DEMAND RESPONSE MECHANISMS

Response to AEMC consultation paper (ERC0247)

December 2018

1. Executive summary

Stanwell welcomes the opportunity to provide this submission to the Australian Energy Market Commission's (AEMC's) consultation on demand response (DR) mechanisms.

Stanwell is supportive of unlocking opportunities for consumers and the market more generally, and contributing to the most appropriate means of doing so. While DR can provide value to the energy market, the three rule change proposals do not adequately facilitate this.

Stanwell agrees there is a need to remove barriers to DR's participation in the market, but we suggest that a broader, more considered approach can unlock greater dividends for consumers and the market. This includes:

- Appropriate framing of DR not as a *service* but as a *service provider*.
- Considering the broader ability of DR providers to participate in a range of ways, not just in the wholesale market. Creating a bespoke mechanism for DR constrains its participation.
- Consideration of the different types of consumers and how they participate. Many examples of DR are out-of-market and already occurring.
- Consideration of DR in the context of the broader work programs underway by the Australian Energy Market Operator (AEMO) and the AEMC. In particular, distributed DR relating to small customers must be considered within the distributed energy resources (DER) program.
- If DR participates in the market, any requirements such as scheduling, provision of information, compliance etc. need to be consistent with those of any other participant in that class. Market efficiency cannot be achieved if preferential treatment is given to certain technologies and business models without due justification. If costs of participation are too high, then rather than being waived for DR, an assessment of the overall participation framework and its costs should be conducted.

Undoubtedly, barriers to DR participation in the market should be removed, but the market should then be allowed to determine the value of the services provided by DR.

Stanwell welcomes the opportunity to further discuss this submission. Please contact Alison Demaria on (07) 3228 4588 or alison.demaria@stanwell.com.

2. Context of the rule change proposals

The three rule change proposals represent an industry desire to remove regulatory barriers to new technologies and business models participating in the market.

DR is a good provider of some of the services required by the power system and Stanwell is supportive of capitalising on these resources. In this context we agree with the intent of the rule change proposals and what they are trying to achieve, but disagree with the specific approaches proposed.

This is reaffirmed by considering the assessment criteria outlined in the consultation framework with which Stanwell broadly agrees. Examples of how these proposals do not satisfy the criteria include:

- The need for a resilient framework that is flexible to market changes and specifically does not restrict solutions to current issues, business models or technologies. This criterion also reflects the neutrality of the National Electricity Rules (rules). Implementing separate mechanisms for DR risks this approach, and may have the inadvertent consequence of restricting opportunities to consumers and increasing market inefficiencies.
- The need to consider the relationship between different types of DR and ensure non-distortionary effects of its applications is outlined as a clear desire by the AEMC but then the paper focuses solely on wholesale DR.

  It is also difficult to discern whether the wholesale mechanisms discussed will facilitate more Demand Side Participation (DSP) in network and ancillary services without broadening the scope.

Stanwell notes that the assessment criteria do not fully consider these rule change requests in the broader context of the work underway by various market bodies, in particular the work program on DER. While raised in the discussion paper, more thought needs to be given to whether the three proposed mechanisms offer the most efficient approach or whether they should be integrated in other current work programs.

Stanwell also notes that the consultation paper touches upon the various objectives of DR but does not adequately frame these in the discussion or the potential facilitation pathways. As discussed in the next section and raised in the AEC rule change request, there is no one size fits all approach to DR. Care must be taken to not just look through the lens of maximising consumer choice, but also maximising the benefits to the system as a whole. Facilitating consumer choice is optimised by a holistic approach which limits any market cross-subsidisation.

The rest of this submission is structured around the main themes raised in the consultation paper, with views on the specific questions asked by the AEMC discussed throughout.

3. Framing demand response

What do we mean by DR?

The terms DR and DR mechanism are often used interchangeably and can have slightly different meanings depending on stakeholder perspective. In the consultation paper, the AEMC refers to DR as being of different types, namely wholesale, emergency and network and ancillary services.

These are not types per se but rather *applications* of DR. To consider the full value of DR, Stanwell considers it to be more effective to be explicit in identifying DR as a *service provider* just like a generator currently can provide energy services as well as frequency control ancillary services (FCAS).

This distinction is subtle and potentially semantic, but framing DR in terms of its physical characteristics will provide broader operational and market benefits including:

- Service provision more effectively matched to operational needs and thus appropriately valued in the market;
- Service providers have more transparency about opportunities to participate in the market, and as a recognised provider they can adapt to changing market conditions and even new markets more efficiently;
- DR is considered on equal footing with generators and other participants in the market, a desire that was expressed in the rule change requests; and
- Interactions between the different “types” of DR would be much more apparent, and like all other technologies, reflect a change in megawatts (MW) over a particular timeframe.

Furthermore, considering DR in terms of service provision assists in the measurement of its additionality and allows the market to more efficiently value DR alongside other market participants.

Like other service providers, how DR participates in the market and the value of its services depends on the type and size, as well as the physical characteristics of the load and accompanying control systems. DR should therefore have the same

"mechanism" of participation as other market participants. Treating DR as a bespoke product (whether with or without a separate market):

- Limits its flexibility to participate more broadly and competitively; and
- Is inconsistent with the AEMC's assessment criteria and technology neutrality of the rules.

In particular, Stanwell is opposed to the South Australian Government's proposal to have a transitionary market for DR that is separate to the wholesale market. This is unnecessary as it duplicates the existing frameworks and would only add cost and complexity. DR would be providing the exact same service as other participants in the wholesale market (that is a change in MW over time) and should be subject to the same participation mechanism rather than create unnecessary market distortions.

Placing DR in context

As outlined above, Stanwell considers it important to consider all potential opportunities that DR as a market participant can contribute. Just as important is consideration of how these rule change proposals and any plausible outcomes fit into the broader work currently underway across industry[1].

The DR mechanisms proposed in the rule changes risk being a piecemeal approach to a problem that has only been partially defined, and as such will not produce the most efficient outcome.

Framing DR in terms of its physical characteristics as a service provider will ameliorate some of this risk; however, the consultation paper's narrow focus on wholesale DR means that potential outcomes are likely to be inflexible to any market changes that may result from the overall reform process.

In particular, the discussions on aggregated DR from individual consumers and any related solutions are inefficient if DR is not considered in the broader context of DER. By AEMO's definition, DER "can refer to distribution level resources, which produce electricity or actively manage consumer demand e.g. solar rooftop photovoltaic systems, batteries, and DR".[2]

This definition recognises that DR has the potential to provide the same physical services as other forms of DER and they share the same barriers to participation as discussed below. Ignoring the relationship that distributed level DR is a subset of DER will:

- Duplicate the work undertaken by the AEMC and industry;
- Misinform consumers and potentially inadvertently limit their perceived choice in how they participate if there is a separate categorisation for DR. For example, consumers may think they can only participate in aggregations of DR providers rather than other providers; and
- Misclassify DR as a service rather than a service provider which, if leads to its own mechanism, gives preferential treatment in the rules for a particular service provider.

The barriers to participation for distributed DER are largely related to consumer accessibility and have been raised in previous contexts. Small customers can already participate through out-of-market agreements with their distribution network depending on their location. There are also existing out-of-market arrangements currently available through agreements either directly with a retailer or a tripartite arrangement with demand response specialists and a retailer.

By contrast, DR provided from large single sites should be considered in the context of existing rules for the registration and participation of large generators. Most of their barriers to participation are external to the market such as the inflexibility of load. Large flexible loads already participate in out-of-market contracts such as the Reliability and Emergency Reserve Trader (RERT) or are responsive to the spot price. For those not exposed directly to the spot price, this is generally a commercial decision based on contractual agreement with their retailer that is deemed of more benefit to the organisation than participating in the spot market. This also captures opportunities to shift load where feasible to times of the day when the wholesale price is lower.

Stanwell understands that AEMO is currently seeking to conduct trials with large loads to test their ability to follow dispatch targets.

Valuing DR

DR has enormous potential to provide valuable services to consumers and the market as a whole. Proper evaluation requires understanding the service being provided and the practical potential of the service providers. Stanwell agrees with the AEC that, as there is no one size fits all DR service provision, pricing must be structured around the value delivered.

It is important to distinguish what aspects of DR should be valued in the market and what are intrinsically out-of-market services. For example the AEMC rightly

[1] Notable examples include the actions tasked to the Energy Security Board, the long-term frequency control work program underway by the AEMC and AEMO, as well as the industry wide DER program.
[2] https://www.aemo.com.au/Electricity/National-Electricity-Market-NEM/DER-program

identified DR as a provider of RERT as being out-of-market. The relevance becomes clear in the discussions on the cost and benefits of DR as well as the need for regulatory changes.

Ultimately, the value of DR is driven by the service it is delivering:

Contracted response

The market contains various types of DR contracts:

- AEMO assesses proposals by DR providers for reserves through the RERT. These are out-of-market resources and usually utilised for disturbances or at peak times. These must be contracted to ensure availability when needed as well as the appropriate communication systems.
- Smaller customers can access DR contracts with their local distribution network provider to assist in managing local peaks or congestion. Energex for example has a broad DR program. These provide valuable services to the networks and are valued within the direct contract process. This can be the simplest way in which consumers can benefit directly from DR.
- Many commercial and industrial loads have DR specifications or options in their retail contracts. In these instances, the retailer utilises DR as part of its overall portfolio management. This type of DSP is required to be captured by AEMO's DSP portal.

  Stanwell Energy contracts DR from some of its large loads, the details of which are specific to the individual customer. The larger loads provide more flexibility and certainty and thus are more reliable for Stanwell's needs. More detail is provided in Box 1.

Non-scheduled, uncontracted response

If a customer unilaterally reduces load or shifts its load from a high price period to a low price period, for example from the day time to the night time or vice versa, this application of DR is:

- Not providing a market service because the DR cannot be accessed as a real-time operational service;
- The beneficiary is the customer in accessing a lower electricity price. While there will be some benefit to the power system if the load is shifted into the "duck curve", the overall system benefit is diluted as it is not in direct response to operational price signals;

Box 1: DR products offered by Stanwell Energy

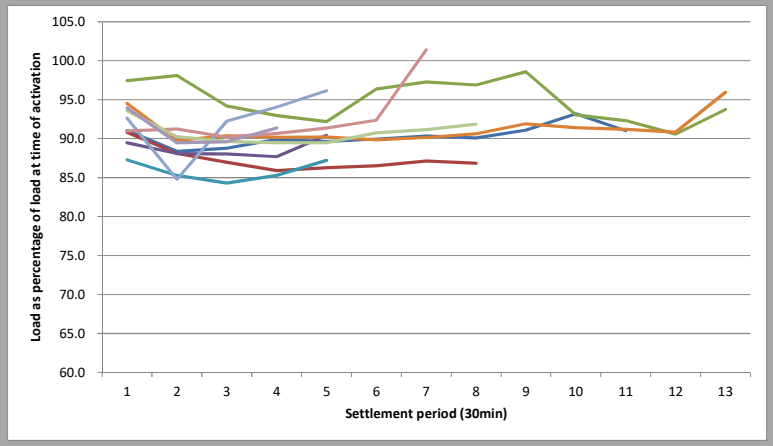
In the consultation paper the AEMC asked stakeholders about their current and future interest in offering DR products. Stanwell's retail business, Stanwell Energy makes available DR products to all its customers; however, the willingness to participate depends on the specific load. Many customers do not want or are unable to modify their loads, or do not see sufficient value in the energy market relative to their core business.

Stanwell does have a number of customers with DR products in their contracts. These represent customers with load requirements of around 10-100 MW who are willing and able to make available a fraction of their total load for DR.

Stanwell Energy's DR products typically involve an availability payment as well as remuneration if activated. The exact amount depends on the pool price if, and when, activated with Stanwell calculating the baseline against which payment is made.

Stanwell Energy activates these contracts when there is a market benefit in doing so, and so the market naturally sets the value and timing of these resources. DR will be activated in some months but it is not unusual to have little activation over a long period. Also, customers are typically not obliged under their contracts to participate if called to activate at a time that would adversely affect their operations. Furthermore, there is flexibility in the DR products that allow customers to affect DR with Stanwell as their agent.

The chart below illustrates the DR from one Stanwell customer during a single month in 2017. The chart shows how the demand changed relative to period zero when the response was activated until the period in which the DR was deactivated. At time zero, the load is 100% and in the instances of activation, the load reduced to around 85-95% relative to the load at time zero, with the response sustained for around 90 minutes to six hours.



For this month, the customer's benefit of participating in DR was approximately $2,800/kWh of offset demand.

- Unless these loads are large (discussed below), then this type of DR is unlikely to affect AEMO's load forecasting as it already relies on an underlying diversity in customer behavior.

This type of load shifting can be undertaken by all customers regardless of size and may be manual or automated.

Smaller loads wanting to participate in the wholesale or ancillary markets are more likely to as part of an aggregated portfolio. This reduces the overall expense to the consumer and transfers the required capabilities for market participation to the aggregator, but does not change the service being provided. The potential value to the consumer and/or aggregator is energy market arbitrage and FCAS revenue. The market determines the value of services delivered by DR.

Aggregated portfolios are a means to effectively expose small consumers to behavioural incentives related to the wholesale price. The other means sometimes considered are reflective tariffs such as time-of-use. Any tariffs need to be designed with caution so that they are truly reflective and aligned with the system needs. In its *Emerging Technologies Information Paper* AEMO demonstrated how time-of-use tariffs can induce aggregate DER behaviour that adversely affects the system.[3]

This is because these customers' response is automated and cannot be accessed in operational timeframes. This creates an operational asymmetry for AEMO as components of the system are reacting to pricing signals that aren't always reflective of the needs of the power system. This reaffirms that any direct exposure to pricing signals needs to be accompanied by appropriate requirements on participants.

If these loads are scheduled, then they can be called upon to assist secure operations if needed and create greater market transparency and efficiency. If they are non-scheduled, then they provide no operational benefit to the market.

Scheduled, uncontracted response

Market participation to deliver operational services to the system in real-time is limited to a few business models. Large loads may elect to become scheduled, although few do, and non-scheduled loads may be willing to participate in ancillary services if the price is sufficient to offset the cost of participation. For example, loads can provide FCAS.

Increasing the amount of DR which is scheduled and in-market should be a primary consideration of the Rule change process.

Costs of DR participation

All participants in the market have costs imposed on meeting requirements of entry and ongoing obligations. This is also true for DR and would form part of the business model for the individual participant. There will be firm costs associated with activation equipment as well as variable costs that depend on the volume and length of activation.

If DR participants are finding market entry as cost-prohibitive, the default response should not be to change the requirements of entry only for a certain class of participant. If economic barriers to entry exist then this should warrant an assessment of the overall participation framework to determine whether the costs of meeting obligations are still appropriate.

Indirect costs of DR participation

Indirect costs that were not identified in the consultation paper relate to the operation of the distribution network. DR participating in aggregated portfolios will add to the changing dynamics of the distribution network and the operational capabilities of network service providers. Networks will need to coordinate with AEMO to ensure that there are no adverse impacts from DSP as well as invest in greater monitoring equipment.

4. Facilitating access to participation

The role of the regulatory process is to facilitate access to participation in a way that is technology agnostic and transparent. It is prudent to acknowledge that facilitating access to participation is distinct from facilitating participation. The latter is decided upon by the business case that a (potential) participant develops based on the market price signals.

This objective was expressed in the consultation paper, whereby the AEMC wants to assess the proposals for "how they facilitate consumer choice in service provision through competitive markets".

We need to let the market perform its role and not over-engineer regulatory mechanisms. The services provided by DR should be valued appropriately in the market based on the operational needs of the system. This then determines both the willingness and method of participation for all providers including DR, thereby providing the most efficient outcomes.

[3] https://www.aemo.com.au/-/media/Files/PDF/Emerging-Technologies-Information-Paper.pdf

The predominant barrier to market participation by smaller customers was identified in all three rule changes as the inability to have multiple trading relationships (MTR) at a single connection point. The AEC's submission presented an approach to circumvent the need to establish MTR by proposing retailers negotiate in good faith with third-parties, while the AEMC has already indicated to AEMO that it should submit a rule change request to facilitate MTR.

The AEMC and the South Australian Government also posited that DR providers were unlikely to have the capability to assume the role of retailers as they may lack the associated expertise in a number of categories including IT systems, prudentials and risk management. However, if these providers want to actively participate in the market on behalf of consumers, many of these capabilities are required regardless.

Facilitating MTR may also incentivise retailers to offer DR products and generate more competition.

The willingness of small and medium customers to participate either directly or via aggregation is another barrier to address. Products need to be tailored based on an understanding of how these consumers want to participate, in addition to broader education about DER and how it can be operationally valued.

Participation in wholesale and ancillary markets for any service provider requires consideration of:

- Registration category
- Registration thresholds
- Scheduling and dispatch
- Baselines

These are discussed below in turn.

Registration category

Stanwell considers that the proposed separate market participant category risks constraining the potential of DR and creating confusion for participants.

Registration categories for loads are already fragmented by the potential competition between retailer registered energy market participation and third-party registered FCAS participation. It is unclear where a new DR participant category would fit relative to these classes.

Consideration of a separate registration category is already occurring. In the case of aggregations of DR, this is captured in AEMO's DER work underway. At the utility scale, AEMO is conducting a review of registration categories and specifically consulting on emerging generation and energy storage[4].

In both cases, AEMO is undertaking trials to determine the operational requirements for new business models and their capability to deliver services. This includes intended trials of the ability of large load to follow dispatch targets.

AEMO is also undertaking trials of Virtual Power Plants (VPPs) to understand the performance requirements for their participation in FCAS as well as telemetry and performance verification needs.

Establishing a new participant category for DR should only occur if the need is clearly detailed by AEMO's current work. Otherwise inefficiencies will be created and lead to confusion for potential participants. The holistic approach would better cater for the needs of new business models and ensure that no unintended barriers are enforced by narrowing the registration category, and ultimately provide broader benefits to consumers.

Registration thresholds

Registration thresholds for DR should reflect the service being provided to the market. As DR is proposed to be treated equally to generation, equal thresholds should apply. As with generation, AEMO could provide exemptions or variations on a case-by-case basis where there is a clear operational need or benefit.

This is relevant for both energy and ancillary service markets.

Scheduling and dispatch

Framing DR in terms of the service it's providing should determine how it is or isn't treated within central dispatch. Participants scheduled for their intended participation will give AEMO the visibility and operational requirements it needs and reduce market distortions.

This excludes out-of-market DR including DR contracted for RERT, local distribution network services and by retailers or third-parties in direct agreement with their customers to hedge their position from dispatch, with the real-time impacts of the latter captured by the DSP guidelines.

Two of the benefits of DR that were cited by the rule change proposals and in the consultation paper were greater transparency to AEMO for its forecasts, and a

[4] http://aemo.com.au/Electricity/National-Electricity-Market-NEM/Initiatives/Emerging-Generation-and-Energy-Storage-in-the-NEM---Grid-Scale

means to manage the greater intermittency on both the supply and demand sides. Each of these benefits relies on the DR being reasonably firm and predictable. Neither of these can be realised if appropriate obligations on DR participation are not imposed. This includes the need to provide forecast information, compliance with targets and be subject to processes such as causer-pays. Preferential treatment for any participant, not just DR, creates inefficient risk allocation, the costs of which will be ultimately borne by consumers. While there is an associated cost of complying with the requirements of dispatch, the benefits to the market increase significantly as participants' actions and intentions are made transparent. Scheduling provides transparency to AEMO allowing more accurate forecasts, more efficient formulation of price[5], and better allocation of market costs.

Baselines

There is no default method for calculating baselines as it will depend on what service DR is providing and to whom. In this respect, baselines should be determined by the procurer of the service:

- Participants in the central dispatch would have appropriate measurement and communication systems such that AEMO could determine their baseline.
- DR services provided out-of-market have their baselines determined as part of the contract terms.
- Aggregators of DER are responsible for determining the baselines for individual participants and managing associated risk across the portfolio (while baselines for the aggregate resource are determined by AEMO).

[5] During the Non-scheduled generation and load in central dispatch rule change consultation, Stanwell provided the AEMC with analysis of the market cost of large loads being unscheduled. We would be happy to provide this information again if useful.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