

# Distribution Future Energy Scenarios 2022

Local Authority:  
Derbyshire Dales

## What are Distribution Future Energy Scenarios?

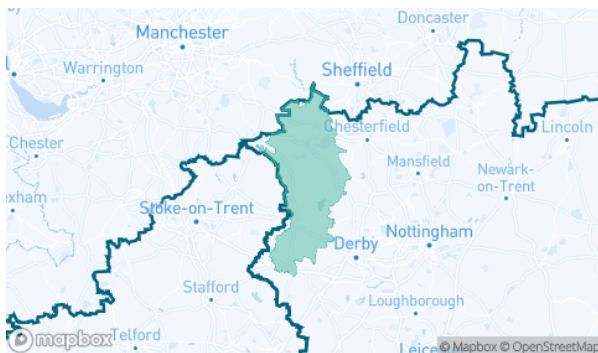
National Grid run Distribution Future Energy Scenarios (DFES) on an annual cycle for all licence areas, and represent a range of credible future scenarios of what could connect to the distribution network.

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 Derbyshire Dales covered by the NGED licence areas.



## Scenario Summary

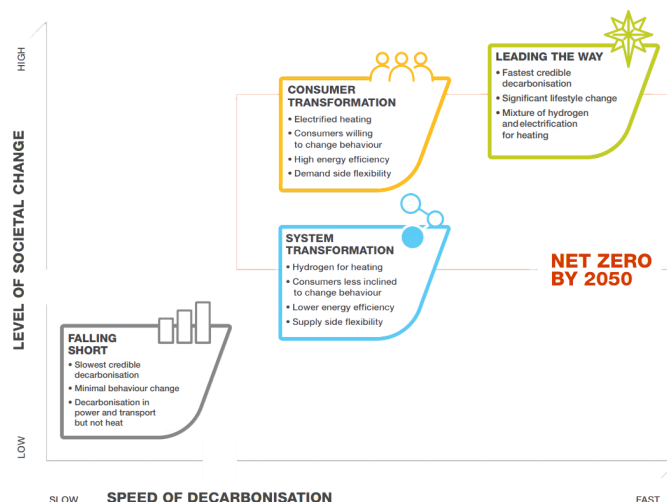
This DFES scenario framework includes three scenarios that are compliant with UK government targets of Net Zero greenhouse gas emissions by 2050. A summary of each scenario is below:

**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 Derbyshire Dales 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	0	0	0	0	10001	4202	4202	0
Domestic	New dwellings	0	1215	1379	1379	1700	3356	3344	3344	3335
Electric vehicles	Electric vehicles	1391	8901	10795	19900	19775	60389	47943	49226	44006
EV Charge Point	EV charge points	669	4016	5681	10628	11721	32621	30513	32497	32311
Heat pumps	Heat pump installations	652	2999	3272	6329	9829	19078	21844	34590	30117
Hydrogen electrolysis	MW (installed capacity)	0.0	0.0	0.6	0.0	0.9	1.6	7.6	3.8	6.5
Non domestic	Floorspace (metres squared) of new I&C developments	0	111707	143498	143498	151910	227475	227229	227229	227475
Other Distributed Generation	MW (installed capacity)	4.4	4.4	5.8	8.0	8.5	1.7	2.5	5.6	6.6
Resistive electric heating	Resistive electric heating units	3529	2955	2846	2990	2886	2092	959	2076	2155
Solar Generation	MW (installed capacity)	14.9	20.3	27.9	36.4	31.9	63.5	113.3	148.5	138.5
Storage	MW (installed capacity)	0.0	0.1	0.9	1.9	2.7	3.3	8.1	18.5	24.1
Wind	MW (installed capacity)	15.0	15.1	15.5	20.3	18.8	20.9	32.0	70.6	61.6

## 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

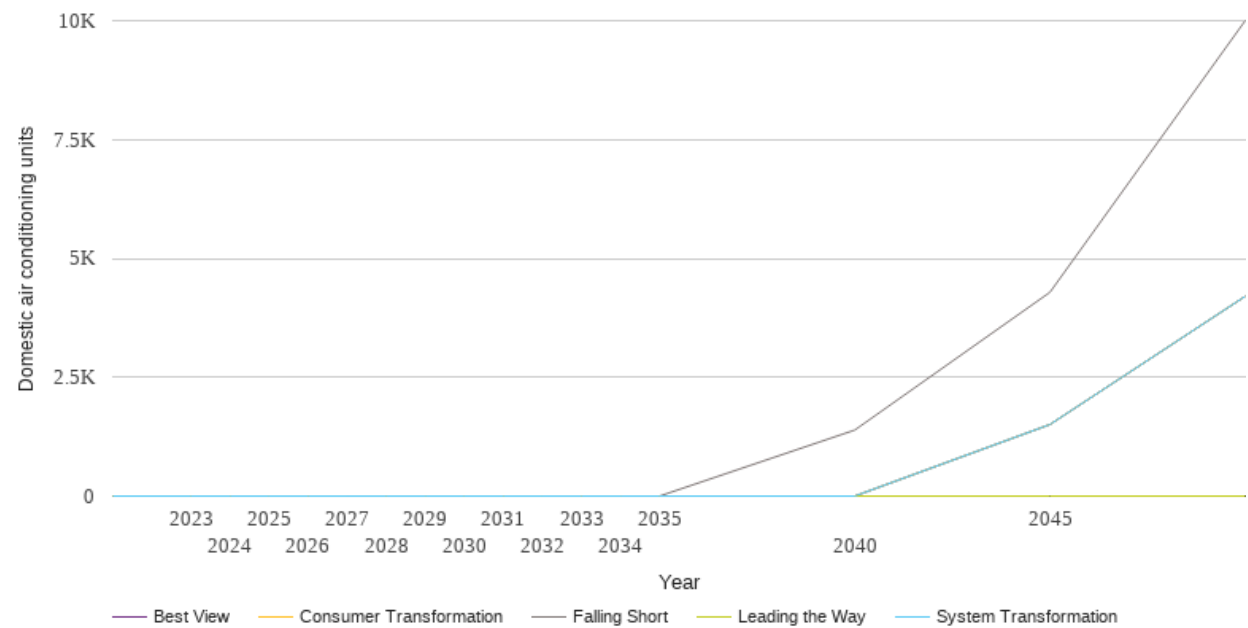
NGED is committed to continually improving the DFES process. To ensure the DFES projections fully capture local ambition, in 2022 we have appointed two DSO Strategic Engagement Officers to engage with local authorities. Any feedback will be incorporated into future Distribution Future Energy Scenarios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

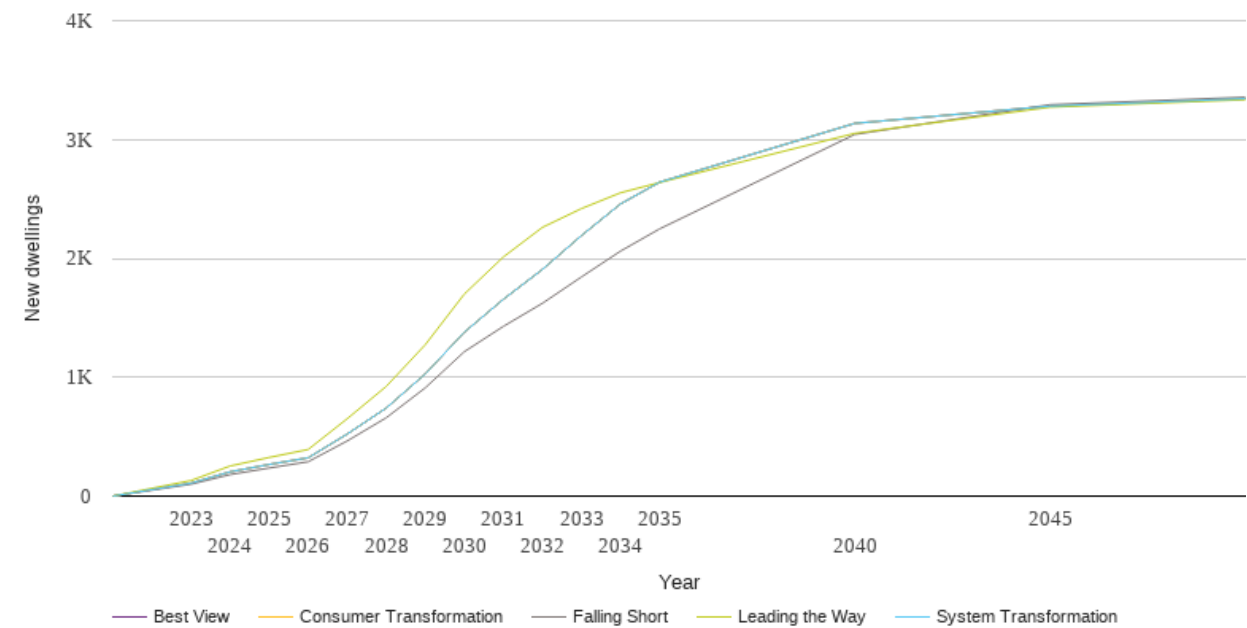
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	0	0	0	0	0
2024	0	0	0	0	0
2025	0	0	0	0	0
2026	0	0	0	0	0
2027	0	0	0	0	0
2028	0	0	0	0	0
2029	0	0	0	0	0
2030	0	0	0	0	0
2031	0	0	0	0	0
2032	0	0	0	0	0
2033	0	0	0	0	0
2034	0	0	0	0	0
2035	0	0	0	0	0
2040	1389	0	0	0	0
2045	4288	1506	1506	0	1506
2050	10001	4202	4202	0	4202



# Technology Summary: Domestic

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

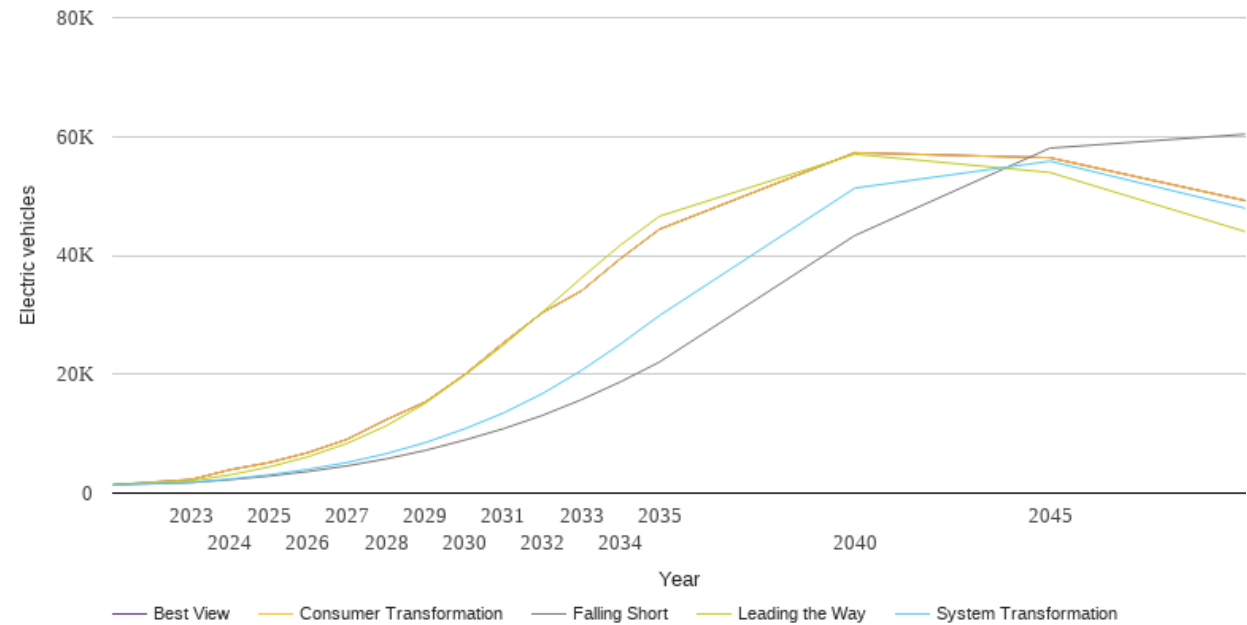
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	100	109	109	131	109
2024	181	204	204	253	204
2025	236	266	266	325	266
2026	289	322	322	392	322
2027	464	522	522	651	522
2028	659	741	741	923	741
2029	911	1028	1028	1274	1028
2030	1215	1379	1379	1700	1379
2031	1428	1656	1656	2012	1656
2032	1622	1907	1907	2261	1907
2033	1844	2192	2192	2419	2192
2034	2061	2458	2458	2552	2458
2035	2248	2641	2641	2638	2641
2040	3043	3136	3136	3052	3136
2045	3293	3281	3281	3272	3281
2050	3356	3344	3344	3335	3344



# Technology Summary: Electric vehicles

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

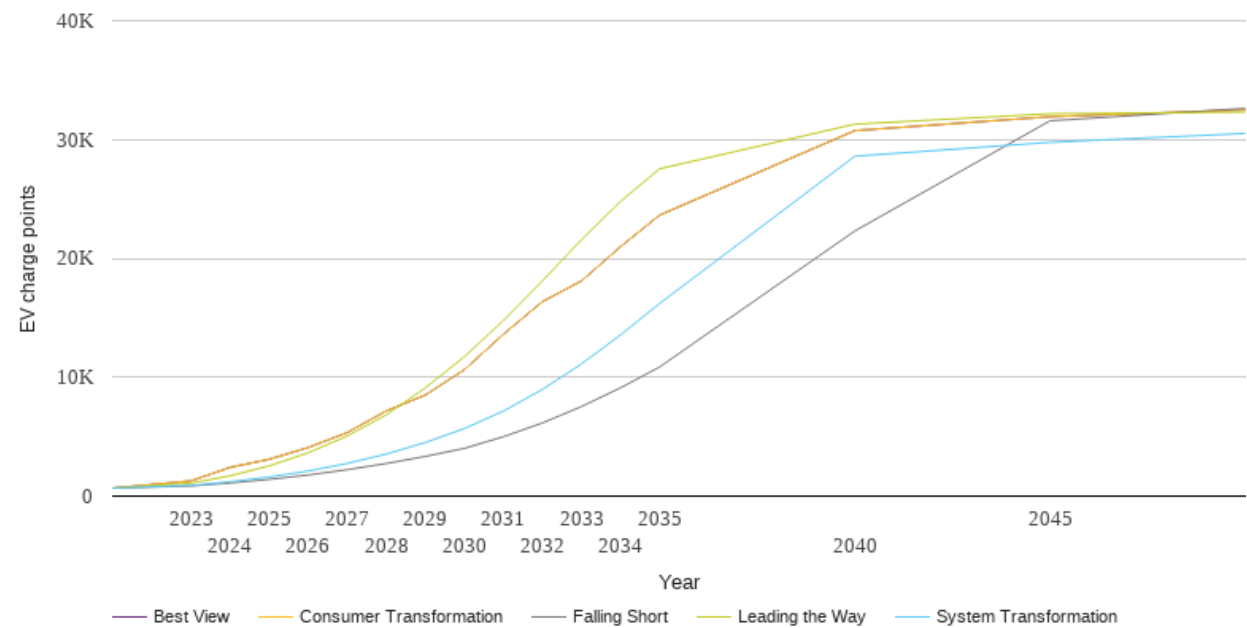
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	1391	1391	1391	1391	1391
2023	1765	1802	2284	2071	2284
2024	2250	2365	3929	3057	3929
2025	2860	3088	5140	4402	5140
2026	3634	3989	6822	6115	6822
2027	4588	5150	9059	8374	9059
2028	5758	6634	12354	11309	12354
2029	7186	8492	15332	15123	15332
2030	8901	10795	19900	19775	19900
2031	10830	13477	25291	24879	25291
2032	13076	16731	30358	30451	30358
2033	15721	20630	34033	36215	34033
2034	18722	25079	39467	41747	39467
2035	22054	29891	44403	46593	44403
2040	43337	51324	57281	57030	57281
2045	58048	55846	56428	53953	56428
2050	60389	47943	49226	44006	49226



# 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	669	669	669	669	669
2023	856	896	1280	1088	1280
2024	1100	1203	2413	1704	2413
2025	1405	1602	3094	2540	3094
2026	1773	2108	4085	3643	4085
2027	2222	2747	5341	5056	5341
2028	2739	3537	7169	6843	7169
2029	3339	4511	8498	9098	8498
2030	4016	5681	10628	11721	10628
2031	4994	7151	13611	14768	13611
2032	6154	8972	16360	18100	16360
2033	7534	11120	18101	21574	18101
2034	9109	13551	20979	24788	20979
2035	10858	16200	23639	27538	23639
2040	22302	28590	30750	31291	30750
2045	31574	29765	31919	32169	31919
2050	32621	30513	32497	32311	32497

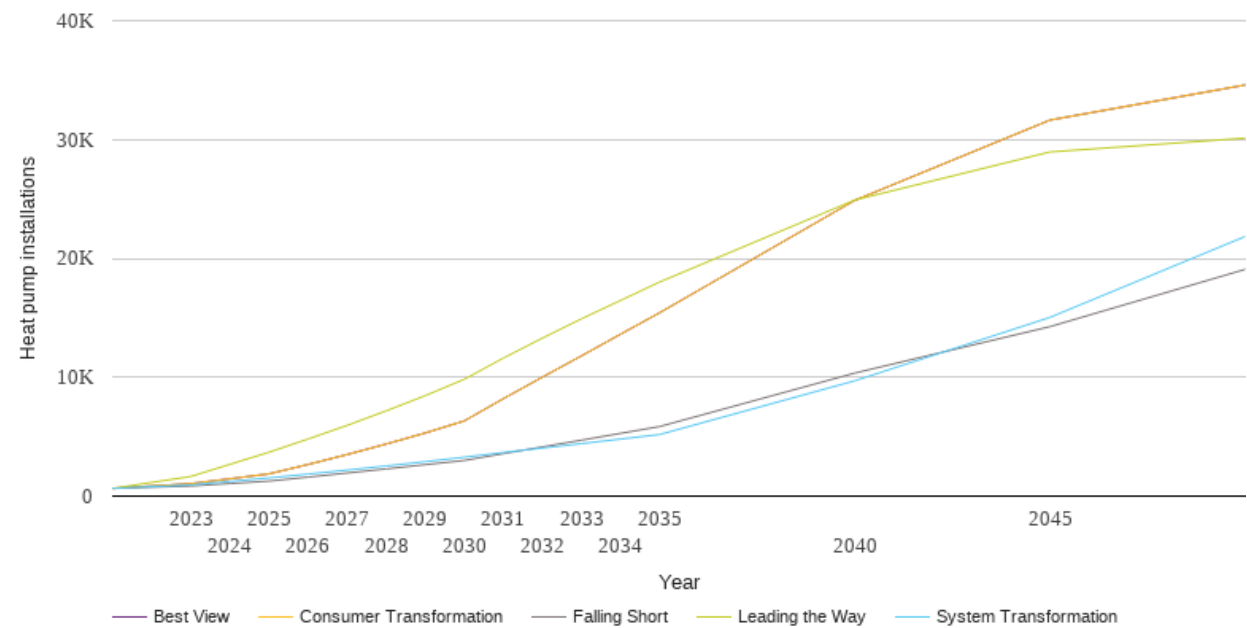




# Technology Summary: Heat pumps

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

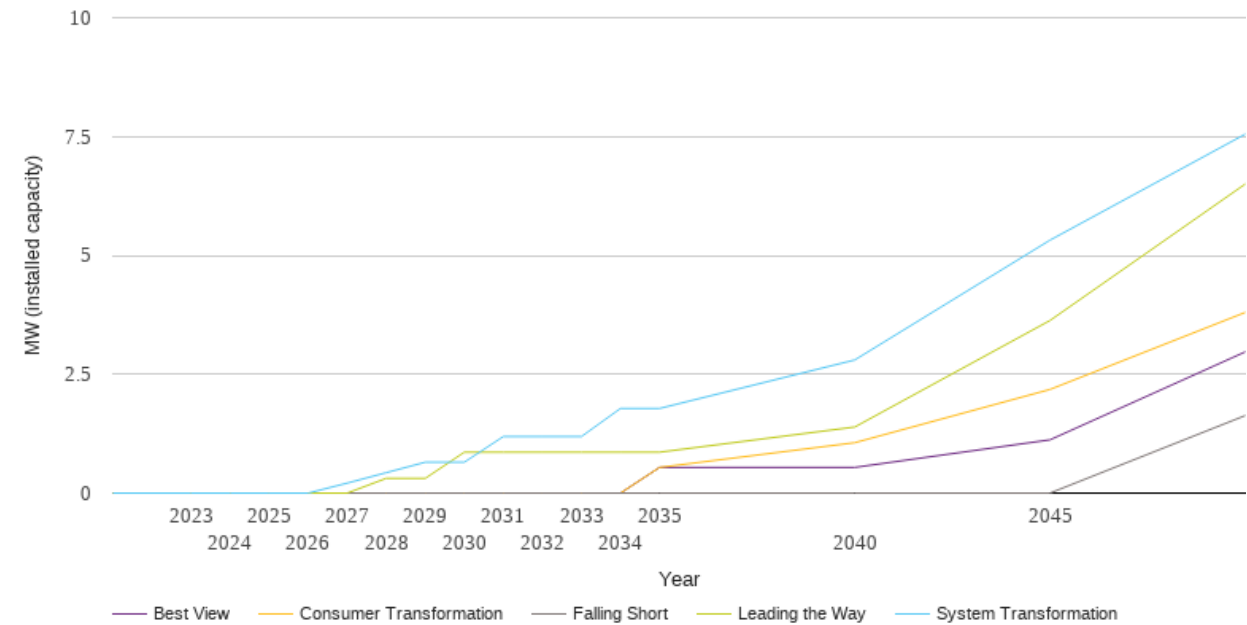
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	652	652	652	652	652
2023	850	940	1049	1654	1049
2024	1058	1234	1456	2676	1456
2025	1261	1527	1872	3695	1872
2026	1598	1856	2662	4806	2662
2027	1942	2188	3499	5953	3499
2028	2289	2537	4382	7176	4382
2029	2645	2893	5313	8454	5313
2030	2999	3272	6329	9829	6329
2031	3575	3668	8198	11610	8198
2032	4138	4044	10009	13293	10009
2033	4707	4414	11797	14913	11797
2034	5278	4798	13618	16459	13618
2035	5850	5178	15422	18009	15422
2040	10350	9701	24880	24911	24880
2045	14256	15035	31638	28955	31638
2050	19078	21844	34590	30117	34590



# Technology Summary: Hydrogen electrolysis

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

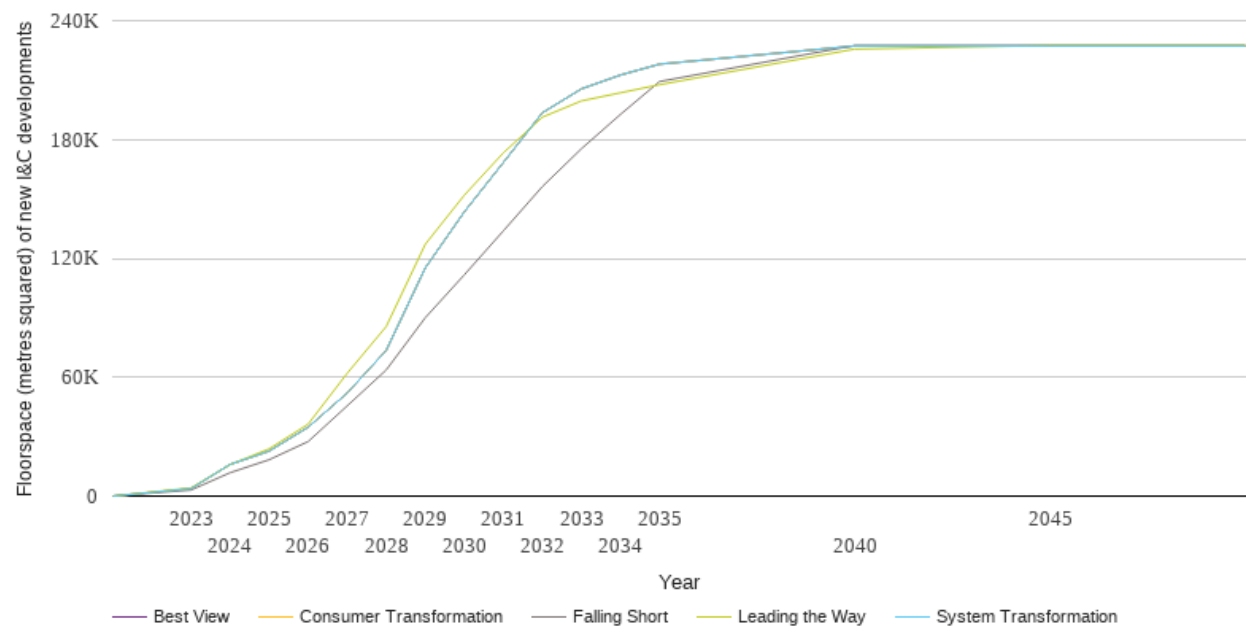
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.0	0.0	0.0	0.0
2026	0.0	0.0	0.0	0.0	0.0
2027	0.0	0.2	0.0	0.0	0.0
2028	0.0	0.4	0.0	0.3	0.0
2029	0.0	0.6	0.0	0.3	0.0
2030	0.0	0.6	0.0	0.9	0.0
2031	0.0	1.2	0.0	0.9	0.0
2032	0.0	1.2	0.0	0.9	0.0
2033	0.0	1.2	0.0	0.9	0.0
2034	0.0	1.8	0.0	0.9	0.0
2035	0.0	1.8	0.5	0.9	0.5
2040	0.0	2.8	1.1	1.4	0.5
2045	0.0	5.3	2.2	3.6	1.1
2050	1.6	7.6	3.8	6.5	3.0



# Technology Summary: Non domestic

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

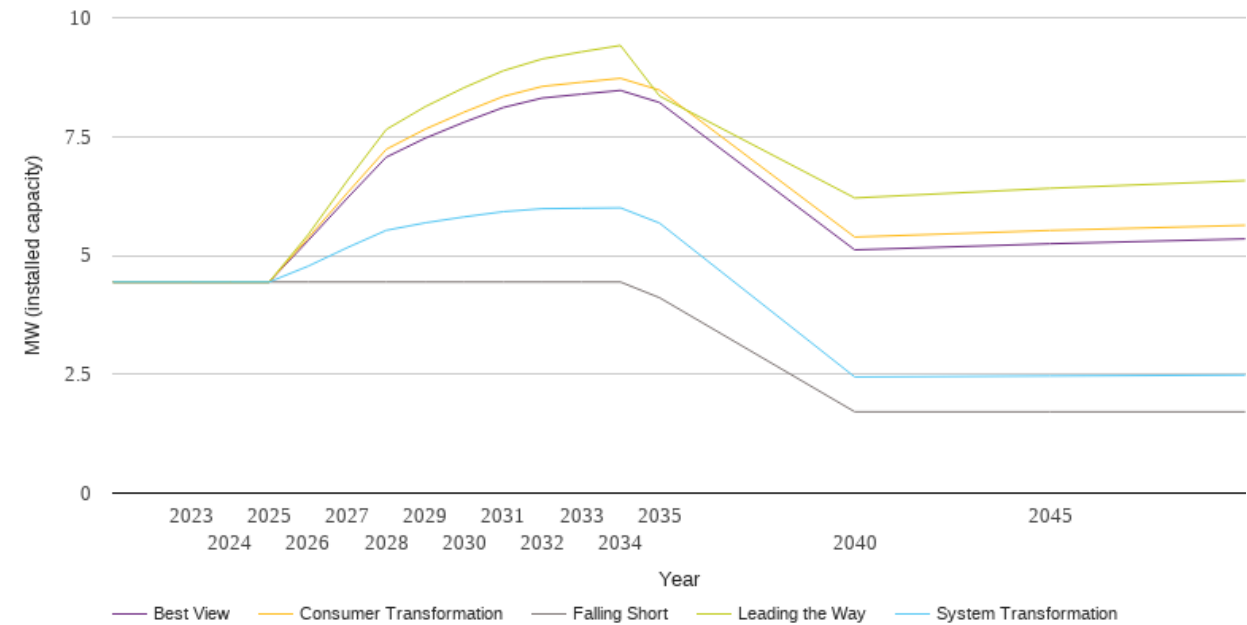
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	3070	3789	3789	4122	3789
2024	11796	15984	15984	15855	15984
2025	18354	22706	22706	23849	22706
2026	27541	34771	34771	36322	34771
2027	45557	52027	52027	61998	52027
2028	63686	73583	73583	85620	73583
2029	90051	115192	115192	127145	115192
2030	111707	143498	143498	151910	143498
2031	133907	168416	168416	173299	168416
2032	156289	193528	193528	191303	193528
2033	175380	205574	205574	199498	205574
2034	192704	212562	212562	203591	212562
2035	209285	218058	218058	207685	218058
2040	227475	227229	227229	225667	227229
2045	227475	227229	227229	227475	227229
2050	227475	227229	227229	227475	227229



# Technology Summary: Other Distributed Generation

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

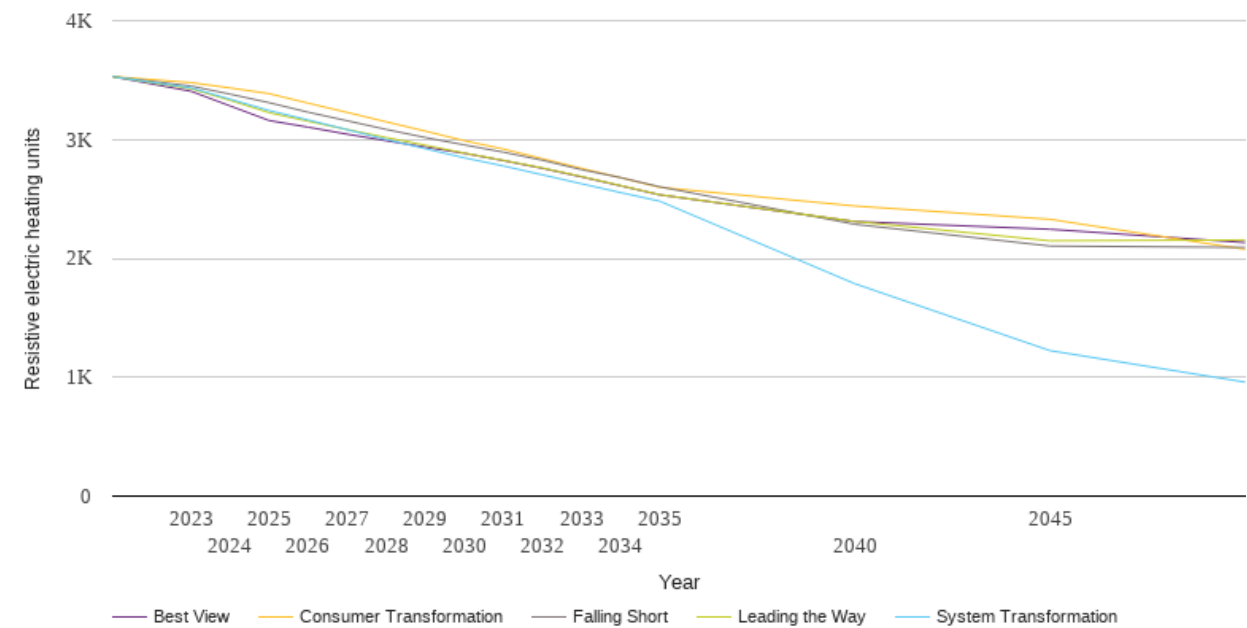
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	4.4	4.4	4.4	4.4	4.4
2023	4.4	4.4	4.4	4.4	4.4
2024	4.4	4.4	4.4	4.4	4.4
2025	4.4	4.4	4.4	4.4	4.4
2026	4.4	4.8	5.4	5.4	5.3
2027	4.4	5.2	6.3	6.6	6.2
2028	4.4	5.5	7.2	7.6	7.1
2029	4.4	5.7	7.7	8.1	7.5
2030	4.4	5.8	8.0	8.5	7.8
2031	4.4	5.9	8.3	8.9	8.1
2032	4.4	6.0	8.6	9.1	8.3
2033	4.4	6.0	8.6	9.3	8.4
2034	4.4	6.0	8.7	9.4	8.5
2035	4.1	5.7	8.5	8.4	8.2
2040	1.7	2.4	5.4	6.2	5.1
2045	1.7	2.5	5.5	6.4	5.2
2050	1.7	2.5	5.6	6.6	5.3



# Technology Summary: Resistive electric heating

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

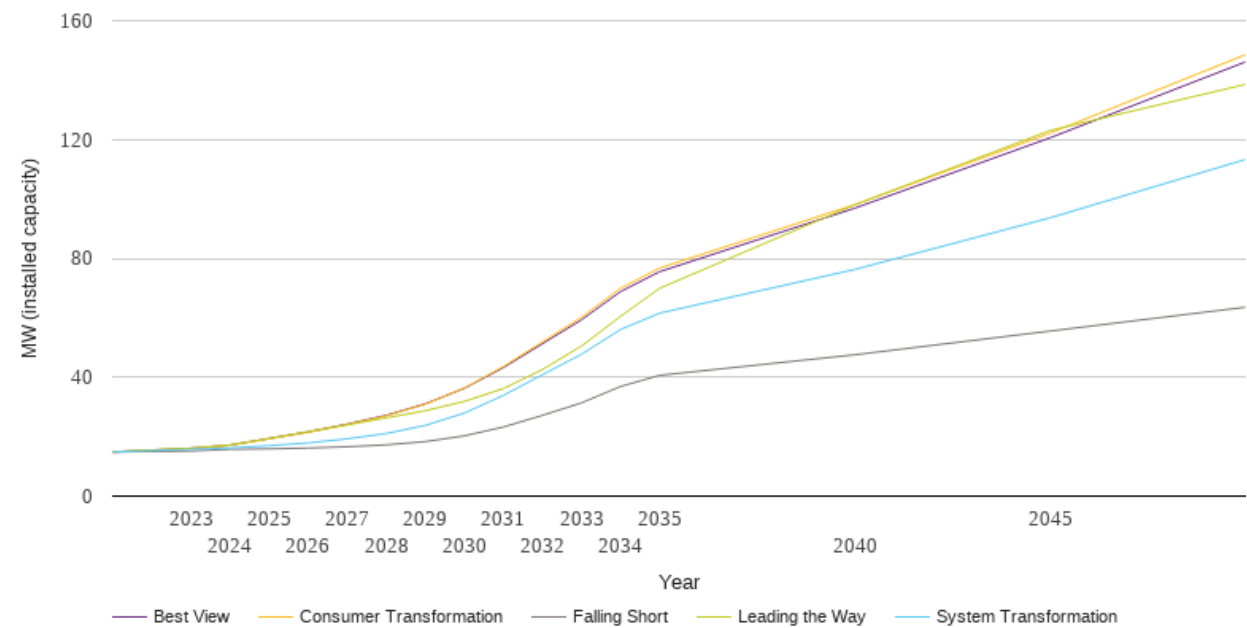
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	3529	3529	3529	3529	3529
2023	3450	3434	3479	3427	3406
2024	3382	3340	3434	3330	3283
2025	3310	3244	3386	3226	3160
2026	3230	3165	3306	3154	3104
2027	3158	3083	3228	3084	3045
2028	3085	3001	3149	3017	2990
2029	3017	2923	3071	2952	2936
2030	2955	2846	2990	2886	2884
2031	2894	2778	2920	2825	2823
2032	2826	2703	2839	2761	2758
2033	2747	2628	2758	2689	2686
2034	2680	2554	2679	2613	2611
2035	2603	2482	2598	2536	2535
2040	2287	1787	2441	2311	2310
2045	2104	1224	2329	2148	2245
2050	2092	959	2076	2155	2133



# Technology Summary: Solar Generation

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

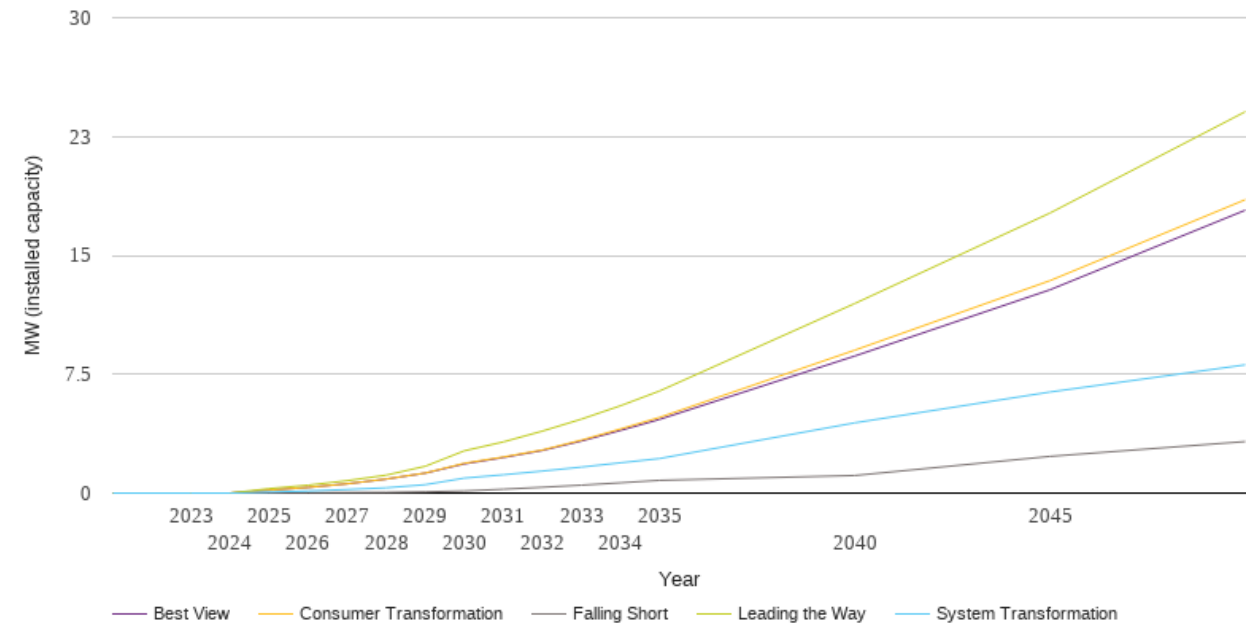
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	14.9	14.9	14.9	14.9	14.9
2023	15.2	15.8	16.1	16.1	16.1
2024	15.7	16.2	17.1	17.2	17.2
2025	15.9	17.0	19.3	19.4	19.4
2026	16.2	17.9	21.5	21.6	21.6
2027	16.6	19.3	24.1	24.0	24.2
2028	17.2	21.1	27.0	26.3	27.2
2029	18.3	23.8	30.9	28.7	31.0
2030	20.3	27.9	36.4	31.9	36.3
2031	23.3	33.9	43.6	36.2	43.3
2032	27.2	40.8	51.9	42.6	51.3
2033	31.4	47.7	60.2	50.5	59.3
2034	36.9	56.1	69.9	60.5	68.8
2035	40.6	61.6	76.7	69.9	75.5
2040	47.6	76.3	98.1	98.0	96.9
2045	55.5	93.6	122.1	123.0	120.6
2050	63.5	113.3	148.5	138.5	146.1



# Technology Summary: Storage

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

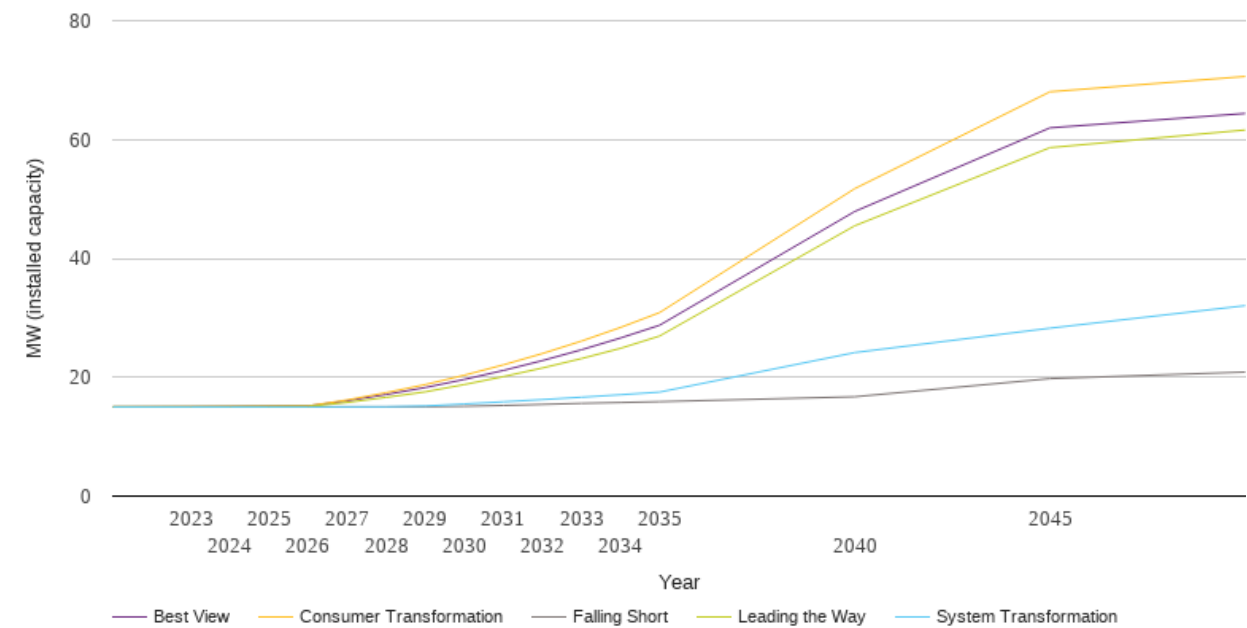
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.1	0.2	0.3	0.2
2026	0.0	0.1	0.4	0.5	0.4
2027	0.0	0.2	0.6	0.8	0.6
2028	0.0	0.3	0.9	1.1	0.9
2029	0.1	0.5	1.3	1.7	1.3
2030	0.1	0.9	1.9	2.7	1.8
2031	0.2	1.2	2.3	3.2	2.2
2032	0.4	1.4	2.7	3.9	2.7
2033	0.5	1.6	3.3	4.7	3.3
2034	0.7	1.9	4.0	5.5	4.0
2035	0.8	2.2	4.8	6.4	4.7
2040	1.1	4.4	9.0	12.0	8.6
2045	2.3	6.4	13.4	17.7	12.8
2050	3.3	8.1	18.5	24.1	17.8



# 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	15.0	15.0	15.0	15.0	15.0
2023	15.0	15.0	15.0	15.0	15.0
2024	15.0	15.0	15.1	15.0	15.1
2025	15.0	15.0	15.1	15.0	15.1
2026	15.0	15.0	15.2	15.1	15.2
2027	15.0	15.0	16.2	15.8	16.0
2028	15.0	15.0	17.4	16.6	17.1
2029	15.0	15.2	18.8	17.5	18.3
2030	15.1	15.5	20.3	18.8	19.6
2031	15.3	15.9	22.1	20.1	21.1
2032	15.4	16.2	24.0	21.6	22.8
2033	15.6	16.6	26.1	23.1	24.6
2034	15.7	17.1	28.4	24.9	26.6
2035	15.9	17.5	30.9	26.9	28.7
2040	16.7	24.1	51.7	45.5	47.9
2045	19.8	28.3	68.0	58.6	62.0
2050	20.9	32.0	70.6	61.6	64.4





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))  
(collectively, “NGED”)

[nged.networkstrategy@nationalgrid.co.uk](mailto:nged.networkstrategy@nationalgrid.co.uk)

