Scenario - MDVO/B & SoC without DFR [1] **Non-Time Varying**



- [1] Example 50MW, 50MWh storage facility, with warranted limits on operation at the SoC extremes, & 88% round trip efficiency. Assumed power curve to be linear across full SoC range.
- Determination of
- useable/tradeable energy from SoC alone, therefore requires assumptions to be made on all of the above.
- Time now: 16:00
- [2] SCADA reporting 93% full
 - MDVO: 41.8MWh
 - MDVB: -1.08MWh
- Planned 50MW export at 18:00
- [3] Receive 50MW 30min offerside acceptance (16:00-16:30)
- Modelled SoC at 16:30: 40%
- MDVO unchanged until it is redeclared post instruction
- [4] MEL here based on 30min rule. Only indication that there is a future SoC violation

and the second

Scenario - MDVO/B & SoC without DFR [2] Time Varying



Scenario - as per [1]

- [1] Receipt of 50MW 30min offerside acceptance (15:30-16:00) updates future MDVO/B values
- In the absence of any further instructions MDVO/B stays static until next scheduled action (50MW export at 18:00) & shows to NGESO there is a future SoC violation
- Implies export PN will need to be adjusted down [or benefit from bidside acceptance in the BM)
- Needs acceptance that only the most recent MDVO/B value is seen to be firm (and representative of the storage facility's actual usable export/import capacity) and any subsequent value indicative
- As otherwise at Gate Closure, site could be interpreted as showing 75MWh of export availability [when in reality it has 41.8MWh]

Scenario - MDVO/B & SoC with Partial Outage Time Varying



<u>Scenario</u>

- Time now: 16:00
- Planned 50MW export at 18:00 as before
- [1] Half the available power & capacity is made unavailable [Forced outage]
- SCADA stays reporting 93% full [assumes for BESS that all subunits are well balanced]
- [2] MEL/MIL & MDVO/B all change though in response to the drop in availability
 - MDVO: $41.8 \rightarrow 20.9$ MWh
 - \circ MDVB: -1.08 → -0.54MWh
- [3] Future position can no longer be physically met.
 Depending on nature of issue & time to delivery. Position would be retraded / PN adjusted down.
- NGESO only gains an awareness of impact of planned outages though a time vaying signal.