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1. Executive summary

Stanwell agrees with the AEMC that a two-sided market is required to efficiently balance supply and demand in an environment where each side of the market is becoming more variable and responsive. The proposed Demand Response Mechanism is a small and positive step towards such a market. The proposal retains the opacity of the majority of the demand side but allows for transparency and compensation of wholesale demand response provided from large users through third parties.

Stanwell supports the Australian Energy Market Commission's (AEMC's) efforts to, as much as practical, ensure equivalent requirements on both the demand and supply side of the market. This will promote transparency and minimise complexity when making comparisons between competing resources. Stanwell supports the proposals for Demand Response Service Providers (DRSPs) to provide information about capability and intent ahead of dispatch, and for them to participate in price formation.

Stanwell also supports the Commission's recommendation to restrict the mechanism to large customers initially while investigations are undertaken into appropriate consumer protections for small customers.

While supporting the headline features of the proposed reform, Stanwell considers that there are a number of specific details which require further work to minimise conflicting signals and unintended consequences.

The AEMC has proposed the implementation of the demand response mechanism only one year after the commencement of five minute settlement. Stanwell recommends additional exploration of the practically achievable timeframe for the proposed reform, including consideration of staged implementation. The draft rule does not appear to incorporate the learnings from recent processes, viz:

- AEMO and retailers will be required to make system changes to enable this reform;
- the cost and complexity of the implementation of five minute settlement is greater than expected by AEMO and the AEMC; and,

- AEMO has stated that they will not be able to begin significant work on the mechanism until after five minute settlement has commenced¹.

Despite this, the AEMC has recommended the implementation of the demand response mechanism only 1 year after the commencement of five minute settlement.

Stanwell welcomes the opportunity to further discuss this submission. Please contact Jennifer Tarr on (07) 3228 4546 or jennifer.tarr@stanwell.com.

¹ Page 183, draft determination

2. Participant category and registration

The draft rule establishes a new participant category – the Demand Response Service Provider (DRSP) who will be able to offer wholesale demand response into the wholesale market. The DRSP is not required to be the Financially Responsible Market Participant (FRMP) – i.e. the retailer - for the load.

Registration process

Stanwell agrees that registration and classification are important steps in the process of facilitating more, and more valuable, demand response including:

- 1. The obligations that a DRSP is required to comply with in order to be approved as a provider of wholesale demand response, and;
- 2. The assessment of loads by AEMO that are approved to participate including their technical characteristics, location and ability for a baseline to be determined.

Stanwell agrees that AEMO should have the ability to set prudential requirements for DRSPs in order to maintain the financial integrity of the market. However, as the wholesale demand response mechanism is to be settled outside of normal settlement arrangements, the actual calculation and netting of prudentials across a participant's registration categories may not be straightforward. Stanwell requests that the AEMC clarify who is responsible for consumption in the rare case where a DRSP is dispatched for demand response but the resulting load is actually above the baseline².

Stanwell notes that the demand response mechanism does not encourage the transparency of demand response through retailers. It is beneficial for a retailer to continue to offer unscheduled demand response rather than register as a DRSP and fund its own settlement surplus and associated costs.

Assessment of loads by AEMO

Stanwell supports the AEMC's decision that AEMO must assess each load proposed by the DRSP for its suitability for involvement in dispatch. This provides assurance that:

- The DRSP has a relationship with the customer;
- The load has a suitable baseline;
- The load has appropriate metering and communications equipment in order to receive dispatch instructions, and
- AEMO is aware of the location of the load in order to incorporate it into constraint equations.

In addition to the type 1, 2, 3 or 4 meter plus "appropriate communications and telemetry for the issuing of dispatch instructions", large loads should also provide Supervisory Control and Data Acquisition (SCADA)³ feeds in order to determine their causer pays factor when dispatched for demand response.

The registration of demand response loads should prevent generators registering as demand response loads where they could otherwise register as generators. The opportunity for loads to opt in and out of dispatch and thereby avoid certain obligations, may create a perverse incentive for some generators to locate behind the meter and register in this way too.

Scheduled demand response units

Once loads have been approved by AEMO to participate in the demand response mechanism, Stanwell understands that the DRSP will be able to aggregate the loads into scheduled wholesale demand response units. These will be blocks of 5MW or greater that will participate in dispatch.

Stanwell suggests that AEMO approve the specific aggregation of loads into scheduled demand response units. This will allow AEMO to manage constraints and system security within dispatch.

Stanwell also recommends that the AEMC consider lowering the threshold for demand response units⁴ from 5MW to 1MW. 1MW is the increment used for bidding and is the volume that can unilaterally influence price. A lower threshold would also facilitate more participants (loads) in wholesale demand response and the associated benefit of transparency.

The AEMC notes that a DRSP may be offering both frequency control and demand response at the same time but that it may be different loads within the

² This may happen as AEMO target a load for demand response based on its actual consumption rather than its baseline. It is the DRSP's responsibility to ensure offers are cognisant of the demand response against the baseline.

³ References to SCADA should be taken to mean SCADA or equivalent

⁴ Equivalent reductions for other registrations could be pursued but are likely to fall outside the scope of this rule change proposal.

DRSP providing these services. Stanwell therefore agrees that it is DRSPs rather than AEMO who are best placed to co-optimise the offers for these services.

Stanwell agrees with AEMO that there may need to be a geographical limitation on loads within an aggregated facility to ensure transparency and scheduling is consistent with the management of security constraints within central dispatch.

3. DRSP participation in central dispatch

Stanwell supports the AEMC's intent in ensuring consistency between the treatment of scheduled wholesale demand response units and scheduled generating units in central dispatch. This is essential to ensure the most efficient dispatch outcome and electricity system stability.

Provision of information through SCADA

Stanwell agrees that the information provided to AEMO by participants through SCADA is integral to the functioning of dispatch and to demand forecasting. The draft rule proposes that AEMO will have the flexibility to specify a different process by which it is able to receive information from demand response loads. If such a process is determined to be feasible and sufficient for large demand responsive loads, Stanwell considers that it should also be available for provision by generators.

The loads initially expected to participate in the demand response mechanism are large sophisticated loads, possibly with embedded generators. Large loads' actual consumption and response to dispatch targets are critical to AEMO's management of system security and frequency. For example, Stanwell has observed unscheduled demand response from individual loads of greater than 150MW within 5 minutes, significantly affecting frequency. In this situation, providing AEMO with regularly updated data such as through a SCADA link appears essential for managing system security. The five minute data provided to AEMO in the Virtual Power Plant demonstrations are unlikely to be enough, especially for calculating causer pays factors.

If SCADA can not be used for all scheduled wholesale demand response providers, then Stanwell suggests it at least be enforced, through the Rules, on loads providing demand response greater than 1MW.

Electing to participate in dispatch

The AEMC proposes that DRSPs can elect when they participate in dispatch. Stanwell notes that by not participating in dispatch at all times, the value to AEMO of the resource is diminished. AEMO can not rely on this resource to assist with ramping, reserves and reliability.

When participating, DRSPs face the same obligations as scheduled generators. When not participating, the DRSP will not receive a dispatch target and will not be subject to causer pays.

The draft determination proposes three states for a scheduled demand response unit:

- 1. Not participating;
- 2. Participating but not cleared or not available; and
- 3. Participating and instructed to provide demand response.

Stanwell is unsure why these new dispatch categories are necessary. For consistency with other scheduled participants, it may be easier for DRSPs to be "available" and "not available" as follows:

- 1. Not available The FRMP remains exposed to the variability in consumption and the customer is treated as a "load" in the determination of causer pays factors.
- 2. Available but not cleared The FRMP remains exposed to variability in consumption and the customer is treated as a "load" in the determination of causer pays factors. The DRSP receives a zero causer pays factor. The DRSP will need to receive a target from NEMDE that it is "not cleared" rather than a target to remain at the same level.
- 3. Available and cleared The FRMP is liable for the baseline energy consumption, the load receives a zero causer pays factor (potentially excluded from load calculation), the DRSP is paid for the difference between the baseline and actual consumption and the DRSP receives a causer pays factor based on its variation to its dispatch target.

Stanwell notes that a DRSP will not rationally participate in dispatch unless both

- a) the wholesale spot price is higher than the retailer reimbursement rate, and
- b) the reduced load is less than the baseline for that dispatch interval.

While Stanwell appreciates why the AEMC has chosen to allow a DRSP to opt in and out of dispatch, it does introduce opportunities for gaming. For example:

- A small generator may be able to register as a DRSP load thereby avoiding the need for more onerous generator obligations

- The DRSP has the ability to rebid to opt out of dispatch part way through responding to demand response targets if the load's baseline drops below the actual load. This has implications for transparency and efficient dispatch. This would be avoided if the rules prevented the load from opting out until the demand response unit was cleared to return to its prior level of consumption.

The AEMC has not indicated how Fast Start Inflexibility Profiles could work with demand response loads. Loads may have a fixed pattern of demand response or demand restoration that would be efficient for AEMO to incorporate into dispatch.

Ceasing to participate in dispatch

The mechansim needs to avoid the potential for demand shocks or step changes related to demand response participation and targets.

The AEMC states that when a DRSP ceases to participate in central dispatch, it must provide to AEMO:

- 1. The aggregate consumption for the scheduled demand response unit at the end of the previous dispatch interval, and
- 2. An expected consumption profile for the scheduled demand response unit for the 30 minutes after that dispatch interval.

It appears that AEMO would already have the scheduled demand response unit's aggregate consumption information at the end of the previous dispatch interval. This is necessary for AEMO to manage the DRSP's participation in dispatch. Even the Virtual Power Plant trials provided AEMO with 5 minute consumption data.

The provision of the expected consumption profile for the 30 minutes after that dispatch interval is important to enable AEMO to manage the withdrawal of the DRSP from central dispatch. This could require the substitution of demand response with generation as the underlying load/s return to normal consumption levels.

Stanwell has observed price spikes as a result of unscheduled demand response loads returning to normal consumption levels. For this reason, Stanwell suggests that rather than just providing an expected consumption profile with no obligation to follow the profile, the scheduled demand response units should participate in dispatch until they receive a target from AEMO to return to its prior level of consumption. The same as other scheduled participants, if the DRSP wishes to no longer be cleared for dispatch they have the option to rebid to achieve this outcome.

Alternatively, the scheduled demand response unit should be obligated to follow its provided 30 minute consumption profile with a causer pays penalty applicable for not following the profile.

DRSP instructions to provide demand response

Stanwell notes the DRSP receives an instruction based on its consumption at the start of its first contiguous dispatch interval for demand response. If this is to proceed, the market will receive signals that are not transparent as participants are not aware of the underlying baseline. Stanwell suggests the baseline be used by AEMO in forecasting and is the basis from which the load is targeted.

For example, consider a 100MW load that can offer 10MW of demand response. Assume the baseline for this load increases by 1MW each dispatch interval. At the start of the fourth dispatch interval the load is consuming 104MW (as per its baseline) and is expected to increase to 105MW. When AEMO targets the DRSP it should send a dispatch signal of 10MW meaning the load should consume 95MW (Baseline of 105MW less demand response of 10MW). This would provide a clear and consistent data set to market participants.

Under the AEMC's proposed approach the load appears to be held at 104MW and the demand response is targeted at 9MW, despite fully utilising the available demand response. Settlement would still reflect 10MW of effort. However data presented to participants would include discontinuities around the dispatch intervals where demand response is dispatched (in this case pre-dispatch would have indicated 105MW of demand but only 104MW was used in dispatch).

As discussed earlier, NEMDE should distinguish between a "return to prior level of consumption" target to a DRSP (with associated causer pays penalties for deviating) and a "not cleared" signal from NEMDE (with no causer pays penalties and the FRMP responsible for the load).

Stanwell requests further examples on the DRSP's interaction with the mechanism including how it would be targeted for dispatch, how this information will be displayed to other participants, the calculation of causer pays, the impact on the demand forecast etc. The examples should include a variety of different baselines.

Directions

The draft rule does not allow a DRSP to be issued with a direction. The AEMC considers that if the DRSP has no capacity to respond then the NER would not necessarily accommodate this as a reason for not responding to a direction.

Directions are a valuable tool for AEMO to manage system security, to be used in rare circumstances. It is important that AEMO has the option to direct DRSPs as this may be more cost effective for consumers than directing generators. Stanwell's experience is that AEMO Operators typically consult with the participant before issuing a direction and are receptive to information on any constraints a participant has in responding to a direction. The DRSP could also manage its availability to directions by bidding unavailable.

4. Information provision

The AEMC has proposed various information provision requirements on the DRSP. Stanwell agrees with these decisions as improved transparency of demand response will lead to more efficient price outcomes, better forecasting and enhanced reliability.

In addition, Stanwell suggests that any load participating in the demand response mechanism should also comply with the 42 month notice of closure obligation on generators. The closure of large loads is as important to reliability planning as generator closure and this information may be enough to prevent the triggering of the Retailer Reliability Obligation and its associated costs on consumers.

Regarding the Demand Side Participation Information Portal (DSPIP), Stanwell requests the AEMC confirm the following responsibilities:

- Retailers must submit any demand response arrangements they have with customers that are not part of the mechanism.
- DRSPs not required to submit to the DSPIP⁵ as the DRSP's demand response is already transparent to AEMO through its bidding and participation in STPASA, MTPASA etc

Provision of information to the retailer

Stanwell, like most retailers, carefully manages the spot market exposure of its retail customers through load forecasting, communication with customers regarding outages and forward market management. Although the AEMC suggests a retailer's hedging will be unchanged under the DRM this is not Stanwell's expectation.

If a retailer has a customer with a DRSP relationship the retailer would need to be provided with the same information as that being communicated between the DRSP and AEMO. This is to enable informed active forward management of the retail position. That is, the retailer requires:

- 1. Demand response bids for customer (so as to allow the retailer to determine whether or not the customer is likely to provide demand response);
- 2. The relevant baseline of the customer (so that the retailer can determine whether or not the customer is likely to provide demand response);
- Live consumption (the retailer will use this in conjunction with 1 and 2 to determine whether or not the customer is likely to provide demand response);
- 4. The dispatch targets of the customer; and
- 5. STPASA and MTPASA submission for the customer.

As this information is already proposed to be communicated between the DRSP and AEMO, for implementation simplicity, Stanwell suggests that AEMO provide access to this information to the retailer through *infoserver*. This will enable incorporation of the data into existing retailer systems which access *infoserver*.

In addition, when retailers are pricing large customers, they assess the risk of the customer's load shape and its impact on the retailer's total load shape. For this analysis, customers (or their broker) provide the prospective retailer with their historical consumption. In future, to accurately price and assess a new customer, retailers will also require access to the demand response history of the customer (since they will be responsible for it). It is not clear how demand response from an aggregated resource will be able to be allocated to individual loads for future pricing processes. Equivalent challenges are present for AEMO in determining a baseline for a site which has historically provided demand response.

5. Baselines

Impact of the baseline on the retailer

Even if a baseline were perfectly unbiased (a customer's load is equally above and below the baseline), a retailer will still be exposed to the mechanism in an uneven manner – only when the customer's load (after demand response provision) is less than the baseline, and the price is high. Demand response will

⁵ Unless they wanted these contracts to count under the Retailer Reliability Obligation.

not be provided when the load (after demand response) is above the baseline, even at high prices. This is illustrated in the following chart.



Note: 5 minute data. Flat baseline calculated due to the distribution of load around the baseline.

This situation demonstrates the importance of the retailer having access to the information required to determine the likelihood of its customers providing demand response (as discussed earlier: bidding, forecast and consumption information for a retailer's DRM customers).

Baseline selection

The baseline should be subject to regular and transparent review. Stanwell suggests there be a mechanism for the retailer to challenge whether a baseline is appropriate. Also, noting AGL's experience through the Australian Renewable Energy Agency (ARENA) trials that baselines can have an acceptable level of error across a large portfolio but have a high risk of inaccuracy at the individual

customer level⁶, consideration should be given as to whether groups of customers, aggregated by the DRSP, could be given a single baseline.

Use of baseline in Retailer Reliability Obligation

For compliance with the Retailer Reliability Obligation, retailers will continue to hedge based on their forecast of a customer's consumption. This forecast will be more complex than currently as it will need to incorporate the likelihood of the customer providing demand response. Stanwell supports the actual load being used for the purpose of compliance calculations but that the demand response under the mechanism be ineligible as a qualifying contract. Alternatively, the baseline load is used for retailer compliance, with the demand response automatically credited to the retailer as a qualifying contract. Otherwise, the demand response is double counted. The retailer should not be in a position where the demand response has been added back to their liable load but they do not have access to the demand response contract to offset against this load.

6. Settlement and cost recovery

Stanwell supports the AEMC's choice to continue to bill customers for actual consumption. This will avoid significant complexity and implementation costs. The proposed separate settlement with AEMO for demand response is clunky but preferable to the alternative, assuming the mechanism is relatively short-lived as described by the AEMC. A separate settlement system gives retailers the choice to manually settle demand response if uptake is slow, reducing initial implementation costs. Stanwell also supports not incorporating the implementation of the demand response mechanism with five minute settlement.

Retailer reimbursement rate

The AEMC has suggested that the retailer be reimbursed for the lost load (which it may have hedged for) at a reimbursement rate based on historic spot prices. This is unlikely to be the same as the cost to the retailer of managing the risk of the load as this would be based on forward prices. The proposed use of historic spot prices appears to be a least worst approach compared to the complexity of using forward prices or a retailer supplied price.

Historic spot prices could be used but they should be selected based on the interval to be reimbursed rather than using a quarterly average. This would

⁶ Page 122, Draft determination

account for the fact that demand response is likely to occur for short periods at high prices.

7. Other considerations

Performance standards

As a condition of registration, generators must meet a set of generator performance standards to ensure the operation of the generator does not contribute to security issues. These include a requirement to do no harm to system strength and to remain connected during certain system security events.

As the demand response mechanism will encourage load to act in a way that will affect the system (such as large drops in consumption), the AEMC should consider what performance standards should be applicable. This is particularly relevant as a large portion of demand response may be embedded generators (either synchronous or inverter connected) behind the meter.

Extending the scheme to small customers

Stanwell agrees with the AEMC that the mechanism should not at this stage be extended to small customers. Introducing the scheme to large customers will allow a period of review and analysis and is consistent with the market being a wholesale market rather than a retail market. Small customer participation through aggregators adds layers of complexity relating to visibility and participation in constraint equations in addition to the need for clarity regarding small customer protections.

Interaction with environmental schemes

The AEMC should clarify that the retailer will continue to be liable for environmental scheme compliance based on a customer's actual consumption. The use of baselines should be restricted to the wholesale energy market to avoid unnecessary complexity.

Customers on pool pass through agreements

Some customers are on pool pass through retail agreements rather than fixed price agreements. These customers are already incentivised to provide demand response at times of high prices. If these customers participate in the mechanism, they would receive extra reimbursement for demand response that would otherwise have occurred. Consideration should be given as to whether a condition of participation in the mechanism is a fixed price retail agreement. Alternatively retailers could be responsible for managing this risk through contractual conditions on pool pass through agreements.

DRSP contribution to meter data provider costs

Retailers pay for, and pass onto customers, the costs associated with metering. Consideration should be given as to whether the DRSP should contribute to these costs, especially if, due to participation in mechanism, a new meter is required.

Implementation timeframe

The AEMC has proposed the implementation of the demand response mechanism only one year after the commencement of five minute settlement. Stanwell recommends additional exploration of the practically achievable timeframe for the proposed reform, including consideration of staged implementation. The draft rule does not appear to incorporate the learnings from recent processes, viz:

- AEMO and retailers will be required to make system changes to enable this reform;
- the cost and complexity of the implementation of five minute settlement is greater than expected by AEMO and the AEMC; and,
- AEMO has stated that they will not be able to begin significant work on the mechanism until after five minute settlement has commenced⁷.

⁷ Page 183, draft determination



Appendix 1: Difficulty in determining baselines

Stanwell expects that baselines will be difficult to determine for some loads. They are also likely to be biased, directly influencing whether a DRSP provides demand response, in association with the price. Some examples of customer load variation are shown below.

The following customer may be easy to determine a baseline for. Their load is relatively flat with little difference in load shape or volume between winter and summer. This customer is likely to be an exception.

Half Hourly Data (MW) 14.00 12.00 10.00 8.00 6.00 4.00 2.00 0.00 Jan-19 -Jan-19 -Feb-19 -Oct-18 Oct-18 Dec-18 Dec-18 Feb-19 Apr-19 un-19 Jun-19 Aug-18 Sep-18 Nov-18 Nov-18 Mar-19 Mar-19

Looking at the daytime variance in load, this customer shows little variation throughout the day, both on working and non-working days.

Historical Distribution of Load - Quarter 1

Historical Distribution of Load - Quarter 1 Working Weekday Non-working Day min & max 10th-90th percentile min & max 10th-90th percentile 14.00 14.00 12.00 12.00 10.00 10.00 8.00 8.00 6.00 6.00 4.00 4.00 2.00 2.00 0.00 1630 1730 1930 1930 2030 2130 2230 2230 2230 2230 2230

By comparison, the following customer exhibits a distinct seasonal load.



Looking at the distribution of load throughout the day in guarter 1, the load also shows lower consumption and variation in offpeak hours and greater overall demand on working days. This customer is likely to be difficult to determine a baseline for.



These examples highlight the complexity in determining a baseline at a 5 minute level.

