



Demand Response Aggregators of Ireland

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Commission for Energy Regulation
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5th October 2016

Dear Karen and Thomas,

Re: I-SEM Capacity Requirement and De-rating Factor Methodology (Detailed Design) Consultation Paper (SEM-16-051)

The Demand Response Aggregators of Ireland (“DRAI”) is an association of eleven Demand Side Unit (DSU) and Aggregated Generating Unit (AGU) providers in the SEM. Our purpose is to provide a single voice on policy and regulatory matters of common interest and we very much look forward to working with you into the future. I hope that you will consider this response in your deliberations, as we believe there is a significant role for DSUs and demand-side participation in any future market arrangements in Ireland.

WHY DR/DSU ARE IMPORTANT?

DR/DSUs are capable of responding to signals from the system operator within an hour and therefore provide an effective means of reducing the demand requirement, which can assist in balancing the system and avoiding constraints. Facilitation of DR/DSUs increases demand flexibility and improves overall system stability by:

- providing reliable distributed capacity to the system;
- contributing to avoided investment in peaking plant by delivering peak load reduction;
- providing flexibility to mitigate the uncertainty of wind output; and
- helping mitigate transmission and distribution network constraints.¹

Effective integration of DR/DSUs into the market structure will provide flexible, cost-effective capacity and in doing so complement thermal plant and renewables capacity. In addition, the participation of DR/DSUs can reduce the market power of conventional generators in the wholesale market, leading to more competitive outcomes.

¹ Single Electricity Market (SEM) (2011), Demand side Vision for 2020 Decision Paper, SEM/11/022.



In the past, inefficient diesel plant could run for hours in anticipation of high retail price signals or system demand (Peak lopping in NI, WPDRS in ROI), even though such system demand did not always materialise. The SEM has been successful in positioning AGUs and DSUs correctly in the merit order, ensuring this capacity is available to the system operator to dispatch when needed, and thereby avoiding the need to run the inefficient diesel plant unnecessarily. This is a substantial improvement, both economically and environmentally. The DRAI would therefore fully support the carryover of this aspect of the SEM model into the I-SEM, as the alternative would result in reverting to expensive load curtailment and would also see the unnecessary operation of diesel generation capacity.

FACILITATION OF DR/DSU IN THE I-SEM

Fundamentally, the DRAI expects that DR/DSUs/demand-side capacity will become increasingly important in the design of the Irish electricity system and believes that the regulators need to give further consideration to how DR/DSUs² can be facilitated when developing the new I-SEM market arrangements.

Across Europe, DR/DSUs are increasingly recognised as an effective and highly efficient means of balancing the supply of electricity with consumer demand, and within the I-SEM the requirement to balance an increasing proportion of variable wind generation is expected to be an increasing challenge. In Ireland the delivery of the 2020 and 2030 renewable energy targets is projected to result in one of the highest penetrations of variable non-synchronous generation on any power system in the world and is expected to create very challenging future operational scenarios for the grid system operators³. It is therefore paramount that this advanced and progressive electricity system is supported by appropriate market arrangements within the I-SEM to encourage the growth of demand-side participation and other system balancing measures.

Whilst the DRAI recognises that flexible dispatchable generation (peaking plants/OCGT) is effective at providing real-time balancing of renewable generation variability in the today's electricity system design, however, we also expect that DR/DSUs will have an increasing role in delivering system balance in the future -- to continue to rely on conventional plant with ever lower utilisation factors would be unaffordable. The DRAI therefore believes that the regulators need to be mindful of this growing potential in order to ensure that the I-SEM market arrangements provide adequate support for DR/DSU participation into the future.

In this consultation response, we begin by providing some general comments on the approach taken in the design of the Capacity Remuneration Mechanism (CRM) to date, including specific reference to CRM consultations 1 -- 3. The DRAI view is then expressed in relation to a number of the proposals contained within the I-SEM CRM (SEM-16-051) that directly affect DR/DSUs and we also include suggestions as to how the CRM can be designed to work to effectively integrate DR/DSUs.

GENERAL COMMENT – I-SEM CRM CONSULTATIONS 1-3

The DRAI is supportive of the rationale behind de-rating and we recognise that historic forced outage rates for relevant technologies can be effectively applied to conventional generators. However, the DRAI also argue that since the performance of specific DR/DSUs is a result of the defined programme rules there can be no intrinsic forced outage rate for DR/DSUs. The following explanation provides the rationale behind this view point:

When a DSU aggregator registers a site to their DSU, they register it for the maximum capacity it can provide, and this is the value that goes onto the "Op Cert" or SEM registered capacity. The percentage of this registered capacity that will then be available to the SEM will vary on an hourly basis, depending on the energy being consumed or the general available capacity of the customer. In addition, there is considerable variation in the availability of DSUs, some can be generally available for >90% of their Ops Cert capacity, while

² The term 'DSU' has been used throughout this letter. It should be understood to refer to both DSUs and AGUs as appropriate. The term 'DR' refers to Demand Response as provided by DSUs and AGUs

³ EIRGRID GROUP ANNUAL RENEWABLE REPORT 2013 Towards a Smart, Sustainable Energy Future

others may only be available for 50%. Therefore, within the SEM the use of “Nameplate”, “Ops cert” or registered capacity cannot be considered as a proxy for scheduled or forced outages for most DSU portfolios. In essence, the important point is that the availability of a DSU is in no way related to the actual reliability of the unit.

The portfolio nature of DSUs and the significant variability of the components within these portfolios, mean that in order to ensure reliability of response, DRAI aggregators need to analyse their portfolio to calculate the requirement necessary to meet the stated capacity obligation. In doing so they effectively impose their own de-rating as they never offer the full “nameplate” capacity of their portfolio, it is therefore not necessary to apply a further de-rating. The DRAI would in fact argue that should the Regulator apply the de-rating factors set out in the consultation paper, this would effectively result in a second de-rating of the DR/DSUs and therefore a double de-rating. We believe that this double de-rating would result in unfair treatment of DR/DSU technologies in the market, and would consequently constrain the development of Demand Side Response within the I-SEM.

To provide a simple example, a DSU aggregator with a commitment of 10MW may recruit a single resource which always has a load of greater than 10MW that can be curtailed at any time. In this case the unit could be considered to have a “nameplate” of 10MW, and can provide 100% when required. Alternatively, another DSU aggregator with the same commitment could recruit thirty 1MW resources, each of which will be available for some of the time. In the second case the portfolio has an aggregate availability of 10MW every hour (same as the first example), but the “nameplate” of the unit would be 30MW and the percentage provision would be 33%. In both cases the aggregators are reliably meeting their commitment and doing so in an equally valid way, however, the important difference is the value of their “nameplate” capacity.

The DRAI also have the following specific comments in relation to the content of the SEM-16-051 consultation paper.

LINKING DSU AND AGU

We do not agree with the premise that AGUs and DSUs should be treated the same way. We would firstly like to reference, Para 1.3.3 of the Consultation Paper SEM-16-051 dated 23rd Aug 2016, which refers to a number of SEM Committee decisions included in the CRM Decision 1 paper. In particular, the decision which states that, “*Central de-rating factors will be technology-specific*”.

In addition, we would like to highlight that in the market today there are two types of technology aggregator:

- Demand Side Units (DSUs) generally operate **Load-Dependent** strategies, without using export potential, therefore Energy Payments are not available to this form of aggregator. In some cases embedded generation is incorporated into the unit, however, the underlying concept is essentially **Load-Shifting**.
- Aggregated Generator Units (AGUs) operate quite differently, even though there are many similarities with the underlying technology. This is because the capacity of an AGU is defined and bounded by approved Maximum Export Capacities (MECs) at individual sites. For this reason the capacity of an AGU is by definition is **Load-Independent**.

AGUs and DSUs require site by site capacity tests where the aggregator requests the addition of new capacity. Both types of aggregator however operate voluntary de-rating to ensure their availability when called, and this is regularly validated by the TSO when the tests are performed. Under the I-SEM, penalties during a scarcity event will be greatly increased, which will have commercial implications for DRAI members and will encourage them to apply more stringent de-rating requirements.

PROPOSED SOLUTION

The DRAI consider that each of the following points are important considerations and argue that they should be included in the De-Rating methodology adopted by the Regulatory Authorities:

1. **Self De-rating** -- In today's market, aggregators commit to providing capacity based on the size of their portfolio, and it is the aggregator who is responsible for managing the reliable performance of DSUs to deliver on this commitment. The DRAI considers that this self-derating approach for DSU, which is backed up by verification testing by TSOs is the most practical solution for the technologies. This approach facilitates a potentially wide array of DSU availability outcomes, and this is necessary as the capacity for a DSU site can vary greatly by time of day, day of the week, and season of the year. Under the I-SEM DSUs will also be adequately incentivised, through penalty pricing and TSO testing, to avoid bidding inappropriate capacity into the CRM. The DRAI therefore consider that the case is well made for self-de-rating of DSUs, and through doing so holding the DSU aggregator responsible for ensuring that the sum of these resources add up to the commitment at all times of the year. We would also support the introduction of appropriate market mechanisms to penalise capacity providers that fail to deliver on their commitment. We would also strongly oppose the adoption of a top-down formulaic approach, which would unduly penalise high-availability sites and not adequately assess the contribution of other more variable locations.
2. **AGUs (Load Independent)** -- The DRAI would also like to highlight the fact that the capacity of a Load-Independent aggregator (mainly offered by AGUs) has a significantly higher rating than Load-Dependent capacity, and for this reason we believe that AGUs should be treated as a different technology to DSUs. The capacity offered by an AGU has many of the characteristics of traditional generation, however, we would argue that the capacity is more reliable as it is distributed over a number of sites each with MEC cover, and therefore has inherently lower risk. In GB, the National Grid's Capacity Market Auction Guidelines of June 2015, p6 included a de-rating factor for reciprocating engines (such as diesel generators) at 94.54% alongside OCGT – see: https://www.emrdeliverybody.com/Capacity%20Markets%20Document%20Library/Auction%20Guidelines%20June%2029%202015_TA.pdf. TSOs in Ireland can confirm that the results of AGU testing indicate high rates of compliance in excess of 90%, consistent with the GB data.
3. **DR (Distributed generation)** -- We note that the outage risk associated with large 'lumpy' generation has been reflected in the de-rating factors, which increase with scale and the DRAI members are largely supportive of this approach. However, we do not consider that this approach can be logically extended to AGU and DSU aggregators as the lumpiness issue is not relevant. This is because the aggregate total is the sum of a number of independent AGU and DSU units, each with a separate distributed (relatively small) embedded capacity. The DRAI would therefore argue that it is not necessary to apply a scale adjustment to either AGU or DSU de-rating factors.

ADDITIONAL COMMENTS RELATING TO THE CRM LOCATIONAL ISSUES CONSULTATION PAPER SEM-16-052:

Unfortunately, the DRAI did not have opportunity to appraise and respond to the CRM3 locational paper (SEM-16-052) within the requested timeframe. We would however like to take this opportunity to highlight a number of concerns we have in relation to the locational issues discussed in the paper:

North-South Interconnector –

1. **Additional cost** – the Electricity Market may suffer excess costs via Constraint or other charges due to failure to upgrade internal interconnection, which will ultimately borne by the customer;
2. **Crowding Out** – reducing the residual capacity available to other providers may perversely restrict or eliminate competition. The DRAI would like to draw attention to the fact that Demand Response is mandated requirement under Article 15 of the EU Energy Efficiency Directive, is supported by the SEM Committee policies, and is particularly sensitive to the CRM arrangements. We are therefore

interested to know which measures are proposed to encourage diversity and promote market flexibility and long-term efficiency.

3. **Contingency Planning** – in the case where the North-South Interconnector is delayed beyond the short term and/or issues such as Brexit result in policy changes, additional capacity within Northern Ireland may be the only practical alternative. Maintenance of alternative energy providers and support for distributed generation therefore seems sensible.

On behalf of the DRAI I hope that you find our comments helpful and constructive and I look forward to hearing from you in due course. I would also welcome the opportunity to discuss matters relating to the I-SEM CRM and how they could potentially assist the development of the DR/DSU market within the context of the All Island electricity market.

Yours sincerely,



PATRICK LIDDY
DRAI Chairman