RULE CHANGE NOTICE

RELEVANT DEMAND OF A DEMAND SIDE PROGRAMME

(RC_2012_02)

This notice is given under clause 2.5.7 of the Market Rules.

Date Submitted: 23 August 2012

Submitter: Jeff Renaud, EnerNOC

THE PROPOSAL

The Relevant Demand is an estimate of the likely total consumption of a Demand Side Programme (DSP) during peak intervals. As part of the Rule Change Proposal: Curtailable Loads and Demand Side Programmes (RC_2010_29) a "portfolio management" approach was introduced whereby the performance of a DSP is assessed in aggregate, rather than on a site by site basis.

EnerNOC notes that as part of the development of the revised Relevant Demand methodology under RC_2010_29 the IMO commissioned Data Analysis Australia (DAA) to consider the Relevant Demand methodology. DAA investigated two ways of combining the data from the constituent loads to produce a portfolio Relevant Demand:

- Approach A – The Relevant Demand is calculated for each NMI in turn, then the results are summed to give the portfolio Relevant Demand; and

- Approach B – The Loads are summed first, the Relevant Demand is then calculated for the portfolio.

EnerNOC notes that the DAA analysis found no significant difference between Approach A or Approach B in terms of creating an obvious bias where one approach yields consistently higher Relevant Demands than the other.

In its proposal EnerNOC notes the following concerns associated with the use of Approach B (as implemented by RC_2010_29):

- Approach B is very sensitive to changes in the portfolio and can result in significant uncertainty for end-use customers. The "value" of an end-use customer can be very different depending on what other loads are in the DSP.

- Since the results are sensitive to the correlation between the loads, the contribution of any one NMI cannot be calculated unless the meter data for all

the NMIs in the DSP is available. This means that an individual end user can not calculate their contribution to the portfolio RD.

- Without a clear relationship between the portfolio RD and an individual RD, a DSP operator is unable to clearly and transparently inform their customers of their individual baselines.

- Lack of transparency makes the approach highly complex. Baselines should be simple enough for all stakeholders to understand, calculate, and implement, including end-use customers.

Given the identified issues associated with the use of Approach B, and given that there is no significant difference (in terms of bias) between the two approaches, EnerNOC proposes that so long as a static baseline methodology is to be used for assessing DSPs, Approach A should be adopted.

Appendix 1 contains the Rule Change Proposal and gives complete information about:

- the proposed amendments to the Market Rules;

- relevant references to clauses of the Market Rules and any proposed specific amendments to those clauses; and

- the submitter's description of how the proposed amendments would allow the Market Rules to better address the Wholesale Market Objectives.

DECISION TO PROGRESS THE RULE CHANGE

The IMO has decided to progress the Rule Change Proposal to allow interested parties an opportunity to provide submissions as part of the rule change process.

Preliminary Assessment against the Wholesale Market Objectives

In considering whether to progress the proposed amendments the IMO has undertaken a preliminary assessment of the proposed changes against the Wholesale Market Objectives. This assessment has identified that in determining whether to accept the proposed amendments a tradeoff between greater transparency and reduced accuracy of the Relevant Demand measure will be required. Details of the IMO's preliminary assessment against each of the Wholesale Market Objectives are presented below:

(a) to promote the economically efficient, safe and reliable production and supply of electricity and electricity related services in the South West Interconnected System

The proposed amendments to the determination of the Relevant Demand for a DSP (Approach A) would result in a measure of performance of a DSP that appears less accurate than under the current approach (Approach B). While Approach A results may be equally likely to be above or below the Approach B results (as reflected in RC_2012_02 and supported by the IMO's analysis as presented at the August 2012 MAC meeting), this does not mean that the two approaches are equally good for determining an accurate Relevant Demand for the Facility as a whole. The IMO's concern with Approach A can be seen in the two examples provided in RC_2012_02:

- For Figure 1, current Approach B gives a reasonable Relevant Demand result of 1.2 MW, while Approach A only gives 0.3MW, a very low value which ignores the effect of combining the loads into a portfolio.
- For Figure 2, Approach B again gives a reasonable Relevant Demand of 1.2 MW. However Approach A gives a result of 2.1 MW, which the combined portfolio only reached in 2 of the 32 Trading Intervals. Most of the time the combined portfolio could only provide 1.2 MW and it would seem inappropriate to use the much higher value as the Relevant Demand.

The introduction of potential distortions in the calculation of a DSP's Relevant Demand (either upwards or downwards) is potentially inconsistent with Wholesale Market Objective (a). If the Relevant Demand for a DSP is set too low then the actual capacity available from the DSP will not be fully recognised. More importantly, if a Relevant Demand is set too high then it is more likely that when the DSP is dispatched it will not be consuming at that Relevant Demand level, and so will not be able to provide the capacity reduction expected by System Management. This has potential impacts with respect to System Management's ability to rely on a DSP to produce a required reduction in consumption when issued a Dispatch Instruction when compared to the status quo. This also has potential impacts on whether a DSP is over or under paid relative to their actual delivery. The IMO considers that there are likely implications with respect to the proposed amendments on system reliability when compared to the status quo.

(b) to encourage competition among generators and retailers in the South West interconnected system, including by facilitating efficient entry of new competitors.

No impact.

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

By no longer considering the consumption of a DSP at the aggregated level (but rather for each individual load) a DSP will no longer be treated equivalently to Market Generators whose output is currently measured at one connection point (which

incorporates behind the fence load). This is potentially inconsistent with Wholesale Market Objective (c).

The IMO also notes that the changes proposed by RC_2012_02 are inconsistent with the previous advice of the MAC (provided during the May 2010 meeting and implemented under RC_2010_29) upon which the current design of the treatment of DSM in the Market Rules is based. The current market design focuses directly on the DSP and not the Associated Loads. In particular, RC_2010_29:

- ensured that for the purposes of measuring performance only the DSP would be visible to the market and not the component loads, and that performance would be calculated at the aggregate level rather than for each load individually; and

- clarified that the DSP is the Registered Facility (i.e. the loads are not visible to the market)[1].

The IMO notes that under the current market design the only interest in the Associated Loads from the market's point of view is during the process of applying to the IMO to associate the loads (during which time the IMO confirms that they are appropriate loads to be associated with the DSP).

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

No impact.

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

There may be some benefits associated with improving the transparency of the contribution of the Associated Loads to a DSP. In particular, the ability to identify the relationship between an individual Load's baseline and DSP's Relevant Demand will allow end-users to identify their relative contribution to the DSP themselves (this is particularly relevant where it changes over time). The proposed changes will have benefits to DSP aggregators and potentially impact on the delivery of physical capacity to the market via the programmes operated by DSP aggregators. This impact would potentially better Wholesale Market Objective (e).

The IMO however reiterates that the current design focuses on the DSP as the Facility and not the component loads. Further, dependent on the number of Loads assigned to a DSP the relevant contribution of each Associated Load will vary. Similarly a Load that is transferred between two DSPs may not make the same contribution to each DSP.

[1] For further details refer to the MAC minutes for the May 2010 meeting.

General comments:

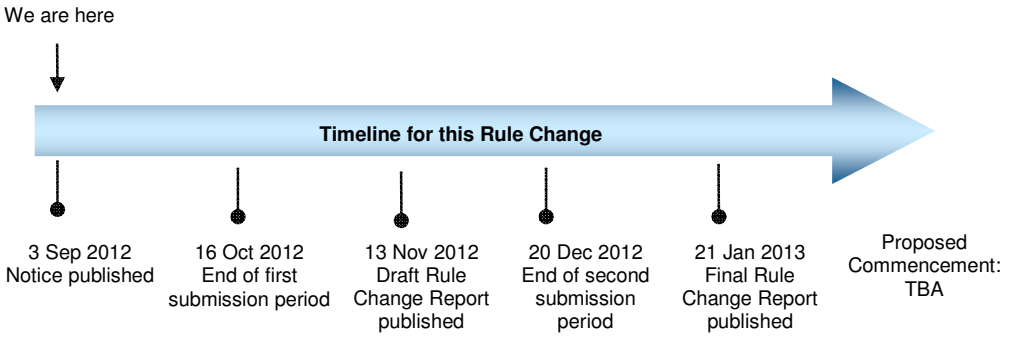
In making a decision on whether to approve the proposed amendments a trade-off between transparency and accuracy will be required. The wider issues associated with the use of a static Relevant Demand will however continue to mean that the Relevant Demand of a DSP (under either the status quo or as amended as proposed) may not reflect the DSP's actual ability to reduce its load as accurately as a more dynamic measure. The IMO notes that in its Rule Change Proposal EnerNOC explicitly notes that its proposed amendments are subject to the continued use of a static baseline methodology being applied:

"EnerNOC proposes that, so long as a static baseline methodology is used for assessing DSPs, Approach B should be replaced with Approach A…"

Likewise the public workshop on the Relevant Demand Methodology that was held as part of the submission process for RC_2010_29 identified support for the IMO further considering options for the introduction of a dynamic Relevant Demand. Based on the views expressed during the consultation process for RC_2010_29 the IMO determined that it would undertake a separate wider consideration of the options for implementing a dynamic Relevant Demand methodology.

TIMELINE

The projected timelines for processing this proposal are:



CALL FOR SUBMISSIONS

The IMO is seeking submissions regarding this proposal. The submission period is 30 Business Days from the publication date of this Rule Change Notice. Submissions must be delivered to the IMO by **5:00pm** on **Tuesday, 16 October 2012**.

The IMO prefers to receive submissions by email to market.development@imowa.com.au using the submission form available on the IMO website: http://www.imowa.com.au/rule-changes.

Submissions may also be sent to the IMO by fax or post, addressed to:

Independent Market Operator
Attn: Group Manager, Market Development
PO Box 7096
Cloisters Square, Perth, WA 6850
Fax: (08) 9254 4399

Wholesale Electricity Market
Rule Change Proposal Form

Change Proposal No: *RC_2012_02*
Received date: *23 August 2012*

Change requested by:

Name:	Jeff Renaud
Phone:	(03) 8643 5934
Fax:	(03) 8643 5999
Email:	jrenaud@enernoc.com
Organisation:	EnerNOC
Address:	45 Ventnor Avenue, West Perth
Date submitted:	*23 August 2012*
Urgency:	*3-High*
Change Proposal title:	Relevant Demand of a Demand Side Programme
Market Rule(s) affected:	4.26.2CA

Introduction

Market Rule 2.5.1 of the Wholesale Electricity Market Rules provides that any person (including the IMO) may make a Rule Change Proposal by completing a Rule Change Proposal Form that must be submitted to the Independent Market Operator.

This Change Proposal can be posted, faxed or emailed to:

Independent Market Operator
Attn: Manager Market Development and System EerCapacity
PO Box 7096
Cloisters Square, Perth, WA 6850
Fax: (08) 9254 4339
Email: market.development@imowa.com.au

The Independent Market Operator will assess the proposal and, within 5 Business Days of receiving this Rule Change Proposal form, will notify you whether the Rule Change Proposal will be further progressed.

In order for the proposal to be progressed, all fields below must be completed and the change proposal must explain how it will enable the Market Rules to better contribute to the achievement of the wholesale electricity market objectives. The objectives of the market are:

(a) to promote the economically efficient, safe and reliable production and supply of electricity and electricity related services in the South West interconnected system;
(b) to encourage competition among generators and retailers in the South West interconnected system, including by facilitating efficient entry of new competitors;
(c) to avoid discrimination in that market against particular energy options and technologies, including sustainable energy options and technologies such as those that make use of renewable resources or that reduce overall greenhouse gas emissions;

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

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

Details of the proposed Market Rule Change

1. Describe the concern with the existing Market Rules that is to be addressed by the proposed Market Rule change:

Context

The development of the Relevant Demand methodology for a Demand Side Programme (DSP) was considered as part of an extensive set of rule changes (RC_2010_29) to enable a "portfolio management" approach for DSPs. The idea of the new method was that the performance of a DSP would be assessed in aggregate, rather than on a site-by-site basis, as was the case prior to the implementation of the RC_2010_29 changes.

As part of the development of the DSP Relevant Demand methodology, Data Analysis Australia (DAA) was commissioned to consider the method for calculating the Relevant Demand (RD) of DSPs[1]. As set forth in their paper, a key requirement of the analysis was to formulate a methodology that was both "stable and reliable".[2]

DAA investigated two ways of combining data from the constituent loads to produce a portfolio RD. In each case, the RD is calculated by taking a median across the specified peak trading intervals. The difference is that:

- In Approach A, an RD is calculated for each NMI in turn, then the results are summed to give the portfolio RD.
- In Approach B, the loads are summed first, then the RD is calculated from these summed values.

DAA's analysis showed that "there does not appear to be an obvious bias between the approaches whereby one approach yields consistently higher Relevant Demands over the other"[3].

Further, their results "demonstrated that the order by which the aggregation occurs has little effect on the stability and reliability of the relevant demand"[4].

In RC_2010_29, it was decided to use Approach B as it appeared easier to administer:

> "Following the outcomes of DAA's analysis which found no significant difference between the two options, the IMO did not consider it is necessary to calculate the RD level for each individual Load as this would create unnecessary operational overhead and not improve the RD levels ability to reflect the normal operational level of the DSP during required intervals."[5]

It is understood, however, that the operational impact in utilising the alternative Approach A is minor, and existing tools designed to calculate DSP RDs could accommodate the change relatively simply.

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[1] Comparison of Alternative Relevant Demand Calculation Methodologies, Data Analysis Australia, Project: IMO/3, July 2010.
[2] Ibid, Section 1, page 1.
[3] Ibid, Section 9, page 36.
[4] Ibid, Executive Summary, page v.
[5] RC_2010_29 Final Rule Change Report, Appendix 1, page 101 (of PDF)

Comparison: Approach A vs. Approach B

EnerNOC supports DAA's finding that neither approach has an obvious bias.

Either method can give the higher result, depending on the data. We demonstrate this with some extreme examples.[6]

In Figure 1, the DSP's RD using Approach B is 1.2MW, whereas using Approach A, gives a result of 0.3MW – a difference of 0.9MW.

Figure 2 illustrates two slightly different loads. In this case, the DSP's RD using Approach A yields a RD result of 2.1MW, whereas Approach B yields a RD of 1.2MW; the same 0.9MW difference, but in the opposite direction.

Although this is a simplistic example, it clearly shows that either approach can yield a higher RD. When analysing different portfolios that exhibit similar characteristics this same principle would stand true.

Figure 1: Comparison of DSP Relevant Demand Approaches (A & B)

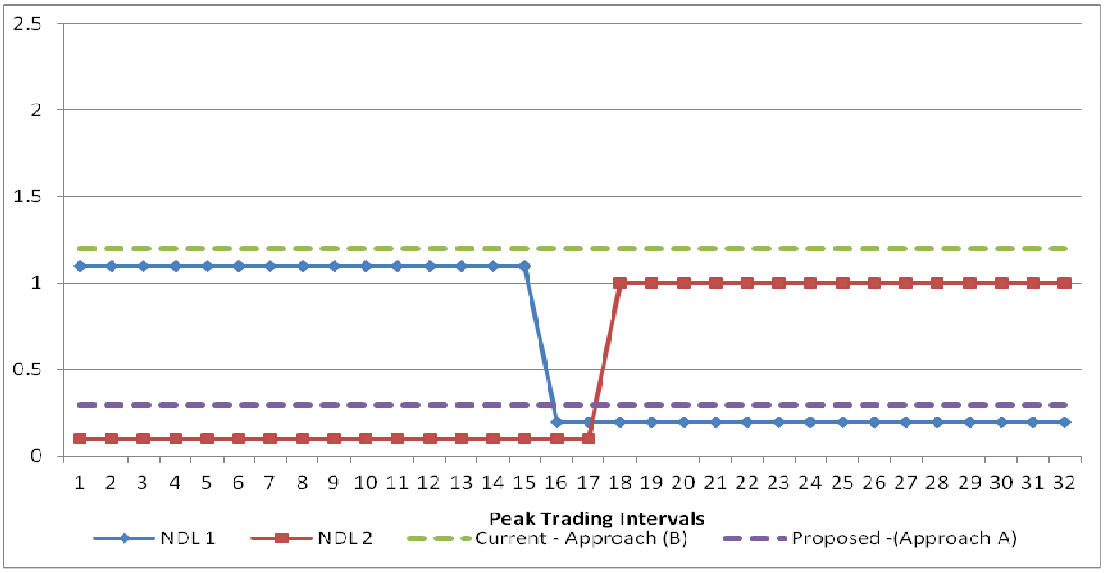
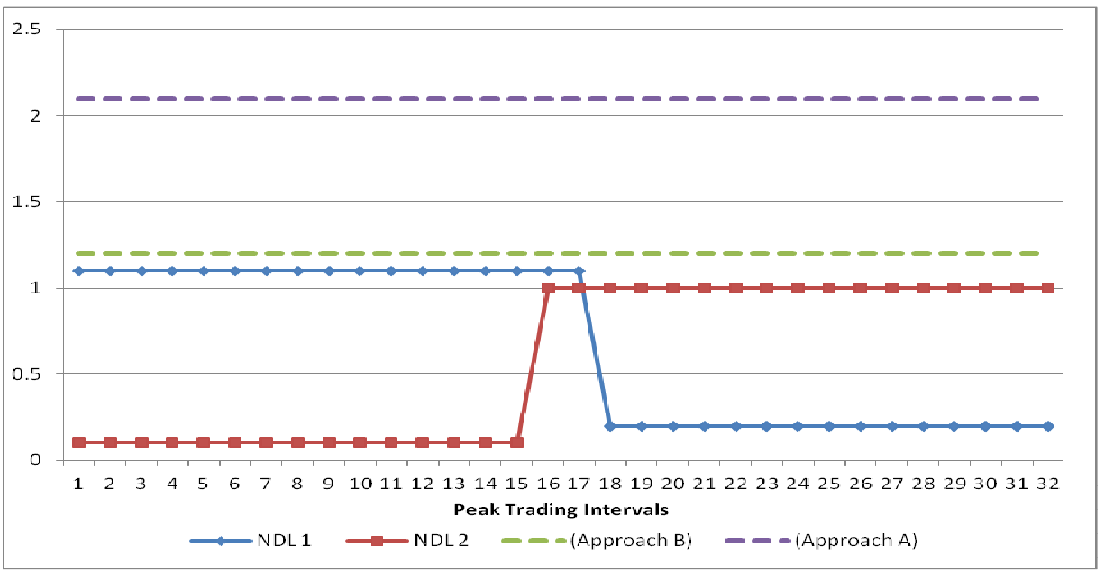


Figure 2: Comparison of Relevant Demand Approaches (A & B)



[6] Supporting data has been provided to the IMO as an addendum to this submission

Uncertainty, and Lack of Stability

As will be elaborated below, the portfolio RD calculated using Approach B is very sensitive to changes in the portfolio and can result in significant uncertainty for end-use customers. Practically, this means that the "value" of an end-use customer can be very different depending on what other loads are in the DSP.

Examining the example of Figure 1, if the DSP consisted only of NDL1, the portfolio RD would be 0.2MW. Adding NDL2 increases the portfolio RD to 1.2MW. It could then be considered that NDL2 contributed 1MW, however this is inaccurate and inequitable, as the result is derived simply because they were added after NDL1. Equally, if the DSP consisted only of NDL2, the portfolio RD would be 0.1MW. Adding NDL2 increases the portfolio RD to 1.2MW. It could then be considered that NDL1 contributed 1.1MW, which again is inaccurate and inequitable.

Summary - Figure 1

In First	RD (MW)	In Second	Portfolio RD Result (MW)	Marginal Value of Second Site (MW)
NDL1	0.2	NDL2	1.2	1
NDL2	0.1	NDL1	1.2	1.1

Conversely, in Figure 2, NDL1 alone gives an RD of 1.1MW. Adding NDL2 increases the portfolio RD to 1.2MW. Similarly, NDL2 alone gives an RD of 1MW and adding NDL1 increases the portfolio RD to 1.2MW. Subsequently, it could be considered that NDL2 is worth 0.2MW and NDL1 0.1MW, however, this again would be inaccurate and inequitable based upon the timing of their introduction to the DSP. Alternatively, the first associated load would need to be informed that their contribution is not as high as initially thought.

Summary - Figure 2

In First	RD (MW)	In Second	Portfolio RD Result (MW)	Marginal Value of Second Site (MW)
NDL1	1.1	NDL2	1.2	0.1
NDL2	1	NDL1	1.2	0.2

As DSPs introduce or remove loads from their program over time, the contribution of individual constituent loads to the DSPs RD requires significant recalculation with the result wholly dependent upon the order in which individual loads are introduced into the calculation.

Using Approach A, these problems do not occur: in the example of Figure 1, the portfolio RD is 0.3MW, and in the example of Figure 2 it is 2.1MW. Each NDL's contribution is easy to calculate, using data from that site alone, and *remains stable*.

Lack of Transparency

There is a problem with Approach B: since the result is sensitive to the correlation between the loads, you cannot calculate the contribution of any one NMI unless you have meter data for all the NMIs in the DSP.

This means that the IMO can calculate it, as can an aggregator, but an individual customer cannot.

It is important for an individual customer to be able to calculate their contribution to the portfolio RD, because it is this (less their minimum load) which determines the value they contribute to the DSP.

Under Approach A, this is a simple calculation that they can perform themselves; under Approach B, they have no way of doing this, and simply have to trust that an aggregator is dealing with them fairly: there is no transparency.

Furthermore, an aggregator is unable to calculate this figure using Approach B until they have identified, and obtained meter data for, all the other loads which will constitute the DSP. Until that point, the contribution of each load to the DSP is highly uncertain.

Key Concern with the Existing Approach

EnerNOC's key concern with the status quo is one of transparency. Poor transparency discourages engagement in DSM, as it would in any other part of the market. Without a clear relationship between the portfolio RD and an individual RD, a DSP's customers are in the dark – a DSP operator is unable to clearly and transparently inform their customers of their individual baselines – at best, they can give an estimate, but this will need to be revised continually as the portfolio is assembled.

Fundamentally, poor transparency impacts end-users – they have to *trust* a DSP about what the DSP says they contribute, and that number may change over time as the portfolio changes, for reasons that a DSP can't explain to them without breaching the privacy of other end users.

A lack of transparency makes the current approach highly complex – baselines should be simple enough for all stakeholders to understand, calculate, and implement, including end-use customers.

Moreover, the current approach risks incentivising behaviour that may be at odds with the Market Objectives. Ideally, when an aggregator assembles DSPs, they should be concerned principally with reliable performance. Approach B encourages aggregators to optimise their DSPs to bring about outcomes similar to Figure 2, while avoiding those similar to Figure 1. There's no advantage to the market from this optimisation effort, and decisions made to further it could hinder reliability.

EnerNOC contends that the approach adopted under the existing rules was not intended to result in a demonstrably volatile outcome for end-use customers that can directly impact the delivery of physical capacity to market and hence system reliability.

A 'Portfolio' Baseline

EnerNOC supports DAA's assertion that "the effect of aggregating data [is] secondary to the effect...caused by the different Relevant Demand Methodologies"[7] and notes that DAA did not question the validity of either approach.

If Approach B had some significant theoretical or practical advantage over Approach A, it might make sense to persist with it. However, this is not the case: having found no significant difference between the two approaches, Approach B was chosen on the basis that it might require less work. In practice the work required by the IMO for each approach is the same: they can be calculated by the same tool from the same data.

EnerNOC proposes that, so long as a static baseline methodology is to be used for assessing DSPs, Approach B should be replaced with Approach A, due to the practical and policy issues that have been raised in this submission. EnerNOC is of the firm belief that Approach A will better allow the Market Rules to achieve its objectives and will result in a transparent methodology that accurately accounts for changes to a DSP's structure and encourages engagement in DSM.

[7] DAA, Section 9, page 36

2. Explain the reason for the degree of urgency:

The current approach is a barrier to participation in the RCM and creates significant instability and uncertainty for existing and potential new customers

3. Provide any proposed specific changes to particular Rules: (for clarity, please use the current wording of the Rules and place a ~~strikethrough~~ where words are deleted and underline words added)

It is proposed that the following rule change be implemented:

4.26.2CA. The Relevant Demand of a Demand Side Programme for a Trading Day d in a Capacity Year is the sum of the medians ~~median of the historical consumption quantities determined by the IMO for each of the 32 Trading Intervals identified under clause 4.26.2C(a) for the Capacity Year. The historical consumption quantity for each Trading Interval is the sum, over all the Associated Loads associated with the Demand Side Programme during Trading Day d,~~ of the MW ~~quantity~~ quantities determined by the IMO for each Associated Load ~~and the Trading Interval~~ under clause 4.26.2C(b).

4. Describe how the proposed Market Rule change would allow the Market Rules to better address the Wholesale Market Objectives:

The proposed rule change would better address the market objectives in the following ways:

i. Market Objective (a): By reducing complexity, improving transparency, and establishing a clear relationship between individual load baselines and a DSP's Relevant Demand, the change will improve the reliability and efficiency in the provision of capacity services in the SWIS;

ii. Market Objective (c): Through removing disincentives for efficient DSM portfolio management, the change would help avoid discrimination against sustainable energy options and technologies that reduce overall greenhouse gas emissions. Further, it would avoid discouraging DSM participation by end-use customers by providing a clear and meaningful baseline to measure their contribution;

iii. Market Objective (e): By improving transparency and establishing a clear relationship between an individual load's baseline and a DSP's Relevant Demand, end-use customers will be encouraged to take measures that manage the amount of electricity consumed during periods of system stress.

5. Provide any identifiable costs and benefits of the change:

It is envisaged an overall reduction in costs will be experienced, through reduced complexity and requirements to mitigate "peak load losses", for both the IMO and DSP operators.

The simplification of the DSP Relevant Demand methodology and transparency involved in utilising the proposed rule change rather than that which exists at present will provide DSM program benefits for all customers / associated loads participating.

The change will encourage participation in the RCM and will lead to the efficient reduction in system peaks.