

Enel X response to CMC_16_25 consultation



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Thank you for the opportunity to comment on the DRAI's proposed modification CMC_16_25, as part of the consultation on Capacity Market Code Modifications Workshop 45.

We strongly support this proposal. This response in three parts:

- First, it sets out some important context that seems to have been overlooked in the discussion around this modification so far, which makes this modification both vital and urgent.
- Second, it addresses the comments and questions raised by the RAs in the consultation paper.
- Third, it provides some suggestions on suitable availability metrics.

1 Important context: Energy payments for DSUs

An important bit of context is missing from both the consultation paper and the previous discussion on DRFs in SEM-25-040.¹

As noted by the RAs and the TSOs, average availability of DSUs is currently poor. However, this has nothing to do with any intrinsic property of DSUs. It is because of a flaw in the implementation of the I-SEM: DSUs are not being paid for the energy they deliver when dispatched, except on the rare occasions that the capacity market strike price is exceeded.

1.1 *Why the lack of energy payments incentivises low availability*

Not being paid for the energy they deliver means that the customers in the DSU lose money almost every time they are dispatched. They incur substantial costs in delivering their response, but are not usually paid for them.

Every hour that they make themselves available is simply another opportunity for them to be forced to lose money. They can only reduce this risk by making themselves unavailable.

A rational outcome would be for customers with capacity market obligations only to be available when they think there is a material risk of the strike price being exceeded. For them, there's no upside to being available at any other time.

¹ Capacity Remuneration Mechanism CY2029/30 T-4 Capacity Auction Parameters Decision Paper, 1 August 2025, available [here](#).

Given this context, it's remarkable — and a testament to the hard work of aggregators — that DSU availability is as good as it is.

1.2 *Moving to individual DRFs for DSUs avoids prolonging the harm*

This is why the DRAI's modification proposal is both important and urgent.

The implementation flaw around energy payments has to be fixed soon: European rules require it, and the longer it is delayed, the worse the consequences.

Without this modification, the DRFs in auctions for delivery years after the introduction of energy payments will continue to be based on measurements of availability from historical periods in which DSUs were being actively incentivised to minimise their availability.

By itself, using inaccurate DRFs in this way would clearly be unjustifiable, as it is unfair to participants. But it would also have further consequences: it would prolong the harm caused by the historical failure to implement energy payments.

This is because the artificially low DRFs due to the historical lack of energy payments have a strong effect on bidding behaviour and auction outcomes.

We do not know exactly how DRFs are being calculated, as the TSOs' methodologies are not publicly documented.² However, comparing the DRFs for DSUs with those for battery storage of the same duration should indicate the effect of availability on DSU DRFs.³ Across the most recent four auctions, the DRF for storage was 40% higher than that for DSUs.⁴

The effect of this additional de-rating is that, to pay the same amount to customers per MW of flexibility, the DSU needs 40% higher revenue from the capacity market.

Since capacity market auctions are pay-as-clear, the optimal strategy⁵ is to offer capacity at the lowest price you can accept. If the auction clears at a higher price, you'll be awarded a capacity agreement at that higher price. If it clears at a lower price, you won't be awarded a capacity agreement, but you are indifferent about this, because at any lower price your participation would have been unprofitable.

Most of a DSU's capacity revenue is passed straight through to the participating customers. It is the minimum payment that is acceptable to those customers that determines the minimum capacity price a DSU can offer in an auction. So the additional de-rating due to poor availability causes the minimum offer price to rise by 40%.

It might have been possible to argue that this additional de-rating was necessary when DSUs' availability was poor because of the lack of energy payments,⁶ but this argument

² This should be fixed, to allow errors to be spotted, but this is out of scope for this consultation.

³ This analysis cannot determine the DRF that would apply if the DSU were perfectly available, just what would apply if DSUs had the same availability as assumed for battery storage units. The starting point for the de-rating table proposed in the modification should be 100% availability.

⁴ This figure was calculated for a 10-20 MW unit with a 2 hour duration, from the IAIPs for the 27-28 T-4, 24-25 T-1, 28-29 T-4, and 25-26 T-1 auctions.

⁵ Except for participants with significant market power — not relevant here.

⁶ We would, however, question this, as we suspect that inappropriate availability metrics may have been used — e.g. including DSUs that don't have any capacity obligation, or failing to weight by time of day.

cannot be sustained when considering future delivery years for which energy payments will have been implemented: the harm would be caused needlessly.

Inflating DSU offer prices in this way undermines DSUs' ability to exert downward pressure on capacity market clearing prices. It also reduces the level of demand-side participation, because some DSUs that otherwise would have cleared are forced to offer at too high a price. Both of these effects are undesirable from a public policy perspective.

1.3 Evidence of the harm caused by excessive de-rating

Although offer prices are usually secret, due to a quirk of the auction clearing mechanism, there is some public data available showing the inflated prices that DSUs have been forced to offer.

Although the auction is mostly pay-as-clear, where accepting the marginal resource would lead to the capacity requirement being exceeded, the auction clearing mechanism will look further up the offer curve and will instead accept more expensive (but smaller) resources, on a pay-as-bid basis, if this leads to the capacity requirement being met at lower total cost. It is unpredictable whether, and to what extent, this will happen, as it depends on the detail of the shape of the overall offer curve. It's not something that any capacity provider could count on using.

Looking at the last 4 auctions, 75% of the DSU capacity that cleared offered at prices above the clearing price. The average price received by this DSU capacity (on a pay-as-bid basis) was 43% above the clearing price in those auctions.⁷

This capacity only cleared due to this quirk of the clearing mechanism. It means that the capacity providers would not have been willing to provide the capacity if they were only being paid the clearing price, despite the clearing prices being unusually high in recent auctions.

1.4 Why action is urgent

The analysis above shows that, in each of these recent auctions, there was every chance of most of the DSU capacity not clearing, leading to much lower demand-side participation: it's only through luck that this volume did clear.⁸

This lucky outcome may have led to policymakers not recognising the seriousness of the issue, as it has delayed a collapse in DSU participation by a few years. If the levels of participation had already collapsed, we would all be having urgent discussions about how to fix it. What the data shows is that this collapse is overdue. It could well happen in the next auction.

Applying erroneously low de-rating factors to DSUs in auctions for delivery years after the energy payments issue will have been resolved would, as well as being unjustifiable,

⁷ Source: Enel X analysis of Appendix B of the Final Auction Results for the 27-28 T-4, 24-25 T-1, 28-29 T-4, and 25-26 T-1 auctions.

⁸ We are using "luck" as shorthand for "the unpredictable effects on the behaviour of the auction clearing algorithm of fine details of the shape of the supply curve".

also give more opportunities for this luck to run out and demand-side participation to collapse.

1.5 Alternatives to CMC_16_25

CMC_16_25 is not the only way to address the issue of excessive de-rating distorting auction outcomes for delivery years after the energy payments issue will have been resolved.

An alternative would be to retain the technology class approach, but discard the irrelevant historic availability data.⁹

However, this presents a problem: what level of availability should the TSOs assume, before they have had the opportunity to collect any relevant data? It's reasonable to expect the level of availability to be very different once you stop actively incentivising unavailability, but coming up with a specific number for all DSUs would be pure guesswork.

It's this difficulty – the lack of data – that makes the DRAI's proposal particularly appealing: there's no need to make any centralised assumptions. Instead, the problem is devolved to the DSUs themselves, who have to make their own assessments, and are held accountable for them via the GPI.

2 Responses to RAs' questions and comments in the consultation paper

2.1 Changes to the DRM methodology would require significant policy analysis and development (presumably meaning that they would take years)

We agree that a full rethinking of the approach to de-rating could be a lengthy exercise. However, this is not necessary before implementing CMC_16_25, as this is not a radically new approach, but merely a minor modification to the current approach.

2.2 How would reconfigurations of the individual sites in a DSU interact with the GPI?

The GPI should apply to the DSU as a whole, as it is configured during the delivery year.

Aggregators should be encouraged to manage their portfolio actively to maintain reliable performance. If a particular site starts having poor availability – e.g. due to changes in the customer's consumption patterns, or replacement of equipment – then the aggregator should seek to repair the DSU's performance by replacing this defective part, just as the operator of a generator would address reliability problems through maintenance.

2.3 What is the rationale for applying this proposal only to DSUs, not to other technology classes?

This approach could be applied to all types of units. However:

⁹ Doing this would prevent future auctions being distorted by historic availability data, but wouldn't address the other problems with class-based de-rating – e.g. the lack of incentive to improve availability – discussed in the modification proposal. In our view, the reasons set out by the DRAI are alone enough to justify implementing the modification. The additional issue we are addressing just makes it particularly urgent.

1. It is for DSUs that technology class de-rating makes the least sense. This is because DSUs do not have an intrinsic technical level of reliability or availability. Instead, their performance depends on the mix of customers within them and the incentives given to them. Portfolios can be constructed to deliver any desired level of availability, but it affects the cost.
2. It is DSUs that are the most responsive to financial incentives, as their technical availability depends on their customers' commercial decisions. The lack of financial incentives for higher availability therefore has a stronger effect on DSUs than on other types of units.
3. As set out in the first section of this submission, there has been a particular problem with availability of DSUs due to the lack of energy payments. This problem should be resolved soon. Unless something is done to break the link between future de-rating factors and historical availability statistics, the outcomes of future auctions will be needlessly distorted, possibly leading to a collapse in demand-side participation. So it is urgent that this change is made for DSUs, but the same urgency may not apply to other types of units.
4. Providers of other types of capacity may not be willing to guarantee particular levels of availability. It is potentially onerous, as it transfers considerable risk to the capacity provider. Other types of capacity provider may consider the inaccuracies due to class-based de-rating to be less problematic for them than this solution.

3 Suitable availability metrics

The modification proposal mentions an "availability metric", which is a measure of the extent to which the DSU makes the necessary capacity available when needed. To be a useful metric, a value of 1 should correspond to always having all the necessary MW available, and a value of 0 to never having anything available. But there are various ways the metric could be constructed, and some are much better than others.

SEM-18-030a¹⁰ explains that the marginal de-rating factor should represent "the MW change in surplus (above the adequacy standard) due to the addition of the unit, divided by the MW capacity of the unit". So, if the DRF is to incorporate an availability metric, this should also be on the basis of its marginal effect on system adequacy.

Unweighted, average availability across every interval would therefore be a bad metric. This would only make sense if 1 MW of DSU capacity being unavailable at 3am on a Sunday had the same impact on system adequacy as 1 MW of DSU capacity being unavailable at 6pm during a winter weekday peak. Clearly this is not the case.

If a unit were available 85% of the time, but never at all during weekday evening peaks, it wouldn't make sense to say it loses only 15% of its contribution towards resource adequacy compared to a perfectly available unit.

¹⁰ I-SEM Capacity Market: Methodology for the Calculation of the Capacity Requirement and De-rating Factors, June 2018, available [here](#). This quote is from p.5.

A better metric would be one that is weighted towards periods where the unit is likely to be dispatched. A unit not being available at a time when it was not going to be used anyway has no detrimental impact on the system.

Considering all 101 dispatches of our main DSU, AE1, since 2017:

- 98% have been on Mon–Fri.
- None have started before 7am nor continued after 10pm.
- 77% have started between 5pm and 8pm.

This is a long way from being evenly spread across all 8,760 hours of the year.

A potentially very good weighting factor would be the Loss of Load Probability (LOLP) that used to be calculated for each interval as a factor in SEM Capacity Payments: it is high at times that resources are likely to be needed, and low at other times.

Alternatively, the Capacity Quantity Scaling Factor (FSQC) could also be the basis for a reasonable weighting. It may not be a strong enough weighting in its raw form, though, as it does not fall much below 0.4 in any interval, whereas the probability of dispatch is much more variable. It might therefore be better to raise FSQC values to a power so as to give a weighting that more closely reflects the likelihood of the TSO needing to dispatch a DSU. This would then penalise unavailability in peak times more strongly.

We suggest that, as part of the implementation of CMC_16_25, there should be a brief consultation on what weighting methodology to use for the availability metric, so that a workable approach can be chosen. Participants need to understand the behaviour of the metric before they can decide the level they will commit themselves to achieving.