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## Wholesale Electricity Market Rule Change Proposal Submission Form

### RC\_2010\_29 Curtailable Loads and Demand Side Programs

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#### Submitted by

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#### Submission

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#### 1. Please provide your views on the proposal, including any objections or suggested revisions.

EnerNOC believes the approach proposed by the IMO within the Rule Change Discussion Paper on the following Issues warrants general support:

- Issue 1: Registration of Curtailable Loads - we support the development of a DSP as a Facility Type for the reasons outlined in the IMO's paper. We do, however, envisage a potential concern with the change in that it may confine demand side management activities solely to the WEM's capacity market. Energy market developments suggest that the future market operations would seek to take full advantage of the efficiencies and associated cost reductions of dynamic loads that are fully integrated into the electricity market.

*At this stage of the WEM's development, we query whether the proposed change may, perhaps unintentionally, entirely restrict DSP activities to the capacity market alone;*

- Issue 2: Facility Definition - we wholeheartedly support this proposal, as it removes operational inefficiencies relating to the registration and dispatch of demand side management programs, as well as formalising the concept of an aggregated demand side management portfolio that should be viewed and measured in its performance as a single unit and not as the sum of the individual loads that comprise it. We also applaud the IMO for its support to amend the Market Rules to enable portfolio over-subscription, a central and key risk management component of the aggregated / portfolio-based demand side management model;
- Issue 3: Market Fees - we support the continuation of existing rules on Fees for DSPs and the IMO's approach on this issue;
- Issue 5: Capacity Cost Refunds - we support in general the approach for capacity cost refunds for DSPs to reflect similar treatment within the rules to that provided for Generators, and believe DSPs that fail to enrol sufficient loads to meet their capacity obligations should be penalised accordingly.

However, we believe the changes relating to the calculation of refunds for DSPs has overlooked an essential element of DSP availability, that is, the provision of capacity during noon and 8pm on business days (4.10.1(f)(vi)). Currently the changes proposed indicate that DSPs would pay refunds for "any given trading interval" where they fail to comply with their obligations. Refunds should be restricted for failure to meet obligations during the nominated availability periods.

*It is recommended that the potential for capacity refunds for DSPs should only relate to failure during that period where the DSP's Availability is mandated, noon to 8pm on business days, and that the rule changes proposed relating to capacity shortfall calculations be reflective of this.*

- Issue 6: Reserve Capacity Security - we support the IMO's approach outlined in RC\_2010\_12 to amend the Market Rules so that a DSP is considered as a single Facility for the purpose of evaluating a request for the return of their Reserve Capacity Security.
- Issue 7: Stipulated Default Loads - EnerNOC considers the IMO's approach to combine the concept of a Curtailable Load (CL) and Stipulated Default Load into the DSP concept as worthwhile and worthy of support.
- Issue 8: Potential Double Payment - we support the IMO's comments that it is entirely reasonable, and in line with treatment for generators, that a CL/DSP receive a Dispatch Instruction Payment in incidences where it has curtailed its consumption following a request from System Management. Similarly, we are also supportive of the approach indicated where this payment will not be made during incidences of a Reserve Capacity or Verification test, as this treatment aligns with existing commissioning test provisions for generators.

We acknowledge the potential double payment concern raised by the MAC member, and suggest only that, were this concern to be pursued further at a later time, the solution look to target the MCAP benefit received by the Market Customer supplying energy to the Load. It is the retailer in these instances that is receiving an "unplanned" benefit (unless they are operating the DSP dispatched by SM) rather than the DSP which is providing a direct service to the WEM through its dispatch.

#### ISSUE 4: MEASUREMENT OF CL PERFORMANCE

With regards Issue 4, EnerNOC believes the IMO's proposed approach to DSP performance measurement is likely to create significant risks for DSM capacity provision and lead to greater instability and higher costs for the market as a whole.

By aligning the intervals used to determine a DSP's Relevant Demand (RD) measure with those intervals used for Individual Reserve Capacity Requirement (IRCR) purposes, the market would be bundling two separate mechanisms that require distinct measurements for their own specific purposes. Moreover, by linking the RD to the IRCR methodology, the IMO appears to falsely presume that a DSP would only be dispatched by System Management (SM) in response to a capacity shortfall, and not for other likely purposes such as transmission constraints or unforeseen system contingencies.

As a result of the IMO's proposal in RC\_2010\_29, IRCR management and demand side participation in the Reserve Capacity Mechanism will become mutually exclusive as successful attempts to reduce one's IRCR exposure will cannibalise the capacity that can be made available to the WEM. The resultant choice will have considerable market impacts:

- End-use customers choosing to secure their direct economic interest by reducing their IRCR will impact existing and future DSPs, with potential for capacity shortfalls, Supplementary Reserve requirements, and/or the need for additional generation;
- End-use customers choosing to provide DSM for capacity purposes to the detriment of reducing their peak loads will lead to capacity forecasts being higher than would otherwise be necessary, increasing electricity costs for all customers in the SWIS.

Both impacts cited are likely to be felt simultaneously, with end-use customer segmentation (capacity or IRCR) taking place over time were the proposed change to be implemented.

While perhaps unintentional, adopting the proposed rule change would signal that the market is seeking to either remove an incentive to reduce peak demands or limit the quantity of DSM providing capacity in the WEM. Either signal would likely lead to market inefficiencies and work against a range of market objectives, particularly those in relation to:

- (a) the economically efficient and reliable provision of supply;
- (d) minimising the long-term costs of electricity; and
- (e) encouraging measures to manage the amount of electricity used and when it is used.

#### ***IRCR and RD "Conflict"***

The IMO has previously defined and highlighted concern with the issue of "double payment"<sup>1</sup>, relating to a CL reducing its demand for IRCR purposes and then requesting, under current rules, the ability to revise its RD upwards due to "maintenance" being performed during those IRCR intervals. This issue stems from fundamental problems associated with the Relevant Demand methodology that is both currently employed and proposed in this rule change, rather than customer actions to reduce their exposure to IRCR charges.

The supposed "conflict" between IRCR and RD is a consequence of an approach that has an underlying assumption that it is appropriate to employ the same methodology for determining a CL's IRCR and its ability to provide capacity to the WEM when dispatched. By continuing with this approach, the IMO is conflating resource adequacy and planning activities with measurement needs in an operational context. Using a customer's demand from the previous Hot Season is appropriate for assessing capacity requirements because system planning activities, by their very nature, must be conducted far in advance. Conversely, that approach is ineffective and unnecessary for the purposes of market operations, which require real-time data in order to ensure reliability.

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<sup>1</sup> Agenda Item 8a: Curtailable Loads - Relevant Demand Analysis, MAC Meeting No 30: 11 August 2010, pg1

While the existing RD approach does not perfectly align with IRCR calculations, it falls prey to the same issues as the IMO's proposed modification because it is "static" and likely overlaps with IRCR intervals. A "static" RD measurement that uses consumption data from as much as a year in the past - and which does not change to reflect differences in a CL's load profile over the course of a day, week, or season - is inherently an inappropriate methodology to employ for operational purposes for a resource participating in the WEM. Almost no electricity users have demands that remain flat over a day, let alone the course of a season or a year. For example, in addition to fluctuating usage throughout the day, in the time since the RD was calculated, a customer may have installed new equipment that has drastically increased or decreased load. Consequently, a static RD simply cannot provide insight into whether or not a CL/DSP has load reduction capabilities at the specific time SM needs them, nor can it be counted on to provide an accurate assessment of CL/DSP performance after a dispatch.

Similarly, past attempts to manage IRCR exposure have no bearing on the real-time demand reduction that a CL/DSP can provide when called upon to do so by SM. Underlying the concept of aligning IRCR and RD intervals is an assumption that because a customer managed their IRCR in the previous year that they can be assumed in the current year to have already curtailed demand when SM would otherwise dispatch them. EnerNOC contends this assumption is erroneous, and potentially dangerous.

Moreover, even if agreement with the "double payment" perspective might be shared, the proposed RD measurement approach penalises customers for IRCR management even when those activities are non-coincident with the likely dispatch requirements of a CL/DSP by SM. There is no way to know in advance if the time at which SM needs DSM capacity and dispatches a CL/DSP will later be determined to also be an IRCR interval. As such, in its attempts to limit "double payment" concerns, the IMO has advocated for an RD methodology that unfairly penalises customers that manage their IRCR exposure as it will end up removing all WEM-derived payments for any load reductions dispatched by SM, whether or not they are actually coincident with IRCR intervals. While this risk is also present in the current RD methodology, it is guaranteed under the IMO proposal in RC\_2010\_29.

This is not simply an academic debate, but one that has serious, real-world consequences. The alignment of both the RD and IRCR measures would produce an outcome where the loads most capable of assisting the WEM as a CL/DSP would have no incentive to provide it. Where a sophisticated, large load may be successful in reducing its entire demand during the key 12 IRCR intervals, with the RD and IRCR measures aligned the market would offer no further payment for that same load to reduce its demand for at least a further 36 intervals as a capacity service, assuming a coincidence between the IRCR intervals and when SM requires DSM in response to a reliability event. EnerNOC questions the wisdom of a rule change which will in its very design exclude the WEM's most demand-flexible and peak-responsive loads from providing capacity to the market. Loads pursuing IRCR-reduction programs in the WEM will invariably be large, as many small to mid-size customers do not have capacity charges passed through by their retailers, and sophisticated, as they will be required in advance to curtail across a period that covers the SWIS' 12 peak intervals. It is important to recognise that this risk is also present with the current RD measure based on the 32 intervals described in 4.26.2C, albeit to a lesser degree, because of the likely overlap of at least a portion of those intervals with the 12 that set the IRCR.

*In summary, when System Management dispatches a CL/DSP, it is because DSM capacity is needed at that specific point in time, not because of system conditions from the preceding Hot Season. If a CL/DSP can provide the needed load reduction when dispatched, they should not only be encouraged to do so, they should also be paid for the resource they provide to the WEM - regardless of any IRCR activities.*

### Profile Measurement Methodologies

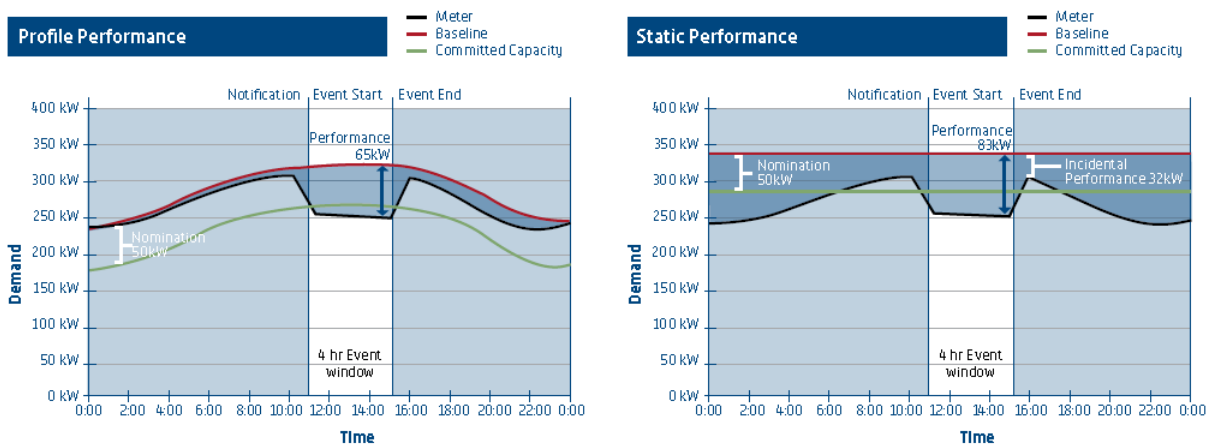
EnerNOC believes the issues that the IMO seeks to resolve through modifying the RD intervals and the exclusion rules are each symptoms of the use of a flawed static baseline methodology to determine the RD measure. Moving away from a static RD would not only prevent the inherent conflicts between planning and operations detailed in the previous section, it would also improve the overall accuracy and integrity of the RD measure and associated performance calculations.

Our experience in providing DSM in electricity markets around the globe suggests that significant research has already been conducted on the relative strengths and weaknesses of different measurement methodologies for demand response, and that more advanced baselines have successfully been implemented in a variety of markets and programs. EnerNOC believes that the WEM would benefit by the use of these improved measurement methodologies, which are both more accurate and mitigate against gaming activities by market participants. We acknowledge that further analysis of these potential measures could be simulated across DAA’s sample DSM portfolios to assist in the market’s consideration of the most appropriate measure to use.

With the current and proposed RD based on demand during system peak periods, the RD is likely to result in “incidental performance”, where a customer is already operating below their baseline and receives credit for greater levels of demand reductions than what actually took place. The IMO has recognised this inaccuracy, acknowledging that an “aggregated DSP (may) already be operating at below its RD level when dispatched and may not be required to curtail consumption at all to meet the Dispatch Instruction”<sup>2</sup>. This can have serious implications. As the IMO also identified, the inaccuracy could impact system reliability by overestimating the amount of available capacity, leading to System Management potentially allowing more outages than should be permitted to maintain reliability standards.

EnerNOC believes there is a clear choice to both accomplish the objectives of the IMO’s proposed changes to the RD methodology and to also improve its accuracy in general: a measurement methodology known as a “profile” baseline. Profile baselines, which closely resemble a site’s actual load profile throughout the day and are based on historical interval meter data over a recent period prior to dispatch, stand in stark contrast to static baselines such as the current RD methodology. Profile baselines are also often referred to as “dynamic” as they are changed and updated to reflect recent conditions and consumption patterns. To compare the two baseline types of static and profile, an example has been shown in the figure below which assumes a customer has registered demand side capacity of 50kW.

Figure 1: Profile vs Static Baselines



Using a static baseline (right graph), the forecast baseline is far greater than the actual load throughout the entire day. Peak performance during dispatch is measured at 83kW, well above the expected 50kW.

<sup>2</sup> Independent Market Operator, Issues Paper: Curtailable Loads in the Market Rules, Ref: CP\_2010\_06, 5 May 2010



Applying an accurate profile baseline generates closer alignment with actual consumption patterns. By having a baseline that follows actual metered demand before and after dispatch, performance is measured at 65kW, or more than 20% below the static baseline.

In the example shown, a static baseline provides 32kW of incidental performance, or nearly 40% of the recorded performance. This incidental capacity represents significant program costs for the WEM, with DSM comprising around 8% of the WEM's capacity. With over 450MW of DSM credited for 2012/13, were incidental performance levels of 20% or more being experienced this would indicate a potential capacity shortfall / overpayment of 100MW or more. This represents in excess of \$15 million in 12/13 in capacity costs and payments.

Static baselines trade accuracy for simplicity. Other markets and utilities have recognised that the use of more accurate profile baselines is available without adding significant complexity to the measurement and verification process. By moving towards the use of a profile measurement approach for RD, the market could achieve significant improvements in the accuracy and predictability of DSM provision, minimise gaming potential and the inflation of capacity baselines, maintain simplicity, and enable the reliability of forecast DSM capacity in a manner consistent with other capacity sources, ensuring that SM is able to utilise DSM effectively.

Over the coming weeks, EnerNOC will submit a Rule Change Proposal seeking to implement a Relevant Demand calculation based on a more accurate profile baseline. At that time we will explain in further detail the various iterations a profile baseline can take, as well as suggest a particular profile methodology based on established best practices that we believe would be most successful based on both our direct experience, as well as third-party published studies.

EnerNOC acknowledges that a Relevant Demand calculation based on a profile methodology will represent a marked departure from the current calculation used in the WEM, and we shall propose within our Rule Change Proposal a time frame for profile baseline implementation that recognises the WEM's change management requirements.

### **Recommendations**

In relation to Issue 4, EnerNOC recommends that:

- The RD measure be amended to a profile methodology that is dynamic and efficiently balances key methodology criteria such as simplicity, accuracy, and predictability with minimising gaming potential.

As mentioned previously, EnerNOC intends to proceed with a proposed rule change that reflects the above recommendation for the IMO and Market Participants to consider. We acknowledge the rule change process within the WEM and recognise that our proposal to consider a dynamic measure may necessitate the parallel consideration of both rule change alternatives. With this in mind, and in the event the IMO looks to proceed with its current recommendation in some fashion, EnerNOC recommends:

- To provide appropriate time to consider alternative RD methodologies, and to avoid the potential for multiple changes to the RD measure, any change to the RD measure be scheduled for implementation and use no earlier than the 2012/13 market year (starting October 1, 2012);
- That the RD measure, were it to remain static, be amended so that the proposed rule change include an additional 20 intervals for a total of 32, being the peak eight (8) intervals on each of the peak four (4) days in the previous Hot Season; and utilises an arithmetic mean for averaging instead of a median. Using a median averaging calculation could be potentially problematic with the inclusion of 20 more intervals and could result in too much downward pressure on the Relevant Demand measure. As such, we believe an arithmetic mean would be a more appropriate averaging methodology for this potential alternative, that would allow the IMO to utilise an increased number of intervals while avoiding unnecessary downward pressure on the baseline measurement.

EnerNOC notes that this aligns with Data Analysis Australia's (DAA) investigation<sup>3</sup> into RD methodologies and their recommendations that: *Where the IMO wishes to retain "control over these (IRCR-reduction) customers", a methodology that utilises the IRCR days (highest 4) but expands the number of intervals on each peak day (eg. to 8 from the existing 3), thereby improving the stability and reliability of the RD measure to inform the IMO's Reserve Capacity certification requirements;*

In relation to Issue 5, EnerNOC recommends that:

- Capacity refunds for DSPs should relate to failure during that period where the DSP's Availability is mandated, noon to 8pm on business days, and that the rule changes proposed relating to capacity shortfall calculations be reflective of this.



**2. Please provide an assessment whether the change will better facilitate the achievement of the Market Objectives.**

EnerNOC has sought to identify a number of changes to the rule change proposed by the IMO. As part of its rule change submission to move towards a dynamic measurement for RD, EnerNOC shall provide a detailed assessment within that submission of the likely impact of such a change on market objectives.

We consider the changes proposed by the IMO to amend the calculation of the Relevant Demand to be based on the aggregated output of the DSP (portfolio-basis), together with the ability to oversubscribe DSPs will have the following impact on the Market Objectives.

Impact	Market Objectives
Allow the Market Rules to better address the objective	a, d, b
Consistent with objective	c, e
Inconsistent with objective	

EnerNOC considers the changes proposed to amend the calculation of the Relevant Demand to be calculated on the IRCR intervals will have the following impact on the Market Objectives:

- Promote unreliability in the supply of capacity in the South West interconnected system by utilising an inaccurate RD measure, and impacting DSM capacity supplies;
- Work against the provision of economically efficient electricity related services in the SWIS by forcing a choice between peak load reduction services or capacity provision;
- Introduce discrimination against particular energy options and technologies that reduce overall greenhouse gas emissions;
- Increase the long-term cost of electricity supplied to customers from the South West interconnected system; and
- Discourage the taking of measures to manage the amount of electricity used and when it is used.

Impact	Market Objectives
Allow the Market Rules to better address the objective	
Consistent with objective	b
Inconsistent with objective	a, c, d, e



EnerNOC considers the changes it has recommended to amend the IMO’s proposed aligning of the RD and IRCR measures will have the following impact on the Market Objectives:

- Promote greater reliability and efficiency in the supply of electricity and electricity related services in the South West interconnected system;
- Encourage the efficient entry of new competitors to the WEM;
- Helps avoid discrimination against particular energy options and technologies that reduce overall greenhouse gas emissions;
- Better assists with minimising the long-term cost of electricity supplied to customers from the South West interconnected system; and
- Maintain the encouragement of measures to manage the amount of electricity used and when it is used.

Impact	Market Objectives
Allow the Market Rules to better address the objective	a, c, d, e
Consistent with objective	b
Inconsistent with objective	

EnerNOC considers the changes proposed to amend the capacity refund calculation for DSPs will have the following impact on the Market Objectives:

- Avoid discrimination against particular energy options and technologies by enabling refunds to be paid in relation to agreed Availability requirements only.

Impact	Market Objectives
Allow the Market Rules to better address the objective	c
Consistent with objective	a, b, d, e
Inconsistent with objective	

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**3. Please indicate if the proposed change will have any implications for your organisation (for example changes to your IT or business systems) and any costs involved in implementing these changes.**

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Changes to the static RD measurement calculation will have an impact on EnerNOC as we will need to amend existing systems containing the current static measurement approach. We envisage the costs associated with this change to be small.

Alignment of the RD measure with IRCR intervals, as proposed by the IMO, will have an impact on EnerNOC's portfolio management. We forecast that existing and new DSM-capable loads are likely to target their IRCR charges, reducing capacity potential from these loads and/or rendering some customers from being able to deliver demand response capacity to the WEM as originally planned. Such results would also potentially impact the ability to recruit sufficient capacity, as capacity obligations were taken on when the Market Rules would not have impacted the ability for customers that manage their IRCR exposure to participate in the WEM. It is unclear at the present time what the magnitude of the impact will necessarily be, however, it is expected to be potentially significant.

By increasing the risk of capacity overestimation in the WEM, as well as reducing the size of the DSM market within WA, higher funding and operational costs for all Market Participants and end-users are envisaged.

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**4. Please indicate the time required for your organisation to implement the change, should it be accepted as proposed.**

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EnerNOC estimate that, were the changes as proposed by the IMO to proceed, it may take approximately 3 months to implement changes to the measurement calculation, with the main requirements of systems and contract changes requiring this period for implementation.

EnerNOC forecasts that longer term changes in the makeup and structuring of its DSM portfolio would also be likely. Portfolio construction requirements for the 2013/14 year are likely to be impacted, together with restructuring requirements for the 2012/13 year also.