Energy Metrics Consulting

IPART NSW -
Industry Consultation Paper

The future of embedded networks in NSW

1st September, 2023

Energy Metrics Consulting Pty Ltd | www.emetrics.com.au | (02)8003 5004
Glen Streatfeild | [redacted]

Table of Contents

1. Overview

The Independent Pricing and Regulatory Tribunal of NSW is conducting a review into embedded networks in NSW, as announced on 15th June, 2023.

IPART is responding to concern from the NSW Government about a lack of consumer protections and pricing controls supporting residential embedded energy networks, and whether or not banning embedded thermal energy networks is appropriate.

Energy Metrics Consulting believes that embedded energy products, including thermal and sustainability focused systems, have the potential to benefit all parties involved when implemented effectively.

Embedded energy supply agreements can support lowering construction and development costs, reduce annual energy costs to residents, facilitate the implementation of renewable energy and environmentally friendly technologies, and increase the buying power of energy retailers. When effectively implemented, these benefits can be equally balanced between all stakeholders.

Currently, the lack of regulatory oversight or framework permits the potential for embedded energy agreements to assign benefits disproportionally amongst the parties involved, which in those circumstances, can lead to higher or non-competitive tariffs for end users.

2. Energy Metrics Consulting's Role in Embedded Networks

Energy Metrics Consulting is an energy consulting firm that was established in 2019 initially to offer expert support and commercial and technical advice for embedded energy networks. We are engaged by developers, builders, building committees and strata managers to assist with all matters relating to embedded networks. While we currently offer a range of energy related services to the market, our core business is still assisting with the establishment and implementation of embedded networks.

We routinely conduct supply tenders, feasibility studies, agreement reviews, tariff benchmarking, technical analysis and supplier change overs on behalf of our clients.

It is our view, that all customers of embedded networks should have access to unbiased, expert knowledge and advice to make informed decisions regarding their embedded network agreements and systems. Currently many customers of embedded networks get information from embedded network operators (ENO) who have vested interests in the information given out.

3. Terms of Reference – Energy Metrics Consulting's Submission

A. Are these the right criteria to use for assessing the different pricing options? Are there any criteria we have missed?

The criteria suggested by IPART are largely appropriate, however Energy Metrics Consulting would note the following additional criteria for consideration:

- Who owns and operates of the embedded energy service?
- What base fuel is being utilised for the thermal energy service?
- Have circulation / distribution losses within the building been accounted for (thermal energy networks)?

Regarding the first point, we have noted an increase in fee-for-service and building owned embedded networks. We believe both of these ownership and operation methodologies are a benefit for embedded networks as they provide transparency and control over the service and the tariffs to the building or owner's corporation. Unlike retail embedded energy networks, building owned embedded networks are run entirely for the benefit of the residents, with the owner's corporation able to set the tariffs charged to the end users. The owners corporation also has visibility over the gate meter costs, and any profit from the network remains with the owners corporation. For these reasons, we do not believe building owned embedded networks should be subject to the same limitations and regulatory requirements as those run by dedicated embedded energy network operators.

In relation to the second point, we believe the continued billing of thermal energy supplies in a per litre of water capacity (or similar volumetric measurement) is the best outcome for end users. We suggest IPART will need to outline different methodologies for centralised electricity generated hot water systems to those used for centralised gas generated hot water systems.

A major benefit of embedded thermal energy networks is they generally remove the variability of circulation / distribution losses from the end user account. We submit that any methodology to set a maximum price for thermal energy tariffs will need to consider and account for these losses, but preferably not expose the end user to the variability in cost they bring.

B. How should maximum prices be set?

It is our firm view that embedded energy networks should provide a saving to end users when compared to the competitive tariffs offered by major on-market retailers (not just a discount from standing / default offers). We routinely negotiate price protection clauses in embedded network service agreements (or similar legal instrument like deeds) to ensure prices quoted in a tender are maintained.

Examples of price protection clauses we have seen or negotiated in agreements currently are:

- Guaranteed percentage discount from Default Market Offer (DMO)
- Price to be set equal to or better than the ENO's competitive on-market tariff
- Price match policies
- Price set to a minimum percentage discount from the ENOs published tariff (when an ENO has chosen to make their embedded energy tariffs publicly available)

While all of these clauses work for setting electricity price protections, only the last one works for thermal energy supplies.

The three main factors we consider in a price protection mechanism are:

- Comparable to on-market tariffs or publicly available tariff
- Better than standing offers as a minimum, discounts from competitive market tariffs at a maximum.
- For thermal energy supplies, moderate efficiency and loss allowance used in calculation (this incentivises operators to use more efficient plant, equipment, and designs)

While electricity has the default market offer as a publicly available reference point for tariffs, no such mechanism exists for gas, and no publicly available reference point for thermal energy supplies exists.

We suggest that one of two methods be used for setting the maximum price or tariff for thermal energy supplies:

1. A calculation methodology be gazetted into policy that provides a mathematical link between the base fuel cost and a volumetric charge, or
2. A maximum annual cost (similar to the arrangement of the DMO) be set on an annual basis, that incorporates an expected consumption level of the average end user.

C. Is the Commonwealth Government's Default Market Offer the appropriate maximum price for electricity embedded networks? If so, why?

Yes. Typically, in a tender process, we would expect retail embedded network operators (ENO) to offer tariffs that provide a 5 – 10% price reduction from on-market discount tariffs available. As an example, in a recent tender of a multiple building precinct, we noted the average discounted on-market tariff offered in that area was a 5% saving from DMO. The top respondents to the tender provided tariffs that were a 10 – 20% saving from DMO.

While IPART could consider setting a maximum price below DMO, we would advise that if this is considered it should be a small percentage (i.e. 5 or 10% at a maximum). It is our view that a maximum price should ensure that embedded customers do not have tariffs higher than on-market supplies. We do not believe maximum prices should be set at a discount from DMO that is restrictive of competitive offers or prohibits the operation of embedded networks on smaller (less than 50 dwellings) buildings.

The current AER exempt selling guidelines limit ENOs from charging more than DMO currently, but we have seen instances where an ENO has used their retail authorisation to push a "market offer" above DMO. We feel that at a minimum, IPART should present an enforceable way to limit all ENOs to not charging more than DMO for electricity.

D. How should different metering arrangements be taken into account? For example, how should prices be set where services are unmetered, or where water is metered rather than energy?

Energy Metrics Consulting has developed a proprietary calculation from benchmarking embedded thermal energy supplies. It was our view that similarly to how the DMO for electricity compares the average annual cost, regardless of specific supply and consumption charges, benchmarking thermal energy supplies should consider the average total annual cost to the end user.

It is our view that IPART should support the metering of thermal energy supplies volumetrically rather than billing via the base fuel (as per the reasons previously stated).

E. Should prices be set differently for different types of customers, and different types of embedded networks? For example, residential customers, land lease communities, small businesses.

Yes, prices should be set differently for thermal energy networks and embedded electricity networks.

For embedded electricity networks, as with the DMO, there needs to be a different maximum price for residential accounts to commercial / small business accounts. We see no major difference in the consumption and demand requirements of residential apartments to land lease dwellings, however, as the consumption and demand profile of common property and commercial / retail tenants differs dramatically from residential accounts, any maximum price set for them should also be calculated differently from residential accounts.

For embedded thermal energy networks, high consumption accounts expose the biggest issue with the current norm of volumetric charges in hot water networks which is the lack of stepped tariffs. In an on-market gas account, the more gas used in a given period, the less cost per megajoule. In an embedded hot water system however, most ENOs only offer a flat tariff. While typical residential consumption rarely will consume enough gas to be billed in even the 3rd step of the tariff, high volume consumers (such as food outlets or dwellings with 6 or more residents) can consume enough hot water that they would be financially better off on a traditional gas tariff than flat per litre tariffs.

Given most ENOs will not supply thermal services to retail tenants, this issue only effects a tiny percentage of end users. It is worth noting that this issue of flat tariffs versus stepped charges has exacerbated issues with residential end users that are high volume consumers of hot water (such as the cases that were held up as examples of overcharging by ENOs during the Law and Safety Committee inquiry into embedded networks).

F. Are there any issues or systems constraints on using the common factor to calculate the units of energy for heating and chilling water?

Yes, there are issues noted. We would encourage caution with how a common factor calculation is applied to heated or chilled water. Namely, the key concern here is any requirement to bill end users in the base fuel measurement, which we feel is not a positive outcome.

Embedded thermal energy systems have a distinct advantage over the traditional Jemena common factor calculation, as it provides the end user more certainty of cost. Losses from circulating the heated or chilled water around the building are built into the tariff. This results in a consistent bill for consistent consumption. A major issue with billing in the base fuel is reconciliation of the circulation losses. The common factor calculation means that circulation losses are proportional to consumption. This often results in variability of the actual cost to an end user, largely dependant on the consumption levels of other users on the service.

We would also note, that any system that requires billing to be measured in the base fuel units offers no incentive for the ENO to use more efficient plant, equipment or circulation design, as all costs are borne by the end user.

G. How can the maximum price for hot and chilled water be set to provide incentives for energy efficiency?

Embedded networks achieve profitability through three key measures: arbitrage, efficiency, and generation. Currently, most embedded thermal energy networks rely on arbitrage to achieve profitability. We have noticed, that from the perspective of an ENO, there is no incentive currently to use more efficient plant (i.e. using condensing gas units over standard gas units) as the benefit of the increased efficiency has minimal impact on the on the profitability of the system.

If IPART were to set a maximum price equal to that of the standing gas offer from major retailers, ENOs would be more likely to review their choice of plant to ensure that systems are as efficient as possible.

If a maximum price was set below an equivalent gas standing offer, then ENOs would need to ensure that systems (both plant and pipework) are as efficient as possible, or else they would not be able to recover the cost of the capital they outlay to supply the plant.

We would caution IPART from setting a maximum price lower than the discounted gas tariffs offered in the market, as that may cause ENOs to withdraw hot water services from their offerings, or compel them to introduce capital recover charges (which will ultimately affect the end users negatively).

H. How can the maximum prices provide incentives for low emissions energy generation?

Embedded energy networks have already shown they encourage low emissions energy generation. Both onsite photo-voltaic solar and certified GreenPower are often standard inclusions in embedded networks.

It is our belief that a maximum price will not affect the inclusion of low emissions energy generation, but is likely to encourage more competitive pricing, and force ENOs to maintain an equal division of benefit amongst all stakeholders (as they will not be able to provide greater benefit to a property developer by increasing the tariffs charged to end users).

I. How should the maximum prices be enforced?

We feel that the most appropriate way to enforce maximum prices for embedded networks is through the Energy and Water Ombudsman NSW (EWON). As both exempt sellers and authorised retailers are required to be members of EWON, they would be the most appropriate body to monitor and enforce maximum prices.

EWON should be given the authority to issue significant fines for any ENO that charges end users above the maximum price, and the authority to require ENOs to reimburse end users when they have been charged above the maximum price.

J. Should new hot and chilled water embedded networks be banned? What are the benefits and costs of supplying these services through an embedded network?

Definitely not. The Jemena access arrangement in 2015 was specifically altered to allow for alternative metering solutions to be used in NSW. Banning embedded thermal energy networks would encourage property developers to use less efficient equipment and designs. It will also increase the cost of developments, which we feel is inappropriate given the current state of housing affordability in NSW and the rest of Australia.

Banning embedded thermal energy networks will also have an unintended side effect, slowing the transition to renewables. This is because embedded thermal networks are the best way of providing a user-pays metering system for centralised electric heat pumps. With out these systems, developers will be encouraged to use gas systems, or per apartment electric instantaneous units (which may reduce the circulation inefficiencies of a centralised system, but still generally operate at a coefficient of performance of 1).

Centralised thermal energy systems (both those for potable hot water and those for HVAC applications) have a variety of advantages. The combination of centralised thermal energy plants and embedded networks allows greater uptake and implementation of high efficiency systems, as well as greater ease of creating grid-interactive buildings (that can support distribution networks and function as distributed energy resources). Banning of embedded thermal energy networks will stifle the growth and innovation currently underway in the embedded network industry that are supporting these positives.

4. Summary

Energy Metrics Consulting believes the modern application of embedded energy networks has supported and has the potential to further support consumer cost reduction, property and utility infrastructure innovation and development, affordable housing, and sustainable development.

As it concerns utilities and essential services, the growth of this industry should be supported by policy and regulatory oversight to maintain consumer protections and support minimum operational standards to ensure the benefits of embedded networks are evenly distributed amongst the providers, developers, and consumers.