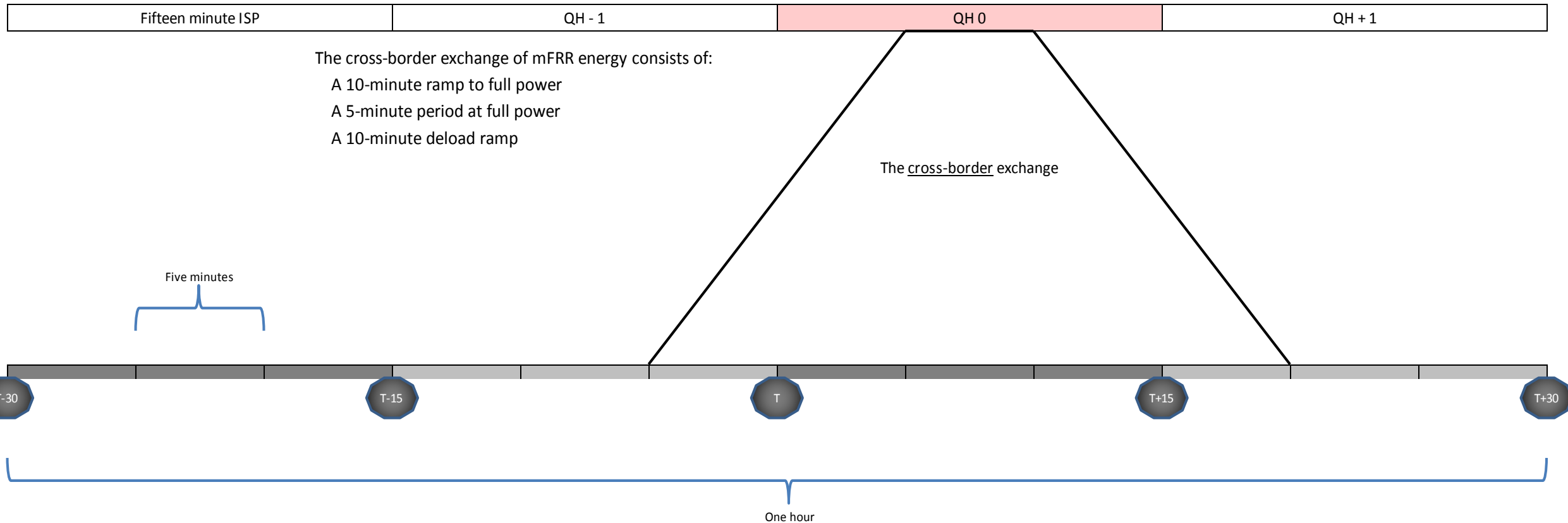


TSO-TSO product shape

mFRR TSO-TSO exchanged shape



Note that the cross-border exchange is not necessarily the same 'shape' as the mFRR product(s) in MARI.
TSOs can be flexible on the local rules applied in their area.
Deviation from the ramp may be permitted.
It should not be considered the same as a BOA which GB parties must 'follow' or be imbalanced.
However in GB we may wish to use local rules to make a MARI instruction look and act like a BOA.

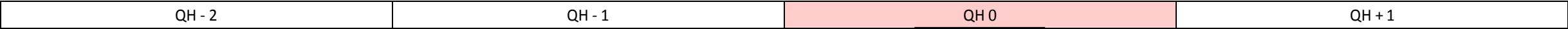
Nevertheless, from the cross-border exchange we can begin to define our products.

Note that there are two products:

A Scheduled activation (SA) ✓

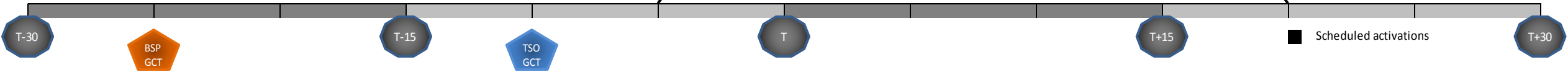
And Direct activation (DA) ✓

MARI: TSO-TSO exchanged shape (SA)



The scheduled activation

The SA occurs once per 15 minute settlement period.
It is scheduled in the sense that the cross-border exchange will start and end at fixed times.
If T is the time at which ISP begins then:
The ramp starts at T-5
Full power is reached by T+5
Deload is completed at T+20



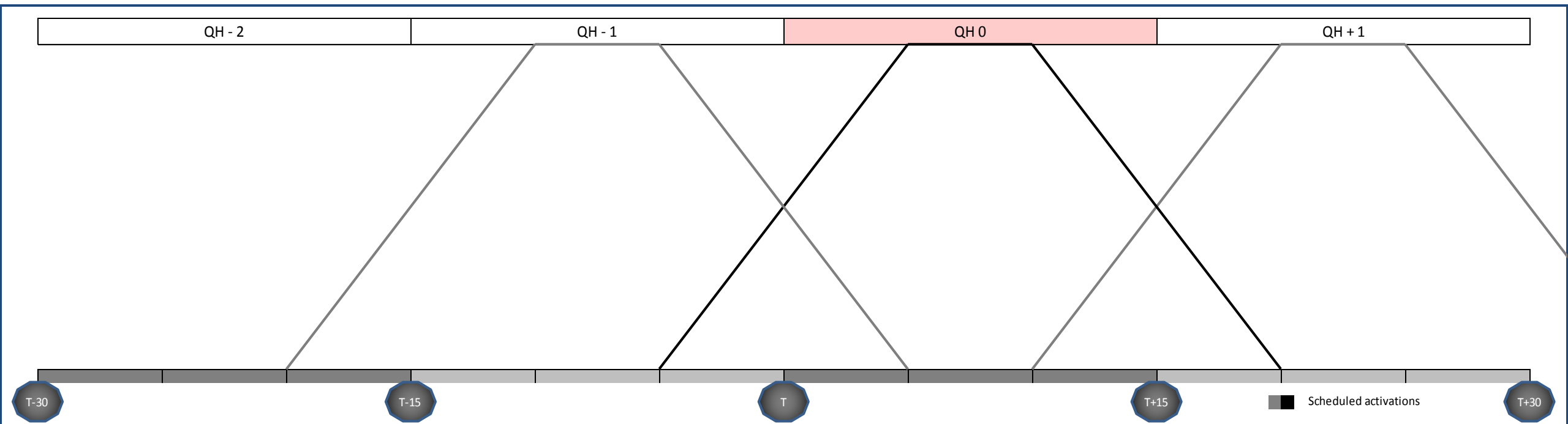
From the perspective of a balancing service provider (BSP)
The BSP must submit their bid/offer data for QH0 before T-25
BSP GCT is at T-25
The BSP submits to their local TSO who will pass the bids to MARI..

IF: Article 7

From the perspective of a TSO
The TSO must submit their mFRR need AND the BSP bids/offers to MARI before T-10
TSO GCT is T-10
This means a TSO has 15 minutes to filter BSP bids/offers for security and constraint reasons

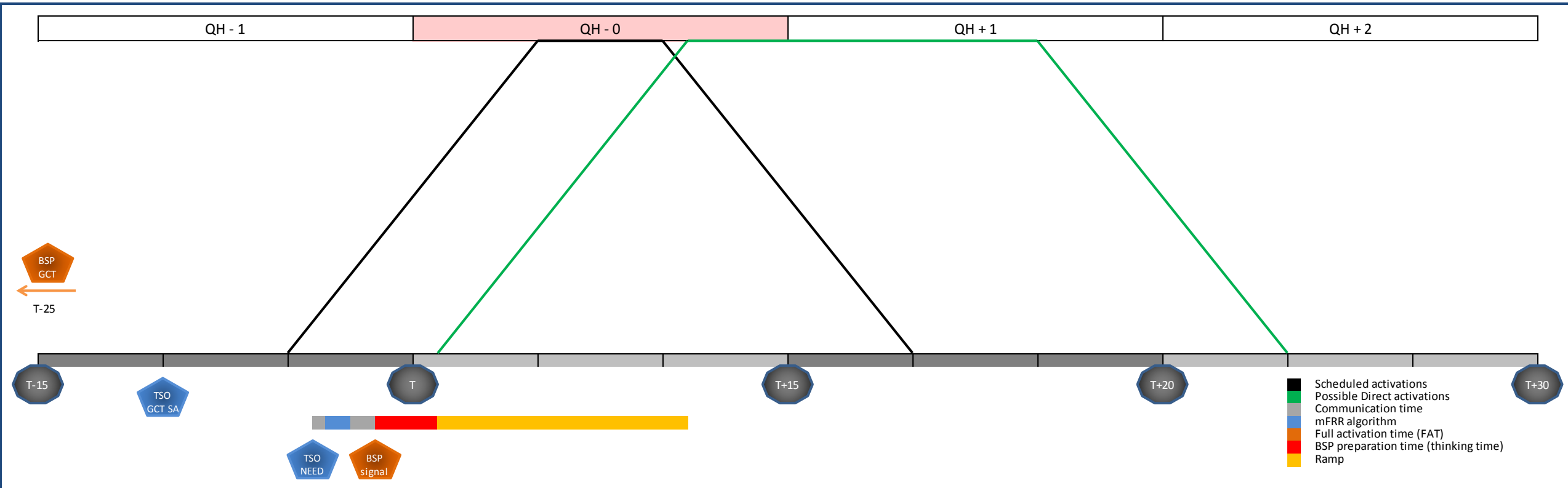
IF: Article 8

MARI: TSO-TSO exchanged shape (SA)



A series of scheduled activations
Adding in the SA for QH -1 and QH + 1 builds up the picture
In this way, SA can be 'linked together'

MARI: Now add the Direct Activations (DA)



The process timings for Direct Activation are assumed to be mostly the same as for SA. (The DA algorithm will have 20 seconds to complete, compared to 1 minute for the SA – but the ‘problem’ should be simpler to solve).

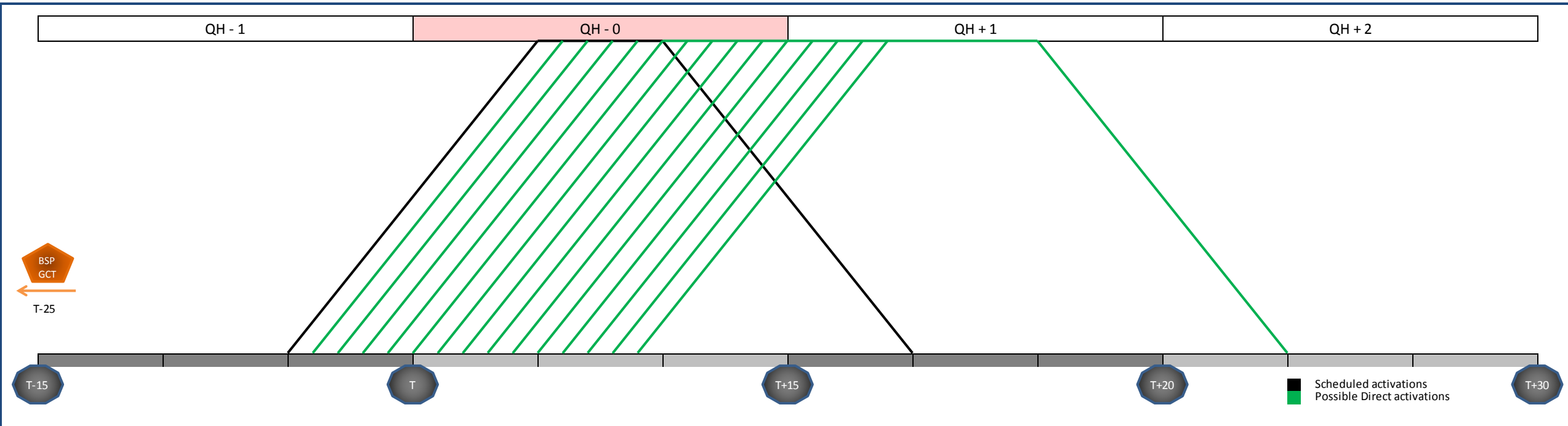
Here we have added a typical DA (green line).

As a BSP, your GCT remains at T-25. You receive an activation signal and have 12.5 mins (FAT) to reach full power.

IF: Article 6

DA for QH-0 occur **after** the SA. (This has consequences for settlement – more on this later.)
All DA cease at T+25 (regardless of when they were initiated).

MARI: The Direct Activation



Direct activation occurs continuously between schedule activations (here shown one each minute)

ED: Page 10

The BSP may receive an activation signal between T-7.5 and T+7.5 (for DA bids submitted for QH0 starting at time, T)

Gate closure (for BSPs) for both Scheduled and Direct bids occurs at T-25.

Note: Your bid, submitted for QH-0, is delivering most of its energy in QH+1

ED: Chapter 2.2