

Assumptions

100% of new car sales zero emission by 2030 (HMG target)
 10 year vehicle life/fleet turnover rate
 Therefore 100% electric fleet by 2040

Historic data on growth in plug-in vehicles (VEH0132)

<https://www.gov.uk/government/statistical-data-sets/all-vehicles-veh01>

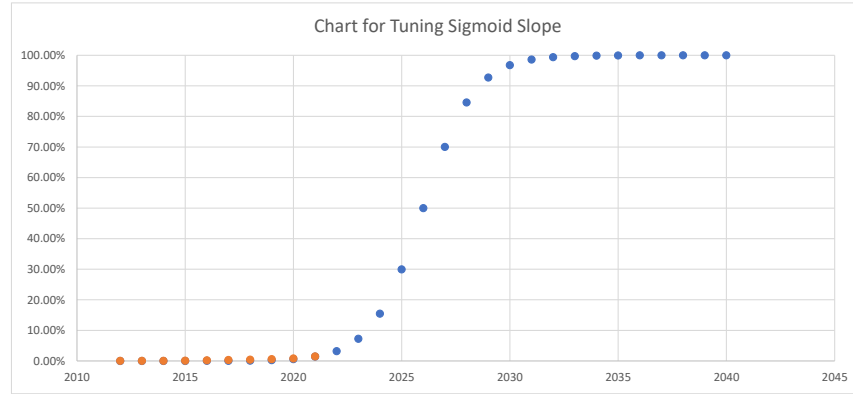
NB source data lists total vehicles licensed (i.e. fleet size) at the end of each quarter. Most recent data is 2021 Q2. Q2 data for each year used here

	Source	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Plug-in vehicles	VEH0131	7,211	10,122	16,019	39,589	70,678	108,847	157,787	211,440	300,931	543,515
All Cars (thousands)	VEH0101	28,710.3	29,080.2	29,695.1	30,030.2	30,689.3	31,212.2	31,498.2	31,842.5	31,619.2	32,030.5
All LGVs (thousands)	VEH0101	3,282.8	3,346.2	3,461.7	3,572.8	3,736.7	3,870.0	3,978.3	4,102.9	4,097.9	4,371.2
Plug-in proportion of fleet		0.02%	0.03%	0.05%	0.12%	0.21%	0.31%	0.44%	0.59%	0.84%	1.49%

Modelled projection of plug-in vehicle fleet

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
Plug-in proportion of fleet	0.00%	0.00%	0.00%	0.01%	0.02%	0.05%	0.11%	0.26%	0.61%	1.41%	3.23%	7.24%	15.45%	29.94%	50.00%	70.06%	84.55%	92.76%	96.77%	98.59%	99.39%	99.74%	99.89%	99.95%	99.98%	99.99%	100.00%	100.00%	100.00%

Plug-in proportion in 2040: 100%
 sigmoid slope: 0.85
 Midpoint of period: 2026



Modelled resident Plug-in car use

Number of homes: 1489
 Number of cars: 1000 Slightly less than 1 per household/some have drives
 Cams v national fleet lag years: 0 (If you want to model a delay in uptake compared to national a number of years lag in here) **NOTE - Cams is ahead of national**

	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045
Riverside/De freville Plug-in fleet	14	32	72	154	299	500	701	846	928	968	986	994	997	999	1000	1000	1000	1000	1000	1000	0	0	0	0	0

Modelled CCC Workplace charging

UK car average mileage: 7400 <https://www.nimblefins.co.uk/average-car-mileage-uk>
 proportion of charging at public EVC: 10% set to same as workplace - highly likely to be an underestimate but couldn't get figures
 Assumed miles/kWh: 3.5 Haven't found proper data on this, have used assumption from here <https://www.edfenergy.com/electric-cars/costs>
 Possible hours for charging: 24
 Number of chargepoints: 19
 chargepoint capacity (kW): 7
 total chargepoint capacity (kW): 266
 Days possible to charge: 365
 Max kWh pa: 2330160

	21/22	22/23	1 23/24	2 24/25	3 25/26	4 26/27	5 27/28	6 28/29	7 29/30	8 30/31	9 31/32	10 32/33	33/34	34/35	35/36
Total charging (kWh pa)	2973	6828	15313	32658	63309	105714	148120	178770	196116	204600	208455	210147	210879	211193	211328
miles charged (pa)	850	1951	4375	9331	18088	30204	42320	51077	56033	58457	59559	60042	60251	60341	60379
£tariff revenue @ 20p/kwh	£ 595	£ 1,366	£ 3,063	£ 6,532	£ 12,662	£ 21,143	£ 29,624	£ 35,754	£ 39,223	£ 40,920	£ 41,691	£ 42,029	£ 42,176	£ 42,239	£ 42,266
electricity cost @17.5p/kWh	£ 520	£ 1,195	£ 2,680	£ 5,715	£ 11,079	£ 18,500	£ 25,921	£ 31,285	£ 34,320	£ 35,805	£ 36,480	£ 36,776	£ 36,904	£ 36,959	£ 36,982
Gross profit after electricity	£ 74	£ 171	£ 383	£ 816	£ 1,583	£ 2,643	£ 3,703	£ 4,469	£ 4,903	£ 5,115	£ 5,211	£ 5,254	£ 5,272	£ 5,280	£ 5,283
50% Profit share	£ 37	£ 85	£ 191	£ 408	£ 791	£ 1,321	£ 1,851	£ 2,235	£ 2,451	£ 2,558	£ 2,606	£ 2,627	£ 2,636	£ 2,640	£ 2,642
Cumulative profit	£ 37	£ 123	£ 314	£ 722	£ 1,514	£ 2,835	£ 4,686	£ 6,921	£ 9,373	£ 11,930	£ 14,536	£ 17,163	£ 19,799	£ 22,438	£ 25,080

Payback = £16,336.5 if borrowing £15,000

Calculation of Debt Charges Pressure

Financial Year Ending:	22	Total MRP:	15,000
Principal (period 1):	15,000	Total interest paid:	1,337
Principal (period 2):	0	Total principal:	15,000
Principal (period 3):	0	Annual MRP:	1,500
Principal (period 4):	0		
Principal (period 5):	0	Total revenue expense:	16,337
Interest rate:	1.62		
Repayment period for loan (years):	10	<i>Usually equal to the lifetime of the asset</i>	
Period AuC transfer to B/S:	1		

Year	Period	Principal outstanding (closing)	Principal outstanding (closing) Adj. for MRP	Interest expense	MRP expense	Cumulative MRP	Total revenue expense
21-22	1	15,000	15,000	243	-	-	243
22-23	2	15,000	13,500	219	1,500	1,500	1,719
23-24	3	15,000	12,000	194	1,500	3,000	1,694
24-25	4	15,000	10,500	170	1,500	4,500	1,670
25-26	5	15,000	9,000	146	1,500	6,000	1,646
26-27	6	15,000	7,500	122	1,500	7,500	1,622
27-28	7	15,000	6,000	97	1,500	9,000	1,597
28-29	8	15,000	4,500	73	1,500	10,500	1,573
29-30	9	15,000	3,000	49	1,500	12,000	1,549
30-31	10	15,000	1,500	24	1,500	13,500	1,524
31-32	11	15,000	-	-	1,500	15,000	1,500
32-33	12	-	-	-	-	-	-
33-34	13	-	-	-	-	-	-
34-35	14	-	-	-	-	-	-
35-36	15	-	-	-	-	-	-
36-37	16	-	-	-	-	-	-
37-38	17	-	-	-	-	-	-
38-39	18	-	-	-	-	-	-
39-40	19	-	-	-	-	-	-
40-41	20	-	-	-	-	-	-
41-42	21	-	-	-	-	-	-
42-43	22	-	-	-	-	-	-
43-44	23	-	-	-	-	-	-
44-45	24	-	-	-	-	-	-
45-46	25	-	-	-	-	-	-
46-47	26	-	-	-	-	-	-
47-48	27	-	-	-	-	-	-
48-49	28	-	-	-	-	-	-
49-50	29	-	-	-	-	-	-
50-51	30	-	-	-	-	-	-
51-52	31	-	-	-	-	-	-
52-53	32	-	-	-	-	-	-
53-54	33	-	-	-	-	-	-
54-55	34	-	-	-	-	-	-
55-56	35	-	-	-	-	-	-
56-57	36	-	-	-	-	-	-
57-58	37	-	-	-	-	-	-
58-59	38	-	-	-	-	-	-
59-60	39	-	-	-	-	-	-
60-61	40	-	-	-	-	-	-
61-62	41	-	-	-	-	-	-
62-63	42	-	-	-	-	-	-
63-64	43	-	-	-	-	-	-
64-65	44	-	-	-	-	-	-
65-66	45	-	-	-	-	-	-
66-67	46	-	-	-	-	-	-
67-68	47	-	-	-	-	-	-
68-69	48	-	-	-	-	-	-
69-70	49	-	-	-	-	-	-
70-71	50	-	-	-	-	-	-
71-72	51	-	-	-	-	-	-
72-73	52	-	-	-	-	-	-
73-74	53	-	-	-	-	-	-
74-75	54	-	-	-	-	-	-
75-76	55	-	-	-	-	-	-
76-77	56	-	-	-	-	-	-
77-78	57	-	-	-	-	-	-
78-79	58	-	-	-	-	-	-
79-80	59	-	-	-	-	-	-
80-81	60	-	-	-	-	-	-
81-82	61	-	-	-	-	-	-
82-83	62	-	-	-	-	-	-
83-84	63	-	-	-	-	-	-
84-85	64	-	-	-	-	-	-
85-86	65	-	-	-	-	-	-
86-87	66	-	-	-	-	-	-
87-88	67	-	-	-	-	-	-
88-89	68	-	-	-	-	-	-
89-90	69	-	-	-	-	-	-
90-91	70	-	-	-	-	-	-
91-92	71	-	-	-	-	-	-
92-93	72	-	-	-	-	-	-
93-94	73	-	-	-	-	-	-
94-95	74	-	-	-	-	-	-
95-96	75	-	-	-	-	-	-
96-97	76	-	-	-	-	-	-

97-98	77	-	-	-	-	-	-
98-99	78	-	-	-	-	-	-
99-100	79	-	-	-	-	-	-
100-101	80	-	-	-	-	-	-
101-102	81	-	-	-	-	-	-
102-103	82	-	-	-	-	-	-
103-104	83	-	-	-	-	-	-
104-105	84	-	-	-	-	-	-
105-106	85	-	-	-	-	-	-
106-107	86	-	-	-	-	-	-
107-108	87	-	-	-	-	-	-
108-109	88	-	-	-	-	-	-
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110-111	90	-	-	-	-	-	-
111-112	91	-	-	-	-	-	-
112-113	92	-	-	-	-	-	-
113-114	93	-	-	-	-	-	-
114-115	94	-	-	-	-	-	-
115-116	95	-	-	-	-	-	-
116-117	96	-	-	-	-	-	-
117-118	97	-	-	-	-	-	-
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119-120	99	-	-	-	-	-	-
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123-124	103	-	-	-	-	-	-
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126-127	106	-	-	-	-	-	-
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190-191	170	-	-	-	-	-	-
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213-214	193	-	-	-	-	-	-
214-215	194	-	-	-	-	-	-
215-216	195	-	-	-	-	-	-
216-217	196	-	-	-	-	-	-
217-218	197	-	-	-	-	-	-
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