Impact on wider TNUoS Charges

This Annex considers the cost impact on wider TNUoS charges of CMP 418. As confirmed by the ESO, Local Circuit and Substation Charges are classed as Connection Assets and therefore should be excluded when calculating how much revenue can be collected from Generators under the EU Cap. This means that any changes to the Connection Exclusion amount affects the Transmission Demand Residual (TDR).

The impact on TDR is achieved by looking at the amount related to Dynamic Reactive Compensation Equipment (DRCE) that is, under the status quo, recovered by the offshore local circuit tariff. In line with the purpose of CMP 418, if the offshore generator no longer pays for DRCE, then the amount of the OFTO revenue which accounts for that equipment moves from the offshore local circuit tariff to the Transmission Demand Residual (TDR) tariffs (spread proportionally across all TDR tariffs).

The UK has set an ambitious target of reaching 50 GW of offshore wind capacity by 2030[1], and up to 125GW by 2050[2]. As of December 2023, the UK has approximately 15 GW[3] of offshore wind capacity, which would mean 35 GW is required in the 6 years from 2025 to 2030. To meet the 2030 target, it is necessary to add approximately 5.83 GW per year, while approximately 3.75 GW additionally capacity is required annually from 2030 onwards to meet the 2050 target. The number of DRCEs required to support this new offshore wind capacity has been estimated by considering SVCs specifically. SVCs were used as costs were readily available, but STATCOMs are also used as DRCE in offshore wind. Including different types of DRCE in the analysis would be expected to further improve the benefits of this proposed solution. This is because the same cost-saving calculations used for SVCs are applicable to the typically higher costs of other DRCE equipment.

Each SVC is assumed to cost £17.9m for 100 MVar[4], which is capable of supporting roughly 300 MW of offshore wind (£/MW 59,667). This cost was arrived at by using the mid-range 100MVar SVC cost from ETYS 2015 – Appendix E and inflating to pre-Covid prices in 2020[5].

In status quo, the Tender Revenue Stream (TRS) attributable to SVCs would be recovered through project specific offshore tariff but they in effect represent the amount that would then have to be moved to TDR in line with the recommendation of this CUSC modification and would cover both CAPEX and OPEX. Hence, to calculate the amount that would need to be recovered from TDR, the TRS/Final Transfer Value (FTV) ratio was used to derive the TRS impact. The TRS/FTV ratio is a useful figure to compare the annual amount paid to OFTOs relative to the total offshore transmission CAPEX across projects. An analysis of all TRS data available for wind OFTOs between 2011 and 2021 indicates a stabilisation of TRS/FTV ratio at 4% from Tender Round 6 onwards.[6]

$$TRS\ Impact\ = \frac{TRS}{FTV} Ratio\ \times (Cum.OW\ MW\ x\ SVC \frac{£}{\mathrm{MW}} cost\ )$$

$$Pre\ 2030\ TRS\ Impact\ (2025)\ = 4\%\ \times (5833\ x\ \times 59{,}667)\ = £13.92\mathrm{m}$$

[1] Offshore Wind Net Zero Investment Roadmap, HM Government, 2023
[2] Climate Change Committee (2020), 'The Sixth Carbon Budget: The UK's path to Net Zero'
[3] Wind Energy Statistic, renewable UK
[4] ETYS 2015 - Appendix E, 2015
[5] Bank of England Inflation Calculator
[6] Aurora Energy Research, 2022 Moray West Report. Available upon request on a confidential basis.

$$Post\ 2030\ TRS\ Impact\ (2025)\ = 4\%\ \times (3750\ x\ \times 59{,}667)\ = £8.95\text{m}$$

	Cum. OW (MW)	Cum. SVC Cost (£)	TRS Impact (£)
2025	3,500	208,833,333	8,353,333
2026	7,000	417,666,667	16,706,667
2027	10,500	626,500,000	25,060,000
2028	14,000	835,333,333	33,413,333
2029	17,500	1,044,166,667	41,766,667
2030	21,000	1,253,000,000	50,120,000
2031	24,500	1,461,833,333	58,473,333
2032	28,000	1,670,666,667	66,826,667
2033	31,500	1,879,500,000	75,180,000
2034	35,000	2,088,333,333	83,533,333
2035	38,500	2,297,166,667	91,886,667
2036	42,000	2,506,000,000	100,240,000
2037	45,500	2,714,833,333	108,593,333
2038	49,000	2,923,666,667	116,946,667
2039	52,500	3,132,500,000	125,300,000
2040	56,000	3,341,333,333	133,653,333
2041	59,500	3,550,166,667	142,006,667
2042	63,000	3,759,000,000	150,360,000
2043	66,500	3,967,833,333	158,713,333
2044	70,000	4,176,666,667	167,066,667
2045	73,500	4,385,500,000	175,420,000
2046	77,000	4,594,333,333	183,773,333
2047	80,500	4,803,166,667	192,126,667

2048	84,000	5,012,000,000	200,480,000
2049	87,500	5,220,833,333	208,833,333
2050	91,000	5,429,666,667	217,186,667

Impact on Wind Farm Development Costs

The impact of the proposed solution to socialize costs through the TNUoS on wind farm development costs can be seen as twofold: a direct impact that mirrors the increase in TNUoS costs, and an indirect benefit stemming from reduced volatility and financial uncertainty.

Since offshore wind projects participate in the Contracts for Difference (CfD) scheme, which provides a long-term guarantee on price per MWh, these savings have the potential to reduce the CfD price by an amount equal to the annual saving. The costs paid by wind farms would decrease by the same amount paid through wider TNUoS. Assuming 35/110 GW of offshore wind is added by 2030/2050, this would cost up to £83.53m/£262.53m annually to fund via the current methodology. Across 8760 hours in a year and assuming a 45% load factor, this offshore generator annual cost saving is equivalent to £0.61/MWh. This is compared to current offshore wind CfD prices in the latest allocation round of £45.37/MWh.[7]

Reducing the unpredictability of TRS payments by removing DRCE costs, provides a reduction in financial risk for developers, leading to lower financing costs and reducing potential mispricing in CfD auctions. This is supported by analysis by NERA Economic Consulting[8], which suggests that reduced volatility and improved financial planning could lead to decreased costs to consumers. The proposed solution would thus lead to a net decrease in consumer costs compared to the current methodology that is directly reflective of the DRCE cost that would be socialised via TNUoS, hence we would expect the consumer impact of the proposed change to be net off.

[7] CfD Register, Low Carbon Contracts

[8] Offshore Wind Transmission Charges, Scottish Hydro Electric Transmission, September 2021