

26 August 2011

Australian Energy Market Commission  
PO Box A2449  
Sydney South NSW 1235

***Issues Paper: Power of Choice – giving consumers options in the way they use electricity  
EPR0022; Demand Side Participation (DSP) Stage 3 Review***

Dear Commissioners Pierce, Henderson, Spalding:

EnerNOC thanks the AEMC for the opportunity to contribute to the DSP Stage 3 Review and provide our perspectives on the Issues Paper in this submission. We appreciate the AEMC's renewed investigation of the barriers to implementing DSP in the National Electricity Market (NEM) and we look forward to a productive outcome.

As EnerNOC explains in the enclosed answers to the questions contained in the Issues Paper, we believe the insufficient uptake of DSP in the NEM is primarily due to the lack of supportive market conditions for DSP. While this Issue Paper is largely focused on customer choice, EnerNOC contends that parties like EnerNOC need to be able to leverage market conditions to create DSP opportunities for customers to choose to pursue. The introduction of aggregators to the NEM as participants and the establishment of innovative DSP programmes can achieve a great deal, including increased customer choice, reduced electricity costs and enhanced ability of the NEM to absorb ever more intermittent generation. We believe the lack of supportive market conditions for DSP in the NEM include the following:

- While the NEM has inherent mechanisms which provide reserve capacity, these mechanisms are complex and they present participating customers with considerable risk. New mechanisms that have proven essential to spurring DSP growth in both energy and capacity markets around the globe must now be introduced;
- The inability for DSP aggregators like EnerNOC – the primary drivers of DSP growth in wholesale markets – to directly access the energy and FCAS markets and monetise load reductions that provide the same resource as an increase in output from supply-side resources;
- A regulatory environment which does not create parity in opportunities for demand side and supply side resources in terms of network investment, and unintentionally encourages network operators to build additional infrastructure rather than manage demand.

To achieve these goals, the AEMC must open all areas of the NEM to DSP such that any supply side and demand side option have the same risk/reward outcomes and therefore compete equally.

From our experience providing DSP around the globe, and with more than 6.6 GW of dispatchable demand response under management today, EnerNOC knows that customers do indeed choose to engage in DSP when the market conditions allow for it. We hope the AEMC finds our submission and perspectives to be useful as it considers the role of customer choice in the uptake of DSP in the NEM. EnerNOC very much looks forward to the subsequent stages of this Review, including the release of the Directions Paper in November.

Thank you again for the opportunity to respond to the Issues Paper. Please do not hesitate to contact me directly with any questions related to this submission, or DSP in general.

Regards,

A handwritten signature in black ink, appearing to read "Michael Zammit". The signature is fluid and cursive, with a prominent initial "M" and a stylized "Z".

Michael Zammit  
Principal, Market Development

**1. Chapter 3 outlines our approach to identifying “market and regulatory arrangements that enable the participation of both supply and demand side options in achieving an economically efficient demand/supply balance in the electricity market.” Do you agree with our approach?**

EnerNOC contends that the approach outlined in Chapter 3, in which DSP is primarily viewed as a function of customer choice, is problematic. This perspective appears to presuppose that there are sufficient opportunities for DSP in the NEM today, and that the relative lack of DSP in the NEM is the result of end-use customers either choosing not to pursue DSP, or a result of their ignorance of the existing opportunities for demand side participation.

While customer choice undoubtedly is a factor in the uptake of DSP, we view the narrow focus of the aforementioned approach to be based on an inaccurate premise.

EnerNOC maintains, as we have in past submissions to the AEMC, that the lack of DSP in the NEM is primarily due to regulatory barriers to third party demand response (DSR) aggregators such as ourselves, as well as the lack of a capacity mechanism that can be used by demand-side participants. It is true that the NEM is highly efficient from a supply-side perspective, but the NEM is not structured in a way that places DSR providers on equal footing with other market participants. Most importantly, third party DSR providers like EnerNOC cannot directly participate in the energy market with curtailable loads, and are instead limited to obtaining market access through arrangements with retailers. Without direct access to the spot market, demand-side participants cannot use energy revenue to back the sale of financial hedges. This is the mechanism used by generators to convert volatile energy market revenue into predictable capacity revenue, essential for a sustainable business; it is inaccessible to demand-side participants.

Although we understand that the previous two Reviews of DSP in the NEM do not align with this view, we believe our experience providing more than 6,600 MW of DSR in a variety of market types around the globe provides us with the appropriate perspective to make such an assertion.

In markets around the world, DSP has been primarily advanced by third party aggregators with direct access to wholesale markets. This is most evident in the wholesale capacity markets of the PJM Interconnection and ISO-New England in the United States, and the Wholesale Electricity Market operated by the IMO in Western Australia. All three of these markets met between 7.5-9.5% of their total capacity through DSR resources in their most recent auctions and procurement cycles, respectively. EnerNOC recognizes that the NEM is fundamentally different as an energy-only market and has different issues to contend with. However, the benefits of establishing parity with other market participants in terms of market access in the NEM would be no less significant. Market access will allow for the creation of opportunities for DSP that aggregators can then market to customers. Aggregators are experts at delivering DSR in a way that provides the same resource to the market as a supply-side equivalent, and which can be monetized accordingly. Moreover, aggregators also have significant expertise in educating customers about DSP opportunities and how to best participate in them. But, aggregators need to first be given the ability to create such opportunities for DSP, as otherwise it is a flawed premise to suggest that customers are simply choosing not to participate.

It is important to note that EnerNOC is not seeking subsidies or incentives, but rather simply the opportunity to directly compete with supply-side resources. Put differently, direct market access would ensure that DSR has to be cost-effective. If DSR was not priced at or below the equivalent generation resource, there would be no opportunity to monetize that DSR capability. The AEMC is clearly aware of the benefits of cost effective DSP, as it lists on page 13 of this Issues Paper, and as such should be entirely supportive of a framework that increases the opportunities for cost-effective DSP.

Extending this concept of supply and demand side parity beyond the energy market itself would only further increase the opportunities for DSP participation, and consequently the ability for customers to choose whether or not to pursue such options. For example, while Distribution Network Service Providers (DNSPs) and their transmission-level counterparts are obligated to consider non-network alternatives to infrastructure investments, that framework still does not put such demand side alternatives on a level playing field with supply-side options from the risk/return perspective of the various participants. This again limits the ability for the realisation of opportunities for DSP, and the associated customer choice.

The government of the United Kingdom recently recognised and addressed this very challenge. In the 2010-2015 Distribution Price Control Review 5 (DPCR5), Ofgem – the national electricity and gas regulator – instituted the so-called “Equalisation Incentive” which establishes parity in the treatment of capital and operating expenditures by distribution utilities.<sup>1</sup> Thus, any utility acting in its own rational economic interest will clearly pursue the most cost-effective way to meet network needs and reliability requirements, whether that is through traditional investments in infrastructure or through non-network alternatives like DSR. This mechanism is very similar to the proposals for efficient network investment cited by AER Chairman Andrew Reeves in his 20 June 2011 speech, “Finding the balance – the rules, prices and network investment.”<sup>2</sup>

With growing concerns about climate change, and the related need to replace fossil fuelled generation with cleaner resources, expanding DSP in the NEM must be a priority. Of particular relevance are the expanded Renewable Energy Target which recently went into effect, as well as the Australian Government’s plan to put a price on carbon emissions as part of their clean energy future plan. Studies have shown the use of DSP for both peaking needs and ancillary services to provide savings in terms of greenhouse gas emissions.<sup>3</sup> Equally important, DSP is increasingly being seen as an ideal resource for facilitating the integration of intermittent renewable such as wind, through both the provision of traditional ancillary services and specialised wind-balancing programs like EnerNOC is piloting with the Bonneville Power Authority in the US<sup>4</sup>. In the United Kingdom, National Grid forecasts that the growth in wind resources over the next decade will require more than doubling the size of its reserve and balancing markets<sup>5</sup>. Intermittent renewable generation like wind forms a very small proportion of the supply side in the NEM, however if renewables are to be deployed in a sustainable fashion, it is essential that markets create opportunities for cost-effective and environmentally-friendly resources like DSP to provide such balancing services. It must be noted as well that while the deployment of renewable can have the tendency to exert further upward pressure on retail rates for consumers, expanded DSP creates the opportunity for customers to reduce their energy expenses through either avoided costs or new revenue streams, thereby increasing the likelihood of continued public support for low carbon policies that are a Government priority.

Separate from the challenges associated with combating climate change, the continued growth of peak electric demand within the NEM further demonstrates the need for additional DSP. As the AEMC itself wrote in the announcement of the publication of this Issues Paper, “Managing demand, particularly peak demand, and providing an alternative means of achieving reliability expectations has the potential to reduce future network investment.”<sup>6</sup> It is well-known that it is far more efficient to manage peak demand than to build infrastructure to support such infrequent needs, an issue only compounded by the

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<sup>1</sup> <http://www.ofgem.gov.uk/Networks/ElecDist/PriceCtrls/DPCR5/Pages/DPCR5.aspx>

<sup>2</sup> Energy Users Association of Australia, Energy Price and Market Update Seminar, “Finding the balance – the rules, prices and network investment,” 20 June 2011

<sup>3</sup> Synapse Energy Economics, “Modeling Demand Response and Air Emissions in New England,” September 2003.

<sup>4</sup> [“EnerNOC Chosen by BPA to Showcase Power of Demand Response to Manage Intermittent Wind Power”](http://www.enernoc.com/News/PressReleases/EnerNOC-Chosen-by-BPA-to-Showcase-Power-of-Demand-Response-to-Manage-Intermittent-Wind-Power)

<sup>5</sup> <http://www.nationalgrid.com/uk/Electricity/Operating+in+2020/>

<sup>6</sup> <http://www.aemc.gov.au/News/Announcements/Issues-paper-on-consumer-choices-and-efficient-electricity-consumption.html>

'peaky' load duration curve of the NEM, as mentioned in this Issues Paper. While the AEMO finds sufficient proposed generation capacity in the NEM in its 2010 Electricity Statement of Opportunities, it must be asked how much more efficient it would be to use DSP to meet forecasted load growth instead. Similar, it is reasonable to consider the role expanded DSP could play in delaying the LRC points the AEMO projects to occur in all regions of the NEM except Tasmania over the next few years.

Aggregated DSR has direct benefits for those customers that choose to participate in these programmes. These benefits include financial incentives, advance notice of possible disruption to supply and environmental benefits. Similarly benefits apply to energy efficiency and distributed generation programmes. The AEMC must therefore look at how DSP and other mechanisms which aim to make the NEM more efficient translate into realisable customer benefits and encourage them.

For these reasons, EnerNOC believes that the AEMC should focus on creating the market conditions that will lead to DSP that we have cited in our submission.

## **2. How should the benefits of DSP be measured? Can they be accurately quantified?**

There are several measures which can and are employed to measure the benefits of DSP. While benefits can be measured from both the perspective of the utility / market as well as the customer, it is most useful to first identify the former. The benefits of DSP to the market or utility help define the value of the DSP resource in question, and ultimately the level of financial incentive enjoyed by consumers participating in such an opportunity. Of course, there are also system-wide impacts – such as downward pressure on pricing – that can be enjoyed by all electricity consumers, whether or not they themselves are involved in DSP.

The benefits or value of DSP to utilities or markets can be quantitatively measured by a variety of metrics, including:

- The capex deferred/ or made deferrable. This is true both from the standpoint of avoided generation resources (as a kWh increase provides the same resource as a kWh decrease), as well as avoided transmission and distribution costs (since DSP provides resources without line losses, and can also be locally targeted to avoid or defer specific network investments).
- The downward pressure on energy prices for the entire market. As the well-known energy consultancy the Brattle Group explained in its report, "the Power of Five Percent," the participation of just a few per cent of the market in DSP can drastically reduce high-priced peak events that lead to savings for all consumers.<sup>7</sup> The reduction in the number and severity of system peaks, through measures of load factor, load duration curve, and other similar calculations.
- The increased time made available for a major network augmentation
- The improvement in reliability and security (reducing small amounts of demand across a wide range of customers providing DSP lessens the need to ever load shed large areas)
- Reduction in greenhouse gas emissions, both by the avoided operation of power plants, and the avoided construction of new generation facilities (and the associated environmental impact)

It should be noted that some of these benefits will vary by location, as different regions face varying levels of peak events as well as divergent costs in terms of resource construction.

Alternatively, if measurements need to be reflected on a customer by customer basis then some or all of the following may be implemented:

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<sup>7</sup> Brattle Group, "The Power of Five Percent," 16 May 2007

- Funds earned through DSP, including payments received for each kW of capacity and/or kWh of energy delivered, as appropriate.
- Reduction in energy costs from both the reduced level of consumption, and the associated reduction in maximum demand charges per customer
- Reduction in carbon footprint and the avoidance of greenhouse gas related compliance costs, as appropriate
- Avoidance of loss of service, and the associated business impact, due to the receipt of advance notices provided of grid stress conditions that may have led to blackouts
- Improvements in power quality

**3. What are appropriate discount rates to apply to DSP investments for the various parties across the supply chain?**

EnerNOC believes other parties are more appropriately qualified to provide an answer to this question.

**4. Are there other issues which we should consider in our assessment process and criteria?**

The AEMC should include an assessment the mechanisms used in other energy only markets that have a greater level of demand side participation than the NEM. While we recognize that markets and their design reflect the unique characteristics of their region, we believe it could be instructive to consider how markets similar to the NEM have successfully spurred DSP. This would then provide a foundation to assess whether or not such actions could be appropriate for use within the NEM.

To facilitate such an assessment, EnerNOC recommends examining the DSP-related mechanisms used in the energy-only markets of New Zealand, ERCOT (Texas, US), National Grid (UK), Ontario (Canada).

The lack of a direct market mechanism for DSR participation in the energy market of the NEM has been cited as a barrier to DSP by EnerNOC in this submission. The New Zealand Electricity Market has identified such shortcomings in their energy only market and in 2014 will implement Dispatchable Demand capability into their market so that DSP can participate at the wholesale market level on an “as bid” basis. Interestingly the Parer Report in 2004 recommended an identical mechanism for the NEM, which was never adopted. New Zealand’s experience with DSR in its Instantaneous Reserves (IR) markets is also instructive, particular as it relates to the FCAS. In the IR markets, third party aggregators like EnerNOC are allowed to offer frequency response resources directly into the market and to aggregate such resources into a portfolio. EnerNOC recognises that in September 2010, the AEMC, in response to a Rule Determination addressing the Aggregation of Ancillary Service loads, committed to facilitating a broader consideration of the issue so that a Rule Change request could be advanced. EnerNOC encourages the AEMC to hold a workshop on the issues of aggregation and separating the energy and ancillary service arguments, as it proposed in the Rule Determination, so that the NEM can enjoy greater DSP in the FCAS markets.

In the United States, the Electricity Reliability Council of Texas (ERCOT) is quite similar to the NEM in terms of its overall structure and design. It has launched a demand response programme, the Emergency Interruptible Load Service (EILS), designed to provide reserve capacity to the energy-only market. Unlike the RERT in the NEM, EILS is not limited to short durations of a single season, and is therefore able to create a sustainable environment for investment in DSP. Equally important, ERCOT also allows interruptible loads to provide operating reserves in the ERCOT ancillary service markets, where the value of a load reduction is equal to an increase in generation from a traditional power plant. In both the ancillary service markets and the EILS programme, demand resources receive capacity payments, something EnerNOC (and its predecessor Energy Response) have long conveyed are an essential precondition to large scale DSP and an inherent weakness in the energy-only design of the NEM. With about 3 GW of DSP in the ERCOT today, the

energy-only market has achieved almost 23 times the amount of committed demand side resources that the AEMO's 2010 survey showed (p13) through the use of well-designed DSP policies and programmes.<sup>8</sup>

National Grid, the system operator in the United Kingdom, has taken a similar approach to ERCOT in terms of DSP where there are multiple opportunities for DSR to provide ancillary services to the system. Perhaps the clearest example is the Short Term Operating Reserves (STOR) market, in which DSR competes directly against traditional generation resources to offer balancing services. As in ERCOT, demand resources that clear in the STOR market receive capacity payments for making their loads available for dispatch. In the United Kingdom, the Department of Energy and Climate Change (DECC) is also currently spearheading the development of a capacity mechanism to ensure proper investment signals to power plant developers and DSR providers in light of the planned retirement of 19 GW of generating units.<sup>9</sup>

In Ontario, the Independent Electricity System Operator (IESO) and the Ontario Power Authority (OPA) launched a large scale DSR programme (DR3) in 2007 to provide additional capacity to the market due to planned retirement of coal-fired power plants in the province. DR3's inclusion of a capacity payment represented a departure from previous DSR programmes in Ontario that failed to gain traction, primarily due to incentives being limited to energy payments. As carbon legislation in Australia also has the potential to impact the availability of coal-fired generation, the DR3 programme may be of particular interest.

**5. What are considered the drivers behind why consumers may choose to change their electricity consumption patterns? Please provide examples or evidence where appropriate.**

Consumers will choose to change their electricity consumption patterns when they are offered clear opportunities to do so. As EnerNOC has explained throughout this submission, the lack of a level playing field for DSR in both the energy market and at the distribution level limits the ability for DSP providers to create sustainable business models in the NEM, and as a consequence, limits the available DSP opportunities for consumers. While a select few large customers, such as Adelaide Brighton Cement and the others cited in 4.2 are able to engage in DSP today, most commercial and industrial customers in the NEM are unable to take the spot price as these companies do. While the examples cited in 4.2 are excellent and these companies should be applauded for their efforts, these are extremely rare examples in a market with almost 9 million customers. Clearly the risks involved in direct market exposure and complexity of the market are barriers to all but a handful of large customers. Aggregators can help engage smaller industrial and commercial customers by providing the expertise, facilitation, risk reduction and multiple DSP programs, but without the right market framework (as is currently the case) few companies will participate with flexible demand.

EnerNOC finds it troublesome that the Issues Paper seems to at times allude to the need for retail rates to either rise in general, or be cost reflective (spot), in order to drive DSP. While such changes could indeed lead to increased DSP, neither are preconditions for DSP to exist. Rather, what is lacking are opportunities for the NEM to encourage customers to make their DSR available to the market and then fully utilise DSP over a longer term – whether through the energy market, FCAS, or network support. In the various other markets in which EnerNOC participates, DSP has exerted downward pressure on both capacity and energy prices, but DSP continues to grow as the opportunities for participation for DSP providers and their customers persist, or even increase.

Moreover, assuming that consumers will only be interested in DSP when they face pricing that reflects the 'underlying value' of the resource is problematic. Taken to its logical conclusion, such a precondition would

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<sup>8</sup> ERCOT Demand Response Overview and Status Report, August 2011

<sup>9</sup> "Press Release: Coalition announces transformation of power market," Department of Energy and Climate Change, 16 December 2010.

lead to all customers needing to be exposed to real-time prices in order to achieve DSP. This would essentially undermine the entire business model of retailers in the NEM who package electricity in a way that best suits customers, primarily because most are unwilling or unable to be exposed to the type of price volatility that exists at the wholesale level.

**6. Chapter 4 lists some plausible DSP options that are currently used or could be used by consumers. Are there any other plausible DSP options currently used by consumers that have not been identified? Please provide description of measures and examples, where available.**

EnerNOC believes the list of DSP types in Chapter 4 includes many of the most common types of demand side management. However, it is important to note that customer acceptance of such activities ultimately depends on the existence of opportunities to monetize such demand side participation within acceptable risk limits, which is currently lacking in the NEM today.

**7. Are there DSP options that are currently available to consumers, but are not commonly used? If so, what are they, and why are they not commonly used (i.e. what are the barriers to their uptake)? Please provide examples and evidence if available.**

As EnerNOC has explained in this submission, the lack of ability for DSP to compete against generation in the energy and FCAS markets directly without having to go through a retailer, and the lack of a level playing field for DSP to be assessed against network infrastructure investments, is the primary barrier to DSP. Without opportunities for DSP to be fully valued and monetized within the NEM, most consumers are unlikely to engage in DSP.

**8. Are there other DSP options that are not currently available to consumers, but could be available if currently available technologies, processes or information were employed (or employed more effectively) in the electricity (or a related) market?**

The enabling technologies for DSP already exist, but it is the relative inability to leverage these technologies in a way that captures the value of DSP that is today the barrier in the NEM. Ultimately, improvements in available technology only increase the scope of what the DSP option can be used for. For example adding fast switching technology to a curtailable load that has been peak shifting will allow that curtailable load to be used for frequency control.

**9. What are considered the relevant market conditions to facilitate and promote consumer take up of cost effective DSP?**

There are a variety of improvements to the market conditions in the NEM that would allow for a range of cost-effective DSP to be increasingly used. While EnerNOC believes there are inherent deficiencies in energy-only markets' abilities to spur DSP, there are several ways that the AEMC can maintain an energy only market framework and introduce DSP to work with mechanisms within this framework:

DSP Offering	NEM Changes Required
Wholesale Price Response	<ul style="list-style-type: none"> <li>• Rules need to recognise third party DSR providers and allow for their direct market access</li> <li>• Accommodate Dispatchable Demand on an as bid basis</li> </ul>
Reserve Capacity	<ul style="list-style-type: none"> <li>• Tender for reserve capacity by AEMO, as is done in ERCOT and Ontario</li> <li>• Unbundle reserve from the wholesale energy price and make it competitive between generation and DSP</li> </ul>



Frequency Response	<ul style="list-style-type: none"> <li>Rules need to recognise third party frequency response providers and allow innovative technology</li> </ul>
Network Support	<ul style="list-style-type: none"> <li>Consider changes to regulatory arrangements for grid and distribution networks that will motivate the NSPs to select DSP solutions when they are the best economic outcome for them</li> <li>Set targets on Networks for the level of Energy Efficiency, Renewable Energy and DSP required.</li> </ul>

**10. Are there any specific market conditions which may need to be in place to enable third parties to facilitate consumer decision making and capture the value of flexible demand? Please provide examples and evidence as appropriate.**

In addition to the lack of opportunities for DSP to be compensated for the value it provides, a key barrier is access to meter data. EnerNOC (formerly Energy Response) submitted a procedure change to AEMO to allow third parties who have customer authority direct access to meter data in November 2010. We understand that submission was not met favourably by AEMO. EnerNOC intends to pursue a rule change in this regard. Constraints in fast access to meter data will also inhibit other responses by customers to improve their own efficiency.

**11. What market conditions (technologies, processes, tariff structures, information etc) are needed, that are not currently employed in the electricity market, to make other DSP options available to consumers?**

As noted in response to Question 10 above a major impediment is the lack of access to meter data.

**12. Do you consider retail tariffs currently reflect the costs to a retailer of supplying consumers with electricity?**

EnerNOC believes this topic to be outside its scope of expertise and defers to other parties who are better positioned to answer this question.

**13. Are any changes needed to retail price regulation to facilitate and promote take up of DSP?**

Please refer to EnerNOC’s response to Question 20.

**14. Do the charges to retailers for use of transmission networks reflect the value of that use?**

EnerNOC believes this topic to be outside its scope of expertise and defers to other parties who are better positioned to answer this question.

**15. Do the charges to retailers for use of distribution networks reflect the value of that use?**

EnerNOC believes this topic to be outside its scope of expertise and defers to other parties who are better positioned to answer this question.

**16. Do all consumer groups, including vulnerable consumers benefit from having cost reflective prices in place? If not, are any special provisions required to protect certain classes of consumers?**

As EnerNOC explained in response to question 5, cost reflective pricing is not a necessary pre-requisite to DSP. Experience in other markets shows that DSP can be increased by allowing for direct wholesale market access, creating opportunities for DSP to provide reserve capacity and by creating a level playing field for DSP to compete to provide network support.

**17. To what extent do consumers understand how they can reduce their electricity bill? What information do consumers need in order to increase their understanding of how they can reduce and manage their electricity consumption and hence bills?**

EnerNOC does not believe that customer understanding of how to reduce and manage electricity consumption is the issue, but rather the relative inability of the NEM to compensate consumers for the benefits such actions provide.

**18. What issues are associated with provision of existing information in the market? Are there arrangements that could improve delivery of such information? If so, how and by whom?**

As a Demand Response aggregator EnerNOC has extensive expertise introducing customers to various forms of DSP and how to attract commercial and industrial end-users to participate in its programs. However, the market conditions necessary to create such programs are first required if opportunities for DSP are to be brought to end-users.

**19. Could better information be provided to consumers regarding the actual consumption of individual appliances and pieces of equipment? If so, what information could be provided and in what form?**

EnerNOC believes that access to energy data is a pre-requisite to being able to effectively and properly manage energy consumption. For this reason, EnerNOC provides all of its DSR customers with complementary access to a web portal with their near-real time energy data. However, without the opportunities to receive compensation for the benefit such energy management provides to the system, access to data alone may not be sufficient to drive customer action.

**20. Are retailer and distributor business models supportive of DSP?**

The retailer and distributor business models could be greatly improved to be more supportive of DSP by levelling the playing field between demand and supply side resources. AEMO's Electricity Statement of Opportunities (ESOO) (page 70) notes 728MW of DSP was available for the 2010/11 summer. Of this total 108 MW was "extremely unlikely" to be available, 443MW with an "even chance" of being available and 177MW of being "very likely". The Market Operator must have greater certainty of whether it can use this valuable resource and if so what reliable contribution it can make when called.

Turning to the Distribution businesses, the June 2011 report by the Australian Alliance to Save Energy: Report of the 2010 Survey of Electricity Network Demand Management in Australia abounds with examples that highlight that the incentives for Australian Network businesses to invest in DSP programmes are not in place. Incentives for distributors to adopt more DSP could involve the equal treatment of capital and operating expenditures, as was implemented in the UK, so that distributors would have an incentive to pursue non-network alternatives such as DSP should they prove to be more cost effective. Another alternative could be the establishment of energy efficiency and peak demand reduction standards as have been implemented in many states in the US, such as New York and Pennsylvania. In the case of Pennsylvania,

Act 129 legislation, signed into law in October 2008, requires all electric distribution companies to achieve peak demand reduction targets of 4.5% and energy efficiency reductions of 4% by 2015.

The AEMC could also consider the appropriateness of so-called decoupling provisions, under which the direct relationship between energy sales and a utility's income is separated. While typically employed with vertically integrated utilities, most famously in the US state of California, decoupling would create a market-based incentive for retailers to pursue energy efficiency. Decoupling can also apply to Networks. Encouragingly, the Queensland Network businesses, Energex and Ergon, have successfully funded DSP milestones through their last price resets. This can be considered partial decoupling and will be full decoupling when these Networks earn a rate of return from their DSP investments.

**21. What incentives are likely to encourage research and development of other parties to promote efficient DSP?**

DSP, in particular DSR, is a commercially-available product that is primarily limited by market access and opportunity, and not by the availability or price of existing technology. There is already a significant amount of R&D underway across the globe in efficient DSP programs, many linked to Smart Grid initiatives. However, unless the NEM can include DSP into the market, access to these innovative programs and associated technologies will be very limited. To be clear, we must change the rules and/or market and regulatory structure if we want to encourage new technologies and innovation. It is our view that the benefits of Smart Grid will be very limited in the NEM without these changes.

**22. Are there any regulatory, cultural or organisational barriers that affect take up of DSP opportunities?**

As mentioned throughout this submission, EnerNOC believes the primary barriers to the take up of DSP opportunities are the lack of mechanisms which allow for them in the first place, such as direct market access or standalone DSP programmes. While there may be ways to improve other aspects of the regulatory arena, we believe it is important to focus on the major issues specified in our submission.

**23. What form of commercial contracts/clauses are required for facilitating and promoting efficient DSP?**

With a current demand response network of more than 10,700 commercial and industrial end-user sites, EnerNOC has developed significant expertise in the form of commercial contracts necessary to facilitate and promote DSP. In general, EnerNOC believes in designing customer offerings in a way that limits their risk associated with participation in wholesale markets, aligns their incentives with those of the aggregator and the system operator or utility to whom the DSP is being offered, and encourages the efficient use of electricity. That said, market conditions which create opportunities for DSP – such as those explained throughout this submission – are pre-requisites for the need and use of such commercial contracts.

**24. Are there specific issues associated with investment in infrastructure needed for consumers to take up DSP opportunities?**

We can only comment on the programs that EnerNOC manages and there are no specific issues with the infrastructure we use. In fact they are welcome by customer who do participate as it provides them with others tools to assist in the on site efficiency.

**25. Do you consider that the issue of split or misaligned incentives has prevented efficient investment in DSP from taking place?**

While split incentives can at times prevent efficient investment from taking place, it would be an ambitious claim to argue they are a primary barrier to DSP in the NEM. The issue most notably appears with commercial buildings, where there is an owner, a facility management company and sometimes a separate party responsible for some of the key facilities.

**26. What are potential measures for addressing any issues associated with split or misaligned incentives?**

EnerNOC has established contracting methods that create opportunities for DSP even in the case of split or misaligned incentives. We would welcome the opportunity to discuss commercial contract considerations with the AEMC in more detail if such perspectives would be of interest.

**27. Are there specific issues concerning ease of access to capital for consumers and other parties?**

EnerNOC does not believe that ease of access to capital is a major barrier to DSP in the NEM, or elsewhere. The ability to design commercial offerings for DSP that include limited or no upfront cost will always improve consumer uptake of DSP, and EnerNOC has long employed such components in our DSP offerings to commercial and industrial customers.

**28. What are the significant energy market challenges in optimising the value of technology and system capability to facilitate an efficient level of DSP?**

EnerNOC does not believe that optimising technology is required to increase the level of DSP for commercial and industrial end-users. Optimising the value of that technology is only an issue where the technology is difficult to justify (for example for Residential customers).

**29. Do current technology, metering and control devices support DSP? If not, why not, and what are considered some of the issues?**

Current technology, including metering and control devices, is able to support DSP. EnerNOC has deployed cost-effective and reliable metering and control technology at more than 10,700 sites in Australia, New Zealand, Canada, the United Kingdom, and the United States. That said, as mentioned in our response to Question 10, EnerNOC believes access to meter data is currently an important barrier to DSP in the NEM, and which can prevent such aforementioned technology from being utilised.

**30. How can issues relating to weak and/or split incentives be addressed to ensure that the benefits of smart grid technologies are aligned and felt across the electricity supply chain, including by consumers?**

EnerNOC believes the best way to ensure that the benefits of smart grid technologies are aligned across the electricity supply chain is to create market conditions which allow for the realization of the value of utilizing such technologies.

**31. How can pricing signals/tariff arrangements be made complementary with smart grid technologies to facilitate efficient DSP in the NEM?**

EnerNOC believes that pricing signals can be effectively paired with smart grid technologies to facilitate DSP. However, as mentioned earlier in this submission, EnerNOC is not of the belief that real-time or tiered pricing rates are an essential pre-requisite to DSP.

**32. In maximising the value of technologies, such as smart grids for DSP, what are the issues relating to consumer protection and privacy?**

Consumer protection and privacy must be of paramount concern as the development and implementation of smart grids is advanced. Ultimately, EnerNOC believes energy data should belong to end-users and they should however have the right to share their energy data with third parties that they seek to engage with for the purposes of energy management and DSP.

**33. To what extent do parties have appropriate incentives to put in place the systems, technologies, information flows etc that facilitate efficient DSP?**

EnerNOC believes that the market conditions we have identified to increase DSP will also create the proper incentives to put in place smart grid technologies and energy management systems.

**34. Are there aspects of the NEL or the Rules which prevent parties taking actions that would otherwise allow for more efficient levels of DSP?**

The AEMC concluded in its prior investigations that while there are risks and difficulties an energy consumer can manage their demand and in some very rare cases actively participate in the NEM at the wholesale market level. This customer action is within the spirit of the existing NEL and allowed under the existing Rules. The issues to be addressed by DSP Stage 3 must be to encourage more DSP and make it equal to supply side options thereby optimising the value of DSP to all consumers.

That said, there are aspects of the Rules which prevent parties from taking actions that would otherwise allow for more efficient levels of DSP, specifically:

- Lack of direct access to the energy and FCAS markets by third party aggregators
- No explicit capacity mechanism, which has been shown to be a major driver of DSP, even in energy-only markets like ERCOT. The retirement and unsuitability of the RERT, and the lack of a sustainable new mechanism for reserve capacity, further limits such opportunities in the NEM.
- Unequal treatment of capital investment and non-network alternatives, which creates unintended incentives for addressing network capacity challenges through supply-side means.

There is another issue in the Rules that impacts both generation and DSP, but particularly the latter as demand side resources can have a greater ability for rapid response than traditional supply-side units. Currently, while market participants are given visibility into 5-minute pricing, participants only actually receive the 30-minute price for the energy provided to the market – and which can drastically differ from the initial 5-minute pricing interval which was the impetus for response. In this manner, the end result of the energy market is not true cost-reflective pricing, which could limit DSP. As the AEMC argues in the Issues Paper that cost-reflective pricing can spur DSP, then the Rules should be designed in a way that ensures that the prices which spur consumers to react, should also be reflective of the value they will actually receive for the service they provide to the market.

**35. Are there market failures which mean regulation is needed in some areas to ensure appropriate market conditions are in place?**

EnerNOC believes that regulation is needed in the provision of meter data, as we explain in response to Question 10, which is an essential foundation to DSP. Retailers should not be the gatekeeper to such data – nor for that matter to market access.

Ideally, the NEM should make use of DSP to ride through emergencies just as the WEM successfully used DSR Reserve Capacity to overcome almost certain blackouts in February this year.

**36. What energy efficiency policies and schemes should be considered as part of this Review, i.e. as impacting on, or seeking to integrate with the NEM?**

The engagement of customers in DSP programs will encourage even more interest in reducing their electricity consumption. The technologies which are employed by EnerNOC for DSP or energy efficiency are very similar and once they are installed they can be used for both purposes.

**37. To what extent can energy efficiency policies and schemes be adopted as options for enhancing the efficiency of DSP in the NEM? What are the strengths and limitations of energy efficiency policies as a DSP option compared to other options?**

The major difference in DSP (ie, an event related demand response) and demand management or energy efficiency is the event response has a much more significant and direct positive impact on the major NEM inefficiencies and will contribute very significantly to reducing retail electricity costs to 9 million customers. EnerNOC also strongly supports the demand management and energy efficiency actions by customers as well but while customers are taking action to be more efficient themselves it is also essential that the NEM makes sure it is also becoming more efficient (this is a role that DSP can play).

**38. To what extent do existing retailer obligation schemes facilitate efficient choices by consumers in their electricity use? Are there aspects of those schemes that facilitate efficient consumption choices more than others? If so, please explain.**

EnerNOC has no comment in response to this Question.