Project MARI BSC Solution

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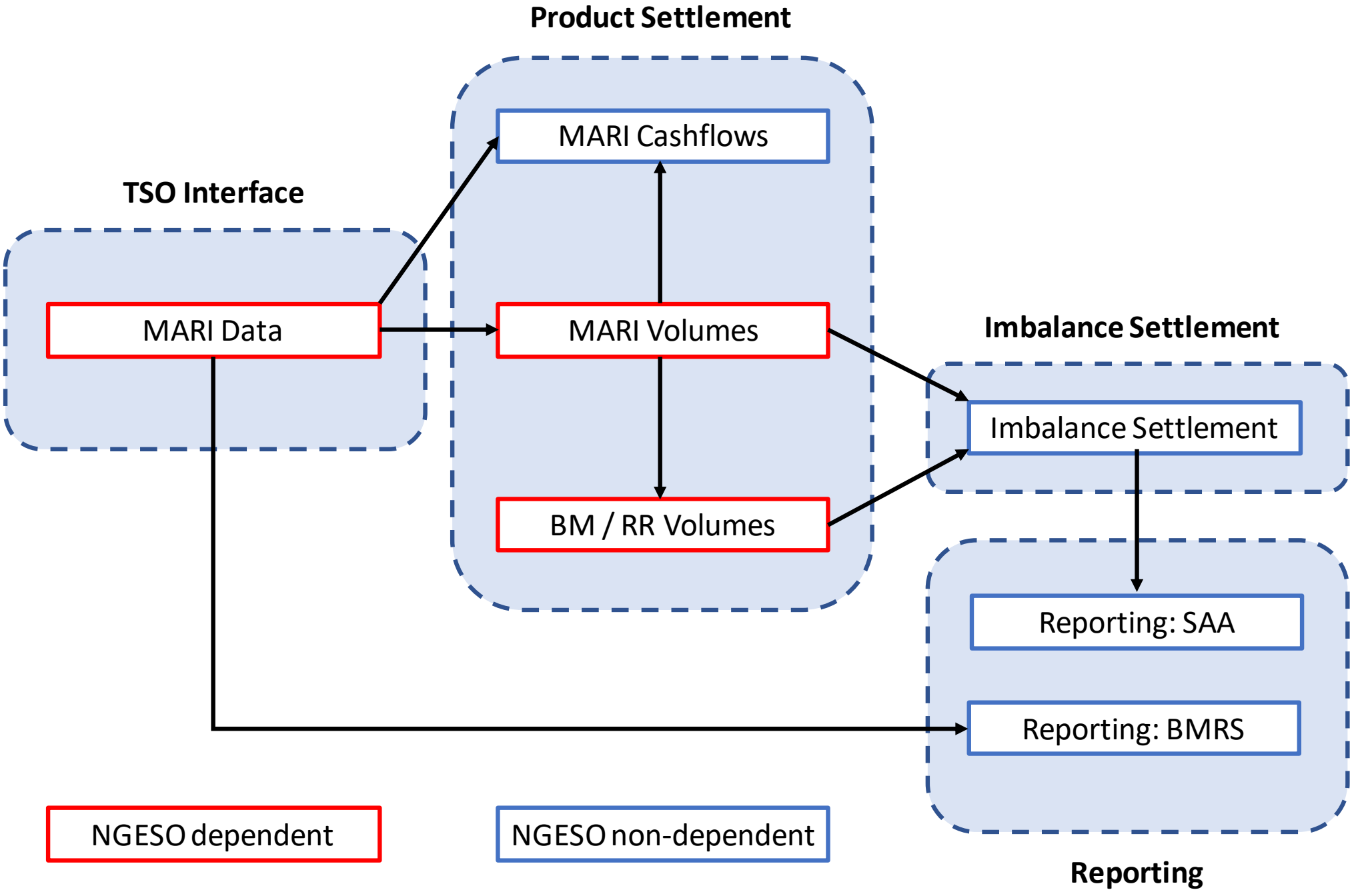
20 August 2020

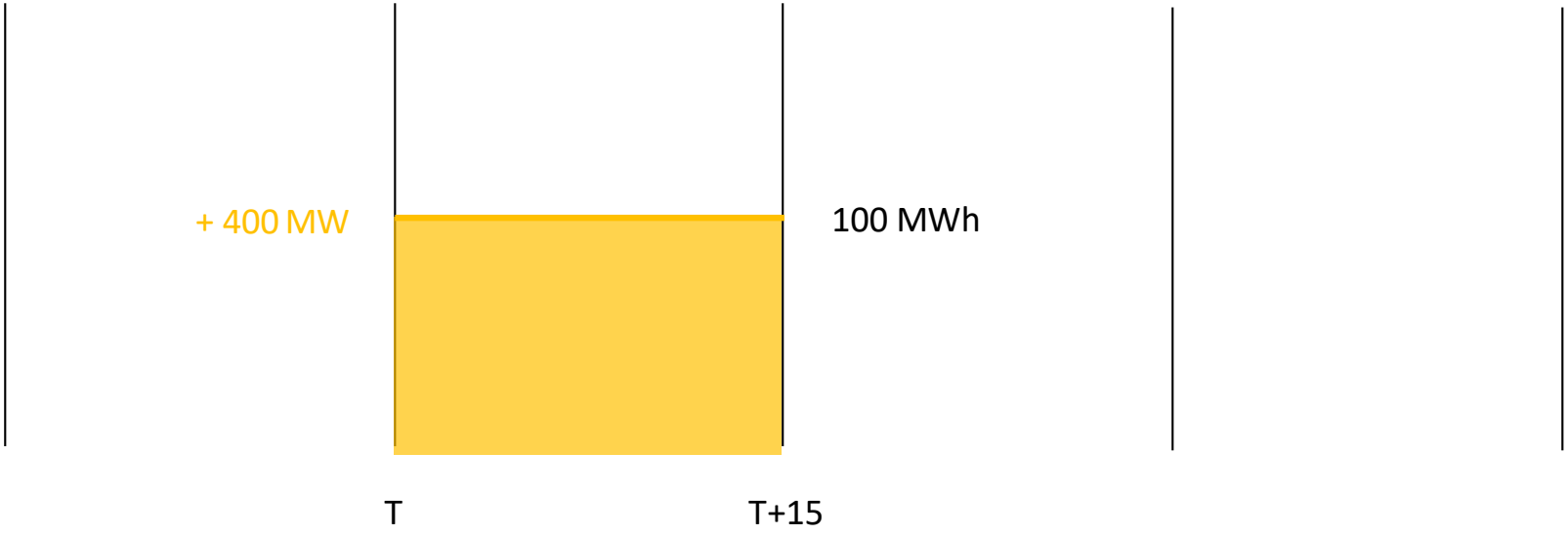
Settlement Solution Overview



‘Block’ RR Acceptance

If we assume that an MARI Activation will consist of the same data as a TERRE activation then ELEXON will to idnetify for each BM Unit the following:

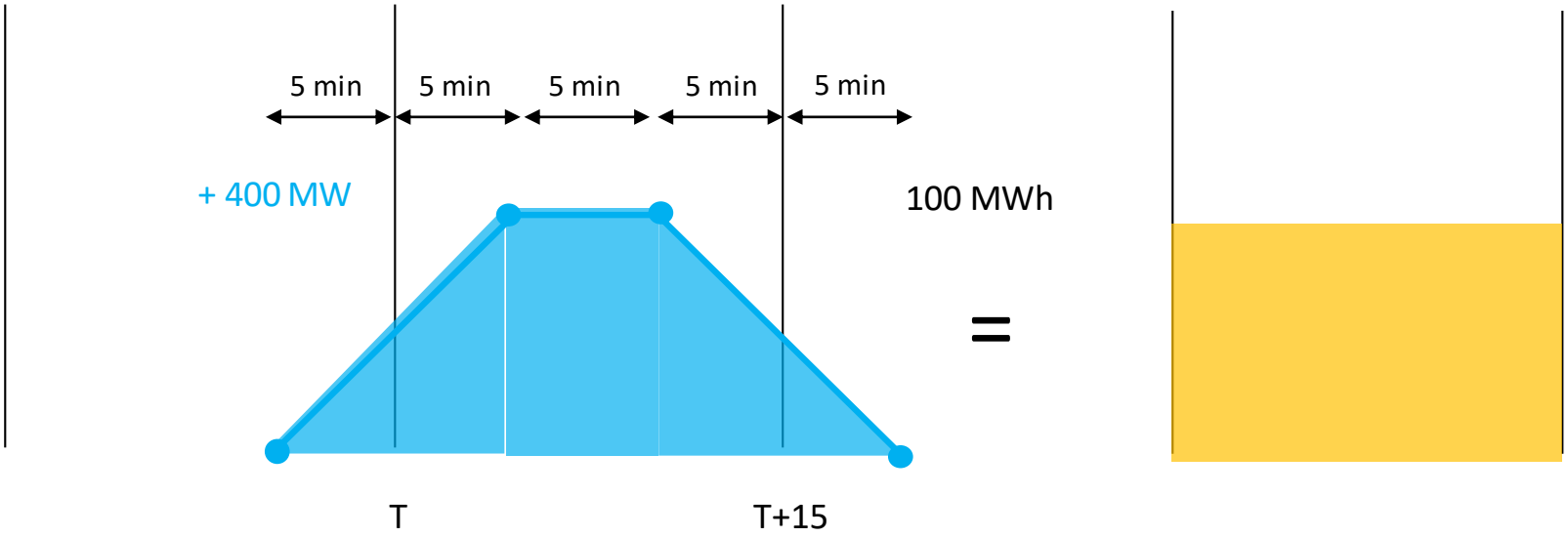
- Start Time (on a quarter-hour boundary)
- End Time (on a quarter-hour boundary)
- Activated Quantity (MW)
- Activation price (£)



MARI Standard Product Shape 'Profile'

What is it?

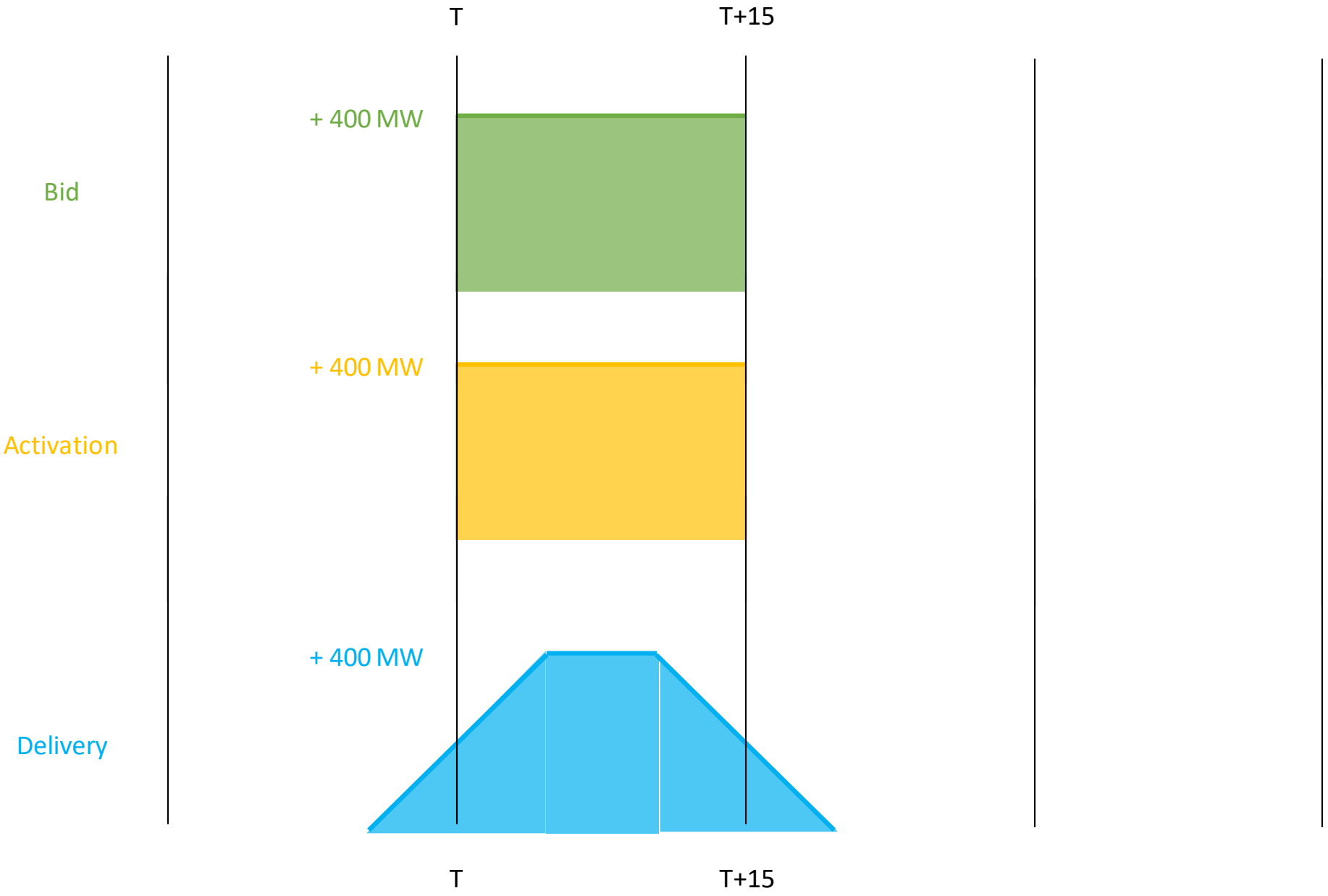
The European mFRR Standard Product Shape* represents the preferred delivery shape of RR Activation 'blocks'.



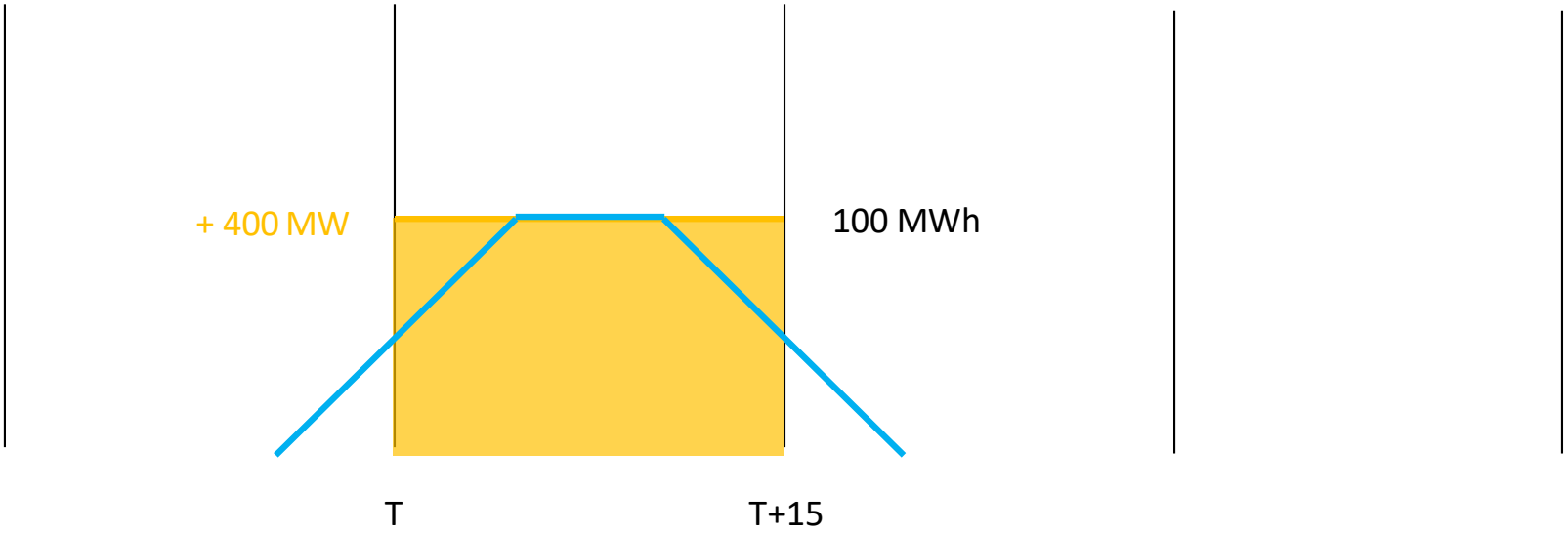
Note by design that Standard Product Shape 'Profile' has the same volume as the RR Block

* also referred to a TSO-TSO exchanged shape

‘Block’ Settlement vs ‘Profile’ Settlement



‘Block’ Settlement vs ‘Profile’ Settlement



- ‘Block’ Settlement is consistent with the MARI activations as produced by mFRR platform
- ‘Profile’ Settlement is consistent with the TSO instructed physically delivered mFRR activation
- Effectively a BSP will have a price for volumes in a time period that is different from the time period that it is delivered in

Note

- TERRE solution uses ‘Block’ Settlement for Cashflows and ‘Profile’ Settlement for Volumes
- TERRE solution also uses ‘Block’ Settlement for Imbalance Price Calculation

MARI Activations

mFRR (MARI) has two types of activation:

Scheduled Activation (SA)

- Auction every 15 minutes paid at the clearing price

Continuous **Direct Activations (DA)**

- Effectively an auction is held every minute from H-7.5 to H+7.5 using bid data for the period T to T+15
- Paid using a conditional price based upon £ DA and £ SA of bid and delivery period.

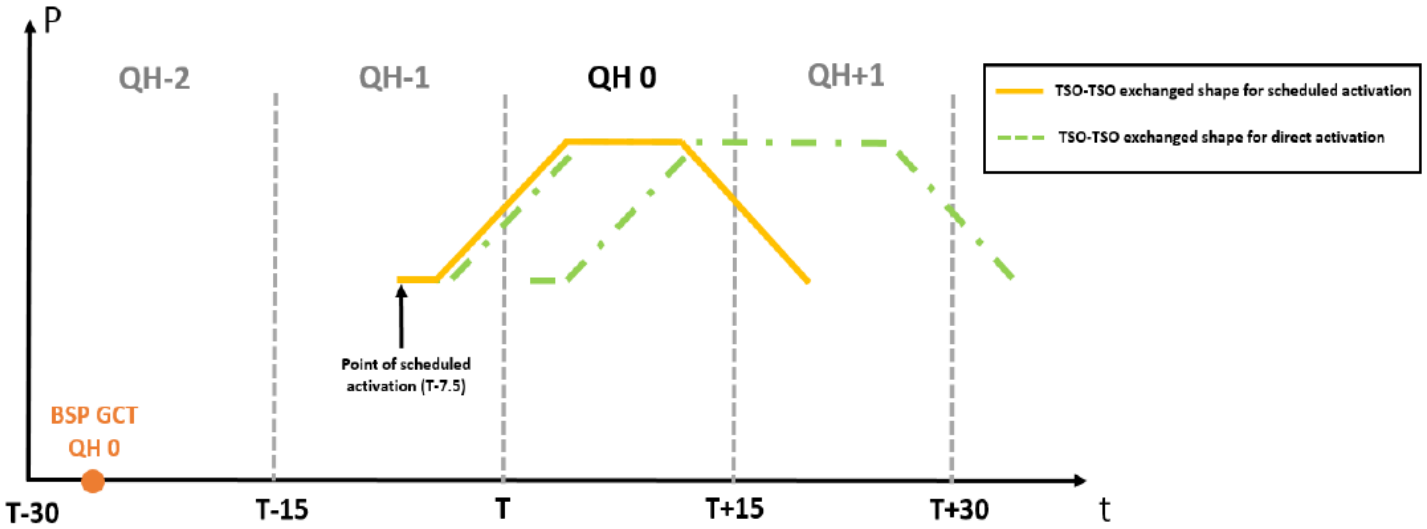


Figure 5: Illustration of the shape of the cross border exchange for a schedule activation and various direct activations

Note the duration of the Delivery Period (i.e. time at the required max MW level) to be defined locally for both SA and DA

Proposed MARI Cashflows

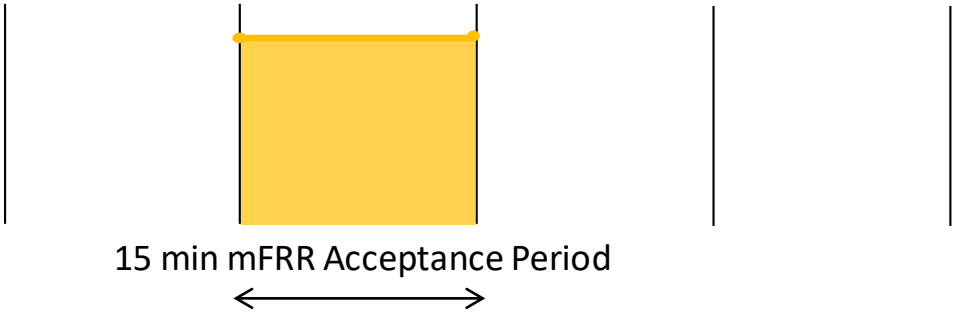
MARI Cashflows

P407 proposes to calculate how much a Party should be paid for a successful mFRR bid using 'block' mFRR activations

= volume * Price £ / MWh

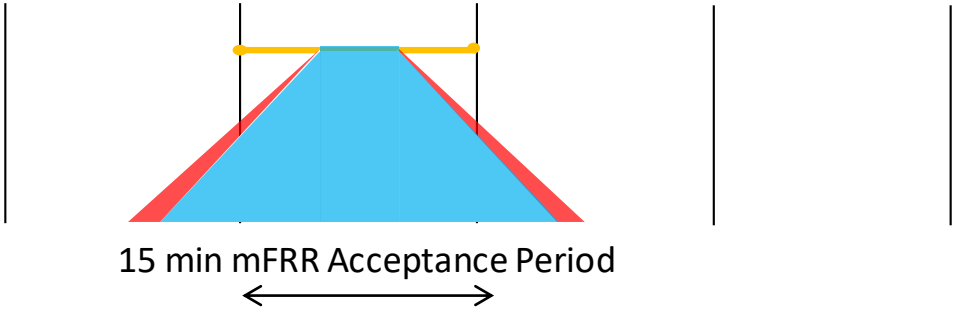
MOL Document

mFRR Cashflow



mFRR Deviation Cashflow

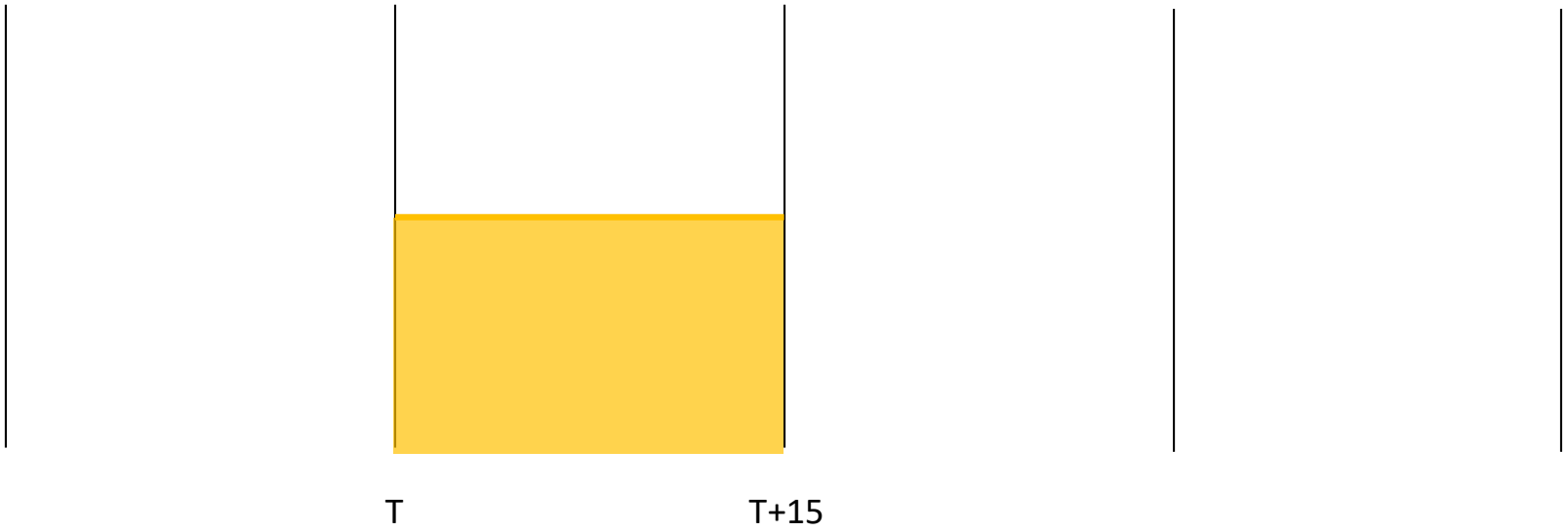
P407 introduces a second cashflow to (optionally) incentivise delivery of the mFRR Standard Product Shape by applying a cost to additional / missing volumes from the preferred delivery shape



*** P344 solution has set BEDP = £0 ***

Original Proposed mFRR Cashflow

£ mFRR Cashflow = 'Block' volume * Activation Price



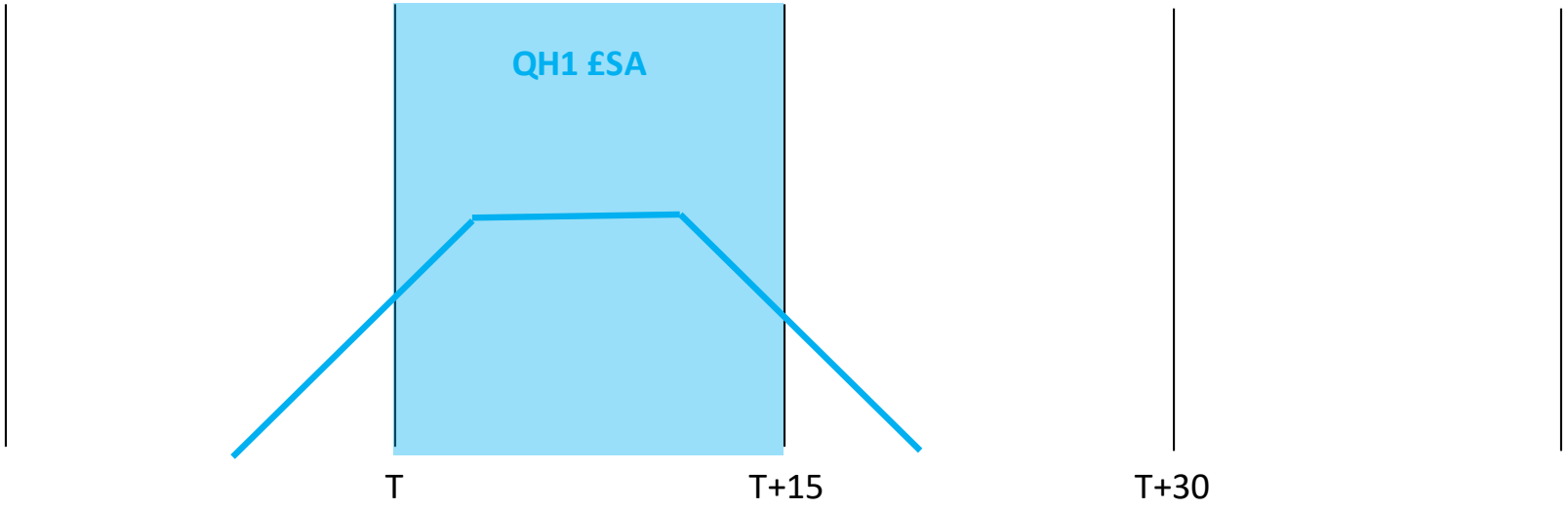
Considerations:

- Do we want separate cashflows for Scheduled and Direct Activations?
  - Note that SA & DA have independently calculated clearing prices
- Is 'block' cashflow settlement appropriate for both SA and DA?
  - Is the alternative of using the mFRR Standard Product Shape better?
  - Will Settlement allocate Direct Activation cashflows to specific QH/SP? [As per Pricing Proposal Article 6 (2)]

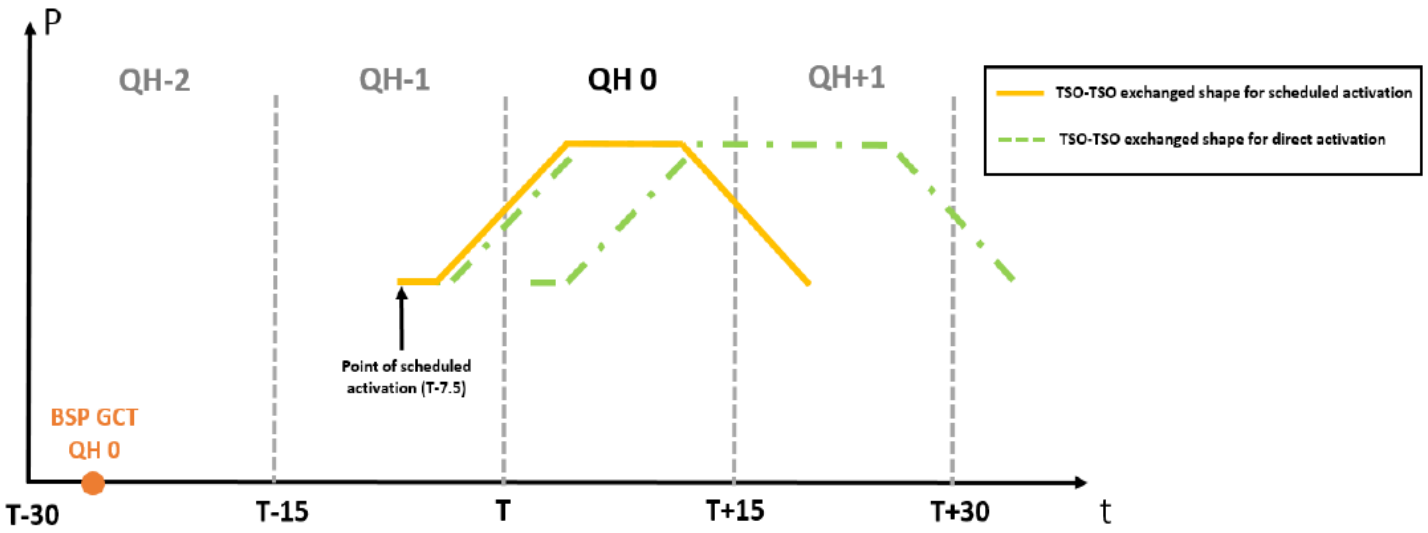
Pricing Proposal

Show Pricing Proposal Article 6 (2)

Scheduled Activation Pricing



mFRR Cashflow and Activations



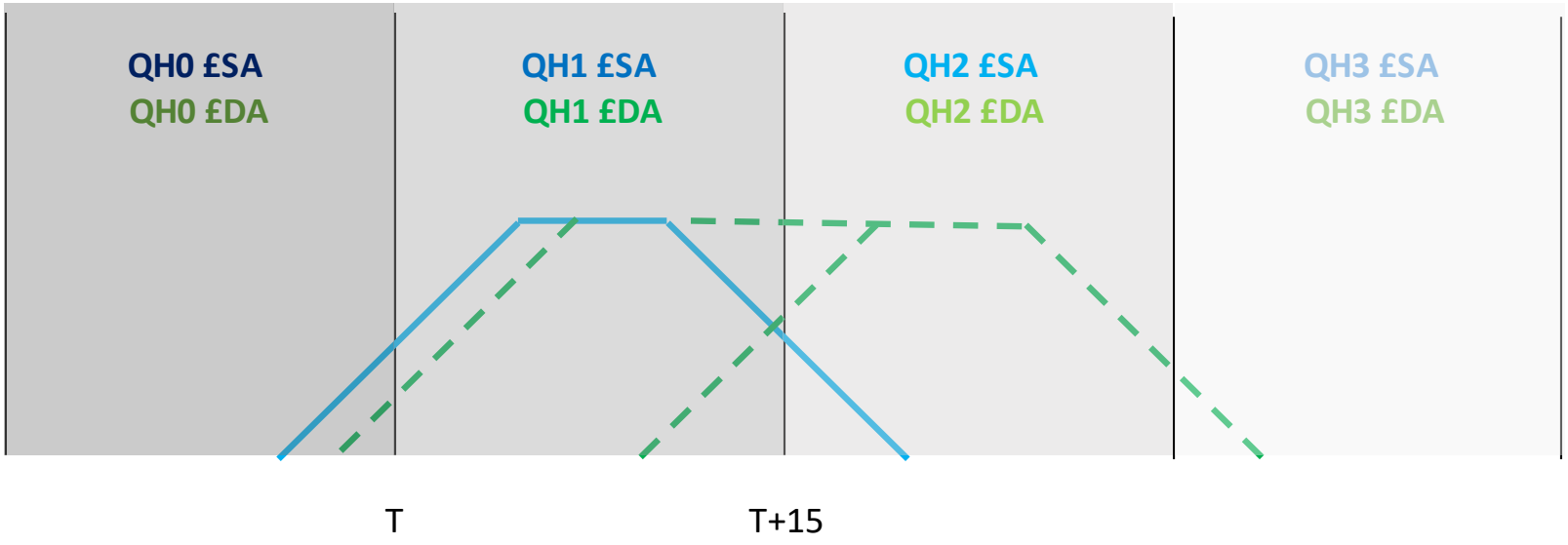
mFRR bids for ISP 'H'

	Volume % distribution			
	H-1	H	H+1	H+2
Scheduled for ISP 'H'				
Ramping start at H-5	8.33%	83.34%	8.33%	0.00%
Direct Activation for ISP 'H'				
Ramping start at H-7	13.42%	82.55%	4.03%	0.00%
Ramping start at H-5	8.33%	83.34%	8.33%	0.00%
Ramping start at H-2	0.67%	75.33%	24.00%	0.00%
Ramping start at H+1	0.00%	56.67%	43.34%	0.00%
Ramping start at H+4	0.00%	36.67%	63.33%	0.00%
Ramping start at H+7	0.00%	18.67%	79.33%	2.00%

Note for Direct Activations I have assumed a maximum delivery period of 5 minutes

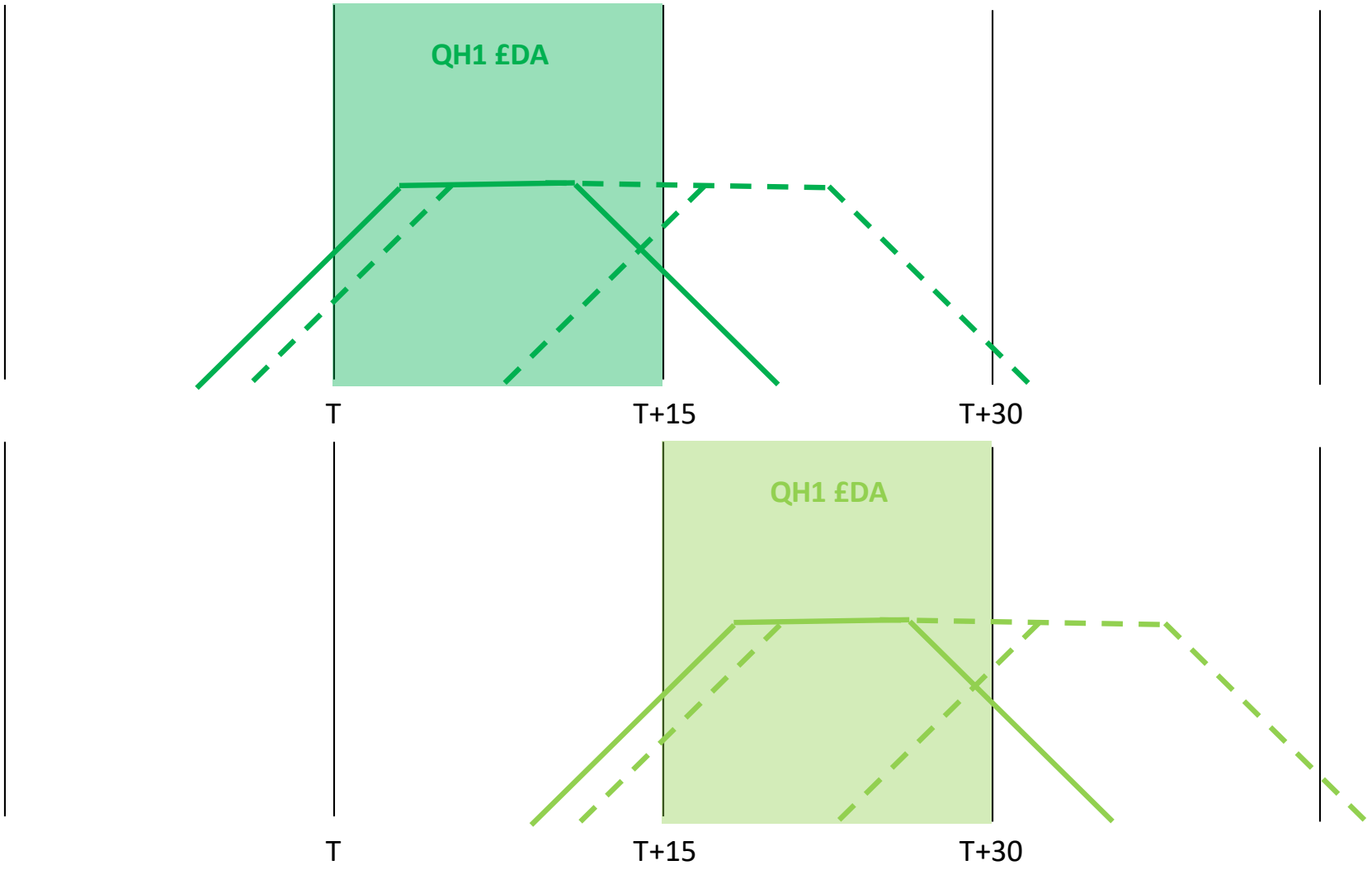
Updated Proposed mFRR Cashflow

£ mFRR Cashflow = 'Profile' volume * QH Activation Price



- Thoughts?
- Concerns?

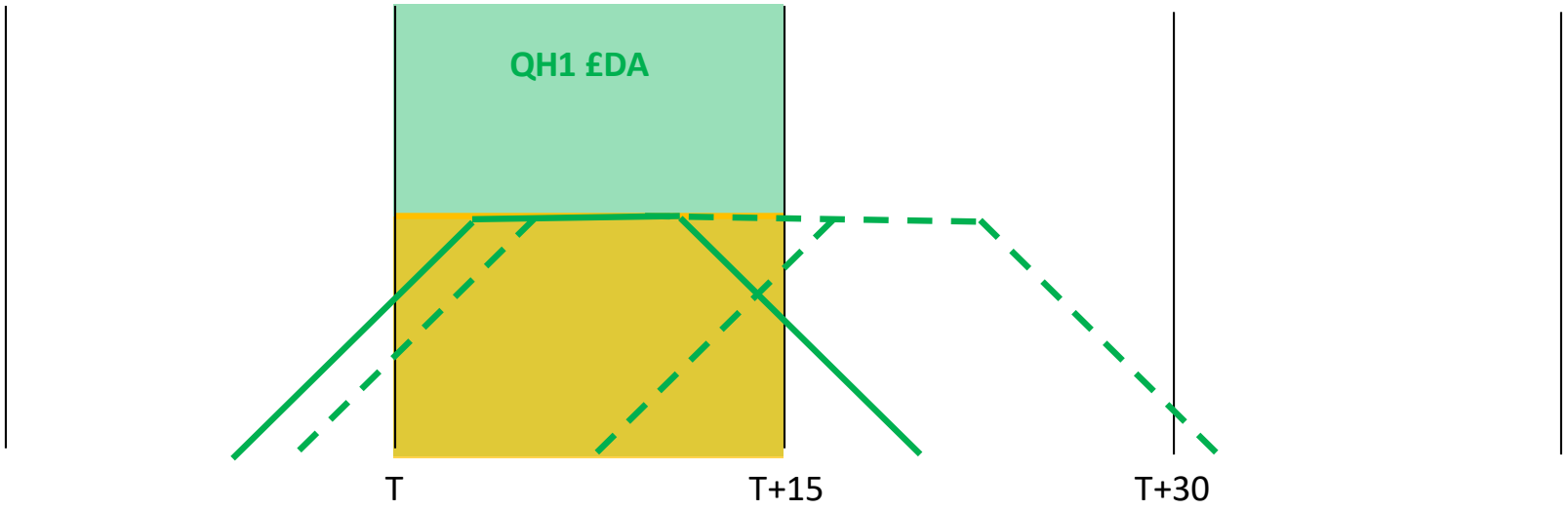
Direct Activation Pricing



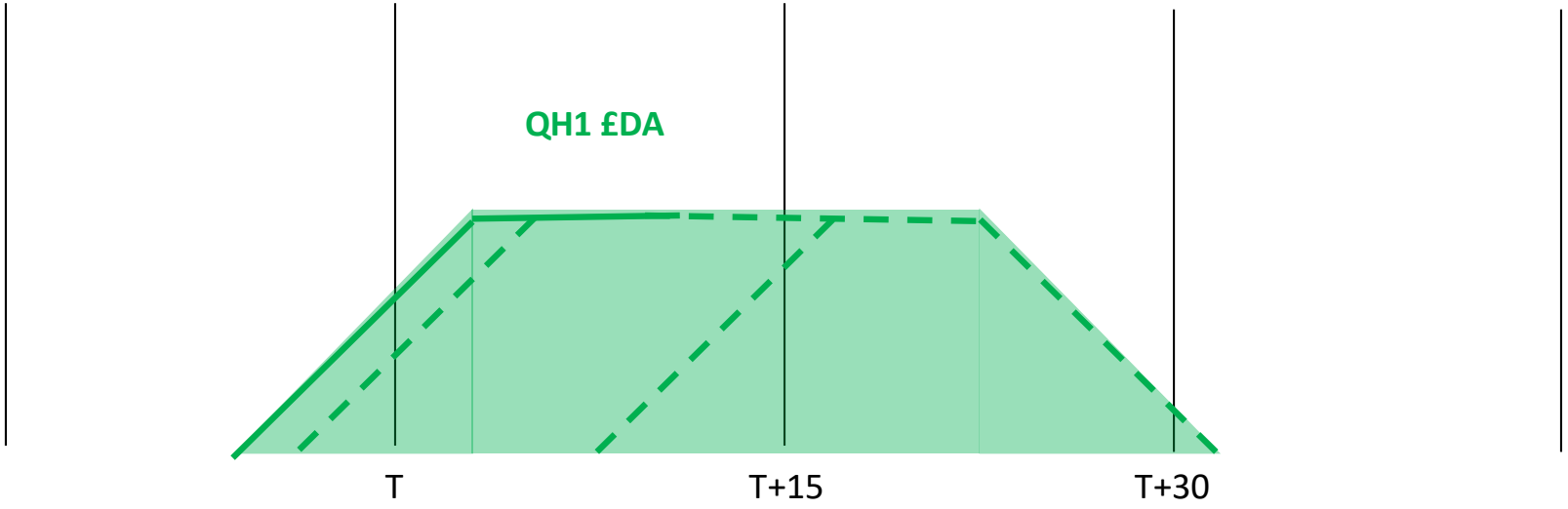
Article 6 (2): For each mFRR MTU, each participating TSO shall determine the accepted bid volume of bids selected in accordance with paragraph 1(a) which shall be attributed to the same mFRR MTU and to the subsequent mFRR MTU for the respective direction.

Options

A

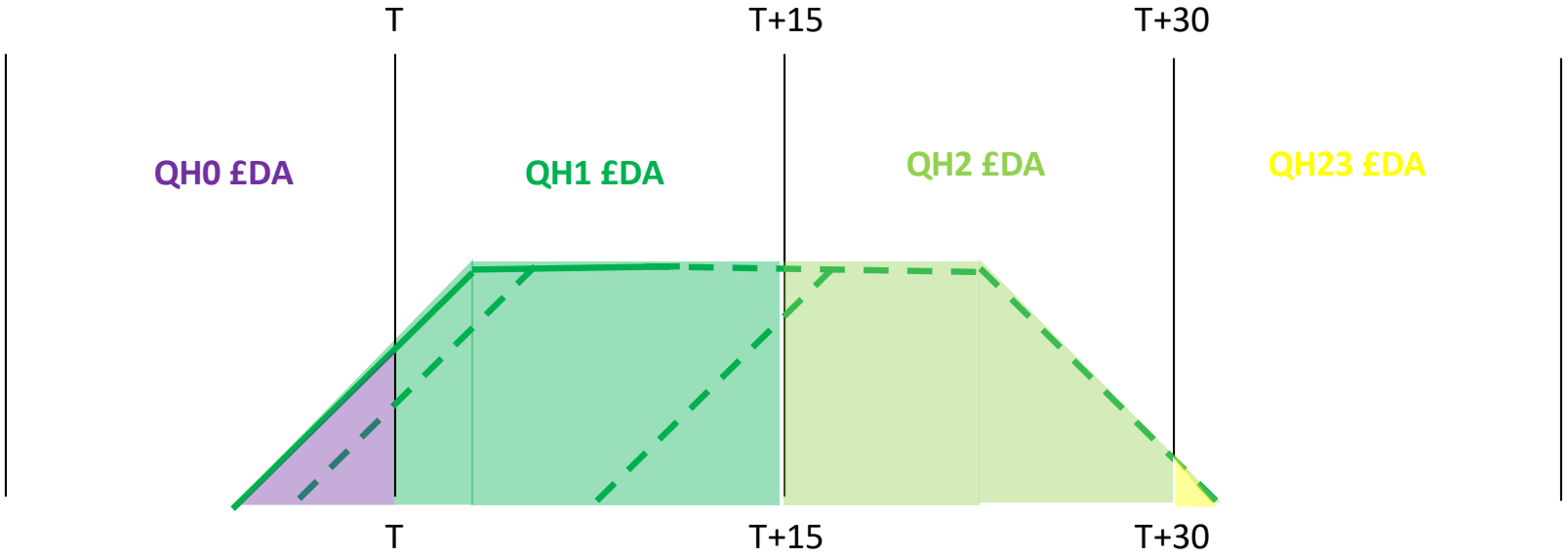


B



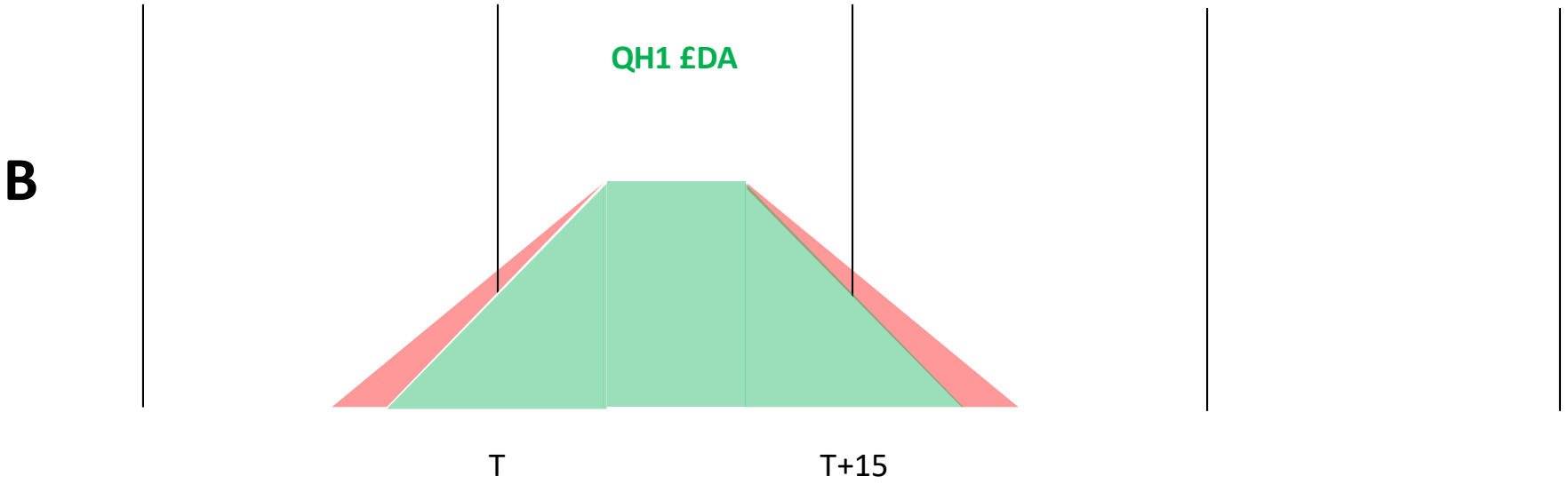
Options

C



Proposed mFRR Instruction Deviation Cashflow

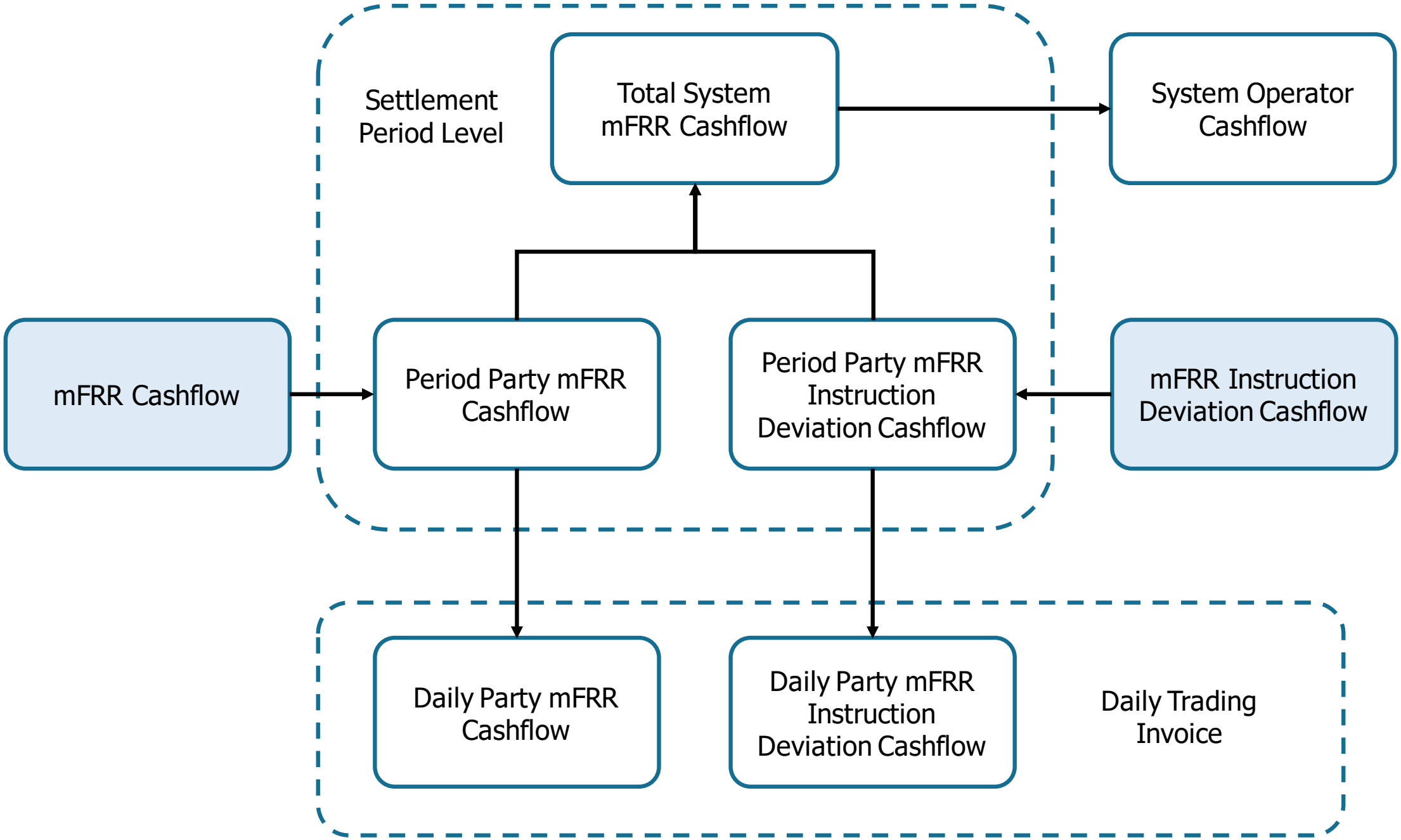
£ mFRR Cashflow = Deviation Volume * BEDP (£0)



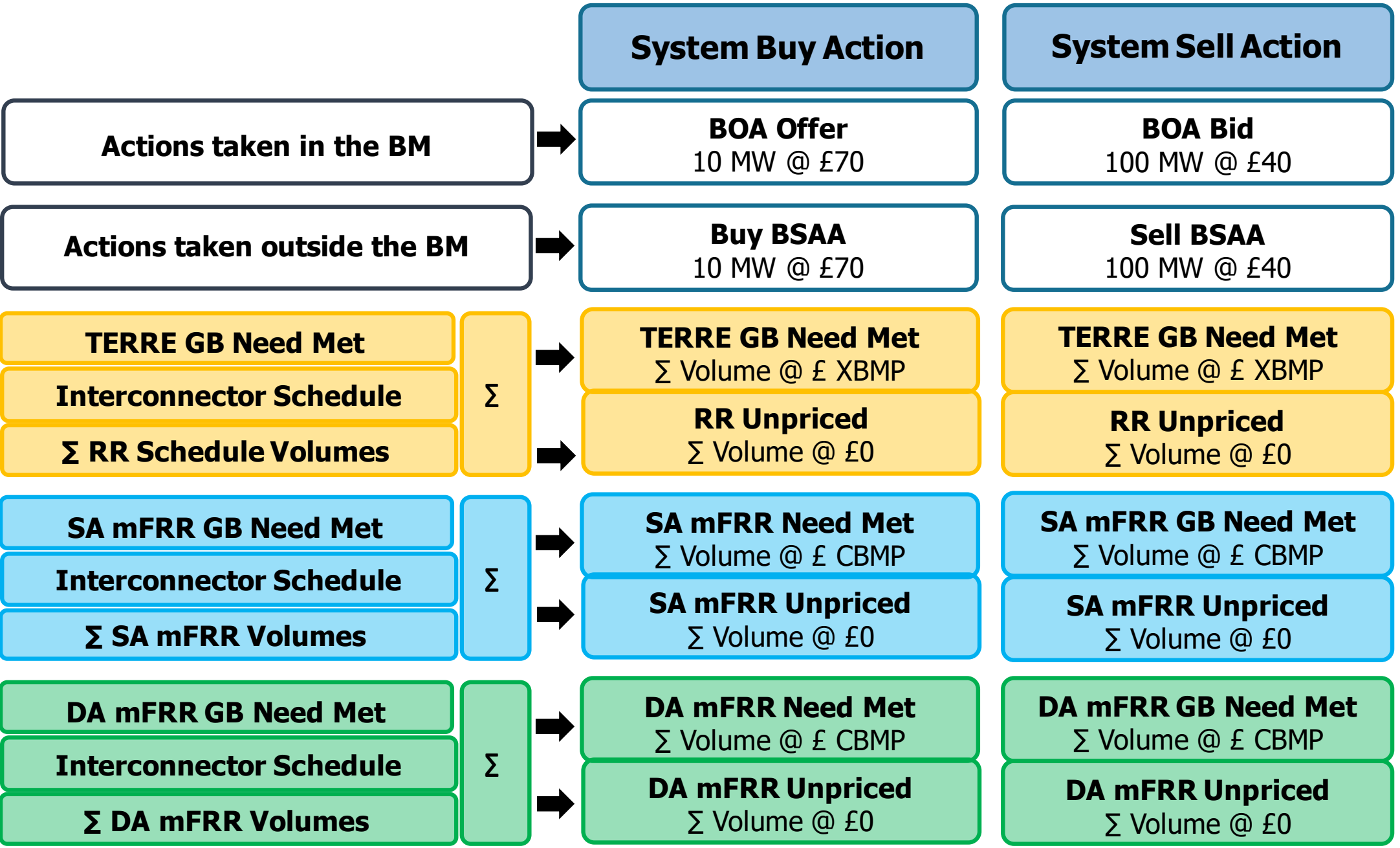
Considerations:

- Is calculated by subtracting Standard Product Shape from the physically dispatched shape
- Do we want to incentivise the mFRR Standard Product Shape?
  - Should we harmonise incentivisation with Replacement Reserve? I.e. BEDP = £0
- Do we want separate instruction deviation cashflows for Scheduled and Direct Activations?

Further Cashflow Impacts



Imbalance Price Update



Solution Overview – Product Settlement

Considerations:

- Are 'block' volumes and cashflows reflective of the cost of balancing?
- Specifically how we choose
- Do we want separate aggregated actions for Scheduled and Direct Activations?