Stand-alone energy systems in the Electricity Market

Consultation on regulatory implications

Energy Market Transformation Project Team

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COAG
Energy Council

Submissions are invited on this consultation paper by 4 October 2016. Electronic submissions are preferred and can be sent to the COAG Energy Council Secretariat at energycouncil@industry.gov.au.

Those who wish to provide hard copies by post may do so by addressing their submissions to:

COAG Energy Council Secretariat
GPO Box 9839
Canberra ACT 2601

All submissions will be published on the Energy Council website (www.coagenergycouncil.gov.au) unless stakeholders have clearly indicated that a submission should remain confidential, either in whole or in part.

Please note that this paper does not provide legal advice about any of the laws discussed in it, and it should not be relied on for any purpose. It is intended as a consultation paper only. It does not reflect the final views of officials or Energy Council policy.

The Energy Market Transformation Project Team consists of officials from the state, territory and Commonwealth agencies with responsibility for energy policy. It operates under the COAG Energy Council framework.

Contents

Introduction

Australian electricity markets are entering a period of change. The traditional, centralised electricity supply model is being challenged by emerging products and services that allow customers greater control over how their electricity is delivered and consumed. The Energy Council is considering a range of issues related to the uptake of new energy products and services. A key work stream is addressing issues associated with the current regulatory framework and stand-alone energy systems.

Stand-alone systems may become more prevalent in the future (as both brownfield and greenfield developments) in response to a number of drivers:

- Increasing viability and declining cost of distributed energy resources such as battery storage technologies;
- Decarbonisation policies and incentives, coupled with high grid costs, driving demand for clean, self-sustainable energy solutions at both the community and individual customer levels;
- Reliability and power security issues for fringe-of-grid communities; and
- Increasing prevalence of off grid areas that include (but is unlikely to be limited to):
    - new remote and/ or isolated regions where grid extension is not an economically viable solution, or
    - greenfields off-grid communities where energy supply arrangements are a precondition of ownership/tenancy.

In general, stand-alone energy systems are currently not captured under the national frameworks and are subject to limited regulation under jurisdictional legislation. The exception to this is Queensland, which applies the National Energy Retail Law (NERL) to all energy selling regardless of connection to the National Electricity Market (NEM) grid, and also applies the NERL distributor obligations to 30 plus regional isolated networks operated by Ergon Energy through nomination of those systems as provided for under Section 12 of the NERL.

There are already areas where it may be more economically efficient for the communities to go off-grid (due to the costs of maintaining and/ or replacing lines to serve those communities); while these are currently covered under the national frameworks and could be taken off grid as a negotiated service there is no evidence that this approach has been adopted.

A key policy question going forward is whether there is value in regulating stand-alone systems under a national framework and, if so, what this framework should cover. A further important policy question is whether barriers exist, be it in the national frameworks or jurisdictional instruments, which prevent stand-alone systems being built to replace grid-extensions where it is the most economically efficient way to serve those customers.

In 2015, officials consulted and provided initial advice to the Energy Council on whether and how new products and services might be integrated into the regulatory framework. A key recommendation from this work was that officials undertake a review of the appropriate regulatory framework for off-grid / stand-alone systems. The purpose of this paper is to seek stakeholder views on (i) under what circumstances stand-alone systems should be regulated under national frameworks (ii) what a future national regulatory framework for stand-alone systems should cover (iii) what, if any, aspects of current regulatory arrangements (national or jurisdictional) that currently act as barriers to the development of stand-alone systems, where this is in the best interests of consumers.

Stand-alone systems fall into the general area of ‘new products and services’ but, due to their potentially substituting for – rather than building on – the interconnected energy grid, present a unique set of challenges and this paper builds upon the new products and services work stream in addressing micro-grids.

Purpose

The purpose of this paper is to begin a consultation on whether the regulatory frameworks that govern the NEM are appropriate in the context of the new stand-alone energy systems that are entering the market.

There a number of reasons that justify the regulation of stand-alone energy systems, namely:

- Essential service - energy is an essential service for which there is a need for continued supply, reliability and universal access.
- Natural monopoly - a stand-alone energy system may exhibit natural monopoly characteristics such that regulation is required to simulate the outcomes from a competitive market.
- Consumer protection - a stand-alone energy system presents consumer protection issues and regulation may be required to address the inequality in bargaining power that exists under such an energy service model.

Scope

This paper does not consider individual customer-owned stand alone systems like household combined solar/battery systems where these are taken up by premises voluntarily. The intended scope of this paper is in addressing the regulatory requirements for new forms of utility supply rather than self-supply for individual consumers.

This paper does not explicitly consider systems in the Northern Territory (NT) and Western Australia (WA). However, some of the issues identified when considering the role of market institutions in those jurisdictions are of relevance to stand-alone systems. The Energy Council is addressing the incorporation of these systems into the National Electricity Law (NEL) as part of the energy reform processes of WA and the NT.

This paper is also intended to be forward-looking. There are a significant number of stand-alone energy systems in Australia already, particularly in remote regions as a consequence of Australia's low population density and the limits of the interconnected NEM. These existing systems are not primarily the subject of this consultation, which aims to clarify the regulatory arrangements for potential new systems. There is, however, potential to consider arrangements to transition existing systems to a new framework over time.

Why conduct this consultation now?

It is timely to look at the regulatory implications of stand-alone energy systems because:

- Jurisdictions are encountering proposals from energy service providers and other groups, such as local councils, that seek to use the micro-grid energy model and present challenges to the regulatory model.
- A number of technology options and business opportunities are beginning to emerge in the market, and it would be better to consider any regulatory implications of stand-alone energy systems at an early stage. This will help to ensure that the regulatory framework is not creating barriers to innovation, and that supporting frameworks are in place to ensure an adequate level of protection for consumers as stand-alone energy systems emerge in the market.
- Stakeholders are seeking certainty from governments about whether and how new stand-alone energy systems might be integrated into the regulatory framework. Uncertainty is both problematic for potential consumers of stand-alone energy services and a barrier to proponents. Clarifying the arrangements will give all parties greater certainty in understanding their obligations and the issues that may arise.

This consultation process is an opportunity to consolidate consideration of these issues, and any subsequent regulatory changes, in a single work stream.

Making a submission

Stakeholders are invited to provide written submissions on the consultation paper by close of business on **Tuesday, 4 October 2016**.

All stakeholder submissions will be published on the Energy Council website unless stakeholders have clearly indicated that a submission should remain confidential, either in whole or in part. Electronic submissions are preferred and can be sent to the COAG Energy Council Secretariat at energycouncil@industry.gov.au.

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What will happen after this consultation?

Submissions on this consultation paper will be used to inform a discussion paper to be presented to Ministers at the COAG Energy Council meeting in December 2016. The paper will identify any priorities for regulatory reform that officials consider should be addressed in the context of stand-alone energy systems in the electricity market.

If any reforms are prioritised as a result of this process, these will also involve extensive consultation. We will need to consider the best options for progressing any work. The nature of the process will be affected by whether the necessary reforms can be made by amending national rules, or whether legislation is required.

Problem

The energy regulatory frameworks set out by the NEL and NERL are fundamentally designed for the interconnected NEM, with key elements addressing vertically disaggregated generation, transmission, distribution and retail functions at a large scale, tied together through a national wholesale market and national transmission infrastructure. Stand-alone systems by definition challenge the purposes for which the energy regulatory framework was designed. If stand-alone systems are to become a significant factor in the electricity sector the regulatory framework needs to be adapted accordingly.

Regardless that the existing national energy framework was developed for a different 'animal', in the absence of amendment there is potential that it could apply to stand-alone systems. For instance, a stand-alone system with a grid connection (regardless of its purpose/ transfer capacity) would be captured by section 11(2) of the NEL requiring registration or exemption of distribution systems that are connected to the national grid. The issue however is whether the existing framework is actually fit-for-purpose for these developments.

Objectives

In addressing this problem, the Energy Council must bear its objectives in mind. Clause 2.1 of the Australian Energy Market Agreement sets out the Energy Council's overarching objective which is:

> *The promotion of the long term interests of consumers with regard to the price, quality and reliability of electricity and gas services*.

The Energy Council is concerned to ensure that where stand-alone energy systems are adopted, those systems aid in the pursuit of the long term interests of consumers, those consumers being both those that are served by stand-alone systems and those which are not. The Energy Council also wishes to ensure that consumers can fully benefit from innovation and that their interests are adequately protected.

Discussion points:

What objectives, beyond the Energy Council's general objective, should be held in mind in addressing regulatory arrangements for stand-alone systems?

What is a stand-alone energy system?

A stand-alone energy system is a local energy grid with control capability, which means it can disconnect from the wider grid and operate autonomously. These systems have technology that is capable of managing power flows, voltage and load. It could be a remote community or it could be a district neighbourhood equipped with forms of distributed generation that are capable of servicing the households' energy needs for significant periods of time.

A key question around stand-alone energy systems is whether the system is connected to the interconnected national electricity system. A stand-alone energy system could be defined as an energy system that is not connected to the interconnected national electricity system as defined under the NEL. The U.S Department of Energy, however, defines a microgrid as a 'group of interconnected loads and distributed energy resources with clearly defined electrical boundaries that acts as a single controllable entity with respect to the grid [and can] connect and disconnect from the grid to enable it to operate in both grid- connected or island mode'.[1]

Discussion points:

What is an appropriate definition for our purposes?

What are the different regulatory issues arise from stand-alone systems that are connected to the grid versus those that are not?

Potential scenarios

There are a number of scenarios through which stand-alone energy systems are or could be deployed:

Existing remote locations – this could include remote mining camps or settlements whose distance from the main grid makes it impractical and inefficient to supply them with their electricity needs by connection to the interconnected national electricity system. Such systems are currently regulated under existing jurisdictional frameworks[2].

Greenfield developments – this scenario relates to development of housing estates within urban areas but a decision is made to have them remain isolated from the grid to some extent. Customers who choose to live in such housing estates would have their energy needs supplied by stand-alone energy systems. Due to the lack of grid connection, such networks will not be regulated under existing energy frameworks that are available to embedded networks. However, if there is a grid connection it would be captured as an embedded network – the question for policy makers and stakeholders is whether this would be appropriate.

Distributor led transition from interconnected network – network providers may conclude that in servicing their networks that it is cheaper to disconnect edge-of-grid customers and instead use stand-alone energy systems to supply them with their electricity needs. It is not clear under the current regulatory framework how such a transition would be treated. For example do affected customers have a legal right to object to these arrangements and what, if any, additional protections do these customers have beyond what they already have access to under consumer law.

Brownfields/community led transition from interconnected network – in this situation there is existing grid

[1] Microgrids at Berkley Lab, https://building-microgrid.lbl.gov/microgrid-definitions

[2] As noted earlier, Queensland differs in its approach as it has, to a large extent, applied the national NERL framework to these situations.

infrastructure and a community engages a stand-alone energy systems provider to transition the community off the interconnected grid.

Ownership models

In considering the challenges presented to the regulatory environment by stand-alone energy systems, it is important to think beyond a single, predominant conceptual ownership or business model. The particular regulatory challenges that are presented by stand-alone energy systems are dependent on the ownership model that is used to provide the energy services.

A broad range of operational models might be envisaged for stand-alone systems, including:

- Landlord model - a landlord installing a micro-grid on site and providing power to tenants under a lease agreement.
- Co-op model - multiple individuals or companies cooperatively owning and managing a micro-grid to meet their power needs, with other individuals or companies opting in on a voluntary basis and being served under contract.
- District model -an independent firm owning and managing a micro-grid and selling power to multiple customers in the area under contractual arrangements.[3]
- Municipal model – a municipal body, such as a council, engages a stand-alone energy systems provider to provide energy services.
- Distribution Network Service Provider model (DNSP) model – a DNSP provides a stand-alone energy system after determining it is the most efficient option to supply a remote or edge of grid area.

Discussion points:

Are there any other potential business models we should consider?

What are the unique regulatory challenges presented by each ownership model?

Are some ownership models more closely aligned with the National Electricity Objective than others?

Issues

Consumer protection

Participants in a stand-alone energy system may not be customers in the traditional sense; rather, they can be a grouping of coordinated demand and supply sources that are operating in unison, so they appear to the utility as a single entity, either a source or consumer of energy.

Stand-alone energy systems challenge one of the key premises that underpin the energy market. The current design of the energy market is based on the idea that customer choice of energy provider, supported by information provision, a competitive wholesale market and monopoly networks regulated on an open access basis, allow for the lowest possible prices for consumers.

The rationale for stand-alone power systems is generally understood to be that smaller, more tightly integrated systems may now be able to provide benefits such as reduced network costs, lower emissions, co-generation of heat and cooling and improved reliability, depending on the circumstances. However, stand-alone power systems may remove the choice of retailer, essentially locking customers within a microgrid to a single, vertically integrated energy service provider.

[3] King D., Electric Power Micro-grids: Opportunities and Challenges for an Emerging Distributed Energy Architecture, 2006

While there is no competitive market in generation within the stand-alone energy system, there is a market developing in those systems which does bring to bear a competitive pressure to the provision of these systems. In this particular market, the customer is not the individual premises but the entity procuring the stand-alone systems on the individuals' behalf (such as a municipal utility provider, body corporate or property developer). This change in the nature of the customer and the service that is being provided leads to a different set of customer protection challenges, namely those associated with making a fully informed decision around the long term purchasing of equipment and technology, with a key issue being ensuring those choices are in the long term interests of end consumers who may not be directly involved in these decisions.

Also raised is the question of the alignment of incentives of parties involved in establishing and maintaining a stand-alone system. While robust and significant competition may exist in the market for such systems, and economic benefits may accrue from deploying them, the necessity of an intermediary between end-use customers and the providers of those systems means that the benefits may not be passed on to those end users (a 'split incentive' situation). This is illustrated in the example of a 'greenfields' development where the intermediary – a developer – may be in a position to gain the economic benefits of procuring and installing such a system up front, but leave subsequent customers at the site with ongoing costs and little effective choice of provider on an ongoing basis. The incentives for procurers of stand-alone systems to share the benefits with end use customers deserve special attention, and these may vary according to the ownership model adopted, as discussed previously.

The NER and NERL currently recognise a tripartite arrangement comprising retailers, distributors and customers. A key question is whether this regulation could and should be extended to include stand-alone energy system providers.

Part 4 of the National Energy Retail Rules (NERR), for example, specifies DNSPs obligations in communicating with customers in regard to issues such as changes to services, processes for dispute, and advice notices regarding the temporary disruption of supply. The NERR (section 88) outlines the distributor's responsibilities to a small customer in the event of planned and unplanned interruptions, including notification periods. It will be important to consider how such provisions should apply to stand alone systems (such as periods of maintenance when the provision of energy may be interrupted to some or all customers it serves), including obligations to customers/premises where life support equipment is used. It is reasonable that similar provisions might extend to stand-alone system service providers.

Part 2 of the NERL provides for the relationship between retailers and small customers, particularly regarding how retail contracts operate in the market for grid-connected customers.

In addition to these energy-specific customer protections, customers have access to broad protections under other regulatory frameworks such as the *Competition and Consumer Act 2010*, which deals with misleading, deceptive or unconscionable conduct; and the Australian Consumer Law, which deals with unfair contract terms, marketing, warranties and guarantees.

It is also worth noting that under jurisdictional legislation DNSPs have various rights and responsibilities which in many cases benefit consumers. An example is rights of entry to private property to make safe an appliance, address an emergency situation or for meter reading. If the stand-alone system operator was not authorised by regulation to undertake these activities, contractual arrangements for the systems would presumably need to cover off on these types of issues.

Discussion points:

How would the discipline of price and service competition be maintained on stand-alone power infrastructure providers, given customers would not be able to switch retailers in the event they became dissatisfied with energy prices and/or customer service?

What contractual relationships should exist, and to what extent should they be regulated, between parties involved in the supply of the services of stand-alone systems?

How can the incentives of the procurers of stand-alone systems be aligned with the end use customers they will serve?

How would we ensure that the public is protected against unreasonable rates, bad service, and negligence that results in safety or human health risks? For instance, would the ACL protections be sufficient for customers on stand-alone systems?

What would become the equivalent of a "retailer of last resort" in the event that an energy services company, delivering stand-alone power solutions, became insolvent? For example, should an insurance scheme or similar be considered for stand-alone system providers/operators in the event of insolvency?

What dispute resolution arrangements should be put in place for customers and should they be energy only dispute resolution or connected to broader tenancy/ownership arrangements?

What hardship and financial support provisions should apply to stand-alone energy customers?

Reliability and service standards

While one of the advantages of stand-alone energy service models is the potential for customers to determine their own levels of reliability traded off against a price, this freedom also raises questions around how to ensure that customers are able to make informed choices and there are obligations on service providers surrounding reliability and service quality. It could be the case that a stand-alone energy service provider may not be operating their power system in a safe, reliable, or secure manner and may negatively impact the service quality of its customers, as well as the grid at large.

Currently, existing remote locations are subject to jurisdictional licensing and exemption frameworks for generation and distribution networks. This may not be equivalent to the reliability settings offered to customers connected to the interconnected national electricity system. Greenfield developments which implement a stand-alone energy system could be treated by jurisdictional regulators in the same manner as systems in existing remote locations, but this may not be appropriate.

No reliability framework applies for individual customer standalone systems. They will determine what is an appropriate level of reliability based on their own preferences.

The arrangements for reliability settings which would apply for a system transitioned from the interconnected network are unclear, noting that the capital expenditure for the pre-existing assets is very likely being recovered through the DNSP's regulated revenue under the network economic framework (refer to later section titled Regulatory asset base).

Determining the appropriate reliability settings for stand-alone systems requires consideration of the costs which would be borne by the customers connected to the system. There could be significant cost to these customers if settings were aligned to the levels applicable to the NEM. However, to the extent that the cost trade off results in a lower level of reliability, there are questions around whether customers will understand the full implications of their decisions.

Discussion points:

How should the service standards that apply to each stand-alone energy system be decided?

How will we ensure that customers are making fully informed decisions about the reliability standards and service quality of the energy services provided through a stand-alone energy system?

Under what governance framework will decisions about reliability versus cost trade-offs be made?

How and by whom should standards be enforced?

Should some obligation to supply apply in an area where a stand-alone system is in place?

Who should be the responsible party if an obligation to supply is put in place in a stand-alone system area?

Regulatory challenges - Networks

The current economic regulatory framework is based around the presumption of a network infrastructure conveying a centralised supply of generation. If microgrid and distributed generation technology develops and presents a more cost effective solution to supplying energy, the regulatory framework needs to develop to accommodate the investment decisions required for stand-alone energy to compete. Further, the regulatory framework will need to accommodate third party suppliers of stand-alone energy solutions. For example, distribution utilities have traditionally been granted monopoly power to provide services to customers within pre-defined service territories. This creates a barrier to third parties investing in stand-alone energy systems in these areas and the efficient provision of these services.

Regulatory challenges arise particularly around a DNSP-led ownership model. While it is apparent that network businesses are looking at the viability of stand-alone systems in fringe-of-grid areas, the question remains as to whether under the national frameworks the network businesses are sufficiently incentivised to provide stand-alone systems where it is the most economically efficient outcome. In particular, the current classification of such services as either 'alternative control' or 'negotiated' services may present a disincentive towards investment as services under these classifications are not included in the DNSP's regulated asset base.

RIT-T / RIT-D

The regulatory investment tests (the Regulatory Investment Test for Distribution (RIT-D) and Regulatory Investment Test for Transmission (RIT-T)), impose an obligation on network businesses to consider all feasible ways of meeting an investment need. The tests apply to new capital (i.e. augmentation) expenditure above a set threshold.

A key issue is that network businesses' capital projects in recent times have comprised predominantly replacement expenditure for which there is no obligation on network businesses to explore alternatives to like-for-like replacement. The Australian Energy Regulator (AER) has indicated it is developing a rule change request to apply both the RIT-D and RIT-T to replacement spending above a scale threshold.

A further, more fundamental issue relates to the focus of the RIT-D. Rule 5.17.1 of the NER specifies that the purpose of the RIT-D is to "identify the credible option that maximises the present value of the net economic benefit to all those who produce, consume and transport electricity in the NEM". As the definition of the NEM under the NEL links to the national electricity system, it excludes consideration of the benefit to those who produce, consume and transport electricity off-grid.

Further work might usefully focus on the appropriateness of thresholds and stronger requirements on DNSPs around assessing credible options for servicing fringe-of-grid locations including off-grid solutions, including any changes to the NER which might be required to support this.

Demand management incentives

New incentive based schemes may be required to encourage DNSPs to investigate opportunities to service fringe-of-grid areas through more efficient decentralised solutions. Incentives may particularly be necessary in situations where networks are not guaranteed to be the provider of the ultimate off-grid solution, or where they view a reduction in their grid-connected asset base as being a threat to their overall returns.

Regulatory asset base

In cases where a distribution business transitions network assets from the interconnected grid, there arise questions about the treatment of these assets under the economic regulatory framework. The inclusion or exclusion of these assets from a distributor's Regulatory Asset Base (RAB) is of particular significance. The provision of a stand-alone system may substitute for a distributor's obligation to connect customers in its service area, and thus is related to its monopoly network functions. However, the provision of such systems may be a service in which a competitive market could develop. Arguments might be mounted both ways about whether the stand-alone system can be included in the RAB as a result.

Price signals

Price signals can act as a means by which commercial providers of stand-alone systems identify what areas of the centralised network present opportunities to be replaced or repurposed to support stand-alone systems. Stand-alone systems may be economically efficient in high-cost areas of the network, but this may not be evident to any party other than a distributor due to the costs of the supply being masked due to the prevailing 'postage stamp'[4] pricing in most distribution areas or the effect of Community Service Obligation (CSO) subsidies in remote and regional areas. This limits the incentives for commercially driven stand-alone systems, or may inappropriately drive them towards low-cost areas of existing networks. However, to introduce locational pricing into existing distribution areas or to remove CSO subsidies would impact significantly on prices for customers in high-cost areas, who will have little or no opportunity to avoid those costs. Policies to ensure social equity would certainly be needed if this were to be tackled.

Network Connection framework

The regulatory arrangements for obtaining connection to a distribution network are currently provided for under Chapter 5 Part A (network connection processes for registered participants, including requirements for the AER to develop guidelines and approve standing offers for basic connection services of DNSPs) and Chapter 5A (processes and requirements specifically relating to connection of retail customers) of the NER. There is an open question as to whether a similar framework is required covering connections of customers to a stand-alone system i.e. a regulatory framework specifying principles and guidelines covering network connection, the process that needs to be followed in entering into an agreement for a service, reasonable expectations around the level and standard of the service and an appropriate negotiation framework (i.e. as per Chapters 5 and 5A of the NER).

Discussion points:

What regulatory barriers exist to third parties supplying stand-alone energy solutions?

How should the regulatory framework ensure that a stand-alone power system is considered as an option where this is the most efficient way to provide energy services?

What elements of the national framework are potentially applicable to stand-alone energy systems?

Are the existing connection frameworks adequate for stand-alone energy systems?

Regulatory challenges - retailing

The NEM has served as the backbone for the enablement of full retail competition – the mechanism by which the competitively set price of energy generated in the NEM is passed on to consumers. Many forms of stand-alone systems are designed as 'vertically integrated' systems where the generation, network, and control infrastructure are designed together, co-optimised and co-owned, much as electricity utilities prior to the NEM were.

This, in addition to the much smaller scale of these systems, works against the potential for effective retail competition within and upon these systems. Without competitive generation, there is no price signal internal to the system to pass through to consumers, and there would not be a competitive retail market to set prices at an optimal level. This is not to disparage the merits of stand-alone systems – the electricity sector has always exhibited strong economies of integration, and stand-alone systems may indeed be able to utilize these to technical and economic advantage, and as previously noted, there can be expected to be competition in the provision of the systems themselves.

However, this does raise specific and profound questions for the regulatory frameworks.

Efficient pricing

In cases where these systems are entirely unconnected to the broader NEM, customers will be locked in to provision of energy from one provider only, and retail choice may be impractical, or at least of no practical

[4] Postage stamp pricing is applying the same network tariff to groups of customers (e.g., residential customers) irrespective of differences in the costs that they impose on the network.

value. As noted earlier in this paper, this lock in situation raises questions about whether any economic benefits of these systems will actually be passed through to end use consumers. And, even if competition in the provision of systems does deliver an economic benefit to customers at the beginning of the system's use, 'lock in' may result in the system's costs diverging from efficient costs over time, if end-use customers are not adequately represented by the system's procurer and otherwise able to bargain with the parties involved.

This raises the question of whether the system should be subject to a form of price regulation for the entire service and not only the network component thereof, or whether long term contracts are a suitable way of managing price risk for end-use customers. Either way, the way in which prices should be set is a further and difficult set of questions which would have to be tackled in turn.

Balancing customer choice

Where such systems *are* connected to the NEM through some form of connection (and noting the variety of ways this connection could be created), there may in theory be an ability to allow end-use customers of the stand-alone system to access choice of retailer by treating the stand-alone system as an embedded network for metering and settlement purposes.

The AEMC has recently made new rules designed to formalise arrangements for metering customers within embedded networks[5], designed to ensure maximum access to retail competition from such networks. On face value, it seems desirable that to the extent a stand-alone system can transfer energy from the main grid, customers should be able to access grid-supplied energy if a better offer can be had than is provided by the stand-alone system provider.

However, practical issues may arise, especially if the transfer capacity is limited, or other issues of system integration affect the ability to utilise market settlement processes. The impact of customers 'defecting' to grid-based energy retailers would presumably affect the risk for stand-alone system providers, and this might in turn result in a perverse incentive for such providers not to establish a grid connection, even if it would be efficient to do so. Comment is sought on the implications.

Energy consumers in the NEM have considerable freedom of action in terms of changing energy retailers, and can change as and when market circumstances allow them to find more attractive offers. Very little constraint is placed on consumers to stay in their contracts, with exit fees applying in some circumstances but being very modest in size for small customers. This freedom of choice comes at the cost of having little actual choice in how their energy is produced and delivered, relying as it does on monopoly networks and an all-energy gross pool wholesale market to deliver fundamentally the same product to each consumer.

The highly configurable and adaptable nature of stand-alone systems means that consumers are presented with a greater variety of choice in terms of the overall way in which energy is produced, transported and sold. However, a system has a long life, and the cost of investing in such a system must be repaid over its life. In many cases, the commercial attractiveness of these ventures may depend upon a significant majority of consumers within an area signing up to a service for a set period of time.

Customers who are 'locked in' to a choice that is made at one point in time will bear the risks involved in making that choice without the 'free options' that NEM retail customers have. In particular, the choice to take supply from a stand-alone system rather than connect to the NEM will be made with respect to customers' values and their expectations about how a stand-alone system will perform compared to a NEM connection over the life of the system, including its cost. Expectations are risky, and a decision to go with a stand-alone system may prove in retrospect not to have been the best decision, if for instance the cost of NEM-delivered energy falls, or the cost of the stand-alone system rises compared to expectations.

The need to make long term decisions (with presumably long term contractual consequences) raises questions about what a regulatory framework would look like that ensures these decisions are made in an

[5] Embedded networks are private electricity networks which serve multiple premises (e.g. tenants within a shopping centre or caravan park) and which are located within, and connected to, the NEM grid. Under the national framework, embedded network operators must gain (or be eligible for a deemed) exemption from registration as a Network Service Provider and/or a retailer. The exemption framework allows the AER to tailor the regulatory obligations to the level of risk. For instance, a retail exemption may require the operator to comply with relevant terms and conditions to ensure a minimum level of protections for consumers, such as for information provision, metering/billing and dispute resolution.

informed manner that serves the long term interests of consumers. What does fully informed consent of customers look like in this circumstance? Is some kind of cost-benefit test required, along the lines of the RIT-D, to justify a decision to establish such a system, and who gets to make the final decision? These questions of choice and consent also arise in instances where a customer moves into a premise that is being provided energy services by a stand-alone energy system.

Discussion points:

In what circumstances should or could a stand-alone system become subject to economic regulation?

How should a regime for economic regulation – if any – be structured to address stand-alone systems?

Should price regulation extend to the entire cost of energy services for customers of stand-alone systems?

Should stand-alone systems that have a grid connection be treated as embedded networks for metering and settlement purposes?

In what circumstances should a decision to establish a stand-alone system be regulated? Who by? And what justification should be provided to the regulator?

Consistency versus tailoring

This paper has raised the question of whether the current regulatory frameworks are appropriate in light of the issues posed by stand-alone systems. If the answer is 'no', then the Energy Council has two broad options for remedying this: (i) to amend the current general frameworks under the NEL/NERL such that they can be applied to stand-alone systems as they are to existing energy businesses or (ii) to develop a tailored, perhaps less onerous, regulatory framework for stand-alone systems which addresses their needs specifically.

Which option is most appropriate will depend in part on the responses by stakeholders to this issues paper and on the results of weighing up the costs and benefits of each. The Energy Council must make a choice between equity, at the cost of more flexible and potentially a lower cost regulatory regime, or vice versa. A further level of complexity may arise should there be a need to make distinctions between types of stand-alone system. For example, is it appropriate to treat stand-alone systems provided by local distribution businesses within their service areas differently, from systems installed on a merchant basis? Reference to the differing business models described earlier could be made, with different implications for consumers arising under these differing models.

The energy sector is not the first to be challenged by new business models. A useful point of reference may be the Australian Productivity Commission Draft Report on Business Set-up, Transfer and Closure (May 2015) and its discussions on new business models. The report notes that Government and regulator responses are critical to new business model's success. Some relevant points from the report are:

- overly prescriptive or inflexible regulatory requirements can shield existing businesses from competition, and impose unnecessarily high costs on new entrants and consumers
- inconsistent treatment of incumbents and new entrants can cause issues e.g. new entrants that do not fall within the regulatory framework have the advantage of not incurring compliance costs
- in general, businesses operating in a similar manner and with similar risks to the community should be governed by the same regulatory requirements. However governments should assess the perceived risk level of the new business, as well as the need to retain all current regulatory requirements on existing businesses in order to achieve the desired outcomes
- claims by incumbent businesses to maintain current levels of regulation should be assessed to ensure the regulatory framework is not being used as a barrier to prevent competition.

These seem to be sound starting principles for considering the need for and nature of any new regulatory arrangements. Stakeholders are invited to suggest other considerations that may be taken into account in determining regulatory frameworks.

These principles are reflected in the way in which some jurisdictional regulators currently approach the regulation of off-grid networks. For example, the Essential Services Commission of South Australia (ESCOSA) regulates both private and public providers of off-grid networks. Off-grid licensees providing retail and distribution services have license requirements covering technical requirements, consumer protections, reporting requirements and administrative matters.

The individual licensing regime allows ESCOSA to apply a flexible regulatory framework that can be tailored to fit each sites different requirements. The businesses providing the off-grid energy services are consulted on these requirements. This flexibility is, however, balanced by a strong reporting and compliance regime.

Discussion points:

What principles should be adopted in determining the need for and nature of any new regulatory arrangements that will apply to stand-alone energy systems?

What would be the appropriate balance between a strong reporting and compliance regime and a flexible regulatory framework?

Conclusion

This paper is intended to begin a consultation on what regulatory frameworks should apply to stand-alone energy systems that are currently not captured under the national frameworks and are subject to limited regulation under jurisdictional legislation

The Energy Council recognizes the opportunities presented by delivering energy services through these models. These systems, however, challenge many of the principles that underlie the regulation of the interconnected grid and require a regulatory approach that is sufficiently flexible to allow for the benefits of these systems to be realized.

Officials would like to hear from stakeholders about the balance of regulation that is required so that customers are appropriately protected under stand-alone energy service models, but at the same time this model of energy service delivery is not stifled.

Discussion points:

Of the various issues raised in this paper, which areas and potential market failures have the highest risks and should be prioritized in terms of regulatory interventions and reforms?