Distribution Market Model

Response to the AEMC Approach Paper

Energy Consumers Australia

Response to the AEMC Distribution Market Model: Approach Paper Dec 2016 3

Executive Summary 3

Opportunity of the Project 4

The AEMC technology work program 4

The Long Term Interests of Consumers 5

Value of the Project 6

Project Scope – specific comments 8

Whole-of-market focus 8

Settlement in the wholesale market 10

Geographic Unit of Analysis 10

Product Unit of Analysis 11

Consumer decision making and protection framing 12

The Changing Function of the Distribution Network 13

From Public Lighting to Power 13

Nodal Pricing 14

Cost Reflective Pricing 16

Targeting Constraints 17

Conclusion 17

Response to Questions 18

Response to the AEMC Distribution Market Model: Approach Paper Dec 2016

Executive Summary

Energy Consumers Australia welcomes the Australian Energy Market Commission's (AEMC) Distribution Market Model project. In this response we make a number of high level observations on matters raised in the Approach Paper.

Our first observations turn to the opportunity presented by the project. In particular, we encourage the Commission to recognise the opportunity to provide strategic leadership by continuing work on this project beyond its initial report in mid–2017. The work will contribute to the promotion of the long term interests of consumers by focusing on the innovation necessary to achieve dynamic efficiency.

Because we see the opportunity for this project to introduce significant positive change the rest of our observations include suggestions that challenge the 'conventional wisdom' on which aspects of the current regulatory framework are built.

We then provide a number of observations on the scope of the project. In particular, we are not convinced that trading in the controllable generation and demand across the distribution network can be separated from the uncontrollable. We contemplate a possible framing that changes the overall conception of the market as one where distribution markets trade with the generators in the wholesale market rather than retailers.

We note that the work on the distribution market model cannot be divorced from the work on consumer protections and regulatory obligations in non-traditional service delivery.

We conclude with some general observations of the implications of distributed energy resources for distribution networks. The first of these is the ongoing need for the network for public use and optimization of Distributed Energy Resources (DER). The growing need and the two-way flow require a fundamental re-assessment of the approach to pricing for distribution network services including an improvement in the application of cost reflective pricing and the potential development of nodal pricing.

We conclude by directly responding to questions raised in the Approach Paper.

Opportunity of the Project

The AEMC technology work program

The Australian Energy Market Commission (AEMC or Commission) has commenced a project (the Project) to provide an assessment of the distribution market design options to harness the potential of distributed energy resources. This response to the Approach Paper (the Paper) for the review, published in December 2016, provides a number of observations and suggestions for the further conduct of the review.

This is the second project in the Commission's technology work program, following the 2015 Integration of Storage Review. The Commission's website notes:

> *Changes in technology, and the pace of those changes, have the potential to fundamentally alter Australia's energy markets. Energy policy and the associated regulatory framework must be able to adapt to these changes to allow a dynamic market response.*
>
> *With so much change on the horizon, energy market arrangements need to be flexible and resilient enough to respond to change.*
>
> *In order to provide advice to and assist governments with policy development, and to inform the Commission's analysis of rule change requests submitted to us, the AEMC needs to have a strong understanding of new market dynamics, including their likely impacts on consumer costs and behaviours as well as the incentives and business models of market participants.*[1]

The objectives of the technology work program are to identify:

- barriers to deployment of new technologies by new or existing market players
- whether the consumer protection framework remains fit for purpose
- incentives or disincentives for business model evolution and whether changes to distribution system operation and market design are needed

Energy Consumers Australia welcomes the technology work program as a key part of the AEMC's market development function. The energy market regulatory framework is complex, consisting of legislation, rules, Australian Energy Regulator (AER) guidelines, Australian Energy Market Operator (AEMO) procedures and additional jurisdictional instruments. It is

[1] See http://aemc.gov.au/Major-Pages/Technology-impacts

appropriate that the Commission continues to test the adequacy of those arrangements, both to the extent they encourage innovation and ensure contemporary consumer protections.

The AEMC's *Integration of Storage* project could have gone further in the framing of the recommendations made. Advice was provided about further investigation that it was appropriate for the AEMC to undertake, especially in relation to consumer protections. However, progress has been fragmented and slow.. If the current project identifies similar opportunities, Energy Consumers Australia encourages the Commission to move immediately to commencing those inquiries and to state that it is doing so in the report rather than waiting for an invitation or direction to do so.

Similarly, if the project identifies rule changes that could assist the development of the market the Commission should follow the approach taken in the review of Business to Business system changes and note that it would welcome a rule change submitted by any party.

The Long Term Interests of Consumers

In conducting its review, the Commission is required to have regard to the National Electricity Objective; to promote the long term interests of consumers through economic efficiency. Similarly, Energy Consumers Australia is required to provide advocacy to promote the long term interests of consumers, especially residential and small business consumers.

Households and businesses do not consume electricity as a primary exercise; they live their lives and run their businesses in ways that consume electricity. How much they consume is in part determined by the choice they make of appliances to provide heat for cooking or climate control.

Economic efficiency occurs when current and future consumers pay no more than is necessary for a reliable and secure electricity supply.[2] Since the publication of the Hilmer report on Competition Policy it has been common in Australia to refer to efficiency as having three components; productive, allocative and dynamic.[3]

The concepts of productive and allocative efficiency are usually referred to as "static" efficiency and reflect the outcomes expected in a competitive market. Competitive market

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[2] Energy Consumers Australia *Interpreting the LTIC: Assessment of the Long Term Interests of Consumers* ECA Research Report No. 1 at http://www.energyconsumersaustralia.com.au/documents/Interpreting-the-Long-Term-Interests-of-Consumers.pdf

[3] In making the statement that economic efficiency had these components Hilmer was quoting from the Treasury submission. The reference to the three components had been common in the Treasury Structural Reform Team, reflecting the textbook "(add text book reference)"

theory assumes all participants are fully informed. In practice, consumers and producers gain information from each other in the market and adjust their behaviour as a consequence. Producers assess demand in the market and make investments to expand capacity, consumers make decisions about the appliances they buy based upon their experience of electricity prices.

These adjustments are how real markets with incomplete information reach (or move to) the theoretical equilibrium. These adjustments are part of the so-called 'static' outcome.

Dynamic efficiency is about more than just these adjustments over time. Dynamic efficiency is the process of innovation so that the structure of the market is changed through new technology resulting in innovation in products, process or price.[4]

Dynamic efficiency also has allocative and productive dimensions. Do business enterprises make the right choice of how much to invest in research, development and design? Are their investments in these areas as productive in generating innovation as it can be? These are more difficult assessments to make compared to the assessments of static efficiency, and as a consequence of the uncertainty over the answers there is a tendency to under invest in innovation, or for regulators to under reward it.

The consequence of under investment in innovation is that consumers pay more than they need to.

Value of the Project

The AEMC is responsible for market development and for rule-making in the electricity market.

Energy markets depend upon multiple parties operating in a coordinated manner to deliver service. The need to provide voltage and frequency stability necessitates a rules based market. Additionally, aspects of the delivery system include natural monopoly elements; notably the distribution networks. These natural monopoly elements are usually regulated, though there are now contested theories of the purpose of this regulation, being either to deliver allocative efficiency through price setting, the control of monopoly power or a transaction economics view of the management of a long term contract.[5]

These rules become unintended barriers to innovation, since the rules are designed around existing technology rather than possible future technologies. As market developer the

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[4] See G. M. Peter Swann *The Economics of Innovation: An Introduction* Edward Elgar 2009
[5] See Christopher Decker *Modern Economic Regulation: An Introduction to Theory and Practice* Cambridge 2015

Commission's first task in the Project must be to identify how the existing rules may work as an impediment to innovation.

As noted in the Paper, the Commission is not using the Project to map a pathway for future regulatory reform. It is an exploration of the possible distribution market design options.

However, the Commission should take note of the observations of the 2015 Governance Review chaired by Dr Vertigan that there is an unprecedented rate of change in the market and a strategic policy deficit exists.

"Strategy" can be a managerial buzzword often applied to little more than simple planning. Fred Gluck and his colleagues identified a four-phase model evolution of corporate planning systems.[6]

Of interest here is the distinction between their two last phases – strategic planning and strategic management. Under strategic planning the organization identifies how they want the future to unfold and allocate resources to realise opportunities or defend against threats. Strategic management recognises that there are many actors whose decisions shape the future, and planning needs to be adaptive of changing circumstances.

As the Paper notes, the evolution of the electricity market will be driven by the decisions consumers make. Market design and development for the future electricity system needs to adopt a strategic management approach that identifies the options for evolution, how consumer decisions will effect that evolution and the consequences of those decisions. The rules need to both facilitate the choice and react to those choices, and to be adaptive to those choices.

Energy Consumers Australia agrees that the Commission's task is not to plan a pathway to reform, but it also needs to do more than identify possible market design options. The Commission needs to consider what additional evaluation will be required of these options against the long term interests of consumers, and what other work will be required for these options to be realised.

The Project is being conducted at the same time as the AEMC is commencing the first annual review of network regulation. The AEMC was tasked by the COAG Energy Council to undertake an annual review of the economic regulatory framework for electricity networks following "stress testing" of the economic regulatory frameworks under the four scenarios identified in the CSIRO's *Future Grid Forum.*

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[6] Gluck, Frederick W; Stephen P. Kaufman and A. Steven Walleck 'Strategic Management for Competitive Advantage' *Harvard Business Review* July-August 1980 154-161

The Approach Paper for the first annual review has identified that the changing operating model for distribution networks will be identified as a priority issue in the first report.

The expected value of the Project overall should therefore not be limited to informing the AEMC's approach to rule changes or providing advice to Ministers. The Commission has the opportunity, to use the Project to develop a strategic framework for the development of the distribution market. ECA submits that the Commission should take this opportunity.

Project Scope – specific comments

The Project key terms and scope, proposed in sections 1.2 and 1.3 of the Paper, create a boundary for the project to focus on "smart" distributed energy resources and to be constrained to distribution networks.

This approach is fundamentally supported, however there are a number of aspects worthy of additional consideration; a whole-of-market focus, the settlement of wholesale markets, the geographic and product unit of analysis of a distribution market and the interaction with consumer protections.

Whole-of-market focus

Changes in the Australian electricity system affect all parts of the system. Generation mix changes at the wholesale level are driven by emissions reduction policies. Changes in household investments have been responsive to emission reduction policies (solar bonuses, premium feed-in tariffs) and in response to increasing electricity bills.

Research by UMR for Energy Consumers Australia consumers say that cost savings dominate the reasons for choosing to install solar electricity systems.

- 92% of respondents said that they installed solar in order to reduce their household energy bills, including 60% who strongly agreed that this was the case.
- 82% said that they installed it to become less dependent on mains electricity
- 80% installed it because of their feed-in tariff
- 74% said that grants schemes were important

Just as consumers say that reducing energy costs and becoming less dependent on mains electricity were key reasons for installing solar electricity systems, so too they say they are key reasons for considering battery storage.

- 76% of those who had researched batteries said that they did so in order to become less dependent on mains electricity.

- 73% reported that they had done so in order to reduce household energy costs.
- 72% wanted to make more efficient use of their solar panels.
- 57% also said that they were considering battery storage because their feed-in tariff was not high enough.[7]

In 2016 Energy Consumers Australia's Regional Listening Tour visited twelve regional locations and listened directly to consumers concerns about energy services. Consumers do not understand why their feed-in-tariffs have changed. As one participant said:

> *I was getting charged 28c/kW and, because of some loophole, they've dropped me down to 8c.*

In the face of low feed-in-tariffs consumers are interested in giving their excess away to their community or local trading.

> *I would prefer my 6 cents of power, sorry, my units of power, which aren't 6 cents, to go into my community.*
>
> *I get 6c from [energy retailer], but if I get 25c because I gave it to you because you have fallen on hard times, well I'm delighted.*

To the extent that the deployment of DER is part of emissions reduction policy, the long term interests of consumers are served by these investments being made efficiently. That has two particular dimensions; cost and security.

Rooftop solar PV has the benefit of being zero emission generation without transmission losses. With the addition of storage, a household can (theoretically) become self-sufficient, However, the value of an energy grid comes through diversification. Different patterns of consumption mean that the storage that would be required for a group of premises is less than the storage required if each house individually is responsible for their own reliable supply.

Similar trade-offs occur with scale; scale efficiencies from large generation and storage installations can be greater than transmission losses. Some technologies, such as pumped hydro storage and concentrating solar thermal, are only viable at scale.

Variable renewable generation changes the characteristics of electricity system security. DERs have the ability to contribute to system security. As an example, the programming of inverters could be changed to not only be responsive (turn off) in response to frequency

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[7] UMR *Usage of solar electricity in the national energy market A quantitative study* Energy Consumers Australia November 2016 available at http://www.energyconsumersaustralia.com.au/research/consumer-participation-in-solar-and-battery-storage-markets

moving outside the 50Hz +/- 0.5Hz range but to also to respond to high Rate of Change of Frequency (RoCoF). Programming and power electronics of inverters could possibly be used to provide support to frequency by setting their frequency to lead or lag the grid frequency (depending on whether grid frequency is slowing or accelerating).

These security implications mean that the analysis of a distributed Market Model cannot be conducted independently of the system wide considerations. Accordingly, the Commission should include in its consideration of options for the Distribution Market Model the impact that each option would have on overall system reliability, security and prices.

Settlement in the wholesale market

The electricity wholesale market (ignoring big industrial users who are market participants) is a process of energy being sold by generators to retailers. The process of settlement, however, uses an intermediary of a host retailer for the calculation of payments. The host retailer is assumed to be the purchaser of all the energy for a distribution network, and then the amounts notionally payable to the host retailer by other retailers are calculated. For premises with accumulation meters the settlement is based on a Net System Load Profile for the non-interval metered consumption.

The energy itself is transported from generators through transmission and distribution networks to consumers.

There is a question (to which Energy Consumers Australia does not have an answer) whether this settlement arrangement appropriately incentivizes distributed energy to be consumed as close as possible to its source of generation. This would promote better outcomes for consumers because it reduces the network requirements to transport energy and hence in the long run reduces prices.

An alternative model has the distribution network provider as the notional clearing house for settlement. This doesn't change the amounts being settled, but does introduce the distribution network into the value chain of concern about consumption in the region.

Geographic Unit of Analysis

The development of a Distribution Market Model requires a definition of the market for analysis. The Australian Competition and Consumer Commission in its merger guidelines states "A market is the product and geographic space in which rivalry and competition take place."[8] The guideline further notes that "in some cases, market definition requires close

[8] Australian Competition and Consumer Commission *Merger Guidelines* November 2008

attention to the functional levels of the supply chain that are relevant to a merger or the particular timeframe over which substitution possibilities should be assessed."

The geographic boundaries of Australia's distribution networks are accidents of history (except possibly the boundaries of the Tasmanian network). All others depend on the development of colonial borders and then various iterations of amalgamation and disaggregation.

The Paper notes the difference between transmission networks and distribution networks for the purposes of the Project. It appears clear on the basis of these considerations that the geographic bounds of a "Distribution Market" are not the boundaries of the Distributionn Network. For example, suburban Sydney and Merriwa in Ausgrid's coverage are not in the same "Distribution Market", nor are Bega, Tweed Heads and Broken Hill in the Essential Energy area in the same "market."

The geographic boundary is the area for which the goods and services are substitutable. As a starting proposition, the whole area served by a zone sub-station fits that definition. The question is how much larger area than just one zone is the market?

A related geographic question is the presence of different types of markets. Suburban Sydney, a regional urban centre and rural or remote regions are very different markets. These differences regularly muddy the discussion of the role of new energy services; a battery at the end of a SWER line is very different to a battery in a Sydney suburban network. Energy Consumers Australia makes the observation about the geographic scope of markets because the scope will impact the design of the Distribution Market Model

Product Unit of Analysis

The Paper proposes that the unit of analysis for the Distribution Market Model is 'smart energy equipment co-located with consumer load.' 'Smart' is further defined as 'able to respond automatically to short-term changes in price or other signals.'

Energy Consumers Australia has some concern with this definition. In particular, we note the concerns of consumers referred to above who are unable to reconcile the price they are paid for electricity they export with the price they pay for electricity they import. Consumer response that they would prefer to donate their energy rather than receive a low tariff reflect this concern.

Elsewhere in the NEM the way values are placed on energy or ancillary services is through markets. The value of locally generated energy depends on local factors and consumers should be able to establish the value of their electricity in a local market. This is not currently

the case and the exclusion of passively operating solar PV is inconsistent with the inclusion of un-schedulable generation from intermittent renewable resources in the wholesale market.

As noted earlier consumers are concerned about the perceived disparity between competitive retail prices for grid electricity and the regulated prices for feed in tariffs. The Commission should, therefore, include all local generation, scheduled and unscheduled, in the Distribution Market Model as it is for the wholesale market.

The use of the word 'automatically' in the definition of 'smart' is also problematic. An automatic response implies an optimization algorithm operating independently of human action. The generalization of not limiting this to price signals but including other signals allows the definition to include control by, for example, a network operator. The word 'automatic' seems to us to be precluding these elements.

Consumer decision making and protection framing

The final area for consideration under scope is the exclusion from the project scope of the existing National Energy Customer Framework and ongoing consideration of consumer protection and regulatory obligations under different electricity delivery models.

The exclusion is understandable because of the work already being undertaken by the Energy Council's Energy Market Transformation Project Team (EMTPT) and the AEMC in its annual review of retail competition.

However, the Distribution Market Model entails a more complex decision making environment for consumers. The first element is decision making in the purchase of distributed energy resources; the second is decision making in entering into the market for the services generated by the resources. Even in business models where one party acts as their agent in all matters, assessing the value of that offer is more complex than assessing the value of grid delivered electricity.

Energy Consumers Australia in its submissions to the EMTPT projects proposed the following typology of six different use cases for analyzing the consumer protection and regulatory obligations framework. This typology is first based on a distinction between single premises and some kind of community which is a collection of premises connected together; DER can be supplied at the individual premises level or as part of a community of premises. For each of the cases there are three ways that electricity can be supplied; from the grid alone, from the grid and DER , or DER alone.

Grid Connection	YES	YES	NO

Distributed Energy Resources	NO	YES	YES
Single Premises	Traditional installation	'Behind the meter'	Stand-alone power system
Community Premises	Embedded network	Micro-grid	Islanded micro-grid

While premises not connected to the national grid fall out of the National Energy Market, the evolution of a community from a collection of traditional single premises installations, through premises installing behind the meter solutions then a micro-grid to an islanded micro-grid would be through the operation of a Distribution Market. How consumer protections and regulatory obligations would change through this migration is therefore part of the analysis required of the Model.

ECA, therefore, submits that the Commission cannot separate the consideration of the Distribution Market Model from the consumer protections and regulatory obligations that apply.

The Changing Function of the Distribution Network

From Public Lighting to Power

The electricity distribution networks we have today had their origin in municipal projects to provide public lighting. Over the intervening century the function of these networks has evolved to the provision of electric power for households and businesses providing heating, cooling, motors, lighting and the relatively new services of electronic devices (though their predecessor in the telegraph and telephone pre-dated electricity, hence the description of poles as 'telegraph poles').

The current economic regulatory framework is subject to a separate AEMC review and Energy Consumers Australia's comments on how it operates are outlined in our submission to that review. In that submission, we specifically address the question of the community value of the distribution network, that it is still required for the provision in urban areas for public lighting, powering National Broadband Network nodes, traffic signals, and a host of other 'non-premise' applications.

Economic regulation of the grid needs to find a way to reflect on the need for the grid irrespective of consumer demand, and the value of the grid for two-way exchange.

There are, however, three specific elements of the modern operation of the distribution network to be highlighted here in order to aid the Commission's contemplation of the issues at hand; the practicality and implication of nodal pricing, the approach to cost reflective pricing, and the value of targeting immediate constraints with "non-network solutions."

Nodal Pricing

The current approach to network pricing (charges that networks place on retailers for their connected customers) relies upon charging for all customers on the same basis wherever they are in the distribution network. This is a carryover from uniform pricing under the integrated provider model.

Uniform pricing is often regarded as a consequence of egalitarian principles in policy, and is disparagingly referred to as "postage stamp pricing." It was, for example, a specific objective of the Queensland Electricity Commission as regional towns were connected to the State Grid.[9]

The perception that uniform pricing is exclusively an equity rather than an efficiency issue ignores the very important consideration of transaction costs. There are two types of transaction costs avoided in uniform pricing; the first is the internal accounting to maintain price differentials and the second is the cost of maintain external offers. The British Post Office provides an example of the former, while telecommunications pricing in Australia provides an example of the latter.

The penny post

The UK Royal Mail has its origins in the functioning of the monarchy. Centralised government had a need to communicate to the regions. The mail roads were a series of roads and stations maintained for this distribution. They were opened to carry private mail by Charles I.

Private mail was paid for on delivery until the advent of the penny post in 1840. In his delightful essay 'Salt, the Postal Service, and the Tariff' French economist Frederic Bastiat outlined the transactional cost of the unreformed French postal service and the English penny post.[10] His principle point was that the penny post eliminated so many transaction costs that the British post was a highly profitable monopoly for the Crown.

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[9] A policy goal achieved in 1987. See Malcolm I. Thomis *A History of the Electricity Supply Industry in Queensland: Vol 2 (1938-1988)* Boolarong Publications 1990

[10] See Frederic Bastiat *Economic Sophisms* at http://www.econlib.org/library/Bastiat/basSoph7.html#S.2, Ch.12, Salt, the Postal Service, and the Tariff 1845

Long distance telephony

When Subscriber Trunk Dialling was introduced to Australia the number of long distance telephony charge bands was reduced to eight. Australia chose to use a multi-metering approach rather than call charge record and also a decadic coding system leaving only eight bands after free and local calls. Distance and time of day were the only two criteria for determining call duration.

When competition was being considered advocates were concerned that the consequence would be price declines on “thick routes” (like Sydney to Melbourne) and increases on thinner routes. The access arrangements for competitors (for PSTN Terminating and Originating Access) included four charge bands depending on whether the telephone was CBD, metropolitan, regional or remote. Competitors also faced the cost of buying their own transmission.

All the cost signals were in place to create the kind of pricing that advocates had feared. The outcome, however, was quite different. A competitor could always gain an advantage by slightly increasing the size of a charge band or adding an hour to the off-peak period. Eventually regularly adjusting boundaries becomes too costly and eventually all providers remove all price distinctions, even though they are making “losses” on some calls.

Consequences

This is an unsurprising result to economists. The conclusion of price theory is that only providers with market power can practice price discrimination. The competitive market makes it impossible to maintain.

That does not, however, mean that wholesale pricing by the monopoly networks shouldn’t include price discrimination. It just means that the consequence of discriminatory network prices is for retailers to compete in ways other than just price.

While retailers do charge different prices currently for different distribution network foot prints this is still a very limited number of price points (at most five in one State) and a boundary that has a basis in history of different integrated businesses. Greater price discrimination becomes hard to maintain.

Energy Consumers Australia is not at this stage recommending an adoption of nodal pricing. We do, however, believe that nodal pricing becomes increasingly relevant in the context where the value to the network of different DER options varies from area to area. Therefore, whether nodal pricing is required is a relevant consideration.

The Commission also needs to distinguish between nodal pricing working as a price signal to other market participants, and the circumstances in which it can be effective without resulting in geographically de-averaged retail prices.

Cost Reflective Pricing

The approach to cost reflective pricing by networks reflects an interpretation of such pricing that is insufficient for the task. Despite the rule requiring cost reflective pricing to cover long-term cost, it is only being interpreted as being that part of the network's cost that is the forward investment in additional capacity divided by the units of energy provided. This is more technically an average incremental cost approach.

Networks are interpreting the future scenario of network pricing as all the remaining costs outside of average incremental cost as being recovered through fixed rate charges. This approach will exacerbate the risk of asset stranding as a high fixed cost can only be avoided by disconnection. The provision of an occasional use tariff that has a lower fixed charge and much higher peak charge is an option to avoid disconnection, but is confronted by the problem of how it is determined that the customer connection should be placed on this network tariff.

Energy Consumers Australia agrees with the conclusion of the Network Transformation Roadmap that for cost reflective pricing to be effective it is essential that the tariff be mandatory for the retailer. However, the choice of price structure available to the end consumer should be determined by the competitive market and then be a choice made by the consumer. Additionally, just because a consumer has an interval meter does not mean they should be placed on a retail tariff that is time dependent.

The implementation of cost reflective pricing is still a 'work in progress.' The points raised below serve to highlight that there is further development of the approach to cost reflective pricing possible.

Two-way charging

The current network pricing structure only charges for the use of the network for receipt of energy from the grid, it doesn't charge for the use of the grid to export energy.

An approach taken to cost reflective pricing that looked at total system long run costs, not just forward looking incremental costs, would include a charge for export. In the very long run every kW of power transported cumulatively adds to the depreciation charge for the asset. A kWh exported should bear the same network cost as a kWh imported.

If the charge was levied on the prosumer then the total price received for a kWh generated would be expected to increase by the network cost – the net outcome to the consumer is the same but the price differential between import and export would decrease.

Connection charges

Connecting generation to the distribution network should be as simple as connecting load.

Current rules require networks to establish a threshold size of PV below which consumers do not need network permission to connect. Systems above this level go through an approval process and this process may identify that the network cannot connect the system or would need to invest in a new transformer to do so.

This is an arbitrary and inefficient process. In the long run, it is the cumulative size of (uncontrolled) generating fleet connected to a part of the network that drives cost. That can be averaged across a whole "node" as easily as can the distribution capacity costs.

Targeting Constraints

The discussion of the Distribution Market Model is invariably filled with discussion of the value of targeting specific network constraints and the value of non-network solutions. As a simple example increased local generation and storage could forestall the need for a feeder or sub-station upgrade.

The approach to these kinds of programs has typically been to focus on existing constraints. However, in the long run everything is potentially constrained. As a consequence, action that will delay a constraint, no matter how far in the future the constraint may be, still has value.

There is an inherent contradiction between tightly targeting individual programs like Demand Management Incentive Schemes and a reluctance to move to nodal cost reflective pricing. The latter can provide the same market price signals at a far lower transaction cost than highly targeted incentive schemes.

Conclusion

Energy Consumers Australia welcomes the Commission's decision to conduct this Project at this time. The promotion of the long term interests of consumers requires ongoing innovation in all aspects of the electricity delivery chain.

The Commission should use this project as the start of its own ongoing reform program to facilitate the innovation necessary to obtain the full benefits of Distributed Energy Resources through a Distribution Market to the benefit of consumers.

In doing so the Commission needs to consider a range of alternatives for the geographic scope of the Distribution Market, to include all electricity that is carried by the network, and to recognise that consumer protections and regulatory obligations are part of market design.

Energy Consumers Australia looks forward to the opportunity to continue to work with the Commission on this important project.

Response to Questions

Question 1 Do stakeholders agree with these definitions, or have any views on the project scope as a result of these definitions?

Energy Consumers Australia encourages the Commission to broaden the scope to include load and generation that is not 'smart' in the project scope because these serves are still transacted in the same market.

Question 2 Do stakeholders support this project scope? Is there anything that has not been flagged for consideration that should be? Is there anything that should be excluded from the project scope?

The scope of the project is appropriately constrained to distribution networks and these are functionally different to transmission networks. However, an approach is required to determining the geographic scope of an individual "distribution market" and the project needs to identify the existence of different classes of these markets.

Question 3 Are there any other elements of a DNSP's role or current responsibilities that should be considered?

The role of Distribution Network Service Providers is currently defined by their initial function as a distributor of energy from connection points to the transmission network to premises. The technical and economic regulatory framework still reflects this historic role.

The evolving role is to be a two-way distributor of energy between all nodes of the distribution network and the technical and economic regulatory framework needs to reflect this. It is still, however, a natural monopoly. Our further comments on the economic regulatory framework will be made in our submission on the annual review of network regulation.

Question 4 Are there any aspects of the regulatory framework that are not set out in sections 2.3 or 2.4 but which should be considered through this project?

Energy Consumers Australia has not identified any additional aspects of the regulatory framework, except the question of the approach to settlements and whether we should recognise that the geographic areas that settle with the wholesale generators are defined by networks not host retailers.

Question 5 Should the coordination of distribution systems with distributed energy resources be centralised under the direct control of one body? Or should it be devolved and performed in a tiered manner?

Energy Consumers Australia thinks the answer to this question will be revealed through the analysis in the project. However, given the number of separate markets with different price signals it is unlikely to be effectively managed centrally. A further consideration is the possibility, like early Stock Exchanges, of competition between different market operators for each market.

Question 6 Do stakeholders agree with the Commission's framework and these principles of good market design? Is there anything that the Commission has missed, or is unnecessary?

In our discussion above we note that it is not consumers who will participate directly in the distribution market but agents of consumers. This distinction needs to be emphasised, and is a distinction that has escaped analysis of cost reflective pricing.

The principles detailed are the principles that would apply to a retail market; the principles of good market design for a distribution market look more like the principles that would apply to a wholesale market. Energy Consumers Australia will give further consideration to market design principles as the project develops.

A key element of the design principles needs to be whether the market as applied by agents precludes participation by any consumer group. This is currently a concern with the solar PV market where not all premises can participate equally.

Question 7 Are there any other issues the Commission should have regard to in considering possible market design options?

The Commission's acknowledgement that different principles might apply to different geographies is the most critical factor. The benefit of incremental reform needs to be balanced against the certainty from a clear reform roadmap. **Question 8 Do stakeholders agree with the Commission's assessment of the technical impacts of distributed energy resources set out above in sections 4.1 to 4.8?**

The technical impacts listed all potentially exist, but there are multiple alternative implications and possible responses. For example, Distributed Energy Resources could potentially contribute to frequency stability by programming the power electronics of inverters to respond to the Rate of Change of Frequency by leading or lagging the observed frequency.

A key issue is the ability of a distribution network operator to know what is connected where. The completion and expansion of the battery storage register being considered by the Energy Council is therefore a critical element of this project.

Question 9 Do stakeholders agree with the Commission's preliminary assessment of these opportunities, and possible solutions to address the technical impacts of distributed energy resources?

The preliminary assessment is very broad – possible solutions range from mandating technical characteristics (which requires more than just "standards") through just market operation and price signals. The challenge is not just choosing which solution mechanism, but the means by which each solution mechanism will be chosen

Question 10 Do stakeholders have any initial views on who should be responsible for managing these opportunities, or implementing possible solutions to the technical impacts?

Energy Consumers Australia's objective is to provide collegiate, evidence based advocacy. There is still insufficient evidence to determine solutions.

In our general observations we have, if anything, encouraged a wider analysis of the issues than the AEMC's approach because we don't want to preclude options unnecessarily.

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