External

Quick Reserve: Crossover Guidance for BM and non-BM units

Version 1.1 - April 2025

Document Version	Update(s)	Page(s) Updated
1.1	Clarification for non-BM participants on the use of a 0MW declaration. It was previous stated in version 1.0 of this Crossover Guidance that 'Declaring 0MW is the only way for a provider to indicate a unit is not available for dispatch for technical (non-commercial) reasons.' Providers should also be advised to submit a 0MW declaration where they hold a contract for 'another' balancing service other than Quick Reserve in a subsequent service window to avoid an incorrect Crossover instruction.	Page 6-7 Page 8-9 Page 14

Document Purpose

This guidance should be read in conjunction with the Phase 2 Quick Reserve (QR) Service Terms currently being consulted on, to provide additional clarity to the 'Crossovers' that are proposed to form part of the Quick Reserve Service for BM and non-BM providers.

The document defines Crossovers, the associated rules and provides example scenarios. Providers are advised to familiarise themselves with these rules so to avoid any unintended penalties and/or withheld Availability payments.

NESO requirement for Crossovers

In any given Service Window NESO may require QR units, where either contracted for QR or declared available for the Optional service, to deliver at least to their Minimum Activation Period (MAP) or Minimum Non-Zero Time (MNZT) for BM units, if instructed. As such, if an instruction is started near the end of a Service Window, then the unit would need to continue to run for up to 4 mins (as determined through its MAP) into the next Service Window. The unit must be able to deliver this output into the second window at or above the MW value in the first window, as described throughout the sections below.

A crossover Instruction is an instruction issued (in accordance with the QR Service Terms) by NESO in a Service Window to deliver QR, where, to meet the unit's MAP, the instruction would cross the boundary into a subsequent Service Window. Where

instructed, the unit must continue to deliver QR across the boundary until completing its MAP.
This period of the subsequent QR Window is defined as the "**Cross-Over Period"** in the Phase 2 QR Service Terms currently being consulted on.

Crossover Instructions can be issued in a QR Service Window to a unit which is either contracted for Quick Reserve or has declared available for the Optional service (non-BM) **but would not** be issued if the unit is contracted for a different Balancing Service in the subsequent Service Window.

QR Service Windows align with 30-minute Settlement Periods (SP) in a service day (23:00 to 23:00) and therefore a crossover period falls each half hour.

Please Note:

- A MAP cannot exceed 5-minutes and includes all ramping.
- Any reference to a Service Window in this document shall be understood to be synonymous with, or equivalent, to the QR Window as defined in the QR Procurement Rules.
- Example crossovers in this document reference SW 1 and SW 2, however these are purely for illustration purposes and the crossover requirement applies to all relevant Service Windows within an operational day.
- For clarification, any reference to a QR Service Window in the case of an uncontracted period refers to any relevant Settlement Period(s).

Document Guidance

The following sections detail the Crossover rules that providers are expected to follow to comply with the relevant terms and conditions of the Quick Reserve service:

1. **Section 1 – applies to non-BM participation**
2. **Section 2 – applies to BM participation**

1. Non-BM Crossovers

When do non-BM Crossovers apply?

Where an instruction is issued by NESO towards the end of either a Firm (contracted) or Optional Service Window, where the unit would not be able to conclude its Minimum Activation Period by the end of that Service Window, the unit is expected to continue its delivery into the next Service Window up to the end of its Minimum Activation Period - unless contracted for a different Balancing Service in the next Service Window.

Quick Reserve requires a units' MAP to be no greater than 5 minutes. Therefore, the latest that NESO can instruct a unit for, and for a Crossover not to apply, is 5 minutes ahead of the end of a Service Window.

Examples:

Crossovers apply in the below examples where the Minimum Activation Period does not conclude before the end of Service Window (SW) 1.

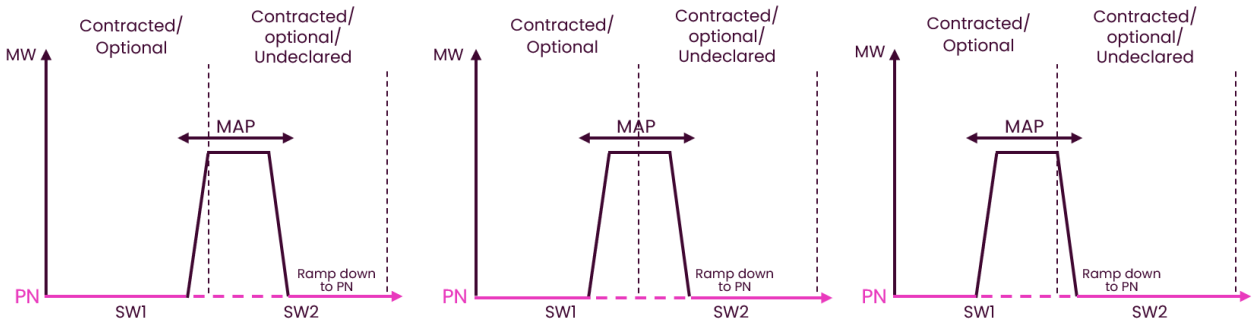

Figure 1 - Simple crossover behaviour

In the scenario where SW 2 is a Balancing Service other than QR (or the unit is declared unavailable), and if there was not sufficient time to create a QR instruction in SW 1 and honour the MAP, then no QR instruction would be created in SW 1. Where there is sufficient time to conclude the MAP within SW 1, then the unit will cease and return to PN for the end of SW 1 following a cease instruction. In this scenario, the last possible time a QR instruction can be issued is outlined in Figure 2.

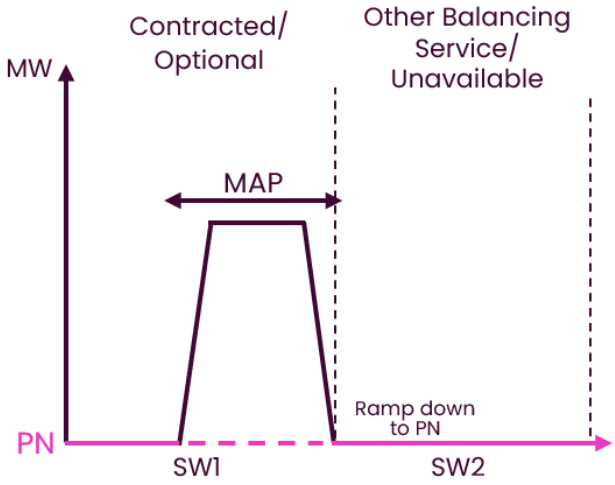

Figure 2 - No crossover required

If a crossover is required, then output should be maintained at least for the duration of the MAP at the same MW or higher, in the subsequent Service Window – see Figure 3.

For example:

- If a unit were contracted for QR (or declared available for the Optional service) for **10MW** in the first Service Window (SW 1) and only **1MW** (contracted or optional) in the subsequent Service Window (SW 2), then the unit must remain at the 10MW output into the second Service Window. The unit is then expected to deliver until ceased (honouring the MAP), and then ramp down to the declared 1MW by the conclusion of the MAP.
- If the second Service Window (SW 2) was declared for **11MW** (contracted or optional), then the unit would ramp up to the new 11MW output immediately at the start of second Service Window and remain there until the end of that Service Window or until a Cease Instruction is received.

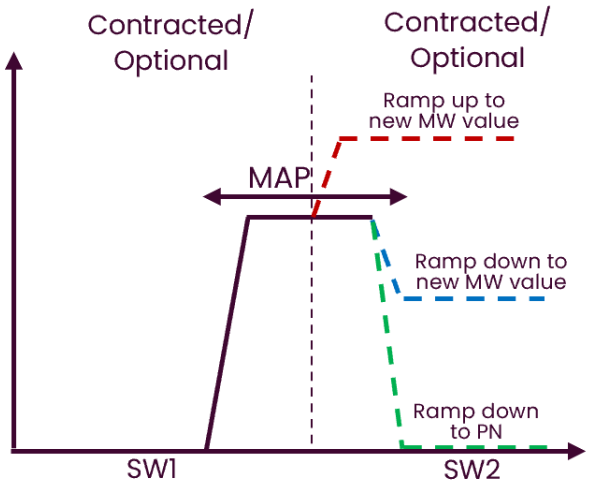

Figure 3 - Crossover to variable MWs

For the avoidance of doubt, if an instruction can be delivered within a Service Window (whilst honouring the MAP), then the instruction should be maintained at the same MW until the end of the Service Window, and then ramp to the new MW level from the start of the next Service Window, where appropriate – see Figure 4.

For example:

- If a unit were contracted for QR (or declared Optionally available) for **10MW** in the first Service window (SW 1) and **11MW** in the subsequent Service Window (SW 2), and the Start Instruction was for a start time where the MAP is honoured within the first Service Window, then the unit will deliver to 10MW output until the end of the first Service Window and then ramp up to the declared 11MW at the start of the subsequent Service Window [red].
- If a unit were contracted for QR (or declared optionally available) for **10MW** in the first Service Window (SW 1) and **1MW** in the subsequent Service Window (SW 2), and the Start Instruction was for a start time where the MAP is honoured within the first Service Window, then the unit will deliver its 10MW output until the end of the first Service Window and will ramp down to the declared 1MW for the start of subsequent Service Window [blue].
- If a unit were contracted for QR (or declared Optionally available) for **10MW** in the first Service window (SW 1) and **any MW** in the subsequent Service Window (SW 2), and the Start Instruction was for a start time where the MAP is honoured within the first Service Window, then the unit will deliver to 10MW output until the end of the first Service Window. NESO may issue a Cease instruction at any point in SW 1 or SW 2 and the unit should ramp to the PN as instruction. In the diagram below, the Cease instruction has been set for the start of SW 2 [green].

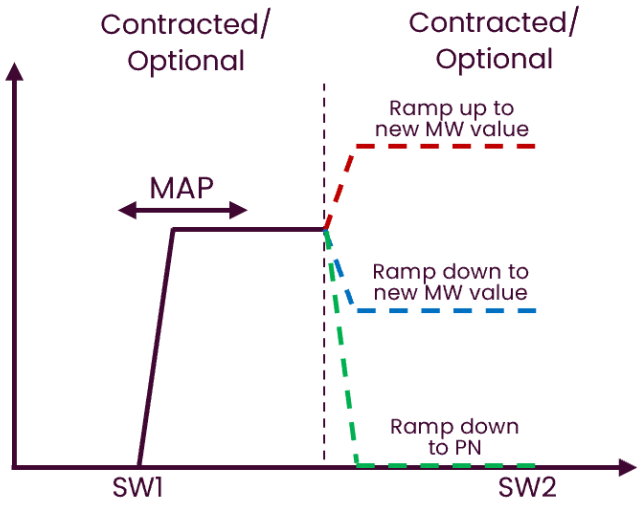

Figure 4 - MAP honoured crossover

If a unit were contracted for QR (or declared optionally available) for **10MW** in the first Service Window (SW 1) and **no declaration, and not contracted for another Balancing Service**, in the Service Window (SW 2), and the Start Instruction was for a start time where the MAP is honoured within the first Service Window, then the unit will deliver its 10MW output until the end of the SW 1 and will ramp down to the PN from the start of SW 2. A cease instruction will be issued to the unit to match this profile.

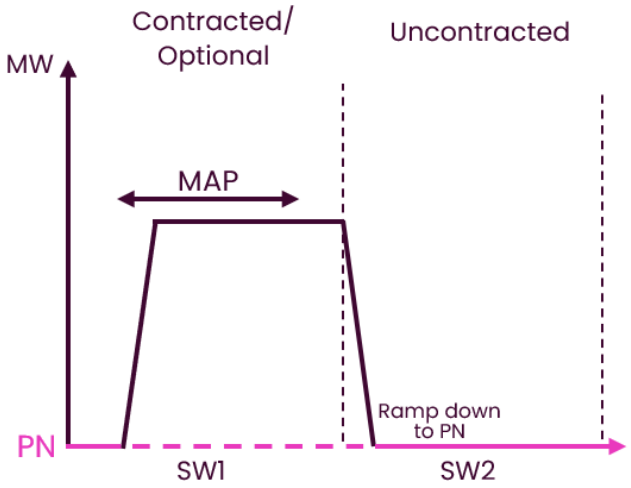

Figure 5 – Uncontracted Subsequent Service Window

Declarations

If contracted for QR (or declared available for the Optional service) in a Service Window (SW 1), a declaration (MW and Price) is always required for non-BM units to be instructed. For Crossover purposes, where a price is not submitted for the subsequent Service Window (SW 2), regardless of contract status, then the price from the SW 1 declaration will be carried forward. So, for SW 2, a Valid Declaration is required to allow for a Crossover instruction, and either of the following would be acceptable as a valid SW 2 declaration;

1. Blank declaration (no declaration) with no Price or MW (where the unit is not QR contracted or optionally available).
2. A price and **blank MWs**.
3. A price and MW value is acceptable (being either Contracted or Optionally available).

Note: zero (0) MW shall only be permissible:

1. to indicate a unit is not available for dispatch for technical (non-commercial) reasons.

2. to indicate where a unit holds a contract for 'another' balancing service other than Quick Reserve in a subsequent service window and is therefore unavailable for crossover. See Scenario D for more detail.

Any failure to provide an acceptable declaration will prevent a Crossover instruction from being possible and therefore Availability Payment will be withheld for SW 1.

Recovery Period following Cease

Upon ceasing to FPN, if there is no change in delivery direction, the unit should, as a minimum, be allowed to recover as per its service declared Recovery Period before being instructed again for a Reserve Service in the same direction.

For example:

- Delivery of Positive Quick Reserve (PQR) -> Cease to PN -> Recovery Period -> Delivery of Positive x Reserve (PxR)

Therefore, if the unit was delivering PQR in SW 1 with a 3-minute Recovery Period and is required to transition to a further positive service in SW 2, such as PxR (including PQR), it must be allowed to recover for the full 3-minutes.

However, if there is a change in delivery direction (e.g. PQR to Negative Quick Reserve (NQR)), then the preceding service declared Recovery Period will not apply and the unit can be instructed without any delay for a service in the opposite direction. E.g:

- Delivery of PQR -> Cease to PN -> Delivery of NQR.

In this example, if the unit is transitioning to any negative service, it can proceed immediately without any delay.

Non-BM Scenarios:

The below examples describe some of the more common non-BM Crossover scenarios. Please also see **Appendix 1 & 2** for more details.

Scenario A:

- SW 1 = QR Contracted
- SW 2 = No Contract

Declarations

- If no declaration is provided, then the volume and price from SW 1 will apply to the crossover delivery period within SW 2.

- Whilst no declaration is required in this scenario, as SW 2 is not subject to contract, nor available optionally, the provider could issue a declaration for price only for a Crossover instruction.

Delivery

Units in this scenario are expected to behave as outlined in Figure 1 and Figure 5, depending on the time of instruction in conjunction with the end of the window. See also instruction timing examples in Appendix 1.

Scenario B:

- SW 1 = QR Contracted
- SW 2 = QR Contracted

Delivery

Units in this scenario are expected to behave as outlined in Figure 1, Figure 3, and Figure 4, as applicable to the time of instruction in conjunction with the end of the window and any associated increase/decrease in the MW for SW 2. See also examples in Appendix 1 and change in MW examples in Appendix 2.

NESO would expect to see a declaration for the contracted MW and a price in SW 2. However, for the avoidance of doubt, if no declaration is provided for SW 2, the unit is treated as if uncontracted for SW 2, and the SW 1 declaration is carried forward. A Crossover instruction will then operate as described in scenario A and the unit would not receive availability payments for SW 2.

Scenario C:

- SW 1 = QR Contracted
- SW 2 = QR Optional

Delivery

Units in this scenario are expected to behave as outlined in Scenario B, subject to a valid declaration in SW 2.

Scenario D:

- SW 1 = QR Contracted
- SW 2 = Response/Other Balancing Service/Declared 0MW for Quick Reserve

Delivery

As SW 2 is available for a different service other than Quick Reserve, it is not possible for the unit to transition straight from Quick Reserve into the next Service Window. Units in this scenario are expected to behave as outlined in Figure 2.

- The unit should declare 0MW for QR in SW 2 to ensure it is not instructed into a service window where provision of a different balancing service is contracted. For the avoidance of doubt, two declarations would therefore be expected in SW 2 – one equating to 0MW for QR, and a separate declaration for the 'other' balancing service (if appropriate).
- The unit is ceased back to its PN by the end of SW 1 and no Crossover Instruction would be issued. The unit will therefore not be considered for instruction if it is unable to meet its MAP and cease by the end of SW 1.
- A cease instruction will be sent in accordance with the units Minimum Activation Period where applicable.
- The contracted service in SW 2 will follow its Service and Contract terms. Non-BM QR service terms and parameters do not impact the "other" Service.

Scenario E:

- SW 1 = No QR Contract/Optional
- SW 2 = QR Contracted/Optional

Delivery

If there is no declaration in SW 1, then unit cannot be instructed in SW 1 and therefore no Crossover instruction is issued. In the case of Optional (SW 1) to Contracted/Optional (SW 2), and where a valid Optional declaration has been made for SW 1, then the unit is expected to behave as outlined in Scenario B.

2. BM Crossovers

Summary of BM Crossover Operation

Declarations:
For BM units, a declaration (MW and Price) is always available for every Settlement Period. If a unit fails to submit a declaration, MW and Price from the equivalent Settlement Period of previous days are used, as per BM default rules.

Optional Declarations:
There is no optional service for BM participants. Therefore, a declaration is either QR (if a contract is held), or simply available in the BM (if no contract is held), or a combination of QR and available in the BM if the unit's declarations are greater than the contracted MW for Quick Reserve.

Dynamic Parameters:
BM units must ensure their dynamic parameters allow dispatch into the start of SW 2 (based on their MNZT and relevant headroom/footroom) **if there is a QR contract in SW 1**. The BM unit is expected to declared MW values such that there is sufficient headroom in SW 2 in order to carry on delivering at the same MW.

Instruction:
BM units will always be instructed via a BOA and will follow the units submitted Dynamic Parameters. OBP will not consider any crossover logic within the dispatch of a BM unit and will issue a dispatch purely based on unit capabilities, as declared through its Dynamic Parameters.

Delivery:
Unlike non-BM operation, BM crossovers simply follow the profile of the BOA instruction, which is based on a unit's declarations and Dynamic Parameters for both SW 1 and SW 2. Units are expected to deliver per the profile of its instruction, regardless of whether it crosses from one settlement period to another.

BM Scenarios:

The below examples describe some of the more common crossover scenarios. Note, unlike non-BM, there is no Optional service for BM and are therefore not considered. Please see **Appendix 1 & 2** for more details on crossovers.

Scenario F:

- SW 1: Quick Reserve Contract Held
- SW 2: No Contract held

Declaration

- BM units are obliged to submit Dynamic Parameters which are in line with their QR contract for SW 1.
- BM units must also submit Dynamic Parameters that enable them to be dispatched in SW 2.
- If a unit fails to meet these obligations, it can still be dispatched under BM rules but will fail its delivery Settlement check and will receive no availability payment(s) for the relevant SW.

Scenario G:

- SW 1: Quick Reserve Contract Held
- SW 2: Quick Reserve Contract Held

Declaration

- BM units are obliged to submit Dynamic Parameters which are in line with their QR contracts for SW 1 and SW 2.
- If a unit fails to meet these obligations, it can still be dispatched under BM rules but will fail its delivery Settlement check and will receive no availability payment(s) for the relevant SW.

Scenario H:

- SW 1: Quick Reserve Contract Held
- SW 2: Slow Reserve (or other Balancing Service) Contract Held

As SW 2 is a different Service, it is not possible for the unit to transition straight from QR into another Balancing Service. The unit will therefore be returned back to its PN by the end of SW 1 and will not be allowed to crossover. Units in this scenario are expected to behave as outlined in Figure 2. The “Other” Balancing Service in SW 2 will be instructed according to its Service and Contract terms. QR service terms and parameters do not impact the “Other” Service.

Scenario I:

- SW 1: No Contract Held
- SW 2: Quick Reserve Contract Held

If there is no declaration in SW 1, then unit cannot be instructed in SW 1 and therefore no Crossover Instruction is issued.

Appendix 1: Example Instruction Timings and Crossover Rules

Scenario: • **5-minute MAP** • **1-minute Time to Full Delivery** • **SW 2 Contracted/Optional/Undeclared**	
Instruction Start	**Unit behaviour**
10:55 (or earlier)	As the 5-minute MAP can be completed in the service window, crossovers do not apply, and the unit would ramp to the new MW level from 11:00 or may be ceased at 10:59. The unit ramps to full delivery by 10:56, stays at this level until 10:59 then may be ceased (with a start time of 10:59) and ramps down to PN by 11:00 or there is no cease and at 11:00 it ramps to the new MW level from 11:00.
10:56	The unit ramps to full delivery by 10:57, stays at this level until 11:00, then either ramps to a higher MW, lower MW or PN by 11.01. A cease instruction would be issued with a start time of 11:00 if there was no declaration in SW 2, no instruction would be issued for ramp to a higher or lower MW.
10:57	The unit ramps to full delivery by 10:58; If SW 2 is at a higher MW, it ramps to the higher MW from 11:00 If SW 2 is at a lower MW, it remains at SW 1 MW until 11:01 and then ramps to the lower MW by 11:02 If the unit has no declared value in SW 2 then it remains at SW 1 MW until 11:01 and then ramps to PN by 11:02 (with a cease time at 11:01)
10:58	The unit ramps to full delivery by 10:59; If SW 2 is at a higher MW, it ramps to the higher MW from 11:00 If SW 2 is at a lower MW, it remains at SW 1 MW until 11:02 and then ramps to the lower MW by 11:03 If the unit has no declared value in SW 2 then the unit remains at SW 1 MW until 11:02 and then ramps to PN by 11:03 (with a cease time at 11:02)
10:59	The unit ramps to full delivery by 11:00; If SW 2 is at a higher MW, it ramps to the higher MW from 11:00 If SW 2 is at a lower MW, it remains at SW 1 MW until 11:03 and then ramps to the lower MW by 11:04

	If the unit has no declared value in SW 2 then the unit remains at SW 1 MW until 11:03 and then ramps PN MW by 11:04 (with a cease time at 11:03)

In the above table the time to full delivery is 1 minute, however the unit could declare parameters in the pre-qualification process that support a sub one minute ramp. If Time to Full Delivery is declared at 45 seconds with the Service Capacity MW as 30MW then the calculated ramp would be 40MW/min. A unit sent an instruction with a start time of 10:05 (start and cease time will always be to a whole minute), would be expected to be at 30MW by 10:05:45. If in this example only 20MW had been declared for the Service Window then the unit (using the same 40MW/min ramp) would be expected to be at the 20MW from PN by 10:05:30.

Appendix 2: Crossover Rules for Example Scenarios

The table below covers the behaviour expected for crossovers across various scenarios.

Case 1: SW 1 Valid Availability Declaration → SW 2 Valid Availability Declaration		
SW 1 40MW	SW 2 – 40 MW (same)	Unit continues at same level until cease.
SW 1 40MW	SW 2 – 50 MW (higher)	Unit ramps to higher MW from start of SW 2 until ceased.
SW 1 40MW	SW 2 – 30 MW (lower)	If MAP is satisfied, ramp to lower MW from start of SW 2. If MAP is not satisfied, then continue at 40MW and ramp to 30MW with MAP (which includes ramp down) satisfied.
SW 1 40MW	SW 2 – 0 MW Declared	The unit has explicitly declared 0MW for SW 2 so an instruction will only be issued if MAP can be satisfied in SW 1, and no crossovers will be applicable for SW 2. The unit has not met the terms of its SW 1 requirement.
Case 2: SW 1 Valid Availability Declaration → SW 2 No Valid Availability Declaration		
SW 1 40MW	SW 2 – No submissions	If MAP is satisfied, then the unit will continue at 40MW to the end of SW 1 and ramp to PN from the start of SW 2, unless ceased prior to the end of SW 1. If MAP not satisfied, then the unit will continue at 40MW and ramp to PN with MAP (which includes ramp down) satisfied
Case 3: SW 1 Valid Availability Declaration → SW 2 Price only declaration		
SW 1 40MW	SW 2 – Price only declaration	The unit has submitted a price only declaration without a MW. If MAP satisfied, then the unit will continue at 40MW to the end of SW 1 and ramp to PN from the start of SW, unless ceased prior to the end of SW 1. If MAP not satisfied, then the unit will continue at 40MW and ramp to PN with MAP (which includes ramp down)

		satisfied. The price paid for utilisation of energy for SW 2 will be that from SW 2. The API allows the submission of price only and a provider could use this to submit a price only for SW 2 when they did not have a contract and to meet their SW 1 obligations.
Case 4: SPW Valid Availability Declaration → Declaration for another NESO balancing service (other than Quick Reserve)		
SW 1 40MW	SW 2 – A contract for another NESO balancing service	An instruction will only be issued if MAP can be satisfied in SW 1. To support this, the provider should declare 0MW availability for QR in SW 2 when contracted for another NESO balancing service other than Quick Reserve.