

Distribution Future Energy Scenarios 2022

Local Authority:
Neath Port Talbot

What are Distribution Future Energy Scenarios?

National Grid run Distribution Future Energy Scenarios (DFES) on an annual cycle for all licence areas, and represent a range of credible future scenarios of what could connect to the distribution network.

The scenarios use a scenario framework consistent with all electricity distribution network operators and the National Grid ESO Future Energy Scenarios. These aim to account for differing uptakes of Electric Vehicles, Heat Pumps, new domestic and I&C developments and distributed generation connections, that NGED use to assess the strategic development of our network.

A summary of the methodology and detailed reports are available on our website. DFES scenario projections are available on the interactive DFES map on the website [here](#).

Geographic Area Covered

This report covers the area of Neath Port Talbot covered by the NGED licence areas.



Scenario Summary

This DFES scenario framework includes three scenarios that are compliant with UK government targets of Net Zero greenhouse gas emissions by 2050. A summary of each scenario is below:

Falling Short (FS) assumes non-compliance with the net zero emissions target. Low levels of decarbonisation and societal change.

System Transformation (ST) has high level of decarbonisation with lower societal change. Larger, more centralised solutions are developed. This scenario has the highest levels of hydrogen deployment.

Consumer Transformation (CT) has high levels of decarbonisation and societal change. Consumers adopt new technologies rapidly, and more decentralised solutions are developed. This scenario has significant electrification of domestic heat.

Leading the Way (LW) has very high levels of decarbonisation and societal change. Consumers adopt new technologies rapidly, and a mix of solutions are developed. This scenario aims for the “fastest credible” decarbonisation pathway.



Scenario Projections: at a glance

The DFES scenario projections at a Local Authority level include all customers connected to the distribution network within the area of the Local Authority at all voltage levels. Customers connected to the transmission network are not included in this analysis. The table below shows a breakdown of the total for Neath Port Talbot for two specific years in the DFES analysis.

NGED also created a 5th 'Best View' forecast for the purposes of regulatory reporting and strategic network planning. This is a hybrid forecast built on local stakeholder engagement and historic performance, which reflects local authority ambition for the technologies where its influence is greatest. The Best View informs the likely amount of investment on the network across a licence area; however, changes in regional growth projections that affect investment requirements are supported through the uncertainty mechanism funding process.

Technology	Units	Baseline Total	2030				2050			
			FS	ST	CT	LW	FS	ST	CT	LW
Air conditioning	Domestic air conditioning units	201	578	490	490	201	18086	8592	8592	201
Domestic	New dwellings	0	3184	3432	3432	3905	5506	5414	5414	5338
Electric vehicles	Electric vehicles	725	11191	14505	27124	27052	83925	76574	74832	62048
EV Charge Point	EV charge points	412	4949	7710	14714	16174	48145	48955	48773	50735
Heat pumps	Heat pump installations	183	3076	3256	10920	19092	35085	41287	68449	57593
Hydrogen electrolysis	MW (installed capacity)	0.1	1.1	1.9	1.1	6.3	4.5	10.0	7.3	17.5
Non domestic	Floorspace (metres squared) of new I&C developments	0	47191	60038	60038	63587	73510	73219	73219	73510
Other Distributed Generation	MW (installed capacity)	3.7	3.7	3.7	3.7	3.4	3.4	3.4	3.5	3.4
Resistive electric heating	Resistive electric heating units	2866	2836	2644	2729	2715	2363	1291	2172	2254
Solar Generation	MW (installed capacity)	12.4	19.0	28.3	39.6	63.9	67.9	126.7	173.7	192.7
Storage	MW (installed capacity)	0.0	0.4	1.5	3.2	5.5	6.0	13.4	34.3	44.5
Wind	MW (installed capacity)	1.0	1.4	2.2	12.6	8.5	14.0	25.3	83.2	64.2

What does this mean for the local distribution network?

As the DFES scenario projections do not imply any electrical behaviour to the base units, electrical profiles are assigned to each technology type for different yearly snapshots. The profiled demand and generation outputs can be overlaid onto a network model and used to identify where there may be future network constraints on the Extra High Voltage (EHV) networks. The customer behaviour assumptions are summarised in the DFES: Customer Behaviour Report, and the detailed network review forms a key input to the NGED investment planning process, which includes the Network Development Plan and Distribution Network Options Assessment.

Incorporating your feedback

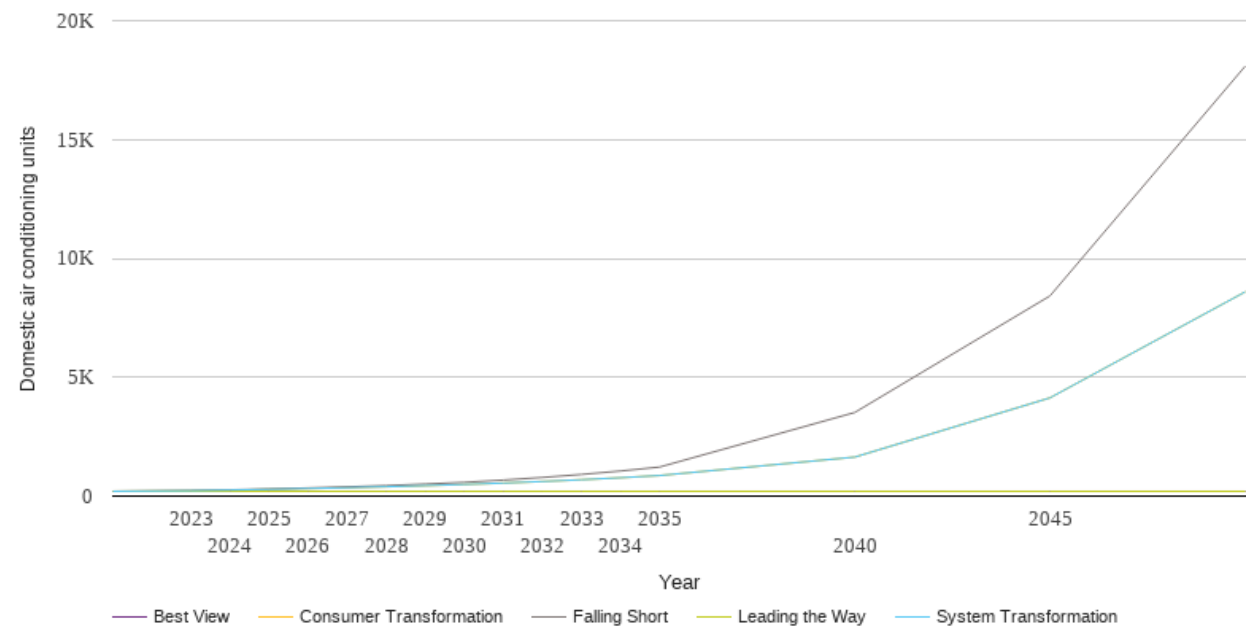
NGED is committed to continually improving the DFES process. To ensure the DFES projections fully capture local ambition, in 2022 we have appointed two DSO Strategic Engagement Officers to engage with local authorities. Any feedback will be incorporated into future Distribution Future Energy Scenarios analysis.

If you have any comments or queries regarding these reports, please contact nged.energyplanning@nationalgrid.co.uk.

Technology Summary: Air conditioning

The table and graph below show the scenario projections for each of the DFES scenarios.

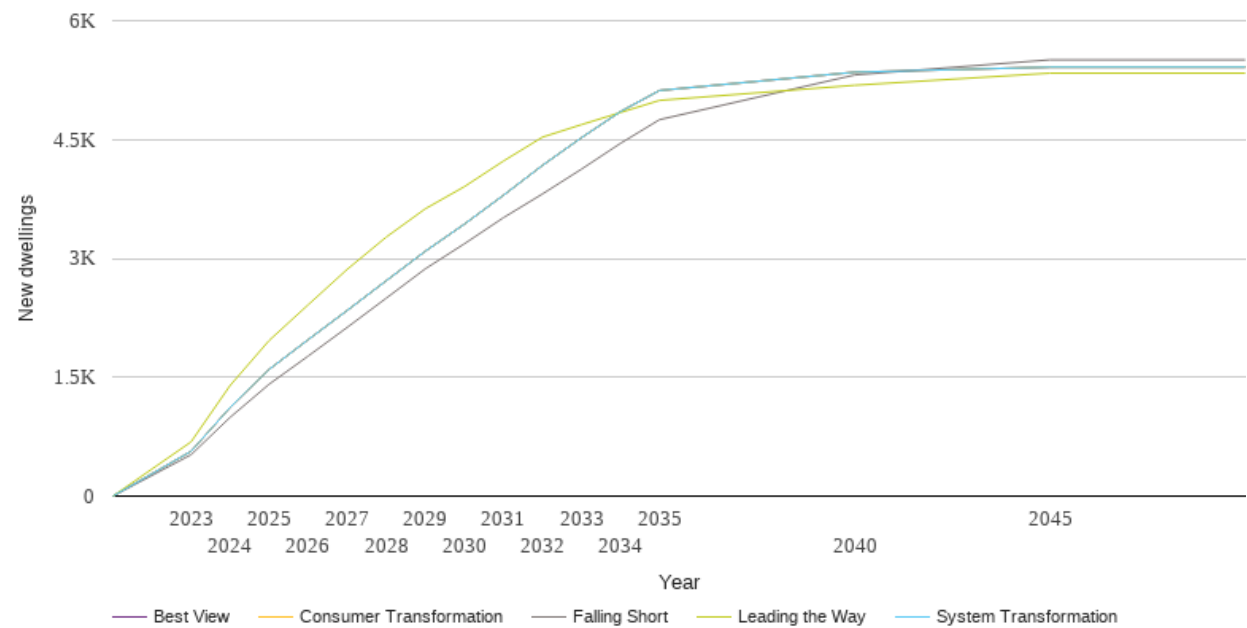
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	201	201	201	201	201
2023	231	227	227	201	201
2024	263	253	253	201	201
2025	300	284	284	201	201
2026	342	317	317	201	201
2027	389	353	353	201	201
2028	443	394	394	201	201
2029	507	440	440	201	201
2030	578	490	490	201	201
2031	674	548	548	201	201
2032	784	614	614	201	201
2033	911	688	688	201	201
2034	1055	772	772	201	201
2035	1221	865	865	201	201
2040	3517	1640	1640	201	201
2045	8421	4133	4133	201	201
2050	18086	8592	8592	201	201



Technology Summary: Domestic

The table and graph below show the scenario projections for each of the DFES scenarios.

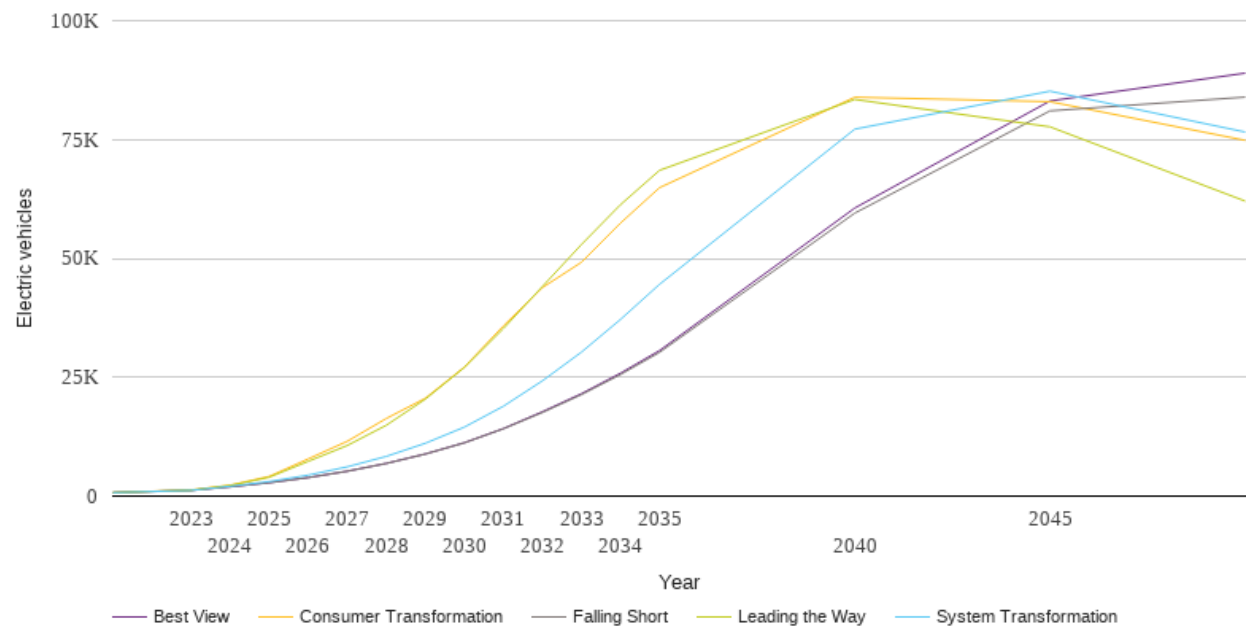
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	522	565	565	684	565
2024	993	1118	1118	1395	1118
2025	1412	1599	1599	1964	1599
2026	1767	1974	1974	2414	1974
2027	2129	2343	2343	2862	2343
2028	2498	2718	2718	3269	2718
2029	2868	3090	3090	3626	3090
2030	3184	3432	3432	3905	3432
2031	3513	3796	3796	4228	3796
2032	3813	4173	4173	4530	4173
2033	4126	4523	4523	4688	4523
2034	4452	4853	4853	4841	4853
2035	4751	5119	5119	4994	5119
2040	5315	5350	5350	5185	5350
2045	5506	5414	5414	5338	5414
2050	5506	5414	5414	5338	5414



Technology Summary: Electric vehicles

The table and graph below show the scenario projections for each of the DFES scenarios.

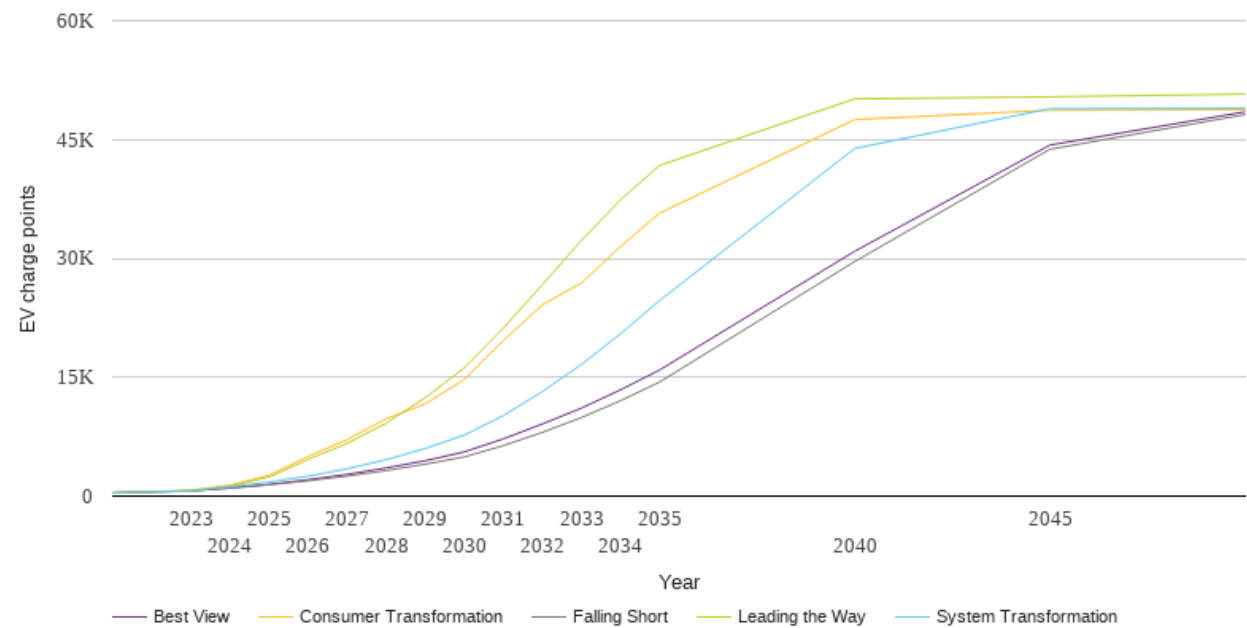
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	725	725	725	725	725
2023	1213	1203	1279	1248	1213
2024	1950	2066	2287	2225	1951
2025	2815	3052	4131	3956	2817
2026	3884	4406	7814	7305	3889
2027	5222	6151	11518	10635	5231
2028	6855	8349	16316	14891	6872
2029	8832	11109	20574	20387	8858
2030	11191	14505	27124	27052	11226
2031	14154	18898	35805	35234	14200
2032	17582	24243	43857	44081	17743
2033	21337	30288	49190	52925	21544
2034	25571	37156	57429	61297	25849
2035	30233	44548	64876	68524	30609
2040	59519	77184	83902	83432	60589
2045	81029	85174	82962	77674	83107
2050	83925	76574	74832	62048	88968



Technology Summary: EV Charge Point

The table and graph below show the scenario projections for each of the DFES scenarios.

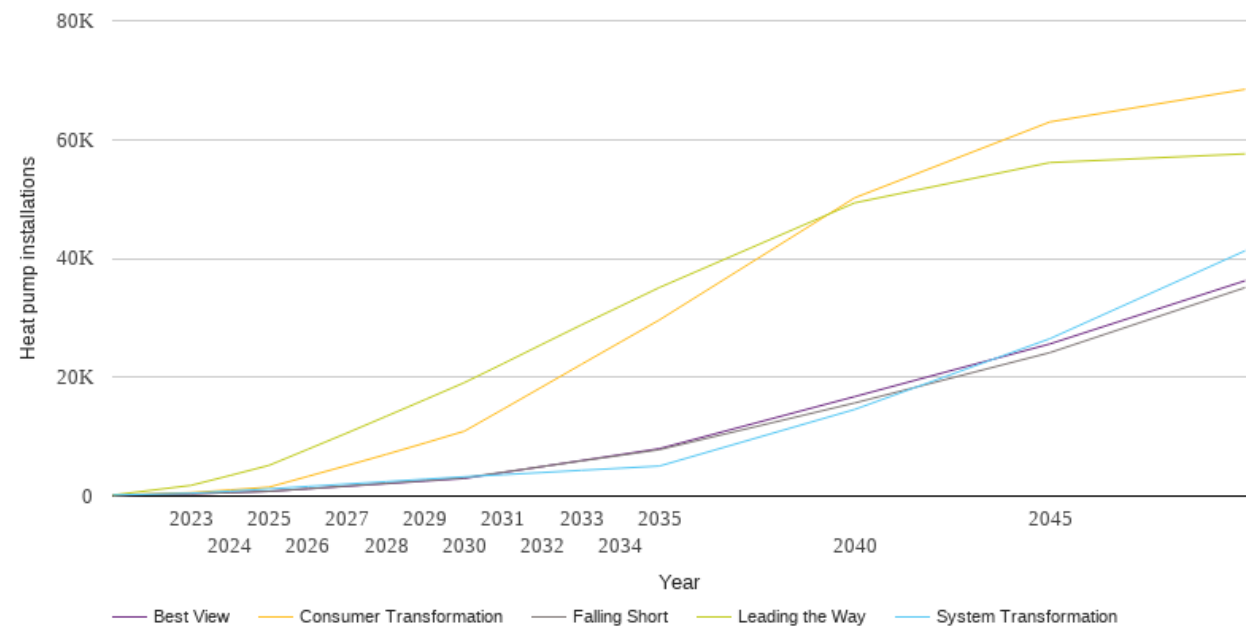
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	412	412	412	412	412
2023	644	661	745	665	645
2024	1018	1196	1383	1252	1024
2025	1431	1777	2627	2407	1479
2026	1934	2514	5003	4631	2064
2027	2526	3443	7140	6664	2743
2028	3224	4599	9747	9209	3554
2029	4028	6010	11659	12422	4463
2030	4949	7710	14714	16174	5580
2031	6369	10163	19636	21207	7227
2032	8044	13191	24146	26687	9105
2033	9913	16620	26899	32266	11104
2034	12042	20478	31498	37403	13412
2035	14390	24672	35702	41735	15908
2040	29602	43874	47518	50137	30900
2045	43771	48890	48697	50386	44305
2050	48145	48955	48773	50735	48493



Technology Summary: Heat pumps

The table and graph below show the scenario projections for each of the DFES scenarios.

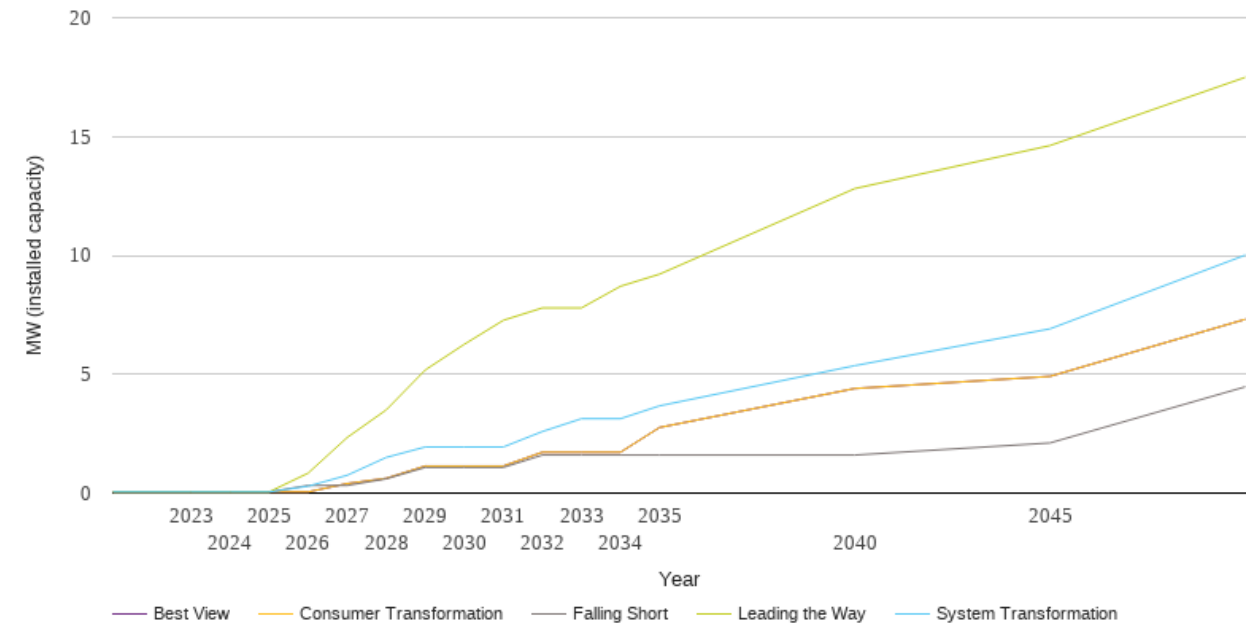
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	183	183	183	183	183
2023	378	486	587	1803	378
2024	588	834	1039	3468	588
2025	799	1209	1511	5179	799
2026	1250	1634	3331	7897	1229
2027	1709	2033	5151	10630	1663
2028	2160	2435	7019	13426	2093
2029	2618	2848	8946	16250	2530
2030	3076	3256	10920	19092	2967
2031	4024	3606	14651	22307	3968
2032	4970	3967	18404	25570	4975
2033	5920	4336	22177	28809	5982
2034	6860	4693	25919	31956	6977
2035	7815	5059	29660	35106	7991
2040	15672	14586	50193	49344	16747
2045	24146	26492	62967	56121	25610
2050	35085	41287	68449	57593	36242



Technology Summary: Hydrogen electrolysis

The table and graph below show the scenario projections for each of the DFES scenarios.

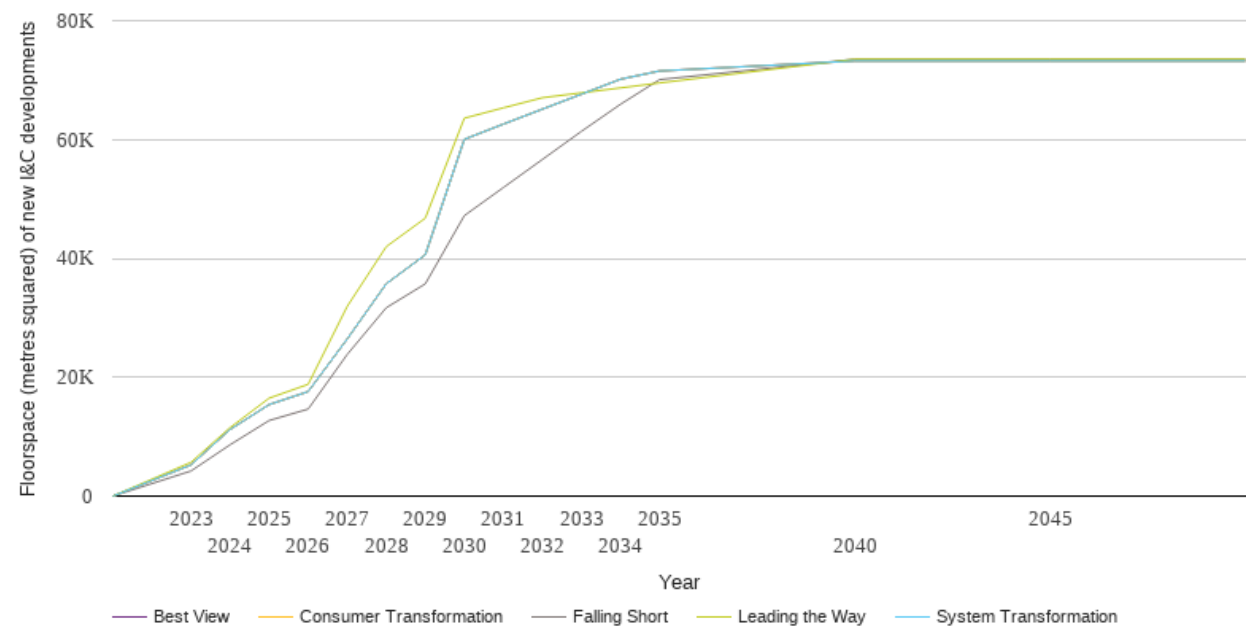
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0.1	0.1	0.1	0.1	0.1
2023	0.1	0.1	0.1	0.1	0.1
2024	0.1	0.1	0.1	0.1	0.1
2025	0.1	0.1	0.1	0.1	0.1
2026	0.3	0.3	0.1	0.8	0.1
2027	0.3	0.7	0.4	2.3	0.4
2028	0.6	1.5	0.6	3.5	0.6
2029	1.1	1.9	1.1	5.2	1.1
2030	1.1	1.9	1.1	6.3	1.1
2031	1.1	1.9	1.1	7.3	1.1
2032	1.6	2.6	1.7	7.8	1.7
2033	1.6	3.1	1.7	7.8	1.7
2034	1.6	3.1	1.7	8.7	1.7
2035	1.6	3.7	2.8	9.2	2.8
2040	1.6	5.4	4.4	12.8	4.4
2045	2.1	6.9	4.9	14.6	4.9
2050	4.5	10.0	7.3	17.5	7.3



Technology Summary: Non domestic

The table and graph below show the scenario projections for each of the DFES scenarios.

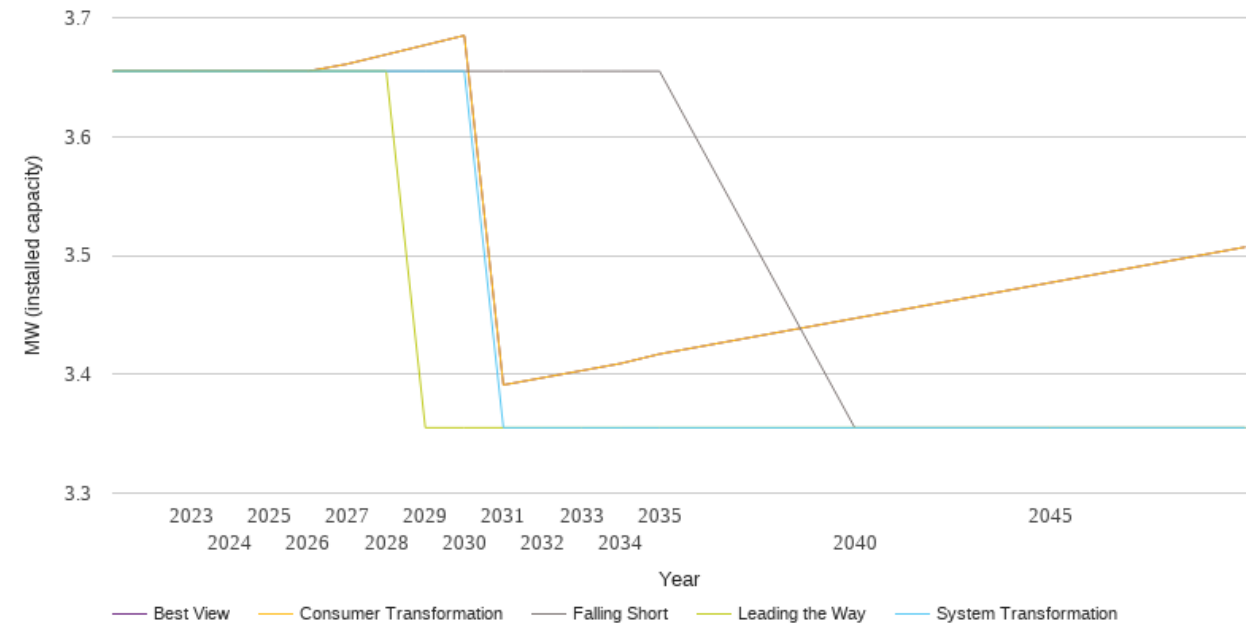
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	4229	5250	5250	5688	5250
2024	8633	11200	11200	11521	11200
2025	12717	15400	15400	16479	15400
2026	14644	17582	17582	18807	17582
2027	23832	26436	26436	31921	26436
2028	31695	35734	35734	41972	35734
2029	35711	40602	40602	46767	40602
2030	47191	60038	60038	63587	60038
2031	51921	62597	62597	65331	62597
2032	56651	65115	65115	67034	65115
2033	61380	67632	67632	67863	67632
2034	65935	70150	70150	68691	70150
2035	70081	71543	71543	69520	71543
2040	73510	73219	73219	73510	73219
2045	73510	73219	73219	73510	73219
2050	73510	73219	73219	73510	73219



Technology Summary: Other Distributed Generation

The table and graph below show the scenario projections for each of the DFES scenarios.

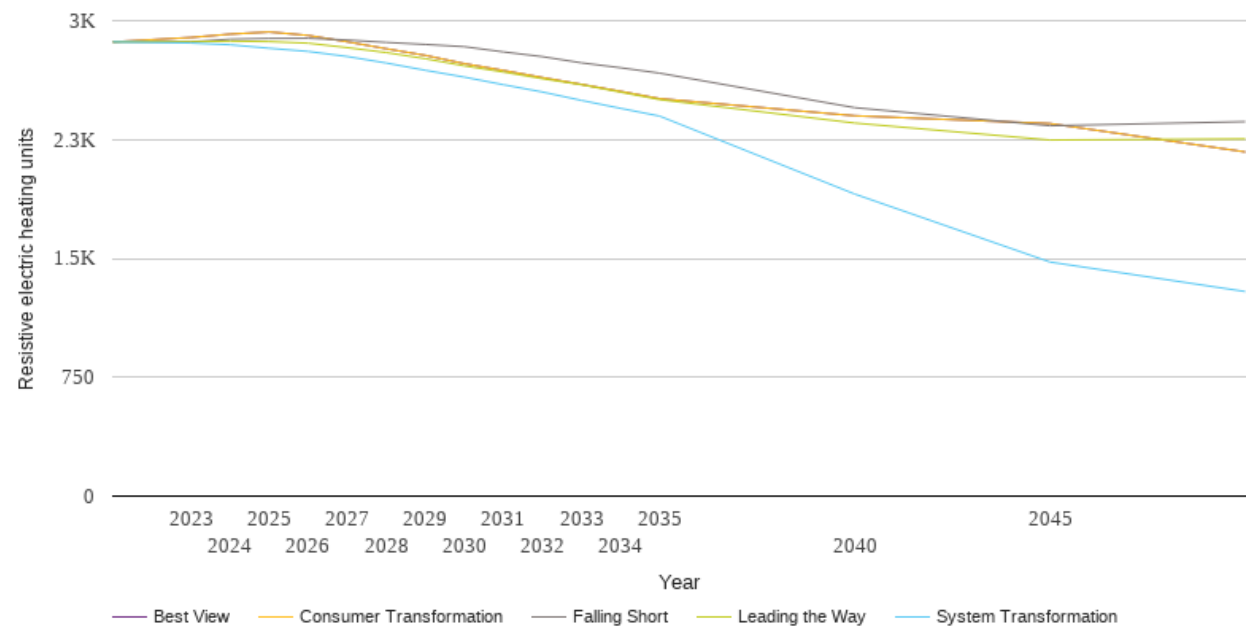
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	3.7	3.7	3.7	3.7	3.7
2023	3.7	3.7	3.7	3.7	3.7
2024	3.7	3.7	3.7	3.7	3.7
2025	3.7	3.7	3.7	3.7	3.7
2026	3.7	3.7	3.7	3.7	3.7
2027	3.7	3.7	3.7	3.7	3.7
2028	3.7	3.7	3.7	3.7	3.7
2029	3.7	3.7	3.7	3.4	3.7
2030	3.7	3.7	3.7	3.4	3.7
2031	3.7	3.4	3.4	3.4	3.4
2032	3.7	3.4	3.4	3.4	3.4
2033	3.7	3.4	3.4	3.4	3.4
2034	3.7	3.4	3.4	3.4	3.4
2035	3.7	3.4	3.4	3.4	3.4
2040	3.4	3.4	3.4	3.4	3.4
2045	3.4	3.4	3.5	3.4	3.5
2050	3.4	3.4	3.5	3.4	3.5



Technology Summary: Resistive electric heating

The table and graph below show the scenario projections for each of the DFES scenarios.

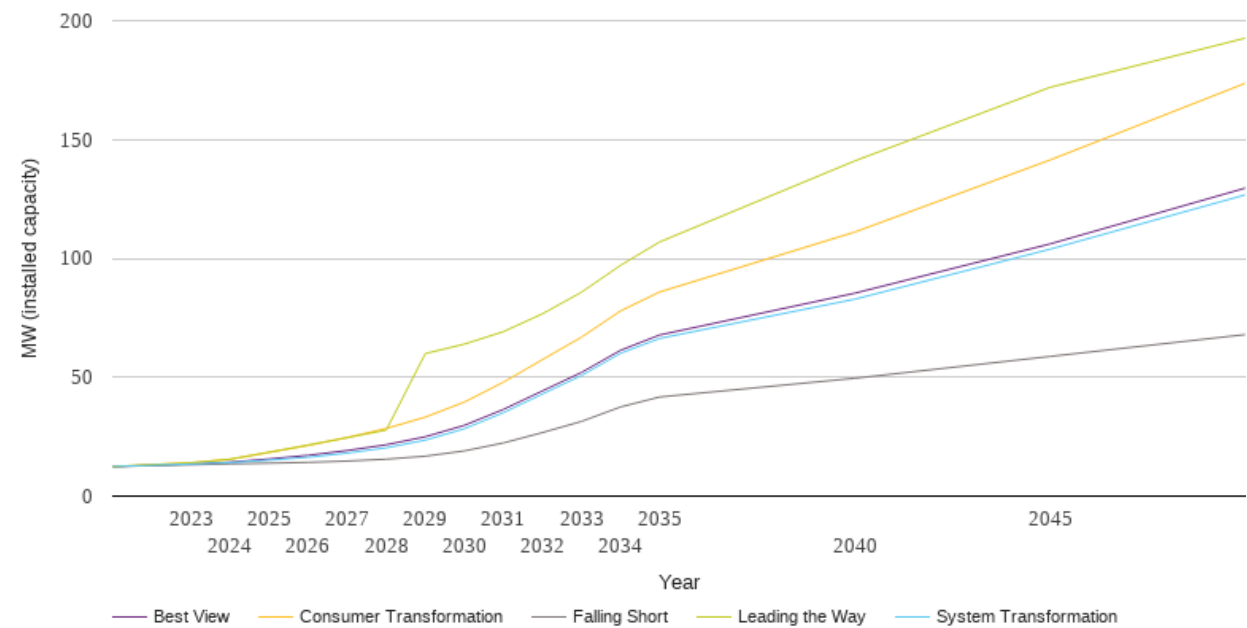
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	2866	2866	2866	2866	2866
2023	2867	2859	2894	2867	2894
2024	2883	2848	2915	2871	2915
2025	2888	2826	2929	2868	2929
2026	2889	2806	2907	2858	2907
2027	2878	2774	2867	2830	2867
2028	2863	2733	2823	2799	2823
2029	2850	2687	2781	2760	2781
2030	2836	2644	2729	2715	2729
2031	2803	2596	2686	2676	2686
2032	2773	2550	2641	2634	2641
2033	2734	2497	2598	2596	2598
2034	2703	2447	2554	2549	2554
2035	2669	2398	2508	2502	2508
2040	2451	1906	2400	2354	2400
2045	2337	1477	2351	2247	2351
2050	2363	1291	2172	2254	2172



Technology Summary: Solar Generation

The table and graph below show the scenario projections for each of the DFES scenarios.

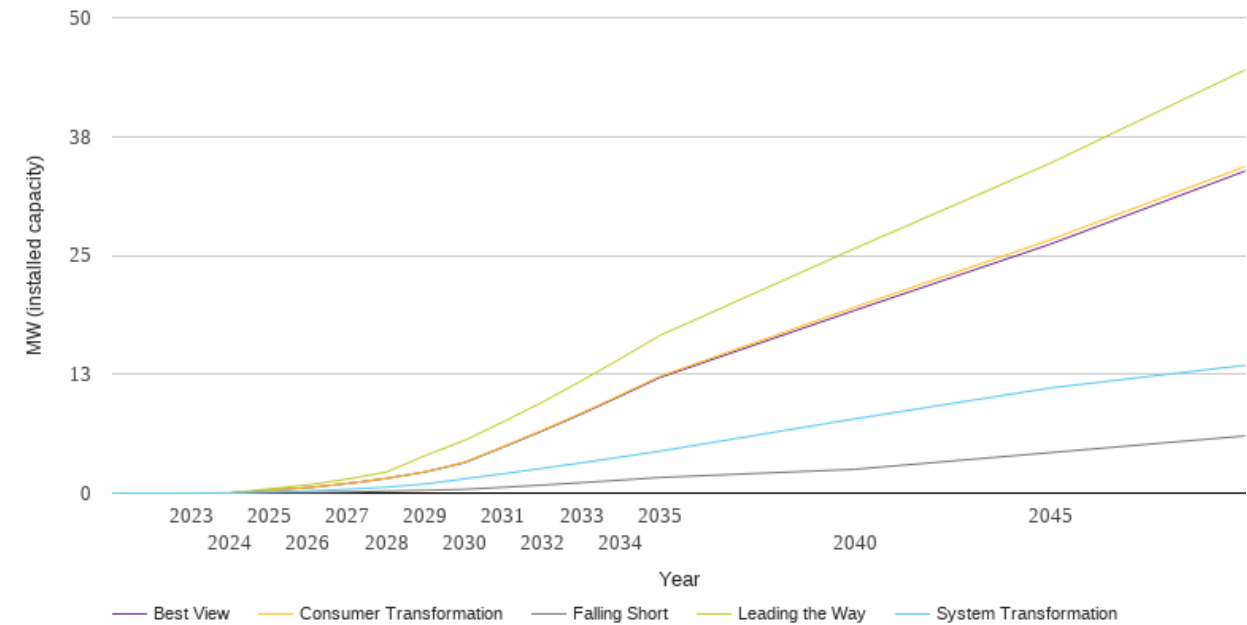
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	12.4	12.4	12.4	12.4	12.4
2023	13.2	13.5	14.0	14.0	13.5
2024	13.6	14.1	15.4	15.5	14.3
2025	13.8	15.1	18.4	18.5	15.6
2026	14.2	16.3	21.3	21.5	17.1
2027	14.7	18.1	24.6	24.6	19.2
2028	15.5	20.3	28.4	27.8	21.6
2029	16.8	23.5	33.2	60.0	25.0
2030	19.0	28.3	39.6	63.9	29.8
2031	22.4	35.1	47.9	69.2	36.5
2032	26.7	42.9	57.4	76.7	44.2
2033	31.4	50.7	66.9	85.8	52.0
2034	37.5	60.0	77.9	97.1	61.3
2035	41.7	66.3	85.9	106.9	67.8
2040	49.6	82.8	111.1	141.0	85.3
2045	58.7	103.9	141.4	171.9	106.1
2050	67.9	126.7	173.7	192.7	129.6



Technology Summary: Storage

The table and graph below show the scenario projections for each of the DFES scenarios.

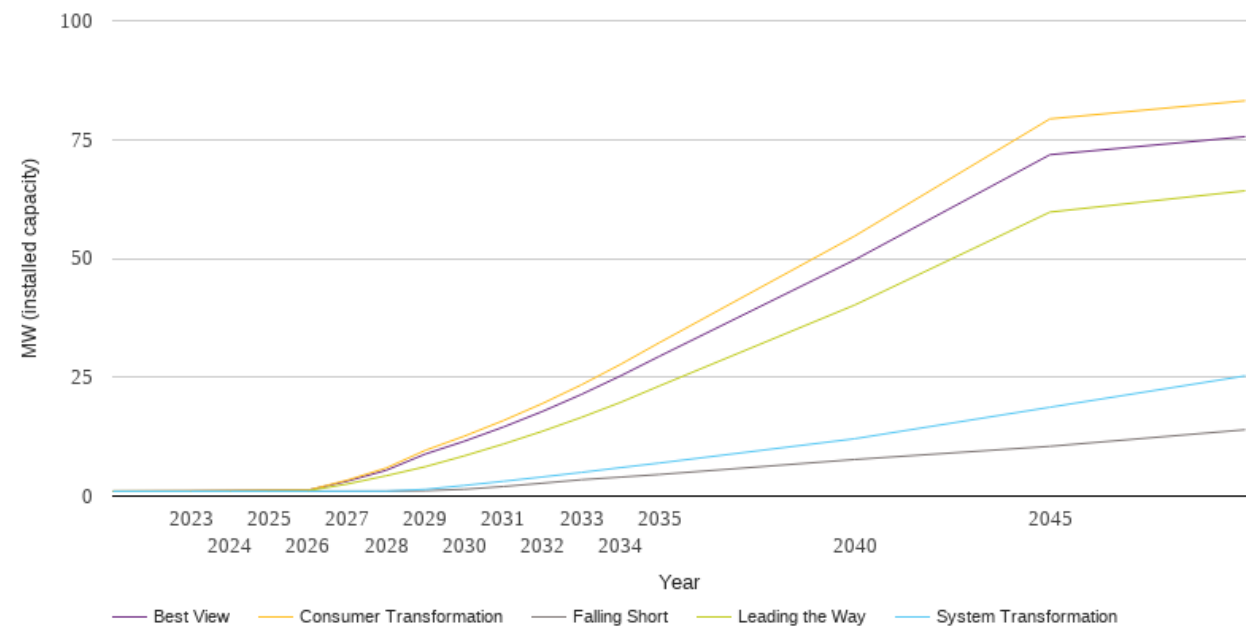
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0
2025	0.1	0.1	0.3	0.4	0.3
2026	0.1	0.2	0.6	0.9	0.6
2027	0.1	0.4	1.0	1.5	1.0
2028	0.2	0.6	1.5	2.2	1.5
2029	0.3	1.0	2.2	4.0	2.2
2030	0.4	1.5	3.2	5.5	3.2
2031	0.6	2.0	4.9	7.5	4.8
2032	0.8	2.6	6.6	9.6	6.5
2033	1.1	3.2	8.4	11.8	8.3
2034	1.4	3.8	10.3	14.1	10.2
2035	1.6	4.4	12.3	16.6	12.1
2040	2.5	7.8	19.6	25.7	19.2
2045	4.3	11.1	26.6	34.7	26.2
2050	6.0	13.4	34.3	44.5	33.9



Technology Summary: Wind

The table and graph below show the scenario projections for each of the DFES scenarios.

Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	1.0	1.0	1.0	1.0	1.0
2023	1.0	1.0	1.1	1.0	1.1
2024	1.0	1.0	1.1	1.0	1.1
2025	1.0	1.0	1.2	1.1	1.2
2026	1.0	1.0	1.3	1.1	1.3
2027	1.0	1.0	3.4	2.5	3.1
2028	1.0	1.1	5.9	4.3	5.4
2029	1.1	1.4	9.6	6.2	8.8
2030	1.4	2.2	12.6	8.5	11.5
2031	2.0	3.1	15.9	10.9	14.5
2032	2.7	4.0	19.5	13.6	17.8
2033	3.4	5.0	23.4	16.6	21.4
2034	4.0	6.0	27.7	19.7	25.3
2035	4.5	7.0	32.3	23.2	29.4
2040	7.7	12.1	54.7	40.2	49.7
2045	10.5	18.7	79.3	59.7	71.8
2050	14.0	25.3	83.2	64.2	75.6



National Grid Electricity Distribution PLC 09223384)
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National Grid Electricity Distribution (South West) Plc (company number 02366894))
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