



Independent Market Operator

Issues Paper

**Title: Curtailable Loads in
the Market Rules**

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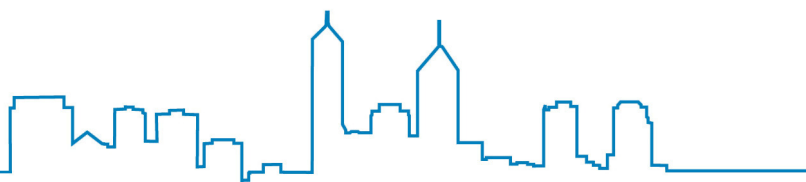
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1. INTRODUCTION AND BACKGROUND

Market Participants that are electricity retailers serve numerous domestic, commercial and industrial users (Loads). Some users are willing to curtail their energy usage at times of extreme peak demand under contract. Demand side management (DSM) providers aggregate such users to form Curtailable Loads (CLs) in order to receive payment for providing Reserve Capacity. Clause 2.30.3 of the Market Rules facilitates this practice.

DSM has provided a positive contribution to the Reserve Capacity Mechanism within the Wholesale Electricity Market and now provides approximately 5% of the total Reserve Capacity.

It is typical that users who are part of a Demand Side Programme (DSP) may interact with the energy market through one Market Participant (their electricity retailer) and with the capacity market through a different Market Participant (their DSM provider). However, one key issue highlighted in this paper is that the Market Rules do not currently allow for a Load to be registered to two Participants.

Following issues identified internally, the IMO has undertaken a review of the Market Rules relevant to Curtailable Loads, incorporating analysis from the earlier DSM Working Group and Rule Change RC_2008_20¹ (DSM- Operational Issues).

From the review, it would appear that operational practices surrounding DSM are inconsistent with the current framework under the rules. The issues that have been identified are listed in Section 2 of this paper; considerable time has been spent developing solutions to these issues.

2. ISSUES

2.1. *Registration of Curtailable Loads*

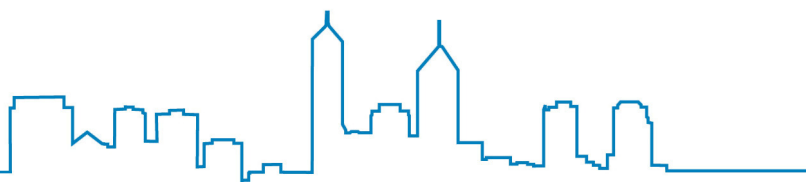
Currently the Market Rules assume that the Market Participant who receives Capacity Credits for a CL is also the retailer providing energy sales to the Load. It is not currently possible to register a Load for the purposes of capacity to any Market Participant other than that which supplies its energy. This is inconsistent with the construct (and historical practice) of having DSM aggregators provide services within the market.

Recommendation 1: The Market Rules be changed so that a Market Participant other than the Market Customer is able to contract for the Reserve Capacity associated with Curtailable Loads.

2.2. *Facility Definition*

Currently the Market Rules treat a DSP as a single (aggregated) Facility for some purposes, and as individual Facilities for other purposes. The rules imply that a DSM provider applies for

¹ See: www.imowa.com.au/RC_2008_20



certification of Reserve Capacity for the DSP as a whole, and that it is to be treated as a single CL (clause 4.8.3). However, clause 4.8.3(b) suggests that the Loads comprising a DSP must be registered individually as Curtailable Loads.

Dispatch Instructions may only be issued to Registered Facilities (clause 7.7.2(b)). Dispatch Instructions should only be issued to individual loads within a DSP and System Management would have to decide which Loads should be dispatched. For operational efficiency reasons, System Management would prefer to issue a Dispatch Instruction to the DSP provider, who would then decide how to deliver the requested curtailment.

Finally, the Market Rules imply that the DSM provider will seek Certified Reserve Capacity for the programme as a whole, but that the Reserve Capacity Obligations are transferred from the programme to its component Loads as they are registered (clause 4.8.3(c)). This means that it is not possible to have more curtailable capacity in a programme than the quantity of Certified Reserve Capacity assigned to the programme. However DSM providers (aggregators) aim to oversubscribe programmes to manage the risk of failing to deliver curtailment when required (i.e. providing some redundancy).

Recommendation 2: The Market Rules be changed to create a new class of facility, known as a DSM Programme.

Recommendation 3: The Market Rules be changed so that over-subscription of DSM Programmes is allowed.

2.3. Market Fees

The Market Rules require Market Fees to be paid on a proportionate level to the net amount of energy supplied or consumed by the Market Participant. This is as determined through the Market Participant's Metered Schedules. Under the current arrangement a DSM provider who contracts solely for capacity is not required to pay any Market Fees. Several options are available.

1. DSM providers could pay no Market Fees, requiring no change to the Market Rules.
2. DSM providers could pay Market Fees based on the quantity of energy dispatched for curtailment, which is consistent with the Market Fee calculation for other Market Participants.
3. DSM providers could pay an annual Market Fee based on the number of Capacity Credits. This introduces additional complexity to the current Market Fee structure.
4. The entire Market Fee structure could be replaced with an arrangement based on both capacity and energy. This could introduce additional complexity to the current Market Fee structure.

In principle, the IMO agrees that all Market Participants should pay Market Fees to contribute to the operating costs of the market. An energy-based model (as suggested in option 2 above) would seem reasonable as it emulates the Market Fees paid by a peaking generator (which would only be expected to generate energy on a limited number of trading periods per year during peak times). It is noted that the total revenue from such a Market Fee structure is expected to be small. For example, if 250 MW of DSM was available in the market, and was



dispatched for 24 hours in a year the total fees to the market would be less than \$2,600 per year at the current Market Fee rate (\$0.431/MWh).

Recommendation 4: The Market Rules be changed so that DSM providers pay Market Fees based on the quantity of energy dispatched for curtailment each year.

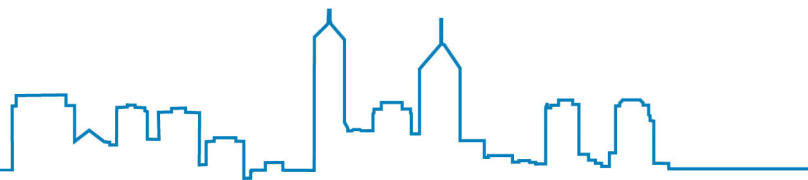
2.4. Measurement of CL Performance

Rule Change RC_2008_20 (DSM- Operational Issues) introduced a new concept for measuring the curtailability of CLs. This is known as the Relevant Demand (RD) level. The RD level determines the median value that a Load consumes during 32 Trading Intervals of highest demand during the preceding Hot Season, reflecting a normal operating level during the intervals when the DSP is most likely to be dispatched.

As the RD level is based on a small number of Trading Intervals there is a potential for gaming. It is also possible that the aggregated DSP will 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. This could impact system reliability by overestimating the amount of available capacity. System Management may then allow more outages than should be permitted to maintain reliability standards. Some alternative measurement options for DSPs are listed below in order of increasing desirability.

1. The curtailment of a DSP could be calculated based on the consumption of the Loads immediately before the Dispatch Instruction to curtail, and compared to the consumption of the Loads during the duration of the Dispatch Instruction. This could be problematic as the normal consumption may vary across a day, while a Dispatch Instruction may be received at a time of the day in which consumption is typically lower.
2. The RD level could be calculated based on the consumption of the DSP as a whole using the current method. If a component Load is under maintenance, the DSM provider would apply for a planned or forced outage. In the event that the available curtailment in the DSP dropped below the Reserve Capacity Obligation Quantity (RCOQ), the DSM provider would pay refunds associated with the reduction in curtailability. This will ensure that the market is not relying on capacity that is not actually available during the maintenance period. This also accounts for the fact that outage of one or more Loads may not actually reduce the curtailability of the DSP if it is oversubscribed.
3. The RD level could be calculated based on the consumption of the DSP during the peak demand times over the Hot Season. This would reduce the volatility in the measure and the potential for IRCR (Individual Reserve Capacity Requirement) gaming. If the outage of one of more Loads within the DSP would reduce the ability to curtail below their RCOQ, the DSM provider can apply for a Planned Outage or Forced Outage.

Recommendation 5: The IMO undertake analysis to compare the options above, with a view to basing the RD calculation on the consumption of the whole DSM programme during the peak demand times over the Hot Season.



2.5. Capacity Cost Refunds

Rule Change RC_2008_20 (DSM- Operational Issues) implemented a methodology for calculating Capacity Cost Refunds for Curtailable Loads. This methodology requires a DSM provider to pay refunds only if it fails to deliver curtailment when dispatched.

An unintended consequence of this is that a DSM provider is not required to pay refunds, even if they fail to procure any CLs into the programme, until such time as they fail to meet a Dispatch Instruction or fail a Reserve Capacity test. The IMO considers that this is a manifest error as a DSM provider will continue to receive payment for the capacity even if it is unavailable to the market.

Recommendation 6: The Market Rules be changed so that a DSP consisting of one or more CLs, is liable to pay refunds if at any time the program is not filled completely. This includes times where this is the result of a component facility being on Forced Outage.

2.6. Reserve Capacity Security

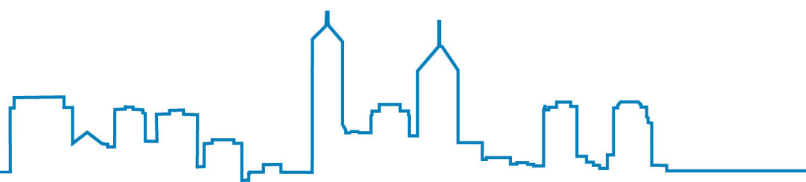
In regard to returning Reserve Capacity Security the arrangements for DSM (and intermittent generators) do not currently work. The rules are currently unclear and inconsistent. For example a program that contracted 90% of the certified curtailment capacity will not have its Reserve Capacity Security at all, whereas a scheduled generation facility would have the security released at the end of the Reserve Capacity Year. This would not be equitable.

Clarity around the return of security will be achieved by allowing DSM providers to aggregate their Loads as a single DSP. This will ensure consistency with the rules governing the return of security for generators. For more information on this, please refer to the Reserve Capacity Security paper, also on today's meeting agenda.

The IMO would propose to develop a principle which is consistent with that applied to generation facilities so that DSM providers can then have their security returned immediately if they operate at 100% of their RCOQ in at least one Trading Interval, or at the end of the Capacity Year if they operate at 90% of their RCOQ during the Capacity Year. Otherwise the Reserve Capacity Security would be forfeited in the same way as would be applied to a generation facility. There may be small differences in the way tests are conducted to prove the capability of DSM in this regard.

Recommendation 7: A DSM Programme be considered as a single Facility for the purpose of evaluating a request for return of Reserve Capacity Security.

Recommendation 8: The Market Rules be amended to ensure that equivalent treatment of all facilities with regard to the return of Reserve Capacity Security is achieved.



2.7. **Stipulated Default Loads**

Stipulated Default Loads are a type of Curtailable Load which must drop consumption to a defined level, as opposed to a typical Curtailable Load which must drop consumption from a defined level.

There is no clear way of determining the demand level of an Stipulated Default Loads from which to assign Certified Reserve Capacity. The concept of using an RD provides clarity and the IMO considers it would be preferable to use normal CLs and the RD provisions.

There are only two Stipulated Default Loads in the market representing approximately 32 MW of capacity.

Recommendation 9: The Market Rules be changed to remove Stipulated Default Loads.

3. **RECOMMENDATIONS**

The IMO recommends that the Market Advisory Committee:

1. **Note** the issues listed above in relation to the treatment of Curtailable Loads;
2. **Discuss** the issues raised and the proposed recommendations; and
3. **Note** that if agreement is reached as to the way forward the IMO will undertake the required analysis and propose amendments to the Market Rules.