Dynamic Moderation (DM) & Dynamic Regulation (DR)

Workshop FAQs

What is the definition of duration for energy limited assets?

The Delivery Duration is: the minimum number of minutes to continuously deliver the service at maximum contract quantity. This is translated into a MWh figure called the Response Energy Volume (REV).

The REV for Dynamic Containment (DC) is calculated by multiplying the Delivery Duration by the Contracted Quantity. Thus, a 50MW contract has a REV of 12.5MWh (50MW x 15mins).

This REV would be delivered if system frequency sustained at:

- 49.5Hz for 15 minutes (i.e. 100% of contract quantity is delivered)

- 49.6Hz for 22.5 minutes (i.e. ~67% of contract quantity is delivered)

- 49.7 for 45 minutes (i.e. ~33% of contract quantity is delivered)

- At any point between 49.8Hz and 49.5Hz, we can use linear interpolation to determine how much (MW) response should be delivered and from that determine how many minutes it would take to reach the full REV.

The Delivery Duration allows a provider to determine the maximum energy that it must be capable of delivering before it may need to make itself unavailable to manage its State of Energy (SoE). The SoE section in the DC Participation Guidance Document explains how this obligation works in practice. For example, starting the contract period with at least the minimum REV (or capability to absorb the REV).

It is worth emphasising that the Delivery Duration is not the minimum number of minutes that a provider must continually deliver the service. DC, DM and DR are continuous services. Electricity System Operator (ESO) is paying a provider for continuous capability to deliver the service of the contract period.

Existing procurement of DC is on a 24-hour basis; providers must maintain availability for the entire contract duration. If there is an exceptional frequency event, for example 49.5Hz continuously for >15 minutes, then providers would not be penalised for a period of unavailability to recover stored energy (again, see the SoE section in the DC Participation Guidance Document for more information).

From an ESO perspective, 15 minutes is enough to insure the system against all but the very rarest possible frequency deviations for Dynamic Containment. We need to complete the same analysis to determine suitable Delivery Durations for DM and DR.

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In the case of symmetrical delivery of these services then it is the net energy delivery that counts as the REV. For example, a period of 5 minutes at 49.5Hz that was followed by 5 minutes at 50.5Hz would deliver a net energy change of 0MWh.

The principles above, Delivery Duration, Response Energy Volume, Contract Quantity will have the same meanings across DC, DM and DR but may have different values such as the length of duration.

Can we fully participate with 1-hour battery – is this the shortest duration a battery could join?

We do not specify the minimum (or maximum) duration of an asset that can participate. What matters is the asset ability to meet the Response Energy Duration requirement (see above). In theory, a 1-hour battery could deliver its full capacity as a contracted service for 1 hour, but it could also do half of its capacity for 2 hours.

Can you provide an example of bundling procurement?

You provide capability to do high and low frequency response at the same time and either increase active power (in the case of low frequency), decrease active power (in the case of high frequency) or do nothing when frequency is at 50Hz or in the deadband (+/- 0.015Hz either side).