EnerNOC Pty Ltd
Level 18, 535 Bourke Street
Melbourne, Victoria 3000
Australia

Tel: +61-3-8643-5900
www.enernoc.com.au
info@enernoc.com

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

Submitted via www.aemc.gov.au

13 October 2016

Dear Mr. Pierce,

Response from EnerNOC to the Commission's draft determination on the Demand Response Mechanism and Ancillary Services Unbundling (ERC0186)

EnerNOC is a global provider of energy intelligence software and demand response services. We work with commercial and industrial end users to offer their demand side flexibility into wholesale capacity, energy, and ancillary services markets, as well as demand response programs offered by utilities. Locally, EnerNOC is a market participant in the Wholesale Electricity Market (WEM), the National Electricity Market (NEM) and the New Zealand Electricity Market (NZEM). EnerNOC's regional head office for Asia-Pacific is located in Melbourne.

EnerNOC is grateful for the opportunity to provide comment on the Commission's Draft Determination. This is an important rule change that EnerNOC has supported since the early days of the Power of Choice review.

EnerNOC is supportive of the Commission's decision to create a more preferable rule in order to advance Ancillary Services Unbundling ("ASU"). This decision should remove barriers to entry and lead to increased competition for the provision of ancillary services, reducing the cost of frequency management.

However, EnerNOC is disappointed that the Commission has set aside the Demand Response Mechanism ("DRM"), which we view as an equally important reform. EnerNOC disagrees with the Commission's assertions that the current market structure is bringing sufficient demand response ("DR") to market, that consumers have sufficient options in monetising their DR flexibility, and that a consumer's DR options are sufficiently "unbundled" from their relationship with their electricity supplier. We believe the Commission has drawn several incorrect conclusions from the Oakley Greenwood ("OGW") report – to us, this report depicts a NEM in which only the largest, most sophisticated industrial consumers are able to bring their DR flexibility to market, with other consumers remaining disengaged and inelastic. Further, EnerNOC believes the Commission has erred in concluding that the DRM would not result in lower prices for customers, and has inaccurately represented market distortions that may arise from the DRM.

This submission details EnerNOC's perspectives in full and identifies topics that we believe require clarification in the Commission's Final Determination.

Demand Response Mechanism:

1 The original vision for the DRM: a scheduled resource with central dispatch

The DRM originally envisaged by the Commission in their Power of Choice recommendations was that:

> *"To the greatest extent possible DR participants should be incorporated into the central dispatch process and settlement arrangements in a similar manner to generators, reflecting their entitlement to receive, rather than pay, within the NEM settlement system."*[1]

and:

> *"To the greatest extent possible demand resources should be encouraged to participate in AEMO's central dispatch as scheduled demand resources."*[2]

This meant that, for any substantive volumes,[3] Demand Response Aggregators ("DRAs") would bid DR into the market in the same manner as scheduled generation. DR would be dispatched by the market operator as part of the same merit order as generation resources. Further, the same compliance mechanisms would apply to the DRA as apply to other scheduled resources if they were unable to deliver the volume of DR dispatched. In general, DR would directly compete with scheduled generation; EnerNOC supported this initial design of the DRM, and we still do today. It would have:

- allowed the demand side to compete directly with the supply side;
- made DRAs' offers and dispatched quantities fully transparent to the market;
- enabled access to the market for customers of all sizes;
- reduced the cost of energy to all customers;
- improved the reliability of supply of the national electricity system and to all customers; and
- for these reasons, aligned with the National Electricity Objective (NEO).

The proposed COAG Rule Change that was ultimately submitted to the Commission for consideration in 2015 is a watered-down version of the original vision for the DRM – a version where DR is non-scheduled and does not participate in central dispatch. However, even this watered-down version is a marked improvement on the status quo, in which there are few opportunities for consumers to respond to scarcity pricing, and those opportunities almost always

---

[1] AEMC, Power of Choice review final report: draft specifications, 30 November 2012, p.42

[2] AEMC, Power of Choice review final report: draft specifications, 30 November 2012, p.48

[3] i.e. Volumes in excess of the threshold (currently 30 MW) below which generators need not be scheduled; we assume that this threshold was intended to apply to the aggregated resource, rather than to individual customer loads, and hence would capture all significant aggregations.

have to be accessed through a retailer (i.e. are “bundled” with retail supply), who may not be interested in offering customers access to DR options and programs. Retail competition simply is not sufficiently near perfect (in this, or any other electricity market) to ensure that major retailers – especially vertically-integrated ones – offer meaningful rewards for customer flexibility.

2 The importance of DR in an energy market

The purpose of DR is to serve as an alternative to, and to compete with, the provision of additional generation to meet demand. By competing with generation, DR can reduce the cost of the entire system. In an efficient market:

- Where the spot price exceeds the cost of the supply side increasing supply, the supply side responds by increasing the supply to the market; and
- Where the spot price exceeds the value the customer derives from consuming electricity, the demand side should equally be able to respond by reducing demand.

However, for this to work:

- both the supply side AND the demand side must be able to respond effectively and equally to the market price; and
- the market mechanisms need to be in place so that both the demand and supply sides benefit equally (excluding any reasonable transaction costs) from their actions.

Without a mechanism for consumers to respond to (and benefit from) responding to the pool price, the balance is skewed towards the supply side, and consumption will occur at inefficiently high levels during scarcity events. Although the proposed DRM does not provide equivalent treatment for demand and supply sides, it is a vast improvement on the status quo where, other than the very largest, most sophisticated consumers, the demand side has very limited opportunities to respond to the spot price, and where the spot price is consistently dictated by the offers made a supply side that knows that it faces largely inelastic demand.

EnerNOC is very concerned that the Draft Decision is silent on the merits of increasing levels of DR participation in the energy market. There appears to be a fundamental inconsistency in the Commission’s Draft Determination. Even if the Commission is fundamentally not supportive of the design of the DRM proposed to it by COAG, EnerNOC believes it is critical for the Commission to express a view to the market as to the benefits of DR as a competitor to generation and as a mechanism to determine or impact spot prices. For example, if the Commission considers that it is impossible for a DR to drive efficient market outcomes without being a scheduled resource that participates in central dispatch, we believe the Commission should provide such guidance.

3 Issues with how the Commission has interpreted the OGW Survey report

The Commission’s Draft Decision draws heavily on the report commissioned from Oakley Greenwood, and concludes that “Demand response can and already is happening in the NEM. There are no barriers to the continued proliferation of demand response that is currently underway"[4]. In support of this position, the Commission summarises the key figures from the OWG survey thusly:

> *"retailers have at least 235MW of demand response capacity under contract, of which 200W[5] is capacity that is directly exposed to the spot price. Demand side management providers are managing at least 310MW of demand response capacity. Other estimates suggest 2000MW of demand is currently available to be exposed to wholesale market prices."*[6]

EnerNOC has a number of concerns with the Commission's use of these summary figures to conclude that the status quo is working fine, and that there are "no barriers" to DR participation:

1. Any individual consumer's DR load will vary throughout the day, and throughout the year. Representing it as a single value is inaccurate and overly simplistic, and demonstrates limited understanding of the nuances of demand-side flexibility. Further, the quantity of DR under contract does not give any indication of the level of actual participation or the effectiveness of the market. We reject the AEMC's conclusion that because there is some demand response happening already today, the status quo is adequate.

2. The vast majority of the 235 MW that retailers reported is counted as "DR" simply because it is spot exposed (200 of the 235 MW, or 85%)[7]. **Just because a load is spot exposed does not mean it is able to, willing to, or does react to high spot prices with any regularity or certainty. Simply put, spot exposure is not the same as DR.** Further, such "DR" is invisible to the market operator and other market participants – it is nigh on impossible for the market operator to factor such "DR" into its load forecasts, and impossible for other market participants (generators) to make offers properly informed about the nature of the demand curve. In this regard, the proposed DRM was an improvement on this status quo, in that consumers would have the option to respond to high prices with DR, then all DR responses would be published publicly, giving all market participants visibility into how much load is reacting to spot prices, in which locations, and at what prices.

3. The corollary to #2 above is that only a very small proportion of retailer-reported DR is "dispatchable" by retailers, or can be inferred to be "firm" in any way (35 of 235 MW, or 15%). This is an important point that will be discussed in more detail later on, as many of the Draft Determination's listed "distortions" relate to the types of DR products a retailer might hypothetically offer their retail customers, and "firmness" is a key concept.

---

[4] AEMC's Draft Determination, p. iv

[5] Our presumption is that this is a typo, and meant to say "MW"

[6] AEMC's Draft Determination, p. iv

[7] With a retailer administering the consumer's access to spot prices – presumably because the consumer's only other option for accessing spot prices (registering as a Market Customer) is so costly as to be an unattractive option.

4. The OGW survey collected no information on the how many consumers are participating in DR schemes, only on the aggregated quantity (in MW) of participating flexible load. It is quite likely that the entire 235 MW of "DR" reported by retailers is sourced from a just a handful of very sophisticated industrial loads. As an extreme illustration, all 235 MW of retailer-reported DR could come from one smelter, or one LNG train. We simply don't know, because the survey didn't collect enough information to draw adequate conclusions.

   As such, EnerNOC is disappointed that the Commission drew the conclusion that the existence of 235 MW of responsive load facilitated by retailers means there are "no barriers" to DR. The survey would have been more informative if OGW had been instructed to collect additional data on the number of NMIs participating in DR, and the average annual consumption of each NMI. From the survey results it is impossible to know how widespread DR participation actually is, and whether there truly are "no barriers" for all types of consumers. The OGW Survey Report does offer one perspective that seems to confirm our suspicion that retailers are only bothering to offer DR to "very large" consumers:

   > *"as several of the retailers noted, the transaction costs associated with such tailoring has also meant that these arrangements are typically only provided to larger commercial and industrial customers (primarily those with an average load of about 5 MW or more)"*[8]

This quote begs the question: Will a retailer or a DR services provider bother responding to a 100MWh/annum[9] consumer who says they want to provide DR? Do smaller consumers really face "no barriers" in bringing their DR to market – do they really have the "power of choice"? In our view the answer is no – and we wish the OGW survey had collected more information to allow the Commission to draw the same conclusion. We are further disappointed that the Commission failed to investigate the "transaction costs" that retailers reported facing, as such costs may constitute a barrier for a smaller consumer wishing to monetise DR via their retailer.

Given the extreme peakiness of the NEM's load profile, it should be able to make cost-effective use of 2,000+ MW of DR. The OGW survey, despite its incompleteness confirms that it falls far short of this.

In short, the OGW Survey Report confirms EnerNOC's view of the current DR landscape in the NEM: Only "very large" loads are participating in DR, and most of this consists of spot price exposure arrangements which may not involve much, if any, actual responsiveness to real-time prices. There is no DR happening in a transparent fashion that adds information to the market,

---

[8] OGW Survey Report, p19

[9] This is the threshold over which most NEM jurisdictions judge a customer to be "large" and thus eligible for the proposed DRM. EnerNOC notes that this equates to an average demand of just 15 kW, which is much smaller than the types of loads highlighted in the OGW Survey Report. Further, this means that that the proposed DRM would be accessible to a wide range of consumers, from smelters to supermarkets, and everything in between.

there is very little "dispatchable" DR happening, and very little mass-market DR happening. In our view the status quo is a failure.

4 Supply of DR for wholesale market purposes remains bundled with retail supply

EnerNOC maintains that under the status quo, provision of DR services remains bundled with a consumer's choice of retail supplier. Consumers have only two options to monetise the flexibility of their consumption:

1. <u>Become a market customer:</u>

- Administrative costs high & fixed (AEMO settlement, IT costs, prudential requirements).
- Impractical for all but largest C&I loads, where transacted volumes so high that energy purchasing is a core business function with dedicated staff.
- Only feasible in industries where energy costs > 15% of COGS, such as aluminium, steel, cement, paper, oil and gas, and water.
- A review of AEMO's database indicates that fewer than 10 energy users have ever registered as a Market Customers, and that most are very large industrial users.[10]
- Value of DR is avoided wholesale purchase ("savings" = quantity of load reduced x RRP)

2. <u>Seek a retailer's cooperation in monetising DR:</u>

a. Take spot exposure, facilitated through a retailer

- From The OGW Survey Report, this is the most common type of "DR" happening today, but most retailers are only providing the service for 5+ MW consumers.
- This option is impractical for smaller consumers for the reasons in #1: although they avoid the overhead of settling directly with AEMO, by instead paying the retailer for this service, they still have to manage risks and possibly prudential requirements.
- Value of DR is same as in #1.

b. Participate in a "dispatchable" DR program run by customer's retailer

- If the figures in the OGW Survey Report are a true representation of the landscape, only ~15% of the small amount of DR happening today falls in this category.
- Not all retailers offer DR, and DR options vary from retailer to retailer.

[10] EnerNOC analysis of MMS 'participant' and 'participantcategoryalloc' tables

- All but the most sophisticated consumers will determine their choice of retailer based on offered energy rates, NOT their DR offer, so there's little competitive pressure for retailers to offer DR, or to provide reasonable value in any such offers.
- The retailer gets to choose if and how the customer can monetise their DR. And the retailers determine when to activate DR. In our view, this type of scheme does not provide consumers with the "power of choice". The Commission's Draft Determination does not sufficiently address the "retailers might offer a customer a DR option but then never call it, jeopardising the customer's ability to earn a return on their investment in DR capability" concern raised by COAG and numerous stakeholders, as summarised on page 25 of the Draft Determination.
- Value of DR comes in form of some sort of payment from the retailer.

So, for all but the very largest of primary industry consumers, all forms of DR run through a retailer in some way. EnerNOC is puzzled by references in the Draft Determination to a consumer's ability to engage a DR Service Provider to monetise DR without the involvement of a retailer – it is simply not possible: *"If [retailers'] offers are unsatisfactory, customers have the option to contract the services of a demand side management service provider to make the most of their demand response capability and manage wholesale price risk using the expertise of these service providers"*[11]

In the Draft Determination, the Commission has rejected multiple stakeholders' (including EnerNOC's) assertion that "DR remains bundled" on the basis that *"It is the customer's preference for a fully hedged retail contract that creates the 'bundling' of the retail contract and the demand response services."*[12] **It is true that most consumers have a preference for fully hedged retail contracts.** This is because the vast majority of "large" consumers are in the business of manufacturing widgets, cooling buildings, powering IT equipment, etc. – they do not have the technology, interest level, or staffing bandwidth to entertain full or partial exposure to the spot price – and never will, even with the aid of technology and a DR services provider.

The decision to accept spot exposure is not one a consumer can take lightly, and would typically need to be approved at the board level, as the financial risks can be large relative to the size of the business. Outside of the "very large" industrial segment, most consumers can't afford to, or don't have the bandwidth to administer, or don't have the risk appetite to participate in the electricity market via any mechanism other than a fully hedged retail contract. **This is why a DRM is important: it will allow DR specialists to unlock the value of DR for consumers of all sizes, despite the consumer's preference for a fully hedged retail contract, whilst their retailer remains unaffected by (and no worse off as a result of)[13] the consumer's DR participation.** Importantly, the proposed DRM is truly "unbundled" in that it would allow a consumer to invest in

[11] AEMC's Draft Determination, p19

[12] AEMC's Draft Determination, p28

[13] Ignoring any one-time, up front implementation costs of 'opting in' to the DRM

DR technology and processes, and retain that capability each time they change retailers in pursuit of the most competitive retail energy contract.

In support of this view, and also our position that spot exposure ≠ DR (detailed in section 3), EnerNOC refers the Commission to the New Zealand Electricity Authority's[14] report following the "undesirable trading situation" that occurred in New Zealand on 26 March 2011[15]. On that day, energy spot prices ranged from $19,200/MWh to $19,750/MWh for a number of hours. The Electricity Authority received 35 submissions from industry and spot-exposed consumers, many of whom had a good whinge about their price shock. Excerpts from two such consumers are reproduced below:

> *"Vodafone has suffered significant financial impact as a result of these events. We have calculated the cost of the 7 hour spike in pricing to be in excess of 8% of the historical annual Vodafone electricity expenditure... Had we been made aware of the possible significant spike in prices we would have had the opportunity to mitigate this through, for example, taking actions to reduce our usage and/or use our own generation and arranged to have the cellular network powered by battery backup during the time of the price spike"*

Submission from Vodafone NZ Ltd

> *"The financial impact is significant for Westpac… had we been aware of the possible level of prices we would have taken actions to reduce our usage and/or use our own generation… We were not therefore in a position to mitigate the costs…"*

Submission from Westpac NZ Limited

It would appear that many spot-exposed consumers were unaware of the risks of accepting spot exposure, and for whatever reason did not enact DR or alter their consumption in any way during a period when the spot price of electricity quite clearly exceeded their value of consuming electricity from the grid.

Further, EnerNOC notes similar anecdotal narratives arising out of South Australia's high energy prices in July 2016. Spot exposure is a risky proposition that only sophisticated consumers can entertain – and even then, it doesn't always go perfectly.

EnerNOC does not deny that there is some DR happening in the NEM today, nor do we deny that some consumers have chosen to accept spot exposure and some of those may be engaging in DR. However for consumers for whom spot exposure is impractical (the majority of consumers), significant barriers exist. The Commission's position seems to be that "because consumers have the option to accept spot exposure in order to monetise their DR flexibility, there is no barrier to consumers accessing demand response". Our position is that requiring spot exposure (given most consumers' inability to do so) constitutes a barrier in and of itself.

---

[14] The Electricity Authority is the electricity market rule-maker and regulator in NZ

[15] https://www.ea.govt.nz/code-and-compliance/uts/undesirable-trading-situations-decisions/uts-26-march-2011/claims/

5 The reason the NEM has so little DR is because the current framework relies on retailers to develop it

The OGW Survey Report indicates that most retailer-led DR (roughly 85%, if survey results are truly indicative) involves the retailer simply providing an administrative service facilitating the consumer's access to the spot price. It reports that retailers are willing to serve consumers with other types of DR but that **consumers aren't approaching retailers seeking dispatchable DR offerings**:

> *"Half of the retailers that responded to the survey noted that customer exposure to the wholesale price constitutes the only source of demand response within their customer base. It should be noted, however, that at least some of these retailers are also willing to provide other arrangements for customers who want to provide DR – it is just that at present all of their customers who want to provide DR have chosen to do so through exposure to the spot price"*[16]

In our view, this quote also indicates that most retailers are not creating dispatchable DR options, are not advertising them, and are not recruiting customers to them. **Despite what may be a retailer's theoretical "efficient incentive"[17] to provide competitive DR offerings, the NEM is seeing very little retailer-led DR participation.** The only retailer EnerNOC is aware of that is running publicly advertised, mass-market DR programs that are open to all their customers is ERM Power[18].

Relying on retailers to lead the way has left the NEM considerably under-penetrated with DR. If the Commission believes increased levels of price-responsive DR participation would benefit the NEM (and it is critical that the Commission provide the market with comment on this topic), then relying on retailers to lead the way is not going to deliver increased levels of DR participation (for the majority of consumers with a preference for largely hedged retail contracts), for these reasons:

- Under the **status quo**, a consumer needs to:
  - know what DR is, and that there's an associated market opportunity
  - know they're capable of providing DR by being flexible with their demand
  - know they should seek a retailer willing to accommodate their desired flavour of DR[19]

---

[16] OGW Survey Report p4

[17] The Draft Determination notes that retailers *"already have an efficient incentive to manage this risk cost effectively to develop competitive pricing offers to their customers. Retailers have a number of instruments at their disposal to manage this risk, and engaging in demand response activities is just one of them. Whether the retailer relies on demand response depends on how competitive demand response is with respect to the other instruments available to the retailer such as buying energy derivative financial products and/or generation assets"* AEMC's Draft Determination, p.61

[18] ERM Power's retail arm trades as ERM Business Energy

[19] We note that on account of their size (demand and annual consumption), various types of consumers do not enjoy equal bargaining power when negotiating rates and services with retailers. Retailers staff teams of

- implement their own load shedding scheme to match retailer's DR product structure; and
- then hope the retailer actually calls the DR, and allows them to monetise their investment

- Under the **DRM**, a demand response aggregator could:
  - introduce DR to customers who don't know about DR opportunities, and wouldn't otherwise seek them
  - explain how a customer can effectively control their load and participate in DR
  - help a customer make a long-term business case for investment in DR-enabling processes & technology
  - bring DR to market outside a customer's (typically) bi-annual energy procurement cycle, "unbundled" from the choice of retailer

- Under the **status quo**, retailers aren't bringing DR to market[20] because of these factors:
  - Non-core**:** A retailer's core business is selling energy, often the output of their generation business. Load-based DR is just not core business.
  - Skills: Commissioning DR requires a very different skill-set to retailing. Without deep knowledge of load production/use processes, and dispatch/control technologies, it simply can't be done.
  - Not a useful competitive differentiator: Consumers are choosing their retailer on the basis of their supply price; rarely (if ever) on their DR offer.
  - Contract durations: Retail supply contracts in the NEM rarely extend beyond two years; many are shorter. With DR's requirements to install technology and adapt processes, an ROI greater than two years is typical.

In a world of perfect retail competition and fully informed consumers, retailers would face immense pressure to make optimal use of customers' DR potential, where this was the lowest-cost source of flexibility; otherwise they would lose business to a more efficient retailer that did so. Unfortunately, the retail market does not approach this theoretical ideal. The DRM would have helped address this competition issue.

The OGW Survey Report indicates that *"One retailer said that their view is that small business and domestic customers represent the real opportunity for significant increases in DR participation"*[21] – however, without a mechanism for DR specialists and new entrants to participate in the wholesale market, and relying on retailers to carry the torch for DR, we do not foresee this type of mass-market participation in DR becoming a reality.

---

account managers to create boutique products and services to woo "very large" consumers, on account of the high transacted volumes. Retailers may not be willing to extend the same quality of service to smaller consumers, who may only have the option to access "mass market" retail tariffs.

[20] Despite what may be a true efficient incentive to remain price competitive through offering DR

[21] OGW Survey Report p19

6 Issues with the Commission's analysis on price impacts and overall savings

The Draft Determination concludes *that "The DRM would not result in overall savings to consumers through lower electricity prices"*[22], and cites four specific factors. Below are comments on where EnerNOC believes the Commission has drawn incorrect conclusions in each of the four cases:

1. "Under the DRM, spot prices will not reflect competition from demand response"[23]

(Because the DRM would be self-scheduled, and only resources that bid into central dispatch are able to determine spot prices, therefore DR can't compete with generation[24]). Or as the Draft Determination puts it: "*it won't be included in central dispatch, which determines wholesale market prices*"[25]

This position completely ignores the effects of increased consumer participation that the DRM would bring. While DR would not be able to "set the price" in any dispatch interval, it can absolutely impact the price. As detailed above, we believe that the NEM today has very low levels of demand-side participation, that increased demand-side participation can bring net benefits to the market, and that the primary barrier is that most consumers have no mechanism for obtaining value from their demand-side flexibility whilst remaining on a hedged retail contract (which is the only realistic option for most consumers). The DRM is the mechanism that such consumers need in order to unlock the value of DR. With increased levels of demand-side participation under the DRM, DR will react to high spot prices (at fully transparent strike prices and quantities). The subsequent reduction in demand will shift the aggregate demand curve used to determine the spot price. This is already happening today, and will happen with greater frequency, and at greater volumes under the DRM.[26]

If there is some technical reason why the described effect (DR shifting the demand curve in instances where scarcity price signals exist, thus reducing the likelihood of the dispatch an expensive marginal generator), is not the case or is not valid, due to the way the Market Operator's systems forecast demand and determine the 5-minute dispatch quantities, or for any other reason[27] – we believe the Commission should explain this in their Final Determination. In

---

[22] AEMC's Draft Determination, p20

[23] AEMC's Draft Determination, p20

[24] Our summary of Commission's logic

[25] AEMC's Draft Determination, p20

[26] The very short, sharp 5-minute price spikes which make this interaction rather messy should become much rarer if generators and DR providers cease to be subject to 30-minute average prices.

[27] We note that the Commission foresaw at the time of its Power of Choice recommendations that the information provided by the DRM even from non-scheduled resources might improve AEMO's ability to produce forecasts that incorporate the effect of price elasticity: *"Overtime, under AEMO's strengthened demand forecasting role, and with greater experience of the DRM program, non-scheduled demand*

our view, simply stating that spot prices will not reflect the impact of DR (because DR isn't included in central dispatch) is not a sufficiently complete argument.

2. "The DRM requires costly changes to the wholesale market and retailer systems "[28]

The Draft Determination also notes "*the incentive to allow customers to participate in the DRM and incur the implementation costs is low*."[29] EnerNOC agrees. This would have been a non-issue if the DRM were mandatory. In our view, the DRM was sufficiently watered down during the industry consultation to allow this argument to be used against ever actually implementing it.

All changes to markets have associated implementation costs. It is easy for opponents of reform to exaggerate these. We note that similar schemes have been implemented in several other markets, and it looks like Germany will soon implement a system that is settled in almost exactly the same way as the proposed DRM.[30] In each case, the rationale is that the efficiency benefits from opening up competition justify the modest implementation costs.

EnerNOC will refrain from further comment on the absurdity of the estimated retail implementation costs, but lodge our concern that the cost estimates were based almost entirely on unverifiable assertions made by market participants who have filed submissions against the DRM.

The Draft Determination goes on to say that:

> *"Where participation in the DRM is voluntary all the benefits associated with a customer's demand response accrues to the demand response aggregator, with the retailer being left to continue to manage the risk of price fluctuations in the wholesale market, as it currently does. The retailer, who under the DRM is expected to incur all its implementation costs but receive none of its benefits, will be better off in developing demand response arrangements directly with a customer outside of the DRM because under such arrangements a retailer will be able to manage the risk of wholesale market price fluctuations and receive the benefit of doing so"*[31]

Firstly, stating that all benefits of DR accrue to the DRA leaves out the obvious fact that a DRA will share the benefits (presumably the majority of the benefits) with the consumer, based on a commercial agreement.

---

response may form part of the dispatch process's demand component. This means that the imperative for demand resources to participate on a scheduled basis may lessen." – AEMC, Power of Choice final report, 30 November 2012, p.116

[28] AEMC's Draft Determination, p20

[29] AEMC's Draft Determination, p21

[30] In European market design discussions, the DRM's settlement arrangements are referred to as "the corrected model", in that the meter data is effectively adjusted to reincorporate the DR energy before retail settlement and billing. It is considered by many to be preferable to the more regulated approaches to unbundling adopted in France and Switzerland.

[31] AEMC's Draft Determination, p21

Secondly, EnerNOC agrees that retailers face an incentive to develop DR arrangements with their retail customers, and we applaud those retailers who have done so already. However the OGW Survey Report indicates that very few retailers are creating such dispatchable/firm DR arrangements under the status quo (apparently just 15% of retailer-managed DR). For the reasons detailed previously, retailers simply aren't driving competition in demand response today. The DRM would allow DR specialists to come in and compete with retailers for the monetisation of DR services – giving consumers an additional option they don't enjoy today. Increased competition for the provision of a consumer's DR services should cause some retailers to "sharpen their pencils" and create DR offering where they have failed to do so under the status quo, which would be beneficial for consumers. The Draft Determination goes on to say:

> *"If participation in the DRM were made mandatory, retailers will include risk premiums into its pricing, to provide for the fact that it must still manage the risk of price fluctuations in the wholesale market without receiving the benefit of the customer's demand response. This will result in higher prices being paid by all consumers for their electricity."*[32]

Retailers already include risk premiums into their pricing, for all consumers who aren't on spot-exposed arrangements. This is an essential component of energy retailing and the main reason that energy retailers exist – because the vast majority of consumers ("large" or otherwise) do not have risk appetite for spot exposure. Consumers are willing to pay a retailer a premium in exchange for the budget certainty of a fully hedged retail electricity contract. **Under the DRM, there is no change to this arrangement**. Customers will receive the same fully hedged offers from retailers, but will have a new, additional competitive option in bringing their DR to market – this is especially important in the instance that the consumer's retailer (which will typically be chosen on the basis of providing the lowest quoted price) does not offer the customer a DR option, for whatever reason.

Further, if a consumer chooses to bring their DR capability to market through a DRA via the DRM, the retailer is no better or worse off than if the customer was not participating in DR. This is because the retailer is billed (and procures forward hedging contracts) based on the consumer's baseline energy. **Under the DRM, the consumer's retailer will be unaffected by the consumer's DR actions, will offer them the same hedged based contract prices, and will be no worse off than if the consumer took no DR actions**. As such, EnerNOC asks that the Commission's Final Determination explain how "this will result in higher prices being paid by all consumers", as we do not believe the statement is supported by the discussion in the Draft Determination.

One additional note on retail risk premiums: The Draft Determination states that "*A retailer can offer better retail supply deals when it takes advantage of a customer's demand response.*"[33] It is important to note that the only way a retailer will ever forgo/remove the risk premium from a fixed price offer made to a consumer, is if the retailer can be *absolutely certain* that the customer will employ their DR capability every time the spot price exceeds a defined threshold – that is, if the customer's DR is *firm*. The OGW survey indicates that there are very few retailers engaging

[32] AEMC's Draft Determination, p21

[33] AEMC's Draft Determination, p19

their customers in this type of “firm” DR arrangement (only 35 MW reported by retailers – or 15% of all reported DR). Such an arrangement is the only situation in which a retailer will alter their hedging strategy as a result of the customer’s DR capability. The DRM would allow retailers to continue hedging the way they’ve been hedging, but allow consumers to monetise their DR when and if they deem the value sufficient, without affecting the retailer.

3. **“The DRM will not necessarily alleviate network constraints and defer network expenditure”[34]**

EnerNOC agrees. Nny references to the DRM’s impact or purported benefit for TNSP or DNSP purposes are entirely misplaced. Wholesale DR (DRM) and “network DR” are two different and discrete services that serve entirely different purposes at different times. Further, any references in the Draft Determination to “time of use tariffs” are similarly misplaced. We do believe that the DRM would lead to more consumers being prepared to serve DNSPs and TNSPs with DR services (through general awareness and investment in DR capability), but we consider this a “nice to have” side effect of the DRM, not a foundational premise upon which the fate of the DRM can be decided. While the original rule change request handed to the Commission from COAG listed network benefits as a potential benefit of the DRM and as such warranted some mention in the Draft Determination, the Commission’s treatment of this issue in order to justify the position that “The DRM would not result in overall savings to consumers” and therefore should not proceed - is inappropriate.

4. **“The DRM can have unintended consequences and create distortions in the spot market and other related markets”[35]**

The Draft Determination lists four distinct “distortions” that may arise from the DRM. EnerNOC provides comment on each below.

Distortion 1: *“the DRM would distort efficient economic outcomes in the spot market because under the DRM less reliable self-scheduled demand response resources would be rewarded equivalently to more reliable, firm scheduled resources in the spot market”*

In responding to scarcity pricing signals with DR, a DRA behaves in exactly the same manner as a non-scheduled (peaking) generator, and is rewarded equivalently. From the conclusion above, **the Commission seems to saying that all non-scheduled generation currently employed in the NEM is distorting efficient economic outcomes**. If this is indeed the Commission’s view, we feel the Commission owes market participants a more thorough explanation in its Final Determination, as this conclusion has fundamental ramifications for the future development of the NEM, regardless of the fate of the DRM.

Distortion 2: *“as retailers would continue to be financially responsible for their customers’ baseline consumption, an outcome of the DRM may be that customers pay for a retailer’s hedging costs through their retail contract even if they provide demand response. Although customers are*

[34] AEMC’s Draft Determination, p21

[35] AEMC’s Draft Determination, p21

expected to receive payments from demand response aggregator for their demand response services, the net outcome for customers is difficult to estimate.”[36]

As detailed in section 6.2 above – for the majority of consumers with a preference for fully hedged retail contracts – retailers will offer the same prices with our without the DRM[37]. There would be no change to the status quo, and that’s the point. **Consumers pay for their retailer’s full hedging costs today, and they would continue to do so under the DRM** – so EnerNOC disagrees with the Commission’s portrayal of this as a “distortion”[38].

EnerNOC agrees that the payments a consumer would earn from the DRM are unknown and impossible to quantify – as they will depend on how often a customer enacts a demand response, and at what price trigger. However, one conclusion that can be drawn about the “net outcome for customers” is that they will not be worse off[39]. They might be neutral, or they might be better off, but they cannot be worse off: if they were going to be worse off, they wouldn’t choose to respond. We have created the table below to illustrate this concept. We think this is an important point for the Commission to address in their Final Determination.

Criteria	Scenario 1	Scenario 2	Scenario 3
Scenario description	Customer sometimes has DR flexibility, but retailer doesn’t offer a DR program	Customer sometimes has DR flexibility, participates in retailer's DR program	Customer sometimes has DR flexibility, participates in DRM via a DRA
Consumer's retail contract structure	Fixed price hedge	Fixed price hedge	Fixed price hedge
Retailer procures hedges based on	Forward estimates of the consumer's use patterns, similar to a baseline	Forward estimates of the consumer's use patterns, similar to a baseline	Forward estimates of the consumer's use patterns, similar to a baseline
Does consumer "pay for a retailer’s hedging costs through their retail contract"?	Yes	Yes	Yes
When customer sheds load during a high price interval, who do benefits accrue to?	Retailer (via avoided wholesale purchase)	Retailer, then retailer presumably shares some benefit with consumer	DRA, then DRA presumably shares some benefit with the consumer
Does consumer enjoy sovereignty on when to implement their DR?	N/A	No	Yes
During DR interval, retailer bills customer on	Actual consumption	Actual consumption	Baseline consumption
Retailer's net position as a result of DR	Much better off, they capture full benefit of avoided wholesale purchase	Somewhat better off, due to avoided wholesale purchase	Neutral; may not even notice that DR interval occurred
Consumer's net position as a result of DR	Worse off, incurs costs of enacting DR (actual costs or opportunity cost of lost production) and receives no benefit	Somewhat better off, due to receiving payment from retailer, but retailer gets to choose when DR opportunities exist	Best off, due to payments from DRA, plus choice to exercise demand response whenever is economically efficient for them

[36] AEMC’s Draft Determination, p22

[37] Ignoring if and how retailers might pass on their one-time, up-front implementation costs

[38] AEMC’s Draft Determination, p21

[39] Ignoring if and how retailers might pass on their one-time, up-front implementation costs

Distortion 3: *"under the DRM, the demand for hedging contracts would remain the same as retailers would continue to remain financially responsible for the baseline consumption of their customers. The availability (supply) of hedging contacts, however, will be related to generation which will be at the levels of actual consumption. This leads to an imbalance between demand and supply in the hedging market. Demand for hedging contracts will remain the same whereas supply will decrease, leading to an increase in hedging contract prices."*[40]

This is inaccurate. The DRM is likely to increase competition in the hedge market. DR loads (or DRAs) would be able to sell caps on the back of their demand response capability, the same way as non-scheduled peaking generators sell caps. In this way the DRM increases competition in the hedge market: at present, any generator can be used to back the sale of a cap, but no load can, as loads do not receive spot price revenue. The DRM would fix this anomaly and allow loads to compete in the hedge market. This incorrrect assertion by the Commission (that load partipation in the market will result in decreased supply of cap contracts) sends confusing and anti-competitive signals to the market. It is critical that the Commission address this misconception in its Final Determination.[41]

Distortion 4: *"competition among demand response aggregators under the DRM, combined with the lack of responsibility for inaccurate baselining, may create strong incentives for demand response aggregators to implement the most 'generous' of available baseline methodologies. Demand response aggregators' and customers' incentives are also aligned in potentially 'gaming' the baseline. This will result in higher prices for retailers which will be passed onto all consumers"*[42]

EnerNOC flatly rejects the assertion that the DRM, as proposed, is open to baseline gaming, and we are extremely disappointed that the Commission has bought into this argument, variants of which have been employed by many opponents of DR in global markets for years, and have been thoroughly debunked. In Section 5.3.5 of the Draft Determination[43] the Commission has completely ignored and failed to comment on input from stakeholders such as EnerNOC and the Alternative Technology Association[44], pointing out that in order to inflate one's baseline, a consumer would have to over-consume electricity (and pay their retailer the associated costs) for a period of days or weeks, in anticipation of a high spot price (and associated potential windfall opportunity) that may or may not eventuate many days later. Consumers simply are not going to engage in this sort of behaviour – consumers' focus is on making widgets (or whatever their primary business purpose is), not strategically over-consuming electricity in order to game the DRM.

---

[40] AEMC's Draft Determination, p22

[41] This position also seems to acknowledge DR's ability to impact the spot price determinations that come out of central dispatch, where DR loads crowd out generation, which is not consistent with the Commission's prior conclusion that non-scheduled response under the DRM cannot affect prices (AEMC's Draft Determination, p20).

[42] AEMC's Draft Determination, p22

[43] AEMC's Draft Determination, p62

[44] ATA, Submission to Consultation Paper, p. 11.

Further, the Commission's Consultation Paper[45] clearly spells out the proposed good-faith provisions, which prohibit a DRA from declaring a DR interval where a customer has deliberately inflated its baseline, where the customer is not taking any deliberate action[46], or where customer is shifting load between NMIs. All these good faith provisions are proposed to be enforceable via the Australian Energy Regulator's (AER) existing mechanisms. DRAs are not going to engage in baseline gaming, as the costs far outweigh the potential benefits, it's difficult to do, the good faith provisions clearly prohibit it, and the risk of reputational damage is simply too great. EnerNOC is disappointed that the Commission has not acknowledged these stakeholder perspectives in the Draft Determination, and request that they be addressed in the Final Determination.

EnerNOC has been providing demand response in many different wholesale electricity markets since 2001. In that time, the only two instances of baseline gaming we have ever become aware of are the two noted in the Brattle Group paper[47]. Both instances involve a type of gaming that is not possible under AEMO's proposed DRM design. For instance, the baseball stadium example involved a "baseline adjustment period" that occurs after notification (from the grid operator) that a demand response opportunity is forthcoming (which is a poorly designed DR mechanism). No such opportunity is possible under AEMO's proposed design. As such EnerNOC strongly disagrees with the following characterisation in the Draft Determination and requests that the Commission retract it in their Final Determination: "The Commission notes that similar gaming opportunities emerge under the proposed baseline methodologies proposed for the DRM, and that the incentives to exploit these opportunities are strong under the DRM"[48]

EnerNOC also strongly disagrees with this passage in the Draft Determination:

> *"In addition, gaming could also increase the total spot market cost of meeting demand in the spot market. This is because to game the DRM the large customer would increase consumption rather than decrease it during periods of high spot prices."*[49]

There are two puzzling aspects to this statement. The first is acknowledgement from the Commission that a load over-consuming electricity could shift the aggregate demand curve sufficiently so as to cause higher spot price determinations. This is inconsistent with the logic the Commission has put forth in previously, where it has reasoned that "under the DRM, spot prices will not reflect competition from demand response"[50]. A consumer's intentional alterations to their electricity demand can either impact the spot price, or they can't. Which is it? EnerNOC requests that the Commission clarify their opinion in the Final Determination.

---

[45] AEMC's Consultation Paper, p28

[46] The Commission has even included an example of this exact scenario on p63 of the Draft Determination, without acknowledging the proposed good faith provisions detailed in its Consultation Paper that explicitly prohibit this scenario.

[47] Brattle Group, International Review of Demand Response Mechanisms, October 2014, p64

[48] AEMC's Draft Determination, p62

[49] AEMC's Draft Determination, p63

[50] AEMC's Draft Determination, p20

The second puzzling aspect is the Commission's assertion that a consumer would increase consumption during periods of high spot prices. EnerNOC is at a loss to understand what the Commission is trying to describe in this instance, and request that the Commission provide further explaination in the Final Determination. We also note that is problematic to make presumptions about what the spot price might be at any time.

Further, we strongly disagree to this characterization:

> *"Demand response aggregators would have a strong incentive to propose to the customer the most 'generous' baseline consumption methodology from AEMO's administered set of methodologies*[51]*"*

The Commission's Consultation paper clearly spells out that *"participation in the DRM would only apply to loads that have been accredited and classified with AEMO as demand response loads (DRLs)"*[52] and that eligibility requirements would require that a load be *"predictable within an acceptable tolerance"*[53] as determined by AEMO. We point out that the Commission's stated concern could be easily remedied by altering the proposed rule to make AEMO solely responsible for determining a DRL's baseline method – we would be supportive of such alteration, which would remove this concern.

Ancillary Services Unbundling

1 Introduction

EnerNOC is supportive of the Commission's plan to implement the Ancillary Services Unbundling (ASU) portion of the proposed rule change. In this section we will refer to Demand Response Aggregators as MASPs, or "Market Ancillary Services Providers", consistent with the Commission's definition in the proposed more preferable rule.

2 The NEM today has very low levels of load participation in the Ancillary Services markets

In support of this view EnerNOC submits the chart in Appendix A. The New Zealand Electricity Market (NZEM) is similar to the NEM, in that it's a gross-pool energy market with 5m dispatch, 30m settlement, and ancillary services markets that are similar to the NEM's FCAS markets. The Electricity Authority first allowed MASPs to participate in the wholesale market in NZ in 2008, granting access for MASPs to recruit and offer aggregated loads into the FCAS-equivalent markets.

---

[51] AEMC's Draft Determination, p62

[52] AEMC's Consultation Paper, p24

[53] AEMC's Consultation Paper, p24

Since that time MASPs, including EnerNOC, have entered the market, increasing competition and the proportion of loads providing ancillary services.

The chart in Appendix A looks at the Contingency FCAS Raise markets in both New Zealand's North Island[54] and the NEM[55] in July 2016. During this time 74.0% of the Contingency FCAS Raise in New Zealand came from interruptible loads, and during 3% of the time, NZ was sourcing 100% of their North Island Contingency FCAS Raise requirement from interruptible loads. Based on EnerNOC's own customer base and our knowledge of the market, we estimate that more than 200 physical loads are participating in NZ's FCAS markets, across a wide range of industries and commercial establishments.

During the same time period in the NEM, just 4.6% of cleared Contingency FCAS Raise was sourced from interruptible loads, from just two dispatchable units: a smelter in Victoria (25% of cleared MWh from loads); and the pumps of a large pumped-storage hydro power station in Queensland (75% of cleared MWh from loads).

The point is that there is no mass-market participation from loads happening in the NEM's FCAS markets today. The reason for this is properly identified in the Commission's Consultation Paper: because under the current rules only Market Customers (retailers) are allowed to submit FCAS bids to market. The reasons retailers haven't bothered recruiting and enabling load-based FCAS are the same reasons they aren't active in recruiting and enabling DR in the energy market – as detailed previously in section 5.

As a result of the Commission furthering ASU, EnerNOC expects the NEM to experience the same effect as the NZEM: over time, the charts in Appendix A will start to look more similar. We expect new entrants will register as MASPs, and increase the supply of FCAS offered to market.

3 Other benefits of increased participation from loads offering FCAS

Though out of the scope of the rule change under consideration, EnerNOC would like to point out that interruptible loads add value in that they can react very quickly to frequency deviations – much faster than the majority of the thermal plant currently offering into the raise6sec FCAS market (also known as the "Fast Raise" market).

---

[54] The North and South Islands are only connected by a DC link, so their reserve markets are mostly separate.

[55] Our presumption is that under ASU, in the immediate term MASP are more likely to offer Contingency FCAS Raise, where a load helps raise the frequency following an unexpected loss of supply, as this is a service that is costly to procure from generators, and yet loads can provide particularly cost-effectively – this does not imply that loads can't, or won't in the future – provide FCAS Contingency Lower or Regulation services.

In a future NEM with lower inertia and higher Rate of Change of Frequency (RoCoF)[56], a demand-side load that provides its full FCAS capability in less than one second will provide more benefit to the grid than a thermal plant that ramps linearly to its FCAS quantity over 6 seconds, and this could be recognised through the development of faster FCAS products. As such, ASU should allow this positive side benefit to be realised.

As an illustration of this concept we have provided the charts in Appendix B, which show EnerNOC's FIR[57] response to a frequency excursion earlier this year in NZ, where EnerNOC's distributed customer base shed approximately 135 MW of load in less than 1 second and helped arrest the frequency fall.

Conclusion

EnerNOC applauds the Commission's decision to further the ASU rule change, but is disappointed in the Commission's treatment of the DRM. While the proposed DRM represents a massive improvement upon the status quo, we readily admit that it is not perfect. In fact we considered that the Commission might set it aside due to:

- unresolved questions on whether DR should set, or react to, the spot price
- voluntary participation from retailers = whole effort could be for naught
- unresolved questions on how to allocate mechanism's costs amongst market participants

However EnerNOC is extremely surprised at the justifications the Commission has used to reach its decision, and we strongly disagree with the Commission's depiction of the status quo and its assertion that there are "no barriers" for consumers in bringing their DR to market.

The Oakley Greenwood report confirms EnerNOC's view of the DR landscape: the only consumers in the NEM participating in DR in any consistent fashion are very large, sophisticated industrial loads that have the capability to take on spot exposure and have retailers willing to create boutique DR offerings for them on account of their size.

We disagree with the Commission's conclusion that just because all consumers could in principle take spot exposure, there are "no barriers" to them participating in DR. Taking spot exposure is simply not an option for the vast majority of consumers. Without a DRM, the NEM will never realise any sort of mass-market demand-side flexibility.

Finally, EnerNOC believes the Commission owes market participants an opinion on whether more price-responsive load is desirable in the NEM, or whether the Commission considers that DR only has value when scheduled in central dispatch, or otherwise. The Draft Determination is silent on this matter – but we think it imperative that the Commission give the market a signal, so that

[56] As indicated by AEMO in its Future Power System Security Program August 2016 Progress Report

[57] FIR = Fast Instantaneous Reserve = Respond within 1 seconds; maintain for 60 seconds. This is the effective equivalent of the raise6sec FCAS service in the NEM, in that it's the 'fastest' FCAS flavour in the market, and its purpose is to arrest the falling frequency.

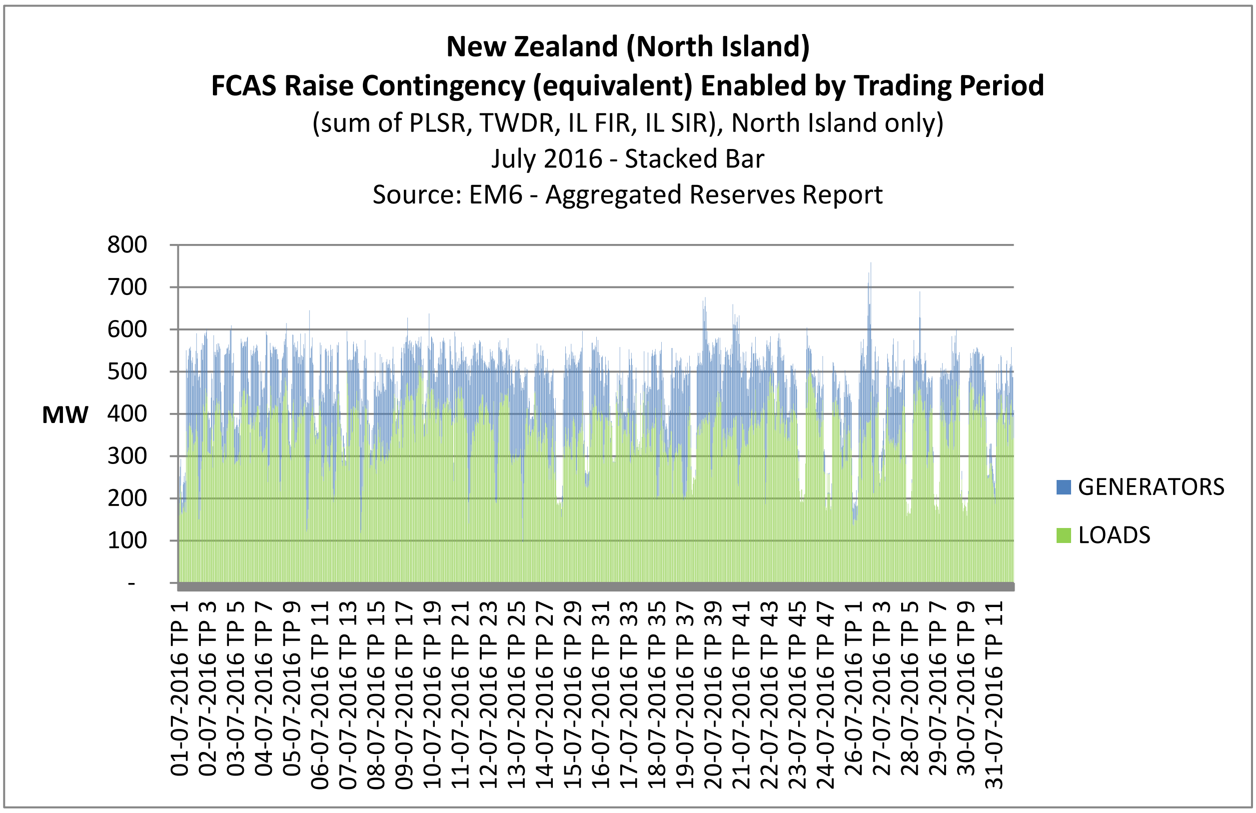
(should the Commission agree that DR has an important role to play in the NEM) a more effective DR mechanism might be designed.

Thank you for the opportunity to comment on the Draft Determination. EnerNOC looks forward to the Commission's Final Determination. Please do not hesitate to contact me if you have any queries.

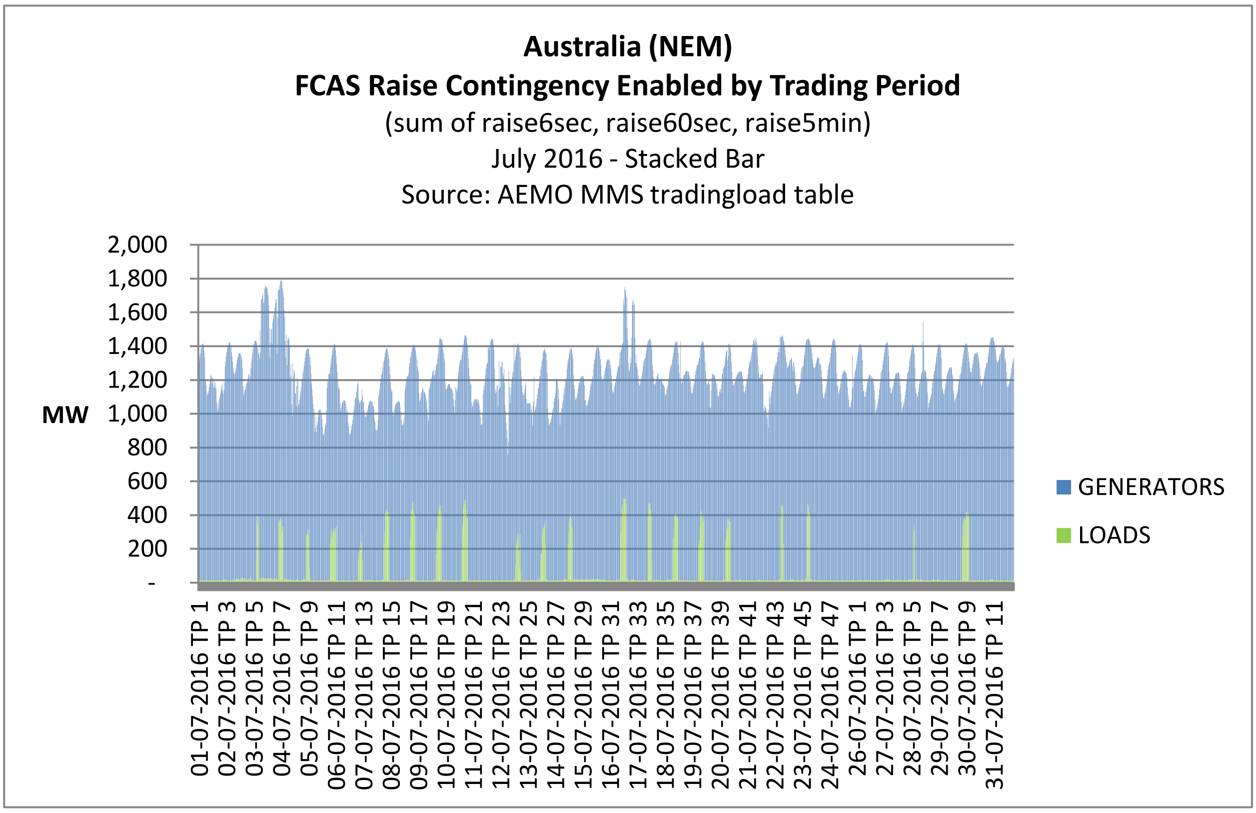
Regards,

Matt Grover
Manager, Market Development
mgrover@enernoc.com | 03 8643 5907

Appendix A



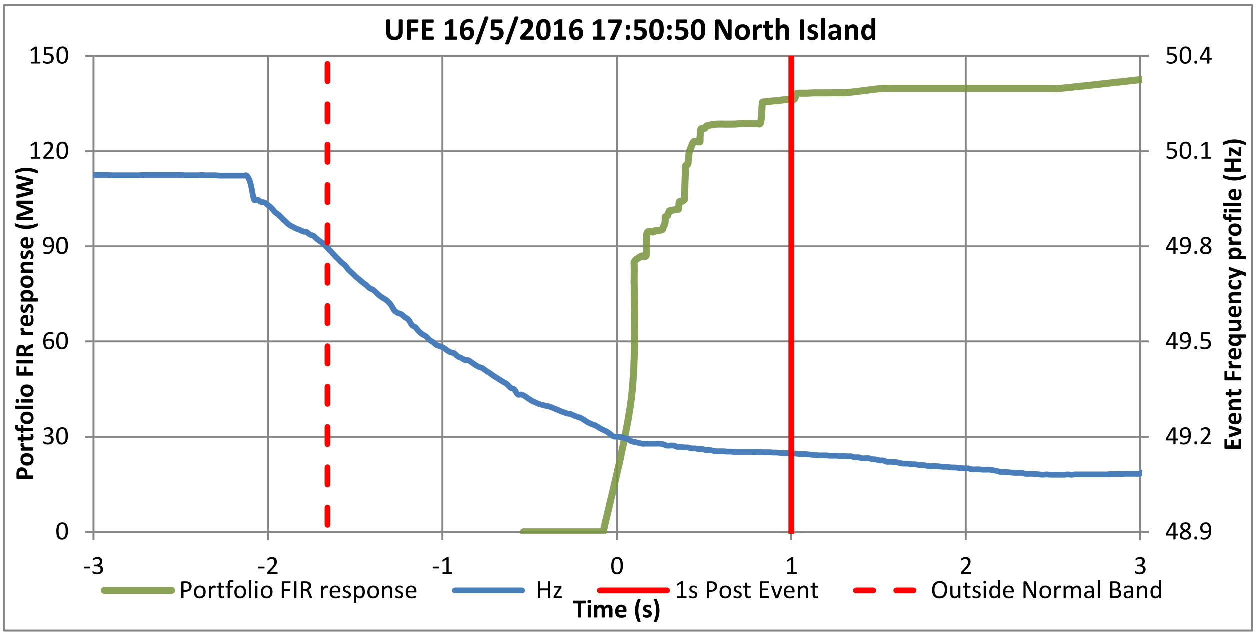
NZ: Loads 74.0% of cleared Contingency FCAS Raise, Sourced from 200+ physical sites

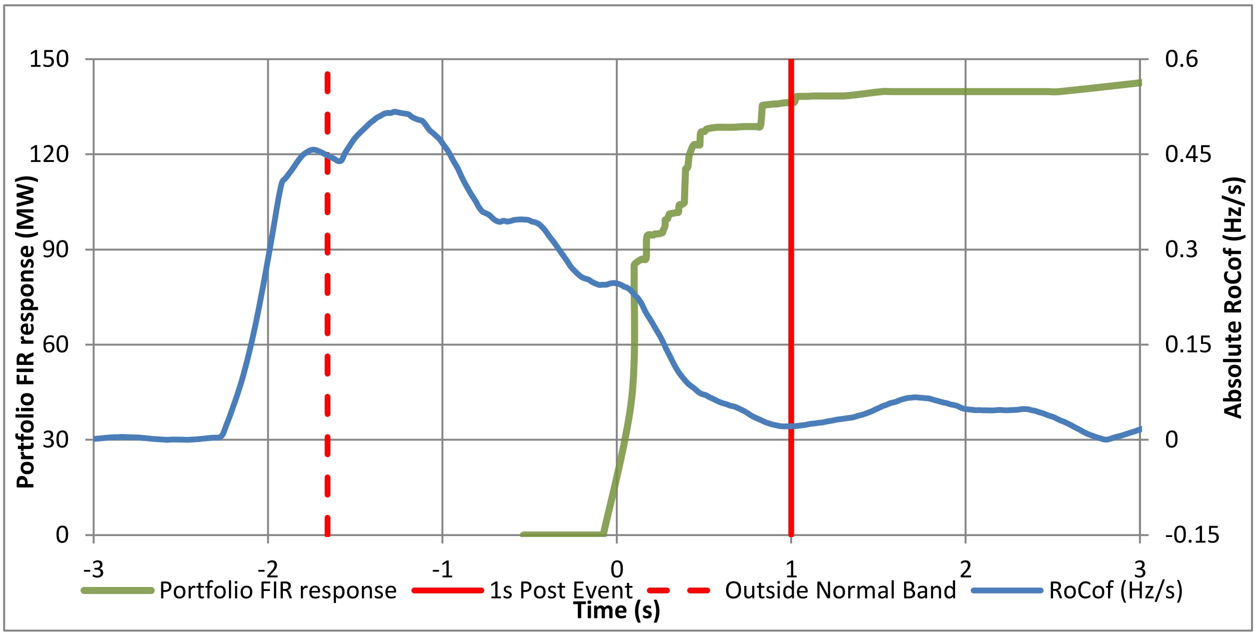


NEM: Loads 4.6% of cleared Contingency FCAS Raise, sourced from 2 dispatchable units

Appendix B

EnerNOC's portfolio response to a recent frequency excursion in the North Island of New Zealand. The top chart plots frequency, the bottom chart plots RoCoF.[58]





[58] Note that the trigger threshold for FIR in New Zealand is 49.2 Hz, which is lower than the equivalent FCAS service in the NEM.