EP UK Investments

A member of the EPH Group

Inclusion of Difference Charges in the Calculation of Make Whole Payment Revenue

Mods Meeting 121 – April 2024

Background – Purpose of Modification

- This modification has been raised to address an issue with the current Trading and Settlement Code rules which may result in a generator being constrained on at a loss.

- This issue arises in where there is a price spike, and the imbalance price exceeds the Strike Price. The calculation for make whole payment revenue does not consider Difference Charges which results in the calculated revenue for a contiguous operating period to be inaccurate.

- This issue arises due to the fact that the Make Whole Payment assessment considers revenues and costs for the entire contiguous operating period. This means that a price spike in one period has an impact on all following operating periods.

- EPUKI does not believe that the current rules are consistent with the intended principle of the Make Whole Payment and thus should be updated.

Legal Drafting Change

- This modification proposes a single change to the calculation of Make Whole Payment Revenue as per F.11.4.2:

$$
\begin{aligned}
&CREVMWP_{uk} \\
&= \sum_{\gamma \in k}\left(\sum_{o}\sum_{i}\left(Max\left(PBO_{uoi\gamma}, PIMB_{\gamma} - MAX\left(PIMB_{\gamma} - PSTR_{\gamma}, 0\right)\right)\right.\right. \\
&\times \left.\left.\left(QAOLF_{uoi\gamma} - Max\left(QAOOPOLF_{uoi\gamma}, QAOBIAS_{uoi\gamma}, QAOUNDEL_{uoi\gamma}, QAOTOTSOLF_{uoi\gamma}\right)\right)\right)\right. \\
&+ \sum_{o}\sum_{i}\left(Min\left(PBO_{uoi\gamma}, PIMB_{\gamma}\right)\right. \\
&\times \left(QABLF_{uoi\gamma}\right. \\
&- Min\left(QABBPOLF_{uoi\gamma}, QABBIAS_{uoi\gamma}, QABUNDEL_{uoi\gamma}, QABNFLF_{uoi\gamma}, QABCURLLF_{uoi\gamma},\right. \\
&\left.\left.QABTOTSOLF_{uoi\gamma}\right)\right)\Big) \quad + \sum_{o}\sum_{i}\left(PBO_{uoi\gamma} \times Max\left(QAOOPOLF_{uoi\gamma} - QAOUNDEL_{uoi\gamma}, 0\right)\right) \\
&+ \sum_{o}\sum_{i}\left(PBO_{uoi\gamma} \times Min\left(QABBPOLF_{uoi\gamma} - Min\left(QABCURLLF_{uoi\gamma}, QABUNDEL_{uoi\gamma}\right), 0\right)\right) \\
&+ \sum_{o}\sum_{i}\left(PCURL_{u\gamma} \times Min\left(QABCURLLF_{uoi\gamma} - Min\left(QABBIAS_{uoi\gamma}, QABUNDEL_{uoi\gamma}\right), 0\right)\right)\Big)
\end{aligned}
$$

- This change ensures that revenue received above the Strike Price is not counted towards Make Whole Payment Revenue.

- This modification will not apply where a unit bids above the Strike Price. This mitigates against any impact on the protection offered by the Strike Price to Suppliers.

Example of Issue

Unit COD		
Start Cost	€/start	€ 150,000
NL	€/hr	€ 6,000
P1	€/MWh	€ 200.00
Q1	MW	200
Obligated Qty	MW	190

Strike Price € 500.00

Period	**COCMWP**	**CREVMWP**	**PIMB**	**CDIFFCWD**	***Revised CFC Calc*** **COCREV adjusted**
P1	€ 196,000	€ 40,000	€ 50.00	€ 0	€ 40,000
P2	€ 46,000	€ 40,000	€ 50.00	€ 0	€ 40,000
P3	€ 46,000	€ 40,000	€ 50.00	€ 0	€ 40,000
P4	€ 46,000	€ 40,000	€ 50.00	€ 0	€ 40,000
P5	€ 46,000	€ 40,000	€ 50.00	€ 0	€ 40,000
P6	€ 46,000	€ 40,000	€ 50.00	€ 0	€ 40,000
P7	€ 46,000	€ 40,000	€ 50.00	€ 0	€ 40,000
P8	€ 46,000	€ 40,000	€ 150.00	€ 0	€ 40,000
P9	€ 46,000	€ 40,000	€ 150.00	€ 0	€ 40,000
P10	€ 46,000	€ 40,000	€ 150.00	€ 0	€ 40,000
P11	€ 46,000	€ 40,000	€ 100.00	€ 0	€ 40,000
P12	€ 46,000	€ 40,000	€ 100.00	€ 0	€ 40,000
P13	€ 46,000	€ 40,000	€ 100.00	€ 0	€ 40,000
P14	€ 46,000	€ 40,000	€ 100.00	€ 0	€ 40,000
P15	€ 46,000	€ 60,000	€ 300.00	€ 0	€ 60,000
P16	€ 46,000	€ 80,000	€ 400.00	€ 0	€ 80,000
P17	€ 46,000	€ 200,000	€ 1,000.00	-€ 95,000	€ 105,000
P18	€ 46,000	€ 400,000	€ 2,000.00	-€ 285,000	€ 115,000
P19	€ 46,000	€ 40,000	€ 200.00	€ 0	€ 40,000
P20	€ 46,000	€ 40,000	€ 150.00	€ 0	€ 40,000
P21	€ 46,000	€ 40,000	€ 50.00	€ 0	€ 40,000
P22	€ 46,000	€ 40,000	€ 50.00	€ 0	€ 40,000
P23	€ 46,000	€ 40,000	€ 50.00	€ 0	€ 40,000
P24	€ 46,000	€ 40,000	€ 50.00	€ 0	€ 40,000
Total	**€ 1,254,000**	**€ 1,540,000**		**-€ 380,000**	**€ 1,160,000**

No CFC due ***€ 286,000 margin*** ***CFC payment Due*** ***€ 94,000***

(CREVMWP-COCMWP)

Example of Issue

Unit COD		
Start Cost	€/start	€ 150,000
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Q1	MW	200
Obligated Qty	MW	190

Strike Price € 500.00

Unit has bid below PSTR. P1 based on complex bid offer data.

Period	COCMWP	CREVMWP	PIMB	CDIFFCWD	*Revised CFC Calc* COCREV adjusted
P1	€ 196,000	€ 40,000	€ 50.00	€ 0	€ 40,000
P2	€ 46,000	€ 40,000	€ 50.00	€ 0	€ 40,000
P3	€ 46,000	€ 40,000	€ 50.00	€ 0	€ 40,000
P4	€ 46,000	€ 40,000	€ 50.00	€ 0	€ 40,000
P5	€ 46,000	€ 40,000	€ 50.00	€ 0	€ 40,000
P6	€ 46,000	€ 40,000	€ 50.00	€ 0	€ 40,000
P7	€ 46,000	€ 40,000	€ 50.00	€ 0	€ 40,000
P8	€ 46,000	€ 40,000	€ 150.00	€ 0	€ 40,000
P9	€ 46,000	€ 40,000	€ 150.00	€ 0	€ 40,000
P10	€ 46,000	€ 40,000	€ 150.00	€ 0	€ 40,000
P11	€ 46,000	€ 40,000	€ 100.00	€ 0	€ 40,000
P12	€ 46,000	€ 40,000	€ 100.00	€ 0	€ 40,000
P13	€ 46,000	€ 40,000	€ 100.00	€ 0	€ 40,000
P14	€ 46,000	€ 40,000	€ 100.00	€ 0	€ 40,000
P15	€ 46,000	€ 60,000	€ 300.00	€ 0	€ 60,000
P16	€ 46,000	€ 80,000	€ 400.00	€ 0	€ 80,000
P17	€ 46,000	€ 200,000	€ 1,000.00	-€ 95,000	€ 105,000
P18	€ 46,000	€ 400,000	€ 2,000.00	-€ 285,000	€ 115,000
P19	€ 46,000	€ 40,000	€ 200.00	€ 0	€ 40,000
P20	€ 46,000	€ 40,000	€ 150.00	€ 0	€ 40,000
P21	€ 46,000	€ 40,000	€ 50.00	€ 0	€ 40,000
P22	€ 46,000	€ 40,000	€ 50.00	€ 0	€ 40,000
P23	€ 46,000	€ 40,000	€ 50.00	€ 0	€ 40,000
P24	€ 46,000	€ 40,000	€ 50.00	€ 0	€ 40,000
Total	**€ 1,254,000**	**€ 1,540,000**		**-€ 380,000**	**€ 1,160,000**

Unit does not receive a MWP as CREVMWP is calculated as greater than COCMWP.

No CFC due ***€ 286,000 margin*** ***CFC payment Due*** ***€ 94,000***

(CREVMWP-COCMWP)

Unit incurs Difference Charges resulting in a net loss.

Under revised formula, unit's CREVMWP will reflect Difference Charges to address this risk.

Example

Hour	H1	H2	H3	H4	H5	H6	H7	H8	H9	**Total**
COCMWP (€)	73000	43000	43000	43000	43000	43000	43000	43000	43000	**417,000**
P1 (€/MWh)	140	140	140	140	140	140	140	140	140	
PSTR (€/MWh)	500	500	500	500	500	500	500	500	500	
PIMB (€/MWh)	50	50	50	1000	2000	50	50	50	50	
CREVMWP – current (€)	28000	28000	28000	200000	400000	28000	28000	28000	28000	**796,000**
Difference Charges	0	0	0	100000	300000	0	0	0	0	
CREVMWP – proposed (€)	28000	28000	28000	100000	100000	28000	28000	28000	28000	**396,000**

- In the above example, a theoretical 200MW unit has been constrained on for nine hours, during which there are two price spikes (H4 and H5).
- Under the current calculation, CREVMWP during the total period is greater than COCMWP. This means that the unit will not receive a Make Whole Payment.
- However, once Difference Charges are considered for the price spikes period, the unit's revenue will be less than its operating costs for the period.
- Under the proposed change, the CREVWMP in H4 and H5 are capped at the PSTR. This means that the application of Difference Charges are considered before determining whether or not to apply a Make Whole Payment.
- This results in the unit will receiving a MWP of approximately €20,000.

Example – Unit Bids Above PSTR, setting PIMB

Hour	H1	H2	H3	H4	H5	H6	H7	H8	H9	**Total**
COCMWP (€)	73000	43000	43000	43000	43000	43000	43000	43000	43000	**417,000**
P1 (€/MWh)	750	750	750	1000	2000	750	750	750	750	
PSTR (€/MWh)	500	500	500	500	500	500	500	500	500	
PIMB (€/MWh)	750	750	750	1000	2000	750	750	750	750	
CREVMWP - current (€)	150000	150000	150000	200000	400000	150000	150000	150000	150000	**1,650,000**
Difference Charges	50000	50000	50000	100000	300000	50000	50000	50000	50000	
CREVMWP - proposed (€)	150000	150000	150000	200000	400000	150000	150000	150000	150000	**1,650,000**

- In the above example, a theoretical 200MW unit has been constrained on for nine hours and has set the imbalance price at a level which exceeds the Strike Price.
- Under the proposed legal drafting, no change will occur to calculation of CREVMWP meaning that the unit will not receive a Make Whole Payment for this period.

Example – Unit Bids Above PSTR, not setting PIMB.

Hour	H1	H2	H3	H4	H5	H6	H7	H8	H9	**Total**
COCMWP (€)	73000	43000	43000	43000	43000	43000	43000	43000	43000	**417,000**
P1 (€/MWh)	120	120	120	750	750	120	120	120	120	
PSTR (€/MWh)	500	500	500	500	500	500	500	500	500	
PIMB (€/MWh)	50	50	50	1000	2000	50	50	50	50	
CREVMWP - current (€)	24000	24000	24000	200000	400000	24000	24000	24000	24000	**768,000**
Difference Charges	0	0	0	50000	50000	0	0	0	0	
CREVMWP - proposed (€)	24000	24000	24000	150000	150000	24000	24000	24000	24000	**468,000**

- In this example, the unit bids below the Strike Price, a spike in fuel prices requires the unit to bid above the Strike Price in Hours 4 and 5. The CREVMWP is based on the unit's PBO rather than the PIMB for this period.
- The unit's CREVMWP is not capped at PSTR during the periods where it has bid above PSTR. This prevents the recovery of revenue greater than the PSTR through the Make Whole Payment.
- Ultimately, the unit does not receive a MWP as its costs for this period are less than CREVMWP.

Conclusion

- It is the opinion of EPUKI, that this modification is unlikely to have a significant impact on the market if it is approved. However, if a price spike occurs and a unit is constrained on and incurs a significant loss, the need and rationale for this modification will be clear.

- As such, this modification is more of a precaution measure than an active change to the market ruleset. However, EPUKI believe that this modification provides a more accurate calculation of MWP revenue, and thus is aligned with the principles of the MWP and the TSC.

- EPUKI has concerns that the presence of emergency generation and retained generation, increased volumes of variable generation, and increased volumes of energy storage may result in imbalance price spikes in the future.

- We believe that this change is important to protect RO holders from an unintended consequence as a result of the MWP calculation.