

## Annex 2 – Supporting Analysis

As per CMP336 (and clarified in the proposed CMP388), sites will be allocated to bands based on the mean average of the latest 24 months consumption data. Some transmission connected sites can have highly variable consumption between time periods and this is shown in Figure 1 which shows 2019-21, 2020-22<sup>1</sup> and 2019-22<sup>1</sup> (i.e. 3 years) of average annual consumption for each site.

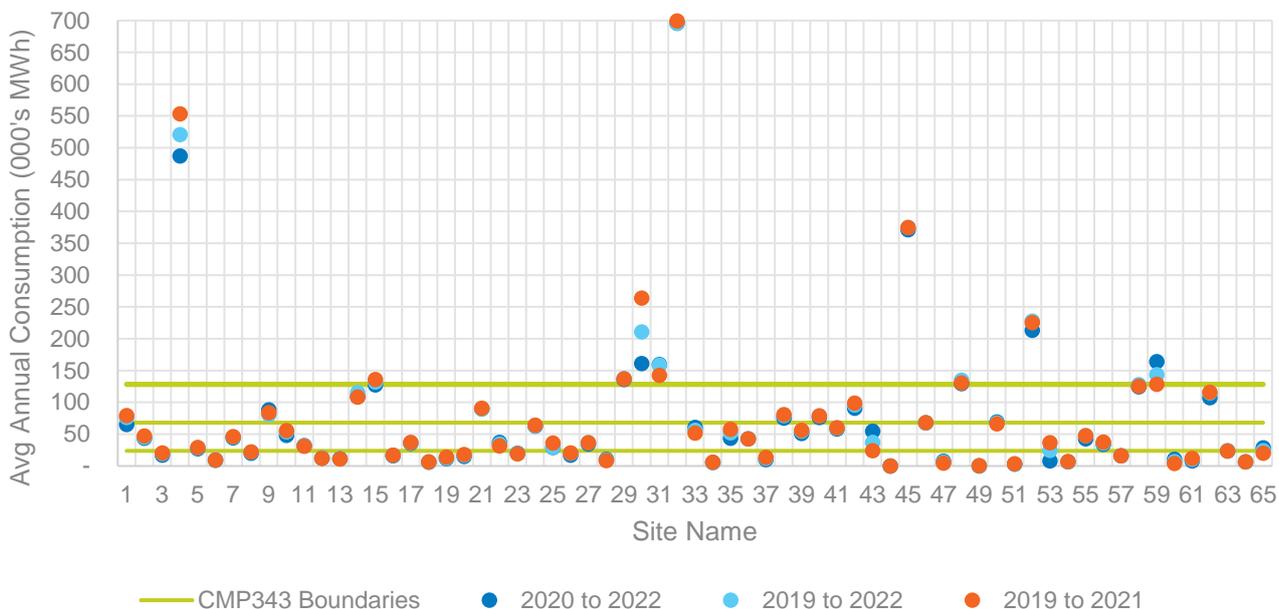


Figure 1 - Consumption by Site

Plotting this data by site rank (i.e. smallest consumption each year is ranked 1 whilst the largest is ranked 65) rather than by name (as per Figure 2) shows more clearly the pattern of consumption of sites at transmission.

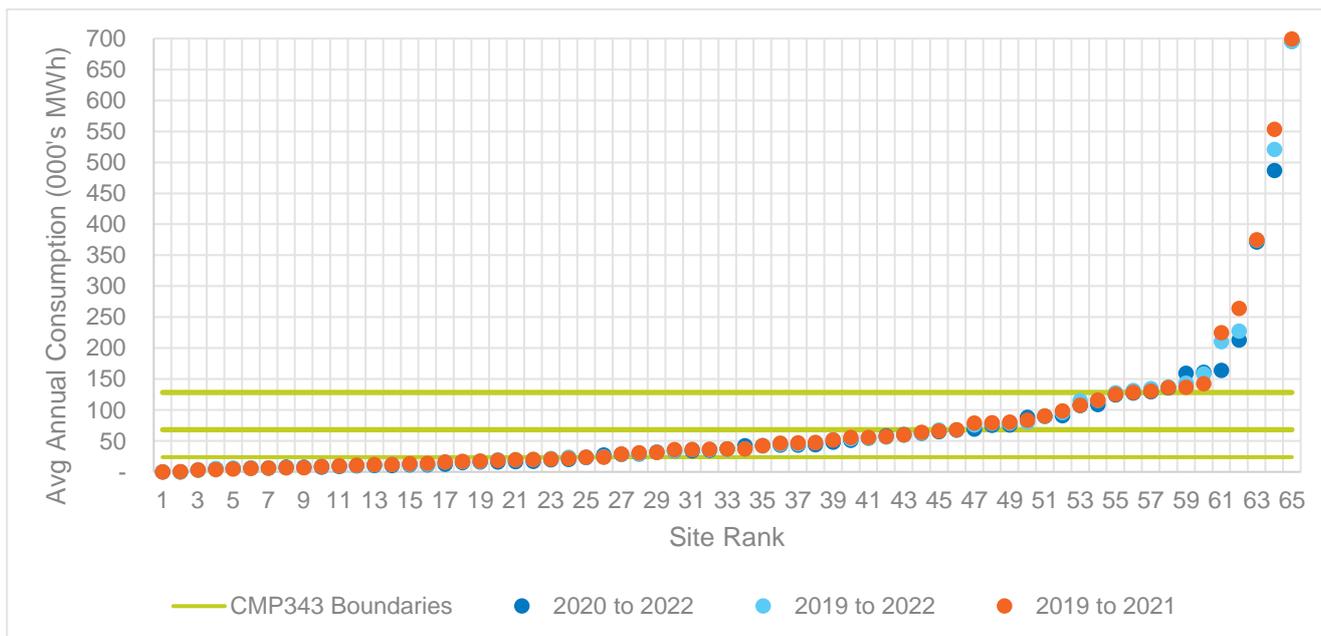


Figure 2 – Consumption ranked from smallest to largest

<sup>1</sup> Please note that at time of writing, data for the 2021/22 financial year is not yet fully available and so is based on data from 09/02/2021 to 08/02/2022 not 01/04/2021 to 31/03/2022.

Figure 3 shows the same information as Figure 2 but focussed on ranks that consume less than 200,000MWh.

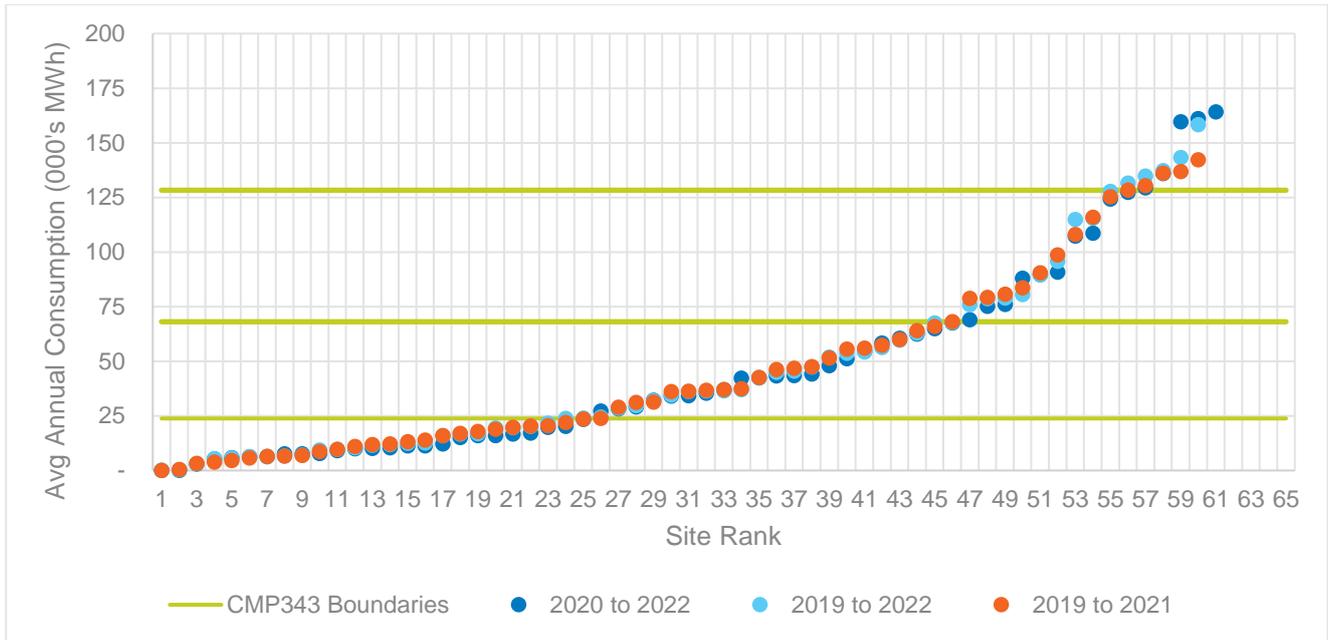


Figure 3 - Consumption ranked from smallest to largest (capped at 200k MWh)

This pattern shows there is a smooth curve of consumption, with no natural breaks in consumption between ranks) up until the largest 5 ranks where the curve spikes (i.e. ranks 61 to 65 which all consume over 200,000 MWh). Also, variability between years within a rank is typically lower than variability between years within a site as per the table below.

		2019-21 vs 2020-22	2019-21 vs 2019-22	2020-22 vs 2019-22
<b>Min Change</b>	Rank	-97%	-33%	-13%
	Site	-100%	-33%	-33%
<b>Max Change</b>	Rank	+40%	+42%	+1912% <sup>2</sup>
	Site	+174%	+87%	+218%
<b>Average Change</b>	Rank	-4%	0%	34%
	Site	-1%	+1%	+6%

At the 85<sup>th</sup> percentile (as per CMP343) the threshold was set at 128,292MWh as shown by the top green line in Figures 2 & 3. This means there is a risk that sites in the 56<sup>th</sup> to 60<sup>th</sup> ranks could be treated significantly different from very similar sites located in the 50<sup>th</sup> to 55<sup>th</sup> ranks. As a result, this proposal looks to revise the threshold for the final band boundary from the 85<sup>th</sup> percentile to the 93<sup>rd</sup> percentile and an associated consumption value of 185,270MWh as shown in brown in the diagram below.

<sup>2</sup> Consumption changed from ~12MWh to ~240MWh. The 2<sup>nd</sup> largest change was +34%.

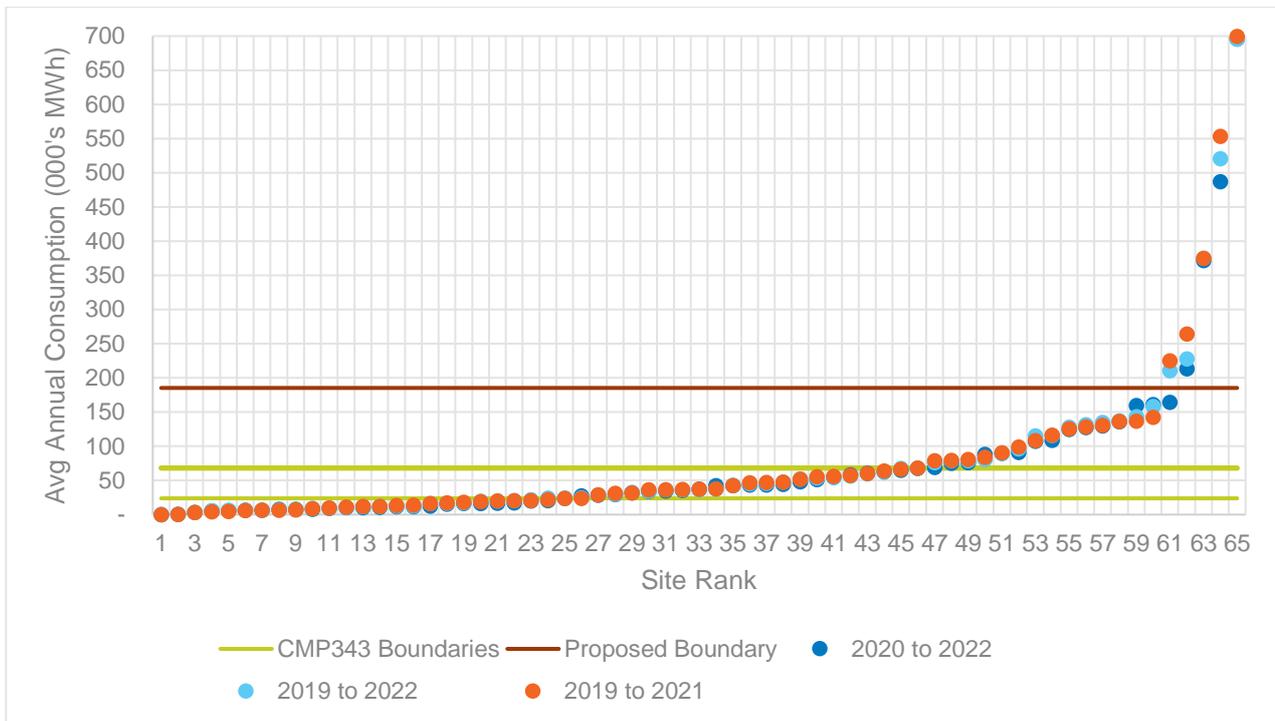


Figure 4 - Consumption ranked from smallest to largest (as per Figure 2) with the proposed band boundary change

For clarity, this proposal is not looking to change the thresholds between band 1 and 2 (40<sup>th</sup> percentile at 23,800MWh) or band 2 and 3 (70<sup>th</sup> percentile at 68,099MWh) and these are still shown in green in Figure 4.

As this proposal will affect allocation of sites to individual bands as well as the consumption of each of these bands (and therefore the total value of the TDR to be recovered from that band) it will also affect the tariffs for bands 3 and 4; bands 1 and 2 (and the sites contained within) are unaffected. The tables below show a comparison of annual tariffs (2022/23 as forecast in March 2021) between the approved CMP343 band boundaries and the proposed CMP389 band boundaries as well as a summary of how this affects site counts and consumption per band.

	Percentile		Threshold (MWh)		Sites		Consumption		Annual Tariff	Total Revenue
	Lower	Upper	Lower	Upper	Count	%	MWh	%	(£)	(Annual Tariff x Site Count)
<b>CMP343 approved boundaries</b>	-	40	-	23,800	26	40.0%	317,362	6.8%	£ 108,474	£ 2,820,326
	40	70	23,800	68,099	20	30.8%	873,668	18.8%	£ 388,205	£ 7,764,091
	70	85	68,099	128,292	10	15.4%	953,325	20.5%	£ 847,198	£ 8,471,983
	85	100	128,292	699,373	9	13.8%	2,512,664	54.0%	£ 2,481,052	£ 22,329,467
	<b>Total</b>				<b>65</b>	<b>100.0%</b>	<b>4,657,020</b>	<b>100.0%</b>		<b>£41,385,866.80</b>

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<b>Proposed boundaries</b>	-	40	-	23,800	26	40.0%	317,362	6.8%	£ 108,474	£ 2,820,326
	40	70	23,800	68,099	20	30.8%	873,668	18.8%	£ 388,205	£ 7,764,091
	70	93	68,099	185,270	14	21.5%	1,656,496	35.6%	£ 1,051,493	£ 14,720,896
	93	100	185,270	699,373	5	7.7%	1,809,494	38.9%	£ 3,216,111	£ 16,080,553
	<b>Total</b>				<b>65</b>	<b>100.0%</b>	<b>4,657,020</b>	<b>100.0%</b>		<b>£41,385,866.80</b>

The table below shows a summary of how these different annual tariffs will affect individual sites.

Annual impact on sites		CMP343 Banding	
		Band 3	Band 4
CMP389 Banding	Band 3	+£204,294 (+24%)	-£1,429,559 (-58%)
	Band 4	N/A	+£735,059 (+30%)

In summary, sites which remain in band 3 or band 4 for under both the CMP343 boundaries and the proposed CMP389 boundaries will pay 24% and 30% more TDR charges respectively. The 4 sites which move from band 4 (under CMP343) to band 3 (under the proposed CMP389 solution) will see a reduction in their TDR charges by 58%.

### Why the 93<sup>rd</sup> percentile?

In choosing the 93<sup>rd</sup> percentile as the solution for this proposal, each percentile (above 85<sup>th</sup>) for the band 3-4 boundary was calculated to determine the impact and this is shown below in Figure 5.

Percentile	MWh Consumption	Band 3 Site Count	Band 4 Site Count	Band 3 Annual Tariff	Band 4 Annual Tariff
85	128,291.51	10	9	£847,198.32	£2,481,051.86
86	128,775.38	10	9	£847,198.32	£2,481,051.86
87	129,717.38	10	9	£847,198.32	£2,481,051.86
88	132,178.12	11	8	£969,730.98	£2,516,801.14
89	135,757.60	11	8	£969,730.98	£2,516,801.14
90	136,432.81	12	7	£987,812.56	£2,706,814.16
91	138,033.86	13	6	£999,884.82	£2,967,157.86
92	141,500.69	13	6	£999,884.82	£2,967,157.86
93	185,269.98	14	5	£1,051,492.60	£3,216,110.69
94	231,291.54	15	4	£1,111,042.65	£3,533,952.55
95	256,168.18	15	4	£1,111,042.65	£3,533,952.55
96	312,740.80	16	3	£1,246,366.53	£3,619,861.78
97	389,113.84	17	2	£1,443,901.70	£3,127,560.49
98	503,238.98	17	2	£1,443,901.70	£3,127,560.49

Figure 5 - Table showing summary of percentile analysis

Percentiles below the 85<sup>th</sup> were not considered in the analysis shown in Figure 5 due there being no clear breaks in the data below this value, shown in Figure 3. As can be seen in Figures 2 and 4, there is a natural break in the data between the 60<sup>th</sup> and 61<sup>st</sup> site ranks at ~200,000MWh. Combining this with the analysis summarised in Figure 5 highlights that the 93<sup>rd</sup> percentile is the band boundary consumption value, which is closest to 200,000MWh.

Other natural breaks in the data occur at the 96<sup>th</sup> percentile (~325,000MWh between the 62<sup>nd</sup> and 63<sup>rd</sup> ranked sites) and 97<sup>th</sup> percentile (~400,000MWh between the 63<sup>rd</sup> and 64<sup>th</sup> ranked sites). These percentiles were not chosen as it would result in a very small number of sites in band 4 which would lead to volatile tariffs (for sites in this band) and a higher risk of this band 4 being needed to be merged with band 3 due to maintaining commercial confidentiality should one or two sites disconnect from the transmission system. For these reasons, the 93<sup>rd</sup> percentile was chosen as the solution to progress for CMP389.