

Matthew Martin
Director, Wholesale Energy Markets
Public Utilities Office | Department of Treasury
Locked Bag 11 | Cloisters Square WA 6850

Submitted via email: PUOSubmissions@treasury.wa.gov.au

4 May 2018

Dear Mr. Martin,

Response from EnerNOC to the Public Utilities Office's *Improving Reserve Capacity pricing signals – alternative capacity pricing options* Consultation Paper, dated 9 April 2018.

EnerNOC is an independent demand response aggregator with experience operating in twelve countries. We work with commercial and industrial energy users to enable dispatchable demand-side flexibility, and offer that flexibility into wholesale capacity, energy, and ancillary services markets, as well as to networks and utilities. Locally, EnerNOC is a market participant in the Wholesale Electricity Market (WEM) and the National Electricity Market (NEM). EnerNOC's regional head office for Asia-Pacific is in Melbourne. In 2017, EnerNOC became part of the Enel Group.

EnerNOC is grateful for the opportunity to comment on the PUO's consultation paper. In addition to responses to the PUO's formal questions, we have included introductory comments specifically focused on the treatment of demand side capacity resources. No matter which form of alternative capacity pricing the PUO's forthcoming advice recommends (i.e. Option 1 or Option 2); the recommended option must treat supply side and demand side capacity resources with equivalence. The 2016 transitional arrangements introduced by the former government have discriminated against DSM and caused it to exit the market en masse, resulting in higher market-wide capacity costs and rendering the WEM an outlier amongst global capacity markets. The PUO's upcoming advice must recommend the end of the discriminatory transitional arrangements and chart a course to the resumption of non-discriminatory pricing for all certified capacity resources.

With any questions relating to this submission please contact Matt Grover on 03 8643 5907 or via mgrover@enernoc.com. EnerNOC would be glad to contribute further to the PUO's consultation process upon request.

Regards,



Jeff Renaud
Vice President & Managing Director - Asia Pacific

Introduction

The PUO's consultation paper has well described the spectrum of choices that must be made in designing an efficient capacity mechanism. The paper well describes the Reserve Capacity Mechanism's (RCM's) inability to self-adjust and resultant tendency to procure excess capacity.

Regardless of the alternative capacity pricing method the PUO eventually recommends (i.e. Option 1 or Option 2), there is one recently-introduced element of the current structure that we believe requires urgent reform: the treatment of demand side capacity resources in the RCM. The previous government's 2016 Amending Rules have resulted in a framework whereby in the current 2017-18 capacity year, demand side capacity resources are paid just 15.3% of the price paid to supply side capacity resources, even though the demand side resource requirements have now been "harmonised" to ensure that demand side resources provide a technically equivalent capacity resource to generation.

As a result, the start of the 2017-18 capacity year saw 454 MW of certified demand side capacity resources choose to exit the market and mothball itself. For EnerNOC's 330 MW of certified capacity, the discriminatory pricing introduced by the 2016 Amending Rules was the sole driver that forced us to exit. If this mothballed demand side capacity is forced to remain out of the market for the long term due to the prolongation of the transitional arrangements, it will have a significant negative long-term impact on the competitiveness of the RCM under any capacity procurement method.

Now that the harmonisation process is complete, there is no justifiable basis for the continued un-harmonised pricing treatment of demand side capacity resources. To ensure the WEM can achieve least-cost procurement of resource adequacy, the PUO must act now to chart a pathway towards non-discriminatory pricing for all qualifying capacity resources, including demand side resources.

Treatment of Demand Side Capacity Resources in the RCM

The WEM's transitional arrangements violate the WEM Objectives

The WEM's unequal pricing methodology violates the WEM's codified Objectives in section 1.2.1 of the WEM Rules (excerpted below,¹ bold emphasis ours):

1.2.1. The objectives of the market are:

*(c) **to avoid discrimination in that market against particular energy options and technologies**, including sustainable energy options and technologies such as those that make use of renewable resources or that reduce overall greenhouse gas emissions;*

¹ Wholesale Electricity Market Rules (28 April 2018), p27

(d) to minimise the long-term cost of electricity supplied to customers from the South West interconnected system; and

(e) to encourage the taking of measures to manage the amount of electricity used and when it is used.

The 2016 Amending Rules discriminate against a particularly technology (c) that encourages efficient measures relating to *when* electricity is used (e) and have resulted in higher long term costs of electricity supplied to consumers (d).

The WEM's transitional arrangements contravene global best practice capacity market design theory

Under the 2016 Amending Rules, the method for determining the (lesser) price paid to demand side capacity resources is linked to an annual assessment of the expected utilisation of the demand side capacity resources. The less the resources are expected to be utilised in a year, the less they are paid. This principle does not apply to supply side capacity resources, even though some supply side capacity resources are utilised less than others, and some supply side capacity resources expect to be utilised approximately as often as demand side resources – that is, some extreme peaking generators expect to sit idle most of the year and run only on days of extreme peak demand, if at all during any given year. Yet although supply and demand side resources play an equivalent role in supporting the WEM's desired reliability outcomes, the RCM does not value them equivalently.

In its paper *Capacity Markets – Lessons Learned from the First Decade*, the Brattle Group, the world's preeminent expert on capacity markets, explains that in efficiently competitive capacity mechanisms, all types of resources should be treated equally (emphasis ours):

*"Different types of generating resources may in fact have very different costs, net energy revenues, and asset values due to their age, efficiency, fuel cost, flexibility, emissions, capital expenditure requirements, and expected life. However, **as long as two resources are interchangeable within any particular year for meeting the reserve margin requirement, an efficiently competitive market construct should award the resources the same capacity payment**"².*

In addition, Brattle explains how in PJM (which has a competitive auction based capacity procurement mechanism) non-discriminatory procurement has resulted in reduced capacity costs.

"Non-discriminatory capacity auctions create an opportunity for all types of capacity resources to monetize their value. The PJM experience shows that market participants have been able to identify supply resources that had lower costs than the new generating plants that had been anticipated. In particular, the large quantity of

² Kathleen Spees & Samuel A. Newell & Johannes P. Pfeifenberger, 2013. "Capacity Markets - Lessons Learned from the First Decade," *Economics of Energy & Environmental Policy*, International Association for Energy Economics, vol. 0(Number 2). p22

*demand resources and upgrades to existing generation were not expected to become available at prices below the cost of new generation. The combination of attracting significant amounts of lower-cost alternatives to new generation and the economic downturn of recent years postponed the need for costly new generation investments by almost a decade, while capacity market prices were generally far below the cost of new entry. **Overall, this PJM experience strongly demonstrates the benefits of maintaining resource adequacy through non-discriminatory procurement**³.*"

International market experience and independent literature demonstrates that non-discriminatory pricing for all capacity resources is best practice, and that the WEM (with its transitional arrangements in place) is a global outlier. Unless the PUO's recommendations chart a course to non-discriminatory pricing that affords mothballed demand side capacity resources a pathway to re-enter the RCM, any future capacity procurement will necessarily result in higher capacity costs that will be borne by consumers.

The current administered pricing curve – regardless of its effectiveness in facilitating efficient investment/retirement decisions – ensures that increased supply will always result in a reduced total (market wide) cost of capacity and vice versa: decreased supply will always result in an increased total cost of capacity. The former government's 2016 reforms have forced hundreds of MW of demand side capacity resources to exit the market, (reducing supply) which has resulted in an increased total cost of capacity (compared to if demand side resources had remained). Finding a way to re-incentivise mothballed demand side capacity resources back into the RCM is the surest near-term action the PUO could take to reduce market wide capacity costs. The resultant downward pressure on capacity prices might finally induce the types of efficient retirement decisions the WEM seeks, which would facilitate a capacity procurement quantity closer to the RCT. We note that retirement decisions are not the exclusive domain of the supply side - at various levels of depressed capacity prices, some demand side resources themselves will be rendered uneconomic and elect to retire.

The WEM has already implemented reforms to ensure that certified demand side capacity resources face "harmonised" operational requirements equitable with those faced by generators.

We note that starting in 2012, the RCM Working Group led a work programme – with the participation and broad input of all industry participants and stakeholders – to "harmonise" RCM participation requirements for demand side capacity resources with those requirements placed on supply side resources. We have summarised the RCM Working Group's recommendations in the table below.

³ Ibid, p19

Requirement	RCM Working Group Consensus
Dispatch events per year	Unlimited
Maximum dispatch hours per day	6 hours
Total dispatch hours per year	Unlimited
Minimum notice period	2 hours, plus day before notice (best endeavours) of probable dispatch
Baseline	No change from Relevant Demand

The eventual harmonisation provisions adopted by the PUO in its 2015 Position Paper went above and beyond the RCM Working Group consensus and further strengthened the operational requirements for certified demand side capacity resources. Table 6.1 from the PUO's Position Paper detailing each "Proposed reform" is excerpted below⁴.

Position Paper on Reforms to the Reserve Capacity Mechanism

Table 6.1: Proposed changes to the demand side management availability requirements

Requirement	Current rules	Proposed reform	Generation facilities
Days of availability	All business days	All business days	All days
Dispatch events per year	Once on at least 6 days ²⁸	200 hours	Unlimited
Hours per day	4 hours	12 hours	24 hours
Total hours available per year	24 hours	200 hours	8,760 hours
Earliest start	12:00 pm	8:00 am	No limitation
Latest Finish	8:00 pm	8:00 pm	No limitation
Minimum notice period of dispatch	4 hours	Near real time	Near real time (currently 10 minutes)
Measure of availability	N/A	Real time telemetry	Real time telemetry
Capacity baseline	Median 32 intervals	5th percentile of top 200 hours and capped at the Individual Reserve Capacity Requirement level	Sent-out capacity calculated at air temperature of 41 degrees Celsius

⁴ Department of Finance | Public Utilities Office, Position Paper on Reforms to the Reserve Capacity Mechanism, 3 December 2015 ([link](#))

Our table below compares and contrasts the harmonisation proposal changes that occurred between the conclusion of the RCM Working Group work programme and the PUO's 2015 position paper. The PUO's position paper (and eventual the Amending Rules) strengthened the requirements for demand side capacity resources beyond those that had been agreed at the RCM Working Group:

Requirement	RCM Working Group Consensus	PUO Position Paper
Dispatch events per year	Unlimited	<i>No limit under 200 hours</i>
Maximum dispatch hours per day	6 hours	<i>12 hours</i>
Total dispatch hours per year	Unlimited	<i>200 hours</i>
Minimum notice period	2 hours, plus day before notice (best endeavours) of probable dispatch	<i>"Near real time"</i>
Baseline	No change from Relevant Demand	<i>5th percentile of top 200 hours</i>

These new "harmonised" requirements changed the availability hours, max dispatch duration, advance notice period, and Relevant Demand methodology of demand side capacity resources, and were intended to ensure equivalency between supply side and demand side certified capacity.

With these "harmonisation" changes implemented in the Amending Rules of 2016, we see no justifiable reason why pricing should remain "un-harmonised" for demand side capacity resources.

If the PUO believes that the newly harmonised demand side resources are truly not (to use Brattle's words) *"interchangeable within any particular year for meeting the reserve margin requirement"* with supply side resources for any reason, and are thus not deserving of equivalent pricing treatment – we suggest that the PUO should detail what those reasons are, and should set in motion consultation on whatever incremental reforms it believes are needed in order for demand side resources to be truly "harmonised".

We note that the changes introduced by harmonisation will make it more difficult for some demand side capacity providers to meet the new requirements, and will render some legacy demand side capacity ineligible. As such we suggest that, if non-discriminatory pricing is reinstated, the amount of demand side capacity that will 'un-mothball' and re-enter the RCM will be significantly less than the quantities the RCM saw in the 2012-2016 timeframe. If the PUO is concerned that a resumption of non-discriminatory pricing would lead to a sudden price shock caused by many hundreds of MW of demand side capacity re-entering the RCM in a single year – we suggest that such concerns are unwarranted.

For more detail on how the WEM's harmonised requirements for demand side capacity resources compare to other global capacity markets, please see [Appendix A](#).

The WEM has become a global outlier by implementing discriminatory pricing for demand side capacity resources

The table below summarises a number of global capacity markets (including those presented in the PUO's Consultation Paper) with regard to their treatment of demand side capacity resources in the capacity remuneration mechanism.

Market	Market Operator	Capacity Pricing Method	DSM Participation in Capacity Procurement?	DSM Capacity Priced Equitably to Generation Capacity?
Western Australia	AEMO	Administrative pricing	Yes	No
United Kingdom	National Grid	Centralized capacity market	Yes	Yes
Ireland (SEM)	Eirgrid/SEMO	Administrative payments	Yes	Yes
Ireland (I-SEM)	Eirgrid/SEMO	Reliability options	Yes	Yes
New York	NYISO	Centralized capacity market	Yes	Yes
US Mid Atlantic	PJM	Centralized capacity market	Yes	Yes
France	RTE	Decentralized capacity market	Yes	Yes
New England	ISO-NE	Centralized capacity market	Yes	Yes
Alberta	AESO	Centralized capacity market	Yes	Yes

The WEM is the only capacity market in the world with extreme discriminatory pricing for demand side resources, and the resultant forced exit of the WEM's demand side capacity is resulting in higher market wide capacity costs.

If Western Australia were a jurisdiction of the European Union (EU), the current transitional arrangements – where demand side resources are paid unequally to supply side resources – would violate the European Commission's State Aid guidelines, and would have resulted in the European Commission denying approval of the WEM's transitional arrangements.⁵

For these reasons we believe that restoration of 'harmonised' capacity pricing for all resources – regardless of technology type – should be a key recommendation in the PUO's eventual advice, regardless of the alternative capacity pricing method the PUO elects to recommend.

For more detail on how the WEM's arrangements for demand side capacity resource participation compare to other global capacity markets, please see [Appendix A](#).

⁵ See e.g. §6.1 of European Commission, Generation Adequacy in the internal electricity market – guidance on public interventions, SWD(2013) 438 final.

Responses to PUO's Consultation Paper questions:

1. How the pricing approach would provide value for the consumer?

Option 1 (improved administered pricing): Relative to the status quo, this option seems likely to reflect the price/reliability trade-off better, from a consumer's perspective. Sharper price signals during times of excess will reduce the total costs borne by consumers, and should also encourage retirements of the least cost-effective resources.

Option 2 (retailer-led contracting): In theory, this option could allow for some consumers to pay lesser capacity costs than other consumers. Because each consumer's retailer is responsible for contracting capacity, those retailers who secure the most competitively priced capacity contracts will be able to offer the most competitively priced retail rates – which could be considered customer 'value'. Similarly, retailers that have their own cost-effective generation plant could self-contract in order to meet their capacity obligation. The danger here is that this arrangement will amplify the advantages of large incumbents, and disadvantage new entrant retailers, compared to any centralised procurement arrangement (whether price- or volume-driven).

2. How the pricing approach would replicate a competitive price for capacity?

Option 1 (improved administered pricing): in our view, this option comes closer than the status quo to replicating a competitive price for capacity, as a steeper price curve will introduce the possibility of prices falling below those tolerable to some capacity providers, so they will not necessarily want to offer their capacity under all circumstances, and may choose to retire rather than risk the possibility of being stuck with an uneconomic capacity price. In this way, Option 1 might induce similar behaviour to a conventional auction, albeit with more reliance on participants' forecasts of future capacity prices.

Option 2 (retailer-led contracting): In principle, this could be fully competitive, as prices are determined by negotiation between the participants. Additionally, Option 2 would seem to facilitate efficient retirement decisions: because in each year the sum of all retailers' obligations would be equal to the Reserve Capacity Target, "excess" capacity would fail to find a buyer, would face an incentive to mothball or retire. To achieve this, however, there would have to be full transparency, and no exercise of market power. We think this would be extremely difficult to achieve in the WEM's current participant structure – and the PUO would have to consider what specific market power controls would accompany the introduction of Option 2. It is due to these difficulties that centralised auctions are a far more common approach. This option is critically dependant on the existence of competitive pressures in the retail market, and the theory presumes near perfect competition. Since the WEM doesn't yet have full retail competition for a large part of the retail market – it is a long way from perfect retail competition.

3. How the pricing approach would operate in scarcity and surplus capacity situations?

Option 1 (improved administered pricing): the only change to the status quo would be the "steepness" of the pricing curve during scarcity and surplus situations. Under scarcity conditions, prices would rise a long way, to a level well above the cost of new entry, inducing new investment. Under surplus conditions, the price would fall, removing the investment signal, reducing costs for consumers, and prompting retirement of the least cost-effective resources.

To effectively facilitate new entry, the administered pricing demand curve (or indeed an auction demand curve) would need to ensure that, if the price rises high enough that new capacity enters, the entrance of a reasonably-sized quantum (i.e. one power station) doesn't cause the price to crash completely in subsequent years. So the width of the "flatter" section of the curve would need to span a sensible increment in capacity.

Option 2 (retailer-led contracting): Presumably, market contract prices would fall during time of capacity surplus until the least-efficient plant chooses to retire, and would rise during times of capacity shortage until such time as a new entrant is attracted to market. A bulletin board would play an important role in making these signals transparent.

The Consultation Paper notes the need for a for "a back-stop procurement process to cover shortfalls that became apparent closer to the capacity year."⁶ In order for the market operator to be able to make a determination to intervene in this manner, it would need robustly transparent information about what quantities had been contracted at various points in time – the role of a centralised trade reporting system would be critical.

4. How would the pricing model attract capacity when additional capacity is required and discourage capacity when capacity is not required?

As above.

5. How would demand side capacity resources participate under the pricing approach? How should these resources be priced?

As described in the Introduction, regardless of whether Option 1 or Option 2 is pursued, demand side capacity resources should be treated equally with supply side capacity resources. Specifically:

Option 1 (improved administered pricing): The Amending Rules put in place by the former government in 2016 that resulted in a separate discriminatory remuneration method for demand side capacity resources should be abandoned. Instead, demand side resources should earn the same price as supply side resources, and face the same price signals to either invest or retire. The implementation of the current discriminatory arrangements

⁶ Consultation Paper, p15

prompted 81%⁷ of the WEM's demand side capacity to immediately choose to mothball itself. The removal of this demand-side capacity has not resulted in a more efficient market, and in fact total capacity costs are higher as a result., The transitional arrangements have only created a more supply-side focused market – that is allowing some inefficient generators to hang around and avoid retirement.

Option 2 (retailer-led contracting): under this option, each certified capacity resource would offer to contract itself at its own competitive price – so there's no need for specific "harmonised pricing" provisions. Rather the need is instead for technical requirements that do not unduly discriminate against demand side resources. This problem can be solved with clear and transparent operational requirements around resource dispatch and utilisation. France has done well in this regard – French retailers seem to be finding that demand side resources are some of the most cost-competitive resources that can be bought in the open market (from aggregators) or that a retailer can develop itself from within its own customer base.

6. What would be the advantages and disadvantages of the pricing approach compared to the current Reserve Capacity Mechanism pricing arrangements?

See responses to questions 1-5.

In relation to Option 2, the Public Utilities Office invites comments on the following additional matters:

7. Would this pricing approach provide sufficient transparency regarding the capacity price?

Option 1 (improved administered pricing): N/A

Option 2 (retailer-led contracting): This option would certainly provide much less transparency than market participants in the WEM are used to. The role of a central bulletin board is likely to be key to providing transparency and facilitating access to the information that participants require in order to make efficient investment and retirement decisions.

We note that from our understanding of the French scheme, RTE and the CRE have had to go to strenuous efforts, accounting for much of the complexity, to achieve a reasonable degree of transparency and liquidity. The general approach of bilateral contracting tends to favour large incumbents, so mitigating the risk of market power distortions has been a major focus of French regulators. If the WEM were try to implement a “simplified form⁸” of the French approach, the WEM would risk missing out all the minute details that are making the scheme effective in France.

⁷ i.e. the 560 MW of certified demand-side capacity in 2016-17 dropped to 106 MW of certified demand-side capacity in 2017-18.

⁸ Consultation Paper, p14

8. *Would this pricing approach promote sufficient market liquidity to support new retail entry?*

Option 1 (improved administered pricing): N/A

Option 2 (retailer led contracting): With a well-functioning bulletin board and focus on ensuring transparency of trades and prices, Option 2 should provide sufficient liquidity to support new entry. However in this regard, Option 2 would appear to be inferior to the status quo – which is highly transparent and provides a great deal of price certainty for a prospective new entrant. The PUO would also need to consider the state of retail competition in the WEM, and consider what controls are required in order to effectively restrain market power.

Appendix A: Summary of Demand Side Resource Participation in Global Capacity Markets

Market	Market Operator	Capacity Market Pricing Method	DSM Participation in Capacity Procurement?	DSM priced equitably to generation?	DSM's role (deployed for)	% DSM participation	DSM Lead Time	DSM Max Annual Utilisation	DSM Testing requirements	Public reports on DR performance
Western Australia	AEMO	Administrative pricing	Yes	No	Emergency/Reliability	57 MW 1.1% of certified capacity 2018-19 delivery year	"Near real time"	200 hours	Each DSM resource tested once per year	http://www.imowa.com.au/docs/default-source/Reserve-Capacity/system_capacity_mosf2_varanus_gas_curtailment.pdf?sfvrsn=2
United Kingdom	National Grid	Centralized capacity market	Yes	Yes	Emergency/Reliability	624 MW 1.15% of cleared capacity 2018-19 DY`	4 hours	Unlimited	DR resources self-schedule 3-4 half-hour tests per year, with 3 in the peak season. Resources that fail to successfully complete tests risk losing payments and getting removed from the market.	Link to capacity market notices & system stress events: https://gbcmn.nationalgrid.co.uk/
Ireland (SEM)	Eirgrid/SEMO	Administrative payments	Yes	Yes	Emergency/Reliability	~400 MW (exc. N. Ireland) ~6% of peak demand (exc. N. Ireland) 2016-17 DY	Dispatch through energy market	Unlimited	DR resource undergoes testing at inception to determine maximum deliverable capacity	EirGrid Monthly Availability Report Sample: http://www.eirgridgroup.com/library/index.xml
Ireland (I-SEM)	Eirgrid/SEMO	Reliability options	Yes	Yes	Emergency/Reliability	619 MW 6.83% of certified capacity 2018-19 DY	Dispatch through energy market	Unlimited	DR resource undergoes testing at inception to determine maximum deliverable capacity	Will be same as SEM
New York	NYISO	Centralized capacity market	Yes	Yes	Emergency/Reliability	1,267 MW 3.95% of peak demand 2016-17 DY	2 hours	Unlimited	Resources are tested by NYISO twice per year for one hour, regardless of actual dispatches. Underperformance during a test can be penalized at 150% of payments.	NYISO 2016 Annual Report on Demand Response Programs https://www.nyiso.com/public/webdocs/markets_operations/market_data/demand_response/Demand_Response/Reports_to_FERC/2017/NYISO%202016%20Annual%20Report%20on%20Demand%20Response%20Programs_Final.pdf

(Appendix A table continued)

Market	Market Operator	Capacity Market Pricing Method	DSM Participation in Capacity Procurement?	DSM Capacity Priced Equitably to Generation Capacity?	DSM's Role (Deployed For)	DSM Participation Rates	DSM Lead Time	DSM Max Annual Utilisation	DSM Testing Requirements	Public Reports on DR Performance
US Mid Atlantic	PJM	Centralized capacity market	Yes	Yes	Emergency/ Reliability	9,807 MW 6.44% of peak demand 2016-17 DY	0.5 - 2 hours	Unlimited	DR resources self-test once per year for one hour, if there are no dispatch events. Underperformance during a test is penalized at 120% of payments.	Load Management Performance Report 2017/2018 http://www.pjm.com/-/media/markets-ops/dsr/2017-2018-dsr-activity-report.ashx?la=en
France	RTE	Decentralized capacity market	Yes	Yes	Emergency/ Reliability	2,600 MW ~2.8% of peak demand 2017-18 DY	Event days called day-ahead	150 hours	DR resources self-certify their capacity but must demonstrate their performance through dispatches during event days. Underperformance can result in penalties	Performance data in the NEBEF program (this is one way by which resources meet their capacity market obligations): https://clients.rte-france.com/lang/fr/visiteurs/vie/nebef_effacements.jsp
New England	ISO-NE	Centralized capacity market	Yes	Yes	Emergency/ Reliability	704 MW 2.76% of peak demand 2016-17 DY	Dispatch through energy market	Unlimited	Resources are tested by ISO-NE twice per year for one hour, if there are no dispatch events. Performance in the tests affect payments in that month and resources can be penalized at 50% of payments for underperformance	Demand Resource Performance 2016-17 https://www.iso-ne.com/static-assets/documents/2017/04/a5_winter_summer_dr_audits_final_results.pdf
Alberta	AESO	Centralized capacity market	Yes	Yes	Emergency/ Reliability	TBD	Dispatch through energy market	Unlimited	TBD	TBD