

**SOLAR PHOTOVOLTAICS IN 2050 RENEWABLE ELECTRICITY TECHNOLOGY MIXES  
& THE ROLE OF ROOF MOUNTED-INSTALLATIONS**

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The countryside charity  
Dorset

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**The Campaign to Protect Rural England exists to promote the beauty, tranquillity and diversity of rural England  
by encouraging the sustainable use of land and other natural resources in town and country.**

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## SOURCES

1. The **Feed-in Tariff (FIT) Installation Report**, published by the Office of Gas & Electricity Markets (OFGEM), is based on operational renewable energy installations with a maximum capacity of 5 MW. Published quarterly, it records installations that have been commissioned up to and including the last day of the quarter. It specifies a Type of Installation: Domestic, Community, School, Commercial or Industrial but does not specify the type of mounting (roof or ground) for solar photovoltaic installations. Data for this report were extracted from the report published 18 January 2022 for the period 1 April 2010 to 31 December 2021. Only installations with a capacity less than 0.2 MW (200 kW) are included. This ensures that this report, focussed on roof-mounted solar photovoltaic installations, does not include more than a few that are ground-mounted.  
<https://www.ofgem.gov.uk/publications/feed-tariff-installation-report-31-december-2021>
2. The **Renewable Energy Planning Database (REPD) Extract**, published quarterly by the Department for Business, Energy & Industrial Strategy (BEIS), records all renewable energy installations with a capacity of 0.2 MW and above that require planning consent and tracks their progress from planning application through to consent, construction and operation. Unlike the FIT Installation Report, the REPD does not identify most but not all, the type of mounting for solar photovoltaic installations. It is also possible to identify from the descriptions provided, the development sites that are domestic, schools, community and commercial. The database is usually updated during the month following the end of each quarter. Data for this report were published on 1 February 2022 and are described as being for December 2021. All operational solar photovoltaic installations identified as roof-mounted have been reported.  
<https://www.gov.uk/government/publications/renewable-energy-planning-database-monthly-extract>
3. The **Solar Photovoltaics Deployment Report** is published monthly by the BEIS and provides data on numbers and capacities of installations in Great Britain, Northern Ireland and the UK. Data for this report are for December 2021, published 27 January 2022.  
<https://www.gov.uk/government/statistics/solar-photovoltaics-deployment>
4. Numbers of domestic roofs can be derived from numbers of domestic dwellings published by the **Valuation Office Agency** of the Department for Levelling Up, Housing and Communities. Data for 31 March 2021 are taken from DTSOP3.0 CSV tables, published 23 September 2021.  
<https://www.gov.uk/government/statistics/council-tax-stock-of-properties-2021>
5. The **Inter-departmental Business Register (IDBR)** is a comprehensive list of UK businesses used by government for statistical purposes. It provides the main sampling source for surveys of businesses carried out by the Office for National Statistics. The two main sources of input are Value Added Tax (VAT) and Pay As You Earn (PAYE) records from HMRC. Additional information comes from Companies House, Dun and Bradstreet and ONS business surveys. Since the two tax sources have thresholds, very small businesses operating below these will, in most cases, not be included. Each business recorded is a Local Unit located on an individual site: for example, a factory or a shop. It is either an Enterprise in its own right or a part of an Enterprise. The IDBR is updated annually from a snap-shot taken in March and published the following October. The data in this report are from a snap-shot taken on 12 March 2021 and published on 4 October 2021.  
<https://www.ons.gov.uk/businessindustryandtrade/business/activitysizeandlocation/bulletins/ukbusinessactivitysizeandlocation/2021/relateddata>  
<https://www.nomisweb.co.uk/datasets/idbrlu>  
<https://www.ons.gov.uk/methodology/classificationsandstandards/ukstandardindustrialclassificationofeconomicactivities>
6. **Modelling 2050: Electricity System Analysis, published by the BEIS Dynamic Dispatch Team, 4 December 2020**  
This paper sets out the modelling assumptions, methodology and outputs of an analysis of the UK electricity system in 2050. This analysis helps an understanding of the potential impact on system costs of reducing carbon emissions at different levels of demand, using different combinations of generating and storage technologies.  
<https://www.gov.uk/government/publications/modelling-2050-electricity-system-analysis>

## SUMMARY

1. This report explores the extent to which roof-mounted installations might be able to contribute to the achievement of 2050 targets for the deployment of solar photovoltaics. The Dynamic Dispatch Team at the Department for Business, Energy & Industrial Strategy suggests that, for the UK as a whole, the maximum contribution expected from solar photovoltaics is a capacity of 120 GW generating an annual 117.6 TWh, 17.4% of 676.8 TWh, the upper bound of expected 2050 total renewable electricity demand.
2. Taking into account current UK generation of 13.5 TWh from operational solar photovoltaic installations (as at 31 December 2021), it is shown that the shortfall of 104.1 TWh could be provided by 66.9% (16.8 million) of currently unutilised buildings, in England alone, on the assumption that the roofs are utilised to the same extent (expressed as kW per roof) as those that have already been utilised.
3. Deployment of 21,269 5 MW ground-mounted community-owned installations would provide an alternative (acceptable to Dorset CPRE) to meet the shortfall. This would require, on average, 56 installations per local authority, the UK's constituent number of local authorities being 379. However, it is likely that most sites in predominantly urban areas would have to be substantially smaller, since a 5 MW site requires about 11 hectares, equivalent to 17 soccer pitches.
4. Another acceptable alternative would be for roof-mounted and ground-mounted community installations to share the shortfall, on a fifty-fifty basis, for example. This would allow roof-mounted deployment to be reduced to 33.5% (8.4 million) of currently unutilised buildings and ground-mounted community deployment to 28 installations per local authority.
5. Deployment of 2,127 50 MW ground-mounted privately-owned installations would be a third alternative (unacceptable to Dorset CPRE). These are likely to be predominantly located on green field sites, each requiring about 111 hectares, equivalent to 173 soccer pitches. The total area required is 236,000 hectares, equivalent to 369,000 soccer pitches.
6. Compared with the alternatives described in paras. 2 - 4, large stand alone ground-mounted solar photovoltaic installations:
  - 6.1 Give rise to higher transmission losses.
  - 6.2 Take-up more of the diminishing available capacity on local and distribution networks.
  - 6.3 Do not allow or are not conducive to wilding, tree growing or agricultural practices.
  - 6.4 Are more damaging to Dorset's highly valued landscape, heritage and amenity assets.

## 1. Current Deployment and the Requirements for Solar Photovoltaics in 2050 Renewable Energy Technology Mixes

1.1 Intense modelling of the UK's 2050 low carbon electricity target has been carried out since 2012 by the Dynamic Dispatch Team (DDT) at the Department for Business, Energy and Industrial Strategy. This has resulted in the generation of 3,360 unique low-carbon technology mixes. The results for 12 that are illustrative of the methodology are shown in Appendix 1 of this paper. They set out the contribution required from each of all the major technologies to meet a lower bound of 578 TWh and an upper bound of 677 TWh for 2050 UK electricity demand.

1.2. The contribution required from **solar photovoltaics** is summarised in Table 1. It ranges from a minimum of 15 GW to a maximum of 120 GW, with an annual generation range of 14.9 TWh to 117.6 TWh. The contribution to the total amount of electricity required is in the range 2.2 to 20.2%, confirming the relatively minor role required of photovoltaics.

1.3 A summary of operational UK solar photovoltaic installations at 31 December 2021 is provided in Table 2. This indicates a total capacity of 13.65 GW and an annual electricity generation of 13.46 TWh, assuming a DDT load factor estimate of 0.1125.

1.4 A quarterly record of the cumulative number of installations and the cumulative increase in capacity for operational solar photovoltaics in the UK are provided in Appendix 2.

UK 2050 Target TWh		Mix Number <sup>1</sup>	UK 2050 Solar PV Target		
			Capacity GW	Generation	
				Annual TWh	% of Target
Upper Bound	676.75	1 (66.3)	15	14.91	2.2
	676.75	2 (65.4)	120	117.58	17.4
	676.75	3 (74.2)	120	117.56	17.4
	676.75	4 (65.4)	40	39.34	5.8
	676.75	5 (60.5)	40	39.34	5.8
	676.75	6 (61.6)	80	78.47	11.6
Lower Bound	578.46	7 (55.1)	15	14.91	2.6
	578.46	8 (55.9)	15	14.91	2.6
	578.46	9 (65.1)	120	117.51	20.3
	578.46	10 (55.6)	40	39.34	6.8
	578.46	11 (52.7)*	15	14.91	2.6
	578.46	12 (52.7)*	80	78.47	13.6

<sup>1</sup>Annual system cost in brackets (£ billion 2012)

\* least cost

SOURCE 6

Installation Range	Installations		Capacity		Installation Mean Capacity	Load Factor	Annual Generation TWh
	Number	% of Total	MW	% of Total			
1 0 to 4 kW	1,031,050	91.9	2,880.5	21.1	2.8 kW	0.1125	2.84
2 > 4 to 10 kW	52,228	4.7	352.7	2.6	6.8 kW	0.1125	0.35
3 > 10 to 50 kW	33,947	3.0	955.1	7.0	28.1 kW	0.1125	0.94
4 > 50 kW to 5 MW	4,139	0.4	3,516.3	25.8	0.8 MW	0.1125	3.47
5 > 5 to 25 MW	412	0.04	4,320.5	31.6	10.5 MW	0.1125	4.26
6 > 25 MW	43	0.004	1,614.2	11.8	37.5 MW	0.1125	1.59
7 Pre 2009	n/a	n/a	14.6	0.1	n/a	0.1125	0.01
<b>TOTAL</b>	<b>1,121,819</b>	<b>100.0</b>	<b>13,653.80</b>	<b>100.0</b>	<b>12.17 kW</b>	<b>0.1125</b>	<b>13.46</b>

SOURCE 3

## 2. Roof Deployment of Solar Photovoltaics in Dorset, Bournemouth, Christchurch & Poole and England as at 31 December 2021

Buildings with Installations						Buildings Without Installations					All Buildings			
Building Type	Reported Installations	% of Used Buildings	Installed Capacity MW	Capacity per roof kW	Annual Generation TWh	Number	% of Unused Buildings	Installed Capacity MW	Capacity per Roof kW	Annual Generation TWh	Number	Capacity per roof kW	Installed Capacity MW	Annual Generation TWh
Domestic	8,279	4.8	31.94	3.857	0.034	163,576	95.2	631.0	3.857	0.66	171,855	3.857	662.9	0.70
Business	271	1.3	8.16	30.103	0.009	20,019	98.7	602.6	30.103	0.63	20,290	30.103	610.8	0.64
TOTAL	8,550	4.4	40.09	4.689	0.042	183,595	95.6	1,233.6	6.719	1.2968	192,145	6.629	1,273.7	1.34

Buildings with Installations						Buildings Without Installations					All Buildings			
Building Type	Reported Installations	% of Used Buildings	Installed Capacity MW	Capacity per roof kW	Number of Recorded Buildings	Number	% of Unused Buildings	Installed Capacity MW	Capacity per Roof kW	Annual Generation TWh	Number	Capacity per roof kW	Installed Capacity MW	Annual Generation TWh
Domestic	6,343	3.9	18.91	2.982	0.020	157,181	96.1	468.7	2.982	0.49	163,524	2.982	487.6	0.51
Business	97	0.5	2.90	29.927	0.003	18,028	99.5	539.5	29.927	0.57	18,125	29.927	542.4	0.57
TOTAL	6,440	3.5	21.82	3.388	0.023	175,209	96.5	1,008.2	5.754	1.0598	181,649	5.671	1,030.0	1.08

Buildings with Installations						Buildings Without Installations					All Buildings			
Building Type	Reported Installations	% of Used Buildings	Installed Capacity MW	Capacity per roof kW	Annual Generation TWh	Number	% of Unused Buildings	Installed Capacity MW	Capacity per Roof kW	Annual Generation TWh	Number	Capacity per roof kW	Installed Capacity MW	Annual Generation TWh
Domestic	714,809	3.1	2,525.38	3.533	2.480	22,399,584	96.9	79,136.5	3.533	77.71	23,114,393	3.533	81,661.9	80.19
Business	26,770	1.0	771.23	28.809	0.000	2,752,960	99.0	79,311.0	28.809	77.88	2,779,730	28.809	80,082.2	78.64
TOTAL	741,579	2.9	3,296.61	4.445	3.237	25,152,544	97.1	158,447.5	6.299	155.59	25,894,123	6.246	161,744.1	158.83

### NOTE

1. Data in the above Table are taken from SOURCES 1,2,4 & 5.
2. It is assumed that unutilised buildings have the potential to be utilised to the same extent (expressed as kW per roof) as roofs that are already utilised.
3. See Appendix 3 for more information on types and numbers of domestic dwellings and numbers of roofs.

### 3. The Extent to which Roof-Mounting can Contribute to the UK's Solar Photovoltaics 2050 Targets

3.1 England has been identified (Table 5) as having the potential for generating an annual 155.59 TWh from solar photovoltaics mounted on currently unutilised buildings. When current operational deployment of 13.46 TWh is taken into account, Table 6 indicates that 155.59 TWh is more than enough to provide the balance required for all the UK solar photovoltaics targets envisaged by the DDT in its 2050 Electricity System Analysis. The most demanding, 117.58 TWh, could be met by utilisation of 66.9% of the available buildings with a mean deployment of 6.3 kW per roof (the current mean value for England).

UK 2050 Target TWh	Mix Number <sup>1</sup>	UK 2050 Solar PV Target			UK Operational Solar PV at 31 December 2021					Unused Buildings (England only)				Balance Required										
		Capacity GW	Generation		Number of Installations	Capacity GW	Load Factor <sup>2</sup>	Generation		No.	Panel Capacity kW	Total Capacity GW	Annual Generation TWh	Annual Energy TWh	% of Unused Roofs	Number of Buildings								
			Annual TWh	% of Target				Annual TWh	% of Target															
Upper Bound 676.75	1 (66.3)	15	14.91	2.2	1,121,819	13.65	0.1125	13.46	90.3	25,152,544	6.3	158.45	155.59	1.45	0.9	234,649								
	2 (65.4)	120	117.58	17.4					11.4					104.13	66.9	16,832,649								
	3 (74.2)	120	117.56	17.4					11.4					104.11	66.9	16,829,177								
	4 (65.4)	40	39.34	5.8					34.2					25.88	16.6	4,184,000								
	5 (60.5)	40	39.34	5.8					34.2					25.88	16.6	4,184,021								
	6 (61.6)	80	78.47	11.6					17.1					65.02	41.8	10,510,418								
Lower Bound 578.46	7 (55.1)	15	14.91	2.6					1,121,819					13.65	0.1125	13.46	90.3	25,152,544	6.3	158.45	155.59	1.45	0.9	234,873
	8 (55.9)	15	14.91	2.6													90.2					1.46	0.9	235,347
	9 (65.1)	120	117.51	20.3													11.5					104.06	66.9	16,821,176
	10 (55.6)	40	39.34	6.8													34.2					25.88	16.6	4,183,963
	11 (52.7)	15	14.91	2.6													90.2					1.46	0.9	235,347
	12 (52.7)	80	78.47	13.6													17.1					65.02	41.8	10,510,418

<sup>1</sup>Annual system cost in brackets (£billion 2012)

<sup>2</sup>Average Dynamic Dispatch Team 2050 assessment

Country	Number of Installations	Capacity MW	Load Factor	Generation	
				Annual TWh	% of Total
England	1,650	16,338.89	0.1102	15.77	88.6
Scotland	79	508.21	0.1102	0.49	2.8
Wales	162	1,222.59	0.1102	1.18	6.6
NI	32	366.85	0.1102	0.35	2.0
<b>UK</b>	<b>1,923</b>	<b>18,436.54</b>	<b>0.1102</b>	<b>17.80</b>	<b>100.0</b>

SOURCE 2 REPD Extract published 1 February 2022

#### NOTE

Table 7 indicates that England is responsible for 88.6% of all UK solar photovoltaic capacity recorded in the December 2021 REPD Extract that is either operational or in the planning pipeline. All installations have a capacity above 0.2MW and the vast majority are ground-mounted.

UK 2050 Target TWh	Mix Number <sup>1</sup>	UK 2050 Solar PV Target			UK Operational Solar PV at 31 December 2021					Balance Required										
		Capacity GW	Generation		Number of installations	Capacity GW	Load Factor <sup>2</sup>	Generation		Capacity GW	Annual Energy TWh	Number of 5 MW Installations	Number of Panels	Panel Area <sup>3</sup> ha	Development Site Area <sup>4</sup> ha	Number of Soccer Pitches <sup>5</sup>				
			Annual TWh	% of Target				Annual TWh	% of Target											
Upper Bound 676.75	1 (66.3)	15	14.91	2.2	1,121,819	13.65	0.1125	13.46	90.3	1.35	1.45	269	5,384,784	746	2,986	4,665				
	2 (65.4)	120	117.58	17.4					11.4	106.35	104.13	21,269	425,384,784	58,967	235,869	368,545				
	3 (74.2)	120	117.56	17.4					11.4	106.35	104.10	21,269	425,384,784	58,967	235,869	368,545				
	4 (65.4)	40	39.34	5.8					34.2	26.35	25.88	5,269	105,384,784	14,609	58,434	91,303				
	5 (60.5)	40	39.34	5.8					34.2	26.35	25.88	5,269	105,384,784	14,609	58,434	91,303				
	6 (61.6)	80	78.47	11.6					17.1	66.35	65.02	13,269	265,384,784	36,788	147,152	229,924				
Lower Bound 578.46	7 (55.1)	15	14.91	2.6					1,121,819	13.65	0.1125	13.46	90.3	1.35	1.45	269	5,384,784	746	2,986	4,665
	8 (55.9)	15	14.91	2.6									90.2	1.35	1.45	269	5,384,784	746	2,986	4,665
	9 (65.1)	120	117.51	20.3									11.5	106.35	104.06	21,269	425,384,784	58,967	235,869	368,545
	10 (55.6)	40	39.34	6.8									34.2	26.35	25.88	5,269	105,384,784	14,609	58,434	91,303
	11 (52.7)	15	14.91	2.6									90.2	1.35	1.45	269	5,384,784	746	2,986	4,665
	12 (52.7)	80	78.47	13.6									17.1	66.35	65.02	13,269	265,384,784	36,788	147,152	229,924

<sup>1</sup>Annual system cost in brackets (£billion 2012)

<sup>2</sup>Average Dynamic Dispatch Team 2050 assessment

Capacity MW	Panel Rating W	Number of Panels	Load Factor	Annual Energy Generation GWh	Average Annual Household Usage <sup>6</sup> kWh	Number of Houses Supplied	Site			
							Size			% <sup>3,4,5</sup> of Site Covered
							ha	Acres	Soccer Pitches	
5	250	20,000	0.1125	4.9279	3,954	1,246	11.1	27.2	17	25

<sup>3</sup>Calculation assumes utilisation of a Panasonic HIT-250E01 250 W panel, 1.610 m x 0.860 m.

<sup>4</sup>Data for Dorset indicates that the panel area is close to 25% of the development site.

<sup>5</sup>A standard FA soccer pitch is 100 m by 64 m

<sup>6</sup> <https://www.gov.uk/government/statistics/energy-consumption-in-the-uk-2021>

(Table C9)



UK 2050 Target TWh	Mix Number <sup>1</sup>	UK 2050 Solar PV Target			UK Operational Solar PV at 31 December 2021						Balance Required										
		Capacity GW	Generation		Number of installations	Capacity GW	Load Factor <sup>2</sup>	Generation		Capacity GW	Annual Energy TWh	Number of 50 MW Installations	Number of Panels	Panel Area <sup>3</sup> ha	Development Site Area <sup>4</sup> ha	Number of Soccer Pitches <sup>5</sup>					
			Annual TWh	% of Target				Annual TWh	% of Target												
Upper Bound	676.75	1 (66.3)	15	14.91	2.2	1,121,819	13.65	0.1125	13.46	90.3	1.35	1.45	27	5,384,784	746	2,986	4,665				
		2 (65.4)	120	117.58	17.4					11.4	106.35	104.13	2,127	425,384,784	58,967	235,869	368,545				
		3 (74.2)	120	117.56	17.4					11.4	106.35	104.10	2,127	425,384,784	58,967	235,869	368,545				
		4 (65.4)	40	39.34	5.8					34.2	26.35	25.88	527	105,384,784	14,609	58,434	91,303				
		5 (60.5)	40	39.34	5.8					34.2	26.35	25.88	527	105,384,784	14,609	58,434	91,303				
		6 (61.6)	80	78.47	11.6					17.1	66.35	65.02	1,327	265,384,784	36,788	147,152	229,924				
Lower Bound	578.46	7 (55.1)	15	14.91	2.6					1,121,819	13.65	0.1125	13.46	90.3	1.35	1.45	27	5,384,784	746	2,986	4,665
		8 (55.9)	15	14.91	2.6									90.2	1.35	1.45	27	5,384,784	746	2,986	4,665
		9 (65.1)	120	117.51	20.3									11.5	106.35	104.06	2,127	425,384,784	58,967	235,869	368,545
		10 (55.6)	40	39.34	6.8									34.2	26.35	25.88	527	105,384,784	14,609	58,434	91,303
		11 (52.7)	15	14.91	2.6									90.2	1.35	1.45	27	5,384,784	746	2,986	4,665
		12 (52.7)	80	78.47	13.6									17.1	66.35	65.02	1,327	265,384,784	36,788	147,152	229,924

<sup>1</sup>Annual system cost in brackets (£billion 2012)

<sup>2</sup>Average Dynamic Dispatch Team 2050 assessment

Capacity MW	Panel Rating W	Number of Panels	Load Factor	Annual Energy Generation GWh	Average Annual House Usage <sup>6</sup> kWh	Number of Houses Supplied	Site			
							Size			% <sup>3,4,5</sup> of Site Covered
							ha	Acres	Soccer Pitches	
50	250	200,000	0.1125	49.3	3,954	12,463	110.9	27.2	173	25

<sup>3</sup>Calculation assumes utilisation of a Panasonic HIT-250E01 250 W panel, 1.610 m x 0.860 m.

<sup>4</sup>Data for Dorset indicates that the panel area is close to 25% of the development site.

<sup>5</sup>A standard FA soccer pitch is 100 m by 64 m

<sup>6</sup> <https://www.gov.uk/government/statistics/energy-consumption-in-the-uk-2021>

(Table C9)

Table 10 OPERATIONAL ROOF-MOUNTED SOLAR PHOTOVOLTAIC INSTALLATIONS in ENGLAND with an INSTALLED CAPACITY of 0.2 MW and ABOVE IDENTIFIED in the BEIS REPD EXTRACT						
No.	BEIS Ref.	Commissioned	Capacity MW	Business Activity	Address	County
1	6043	15/08/2016	1.80	Commercial	Rolls Royce, Patchway	Avon
2	6042	15/08/2016	1.40	Commercial	Rolls Royce, Patchway	Avon
3	7244	16/10/2019	0.20	School	The Hazeley Academy, Milton Keynes	Buckinghamshire
4	1390	24/03/2014	1.20	Commercial	Aldi, Neston	Cheshire
5	1892	01/01/2016	5.30	Community	Home Solar Scheme, Warrington	Cheshire
6	6246	01/08/2018	2.90	Commercial	Bentley Motors, Crewe	Cheshire
7	5079	01/10/2015	1.50	Commercial	Tulip Meats, Bodmin	Cornwall
8	1278	26/03/2014	1.20	Commercial	Aldi, Darlington	County Durham
9	6759	01/11/2019	0.50	Commercial	Burnside Mill, Kendal	Cumbria
10	9664	01/12/2021	0.53	Commercial	Perrigo, Braunton	Devon
11	9412	not stated	0.70	Commercial	Princess Yachts Limited, Plymouth	Devon
12	6114	05/02/2016	1.80	Commercial	Sainsbury's, Waltham Point	Essex
13	7247	04/10/2019	0.40	Commercial	Tesco, Basildon	Essex
14	1513	29/09/2011	1.40	Commercial	Vantage Point Business Village, Mitcheldean	Gloucestershire
15	5312	01/11/2015	1.70	Commercial	Amcors Flexibles, Bradley Stoke	Gloucestershire
16	6752	01/04/2020	0.80	Commercial	Renishaw, Stonehouse	Gloucestershire
17	6742	01/04/2020	0.20	Commercial	Renishaw, Wotton-Under-Edge	Gloucestershire
18	6162	30/06/2016	1.60	Commercial	Aldi, Bolton	Greater Manchester
19	7251	27/03/2020	0.50	Commercial	Tesco, Atherton	Greater Manchester
20	9150	01/12/2021	0.60	Commercial	Space Studios, Manchester	Greater Manchester
21	5071	09/03/2015	1.20	Commercial	MMD Shipping Services, Portsmouth Harbour	Hampshire
22	1616	15/12/2015	1.00	Community	First Wessex Housing Properties	Hampshire
23	6198	18/10/2017	1.00	Commercial	Whitman Laboratories, Petersfield	Hampshire
24	7448	06/03/2020	0.50	Commercial	Tesco, Cleethorpes	Humberside
25	1237	15/11/2013	2.00	Commercial	Morrisons, Sittingbourne	Kent
26	6376	14/12/2016	1.00	Commercial	Tudor Roof Tile Co, Lydd	Kent
27	7238	24/01/2020	0.40	Commercial	Tesco, Sheerness	Kent
28	8448	01/08/2021	0.35	Commercial	Nickle Farm, Chatham, Canterbury	Kent
29	9198	01/08/2021	0.20	Commercial	Roe Timber Frame, Margate	Kent
30	5001	15/03/2015	1.30	Commercial	Waste Water Treatment, Fleetwood	Lancashire
31	8165	10/10/2021	0.50	Commercial	Sanko Gosei, Skelmersdale	Lancashire
32	4694	02/03/2015	6.10	Commercial	Marks & Spencer, Castle Downingtown	Leicester
33	7320	31/03/2019	0.20	Commercial	National Space Centre, Leicester	Leicester
34	5562	23/03/2016	1.50	Commercial	Penguin Foods, Marsh Lane, Boston	Lincolnshire
35	5985	15/01/2016	1.00	Commercial	Sainsbury's, Charlton	London

<b>Table 10 (cont'd) OPERATIONAL ROOF-MOUNTED SOLAR PHOTOVOLTAIC INSTALLATIONS in ENGLAND with an INSTALLED CAPACITY of 0.2 MW and ABOVE IDENTIFIED in the BEIS REPD EXTRACT</b>						
No.	BEIS Ref.	Commissioned	Capacity MW	Business Activity	Address	County
36	6132	19/05/2016	1.70	Commercial	Western International Market, Southall	London
37	6320	24/01/2017	1.00	Commercial	Bywaters' Recovery Facility, Bromley by Bow	London
38	9351	not stated	0.26	School	Bower Park Academy, Romford	London
39	6683	07/06/2016	1.20	Commercial	Pinguin Foods, Kings Lynn	Norfolk
40	7646	09/10/2021	0.20	Commercial	Tesco, Thetford	Norfolk
41	1294	31/03/2014	5.00	Commercial	Kingspan, Sherburn in Elmet	North Yorkshire
42	6485	20/01/2016	5.00	Commercial	Kingspan, Sherburn	North Yorkshire
43	5596	12/06/2015	1.00	Commercial	Sainsbury's, Northampton	Northamptonshire
44	9326	15/11/2021	0.35	Commercial	AC Gill Limited, Nottingham	Nottinghamshire
45	1284	05/11/2014	3.00	Commercial	BMW, Oxford	Oxfordshire
46	5602	26/01/2016	3.80	Commercial	Lyreco, Telford	Shropshire
47	7321	20/12/2019	0.30	Commercial	Tesco, Yeovil	Somerset
48	1473	21/05/2014	1.50	Commercial	f 99.11 Mw	South Yorkshire
49	1490	23/12/2015	1.70	Commercial	Ikea, Armthorpe	South Yorkshire
50	6403	01/12/2016	2.50	Commercial	Next, Armthorpe, Doncaster	South Yorkshire
51	7225	01/04/2020	0.20	Commercial	Tesco, Barnsley	South Yorkshire
52	1491	31/03/2014	5.80	Commercial	Jaguar Land Rover, Pendeford	Staffordshire
53	5828	12/01/2016	2.50	Commercial	Screwfix, Stoke-on-Trent	Staffordshire
54	1894	30/01/2016	4.80	Community	Home Solar Scheme, Mid Suffolk	Suffolk
55	1893	01/06/2016	2.80	Community	Home Solar Scheme, Babergh	Suffolk
56	9767	01/01/2022	0.62	Commercial	Vitec Production Solutions, Bury St Edmunds	Suffolk
57	2389	18/03/2014	2.00	Commercial	Wolseley, Leamington Spa	Warwickshire
58	6314	10/01/2017	1.00	Commercial	DPD Distribution Centre, Oldbury	West Midlands
59	6055	02/09/2015	1.80	Commercial	Parker Steel, Portslade	West Sussex
60	7229	01/05/2020	0.20	Commercial	Tesco, Bognor Regis	West Sussex
61	9382	01/09/2021	1.70	Community	St. Peter's Community Hall, Horsham	West Sussex
62	5653	30/01/2016	2.50	Commercial	B&Q, South Marston	Wiltshire
63	8178	27/09/2021	0.20	Commercial	TRT Lighting, Redditch	Worcestershire
<b>TOTAL (1-63)</b>			<b>99.11</b>			

SOURCE 2

Table 11 The Letter Codes for the 21 Sections of the UK Standard Industrial Classification (SIC) of Industrial Activities 2007	
Section	Economic Activity
A	Agriculture, Forestry & Fishing
B	Mining & Quarrying
C	Manufacturing
D	Electricity, Gas, Steam & Air Conditioning Supply
E	Water Supply, Sewerage, Waste Management & Remediation Activities
F	Construction
G	Wholesale & Retail Trade, Repair of Motor Vehicles & Motorcycles
H	Transportation & Storage
I	Accommodation & Food Service Activities
J	Information & Communication
K	Financial & Insurance Activities
L	Real Estate Activities
M	Professional, Scientific & Technical Activities
N	Administrative & Support Services Activities
O	Public Administration & Defence; Compulsory Social Security
P	Education
Q	Human Health & Social Work Activities
R	Arts, Entertainment & Recreation
S	Other Service Activities
T	Activities of Households as Employers & for Own Use
U	Activities of Extraterritorial Organisations & Bodies

NOTE

1. The above 21 Sections of the Classification are subdivided into 88 Divisions, 272 Groups, 615 Classes and 191 Subclasses. that identify 806 economic activities.
2. An example of identification of the Class of an economic activity is Bridport Netting:

Section C	Manufacturing
Division 13	Manufacture of textiles
Group 13.9	Manufacture of other textiles
Class 13,94	Manufacture of cordage, rope, twine and netting (no Subclass

SOURCE 5

<https://www.ons.gov.uk/methodology/classificationsandstandards/ukstandardindustrialclassificationofeconomicactivities>

Section(s)	Industry	BCP	Dorset	Dorset Council	East Dorset	North Dorset	Purbeck	West Dorset	Weymouth & Portland	Dorset LEP	England
A	Agriculture, forestry & fishing	70	2,085	0	210	620	180	1,015	60	2,160	95,375
B,D & E	Mining, quarrying & utilities	80	125	10	35	20	30	30	10	210	16,780
C	Manufacturing	930	1,255	0	375	235	180	365	105	2,185	129,035
F	Construction	2,595	2,715	0	880	515	350	665	300	5,310	322,600
Part G	Motor trades	600	630	0	185	145	60	205	35	1,230	76,730
Part G	Wholesale	690	695	0	210	145	85	215	35	1,385	111,115
Part G	Retail	1,925	1,945	0	375	320	320	645	285	3,870	271,730
H	Transport & storage (inc. postal)	650	510	10	135	115	80	110	70	1,160	136,310
I	Accommodation & food services	1,320	1,510	5	220	195	270	515	310	2,830	181,630
J	Information & communication	1,250	965	0	280	165	205	250	70	2,220	203,840
K	Financial & insurance	480	355	0	125	55	40	100	35	835	66,755
L	Property	840	740	0	195	120	105	240	75	1,580	105,405
M	Professional, scientific & technical	2,380	2,400	0	710	405	320	765	200	4,780	423,755
N	Business administration & support services	1,505	1,445	5	380	270	215	445	140	2,950	242,140
O	Public administration & defence	75	240	205	40	65	30	85	20	315	18,835
P	Education	405	410	75	100	85	60	115	50	820	64,225
Q	Health	1,180	950	40	210	160	90	340	150	2,130	137,770
R,S,T & U	Arts, entertainment, recreation & other services	1,150	1,305	40	310	250	180	405	165	2,450	175,705
<b>TOTAL</b>		<b>18,125</b>	<b>20,290</b>	<b>390</b>	<b>4,970</b>	<b>3,885</b>	<b>2,800</b>	<b>6,505</b>	<b>2,125</b>	<b>38,410</b>	<b>2,779,730</b>

#### NOTE

1. The column headed Dorset Council records buildings identified as being the responsibility of the Council.
2. All figures are rounded to avoid disclosure. Values may be rounded down to zero and so all zeros are not necessarily true zeros. Totals across tables may differ by minor amounts due to the disclosure methods used. Furthermore, figures may differ by small amounts from those published in ONS outputs due to the application of a different rounding methodology. In 2015, ONS extended the coverage of businesses to include a population of solely PAYE based businesses that were previously excluded because of the risk of duplication. In total, in 2015, 105,000 businesses have been added. Improvements in matching of administrative data and research into those units excluded has indicated that the risk of duplication is very small. The addition of these businesses brings the publication in line with Business Demography and the BIS Business Population Estimates, both of which include these businesses. For more information, see <http://www.nomisweb.co.uk/articles/news/files/UKBusinessCoverage.pdf>.

SOURCE 5

Legal Status	Dorset	BCP	England	East Dorset	North Dorset	Purbeck	West Dorset	Weymouth & Portland	Dorset LEP
Sole proprietor	3,080	2,170	343,860	660	725	350	1,085	260	5,250
Partnership	2,060	720	146,945	320	530	220	890	100	2,780
Non-profit body or mutual association	830	615	104,400	155	140	115	295	125	1,450
<b>PRIVATE SECTOR TOTAL</b>	<b>19,665</b>	<b>17,725</b>	<b>2,714,190</b>	<b>4,855</b>	<b>3,760</b>	<b>2,720</b>	<b>6,275</b>	<b>2,055</b>	<b>37,390</b>
Public corporation	15	20	2,965	0	5	0	5	5	35
Central government	215	185	23,375	50	30	20	75	35	405
Local authority	390	190	39,200	65	90	55	145	35	585
<b>PUBLIC SECTOR TOTAL</b>	<b>625</b>	<b>400</b>	<b>65,540</b>	<b>120</b>	<b>125</b>	<b>80</b>	<b>230</b>	<b>70</b>	<b>1,025</b>
<b>TOTAL</b>	<b>20,290</b>	<b>18,125</b>	<b>2,779,730</b>	<b>4,975</b>	<b>3,885</b>	<b>2,800</b>	<b>6,505</b>	<b>2,125</b>	<b>38,415</b>

Employment Size Band	Dorset	BCP	England	East Dorset	North Dorset	Purbeck	West Dorset	Weymouth & Portland	Dorset LEP
0-9	17,485	15,180	2,366,755	4,290	3,445	2,420	5,560	1,770	32,660
10-49	2,390	2,345	332,980	590	370	325	815	290	4,735
50-249	385	525	69,580	90	65	50	120	60	905
250+	35	75	10,420	5	5	5	15	5	115
<b>TOTAL</b>	<b>20,285</b>	<b>18,125</b>	<b>2,779,730</b>	<b>4,970</b>	<b>3,885</b>	<b>2,800</b>	<b>6,505</b>	<b>2,125</b>	<b>38,410</b>

<https://www.nomisweb.co.uk/datasets/idbrlu>

SOURCE 5

## Appendix 1 Estimates of Technology Mix to Meet UK 2050 Electricity Demand

1. Intense modelling has been out carried since 2012 by the Dynamic Dispatch Team at the Department for Business, Energy and Industrial Strategy. 3,360 unique low-carbon deployment mixes have been generated, the results for 12 of which are shown below. They set out the contribution required from each of all the major technologies, to meet the UK's 2050 low carbon electricity target<sup>1,2</sup>.

2. They indicate that the chosen 2050 capacity target for the contribution from solar photovoltaics ranges from a minimum of 15 to a maximum of 120 GW, with a generation range of 14.9 to 117.6 TWh. The contribution to the total electricity required is in the range 2.2 to 20.2%, confirming the relatively minor role required of solar photovoltaics.

Table 1 Balanced Technology Mixes with Central Flexibility and High Demand												
Name	1 High Nuclear with No Hydrogen		2 High Gas CC		3 Min Firm Low Carbon		4 Balanced		5 High Nuclear with Higher Hydrogen		6 Low Nuclear with Lower Hydrogen	

CAPACITY	GW	%	GW	%	GW	%	GW	%	GW	%	GW	%
Nuclear	40	24	20	7	20	6	30	14	25	15	5	2
Gas CCUS	10	6	30	10	10	3	20	10	20	12	20	9
Solar PV	15	9	120	41	120	36	40	19	40	24	80	35
Wind	105	62	120	41	180	55	120	57	85	50	125	54
TOTAL	170	100	290	100	330	100	210	100	170	100	230	100

Mean  
Nuclear LF  
0.8943

GENERATION	TWh	%	TWh	%	TWh	%	TWh	%	TWh	%	TWh	%
Nuclear	314.1	46.4	156.4	23.1	155.4	22.9	235.4	34.8	197.0	29.2	38.5	5.7
Gas CCUS	19.3	2.9	46.0	6.8	15.2	2.2	36.2	5.4	61.2	9.1	55.2	8.2
Solar PV	14.9	2.2	117.6	17.4	117.6	17.4	39.3	5.8	39.3	5.8	78.5	11.6
Wind	350.4	51.8	383.6	56.7	419.9	62.0	389.7	57.6	348.5	51.6	489.5	72.2
Other (Thermal)	5.0	0.7	2.4	0.3	4.0	0.6	3.3	0.5	0.0	0.0	0.0	0.0
Interconnectors	-26.7	-3.9	-29.1	-4.3	-34.6	-5.1	-27.7	-4.1	17.2	2.5	-2.5	-0.4
Hydrogen	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.2	1.8	18.4	2.7
TOTAL	676.9	100.0	676.8	100.0	677.5	100.0	676.2	100.0	675.4	100.0	677.7	100.0

Mean High  
Demand  
676.75

ANNUAL SYSTEM COST						
£billion (2012)	66.257695	65.360902	74.165153	65.393744	60.500000	61.600000

Mean Solar PV Load Factor for High and Low Demand 0.11251

Appendix 1 (cont'd)

Table 2 Balanced Technology Mixes with Central Flexibility and Low 2050 Demand

Name	7 High Nuclear with No Hydrogen		8 High Gas CC		9 Min Firm Low Carbon		10 Balanced		11 High Nuclear with Higher Hydrogen		12 Low Nuclear with Lower Hydrogen	
CAPACITY	GW	%	GW	%	GW	%	GW	%	GW	%	GW	%
Nuclear	40	32	15	8	5	2	20	10	20	17	5	3
Gas CCUS	5	4	30	17	10	3	20	10	10	8	20	10
Solar PV	15	12	15	8	120	38	40	20	15	13	80	40
Wind Capacity	65	52	120	67	180	57	120	60	75	63	95	48
TOTAL	125	100	180	100	315	100	200	100	120	100	200	100

Mean Nuclear LF  
0.8949

GENERATION	TWh	%	TWh	%	TWh	%	TWh	%	TWh	%	TWh	%
Nuclear	315.3	54.6	117.2	20.3	37.5	6.5	157.0	27.2	157.4	27.2	38.7	6.7
Gas CCUS	11.7	2.0	56.3	9.7	18.7	3.2	37.4	6.5	34.1	5.9	54.7	9.4
Solar PV	14.9	2.6	14.9	2.6	117.5	20.2	39.3	6.8	14.9	2.6	78.5	13.5
Wind	234.4	40.6	416.6	72.1	433.0	74.6	366.3	63.4	328.3	56.8	397.5	68.6
Other (Thermal)	4.5	0.8	0.5	0.1	3.3	0.6	1.4	0.2	0.0	0.0	0.0	0.0
Interconnectors	-3.5	-0.6	-27.4	-4.7	-29.7	-5.1	-23.5	-4.1	24.9	4.3	0.2	0.0
Hydrogen	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.1	3.1	9.8	1.7
TOTAL	0.0	100.0	578.1	100.0	580.3	100.0	100.0	100.0	577.7	100.0	579.4	100.0

Mean Low Demand  
578.46

ANNUAL SYSTEM COST						
£billion (2012)	55.12	55.87	65.07	55.60	52.70	52.70

REFERENCES

- (a) Modelling 2050: Electricity System Analysis, published by the BEIS Dynamic Dispatch Team, 4 December 2020. This paper sets out the modelling assumptions, methodology and outputs of an analysis of the electricity system in 2050. It helps an understanding of the potential impact on system costs of reducing carbon emissions at different levels of demand, using different combinations of generating and storage technologies.  
<https://www.gov.uk/government/publications/modelling-2050-electricity-system-analysis>
- (b) Stuart Younger, BEIS Senior Analyst, Electricity Modelling, Energy & Security Analysis, Email 2 June 2021.

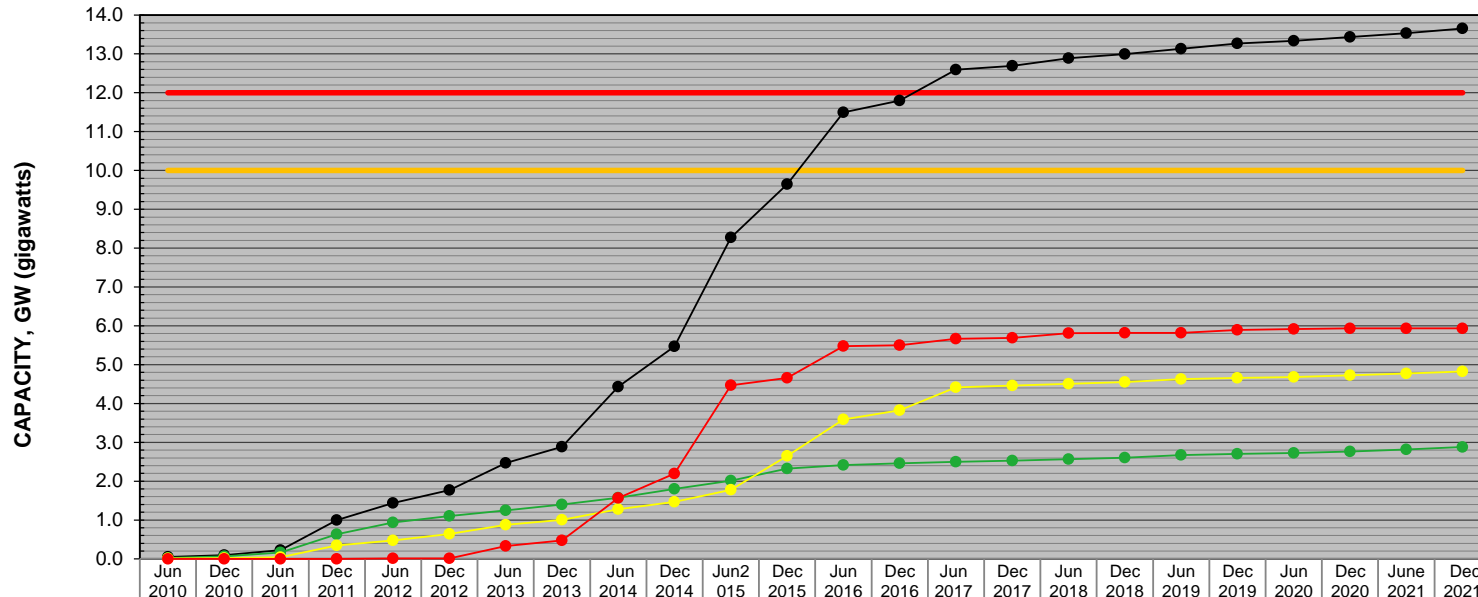
SOURCE 6



Appendix 2 Chart 1

### CUMULATIVE BIANNUAL CAPACITY DEPLOYMENT OF UK SOLAR PHOTOVOLTAICS

NOTE: BY 30 JUNE 2017 DEPLOYMENT HAD EXCEEDED THE UPPER BOUND FORECAST BY THE NATIONAL GRID TO REQUIRE CONSTRAINT OF FURTHER DEPLOYMENT



	Jun 2010	Dec 2010	Jun 2011	Dec 2011	Jun 2012	Dec 2012	Jun 2013	Dec 2013	Jun 2014	Dec 2014	Jun 2015	Dec 2015	Jun 2016	Dec 2016	Jun 2017	Dec 2017	Jun 2018	Dec 2018	Jun 2019	Dec 2019	Jun 2020	Dec 2020	Jun 2021	Dec 2021	
Grid Maximum Upper Bound	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
Grid Maximum Lower Bound	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
All Installations	0.05	0.10	0.22	1.00	1.44	1.77	2.47	2.89	4.43	5.47	8.28	9.65	11.49	11.80	12.59	12.69	12.89	12.99	13.13	13.27	13.33	13.44	13.53	13.65	13.65
Installations 0 to 4 kW	0.02	0.07	0.17	0.64	0.94	1.10	1.25	1.40	1.58	1.80	2.01	2.32	2.42	2.46	2.50	2.53	2.56	2.61	2.67	2.70	2.72	2.76	2.81	2.88	2.88
Installations >4 kW to 5 MW	0.01	0.02	0.04	0.35	0.47	0.64	0.87	1.00	1.28	1.47	1.78	2.65	3.59	3.82	4.42	4.46	4.51	4.56	4.63	4.65	4.68	4.72	4.77	4.82	4.82
Installations > 5 MW	0.00	0.00	0.00	0.00	0.01	0.01	0.33	0.48	1.57	2.19	4.47	4.66	5.47	5.50	5.66	5.69	5.81	5.82	5.82	5.90	5.91	5.93	5.93	5.93	5.93

—●— Grid Maximum Upper Bound     
 —●— Grid Maximum Lower Bound     
 —●— All Installations  
—●— Installations 0 to 4 kW     
 —●— Installations > 4 kW to 5 MW

SOURCE 3

**Appendix 2 Table 1 Data for Chart 1**

**DO NOT DELETE**

Deployment at end	Grid Maximum Upper Bound	Grid Maximum Lower Bound	All Installations	Installations 0 to 4 kW	Installations >4 kW to 5 MW	Installations > 5 MW
Jun 2010	12.00	10.00	0.05	0.02	0.01	0.00
Dec 2010	12.00	10.00	0.10	0.07	0.02	0.00
Jun 2011	12.00	10.00	0.22	0.17	0.04	0.00
Dec 2011	12.00	10.00	1.00	0.64	0.35	0.00
Jun 2012	12.00	10.00	1.44	0.94	0.47	0.01
Dec 2012	12.00	10.00	1.77	1.10	0.64	0.01
Jun 2013	12.00	10.00	2.47	1.25	0.87	0.33
Dec 2013	12.00	10.00	2.89	1.40	1.00	0.48
Jun 2014	12.00	10.00	4.43	1.58	1.28	1.57
Dec 2014	12.00	10.00	5.47	1.80	1.47	2.19
Jun2015	12.00	10.00	8.28	2.01	1.78	4.47
Dec 2015	12.00	10.00	9.65	2.32	2.65	4.66
Jun 2016	12.00	10.00	11.49	2.42	3.59	5.47
Dec 2016	12.00	10.00	11.80	2.46	3.82	5.50
Jun 2017	12.00	10.00	12.59	2.50	4.42	5.66
Dec 2017	12.00	10.00	12.69	2.53	4.46	5.69
Jun 2018	12.00	10.00	12.89	2.56	4.51	5.81
Dec 2018	12.00	10.00	12.99	2.61	4.56	5.82
Jun 2019	12.00	10.00	13.13	2.67	4.63	5.82
Dec 2019	12.00	10.00	13.27	2.70	4.65	5.90
Jun 2020	12.00	10.00	13.33	2.72	4.68	5.91
Dec 2020	12.00	10.00	13.44	2.76	4.72	5.93
June 2021	12.00	10.00	13.53	2.81	4.77	5.93
Dec 2021	12.00	10.00	13.65	2.88	4.82	5.93

SOURCE 3

**Appendix 2 Table 2 Historical Record of UK Cumulative Operational Solar Photovoltaic Installations 31 March 2010 - 31 December 2021**

COUNT 2010 - 2012	Mar 2010	Jun 2010	Sep 2010	Dec 2010	Mar 2011	Jun 2011	Sep 2011	Dec 2011	Mar 2012	Jun 2012	Sep 2012	Dec 2012
0 to ≤ 4 kW	6,564	10,920	18,179	28,546	44,043	66,651	108,353	227,148	303,384	331,853	365,415	387,226
4 to ≤ 10 kW	579	698	848	1,008	1,310	1,736	2,379	5,279	6,840	7,263	8,295	8,975
10 to ≤ 50 kW	183	224	277	341	443	581	922	3,016	4,906	5,382	6,703	7,184
50 kW to ≤ 5 MW	17	21	23	30	37	89	302	329	373	407	549	595
5 to ≤ 25 MW	0	0	0	0	0	0	0	0	1	2	2	2
> 25 MW	0	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL</b>	<b>7,343</b>	<b>11,863</b>	<b>19,327</b>	<b>29,925</b>	<b>45,833</b>	<b>69,057</b>	<b>111,956</b>	<b>235,772</b>	<b>315,504</b>	<b>344,907</b>	<b>380,964</b>	<b>403,982</b>

COUNT 2013 - 2015	Mar 2013	Jun 2013	Sep 2013	Dec 2013	Mar 2014	Jun 2014	Sep 2014	Dec 2014	Mar 2015	Jun 2015	Sep 2015	Dec 2015
0 to ≤ 4 kW	407,861	435,520	457,698	484,529	515,865	543,212	577,904	616,473	651,311	689,792	732,045	791,958
4 to ≤ 10 kW	9,735	10,907	12,153	13,653	15,932	16,541	17,316	18,281	19,230	20,180	21,493	23,504
10 to ≤ 50 kW	7,795	9,112	9,815	10,588	12,031	12,713	13,652	14,997	16,054	17,082	18,902	21,832
50 kW to ≤ 5 MW	670	798	928	1,071	1,225	1,392	1,534	1,718	2,003	2,237	2,448	3,199
5 to ≤ 25 MW	32	44	49	55	140	147	161	182	326	327	330	347
> 25 MW	1	1	1	2	3	3	6	10	26	26	26	26
<b>TOTAL</b>	<b>426,094</b>	<b>456,382</b>	<b>480,644</b>	<b>509,898</b>	<b>545,196</b>	<b>574,008</b>	<b>610,573</b>	<b>651,661</b>	<b>688,950</b>	<b>729,644</b>	<b>775,244</b>	<b>840,866</b>

COUNT 2016 - 2018	Mar 2016	Jun 2016	Sep 2016	Dec 2016	Mar 2017	Jun 2017	Sep 2017	Dec 2017	Mar 2018	Jun 2018	Sep 2018	Dec 2018
0 to ≤ 4 kW	817,169	828,008	838,300	846,349	854,638	862,502	877,886	877,886	884,783	892,378	900,639	911,269
4 to ≤ 10 kW	24,455	25,037	25,863	26,364	26,985	27,638	28,971	28,971	29,566	30,310	31,180	32,415
10 to ≤ 50 kW	22,937	23,342	24,116	24,555	24,922	25,347	26,208	26,208	26,629	27,022	27,457	27,975
50 kW to ≤ 5 MW	3,624	3,698	3,764	3,818	3,970	3,992	4,037	4,038	4,060	4,083	4,112	4,138
5 to ≤ 25 MW	377	384	386	386	395	396	399	398	404	406	406	407
> 25 MW	36	37	37	37	39	39	39	39	41	41	41	41
<b>TOTAL</b>	<b>868,598</b>	<b>880,506</b>	<b>892,466</b>	<b>901,509</b>	<b>910,949</b>	<b>919,914</b>	<b>937,540</b>	<b>937,540</b>	<b>945,483</b>	<b>954,240</b>	<b>963,835</b>	<b>976,245</b>

COUNT 2019 - 2021	Mar 2019	Jun 2019	Sep 2019	Dec 2019	Mar 2020	Jun 2020	Sep 2020	Dec 2020	Mar 2021	Jun 2021	Sep 2021	Dec 2021
0 to ≤ 4 kW	930,242	936,585	944,072	951,944	959,873	962,950	971,835	981,145	990,706	1,003,185	1,016,384	1,031,050
4 to ≤ 10 kW	35,840	36,257	36,992	37,863	38,882	39,640	40,993	42,698	44,944	47,342	49,497	52,228
10 to ≤ 50 kW	29,799	29,993	30,299	30,637	31,121	31,297	31,647	32,033	32,476	32,907	33,438	33,947
50 kW to ≤ 5 MW	4,138	4,138	4,138	4,138	4,138	4,138	4,139	4,139	4,139	4,139	4,139	4,139
5 to ≤ 25 MW	408	408	409	409	410	411	411	412	412	412	412	412
> 25 MW	41	41	41	43	43	43	43	43	43	43	43	43
<b>TOTAL</b>	<b>1,000,468</b>	<b>1,007,422</b>	<b>1,015,951</b>	<b>1,025,034</b>	<b>1,034,467</b>	<b>1,038,479</b>	<b>1,049,068</b>	<b>1,060,470</b>	<b>1,072,720</b>	<b>1,088,028</b>	<b>1,103,913</b>	<b>1,121,819</b>

SOURCE 3

**Appendix 2 Table 3 Historical Record of UK Cumulative Operational Solar Photovoltaic Capacity 31 March 2010 - 31 December 2021**

CAPACITY 2010 - 2012 (MW)	Mar 2010	Jun 2010	Sep 2010	Dec 2010	Mar 2011	Jun 2011	Sep 2011	Dec 2011	Mar 2012	Jun 2012	Sep 2012	Dec 2012
0 to ≤ 4 kW	13.0	23.0	40.2	65.2	103.7	165.6	285.8	635.6	855.6	938.6	1,039.8	1,104.1
4 to ≤ 10 kW	3.4	4.2	5.2	6.3	8.7	12.0	17.3	42.6	56.2	59.7	68.4	73.3
10 to ≤ 50 kW	3.4	4.2	5.2	6.4	8.6	12.1	22.9	96.2	161.5	176.9	220.6	234.9
50 kW to ≤ 5 MW	1.2	2.1	2.3	3.0	4.4	19.6	186.8	207.5	218.8	235.8	319.3	331.1
5 to ≤ 25 MW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0	11.5	11.5	11.5
> 25 MW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.0	0.0
<b>TOTAL</b>	<b>35.6</b>	<b>48.2</b>	<b>67.4</b>	<b>95.5</b>	<b>139.9</b>	<b>224.0</b>	<b>527.4</b>	<b>996.6</b>	<b>1,312.7</b>	<b>1,437.0</b>	<b>1,674.1</b>	<b>1,769.4</b>

CAPACITY 2013 - 2015 (MW)	Mar 2013	Jun 2013	Sep 2013	Dec 2013	Mar 2014	Jun 2014	Sep 2014	Dec 2014	Mar 2015	Jun 2015	Sep 2015	Dec 2015
0 to ≤ 4 kW	1,164.6	1,249.1	1,315.5	1,396.8	1,493.3	1,575.5	1,680.2	1,797.1	1,898.5	2,013.7	2,141.4	2,319.8
4 to ≤ 10 kW	78.8	87.5	95.8	105.7	121.3	125.9	131.8	139.2	146.5	153.8	163.8	179.3
10 to ≤ 50 kW	252.4	294.8	314.7	337.2	378.0	396.2	422.4	461.2	486.9	515.9	567.7	650.8
50 kW to ≤ 5 MW	446.2	491.0	525.8	558.1	687.8	753.9	796.8	865.2	1,017.7	1,110.8	1,205.2	1,819.2
5 to ≤ 25 MW	208.9	295.1	326.6	409.6	1,385.9	1,467.5	1,597.7	1,841.4	3,500.5	3,520.0	3,552.3	3,714.7
> 25 MW	34.5	34.5	34.5	66.1	97.8	97.8	204.0	351.3	947.0	947.0	947.0	947.0
<b>TOTAL</b>	<b>2,199.9</b>	<b>2,466.7</b>	<b>2,627.4</b>	<b>2,888.1</b>	<b>4,178.6</b>	<b>4,431.5</b>	<b>4,847.5</b>	<b>5,470.1</b>	<b>8,011.7</b>	<b>8,275.9</b>	<b>8,592.0</b>	<b>9,630.8</b>

CAPACITY 2016 - 2018 (MW)	Mar 2016	Jun 2016	Sep 2016	Dec 2016	Mar 2017	Jun 2017	Sep 2017	Dec 2017	Mar 2018	Jun 2018	Sep 2018	Dec 2018
0 to ≤ 4 kW	2,389.3	2,415.6	2,441.4	2,459.8	2,478.7	2,496.1	2,514.3	2,530.9	2,545.6	2,562.9	2,582.0	2,607.4
4 to ≤ 10 kW	186.2	190.1	196.0	199.1	203.2	207.2	211.3	215.2	218.9	223.3	228.4	235.5
10 to ≤ 50 kW	681.7	692.1	711.3	722.1	730.9	741.4	753.1	764.0	774.5	784.1	795.6	808.6
50 kW to ≤ 5 MW	2,513.1	2,705.2	2,792.0	2,902.9	3,462.6	3,468.5	3,479.5	3,483.7	3,492.6	3,499.5	3,505.6	3,511.1
5 to ≤ 25 MW	4,001.2	4,064.5	4,091.1	4,091.1	4,169.7	4,175.7	4,175.7	4,198.3	4,248.7	4,268.2	4,268.2	4,275.7
> 25 MW	1,381.7	1,408.8	1,408.8	1,408.8	1,486.7	1,486.7	1,486.7	1,486.7	1,539.5	1,539.5	1,539.5	1,539.5
<b>TOTAL</b>	<b>11,167.9</b>	<b>11,490.9</b>	<b>11,655.1</b>	<b>11,798.3</b>	<b>12,546.3</b>	<b>12,590.3</b>	<b>12,635.2</b>	<b>12,693.5</b>	<b>12,834.4</b>	<b>12,892.2</b>	<b>12,934.0</b>	<b>12,992.4</b>

CAPACITY 2019 - 2021 (MW)	Mar 2019	Jun 2019	Sep 2019	Dec 2019	Mar 2020	Jun 2020	Sep 2020	Dec 2020	Mar 2021	Jun 2021	Sep 2021	<b>Dec 2021</b>
0 to ≤ 4 kW	2,658.2	2,669.1	2,683.1	2,699.1	2,716.3	2,724.5	2,744.6	2,764.1	2,784.5	2,813.1	2,844.9	<b>2,880.5</b>
4 to ≤ 10 kW	256.0	258.3	262.5	267.9	274.1	278.9	287.4	297.5	310.2	323.7	336.6	<b>352.7</b>
10 to ≤ 50 kW	855.6	860.0	867.5	875.7	887.9	892.2	901.3	910.5	920.8	930.4	943.1	<b>955.1</b>
50 kW to ≤ 5 MW	3,511.3	3,511.3	3,511.3	3,511.3	3,511.3	3,511.3	3,516.3	3,516.3	3,516.3	3,516.3	3,516.3	<b>3,516.3</b>
5 to ≤ 25 MW	4,275.7	4,275.7	4,282.9	4,282.9	4,290.2	4,299.1	4,299.1	4,320.5	4,320.5	4,320.5	4,320.5	<b>4,320.5</b>
> 25 MW	1,539.5	1,539.5	1,539.5	1,614.2	1,614.2	1,614.2	1,614.2	1,614.2	1,614.2	1,614.2	1,614.2	<b>1,614.2</b>
<b>TOTAL</b>	<b>13,111.0</b>	<b>13,128.5</b>	<b>13,161.4</b>	<b>13,265.8</b>	<b>13,308.7</b>	<b>13,334.9</b>	<b>13,377.5</b>	<b>13,437.7</b>	<b>13,481.1</b>	<b>13,532.8</b>	<b>13,590.1</b>	<b>13,653.8</b>

NOTE All totals include 14.6 MW for deployment pre 2009.

**Appendix 3 Table 1 Types of Dwellings and Numbers of Dwellings and Roofs as at 31 March 2021 for Dorset Council UA, Bournemouth, Christchurch & Poole (BCP) UA and England**

TYPE OF DWELLING	DORSET COUNCIL UA			BCP UA			ENGLAND		
	Number of Dwellings	Roofs		Number of Dwellings	Roofs		Number of Dwellings	Roofs	
		Number	%		Number	%		Number	%
<i>Flat in a 1 storey block</i>	12,060	12,060	7.0	28,860	28,860	17.6	2,654,050	2,654,050	11.5
<i>Flat in a 2 storey block</i>	14,830	7,415	4.3	35,600	17,800	10.9	2,588,420	1,294,210	5.6
<i>Flat in a 3 storey block</i>	1,860	620	0.4	6,290	2,097	1.3	435,580	145,193	0.6
<i>Flat in a 4 storey block</i>	250	63	0.04	690	173	0.11	60,100	15,025	0.1
<i>Flat in a 5 storey block</i>	70	14	0.01	450	90	0.055	22,620	4,524	0.020
<i>Flat in a 6 storey block</i>	30	5	0.003	620	103	0.063	32,530	5,422	0.023
<i>Flat in a &gt;6 storey block*</i>	340	28	0.02	740	62	0.04	100,550	8,379	0.04
Total for Flat	29,440	20,205	11.8	73,250	49,184	30.1	5,893,850	4,126,803	17.9
Bungalow	35,100	35,100	20.4	26,860	26,860	16.4	2,295,310	2,295,310	9.9
Terraced house	38,330	38,330	22.3	20,320	20,320	12.4	6,504,000	6,504,000	28.1
Semidetached house	31,030	31,030	18.1	25,540	25,540	15.6	5,901,820	5,901,820	25.5
Detached house	41,390	41,390	24.1	39,220	39,220	24.0	3,936,030	3,936,030	17.0
Annexe	920	920	0.5	350	350	0.2	45,560	45,560	0.2
Caravan, houseboat or mobile home	2,470	2,470	1.4	710	710	0.4	113,670	113,670	0.5
Unknown	2,410	2,410	1.4	1,340	1,340	0.8	191,200	191,200	0.8
<b>ALL</b>	<b>181,090</b>	<b>171,855</b>	<b>100.0</b>	<b>187,590</b>	<b>163,524</b>	<b>100.0</b>	<b>24,881,440</b>	<b>23,114,393</b>	<b>100.0</b>

\* an average of 12 storeys is assumed

SOURCE 4

Numbers of domestic roofs can be derived from numbers of domestic dwellings published by the **Valuation Office Agency** of the Department for Levelling Up, Housing and Communities. Data for 31 March 2021 are taken from DTSOP3.0 CSV tables, published 23 September 2021.

<https://www.gov.uk/government/statistics/council-tax-stock-of-properties-2021>