

Mr John Pierce
Chairman
Australian Energy Market Commission
PO Box A2449
Sydney South NSW 1235

Submitted via www.aemc.gov.au

10 December 2015

Dear Mr Pierce,

Demand Response Mechanism and Ancillary Services Unbundling ERC0186

EnerNOC is grateful for the opportunity to comment on this important topic. We hope that our comments will be useful to the Commission.

EnerNOC is a leading provider of energy intelligence software (EIS) and services to utilities and enterprise customers. EnerNOC's EIS solutions for enterprise customers help inform energy purchase decisions, provide advanced visibility into electricity usage patterns, and optimise when it is used. These tools help them engage with demand response and demand management opportunities.

EnerNOC applauds the commencement of this long-overdue rule change process. The lack of integration of the demand side was first recognised as a serious deficiency by the Parer review in 2002. More recently, the Australian Energy Market Commission's (AEMC) Power of Choice review commenced in July 2011 and its recommendations were delivered in November 2012. Based on feedback received during AEMO's Retail Market Consultative Forum, EnerNOC is concerned that the DRM will not be implemented until 2018/19. This lengthy delay is clearly not in the interests of consumers.

1 Intent of the DRM

The AEMC set out the rationale for the DRM as follows:

Providing a way of participating in the wholesale market that is separate to a consumer's electricity supply contract recognises that consumers and retailers may have different energy needs. It also allows consumers to seek competitive offers for demand response from a range of suppliers. Overall, giving consumers the ability to respond to price signals will promote efficient consumption, and thereby contribute to the efficient operation of the demand side.¹

¹ AEMC, *Power of Choice*, final report, November 2012, p. 121.

Customers are currently under-served, because they can only sell their wholesale demand response capability via their retailer. Customers do not choose retailers on the basis of their demand response offerings. Rather, they shop around for the best electricity supply deal, as this is of much greater value to them. Hence there is very little competitive pressure on retailers to deal with demand response. As a result, most customers are not made aware of their ability to provide demand response, or, if they are aware, their demand response services are undervalued. This is what has led to the National Electricity Market (NEM) having such a low level of demand response

2 Voluntary and staged implementation

The COAG rule change recommended the implementation of the DRM in a “voluntary and staged” manner. In EnerNOC’s opinion, this approach could potentially be used as a measure to limit user participation.

It is worth noting that the intent and purpose of the “voluntary and staged” approach was solely to avoid imposing large costs on retailers by requiring them to make changes to their billing systems outside of their normal cycle of upgrades and replacements².

EnerNOC would like to recommend a sensible interpretation of “voluntary and staged”, which would mean that this applies for an initial period of the DRM; however, it should then become mandatory after a defined period of time. The rationale for this position is intertwined with the intent; under reasonable circumstances, retailers will need to overhaul their settlement and billing systems, and so could implement DRM support while they’re undertaking this work for minimal incremental cost.

3 Problems with the current market

3.1 *No competition to procure demand response*

An electricity user can in principle provide demand response for multiple purposes. Unfortunately, with the current NEM arrangements, each of these types of DR can only be procured by—and customers may only choose—one party:

- (a) In response to wholesale price peaks—this can only be procured by the consumer’s retailer.
- (b) Ancillary services, in response to system disturbances—these can also only be procured by the consumer’s retailer.
- (c) In response to distribution network peaks—this can only be procured by the consumer’s local Distribution Network Service Provider (“DNSP”).

² Importantly, this is the Retailer estimate, not the AEMC’s.

- (d) In response to transmission network peaks—this can only be only be procured by the consumer’s local Transmission Network Service Provider (“TNSP”).

The consumer has no ability to shop around for a better deal for their DR, so there is no competitive pressure for these parties to provide good value to the consumer for their DR capabilities. This alone would lead to inefficient underuse of DR. However, since these parties are often reluctant buyers of DR, due to conflicts with their core businesses, the effect can be even more dramatic.

This contrasts with a competitive market environment, in which there would be multiple parties highly motivated to maximise their own profits by finding and procuring as much demand response capability as they can as efficiently as they can, so long as the resulting total cost is below the total value of the services to the markets in which they can be sold. This kind of competition spurs innovation, as each party tries to find the best methods to engage with particular types of consumers.

Since consumers would be able to choose the most attractive offer, competitive tension between these parties would lead to consumers being highly rewarded for their DR capabilities.

3.2 *Demand response is not allowed to compete with generation*

Reducing demand affects the balance of supply and demand in exactly the same way as starting a peaking generator. On a longer timescale, assembling and contracting a portfolio of dispatchable demand-side resources can contribute to the security of supply in exactly the same way as building a new peaking generator.

Since demand response is actually—and not merely metaphorically—equivalent to supply response, economic efficiency requires that it be regarded and rewarded, equivalently, as a resource proffered to system operators, and be treated equivalently to generation in competitive power markets³.

The late Alfred E. Kahn
Professor Emeritus of Political Economy at Cornell University
and author of *The Economics of Regulation*

In the NEM, demand-side resources such as load curtailment are not treated equivalently to supply-side resources such as scheduled generation, despite being technically able to offer all the same services. Specifically, there is no mechanism for a consumer who reduces their demand at a time of high wholesale prices to be

³ Demand Response Compensation in Organized Wholesale Markets, FERC Docket No. RM10-17-000

paid the spot price for doing so. There is also no practical way for a consumer to set the spot price—this can only be done by scheduled resources⁴.

As a direct consequence of this asymmetry, there is little DR in the NEM. Instead of having vigorous competition between supply-side and demand-side resources to achieve an efficient, least-cost outcome, it is a one-sided market, in which demand is largely taken as an exogenous input, and prices are set only by the supply side. It has been aptly described as “the sound of one hand clapping”⁵.

The DRM is not a new concept; the proposed DRM is equivalent to the “unbundled transactions model” advocated by Professor Bill Hogan, Director of the Harvard Electricity Policy Group at Harvard University, as providing the correct economic incentives while being administratively simple.⁶

4 Benefits of introducing the DRM

4.1 Competition benefits

The benefits of introducing demand-side bidding are clear: by allowing demand response to compete directly with generation, and introducing competition to stimulate efficient procurement of DR, the interaction between supply and demand will be improved, and lead to less peaky system load profiles.

Reducing the extreme peaks in the load profiles will significantly reduce the amount of investment needed in supply-side infrastructure.

The significant level of demand-side participation resulting from the introduction of demand-side bidding will also reduce the ability of generators to exercise or abuse market power⁷.

4.2 Multiple applications of demand response

Where DR can be used for multiple purposes—for example for network and for wholesale purposes—there is no requirement for it to be valued consistently for those different purposes.

If a demand-side resource is able to serve several purposes independently, there is no conflict: it should be paid for each service it provides, according to the value of that service. If there is a conflict between some of the purposes, for example between ancillary services and wholesale energy, such that the same resource

⁴ Please see EnerNOC’s submission on demand side obligations to bid into central dispatch, which outlines reasons why scheduling load in the NEM – and as demonstrated in global markets – is not feasible for numerous reasons..

⁵ Lance Hoch (2006), *The Sound of One Hand Clapping: The NEM without DSR*, Energy Users Demand Response Seminar, Sydney

⁶ William W. Hogan, *Providing Incentives for Efficient Demand Response*, prepared for the Electric Power Supply Association, October 2009, pp. 19-21

⁷ See, for example, Stephen J. Rassenti, Vernon L. Smith & Bart J. Wilson (2003), *Controlling market power and price spikes in electricity networks: Demand-side bidding*, PNAS vol. 100 no.5 2998-3003, available from <http://www.pnas.org/cgi/doi/10.1073/pnas.043794210>

cannot provide both services at once, then the consumer can choose the activity with highest value, or allow a third party to manage this choice on their behalf.

4.3 *Improved price transparency*

The proposed design for the DRM would result in customers directly, or their representative DRAs providing the Market⁸ with data comparable to that provided by each scheduled generator⁹.

In EnerNOC's opinion, the DRM design provides significantly better real-time visibility than unscheduled generation. It also provides much better after-the-fact visibility (and hence modellability and predictability) than general spot exposure, behind-the-meter generation and retailers' own DR programme).

Based on this information, EnerNOC would expect that market participants would very quickly be able to ascertain the likely demand reduction – and the associated dispatch price triggers – for specific market zones.

Enthusiastic uptake of the DRM would go a long way towards solving the demand side bidding obligation rule change presented by Snowy Hydro, and achieve their stated problem (of not knowing what response there will be to high forecast prices); It is our belief that the DRM will achieve this; the demand side bidding rule change would not solve this issue at all.

4.4 *System wide benefits*

Importantly, all of the various value streams listed above are system-wide benefits. EnerNOC contests the position presented on page 4 of the AEMC consultation paper that characterises Energy Market participation as a private economic benefit.

5 **Unbundling Ancillary Services**

5.1 *Global perspective*

EnerNOC strongly supports the unbundling of Ancillary Services; it is certainly a market that DRAs would seek to participate in.

Participation in Ancillary Service is a prominent component of EnerNOC's business activity in a number of global electricity markets. EnerNOC's participation in New Zealand highlights both EnerNOC's participation, and the significant contribution of Industrial Loads to meeting the FCAS equivalent requirements. Conversely, there is almost no demand-side FCAS participation in the NEM at the moment.

As first discussed in the AEMC's workshop on aggregated ancillary services on 27 April 2012, all that is required to allow consumers themselves, or third parties, to

⁸ AEMO

⁹ This is specified in AEMO's detailed design document, section 8.

offer Ancillary Services into the market, independent of retailers, is a relatively straightforward rule change, with almost no implementation costs.

5.2 *Allowing aggregators to participate is a critical first step*

Our experience in New Zealand has shown that retailers do not do undertake this activity themselves. This is partly because of unique skill set associated with this activity; however, it is mostly due to retail churn: ancillary services are a relatively low value service, such that it can take many years to recover the initial investment required to bring a site into the market¹⁰.

The AEMC's final rule determination from the Aggregation of Ancillary Services Loads process is particularly instructive:

“Increased competition amongst ancillary services providers should lead to more efficient prices for MAS and, as a result, would be in the long term interests of consumers with respect to the price of supply of electricity”

However, there was one major flaw in the final determination: it only allowed market customers, not third party aggregators to actively compete.

5.3 *Benefits of ASU*

Allowing Ancillary Services participation – to promote system reliability and reduce overall costs – will only become more important as the penetration of intermittent renewables increases and grid inertia decreases. The discussions in South Australia are a harbinger.

5.4 *Technical requirements for participating in FCAS*

To further enable broad FCAS participation, rationalising the technical requirements can help: at the moment, the technical requirements are based around the assumption that each site is bespoke, and provides many megawatts of ancillary services capacity. Hence specifications which necessitate expensive equipment can be tolerated.

For large-scale ancillary service provision by aggregations of much smaller facilities to become feasible, a simpler, standardised approach is needed. For example, rather than requiring high resolution frequency data to be recorded for each event, some reliance can be placed on type testing before a roll-out of cheaper, simpler devices.

¹⁰ The aggregation of Ancillary Services from hundreds of loads requires a significant investment in process, tools, technology, metering, PLC upgrades, and the design of site-specific curtailment strategies to enable participation.

Please do not hesitate to contact me if you have any queries. We are happy to provide further information to help the Commission implement the necessary market reforms.

Yours sincerely,

A handwritten signature in blue ink, appearing to read "Mottel Gestetner". The signature is fluid and cursive, with a large initial "M" and "G".

Mottel Gestetner
Senior Manager, Regulatory Affairs

Appendix – Responses to questions listed in the Rule Change Paper

The comments in this section are supplementary to the comments raised above; they are not intended as the sole response to each question.

1 Assessment Framework

1.1 *Would the proposed framework allow the Commission to appropriately assess whether the rule change request can meet the rule making test?*

1.2 *What changes to the proposed assessment framework would stakeholders' consider appropriate, if any?*

EnerNOC recommends explicitly defining the “Voluntary and Staged” period of time.

2 Potential barriers to demand side participation relevant to this rule change request

2.1 *What are stakeholders' views on the potential barriers to demand side participation that have been set out in this consultation document? How relevant might they be? Should they be considered in the Commission's assessment?*

The AEMC’s recommendation in the 2012 Power of Choice review summarises the key barriers to participation:

- *“to address barriers faced by energy users to participate in the wholesale market and support the competitive provision of demand response services by unbundling it from the sale and supply of electricity, and*
- *To treat load reduction in a similar way to generation in the wholesale market including remuneration for the amount of demand response delivered at the prevailing wholesale spot price.”*

“This would give large customers more competitive options to reduce energy costs in response to high spot price events in the wholesale market, resulting in lower generation and network costs which would benefit all consumers.”

2.2 *Have stakeholders identified other barriers to DSP that should be considered in the Commission's assessment? Please, explain and provide evidence where possible*

2.3 *What are the costs and benefits of removing the barriers that are identified as significant to this rule change request? Which barriers are the most problematic and/or more cost-effective to remove?*

The “voluntary and staged” approach has been suggested to minimise the costs identified with implementing this rule change.

The specific benefits have been raised throughout our submission.

- 2.4 *Are there any current or upcoming changes in the market that would mitigate or address any of the identified barriers?*

The key barriers, namely: 1) no competition to procure demand response, and 2) that DR is not allowed to compete with generation will only be solved in this specific rule change. These critical items are not being addressed in other reforms.

- 2.5 *Might there be any unintended consequences from addressing such barriers?*

3 Questions on the overall DRM design proposal

- 3.1 *Would the proposed DRM generate useful demand-side information in relation to improving wholesale pre-dispatch and dispatch prices? How significant would this improvement be?*

As noted in section 4.3 above, the DRM design provides better real-time visibility than unscheduled generation. It also provides much better after-the-fact visibility (and hence modellability and predictability) than general spot exposure, behind-the-meter generation and retailers' own DR programme

Experienced energy traders will very quickly be able to ascertain the behavior of the demand side. The requirement for DR to notify to the market when a dispatch is occurring will greatly promote this benefit.

- 3.2 *Would the proposed DRM generate useful demand-side information in relation to improving the management of transmission constraints through the dispatch process? How significant would this improvement be?*

Yes. As per our response to question 3.1

- 3.3 *Would the proposed DRM generate useful demand-side information in relation to improving the provision or procurement of ancillary services? How significant would this improvement be?*

Yes. EnerNOC expects that DRAs will seek to educate customers about their potential options in both markets, and would facilitate participation based on economic drivers and physical capabilities.

- 3.4 *Would the proposed DRM operation result in a technology neutral approach between demand response and generation resources?*

The DRM would allow DR to access the spot market in much the same way as generation.

However, it is important to note that it's not necessarily "neutral" to impose the same requirements on everybody. For example, the recent AEMC rule change proposal that would require load to bid into central dispatch is a specific example¹¹.

¹¹ Please refer to EnerNOC's comments in its submission to ERC0189.

- 3.5 *Do stakeholders think that there exist any relevant gaming risks or unintended consequences from implementing the overall proposed DRM operation? If so, how could they be mitigated in a cost-effective way?*

EnerNOC believes that a prohibition against signalling false or misleading demand response events would sufficiently address any concerns.

- 3.6 *Would the DRM result in system-wide benefits and/or costs that might impact the operation and investment in electricity transmission and distribution networks? What aspects of the design would contribute to this?*

If NSPs are receptive to DR as an alternative to capital expenditure on network infrastructure¹², then the presence of a vibrant DR sector based around the wholesale market will make it much easier to procure DR for network purposes. In the absence of a wholesale market opportunity, it is slow, difficult, and expensive to procure DR for network programmes, as the whole programme must start from scratch, and justify all the investment required, on the basis of the value of the short-term network project alone.

- 3.7 *Would the DRM result in improved ability for AEMO to manage system security and reliability? What aspects of the design would contribute to this?*

Our comments from section 3.2 are reproduced here:

Reducing demand affects the balance of supply and demand in exactly the same way as starting a peaking generator. On a longer timescale, assembling and contracting a portfolio of dispatchable demand-side resources can contribute to the security of supply in exactly the same way as building a new peaking generator.

Since demand response is actually—and not merely metaphorically—equivalent to supply response, economic efficiency requires that it be regarded and rewarded, equivalently, as a resource proffered to system operators, and be treated equivalently to generation in competitive power markets.

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4 Accredited baseline consumption methodologies

- 4.1 *In stakeholders' views, are there any alternative demand response mechanism options that would not require the use of baseline consumption methodologies?*

The only way is through spot price exposure. We already have that, but not very much of it.

¹² The introduction of the DMEGCIS would further promote this notion. Although we believe that the delayed commencement of the DMEGCIS is a lost opportunity.

The lesson learned from other markets is that if you rely on spot price exposure, you don't get much participation, as only very risk-tolerant customers will play. This is because you effectively have to be exposed all the time, even if you only want to provide flexibility in very limited circumstances. The trade-off isn't worth it for most customers, so they remain inflexible.

EnerNOC believes it is important for the market operator to be responsible for the development and application of this. AEMO is responsible for settlement, so is the logical party to administer baselines.

4.2 *What are stakeholders' views on the proposed baseline methodologies, and the proposed assessment criteria to be applied when assessing baseline consumption methods?*

The AEMO baseline methodology was prepared by the world's most experienced consultants on DR baselines. No baseline methodology is perfect, but there are plenty which are good enough. The benefits of using baselines (allowing customers to shop around to sell their flexibility independently of their retail contract) outweigh the lack of purity that arises from settling using baselines.

5 Restrictions on the provision of demand response

5.1 *In stakeholders' views, how effective would the proposed DRM design be in preventing the exercise of potential gaming opportunities?*

The costs for energy users to artificially increase their energy use for large periods would far exceed any benefits from the DRM, minimising the incentive to gaming.

Please also refer to comments in question 3.5

5.2 *Are there alternative options to improve upon the current design to manage gaming risks?*

6 Interactions with demand side participation mechanism

6.1 *Does the proposed DRM design appropriately capture and address all potential interactions between the DRM and other demand side participations options in the NEM?*

7 Prudential requirement

7.1 *Are the proposed prudential requirements on DRAs and retailers appropriate?*

8 Settlement charge

9 Implementation issues in relation to the DRM

9.1 *The Council proposes a voluntary approach for retailers to enable their customers to participate in the DRM. How effective do stakeholders think this voluntary approach will be in encouraging retailers to enable their customers to opt-in into the DRM?*

Please refer to Section 2.

9.2 *What are stakeholders' views on allowing manual billing as a viable short term solution to encourage retailers to enable their customers to opt-in the DRM?*

This is an approach that retailers already undertake for Embedded Networks, and should be a viable short-term solution.

10 Voluntary and staged approach

11 Potential barriers to demand side participation in FCAS markets

11.1 *Do stakeholders agree that current market arrangements where only market participants that purchase or sell electricity on the wholesale spot market can participate in FCAS markets are a barrier to entry that restrict DSP in the FCAS markets?*

Yes. Please refer to Section 5 in the first portion of this submission.

11.2 *Do stakeholders agree that facilitating entry via greater DSP, either as individual or aggregated loads, can result in lower cost and higher quality provision of FCAS services while minimizing the scope to exercising market power in these markets? Do stakeholders have any particular evidence to support their views?*

Yes. Fundamentally, increased *competition* will result in more competitive procurement of FCAS and achieve lower costs.

The effect of a demand-side resource on the spot and hedge markets is exactly the same as that of a new-entrant generator. The new entrant only puts other existing generation resources at 'risk' if those generators choose to offer into the market at a higher price point than the new entrant.

In addition to direct cost benefits, FCAS delivered from load has distinct advantages over generation:

- (a) Load can respond faster than generation: In NZ, Interruptible Load (FCAS equivalent) is required to respond to an under-frequency event within 1 second. In practice, much of the load response can curtail faster than this. Conversely, generation (in almost all instances) cannot respond as quickly. If the faster response is modelled correctly, it should allow the market to procure less FCAS.

- (b) Reliable delivery through portfolio aggregation: ‘Failure’ of spinning reserve will result in binary delivery: all or nothing, whereas ‘failure’ of demand response will still typically result in close to 100% delivery. This is due to the aggregation benefits of combining many diverse loads into a single portfolio.
- (c) Diversity of supply: the geographic spread of FCAS providers could potentially result in a smoother restoration of load.

11.3 *In which category ancillary service provision do stakeholders believe that entry will be more likely? Are there any foreseeable future changes that might broaden the scope of entry in markets where demand response has generally not been able to provide ancillary services?*

The following order would be a logical progression

- (a) Raise 6 and 60 seconds
- (b) Lower 6 and 60 seconds & regulation services

12 Questions on the overall ancillary services unbundling (ASU) proposal

12.1 *In stakeholder's view, how would the ASU proposal impact on the cost of balancing supply and demand in the NEM?*

As per question 11.2

12.2 *Would the ASU proposals result in improved ability for AEMO to manage system security and reliability? What aspect of the rule change would contribute to this?*

Yes. The benefits of “faster reserves” and the improved reliability from the DR portfolio would directly promote this outcome – especially with the challenges being faced in South Australia.

12.3 *Would the ASU proposal result in reduced ability for AEMO to manage system security and reliability? What aspect of the rule change would contribute to this?*

No

13 Interactions with the DRM

13.1 *Does the ASU proposal appropriately capture and address all potential interactions with the proposed DRM?*