

# Distribution Future Energy Scenarios 2022

Local Authority:  
Bassetlaw

## What are Distribution Future Energy Scenarios?

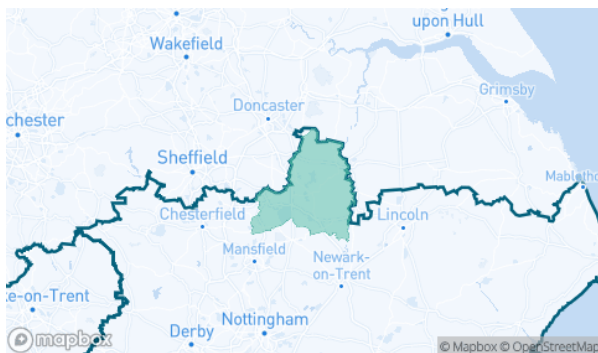
National Grid run Distribution Future Energy Scenarios (DFES) on an annual cycle for all licence areas, and represent a range of credible future scenarios of what could connect to the distribution network.

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 Bassetlaw covered by the NGED licence areas.



## Scenario Summary

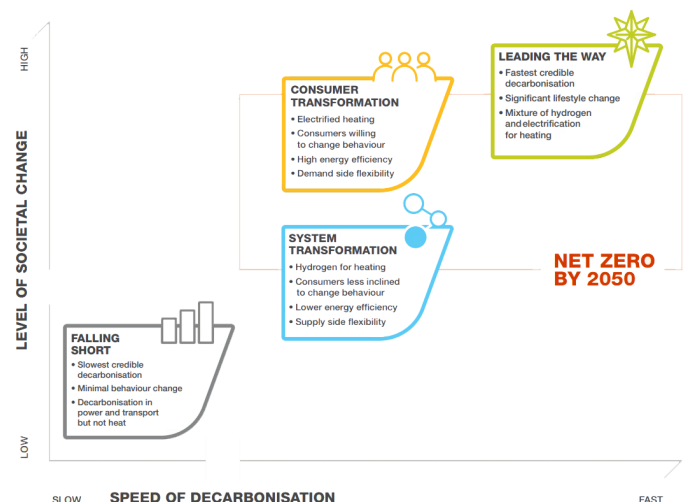
This DFES scenario framework includes three scenarios that are compliant with UK government targets of Net Zero greenhouse gas emissions by 2050. A summary of each scenario is below:

**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 Bassetlaw 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	0	192	115	115	0	18058	8136	8136	0
Domestic	New dwellings	0	1952	2112	2112	2440	4037	3984	3984	3940
Electric vehicles	Electric vehicles	1551	9702	12526	23090	23095	75360	66686	68025	58228
EV Charge Point	EV charge points	769	4209	6412	12003	13193	38094	38405	40262	39960
Heat pumps	Heat pump installations	2042	4936	5212	9360	13916	26072	29631	46219	41358
Hydrogen electrolysis	MW (installed capacity)	0.0	0.0	0.2	0.0	0.0	1.0	4.4	2.2	3.6
Non domestic	Floorspace (metres squared) of new I&C developments	0	610965	726428	726428	780895	1625703	1620407	1620407	1625703
Other Distributed Generation	MW (installed capacity)	20.5	23.7	17.2	17.2	14.0	13.0	14.4	7.2	20.6
Resistive electric heating	Resistive electric heating units	3869	3242	3130	3335	3192	2307	1013	2259	2411
Solar Generation	MW (installed capacity)	32.4	38.6	48.3	56.6	51.1	99.2	176.5	211.3	200.0
Storage	MW (installed capacity)	0.0	0.2	1.2	2.3	3.2	4.5	11.4	25.1	32.5
Wind	MW (installed capacity)	5.1	5.3	5.7	9.1	8.6	11.1	24.8	63.1	52.3

## 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.

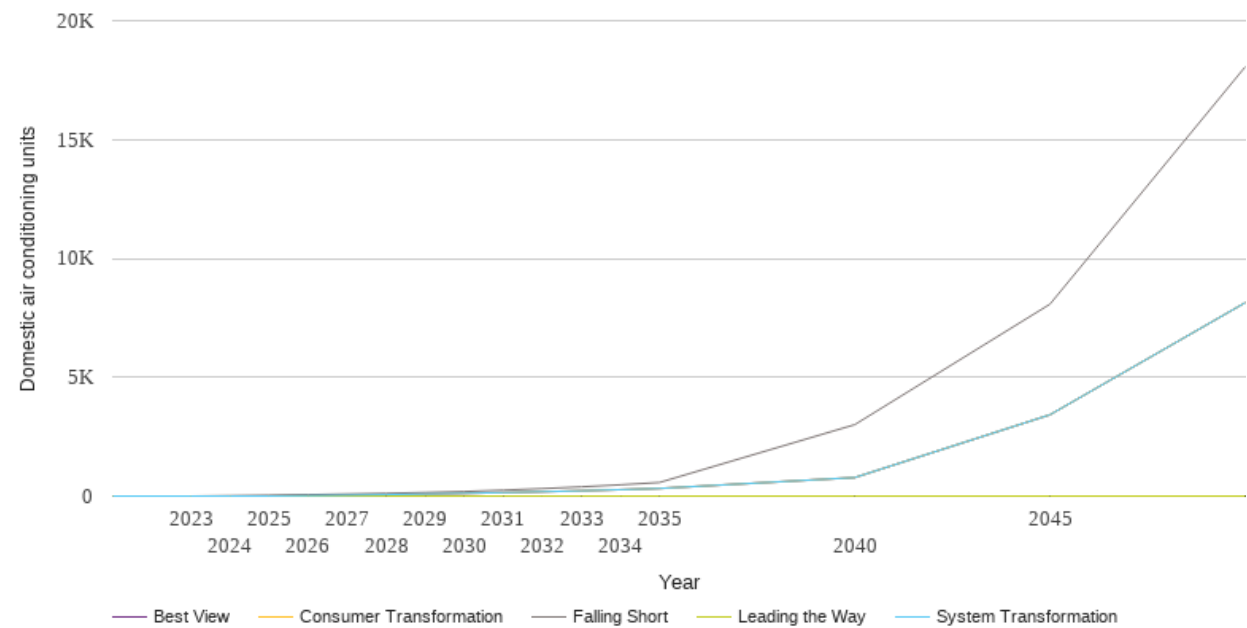
If you have any comments or queries regarding these reports, please contact

[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.

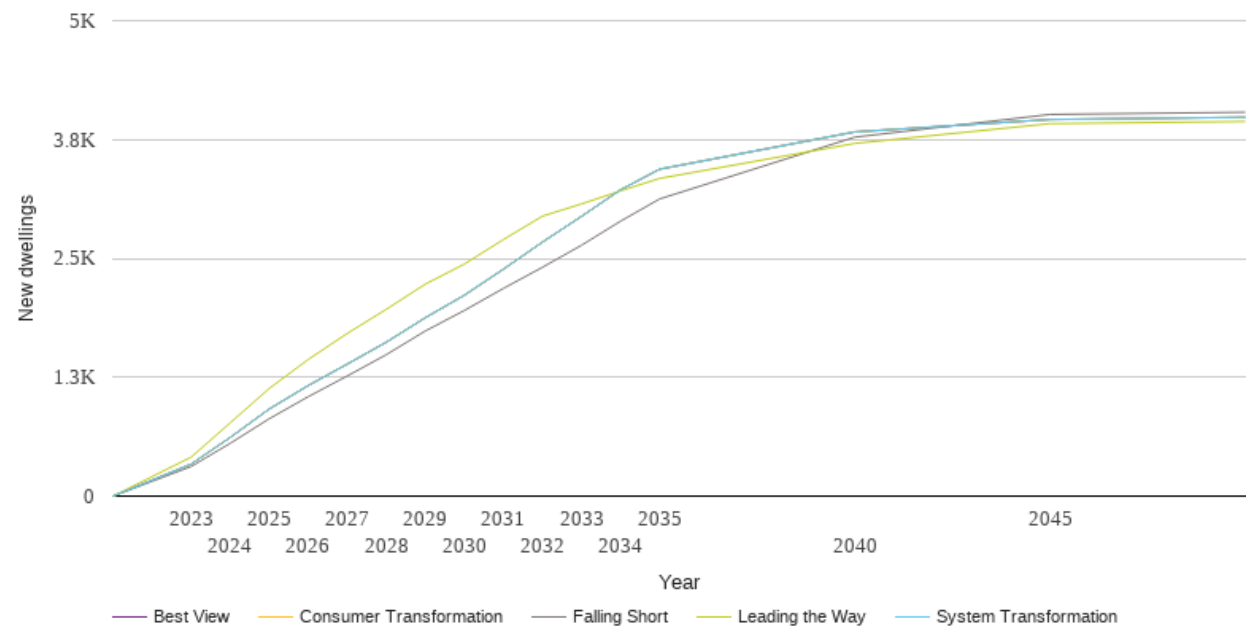
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	0	0	0	0	0
2024	17	0	0	0	0
2025	37	0	0	0	0
2026	60	18	18	0	18
2027	87	38	38	0	38
2028	117	61	61	0	61
2029	152	87	87	0	87
2030	192	115	115	0	115
2031	249	147	147	0	147
2032	314	183	183	0	183
2033	389	224	224	0	224
2034	475	270	270	0	270
2035	573	321	321	0	321
2040	3005	779	779	0	779
2045	8074	3421	3421	0	3421
2050	18058	8136	8136	0	8136



# Technology Summary: Domestic

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

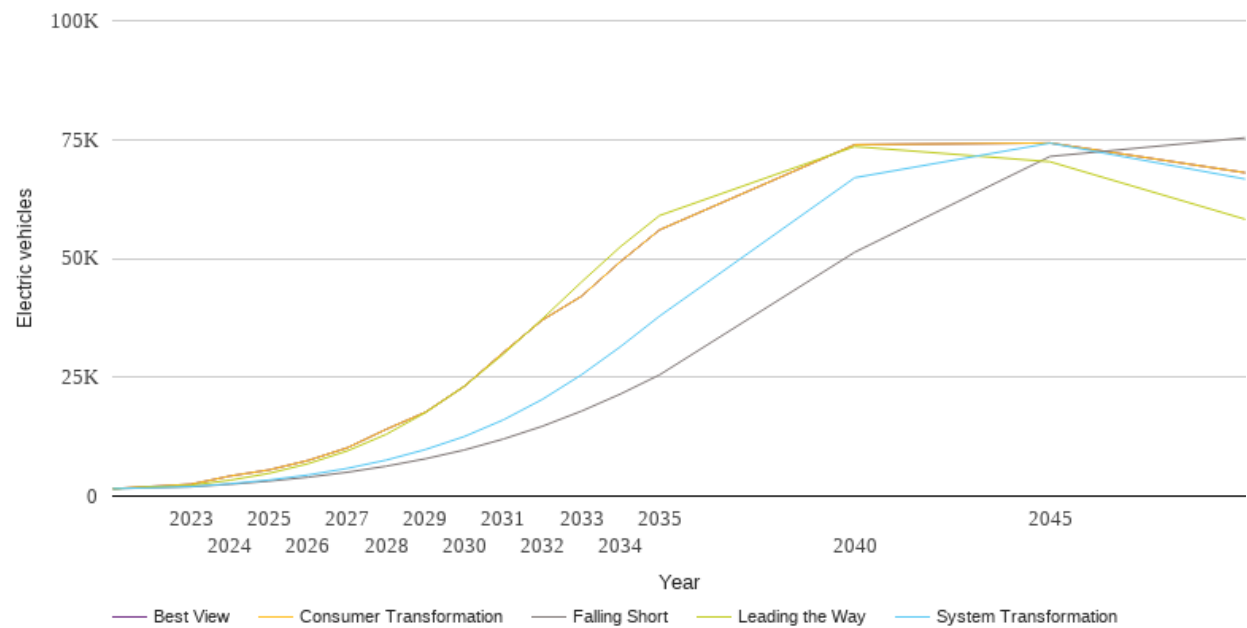
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	311	336	336	409	336
2024	554	616	616	769	616
2025	813	915	915	1131	915
2026	1045	1162	1162	1436	1162
2027	1263	1388	1388	1710	1388
2028	1487	1618	1618	1964	1618
2029	1736	1876	1876	2229	1876
2030	1952	2112	2112	2440	2112
2031	2184	2386	2386	2698	2386
2032	2406	2671	2671	2944	2671
2033	2638	2942	2942	3073	2942
2034	2891	3221	3221	3210	3221
2035	3125	3438	3438	3341	3438
2040	3775	3830	3830	3709	3830
2045	4014	3961	3961	3917	3961
2050	4037	3984	3984	3940	3984



# Technology Summary: Electric vehicles

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

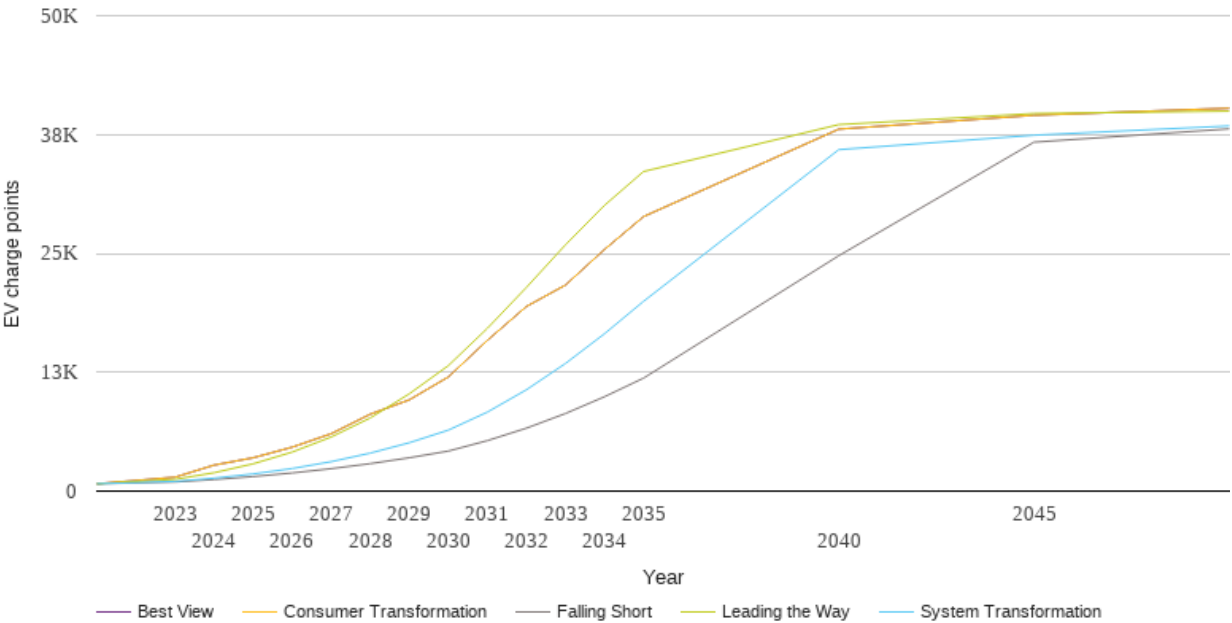
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	1551	1551	1551	1551	1551
2023	1958	1992	2493	2279	2493
2024	2487	2599	4218	3341	4218
2025	3146	3383	5510	4784	5510
2026	3975	4443	7495	6817	7495
2027	5015	5824	10148	9499	10148
2028	6289	7575	14048	12994	14048
2029	7841	9786	17627	17538	17627
2030	9702	12526	23090	23095	23090
2031	12003	16036	30224	29857	30224
2032	14690	20350	37039	37287	37039
2033	17872	25517	42035	45023	42035
2034	21477	31432	49328	52465	49328
2035	25497	37852	55989	59013	55989
2040	51306	66973	73925	73525	73925
2045	71445	74245	74279	70330	74279
2050	75360	66686	68025	58228	68025



# Technology Summary: EV Charge Point

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

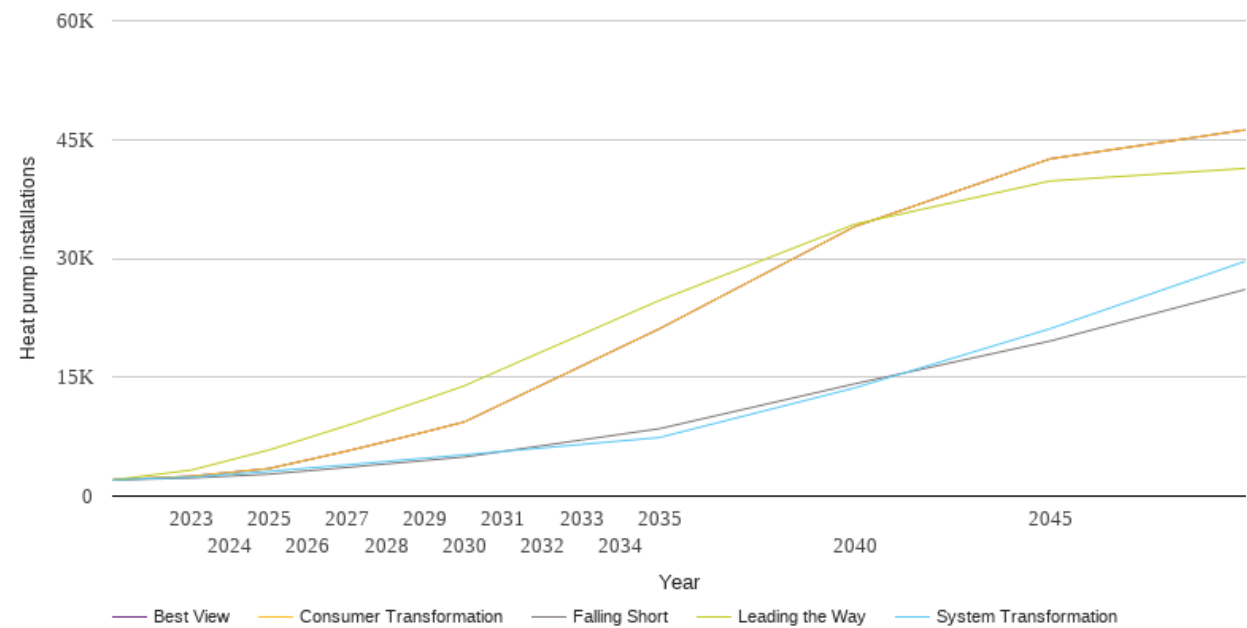
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	769	769	769	769	769
2023	963	1017	1458	1237	1458
2024	1214	1360	2732	1929	2732
2025	1527	1804	3503	2867	3503
2026	1906	2372	4619	4102	4619
2027	2357	3094	6034	5689	6034
2028	2887	3993	8088	7692	8088
2029	3506	5085	9597	10230	9597
2030	4209	6412	12003	13193	12003
2031	5309	8307	15857	17118	15857
2032	6617	10657	19415	21418	19415
2033	8160	13422	21671	25900	21671
2034	9926	16548	25412	30054	25412
2035	11882	19959	28868	33612	28868
2040	24752	35910	38066	38544	38066
2045	36697	37432	39530	39709	39530
2050	38094	38405	40262	39960	40262



# Technology Summary: Heat pumps

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

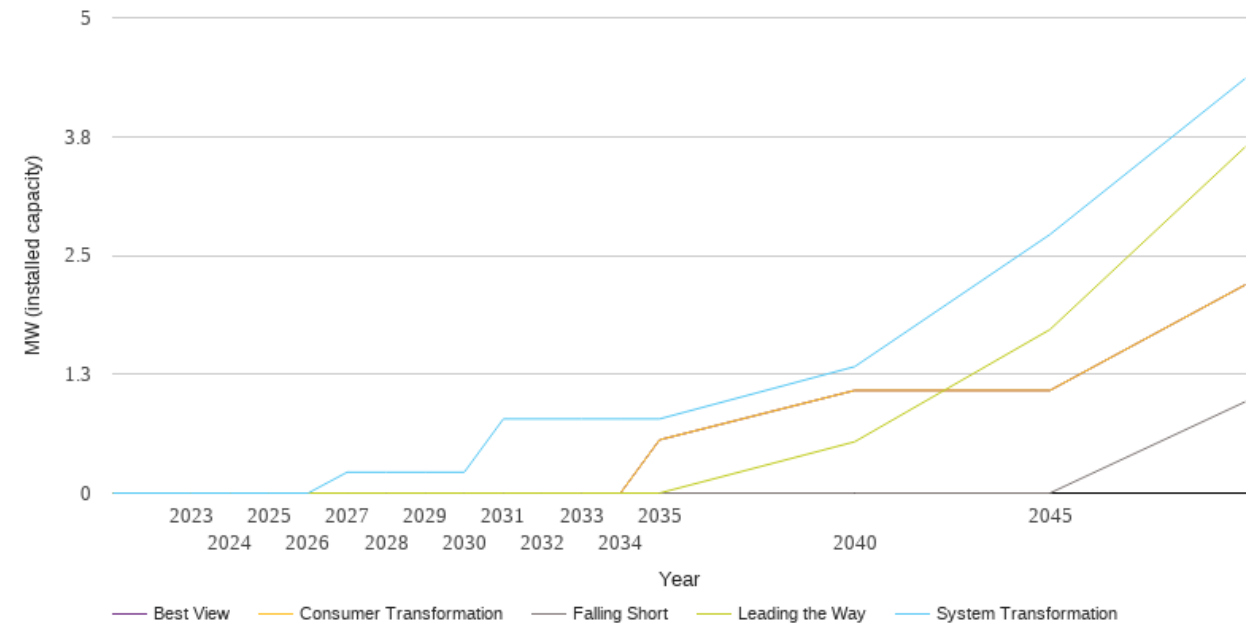
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	2042	2042	2042	2042	2042
2023	2281	2378	2504	3275	2504
2024	2527	2745	2987	4544	2987
2025	2767	3124	3481	5826	3481
2026	3197	3540	4583	7354	4583
2027	3625	3939	5695	8908	5695
2028	4066	4368	6888	10539	6888
2029	4499	4789	8110	12207	8110
2030	4936	5212	9360	13916	9360
2031	5644	5644	11714	16083	11714
2032	6363	6082	14055	18241	14055
2033	7080	6522	16406	20389	16406
2034	7796	6957	18770	22546	18770
2035	8508	7395	21120	24698	21120
2040	14170	13657	34019	34316	34019
2045	19565	21112	42558	39765	42558
2050	26072	29631	46219	41358	46219



# Technology Summary: Hydrogen electrolysis

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

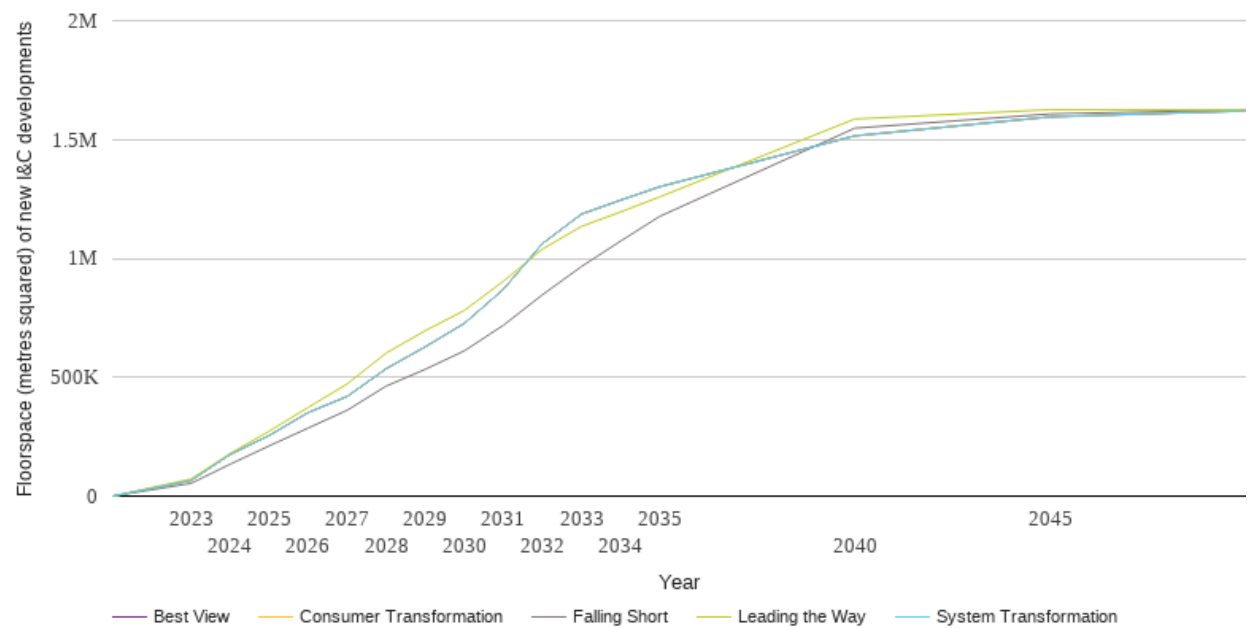
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.0	0.0	0.0	0.0
2026	0.0	0.0	0.0	0.0	0.0
2027	0.0	0.2	0.0	0.0	0.0
2028	0.0	0.2	0.0	0.0	0.0
2029	0.0	0.2	0.0	0.0	0.0
2030	0.0	0.2	0.0	0.0	0.0
2031	0.0	0.8	0.0	0.0	0.0
2032	0.0	0.8	0.0	0.0	0.0
2033	0.0	0.8	0.0	0.0	0.0
2034	0.0	0.8	0.0	0.0	0.0
2035	0.0	0.8	0.6	0.0	0.6
2040	0.0	1.3	1.1	0.5	1.1
2045	0.0	2.7	1.1	1.7	1.1
2050	1.0	4.4	2.2	3.6	2.2



# Technology Summary: Non domestic

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

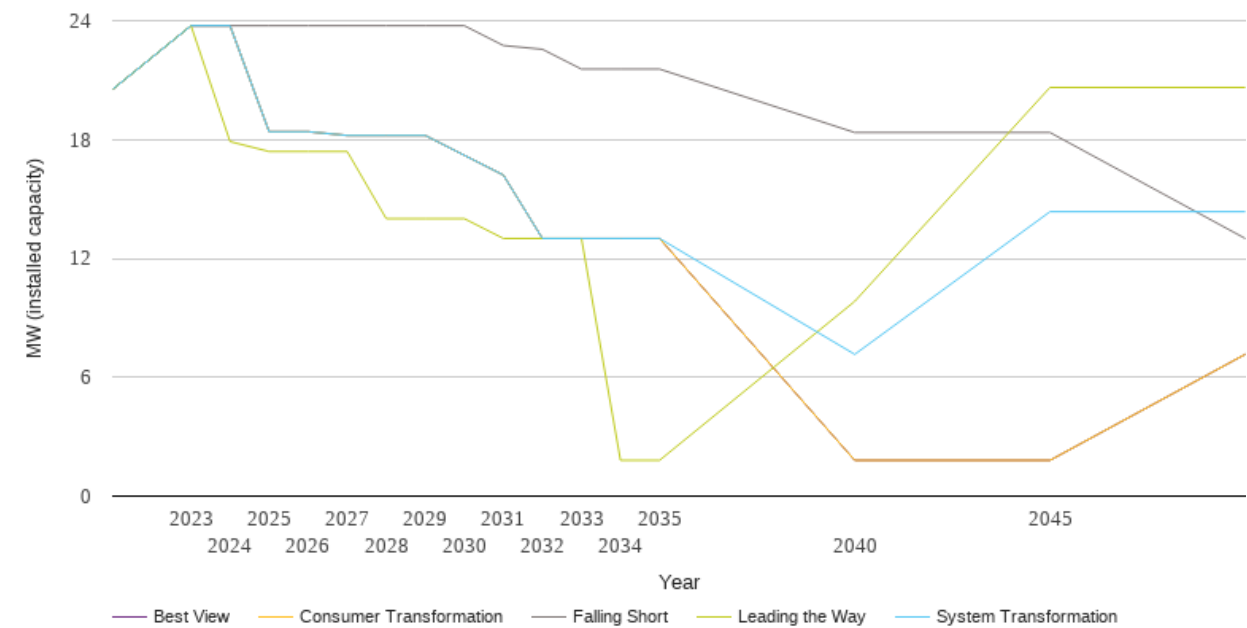
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	53677	65608	65608	71901	65608
2024	134081	175023	175023	178930	175023
2025	211159	254850	254850	273016	254850
2026	286213	351285	351285	372932	351285
2027	361268	419217	419217	472184	419217
2028	462834	536159	536159	601853	536159
2029	533400	628144	628144	696023	628144
2030	610965	726428	726428	780895	726428
2031	718531	869713	869713	903767	869713
2032	846697	1062461	1062461	1038903	1062461
2033	965662	1186210	1186210	1134623	1186210
2034	1072441	1244959	1244959	1195343	1244959
2035	1176503	1301207	1301207	1258563	1301207
2040	1547703	1515407	1515407	1586363	1515407
2045	1607703	1595407	1595407	1625703	1595407
2050	1625703	1620407	1620407	1625703	1620407



# Technology Summary: Other Distributed Generation

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

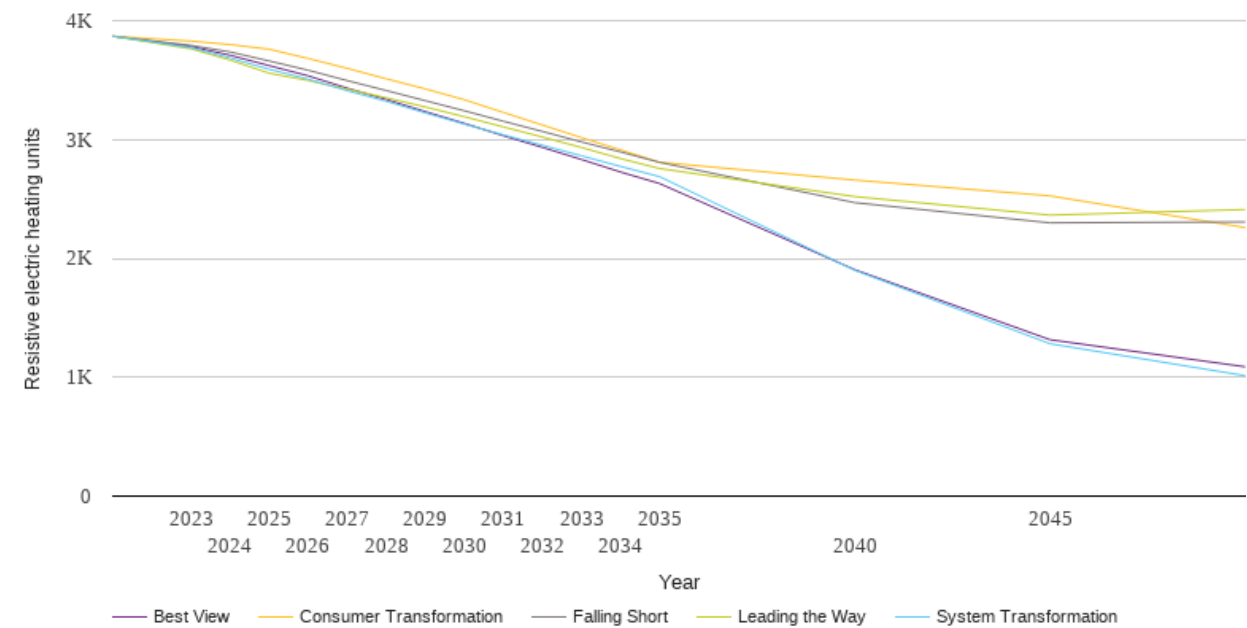
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	20.5	20.5	20.5	20.5	20.5
2023	23.7	23.7	23.7	23.7	23.7
2024	23.7	23.7	23.7	17.9	23.7
2025	23.7	18.4	18.4	17.4	18.4
2026	23.7	18.4	18.4	17.4	18.4
2027	23.7	18.2	18.2	17.4	18.2
2028	23.7	18.2	18.2	14.0	18.2
2029	23.7	18.2	18.2	14.0	18.2
2030	23.7	17.2	17.2	14.0	17.2
2031	22.7	16.2	16.2	13.0	16.2
2032	22.6	13.0	13.0	13.0	13.0
2033	21.6	13.0	13.0	13.0	13.0
2034	21.6	13.0	13.0	1.8	13.0
2035	21.6	13.0	13.0	1.8	13.0
2040	18.4	7.2	1.8	9.8	1.8
2045	18.4	14.4	1.8	20.6	1.8
2050	13.0	14.4	7.2	20.6	7.2



# Technology Summary: Resistive electric heating

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

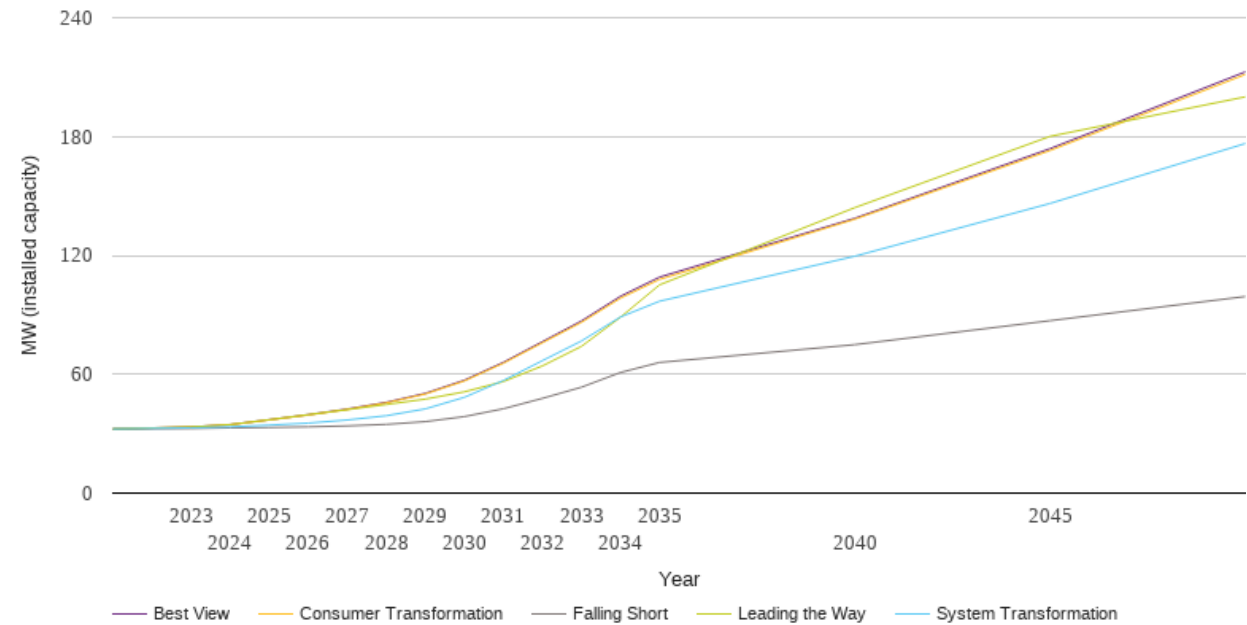
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	3869	3869	3869	3869	3869
2023	3792	3773	3828	3763	3783
2024	3737	3686	3799	3669	3709
2025	3661	3591	3760	3558	3622
2026	3583	3508	3682	3497	3536
2027	3496	3411	3599	3424	3432
2028	3412	3322	3511	3351	3337
2029	3327	3224	3426	3274	3235
2030	3242	3130	3335	3192	3136
2031	3154	3039	3228	3106	3032
2032	3068	2952	3122	3021	2934
2033	2980	2863	3016	2933	2832
2034	2896	2774	2913	2840	2727
2035	2808	2688	2809	2756	2630
2040	2469	1900	2659	2520	1905
2045	2299	1282	2526	2364	1316
2050	2307	1013	2259	2411	1088



# Technology Summary: Solar Generation

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

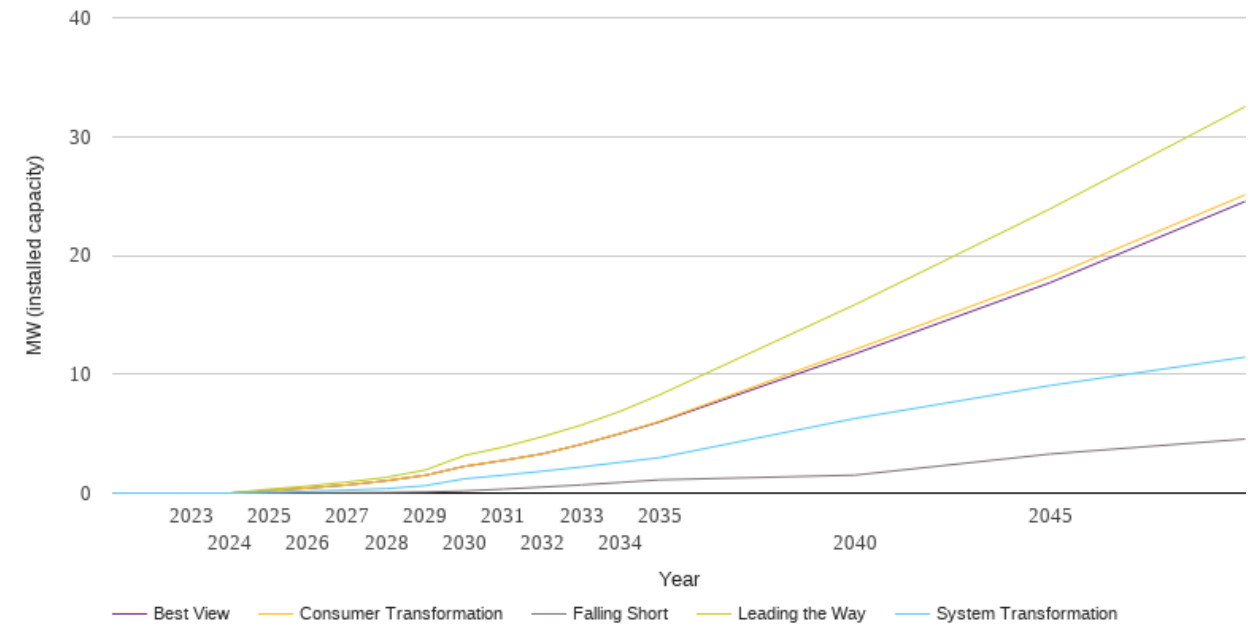
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	32.4	32.4	32.4	32.4	32.4
2023	32.6	32.9	33.3	33.4	33.4
2024	32.9	33.5	34.5	34.6	34.6
2025	33.1	34.3	36.9	37.0	37.0
2026	33.4	35.3	39.4	39.6	39.6
2027	33.9	36.9	42.2	42.1	42.4
2028	34.7	39.0	45.5	44.7	45.8
2029	36.1	42.5	50.0	47.4	50.3
2030	38.6	48.3	56.6	51.1	57.0
2031	42.6	56.9	65.6	56.3	66.0
2032	47.8	66.9	75.9	64.2	76.4
2033	53.5	76.8	86.2	74.1	86.9
2034	60.9	88.9	98.4	88.8	99.4
2035	65.9	96.9	107.9	105.1	109.0
2040	74.9	119.6	138.3	144.1	138.7
2045	87.0	146.2	172.9	180.1	173.9
2050	99.2	176.5	211.3	200.0	212.6



# Technology Summary: Storage

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

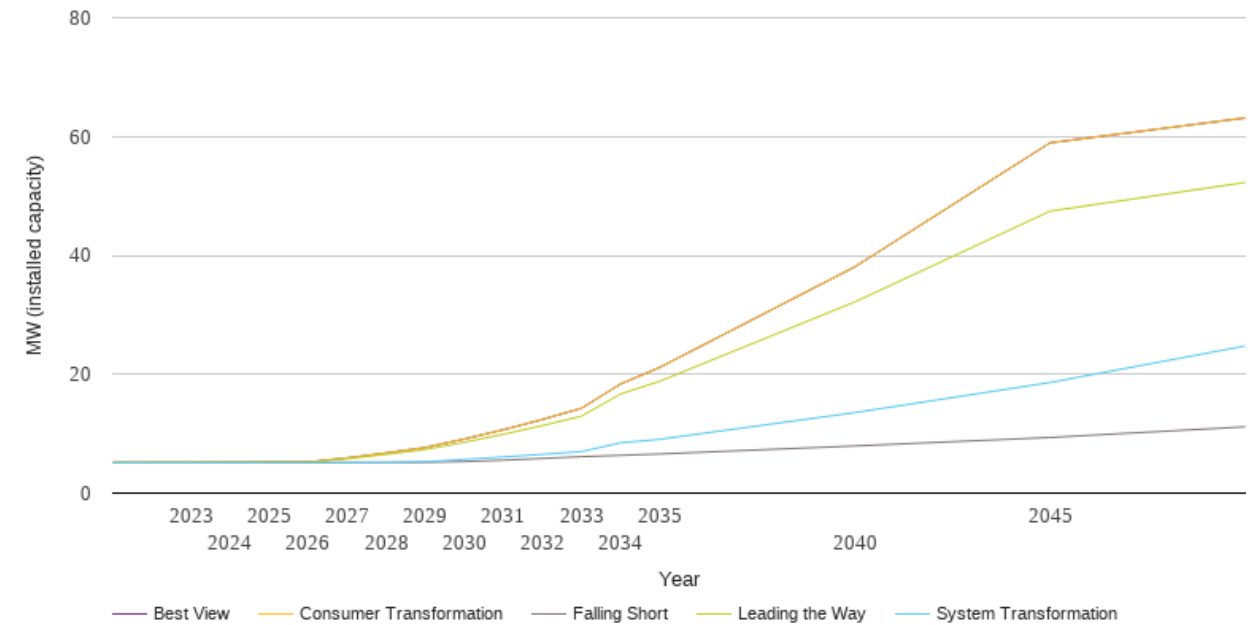
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.1	0.2	0.3	0.2
2026	0.0	0.2	0.4	0.6	0.4
2027	0.0	0.3	0.7	0.9	0.7
2028	0.1	0.4	1.0	1.3	1.0
2029	0.1	0.6	1.5	1.9	1.5
2030	0.2	1.2	2.3	3.2	2.2
2031	0.3	1.5	2.7	3.9	2.7
2032	0.5	1.8	3.3	4.7	3.3
2033	0.7	2.2	4.1	5.7	4.1
2034	0.9	2.6	5.0	6.9	5.0
2035	1.1	3.0	6.0	8.3	6.0
2040	1.5	6.3	12.1	15.8	11.7
2045	3.3	9.0	18.2	23.9	17.7
2050	4.5	11.4	25.1	32.5	24.5



# 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	5.1	5.1	5.1	5.1	5.1
2023	5.1	5.1	5.1	5.1	5.1
2024	5.1	5.1	5.2	5.1	5.2
2025	5.1	5.1	5.2	5.2	5.2
2026	5.1	5.1	5.2	5.2	5.2
2027	5.1	5.1	5.9	5.8	5.9
2028	5.1	5.1	6.7	6.5	6.7
2029	5.2	5.3	7.7	7.3	7.7
2030	5.3	5.7	9.1	8.6	9.1
2031	5.5	6.1	10.7	9.9	10.7
2032	5.8	6.5	12.4	11.4	12.4
2033	6.1	7.0	14.3	12.9	14.3
2034	6.4	8.5	18.3	16.7	18.3
2035	6.6	9.0	21.1	18.8	21.1
2040	7.9	13.5	38.1	32.2	38.1
2045	9.4	18.6	58.9	47.4	58.9
2050	11.1	24.8	63.1	52.3	63.1



National Grid Electricity Distribution PLC 09223384)  
National Grid Electricity Distribution (East Midlands) Plc (company number 02366923))  
National Grid Electricity Distribution (West Midlands) Plc (company number 03600574))  
National Grid Electricity Distribution (South West) Plc (company number 02366894))  
National Grid Electricity Distribution (South Wales) Plc (company number 02366985))  
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