply charges be recovered from hot water users, while Origin suggested they be recovered from all premises in the network (see item 3 in Table 2.6).

57 IPART, Embedded Networks – Draft Report, December 2023, Draft recommendation 3.

58 Because as the owner of the infrastructure the ENS/ENOAP should bear the costs associated with installing inefficient infrastructure and be rewarded for installing efficient infrastructure.

59 Origin also note that the common factor may not be achievable because of the pipework in the building, which again is not owned by the ENS.

**Table 3.2: Options to deal with the financial viability risk arising if the site owner's infrastructure is less efficient than IPART"s benchmarks**

| | | Option A: Site owner bears the cost of any asset inefficiencies | Option B: Embedded network customers bear the cost of any asset inefficiencies |
|---|---|---|---|
| **Asset efficiency ≥ IPART benchmarks** | How is asset efficiency determined? | Based on IPART benchmark (i.e. a common factor of 0.4 MJ/L). | |
| | How would maximum prices work? | Maximum price based on IPART's benchmark approach. | |
| | How are the energy related efficiencies treated? | If the asset is more efficient than the benchmark, it would be open to the site owner to:<br>▪ try and negotiate a lower maximum price, which would benefit the embedded network customers; or<br>▪ allow the difference to be used to offset any other costs the ENS incurs, which it may otherwise seek to recover from the site owner. | |
| **Asset efficiency < IPART benchmark** | How is asset efficiency determined? | The efficiency of the hot water system could either be:<br>▪ agreed to by the site owner and ENS<br>▪ determined by an **independent and qualified certifier**. [60,]<br>The latter of these options could reduce the risk of an inflated value being used by the ENS. Whether or not this option is legally feasible in the context of setting maximum prices is something we are not in a position to advise on. | |
| | How would maximum prices work? | Maximum price **based on IPART's benchmark** approach. | Maximum price **based on certifier's estimate** of the asset's efficiency. |
| | How are the energy related costs associated with the more inefficient system recovered? | The ENS could charge the site owner for any additional energy the asset requires based on the agreed (or certifier determined) estimate of the asset's efficiency. | Costs of inefficiencies recovered from embedded network customers through the maximum price. |

As this table shows, the key difference between the two options is that if the site owner's infrastructure is less efficient than IPART's benchmark then, under Option A, the site owner would bear the costs of that inefficiency, while under Option B the embedded network customers would bear the costs.

Of the two options, Option B is more consistent with what applies in non-embedded networks, with the costs of any inefficiencies associated with hot water systems paid for by the user of those assets. Option A, on the other hand, is more consistent with IPART's draft recommendations and would provide site owners a stronger incentive to install efficient infrastructure. It would also result in the application of the maximum prices in a consistent manner across embedded networks, which should reduce administrative and compliance monitoring costs. Option A is therefore likely to be the preferred option to addressing the identified financial viability risk.

### 3.2.3 Treatment of unmetered gas

A small number of ENSs have questioned how the costs of any unmetered gas are to be treated. It would appear from stakeholder submissions that ENSs currently recover these costs from embedded network customers, and while this would appear to be the most appropriate way to recover this type of cost, we understand that there is a question as to whether this is legally permissible at some sites.

For instance:

- the *Residential Tenancies Act 2010*, requires landlords to pay for electricity and gas supplied to residential tenants, where the use is not separately metered; and
- the *Residential (Land Lease) Communities Act 2013*, only allows operators to separately charge for gas and electricity if there is metering in place.

[60] Under Jemena's Design Guide for Gas Centralised Hot Water System, the certifier is required to have competencies and experience as deemed appropriate by the Australian Hydraulics Association, or other recognised engineering body.

Given these legal constraints, it would appear that ENSs will need to recover any unmetered gas costs from site owners where these legislative instruments apply (or potentially landlords in strata schemes). While inconsistent with a user pays principle, this approach could incentivise the site owner to install the metering required to enable the costs to be recovered from those embedded network customers that are consuming the gas.

## 3.3 Will embedded network providers be able to recover the costs associated with the assets used in the provision of embedded network services?

**Summary:** Under IPART's proposed cost-recovery model, third party ENOAPs and/or ENOs would be able to recover any costs associated with the assets they own and/or operate from site owners, if permitted by relevant legislation and if they haven't been recovered through other means.

To enable this to occur, changes to embedded network service agreements are likely to be required (i.e. to enable costs to be recovered from site owners rather than embedded network customers). While this should be relative straightforward to give effect to under new agreements, it could be more complex under existing agreements, if there are no 'Change in Law' provisions, or the scope of these provisions is limited in some way.

Some transitional arrangements are therefore likely to be required to overcome this contractual impediment, which could otherwise pose a threat to the financial viability of some embedded network providers.

Assuming this impediment can be overcome, it would appear from our review of site-specific legislation, that site owners would (subject to some limited constraints), be able to pass the costs through to owners or tenants of these sites. Whether or not site owners do in fact pass the costs on, would be a matter for each site owner.

### 3.3.1 How would ENSPs, ENOAPs and/or ENOs be able to recover these costs from site owners?

As noted in section 3.1, third party ENOAPs and/or ENOs should, in our view, be able to recover the costs associated with the following assets from site owners, if permitted under relevant legislation (see Table 3.1) and if they have not been recovered through other means:[61]

- metering assets; or
- other assets used in the provision of embedded network services, such as on-site generation and storage, EV chargers, hot water systems or chilled water plant.

That is, if they have not recovered the costs associated with these assets through any of the following means (see section 3.1 for more detail):

- the headroom provided by the maximum prices;
- direct charges levied on embedded network customers, where permitted by relevant legislation (e.g. for meter replacements or service upgrades requested by the customer);
- other charges recovered through residential or commercial lease, tenancy agreement or similar instrument, where permitted by relevant legislation; and/or
- other sources of revenue or benefits.

The only potential impediment to third party ENOAPs and/or ENOs recovering costs from site owners that we have identified is a contractual impediment. This is because the contracting model employed by most embedded network providers to date has assumed that the costs associated with embedded network related assets (excluding embedded network conveyancing infrastructure) will be recovered from embedded network customers through embedded network service charges.

Changes to this contracting model will therefore be required if third party ENOAPs and/or ENOs are unable to recover their costs through other means. While this should be relatively straightforward in

[61] As outlined in section 2.1.2, the embedded network infrastructure itself should already be owned by the site owner (the ENSP), so there should be no need to recover these costs

the case of new embedded network service agreements, it could be more complicated under existing agreements, if there are no 'Change in Law' provisions, or the scope of these provisions is limited in some way.

While suppliers may be able to use the 'Change in Law' provisions in their agreements to overcome this impediment (i.e. to require site owners to pay some of the costs), we cannot rule out the possibility that there may be some existing agreements where this would not be possible. If this were to occur, then it is possible that the financial viability of some third party ENOAPs and/or ENOs may be threatened if they are otherwise unable to recover the costs. Some form of transitional arrangement may therefore be required to address this risk. This issue is considered further in section 3.4.

### 3.3.2 How could site owners recover the costs?

Assuming that third party ENOAPs and/or ENOs can pass through any unrecovered costs to site owners, it is relevant to consider how site owners would be able to pay for those costs.

As Table 3.3 shows, this will depend on the type of site and the restrictions applying under site specific legislation. Based on our understanding of the site specific legislation, it would appear that site owners operating in:

- strata schemes and retirement villages could recover the costs through a capital works fund or by levying contributions on strata tile holders in strata schemes (or recurrent charges on residents in retirement villages);
- land lease communities could potentially recover the costs from home owners through general site fees or a special levy; and
- shopping centres could recover costs from tenants through retail leases, as long as they are not related to the building.

On the latter of these points, it is worth noting that the assets in question include meters, on-site electricity generation and storage assets, centralised hot water systems and chilled water plant. These assets are more in the nature of plant and equipment than building costs and so should therefore be capable of being recovered by the site owner through retail leases.

**Table 3.3: Cost recovery mechanisms for particular sites***

| Site type | Ways in which capital costs can be recovered |
|---|---|
| Strata schemes | Capital works fund or levying contributions on owners |
| Retirement Villages | Capital works fund or recurrent charges^ |
| Land lease communities | Potentially through general site fees or a special levy (but not utility charges) |
| Retail leases | Contributions can be recovered from retail tenants for:<br>▪ capital costs for plant and equipment only, not for building<br>▪ repairs and maintenance of building, plant and equipment<br>▪ fixtures, equipment or services |

* Note that this reflects our understanding of the relevant regulatory instruments and is not intended to constitute legal advice.
^ Note that there can be restrictions on how much recurrent charges can be increased.

Whether or not site owners would actually try and recover these costs would be a matter for them and is likely to depend on the materiality of the imposts. Similarly, whether or not landlords in strata schemes that are required to contribute to the costs would try and pass those costs on to tenants in the form of higher rents would be a matter for those landlords.

In this regard, it is worth noting that while some stakeholders claimed that this approach would just result in higher rents and higher property prices, this may not always be the case.[62] Even if this was what transpired, it is not a reason to maintain the current arrangements, which as noted in section 3.1:

- are opaque and could be resulting in embedded network customers paying more than they should, because, unlike site owners, they cannot drive more efficient outcomes; and
- could be exposing third party ENOAPs to the risk that they will be unable to recover the costs associated with any assets they own.

As outlined in item 6 in Table 2.6, some concerns were also raised in submissions about the need for greater clarity in the final recommendations on what capital costs can and cannot be recovered. We agree there would be value in providing this clarity in the final recommendations, particularly given some of the alternative views that have been expressed about how the AER's Network Exemption Guidelines should be interpreted, as it relates to the recovery of embedded network conveyancing infrastructure. A simplified version of Table 3.1 could potentially help in this regard.

## 3.4 Are transitional arrangements likely to be required?

**Summary:** Transitional arrangements are likely to be required to:

- address the financial viability risk posed by the potential inability of third party ENOAPs and ENOs to amend their existing embedded network service agreements to recover any unrecovered costs from site owners; and
- enable embedded network providers sufficient time to put in place the arrangements required to comply with the new regulatory arrangements, if this is not otherwise provided for in the commencement date for the new arrangements.

As noted in the preceding section, we cannot rule out the possibility that some third party ENOAPs and ENOs may be unable to amend their existing embedded network service agreements (or a sub-set of their agreements) to enable them to recover costs from site owners (where not otherwise recovered and if permitted under relevant legislation). There is a risk therefore that the application of maximum prices to this group of third party ENOAPs and ENOs could adversely affect their financial viability if they are otherwise unable to recover the costs.

Even in those cases where third party ENOAPs and ENOs are able to amend their existing embedded network service agreements, it is likely to take some time to re-negotiate these agreements with site owners.

It is also likely to take some time for embedded network providers to be in a position to comply with the new maximum price requirements and other aspects of IPART's final recommendations. For example, ENSs are likely to have to advise embedded network customers of the changes and their contracts may also need to be amended. ENSs billing systems and other internal systems may also need to be amended to ensure that they comply with the new maximum prices.

There appears therefore to be merit in employing some transitional arrangements to support the transition to the new regulatory arrangements and address the specific issues posed by the implementation of the new arrangements.

There are, of course, a number of different forms that the transitional arrangements could take. For instance:

[62] For example, if the costs are relatively low, then the site owners and/or owners in strata schemes may decide not to pass them on. Even if they do decide to pass them on, it cannot be assumed that the costs will necessarily be the same as what they would have been if the ENS was able to recover the costs from embedded network customers. This is because site owners and/or owners in strata schemes may face more constraints on their ability to pass these costs on than ENS, including competition from other landlords in properties that are not subject to these costs.

(1) To address the risk posed by existing embedded network service agreements, the transitional arrangements could provide for:[63]

   (a) the grandfathering of all the existing embedded network service agreements, which would mean that the new regulatory arrangements would only apply when new agreements are entered into, or existing agreements come to an end;

   (b) the grandfathering of those embedded network service agreements that cannot be amended (i.e. those without a Change in Law provision or another way to amend their agreement); or

   (c) a similar approach to what was employed under the National Gas Rules (NGR) when capacity trading reforms were implemented, which at a high level could involve providing for: [64]

      (i) site owners to respond to any request by a third party ENOAP to amend their existing contracts to allow for cost recovery within a specified period of time;

      (ii) site owners and third party ENOAPs to negotiate amendments in good faith;[65]

      (iii) the amending agreement to be executed as soon as reasonably practicable; and

      (iv) the parties to have recourse to a dispute resolution mechanism if they are unable to reach agreement. [66]

(2) To ensure embedded network providers have enough time to put in place all the arrangements required to comply with the new requirements, the transitional arrangements could provide for the maximum prices not to apply for a specified period of time (e.g. 6-12 months), if this is not otherwise provided for in the commencement date.

Of the various sub-options under (1), Option (1)(c) (or a variant of this option) appears preferable because it would allow the reforms to come in more quickly and apply in all embedded networks at the same time (benefitting customers in those networks).[67] It is also administratively simpler than Options (1)(a) and (b).[68] Whether or not Option (1)(c) is legally feasible in this context is something we are not in a position to advise on.

In contrast to the Option (1) variants, Option (2) would be relatively straightforward to implement and is likely to be required if it is not otherwise provided for in the commencement date for the reforms. That is, if the commencement date already provides embedded network providers with a reasonable period of time to put in place the arrangements they require to comply and sufficient detail is provided on the new arrangements prior to implementation, then this may be unnecessary.

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63 Note that Active Utilities also suggested exempting all existing embedded networks, including those under construction, from the new regulatory arrangements, and in doing so pointed to the grandfathering arrangements employed by the Victorian Government as part of its reforms to the embedded network industry in Victoria. In our view, this is not a useful guide as to the appropriate scope of the transitional arrangements that would be required in this instance, because the reforms implemented by the Victorian Government were much broader reaching than what is being contemplated in this context. The Victorian Government has, for example, agreed to ban embedded networks unless at least 50% of the electricity consumed is met by on-site renewable sources.

64 This is set out in rule 640 of the National Gas Rules (NGR), which requires transportation service providers to respond within 30 business days of a request by a party to a facility agreement to provide them with an amending agreement that permits them to sell transportation capacity and a number of principles specified in the NGR. It also requires the transportation service provider and facility user to negotiate in good faith for the purposes of agreeing the terms of the amending agreement, and to execute the amending agreement as soon as reasonably practicable once the terms have been agreed. It also provides for the parties to have recourse the dispute resolution mechanism in their contract if a dispute arise, or if there is no such mechanism, they can refer the matter for determination by an expert under the expert determination rules.

65 If a similar approach is employed, there could be value in considering whether the following type of principle should guide this:

"Where possible, amendments should be made with a view to preserving the commercial intent and the respective positions of the parties".

66 This could involve the use of the dispute resolution mechanism in their existing agreement, or if there is no such mechanisms, to refer the dispute for determination by an expert under expert determination rules.

67 Under Option 1(a), for example, it could take a significant amount of time for all the existing embedded network service agreements to come to end (particularly if the agreements provide for extension periods). While Option 1(b) is more limited in its application, it could also result in lengthy delays in the application of the reforms to some networks.

68 Under Option 1(b), for example, it may be difficult to identify those embedded networks that are exempt, unless they are required to register with IPART and demonstrate their inability to recover costs, which could be administratively burdensome. Option 1(a), is also likely to rise to administrative burdens, because IPART would need to know what embedded networks are subject to the grandfathering arrangements if it is to monitor compliance with the regime.

# 4. Potential impact on incentives to install efficient energy infrastructure

**Summary of advice:** In a similar manner to financial viability, the risk that a price cap could otherwise pose to innovation and investment in sustainable and efficient energy infrastructure has been ameliorated under IPART's draft recommendations. That is, by allowing embedded network providers, where permitted by legislation, to recover from site owners any costs associated with such investments (including a reasonable rate of return) that have not otherwise been recovered.

In our view, this proposed cost-recovery model is the most effective and transparent way to jointly ensure that:

- embedded network providers continue to have an incentive to invest in sustainable and efficient energy solutions (if feasible); and
- embedded network customers are treated in a consistent manner to non-embedded network customers (in terms of responsibility for behind the parent connection point assets) and are not paying allowances for innovations or investments that may not even be feasible at their sites.

Together with the proposed maximum price methodologies, this cost recovery-model should also provide site owners and embedded network customers with stronger incentives to install efficient energy solutions, if feasible.

The term 'if feasible' is used above, because it is clear from our review that investment in sustainable and efficient energy solutions, particularly in existing sites, is likely to face a number of physical, financial and split incentive barriers, some of which may be insurmountable under current technologies and policy settings.

It is also clear from our review that although embedded network charges are important from an investor's perspective, they have not been the primary driver of innovation or investment in sustainable and efficient energy solutions in embedded networks. Rather, they appear to play more of a second order role, with building rating and certification schemes and the physical, financial and split incentive barriers referred to above, playing a more fundamental role in determining whether innovation and investment will occur in embedded networks.

The second question that IPART has sought advice on is as follows:

> *Will the proposed maximum price methodologies affect the incentive embedded network providers have to install efficient energy infrastructure in embedded networks?*

As item 8 in Table 2.6 reveals, a number of ENSs, consultants and industry associations have claimed that the proposed maximum price methodologies could adversely affect the incentives embedded network providers have to innovate and invest in sustainable energy infrastructure,[69] and suggested the use of higher benchmarks. Professor Sherry, from the Macquarie Law School, on the other hand, questioned whether innovation was occurring and noted that the best way to ensure that sustainable infrastructure is installed in new developments is to mandate it as a condition of development consent.[70]

Given the difference in views expressed on this issue it is instructive to consider the following sub-questions as part of the broader consideration of the question set out above:

- Is innovation and investment in sustainable and efficient energy solutions occurring in embedded networks and, if so, what is driving this?
- What, if any, effects are the proposed maximum price methodologies likely to have on incentives to innovate and install sustainable and efficient energy solutions in embedded networks?

69 Active Utilities, AEC, Energy Locals, ENM Solutions, UDIA.

70 Professor Sherry, Macquarie School of Law, Submission, 18 December 2023, p. 7.

## 4.1 Is innovation and investment in sustainable and efficient energy solutions occurring in embedded networks and, if so, what is driving this?

**Summary:** It would appear from our review of submissions and publicly available information that innovation and investment in sustainable and efficient energy solutions is:

(a) predominantly occurring in those new developments where the developer wants to secure a 5 Star Green Star Rating (or certification under other voluntary schemes) to distinguish their developments from others (i.e. it is occurring in some but not all new developments); and

(b) occurring to a much lesser extent in existing developments, because of the physical, financial and split incentive barriers that can arise at these sites.

It would also appear that while developers and site owners are responsible for determining whether to innovate and/or invest in sustainable and efficient energy solutions, third party ENOAPs can play an important role in financing the innovation and investment in both new and existing developments and have, to date, been compensated for doing so through embedded network charges.

It is clear from our review that although embedded network charges are important from an investor's perspective, they have **not** been the primary determinant (or driver) of whether innovation or investment in sustainable and efficient energy solutions occurs in new or existing developments. Rather, they appear to play more of a second order role, with the factors identified in (a)-(b) playing a more critical role in determining whether innovation or investment will occur within new or existing embedded networks.

The first sub-question we have considered is whether innovation and investment in sustainable and efficient energy solutions (e.g. on-site renewable generation and storage, EV charging stations and heat pumps) is occurring in embedded networks and, if so, what is driving it. In doing so, we have separately considered what is occurring in both new and existing developments.

### 4.1.1 New developments

Based on our review of submissions and publicly available information, it would appear that innovation and investment in sustainable and efficient energy solutions is predominantly occurring in new developments. [71] Specifically, it would appear that this type of investment is predominantly occurring in those new developments where a developer decides to try and distinguish its development from others in the market by securing a 5 Star Green Star rating from the Green Building Council of Australia and/or certification under other voluntary schemes.

This is reflected in the following statement made by Active Utilities:[72]

> "*Developers are certainly understanding, and reacting to, the sustainability demands of their future Lot Owners and Tenants, and recognise that the lowest possible carbon footprint is becoming a cost of entry, rather than a nice to have.*
>
> *As Developers and Main Contractors (Builders) seek to achieve a minimum 5 Green Star rating from the Green Building Council of Australia (GBCA) only sophisticated embedded network structures and overall total metering and sub-metering design can deliver the reporting benchmarks required…*
>
> *Many buildings are now also looking for certification under schemes such as Climate Active and the National Construction Code (NCC) and other State and Federal building compliance requirements such as 7-star NatHERS and NABERS are much more difficult to comply with in total in multi-tenanted environments that are not embedded networks.*
>
> *…*
>
> *Construction costs have escalated alarmingly, and it is becoming increasingly difficult for Developers to construct residential complexes at a price for which they can then deliver stock to the market at an affordable price. Many projects across the country are on hold or have been cancelled due to this inability to be able to deliver a finished product at an affordable price, which is then delaying pre-sale and project financing.*

[71] This is consistent with the following observation from the AER's Issues Paper for the review of the AER exemptions framework:
*"Developers who build embedded networks may be able to install clean energy sources more easily, for example by putting solar panels on an apartment complex roof or installing batteries or electric vehicle charging facilities and other innovative technologies. Such technologies may be more efficiently, and cheaply installed at the development stage, while the communal benefits can be more easily shared among customers who are within the same network."*
AER, Issues Paper: Review of the AER exemptions framework for embedded networks, November 2023, p. 19.

[72] Active Utilities, Submission, 22 January 2024, pp. 12-13.

…

*The capacity of the EENSP to fund elements of the infrastructure can be the difference between a site progressing or not."*

As these statements reveal, the decision to invest in sustainable and energy efficient solutions is being made by developers and their incentive to do so is being driven by voluntary building rating and certification schemes.

Understanding the driver of this investment is important, because it helps to explain:

- why innovation and investment in sustainable and efficient energy solutions is occurring in some, but **not** all, new developments (i.e. because the rating and certification schemes that are reportedly driving these investments are voluntary not mandatory); and
- why, together with the physical, financial and split incentive barriers identified in section 4.1.2, the same innovation and investment is not occurring in existing sites (i.e. because the rating and certification schemes do not apply to these sites).

We understand that in some new developments, developers are undertaking the investment, [73] while in others developers are entering into contracts with third party ENOAPs who fund, design and install this infrastructure (and later become the ENO and ENS for the site).

In principle,[74] ENOAPs should be incentivised to play this role if they expect to be able to recover the costs that they incur and earn a reasonable return[75] on their investment. To date, ENOAPs appear to have sought to recover these costs through:

- embedded network charges, which, in the case of Authorised Retailers have not been capped in any way, and in the case of exempt sellers, only capped by the standing offer of the local area retailer (see Table 2.3); and
- the other means set out in section 3.1.2 (e.g. the headroom provided by embedded network charges, other direct and indirect charges and other sources of revenue and benefits).

It is relevant therefore to consider whether ENOAPs would have the same incentive under IPART's proposed maximum price methodologies. This issue is considered further in section 4.2. It is, however, worth noting that while important from an investor's perspective, it is clear that embedded network charges have **not** been the primary determinant of whether innovation or investment in sustainable and efficient energy solutions occurs in new developments. Rather, the primary determinant has been the voluntary rating and certification schemes.

That does not mean that embedded network charges and the other means by which investment costs are recovered are irrelevant. It does, however, highlight the fact that, in the absence of these schemes (or mandatory requirements, as suggested by Professor Sherry), investment in sustainable energy solutions would be unlikely to occur in new developments. Further support for this view can be found in the Victorian Government's decision to mandate a renewable energy condition[76] for residential embedded networks (i.e. because developers and ENOAPs were not delivering this).[77]

### 4.1.2 Existing developments

In contrast to new developments, there are no building rating or certification schemes currently incentivising investment in sustainable energy solutions in existing embedded networks. A number of

[73] For example, in Frasers Property developments, its subsidiaries (including Real Utilities) undertake the investment.

[74] The term 'in principle' is used here, because, in practice, the incentive for some embedded network providers to play this role appears to have been the potential to earn monopoly profits as the sole provider of embedded network services in a development.

[75] The term 'reasonable return' is used here to refer to a return that is commensurate with the prevailing conditions in the market for funds and reflects the risks the embedded network provider faces in providing the service.

[76] This condition requires a minimum of 5% of electricity consumed at the site to be met from on-site renewable generation and the remainder to be met from off-site renewable sources.

[77] Victorian Government, Response to the Embedded Networks Review, July 2022.

ENSs' submissions also noted that there may other barriers to installing innovative and sustainable energy solutions in existing sites.

For example, Energy Intelligence, Active Utilities and Origin pointed to a number of physical and financial constraints associated with installing solar PV, batteries and replacing centralised gas hot water systems with heat pumps at existing sites:

> **Energy Intelligence:**[78]
>
> *"Due to the limited roof space in apartment blocks and similar settings, tenants will encounter difficulty in accessing solar energy and benefiting from solar feed-in tariffs, even if they are part of an embedded network."*
>
> **Active Utilities:**[79]
>
> *"When limited just to Common Property Public Light & Power (PL&P) the capacity of a building to develop a greener, more sustainable, footprint is severely curtailed due to the nature of the design of the larger buildings' electrical infrastructure resulting in excess power being exported to the larger Grid Network as opposed to been utilised by all other tenants of the building."*
>
> **Origin:**[80]
>
> *"Electricity is not always appropriate for hot water heating. It requires significantly more space and storage of large amounts of water. In addition, the current heat pump capital investment is significantly more than that required for gas centralised systems."*

The reference made by Origin to the physical constraints that may limit the ability to install heat pumps at some sites is consistent with our understanding (i.e. that boiler rooms in many existing buildings are too small to house the larger infrastructure and there may be constraints on housing it elsewhere). We also understand from public sources that retrofitting EV charging stations in existing sites can be difficult and prohibitively expensive in some cases.[81]

In addition to these constraints, some ENS pointed to the financial constraints that Owners Corporations in strata schemes may be subject to. In contrast to some of the other obstacles listed above, this constraint could be (and has been) overcome by Owners Corporations' partnering with third party ENOAPs, or through other financial arrangements (e.g. equipment lease arrangements).

Another well recognised barrier to investing in sustainable and efficient energy solutions that can be far more difficult to overcome is **split incentives**. Split incentives (a recognised form of market failure), arise when those responsible for paying for energy (embedded network customers) differ from the entity responsible for making capital investment decisions that directly affect energy usage (i.e. site owners). In rental properties, for example, landlords may be unwilling to invest in installing solar panels or more efficient hot water systems that have a higher upfront cost, because it will be the tenants – not them – who benefit from the lower energy bills resulting from that investment.

The barriers posed by split incentives and the other physical and financial constraints listed above are not unique to embedded networks. Rather, they apply across the energy market, constraining both the incentive and ability of parties to invest in sustainable and efficient energy solutions in both embedded and non-embedded networks. They can also constrain investment in new developments but, as outlined above, the voluntary 5 Green Star rating and other certification schemes appear to have helped to overcome this barrier at those sites where the developer decides to secure this type of rating or certification.

The foregoing should not be construed as suggesting there has been no innovation or investment in sustainable energy solutions in existing sites. It is just that there can be greater hurdles to this

78 Energy Intelligence, Submission, 22 January 2024, p. 3.
79 Active Utilities, Submission, 22 January 2024, p. 12.
80 Origin, Submission, 29 January 2024, p. 6.
81 See for example, SMH, EV charges in apartment blocks 'a very expensive proposition', 21 February 2023.

occurring at these sites, some of which may be insurmountable given current technologies and policy settings, irrespective of the level at which embedded network charges are set. For example:

- Physical constraints at some sites may mean that there is no alternative than to replace an existing gas hot water system with another gas hot water system, until there is some form of technological breakthrough that overcomes this impediment.[82]
- Split incentives may continue to act as an insurmountable barrier, until there is a change in policy settings (e.g. governments mandating or otherwise incentivising the adoption of minimum energy efficiency standards, appliance standards and/or the phasing out of certain fuels, e.g. gas).[83]

That does not, of course, mean that embedded network charges and other cost recovery arrangements are irrelevant to the consideration of whether innovation and investment in sustainable and efficient energy solutions will occur in existing developments. It is, however, clear from the preceding discussion that other factors are likely to have a more significant influence on whether such investment occurs.

## 4.2 What, if any effect, are the proposed maximum prices likely to have on the incentive to innovate and install sustainable and efficient energy solutions?

**Summary:** In our view, the concerns that some ENSs and industry associations have raised about the potential for the proposed maximum price methodologies to provide insufficient incentive to innovate or invest in sustainable and efficient energy solutions are misguided. The reasons for this are two-fold:

- First, these stakeholders do not appear to have taken into account the fact that under IPART's proposed cost-recovery model, ENOAPs would be able to recover from site owners the costs associated with any investment that they have made (including a reasonable return on those assets), where they have not otherwise been recovered and where permitted by relevant legislation.
- Second, the alternative approach proposed by these stakeholders, which would involve trying to recover the embedded network related assets costs through the maximum prices, would expose ENOAPs to a greater risk of being unable to recover their investment (including a return on investment), which could undermine their incentive to invest and/or lead to less efficient investment. It could also result in embedded network customers paying for innovation and investment that is not even occurring at their sites.

We therefore do not recommend any changes to the maximum price methodologies to address the concerns. Rather, we recommend that IPART retains the cost-recovery model that it adopted in the draft report, because it is the most effective and transparent way to jointly ensure that:

- ENOAPs continue to have an incentive to invest in sustainable and efficient energy solutions where that is feasible (i.e. by providing them an opportunity to recover their investment, including a reasonable return).
- Embedded and non-embedded network customers are treated consistently and embedded network customers are not required to pay for 'innovation' or 'investment' that may not even be feasible at their sites.

Together with the proposed maximum price methodologies, this cost recovery model is also likely to provide site owners and embedded network customers stronger incentives to install efficient energy solutions.

The second sub-question we have considered is what, if any, effect, the proposed maximum price methodologies are likely to have on the incentive to innovate and install sustainable and energy efficient solutions.

In doing so, we have been cognisant of the fact that although the proposed maximum price methodologies and cost recovery arrangements are important from an investor's perspective, they are not the primary driver of innovation and/or investment in embedded networks. Moreover, on their own, they are unlikely to be sufficient to overcome the barriers identified in the preceding section.

[82] For example, we understand that in existing complexes with centralised gas hot water systems, there may not be the physical space available to replace it with a centralised heat pump.

[83] A similar point was made in the COAG Energy Councils' Report for Achieving Low Energy Existing Homes, November 2019, p. 55.

We have also been mindful that from an investor's perspective, the decision to invest will ultimately depend on whether it expects to be able to recover the costs that it incurs, as well as a reasonable return on their investment. That is, whether the investor will earn a return commensurate with the prevailing conditions in the market for funds and reflecting the risks associated with providing the service.

As noted in the introduction to this section, a number of ENSs and industry associations have claimed that the maximum price methodologies will adversely affect the incentive embedded network providers have to innovate and invest in such solutions. Some have gone as far as suggesting that they could encourage the adoption of inefficient infrastructure. The AEC, for example, stated that: [84]

> "…*if correctly incentivised by sufficient allowance, embedded networks can facilitate the occupants access to renewable energy and innovation, to onsite renewable generation, and to other technologies shared throughout an entire building…Any insecurity in cost recovery is likely to lead to lower upfront capital solutions being installed instead, such as gas heating, cooktops and hot water systems. In practice this undermines the objective of encouraging lower carbon energy solutions and appliance innovation that IPART and the NSW government have made policy priorities."*

Similar observations were made by Energy Locals, ENM Solutions and Altogether Group:

> **Energy Locals:**[85]
>
> *"If embedded network operators are unable to recoup investment and therefore less likely to invest in these buildings, residents will have less access to sustainable energy solutions and there will be less access to innovation and investment in solar PV, batteries and electric vehicle charges to NSW apartment residents".*
>
> *"…a price cap that is set to achieve competitive outcomes, such as the Default Market Offer (**DMO**), is appropriate for embedded networks to maintain incentives for competition, innovation and investment by retailers and embedded network operators. Setting a price cap any lower than the DMO will likely have the effect of stifling innovation and discouraging investment in greener and more efficient energy solutions."*
>
> **ENM Solutions:** [86]
>
> *"Restricting EN customers to the lowest prices in the market may not allow these networks to facilitate innovative building, network and renewable solutions that can be reflected within a marginally higher price than market floor level."*
>
> **Altogether Group:**[87]
>
> *"…over the longer term, price ceilings can disincentivise investment and innovation, particularly in industries where high costs are incurred in the development and delivery of products or services. This can lead to slower technological progress and reduced service quality over time. Within embedded networks, consumers obtain access to technological solutions that may not otherwise be available."*

The AEC, Energy Locals and Altogether Group suggested that the maximum prices be based on the DMO to counter these contended effects. Both the AEC and Energy Locals claimed this would provide embedded network providers an appropriate allowance for competition, innovation and investment.[88]

What most of these stakeholders appear to have overlooked when considering this issue is that the proposed maximum prices are not the only means by which embedded network providers are expected to recover their costs under IPART's draft recommendations. Rather, under IPART's proposed cost recovery arrangements, ENOAPs would be able to recover from site owners any of the costs associated with the assets that they own (including a return on those assets), if they have not been recovered through other means (see Table 4.1 and section 3.1.2). This is clearly reflected in the following extract from IPART's draft report:[89]

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84 AEC, Submission, 20 January 2024, p. 2.
85 Energy Locals, Submission, 5 February 2024, pp. 5 and 8.
86 ENM Solutions, January 2024, Submission, p. 6.
87 Altogether Group, Submission, 22 January 2024, p. 3.
88 AEC, Submission, 20 January 2024, p. 1 and Energy Locals, Submission, 5 February 2024, p. 8.
89 IPART, Embedded Networks – Draft Report, December 2023, p. 24

*"We consider that energy prices are not the only mechanism available to sellers for recovering costs. They can also charge the owners corporation for their services. This means that a regulated price would not cap a providers' ability to recover its costs (including a profit margin)."*

**Table 4.1: Other means by which investments could be recovered**

| Types of assets | Other means by which capital costs could be recovered over the life of the assets |
|---|---|
| On-site generation and storage | ▪ General headroom (i.e. the difference between the maximum price for embedded network services and the actual costs incurred by the ENS in providing those services).<br>▪ The operational savings associated with generating and storing electricity on-site rather than procuring it from the NEM and having it supplied to the site via external networks.<br>▪ Any other sources of revenue or benefits associated with the on-site generation and storage, including credits, offsets, allowances, entitlements, deductions, renewable energy certificates etc. |
| More energy efficient centralised hot water systems (including heat pumps) and/or chilled water plant & equipment | ▪ General headroom (i.e. the difference between the maximum price for embedded network services and the actual costs incurred by the ENS in providing those services).<br>▪ The operational savings associated with a more efficient hot water system or chilled water plant & equipment than what is assumed in the maximum price methodology.<br>▪ Any other sources of revenue or benefits associated with the more efficient hot water system or chilled water plant & equipment (e.g any rebates, credits, offsets, allowances, entitlements, deductions, etc). |

For the reasons set out in section 3.1.3, we are of the opinion that this is the most appropriate approach to compensating ENOAPs for any investments that they may undertake (including in sustainable and efficient energy solutions). As we explained in that section, the alternative approach of trying to recover all of the costs through the maximum prices, as suggested by the stakeholders listed above, is inconsistent with what applies in non-embedded networks and could have a range of adverse effects on both:

- Embedded network customers, who under the alternative approach:
  - would be responsible for paying for assets that would be the responsibility of the site owner within non-embedded networks (thereby creating a clear inconsistency); and
  - could be required to pay inflated energy prices for:
    - assets that an ENS does not own; and/or
    - 'innovation and investment' that an ENS has no control over (i.e. because it does not own any assets used in the provision of services), and is potentially not even feasible within the embedded network.
- Third party ENOAPs, who under the alternative approach would have no guarantee that they would actually recover their investment (including a reasonable return on that investment), because they would primarily be relying on headroom to recover the costs, which could vary markedly over time. As outlined in section 3.1.3, this risk would be greater in those cases where the embedded network service agreement term is shorter than the life of the assets and/or where embedded network customers can more readily switch to on-market retailers, or not use the service.

From an investment perspective, the latter of these points is likely to pose the greatest risk to innovation and investment in sustainable and efficient energy solutions. Without any certainty as to cost recovery, third party ENOAPs are unlikely to be willing to fund such investments. As the AEC alluded to in its submission, it could also result in ENOAPs installing less efficient infrastructure, because the "insecurity in cost recovery" posed by the maximum prices would incentivise ENOAPs to install lower cost infrastructure.

We do not therefore recommend making the changes to the maximum price methodologies that AEC, Energy Locals, ENM Solutions and Altogether Group have suggested. Rather, we recommend that IPART retain the cost-recovery model that it adopted in the draft report. This is the only way to jointly ensure that:

- ENOAPs continue to have an incentive to invest in sustainable and efficient energy solutions, where that is feasible (i.e. because they will be able to recover the costs of any investment they make, including a reasonable rate of return); and
- embedded network customers are treated in a manner consistent with their non-embedded network counterparts and are not paying an allowance for innovation or investment that may not even be occurring in their networks.

The use of this cost-recovery model, in conjunction with the proposed maximum price methodologies, should also provide site owners with stronger incentives to install more efficient energy solutions, because they will bear the costs of any inefficiencies associated with the embedded network related assets (including centralised hot water systems). It could also provide embedded network customers stronger incentives to use energy more efficiently and, if necessary, to replace their appliances with more efficient alternatives, because any actions they take are likely to have a greater impact on their bills than is currently the case under the existing arrangements.

Another potential benefit of this cost-recovery approach, and the regulatory reforms more generally, is that it should reduce the incentive for third party embedded network providers to pay developers or site owners any type of commission to become an ENOAP, ENO and/or ENS at a site (to the extent that this is occurring). This is because there will be greater constraints on the prices that embedded network customers can be charged and greater transparency of any costs that an ENOAP may seek to recover from site owners.

In this regard, we would suggest that if ENOAPs are seeking to recover costs from site owners, they should be required to supply information sufficient to explain the basis for any such cost recovery. This would include information on the costs they have incurred, the rate of return that they have assumed and the extent to which they have recovered any of the costs through headroom, other direct or indirect charges and/or other sources of revenue and benefits. This would ideally be provided for in the embedded network service agreements, along with a dispute resolution mechanism to which the parties could have recourse if there is a disagreement on this aspect.

This would of course be a matter for ENOAPs and site owners to negotiate, but these measures could help protect both parties in the event that a dispute arises. Greater transparency should also help to reduce the risk of ENOAPs seeking to recover their costs more than once.