

**Submission
No 13**

EMBEDDED NETWORKS IN NEW SOUTH WALES

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Date Received: 24 June 2022



Energy Metrics Consulting

NSW Parliament
Legislative Assembly Committee on
Law and Safety

Inquiry into Embedded Networks in
NSW

26th May, 2022

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1. Overview

The Committee on Law and Safety is conducting an inquiry into embedded networks in NSW, as announced on 16th May, 2022.

The Committee is concerned about a lack of consumer protections and regulatory framework supporting residential embedded energy networks, in particular noting concerns with embedded thermal networks like centralised hot water systems.

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, reducing 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 disproportionately amongst the parties involved.

2. Energy Metrics Consulting's Role in Embedded Networks

Energy Metrics Consulting was established in 2019 to offer expert commercial and technical advice and support for embedded energy networks. We are engaged by developers, builders, building committees and strata managers to assist with all matters relating to embedded networks.

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

It is our view, that all potential customers of embedded networks, from establishment to operation, should have access to unbiased, specialist and expert knowledge and advice to make informed decisions regarding their embedded network agreements and systems.

3. Terms of Reference – Energy Metrics Consulting Submission

A. Current Legal Framework Regulating Embedded Networks

It is important to note that the term “Embedded Energy Network” covers a broad range of applications and products. Embedded Energy Networks can be referring to the supply of electricity, gas, hot water or heating / cooling in any property with multiple customers. Embedded Energy Networks have become common in medium density and high-rise residential developments, as well as mixed use developments. Other properties utilising Embedded Energy Networks can be caravan parks, shopping centres, industrial estates, retirement villages and broadacre developments.

We feel it is important to call out the full scope of embedded energy network applications, as each service, and each property type have differing rules, standards and technicalities.

For example, the National Energy Retail Law (NERL) and National Energy Retail Rules (NERR) define energy as electricity or gas. This means that in a residential development with an embedded network, an embedded electricity supply is governed by the NERL and NERR, but an embedded or “serviced” hot water network is not, as the retailer is not retailing energy as gas, but thermal energy in the hot water (this is regardless of how the thermal energy is generated – i.e. with gas or electricity).

This effective “loophole” in regulation has been a double edge sword. On one hand, the lack of oversight has allowed embedded network service providers to supply large volumes of customers without access to on-market consumer protections like dispute resolution, hardship policies and ombudsman access (although more embedded network service providers are choosing to offer these in embedded networks). On the other hand, the lack of regulation has removed the constraints that have hampered innovation and adoption of sustainable technologies.

It is our opinion, that any changes to the current regulatory environment, particularly around embedded thermal energy networks, should be in line with the recent Australian Energy Market Commission (AEMC) review and focus on consumer protections. That being said, any regulation changes should encourage the efficient and sustainable design of infrastructure and the use of high efficiency plant and renewable technologies, so as not to discourage the innovation being made in the field.

B. Changes to the Legal Framework Proposed by the AEMC in 2019 Review

In 2017 AEMC began a review into the current state of regulations towards embedded networks. Although their aim and outcome was well focused, their review concentrated mostly on embedded electricity networks. They did commission a smaller review into embedded gas networks, but this does not hold the relevancy of the rest of the review, as the vast majority of embedded networks utilising gas (i.e. residential medium and high rise developments) use an embedded thermal energy model like serviced or bulk hot water.

The proposed AEMC changes to the regulation framework follow the recent broader regulation changes to electricity retailing, like the power of choice reforms and the implementation of the “default market offer”. While all these regulation changes and updates have been considerate and inclusive of embedded electricity networks, helping set minimum standards and customer protections, they do little to regulate the broader embedded product stack (like embedded thermal energy networks).

A major point in the AEMC recommendations is addressing the ability for an individual consumer to be extracted from an embedded network. Currently although consumers have the right given by the power of choice reforms, to do so (without substantial infrastructure alterations) it requires a consumer to receive two bills, one from the new retailer for electricity consumption, and another from the embedded network service provider for network fees. While currently the process is prohibitive and limited (with no real or major financial benefits to the consumer), regulating this aspect would keep a constant pressure on embedded network service providers to maintain competitive tariffs in embedded electricity networks.

Unfortunately, a similar approach will not work for embedded thermal networks, as they rely on onsite plant and infrastructure to transform the base fuel into the thermal energy to be utilised (like HVAC systems or centralised hot water plants). It would be exceedingly difficult to find a way to acceptably and fairly record an accurate measurement of the base fuel to apply it to an individual for the purpose of “orphaning” an embedded consumer from an embedded thermal network. This is a key challenge, as the current and proposed regulations enacted to improve the standards of embedded electricity networks can not simply be replicated across other areas of the embedded thermal energy products to have the same effect.

C. Effect of Embedded Networks on NSW Residents and Businesses, including any health or safety concerns

There has been a vast array of effects the growth of embedded energy networks have had on NSW residents and businesses.

On the negative side, there have been isolated cases (often attracting media attention) of incidents concerning alleged corruption or misleading conduct, and profiteering or excessive charges imposed on residents. These incidents should not be understated, as things like excessive charges where a resident can feel “trapped” by an embedded network may lead to serious stress and psychological harm to a person’s mental health and in turn their physical well-being.

There are, however, some key areas that embedded networks can and have contributed very positively to NSW residents and businesses.

From a financial perspective, embedded networks (particularly those where the financial benefit is evenly balanced amongst the stakeholders) can lower the costs of property development, lower the living expenses of residents (both owner occupier and rental tenants alike), and reduce the ‘cost to serve’ expenses to service providers. The previously low barrier to market entry for an embedded network service provider has seen the incorporation of new small businesses in NSW that has stimulated market competition amongst both the embedded and on-market energy retailers, which has been a direct benefit to businesses and residents in many cases.

From a health and safety perspective, embedded thermal networks in particular have had a noticeable benefit. Traditionally, centralised plants (like hot water systems) when owned and operated by an owners committee under strata title are rarely well maintained and serviced. In comparison, under serviced hot water agreements, embedded network service providers will own and operate these plants and have a contractual obligation to maintain and service these systems. This results in less failures and outages, and with hot water plants, can lower the risks of improper operations like dangerous temperature fluctuations or bacterial growth (like legionella).

Lastly, embedded networks can reduce or mitigate the financial and regulatory barriers to implementing sustainability technologies. In our experience, the adoption of renewable generation (like photovoltaic solar) and electric vehicle charging technologies is greater in developments utilising embedded networks, than those that do not. More recently we have observed an increase in the use of the GreenPower scheme to provide renewable energy to entire developments as a default, where previously this would only be an individual consumer “opt-in at cost” option.

D. Policy and Legal Solutions to Address the Effect of and Concerns About Embedded Networks

It is our view that the modern application of embedded energy networks is an emerging market that has undergone rapid expansion. Like most emerging markets, a rapid expansion attracts significant financial investment and can lead to a disparity in product quality and standards. Any regulatory intervention into the embedded energy market should be careful and considered, so as to improve and set minimum standards for quality of operations and consumer protections, without negating the benefits the embedded network industry has to offer or reducing market competition.

Energy Metrics Consulting has considered the following potential policy and legal solutions, and areas of consideration that could assist in maintaining a standard and building consumer confidence in the continued operation of embedded networks:

Consumer protections

The AEMC proposed alterations to the legal framework have addressed this issue and the requirement of embedded energy service providers to hold membership with the Energy and Water Ombudsman NSW (EWON) assist in strengthening it.

Metering and Billing Standards

While this is not a significant issue for electricity, gas or hot water metering, consideration should be made to address the rise of new metering technologies regarding embedded thermal energy networks, like those used for heating and cooling. It is our understanding that new metering technologies and systems like “delta-T” meters (that calculate energy consumption in closed loop systems) and device level energy consumption apportioning capabilities do not currently have metering standards to support their operation and accuracy. While these new technologies have a potential to benefit businesses and residents, without standards or an operational framework they have more potential to cause issue and undermine consumer confidence.

Published Standing Offer – Hot Water

As there is no Default Market offer for gas, even if a link was created to connect a thermal energy tariff to its source fuel, there would be no mechanism to benchmark it in a gas fuelled system. Instead, we suggest that embedded network service providers be required to publish a standing offer for each distribution network of operation. This would create a self-imposed price cap for each provider and assist in prevention of excessive “price creep” on a site by site basis.

Providers would still be able to reduce tariffs to be competitive in their offerings, but this would potentially reduce the opportunity for a provider to unbalance their offer towards a property developer. It is always a concern in a competitive market, that providers will be encouraged to provide more upfront benefit to a property developer to secure a project and being left with the only recourse to raise consumer tariffs to accommodate this.

An artificial price cap could encourage greater focus on system efficiency to maximise financial returns to providers, and limit sudden market shifts in how the financial benefit is assigned to stakeholders.

Minimum Agreement Terms Standard

Currently embedded service agreements are not consistent between providers. There can be significant variety in both the legal instruments used to secure embedded energy services, and the requirements of their termination. Embedded network service providers should have a legal protection to the investment they make into an embedded network, but a standard that outlines the limit of what can be recovered as well as a mechanism for early termination could encourage market competition, support consumer benefits, and grow consumer confidence.

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.