

# Distribution Future Energy Scenarios 2022

Local Authority:  
Bridgend

## What are Distribution Future Energy Scenarios?

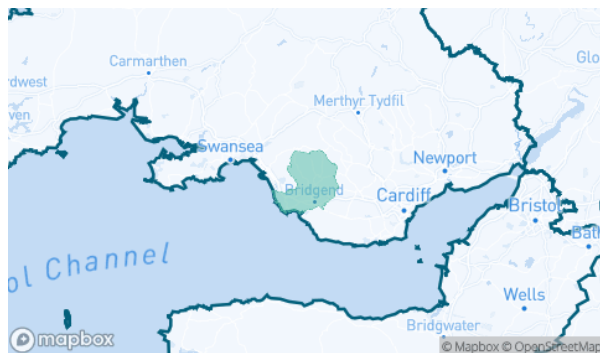
National Grid run Distribution Future Energy Scenarios (DFES) on an annual cycle for all licence areas, and represent a range of credible future scenarios of what could connect to the distribution network.

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 Bridgend 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 Bridgend 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	83	447	324	324	83	18373	8635	8634	83
Domestic	New dwellings	0	787	818	818	871	1057	1020	1020	997
Electric vehicles	Electric vehicles	778	12021	15174	28348	28313	89470	80650	80967	66241
EV Charge Point	EV charge points	528	5453	8067	15279	16757	48883	48222	48576	50519
Heat pumps	Heat pump installations	344	2734	2613	8620	15242	32109	37314	64205	54191
Hydrogen electrolysis	MW (installed capacity)	0.0	0.0	5.7	5.0	6.5	2.4	11.7	9.3	12.8
Non domestic	Floorspace (metres squared) of new I&C developments	0	177385	275693	275693	271837	735033	734880	734880	735033
Other Distributed Generation	MW (installed capacity)	1.5	0.3	0.3	0.3	0.0	0.2	0.0	0.0	0.0
Resistive electric heating	Resistive electric heating units	3197	2832	2695	2813	2742	2238	1108	2113	2219
Solar Generation	MW (installed capacity)	10.2	15.6	24.4	35.4	33.4	47.6	94.9	140.2	136.2
Storage	MW (installed capacity)	0.0	0.5	1.4	3.1	4.5	5.1	12.6	29.4	36.3
Wind	MW (installed capacity)	1.7	2.5	2.9	6.2	5.4	13.3	19.2	43.8	33.7

## 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

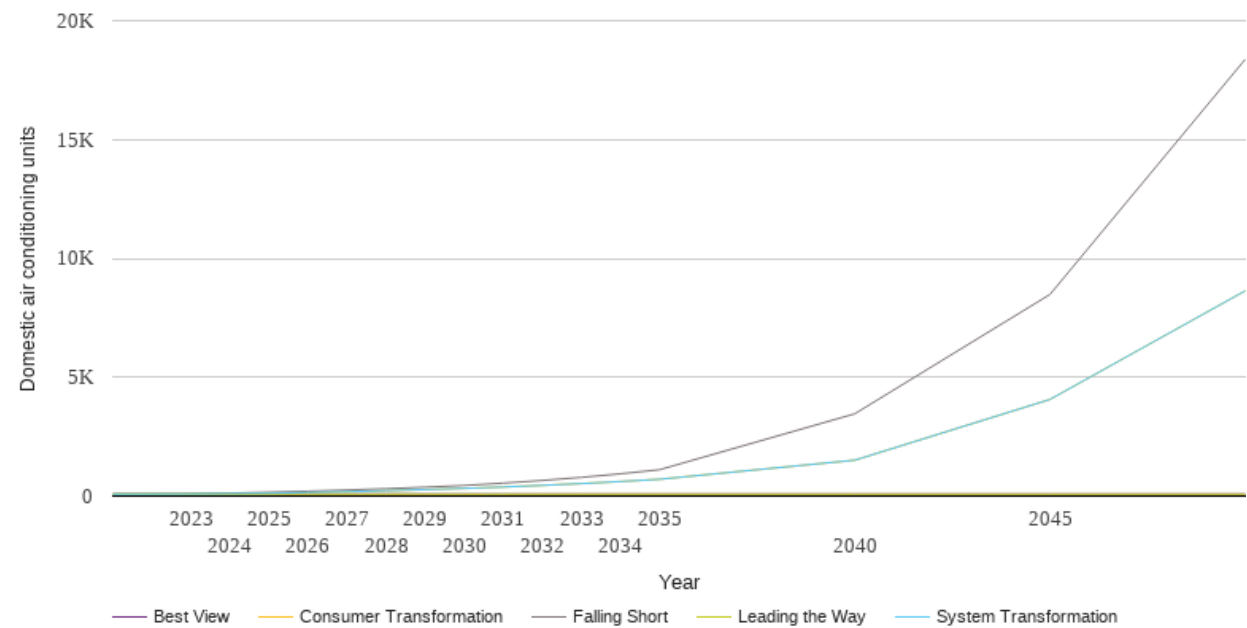
NGED is committed to continually improving the DFES process. To ensure the DFES projections fully capture local ambition, in 2022 we have appointed two DSO Strategic Engagement Officers to engage with local authorities. Any feedback will be incorporated into future Distribution Future Energy Scenarios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

If you have any comments or queries regarding these reports, please contact [nged.energyplanning@nationalgrid.co.uk](mailto:nged.energyplanning@nationalgrid.co.uk).

# Technology Summary: Air conditioning

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

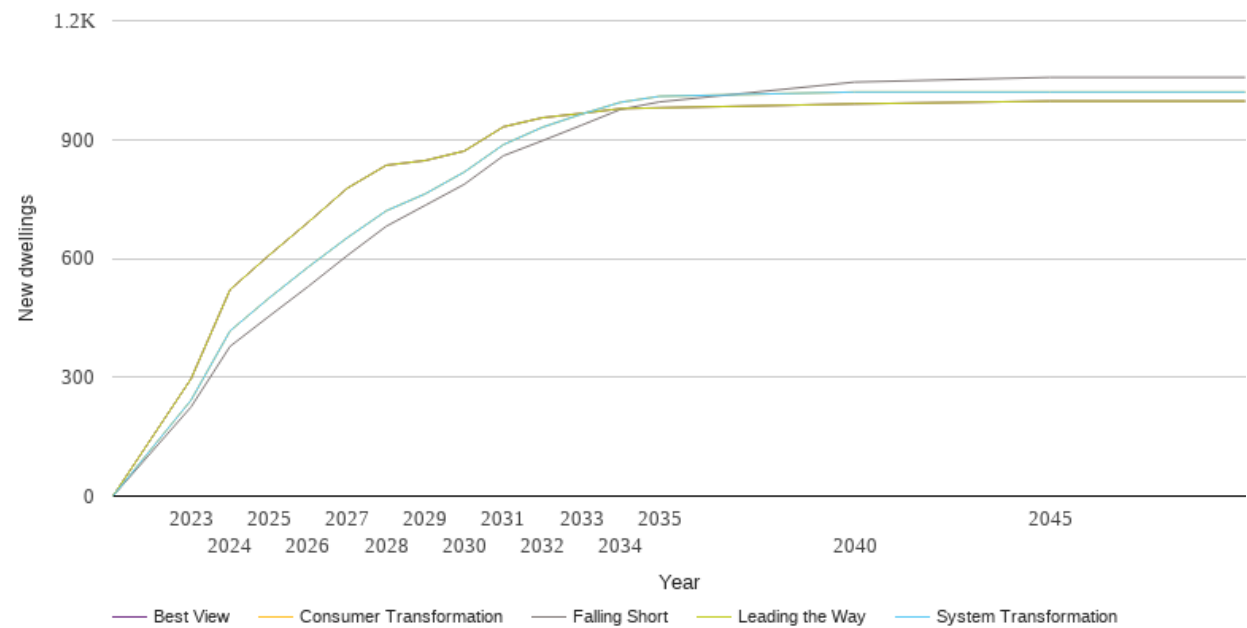
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	83	83	83	83	83
2023	95	94	94	83	83
2024	126	105	105	83	83
2025	162	118	118	83	83
2026	204	150	150	83	83
2027	254	186	186	83	83
2028	310	226	226	83	83
2029	374	273	273	83	83
2030	447	324	324	83	83
2031	546	383	383	83	83
2032	658	451	451	83	83
2033	788	527	527	83	83
2034	938	612	612	83	83
2035	1109	708	708	83	83
2040	3462	1511	1510	83	83
2045	8483	4067	4066	83	83
2050	18373	8635	8634	83	83



# Technology Summary: Domestic

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

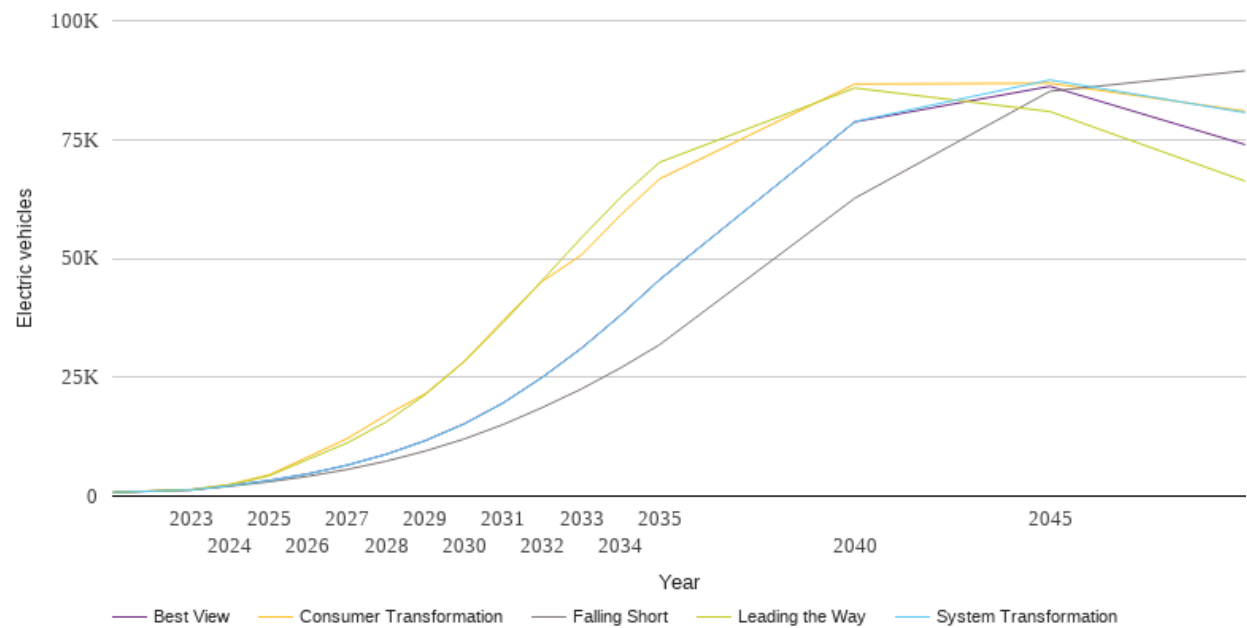
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	225	242	242	296	296
2024	378	417	417	521	521
2025	454	500	500	608	608
2026	529	578	578	691	691
2027	607	652	652	777	777
2028	681	720	720	835	835
2029	734	763	763	847	847
2030	787	818	818	871	871
2031	859	887	887	932	932
2032	897	931	931	955	955
2033	936	964	964	966	966
2034	976	994	994	978	978
2035	995	1009	1009	980	980
2040	1045	1020	1020	990	990
2045	1057	1020	1020	997	997
2050	1057	1020	1020	997	997



# Technology Summary: Electric vehicles

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

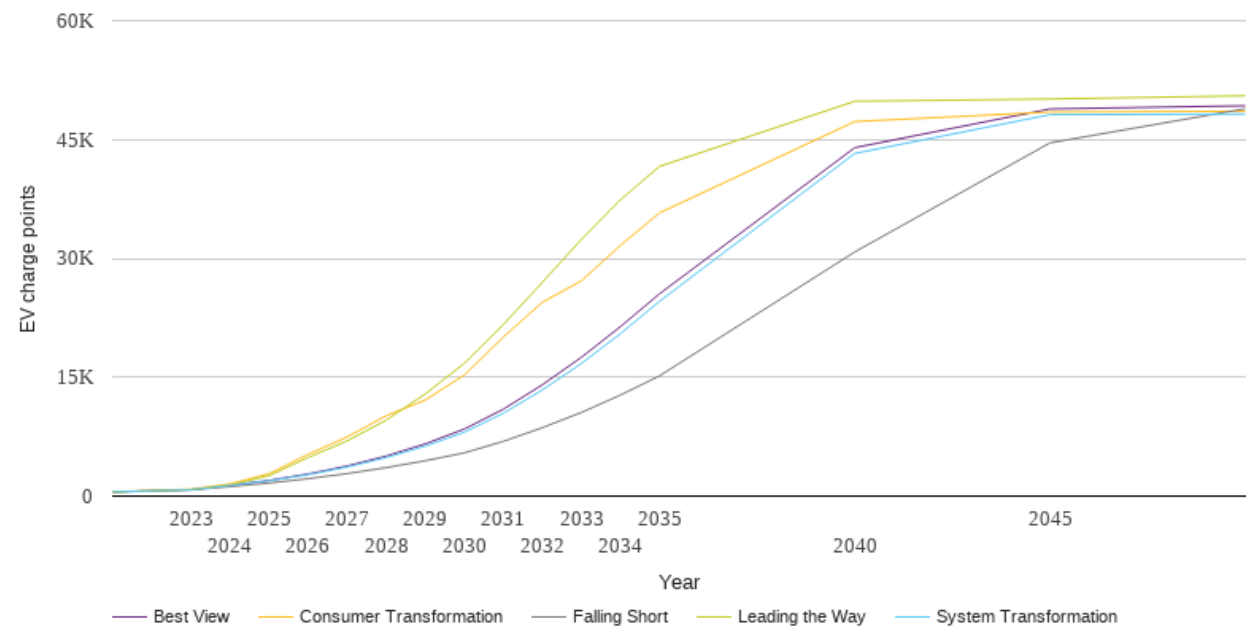
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	778	778	778	778	778
2023	1297	1287	1380	1337	1287
2024	2081	2209	2463	2395	2211
2025	3009	3273	4469	4275	3277
2026	4161	4676	8267	7734	4684
2027	5600	6488	12105	11193	6503
2028	7348	8774	17076	15629	8798
2029	9477	11640	21522	21358	11673
2030	12021	15174	28348	28313	15218
2031	15076	19576	37024	36524	19631
2032	18637	24948	45185	45438	25011
2033	22535	31029	50716	54351	31104
2034	26952	37949	59112	62830	38030
2035	31825	45427	66723	70213	45512
2040	62653	78773	86667	85836	78702
2045	85153	87536	86849	80884	86187
2050	89470	80650	80967	66241	73933



# 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	528	528	528	528	528
2023	788	791	875	799	797
2024	1195	1345	1537	1404	1355
2025	1647	1942	2821	2588	1978
2026	2197	2705	5268	4877	2790
2027	2839	3671	7468	6974	3800
2028	3592	4862	10152	9588	5053
2029	4461	6318	12126	12893	6592
2030	5453	8067	15279	16757	8460
2031	6908	10451	20070	21648	10970
2032	8637	13403	24468	26978	14053
2033	10563	16737	27164	32408	17524
2034	12756	20497	31651	37400	21390
2035	15174	24579	35744	41618	25530
2040	30811	43241	47270	49826	43974
2045	44579	48133	48467	50111	48858
2050	48883	48222	48576	50519	49267

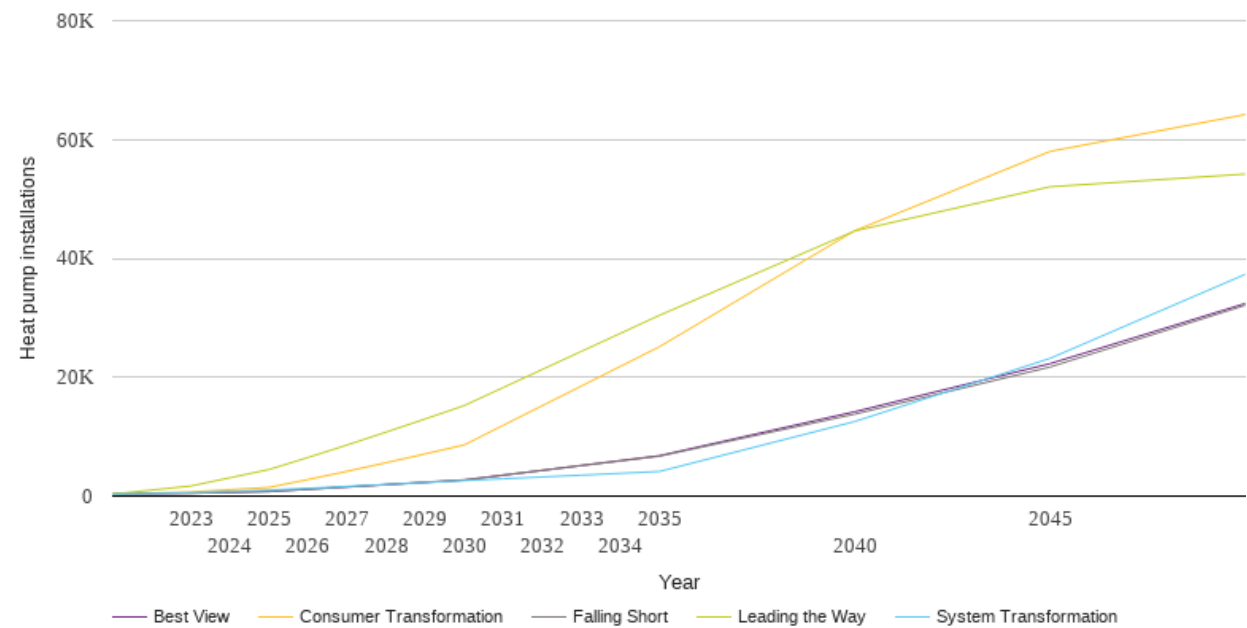




# Technology Summary: Heat pumps

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

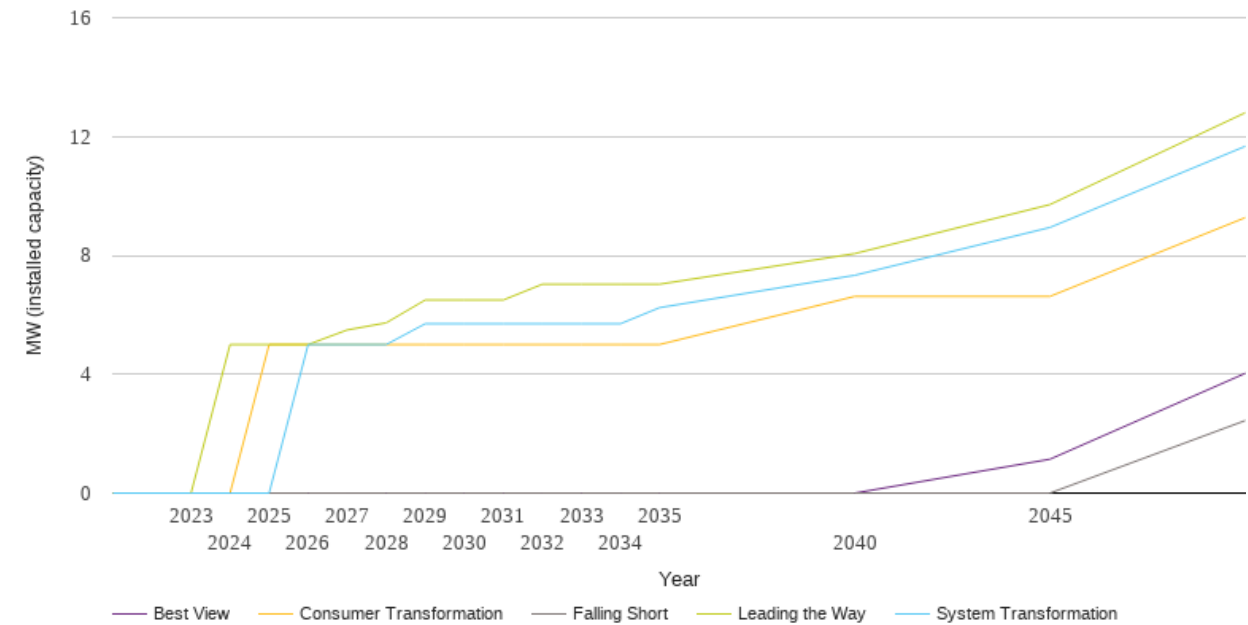
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	344	344	344	344	344
2023	479	553	703	1702	479
2024	633	785	1083	3089	633
2025	775	1018	1464	4474	775
2026	1163	1315	2791	6508	1154
2027	1552	1632	4175	8605	1537
2028	1947	1956	5625	10777	1918
2029	2343	2286	7107	12989	2306
2030	2734	2613	8620	15242	2686
2031	3534	2914	11924	18277	3512
2032	4330	3218	15228	21320	4333
2033	5130	3519	18528	24357	5156
2034	5920	3831	21836	27388	5971
2035	6721	4143	25139	30421	6797
2040	13795	12546	44653	44620	14196
2045	21716	23165	58001	52049	22280
2050	32109	37314	64205	54191	32401



# Technology Summary: Hydrogen electrolysis

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

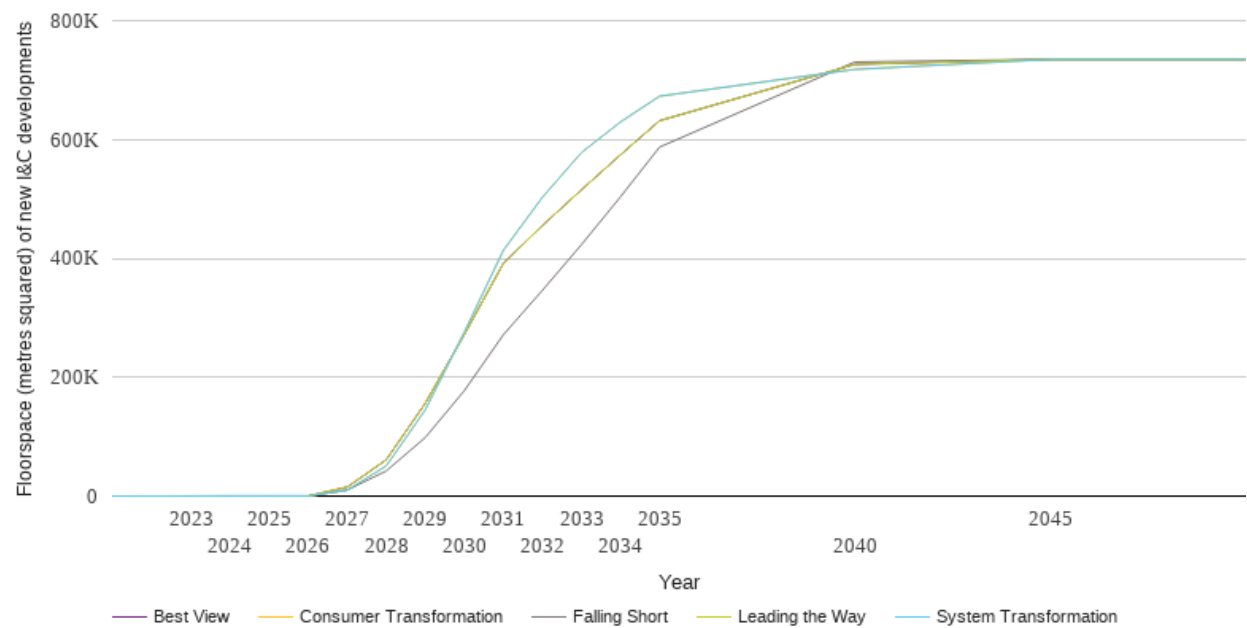
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	5.0	0.0
2025	0.0	0.0	5.0	5.0	0.0
2026	0.0	5.0	5.0	5.0	0.0
2027	0.0	5.0	5.0	5.5	0.0
2028	0.0	5.0	5.0	5.7	0.0
2029	0.0	5.7	5.0	6.5	0.0
2030	0.0	5.7	5.0	6.5	0.0
2031	0.0	5.7	5.0	6.5	0.0
2032	0.0	5.7	5.0	7.0	0.0
2033	0.0	5.7	5.0	7.0	0.0
2034	0.0	5.7	5.0	7.0	0.0
2035	0.0	6.2	5.0	7.0	0.0
2040	0.0	7.3	6.6	8.1	0.0
2045	0.0	8.9	6.6	9.7	1.1
2050	2.4	11.7	9.3	12.8	4.0



# Technology Summary: Non domestic

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

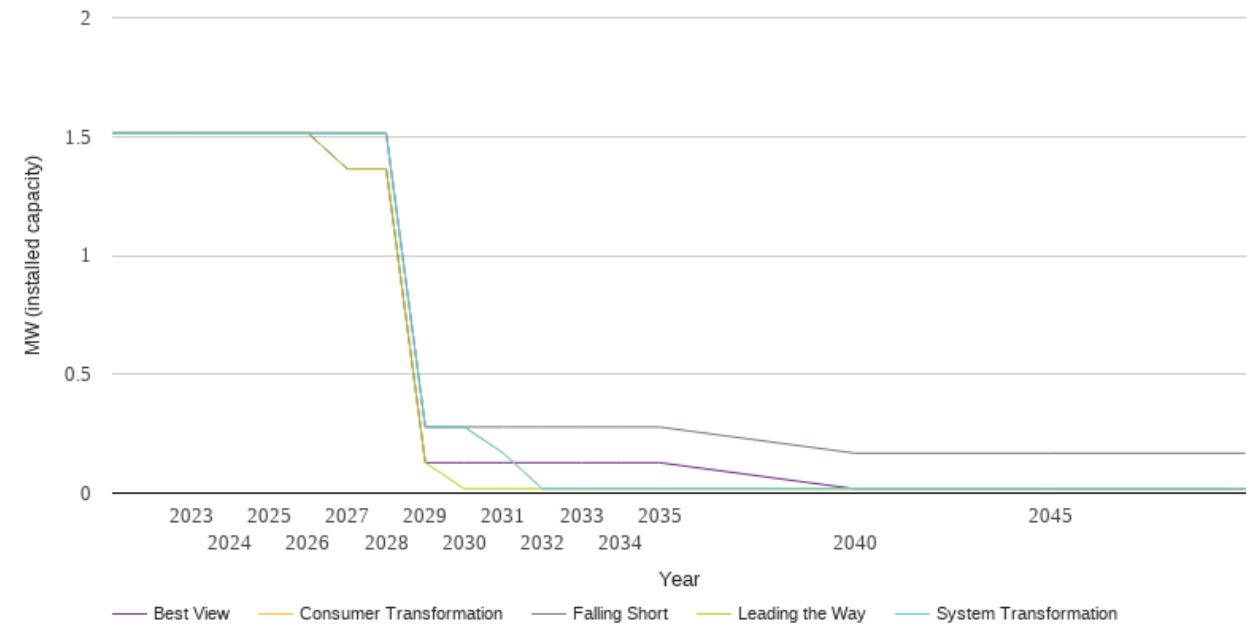
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	77	0	0	77	77
2024	154	0	0	154	154
2025	154	0	0	154	154
2026	154	0	0	154	154
2027	10148	9994	9994	15145	15145
2028	42339	50738	50738	61091	61091
2029	98598	145287	145287	156281	156281
2030	177385	275693	275693	271837	271837
2031	271459	413438	413438	391685	391685
2032	346199	502847	502847	455312	455312
2033	423151	578117	578117	515458	515458
2034	503663	629517	629517	574303	574303
2035	587238	672922	672922	631627	631627
2040	730443	718050	718050	726354	726354
2045	735033	734880	734880	735033	735033
2050	735033	734880	734880	735033	735033



# Technology Summary: Other Distributed Generation

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

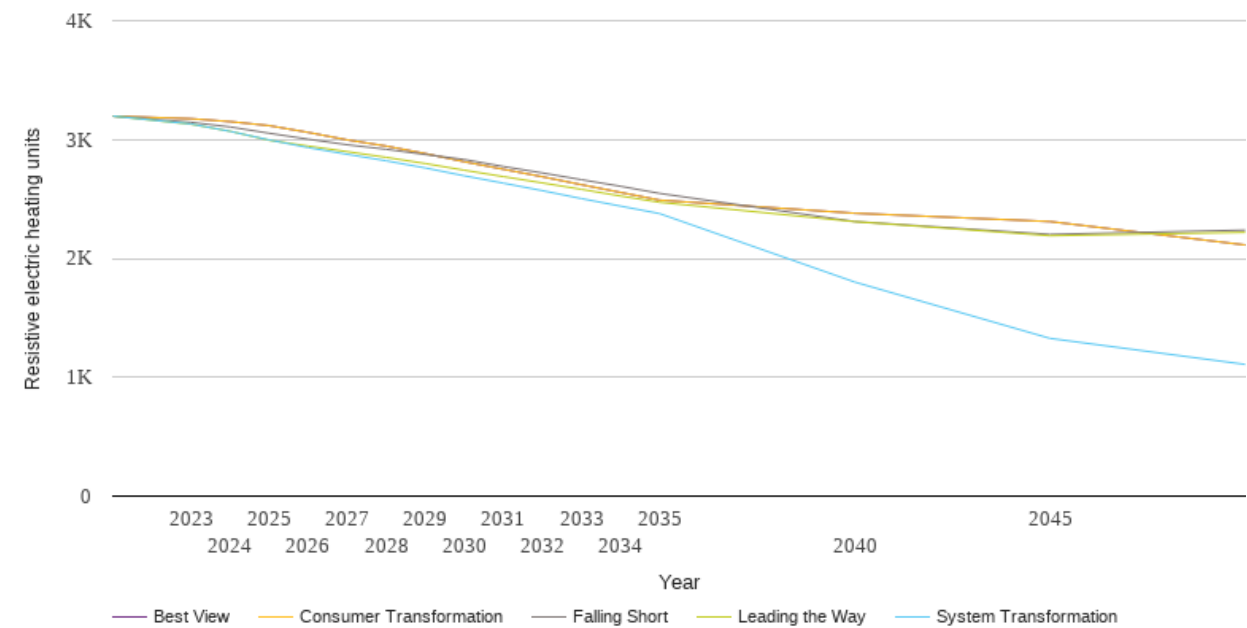
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	1.5	1.5	1.5	1.5	1.5
2023	1.5	1.5	1.5	1.5	1.5
2024	1.5	1.5	1.5	1.5	1.5
2025	1.5	1.5	1.5	1.5	1.5
2026	1.5	1.5	1.5	1.5	1.5
2027	1.5	1.5	1.5	1.5	1.5
2028	1.5	1.5	1.5	1.4	1.4
2029	0.3	0.3	0.3	0.1	0.1
2030	0.3	0.3	0.3	0.0	0.1
2031	0.3	0.2	0.2	0.0	0.1
2032	0.3	0.0	0.0	0.0	0.1
2033	0.3	0.0	0.0	0.0	0.1
2034	0.3	0.0	0.0	0.0	0.1
2035	0.3	0.0	0.0	0.0	0.1
2040	0.2	0.0	0.0	0.0	0.0
2045	0.2	0.0	0.0	0.0	0.0
2050	0.2	0.0	0.0	0.0	0.0



# Technology Summary: Resistive electric heating

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

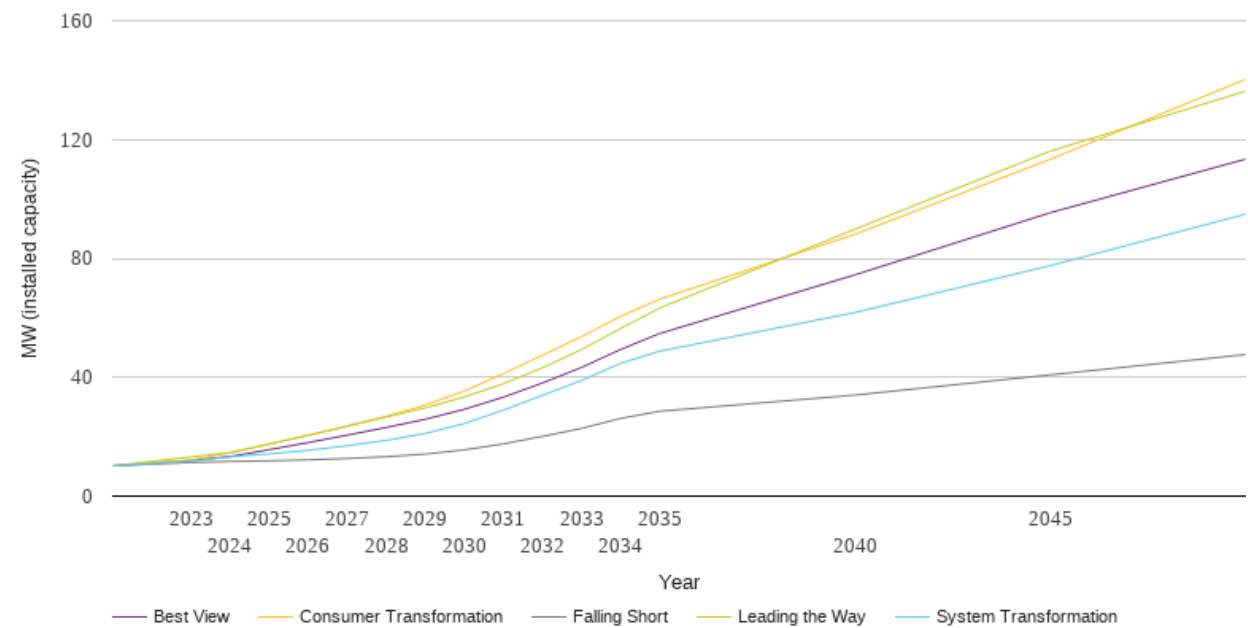
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	3197	3197	3197	3197	3197
2023	3145	3131	3175	3129	3175
2024	3106	3069	3151	3070	3151
2025	3053	2997	3117	2994	3117
2026	3003	2932	3060	2945	3060
2027	2956	2876	2997	2898	2997
2028	2918	2821	2945	2850	2945
2029	2874	2761	2882	2798	2882
2030	2832	2695	2813	2742	2813
2031	2773	2633	2750	2688	2750
2032	2719	2570	2687	2635	2687
2033	2662	2503	2620	2581	2620
2034	2607	2440	2555	2525	2555
2035	2547	2377	2490	2472	2490
2040	2310	1801	2380	2309	2380
2045	2202	1327	2310	2191	2310
2050	2238	1108	2113	2219	2113



# Technology Summary: Solar Generation

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

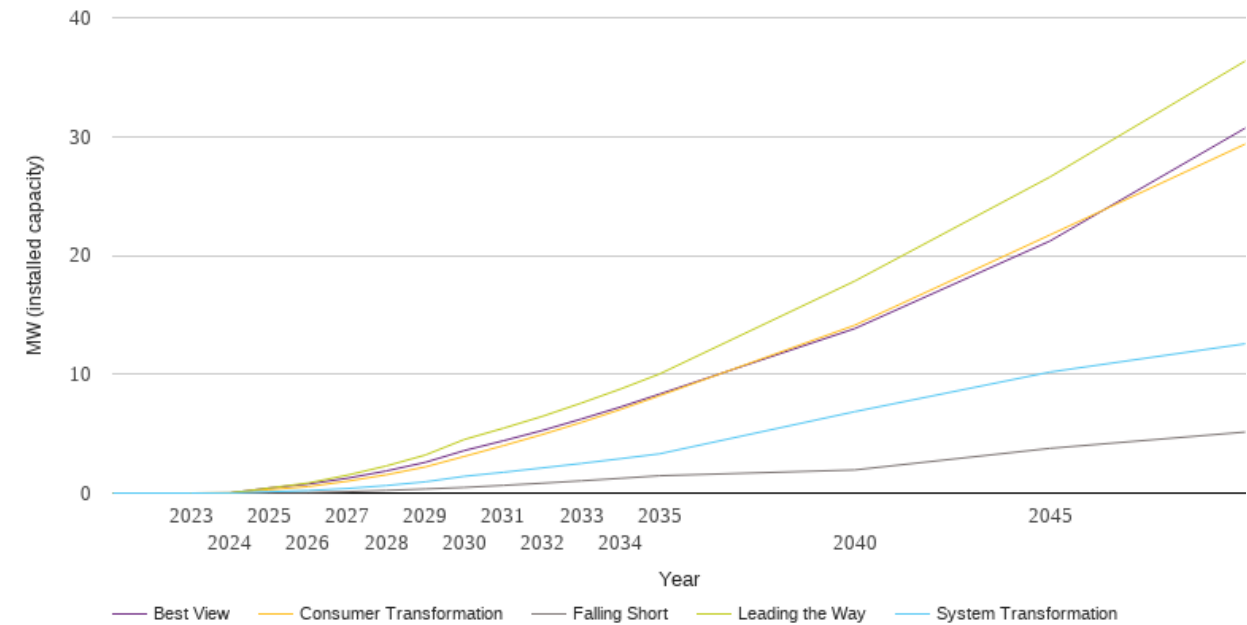
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	10.2	10.2	10.2	10.2	10.2
2023	11.3	11.7	12.2	13.2	12.0
2024	11.7	13.3	14.6	14.6	13.3
2025	11.9	14.2	17.5	17.5	15.6
2026	12.2	15.4	20.4	20.5	18.0
2027	12.7	17.0	23.5	23.5	20.5
2028	13.3	18.8	26.9	26.6	23.1
2029	14.1	21.1	30.6	29.7	25.8
2030	15.6	24.4	35.4	33.4	29.2
2031	17.6	28.9	41.2	37.8	33.3
2032	20.1	33.9	47.4	43.2	38.1
2033	22.8	38.9	53.6	49.3	43.3
2034	26.1	44.7	60.5	56.4	49.3
2035	28.5	48.8	66.3	63.3	54.7
2040	34.0	61.7	88.1	89.8	74.4
2045	40.8	77.5	113.3	116.1	95.3
2050	47.6	94.9	140.2	136.2	113.4



# Technology Summary: Storage

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

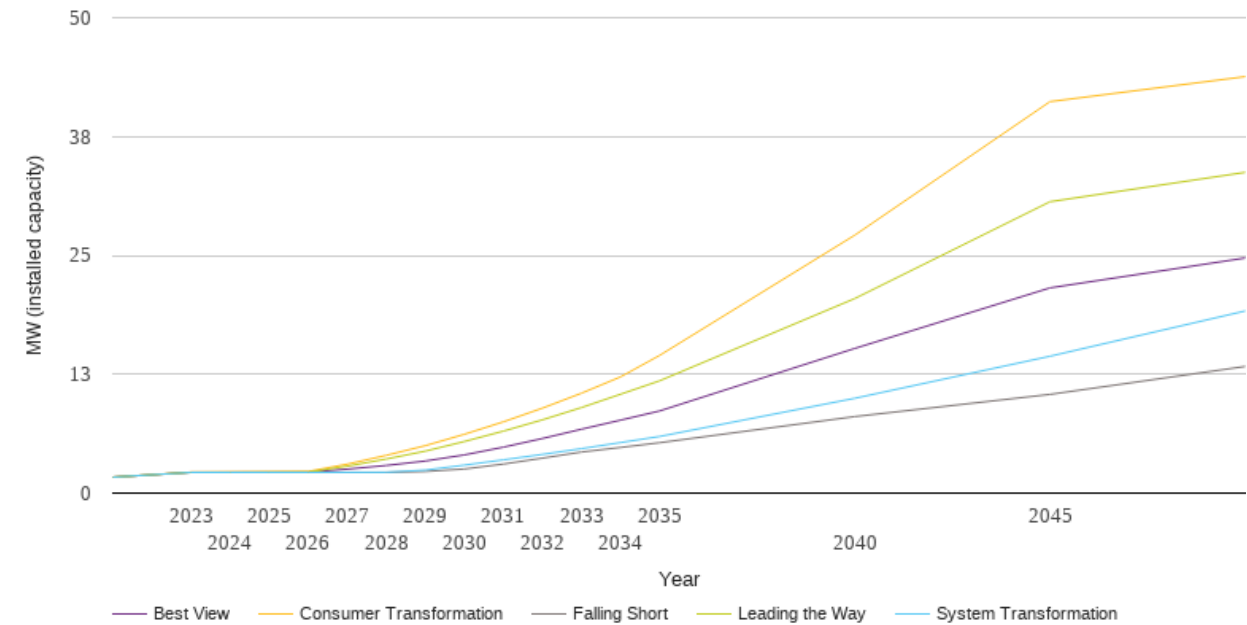
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.1	0.3	0.4	0.4
2026	0.1	0.2	0.5	0.8	0.8
2027	0.1	0.4	1.0	1.5	1.3
2028	0.2	0.6	1.5	2.3	1.9
2029	0.3	0.9	2.2	3.2	2.6
2030	0.5	1.4	3.1	4.5	3.6
2031	0.6	1.8	4.0	5.5	4.4
2032	0.8	2.1	4.9	6.5	5.3
2033	1.0	2.5	5.9	7.6	6.2
2034	1.2	2.9	7.0	8.8	7.2
2035	1.5	3.3	8.2	10.0	8.3
2040	1.9	6.9	14.1	17.8	13.8
2045	3.8	10.2	21.7	26.6	21.2
2050	5.1	12.6	29.4	36.3	30.7



# 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	1.7	1.7	1.7	1.7	1.7
2023	2.2	2.2	2.2	2.2	2.2
2024	2.2	2.2	2.2	2.2	2.2
2025	2.2	2.2	2.2	2.2	2.2
2026	2.2	2.2	2.3	2.2	2.2
2027	2.2	2.2	3.0	2.8	2.5
2028	2.2	2.2	4.0	3.6	2.9
2029	2.3	2.4	5.0	4.4	3.4
2030	2.5	2.9	6.2	5.4	4.0
2031	3.1	3.5	7.5	6.5	4.8
2032	3.7	4.1	8.9	7.7	5.7
2033	4.3	4.7	10.5	9.0	6.7
2034	4.8	5.3	12.2	10.4	7.7
2035	5.3	6.0	14.5	11.8	8.6
2040	8.0	10.0	27.1	20.5	15.2
2045	10.4	14.4	41.2	30.6	21.6
2050	13.3	19.2	43.8	33.7	24.7





National Grid Electricity Distribution PLC 09223384)  
National Grid Electricity Distribution (East Midlands) Plc (company number 02366923))  
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National Grid Electricity Distribution (South West) Plc (company number 02366894))  
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