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Submission to the AEMC review of regulatory arrangements for embedded networks

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About CEEM

The UNSW Centre for Energy and Environmental Markets (CEEM) undertakes interdisciplinary research in the design, analysis and performance monitoring of energy and environmental markets and their associated policy frameworks. CEEM brings together UNSW researchers from the Australian School of Business, the Faculty of Engineering, the Institute of Environmental Studies, the Faculty of Arts and Social Sciences and the Faculty of Law, working alongside a number of Australian and International partners.

CEEM's research focuses on the challenges and opportunities of clean energy transition within market oriented electricity industries. Key aspects of this transition are the integration of large-scale renewable technologies and distributed energy technologies – generation, storage and 'smart' loads – into the electricity industry. Facilitating this integration requires appropriate spot, ancillary and forward wholesale electricity markets, retail markets, monopoly network regulation and broader energy and climate policies.

CEEM has been undertaking research into these challenges for more than a decade, with a focus on the design of markets and regulatory frameworks within the Australian National Electricity Market, and State and Federal energy and climate policy. More details of this work can be found at the Centre website – www.ceem.unsw.edu.au. We welcome comments, suggestions and corrections on this submission, and all our work in the area. Please contact Associate Professor Iain MacGill, Joint Director of the Centre at i.macgill@unsw.edu.au.

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About APVI

The Australian Photovoltaic Institute (APVI) comprises companies, agencies, individuals and academics with an interest in solar energy research, technology, manufacturing, systems, policies, programs and projects.

Our objective is to ***Support the increased development and use of PV via research, analysis and information.***

The APVI prepares Australia's Annual PV in Australia Report and contributes PV related statistics to the International Energy Agency and provides analysis to industry, regulators and government on a range of technical and policy related issues.

A detailed summary of our projects can be sourced at our website www.apvi.org.au some relevant projects and reports include:

- Australian PV System Monitoring Guide;
- Best Practice Guidelines for Local Government Approval of (Solar) PV;
- Interactive Australian PV solar Mapping Resource including PV capacity at a Local Government Area level;
- PV Fault Reporting Website;
- Impacts of PV, AC and other Technologies and Tariffs on Consumer Costs;
- High Penetration of Photovoltaic Systems in Electricity Grids;
- Magnetic Island High Penetration Case Study;
- Carnarvon High Penetration PV Study Report;
- Alice Springs High Penetration PV Study Report
- PV Integration on Australian Distribution Networks: Literature Review

Introduction

The growth in popularity of embedded networks should be seen in the context of the ongoing transformation of the Australian electricity market from a largely centralised generation grid to a more decentralised network, with increasing demand-side participation (DSP) as organisations, communities and individual consumers deploy diverse technologies - including distributed generation, storage and demand response – to help meet their energy needs.

The AEMC's review of regulatory arrangements for embedded networks follows the *Power of Choice Review* and appears to share its emphasis on the importance of the role of consumers as individual participants in the NEM. "*A key assumption behind this review is that consumers will always make the best decision from their viewpoint, based on the prices they face, the technology and equipment they have access to, the information they have and their individual transaction costs. …This will also allow third parties to assist consumers make optimal decisions under innovative business models."* [1]

In reality, many options for demand side participation require significant co-ordination between consumers and support from third parties to facilitate engagement and maximise value, in what is a highly complex 'designer' market with major asymmetries between supply and demand arrangements. Embedded networks are one potential mechanism to facilitate this co-ordination.

It is perhaps not surprising that some industry stakeholders view embedded networks as a vehicle for unscrupulous corporate landlords to lock their tenants into disadvantageous energy contracts. This does, indeed, reflect some aspects of current arrangements, and requires attention. However, this view risks slowing progress on a range of new EN opportunities that can assist the NEM in better serving the long-term interests of consumers. This is particularly the case in the residential sector, where appropriate EN arrangements could facilitate more sustainable community housing developments, energy service delivery at edge-of-grid locations, social housing, apartment buildings and strata schemes.

As one example, although Australia has 1.5 million solar households across Australia and PV penetration reaches 40% in some residential areas, residents of multi-occupancy housing are largely excluded from accessing the benefits of distributed renewable energy. Some 70% of apartments are in buildings of 4 storeys or less, where the common property load is small, and there may be potential for rooftop solar energy to be distributed to the individual apartments. Current embedded network and energy retail regulations are complex and difficult to negotiate and as act as a barrier to communities wishing to realise opportunities such as these.

The National Energy objectives aim to promote the long-term interests of consumers with respect to "price, quality, safety, reliability and security of energy supply". In the current rapidly changing environment, the challenge for regulation is to avoid legislating for or against specific technologies or business models, allowing individuals and communities to determine the best solutions for their circumstances. The presumption that embedded networks are inherently anti-competitive may, perversely, do more to protect the interests of some industry incumbents than consumers themselves. After all, if energy users aren't able to collectively organise themselves to better provide their energy services, much of the inevitable collective decision making required in the electricity industry will have to remain exclusively with existing industry players.

A more technology and participant neutral approach is to recognise that the effect of embedded networks on consumers is neither inherently good nor bad. There are certainly embedded networks where neither regulation nor market signals incentivise ENOs to provide quality service at a competitive price, with the result that off-market customers may be paying higher prices than those available to on-

[1] AEMC, DSP Issues Paper, 2011

market customers. However, there are also circumstances where embedded networks can reduce energy costs for consumers and facilitate shared use of generation and storage resources, with potential broader benefits that might be aligned with consumer preferences, including reduced carbon emissions and deferred network augmentation. In seeking to remove barriers to customers' access to the retail market, it is therefore important to avoid creating additional unnecessary barriers to the creation of embedded networks, where they could benefit consumers.

Question 1: Does the two-tiered framework of requiring either registration/authorisation or exemption remain fit for purpose?

In the context of the growing number, scale and diversity of exemptions:

> ***(a) What issues does the two-tiered regulatory framework of requiring either registration as an NSP/authorisation as a retailer, or exemption give rise to?***
>
> ***(b) Are there alternative regulatory arrangements, not based on a binary system of registration/authorisation or exemption, that would be more appropriate?***

As noted in the consultation paper, there are increasing numbers and diversity of embedded networks utilising a variety of business models. Unlike some other energy resellers (e.g. solar PPA providers), an ENO is usually the sole supplier of electricity to a customer and the consumer protections attached to selling energy through embedded networks must therefore remain robust. However, a sliding scale of constraints and responsibilities is appropriate for ENOs that range from a caravan park with 5 residents to a national energy retailer. Although there is a clear distinction between registration / authorisation and exemption, the existing framework effectively offers 4 tiers of regulation: registration or authorisation, individual exemptions, registered exemptions and deemed exemptions. This framework has the flexibility to address diverse circumstances and business models.

Question 2: Does the exemption framework remain fit for purpose?

> ***(a) Does the exemption framework promote efficient investment and allocation of risks and costs. Specifically, does the exemption framework:***
>
> > ***(i) incentivise efficient investment in infrastructure and energy services within embedded networks?***
> >
> > ***(ii) appropriately allocate risks between exempt sellers and exempt network service providers and embedded network customers.***
>
> ***(b) Does an exemption framework continue to be necessary for some categories of embedded networks? If so:***
>
> > ***(i) what should the objectives of a network and retail exemption framework be?***
> >
> > ***(ii) what types of embedded networks and on-selling arrangements should be eligible for exemption?***
> >
> > ***(iii) Do the three categories of deemed, registrable and individual exemptions remain appropriate? If not, what changes should be made to the exemption framework?***
>
> ***(c) Has the AER been provided the appropriate powers and functions in relation to exemptions under the NEL and the NERL?***
>
> ***(d) Are the current reporting, compliance and enforcement arrangements under the exemption framework appropriate? If not, what changes should be made to the current compliance framework for exemption***

The current exemption framework is fundamentally sound but requires significant changes to address the increasing diversity of business models engaging in the EN space. The process of applying for exemption is complex and time-consuming and can be very hard for communities or groups of consumers to navigate. We know of one recent applicant that required an estimated $130,000 of (pro-bono) legal assistance to secure retail and NSP exemptions for an embedded network of 6 households.

We have also spoken to strata bodies whose plans for PV and storage distributed through an embedded network have been thwarted by the complexity and lack of transparency of the exemption application process.

The exemption framework should serve to avoid placing a disproportionate administrative burden on resellers and ENOs operating at small scale, at an individual site, and / or in the interests of customers. The use of deemed exemptions for specific cases of very small embedded networks is appropriate, as is the use of registered exemptions for specific cases of larger networks. However, there exists a disparity between the criteria for NSP exemptions and retail exemptions, although in practice the process of establishing an embedded network requires both. The classes of retail exemption are unnecessarily restrictive and there is a large disparity in the administrative burden of applying for an individual retail exemption compared to a registered exemption.

As noted in the consultation paper, there is a significant increase in the number of embedded networks in strata-titled developments. There is also an increase in the number of bodies corporate of residential strata buildings seeking to use embedded networks specifically to distribute self-generated solar energy to apartment residents. These systems can reduce household energy costs, reduce greenhouse emissions and – if combined with storage – reduce peak network loads. Potential sites include both small and large strata schemes, particularly low-rise apartment buildings (where there is significant opportunity to supply a large proportion of the building's load with distributed solar generation).

In the consultation paper, the AEMC notes (p25) that "some embedded network operators are run on behalf of embedded network customers (for example, a body corporate) and therefore do face an incentive to pass on all savings from the parent connection point." Nevertheless, the classes of registrable exemption take no account of the relationship between the ENO and the customers. Moreover, the regulations for retail exemption consider residential customers to be particularly vulnerable to exploitation by an ENO, and so make it harder for residential customers to establish an EN than it is for commercial customers. Although class NR2 exemption for residential embedded networks with more than 10 customers exists as a registerable NSP exemption class, the removal of class R2 *retail* exemption class means that these scenarios now require individual retail exemptions, regardless of whether the ENO is a body corporate, a property developer or a community energy organisation.

The protection of an individual customer's ability to opt out of an embedded network should be balanced against the ability of a body corporate (representing all the owners of units within a development) to make a collective decision favouring renewable energy provision. However, we recognise that where an embedded network is established, prior to occupation, by the developer (acting as the body corporate), subsequent owners and occupiers have little or no control over the terms of their energy supply; it is therefore important to distinguish between these scenarios.

We recommend the re-introduction of a class of registerable retail exemptions similar to the old R2 class and linked to the NR2 class of NSP exemption for scenarios where the reseller / ENO represents the interests of customers and /or community. This should be in line with the Victorian Government's proposed addition of a registerable exemption for Community Energy projects[2], but broadened to specifically include bodies corporate and owners corporations, and framed to account for the range of financial and organisational models of community energy. The condition for exemption in this category should be that one of the principal purposes of the provision of services by the exempt entity is to benefit the community it is servicing. To further protect apartment residents, we recommend a restriction on the maximum length of contract for the provision of energy services that can be entered into by a developer on establishment of a new strata development.

It is right that the AER is given discretion to determine individual exemptions, but guidelines should ensure that decisions promote the interests of consumers in line with the national energy objectives,

[2] Victoria State Government (2016). General Exemption Order - Draft Position Paper.

and avoid introducing unnecessary barriers to creation of embedded networks where they could benefit customers.

If access to retail competition is sufficiently improved (see below), ENOs will be incentivised to provide competitive tariffs to retain their customers. This approach is preferable to the AER's current presumption that retrofitting brownfield ENs acts against the interests of customers, and would remove the need for the current onerous conditions including an extended marketing campaign and an unspecified 'substantial majority' in favour.[3]

Question 4: Can access to retail competition be improved?

(a) What barriers exist for small and large customers in embedded networks going on market?

(b) Are retailers currently providing or planning to provide competitive market offers to embedded network customers? What barriers will remain to providing these offers after 1 December 2017 with the commencement of the Embedded networks rule?

(c) Are there examples or cases of small and large embedded network customers going on-market? What were the circumstances that made going on-market desirable and possible for these customers?

(d) What is the level of competition to provide electricity to embedded network operators at the parent meter?

(e) Is there an imbalance in negotiating power between embedded network customers and embedded network operators in negotiating terms and conditions, including price, due to barriers to accessing retail market offers?

There are currently a number of barriers for off-market customers seeking to move on-market. Removal of these barriers will increase the incentives for all ENOs to provide high quality service at a competitive price and is preferable to maintaining the current substantial challenges of establishing embedded networks. These represent significant barriers to communities of consumers wishing to move *off*-market and should also be removed to ensure that creation of an embedded network is a viable market choice.

Metering Arrangements

The introduction of competition in metering services[4] could be an opportunity to ensure a more level playing field for exempt sellers and retailers in accessing metering services for on- and off-market customers within embedded networks, reducing unnecessary meter churn and decreasing the financial barriers to customers moving on- or off-market. However, it is not clear that the limited ring-fencing restrictions in the final rule determination will prevent anti-competitive behaviour by metering coordinators linked to retailers or to DNSPs.

When an EN customer moves on-market, the retailer can choose to buy or lease their meter from the ENO or to replace it, offering no compensation to the ENO for their stranded asset. Conversely, if an EN is retrofitted to a property, the ENO is responsible for costs of installing new meters if required. Currently in Victoria, where 95% of customers have advanced meters, DNSPs have no mechanism for transferring NMI registered meters to ENOs for use as off-market meters when an embedded network is retrofitted to a brownfield site, so the ENO must replace each advanced meter with a new one.

It seems that the ENO is disadvantaged in both scenarios and this unnecessary meter churn is inefficient and cannot benefit consumers. A more equitable solution would be for existing meters to be

[3] Australian Energy Regulator (2016). Draft NSP Registration Exemption Guideline - August 2016.

[4] AEMC (2015). Final Rule Determination: National Electricity Amendment & National Energy Retail Amendment (Expanding competition in metering and related services) Rule 2015.

retained for customers moving on- or off- market where it is technically feasible to do so, and for the existing meter owner to be obligated to make it available for sale or lease at a fair rate. This requires a simple process for advanced meters to be NMI registered or de-registered.

Network Charges

Complexity and lack of clarity around network charges in embedded networks creates barriers both for consumers moving on-market and for communities establishing embedded networks.

Currently, an ENO receives network payments from off-market customers that include charges for the network costs up to the parent meter, but cannot include charges for capital or operational costs of the embedded network. The AER "considers the network development costs to have been met in the initial establishment of the facility"[5] and so does not allow capital expenditure to be recovered through energy charges. However, in practice, 'shadow-pricing' (charging off-market customers the equivalent of network charges they would pay as on-market customers) allows a margin which *can* contribute to EN operating costs.

For example, sufficient income may be generated through the difference between the tariff paid to the external retailer at the parent connection point and the tariff charged to the embedded network customers. The former is likely to be through a commercial tariff, which would normally have a lower usage (per kWh) component than either residential or small business tariffs. The former would also have a demand charge component, so the aim of the ENO would be to minimise demand peaks as seen by the parent connection point (using price signals, batteries and/or demand side management). In this way, it may be able to generate additional income that could be used to supplement income through rent/levies. Income obtained through this approach will of course be reduced by the need to offer an attractive electricity tariff in order to reduce the number of customers who choose to go to another retailer.

Where a strata body retrofits an EN to a residential property, there is no mechanism, other than through electricity bills, to share the capital cost of the installation between residents (owner occupiers and tenants). If the cost is recovered through strata fees, it also falls on landlords who do not benefit from any consequent reductions in electricity bills. This will act as a disincentive to installing the EN and could prevent a community from creating an embedded network even where there is a financial benefit to customers to do so. An ENO should therefore be permitted, if they choose, to recover the capital costs of installing the embedded network (including advanced metering costs if appropriate) through electricity charges, provided they can demonstrate there is no duplication of charges.

Under current arrangements, when an EN customer moves on-market, the ENO must continue to charge the network component of the bill, which is passed via the ENO electricity bill through their retailer to the DNSP[6]. This means that the ENO will need to continue charging a consumer that is no longer their customer. A simpler solution would be for the network operator to be able to 'see' the embedded customer's meter, with the electricity use then subtracted from the ENO's meter. This would reduce both the wholesale and network costs faced by the ENO, and have them transferred across to the embedded customer's new retailer. This arrangement would not require the ENO's retailer to be the same as the embedded customer's retailer.

[5] Australian Energy Regulator (2016). Draft NSP Registration Exemption Guideline - August 2016.

[6] Strangely, the ENO – rather than the retailer - is also responsible for ensuring the customer does not also incur network charges from their new retailer. The AER's Exemption Guideline states "*The exempt embedded network service provider must take steps to remedy any duplication of network charges experienced by tenants who have entered into an energy supply contract with an authorised retailer.*"

Question 6: What consumer protections, in relation to the sale of energy, are appropriate for off-market embedded network customers?

(a) Is the objective of providing comparable consumer protections to exempt customers and customers of authorised retailers being achieved in practice?

(i) What gaps or issues exist?

(ii) Do stakeholders consider the ACL and tenancy legislation to provide suitable complementary protection for embedded network customers alongside the energy specific consumer protections included the exemption conditions?

(b) Are there changes required to the consumer protection framework for off-market embedded network customers?

(i) What should the guiding principles for consumer protections for embedded customers be?

(ii) What risks should be addressed by consumer protections for embedded network customers?

(iii) Should consumer protections continue to be contained in the retail exemption conditions or should they be elevated into another legal instrument, e.g. the NERR?

(c) What energy-specific consumer protections should apply to off-market embedded network customers in the context of market and technological changes and changing risks?

(d) How do the current arrangements for consumer protection impact on vulnerable embedded network customers? How can access to concessions and rebates be improved?

(e) An exempt seller may be providing a broader service than just electricity to embedded network customers. For example, the exempt seller may also be the embedded network customer's landlord, provider of strata services or water supplier. Does the different relationship between embedded network customers and the exempt seller as compared to the relationship between a retail customer and an authorised retailer have implications for consumer protections?

(f) What examples or case studies can stakeholders provide which demonstrate differences in the consumer protections provided to exempt customers and to customers of authorised retailers? Do the experiences of embedded network customers indicate poorer outcomes due to differences in consumer protections?

When deciding on appropriate consumer protections, it should be noted that some standard consumer protections may not be relevant, depending on the type of alternative energy service being offered. For instance, pricing arrangements and service availability different from those imposed on authorised retailers may be appropriate. Although consumers should have the right to opt-out of an embedded network, there are circumstances where the exempt seller should also be protected from punitive costs caused by consumers opting out (e.g., the costs of installing new metering equipment or removing generating and storage equipment when changes are made).

Notably, customers may choose new arrangements, different to those imposed on authorised retailers, which may be the reason for them choosing a different supply option in the first place: for example, they may prefer time of use tariffs that reward daytime use and penalise evening and night time use (to encourage demand management maximising self-consumption of solar generation), even though such tariffs may not look favourable in a direct comparison with commercial tariff structures. A price cap is an appropriate mechanism for protecting embedded network consumers but allowance should be given for these alternative business models. If barriers to individual customers moving on-market are reduced, less rigorous price control may be appropriate, for example a price cap specifying that *on average*, off-market customers pay less than the standing offer.