

# Distribution Future Energy Scenarios 2022

Local Authority:  
Tamworth

## 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 Tamworth 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 Tamworth 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	585	1375	1260	1260	585	24385	12786	12786	585
Domestic	New dwellings	0	1333	1408	1408	1551	1685	1639	1639	1604
Electric vehicles	Electric vehicles	1155	7270	9251	16956	16939	52980	48370	47980	39301
EV Charge Point	EV charge points	553	3227	4891	9182	10085	28946	29306	30823	30575
Heat pumps	Heat pump installations	22	2322	1680	5401	8595	18064	19655	31690	27071
Hydrogen electrolysis	MW (installed capacity)	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.1	0.6
Non domestic	Floorspace (metres squared) of new I&C developments	0	11079 4	13366 3	13366 3	14702 2	20886 1	20794 5	20794 5	20886 1
Other Distributed Generation	MW (installed capacity)	3.4	3.4	3.4	3.4	2.1	0.0	0.0	0.0	0.0
Resistive electric heating	Resistive electric heating units	5078	3944	3872	4196	3939	2114	723	2388	2487
Solar Generation	MW (installed capacity)	4.6	7.5	10.7	16.6	16.9	14.4	30.7	56.7	60.0
Storage	MW (installed capacity)	0.0	0.1	0.5	1.3	1.6	2.0	5.1	13.8	17.8
Wind	MW (installed capacity)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

## 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.

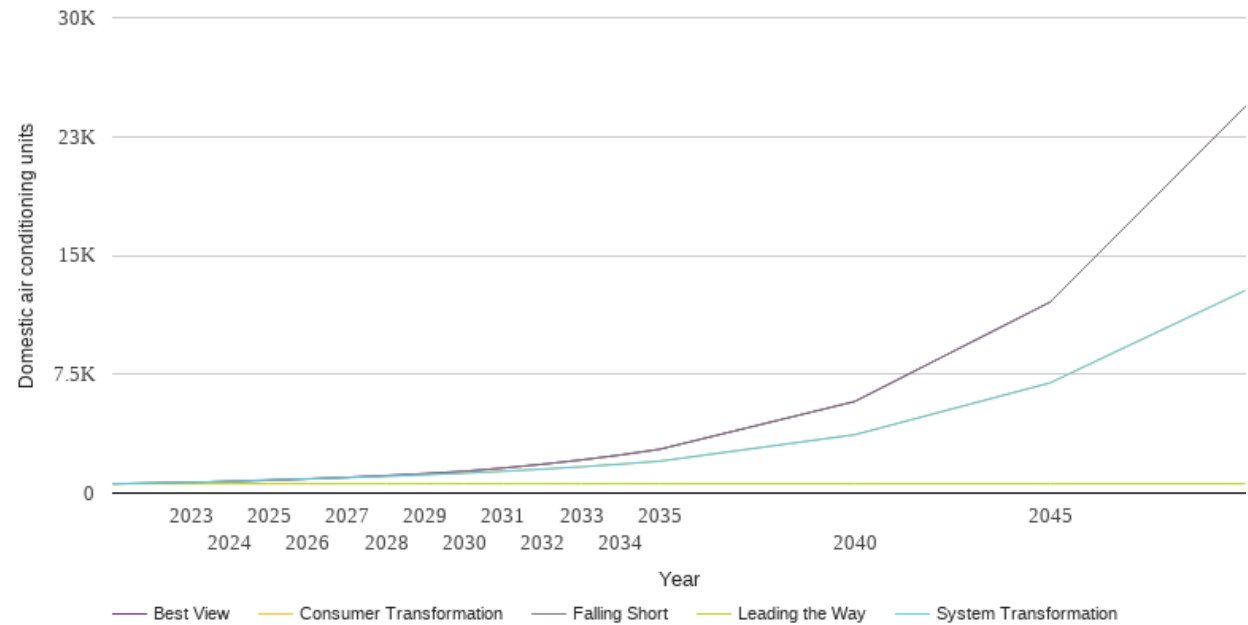
If you have any comments or queries regarding these reports, please contact

[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.

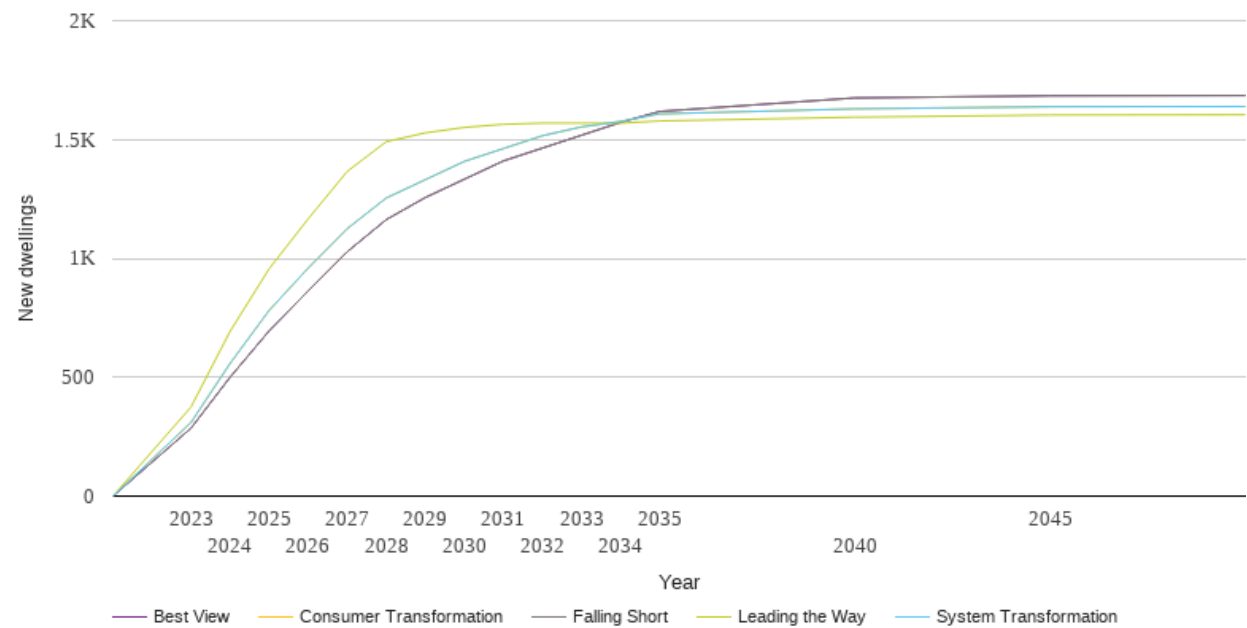
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	585	585	585	585	585
2023	674	664	664	585	674
2024	738	745	745	585	738
2025	812	840	840	585	812
2026	896	905	905	585	896
2027	993	978	978	585	993
2028	1102	1062	1062	585	1102
2029	1230	1156	1156	585	1230
2030	1375	1260	1260	585	1375
2031	1583	1378	1378	585	1583
2032	1820	1510	1510	585	1820
2033	2093	1659	1659	585	2093
2034	2406	1827	1827	585	2406
2035	2763	2014	2014	585	2763
2040	5779	3682	3682	585	5779
2045	12048	6954	6954	585	12048
2050	24385	12786	12786	585	24385



# Technology Summary: Domestic

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

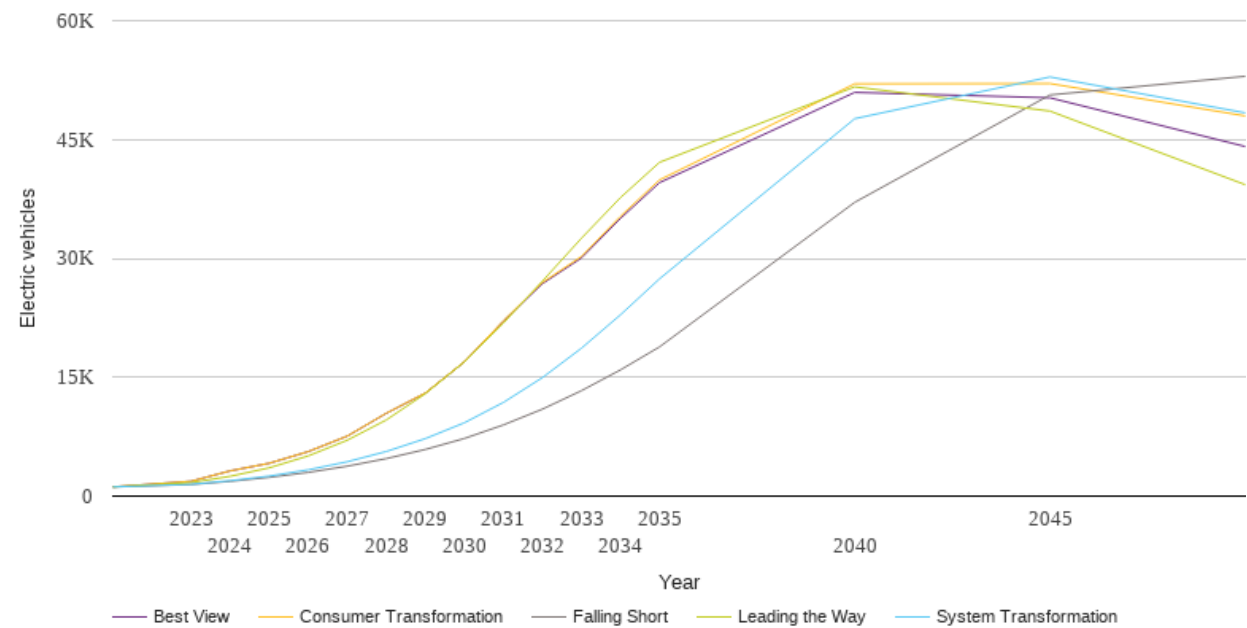
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	286	310	310	375	286
2024	500	558	558	693	500
2025	695	781	781	956	695
2026	863	959	959	1166	863
2027	1028	1125	1125	1366	1028
2028	1163	1254	1254	1491	1163
2029	1256	1331	1331	1528	1256
2030	1333	1408	1408	1551	1333
2031	1410	1462	1462	1564	1410
2032	1464	1516	1516	1569	1464
2033	1518	1553	1553	1569	1518
2034	1572	1576	1576	1569	1572
2035	1618	1608	1608	1578	1618
2040	1675	1629	1629	1594	1675
2045	1684	1638	1638	1603	1684
2050	1685	1639	1639	1604	1685



# Technology Summary: Electric vehicles

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

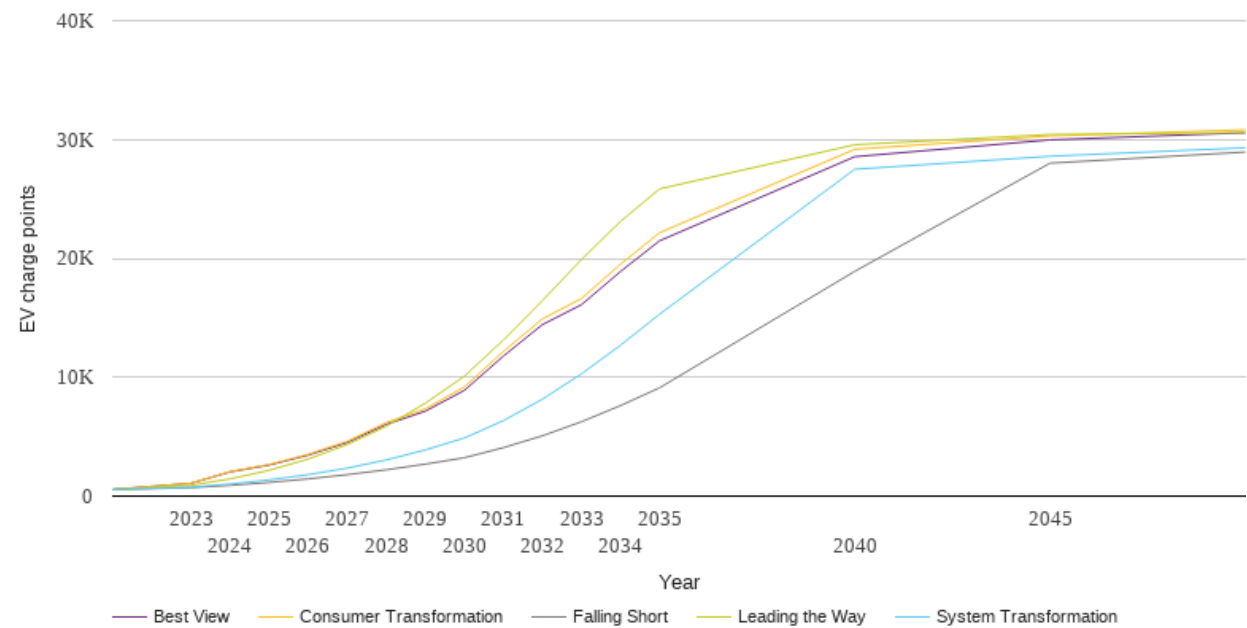
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	1155	1155	1155	1155	1155
2023	1464	1487	1866	1702	1868
2024	1862	1940	3179	2493	3180
2025	2364	2521	4139	3562	4138
2026	2990	3312	5614	5068	5611
2027	3773	4333	7570	7046	7563
2028	4729	5627	10455	9605	10444
2029	5885	7251	13011	12920	12992
2030	7270	9251	16956	16939	16927
2031	8980	11818	22129	21822	22083
2032	10972	14950	26950	27131	26811
2033	13301	18665	30240	32543	30052
2034	15931	22881	35313	37676	35050
2035	18834	27424	39909	42125	39557
2040	37079	47632	52035	51649	50950
2045	50624	52898	52066	48591	50265
2050	52980	48370	47980	39301	44121



# 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	553	553	553	553	553
2023	710	749	1084	915	1078
2024	905	1015	2066	1448	2038
2025	1150	1360	2659	2168	2614
2026	1449	1800	3520	3118	3451
2027	1802	2354	4613	4336	4510
2028	2213	3042	6190	5872	6035
2029	2690	3884	7341	7815	7143
2030	3227	4891	9182	10085	8894
2031	4074	6349	12163	13123	11774
2032	5075	8156	14907	16443	14428
2033	6257	10285	16630	19909	16100
2034	7613	12689	19509	23112	18896
2035	9111	15306	22162	25847	21479
2040	18910	27500	29182	29562	28555
2045	28012	28594	30301	30423	29969
2050	28946	29306	30823	30575	30571

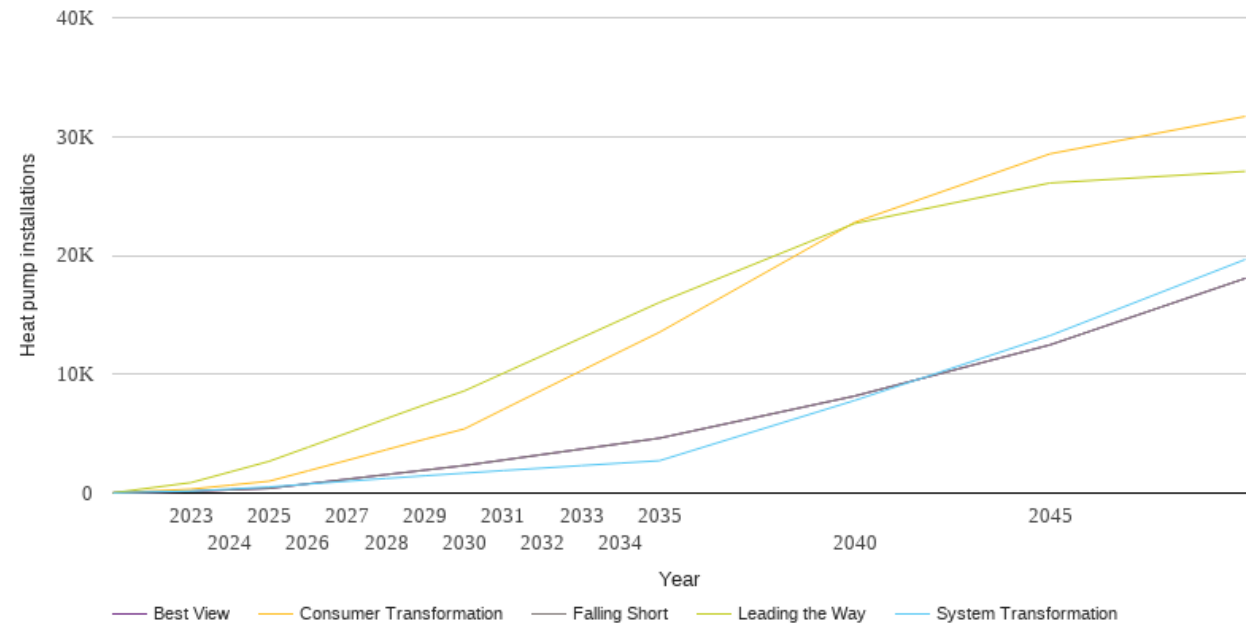




# Technology Summary: Heat pumps

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

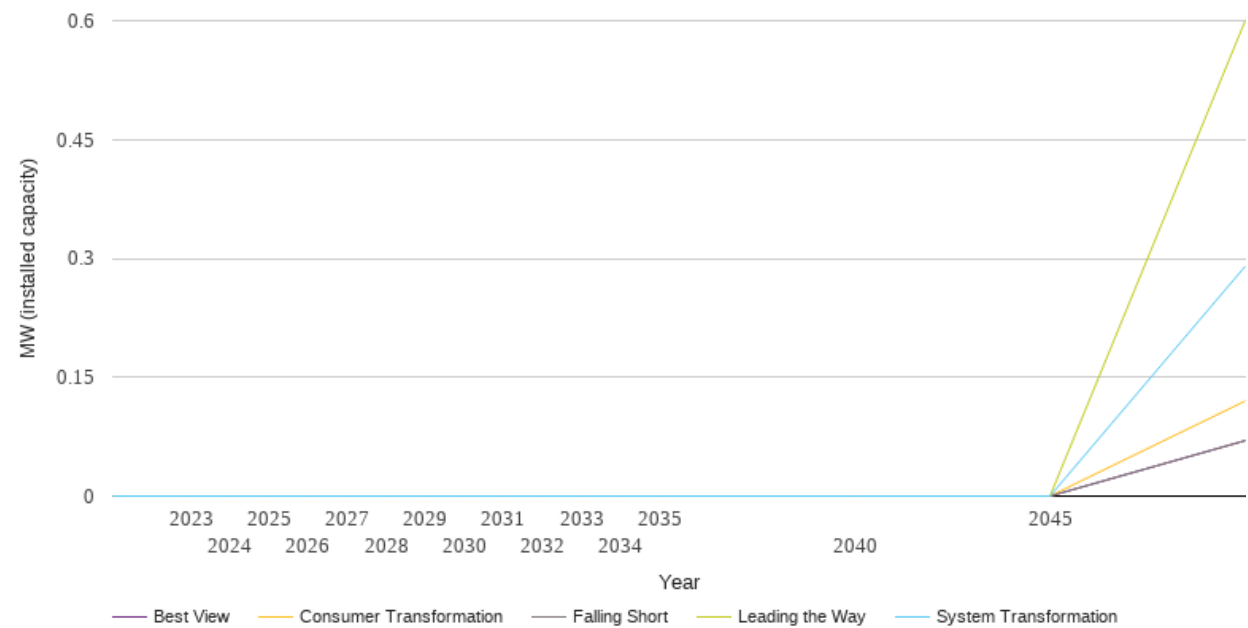
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	22	22	22	22	22
2023	141	169	333	884	141
2024	272	344	664	1775	272
2025	396	517	1002	2675	396
2026	783	762	1875	3860	783
2027	1169	998	2753	5054	1169
2028	1556	1232	3647	6264	1556
2029	1937	1463	4541	7450	1937
2030	2322	1680	5401	8595	2322
2031	2779	1895	7046	10082	2779
2032	3243	2102	8676	11567	3243
2033	3703	2314	10300	13066	3703
2034	4160	2519	11920	14557	4160
2035	4622	2726	13538	16045	4622
2040	8168	7796	22785	22688	8168
2045	12470	13248	28542	26093	12470
2050	18064	19655	31690	27071	18064



# Technology Summary: Hydrogen electrolysis

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

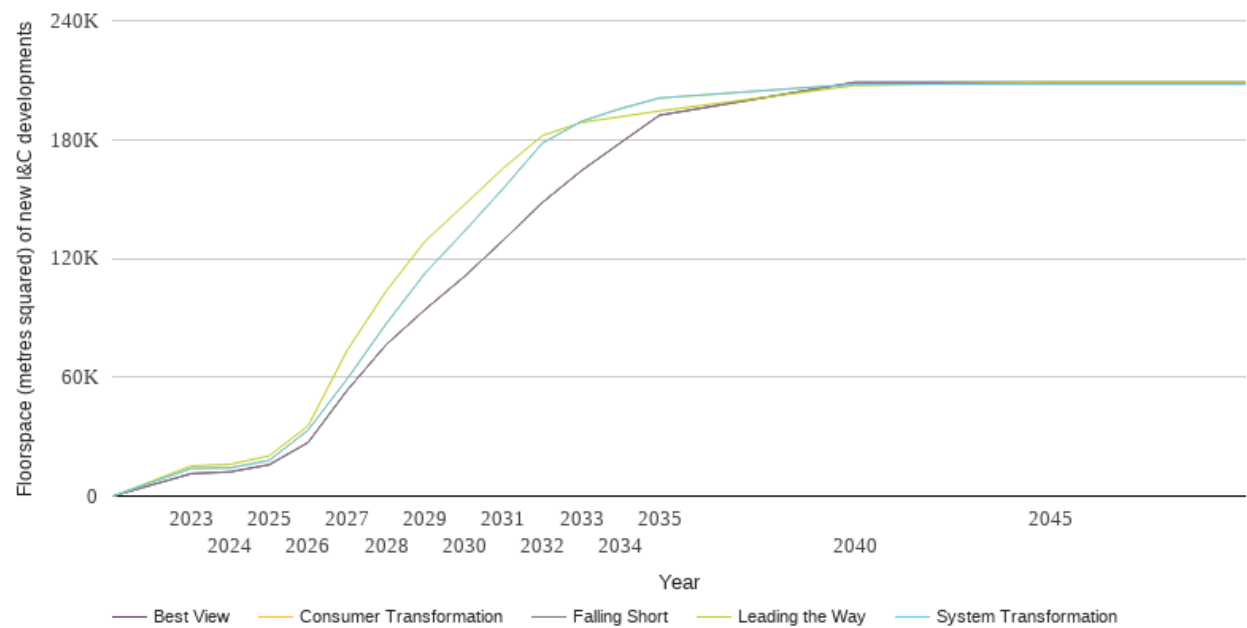
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.0	0.0	0.0	0.0
2026	0.0	0.0	0.0	0.0	0.0
2027	0.0	0.0	0.0	0.0	0.0
2028	0.0	0.0	0.0	0.0	0.0
2029	0.0	0.0	0.0	0.0	0.0
2030	0.0	0.0	0.0	0.0	0.0
2031	0.0	0.0	0.0	0.0	0.0
2032	0.0	0.0	0.0	0.0	0.0
2033	0.0	0.0	0.0	0.0	0.0
2034	0.0	0.0	0.0	0.0	0.0
2035	0.0	0.0	0.0	0.0	0.0
2040	0.0	0.0	0.0	0.0	0.0
2045	0.0	0.0	0.0	0.0	0.0
2050	0.1	0.3	0.1	0.6	0.1



# Technology Summary: Non domestic

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

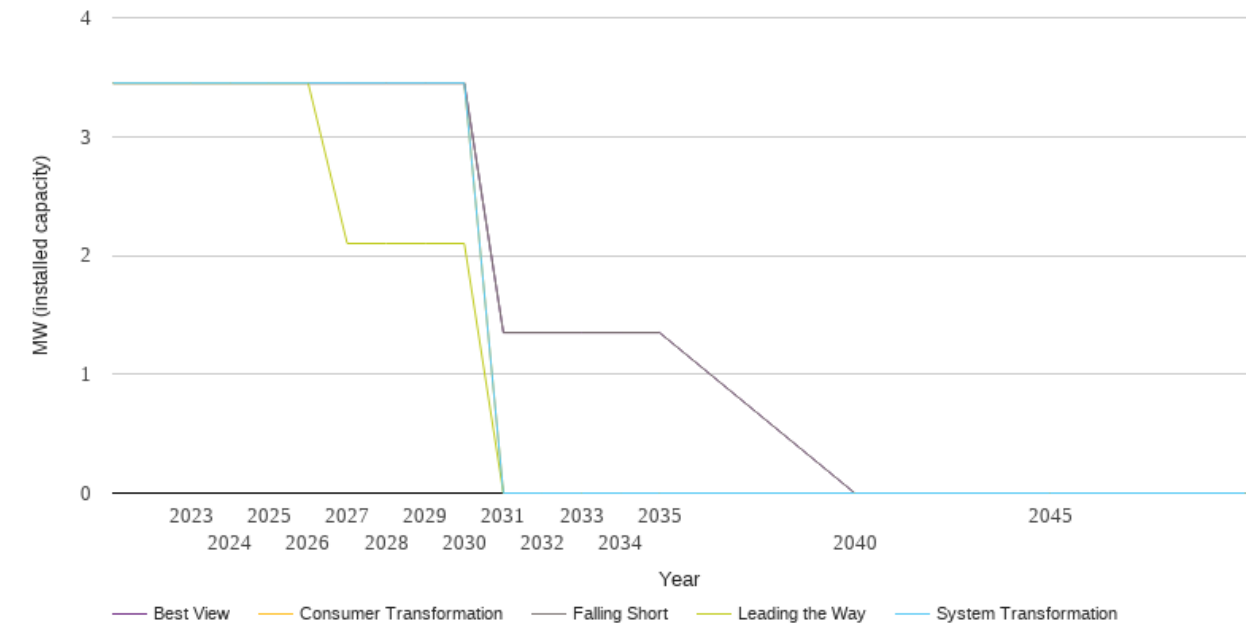
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	11313	13957	13957	15190	11313
2024	12236	14267	14267	16035	12236
2025	15824	17993	17993	20327	15824
2026	27077	33345	33345	35466	27077
2027	53424	59158	59158	73579	53424
2028	76484	87042	87042	103573	76484
2029	94257	112689	112689	128780	94257
2030	110794	133663	133663	147022	110794
2031	129225	155350	155350	165606	129225
2032	148244	178178	178178	181973	148244
2033	164286	189178	189178	188608	164286
2034	178372	195579	195579	191515	178372
2035	192263	200956	200956	194421	192263
2040	208861	207945	207945	207265	208861
2045	208861	207945	207945	208861	208861
2050	208861	207945	207945	208861	208861



# Technology Summary: Other Distributed Generation

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

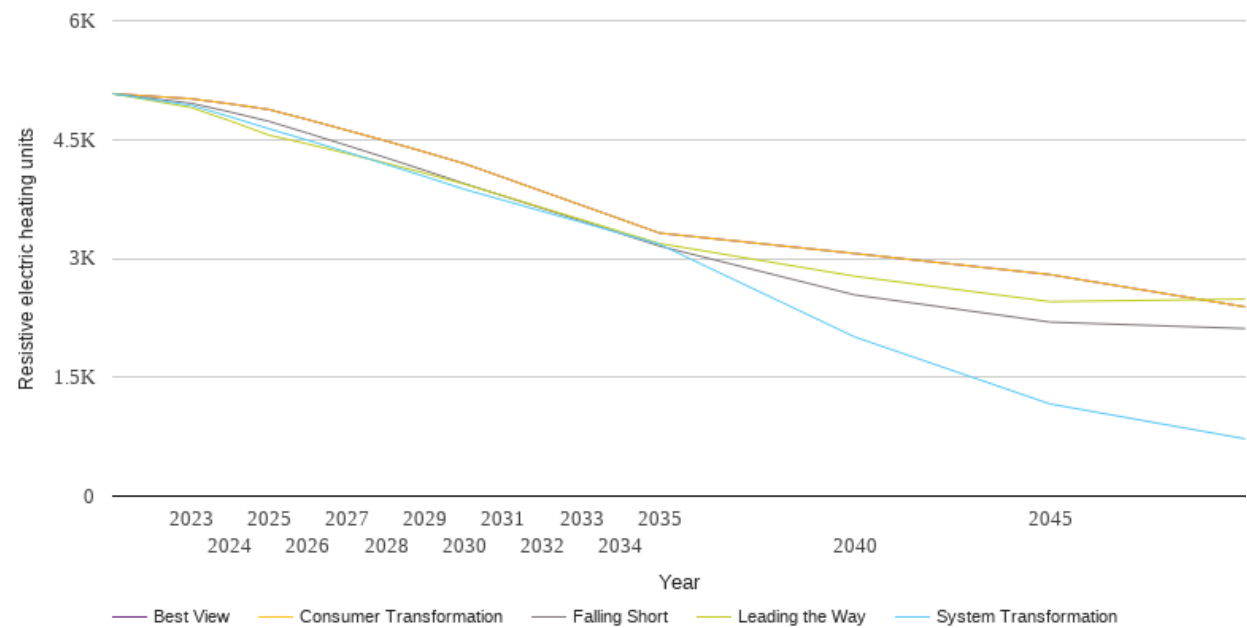
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	3.4	3.4	3.4	3.4	3.4
2023	3.4	3.4	3.4	3.4	3.4
2024	3.4	3.4	3.4	3.4	3.4
2025	3.4	3.4	3.4	3.4	3.4
2026	3.4	3.4	3.4	3.4	3.4
2027	3.4	3.4	3.4	2.1	3.4
2028	3.4	3.4	3.4	2.1	3.4
2029	3.4	3.4	3.4	2.1	3.4
2030	3.4	3.4	3.4	2.1	3.4
2031	1.4	0.0	0.0	0.0	1.4
2032	1.4	0.0	0.0	0.0	1.4
2033	1.4	0.0	0.0	0.0	1.4
2034	1.4	0.0	0.0	0.0	1.4
2035	1.4	0.0	0.0	0.0	1.4
2040	0.0	0.0	0.0	0.0	0.0
2045	0.0	0.0	0.0	0.0	0.0
2050	0.0	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.

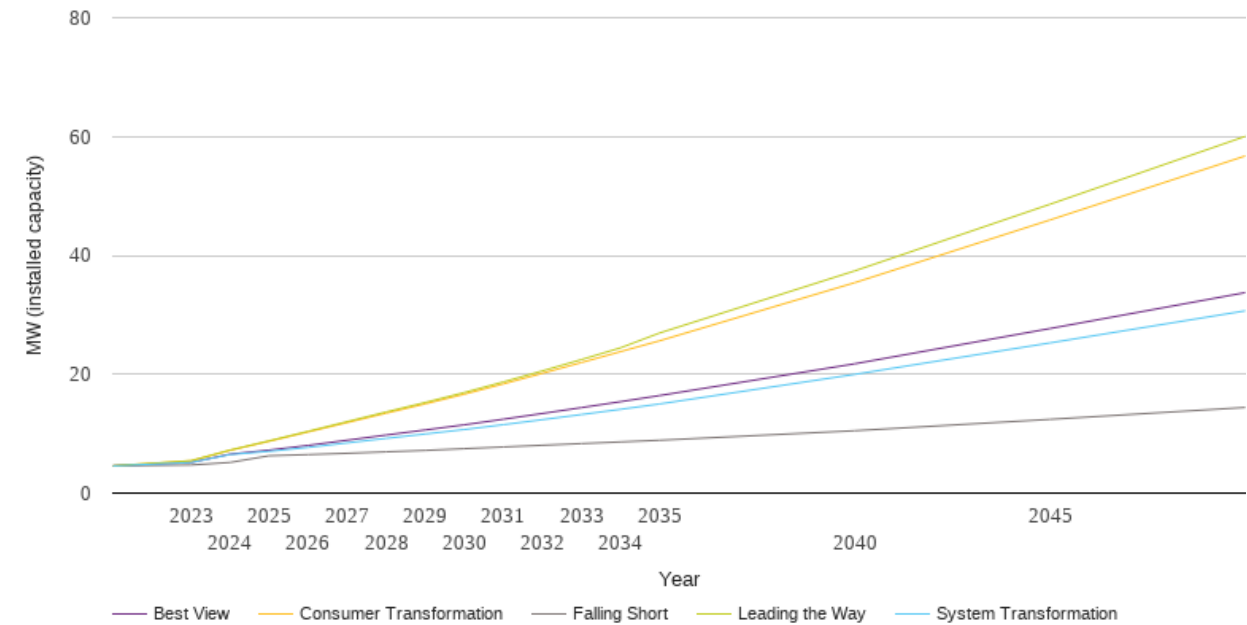
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	5078	5078	5078	5078	5078
2023	4958	4932	5014	4904	5014
2024	4848	4787	4951	4736	4951
2025	4729	4635	4878	4555	4878
2026	4579	4490	4750	4442	4750
2027	4424	4340	4616	4323	4616
2028	4269	4187	4481	4202	4481
2029	4109	4032	4341	4074	4341
2030	3944	3872	4196	3939	4196
2031	3787	3734	4022	3790	4022
2032	3631	3594	3846	3639	3846
2033	3474	3456	3671	3491	3671
2034	3315	3317	3496	3337	3496
2035	3155	3178	3320	3188	3320
2040	2539	2008	3062	2775	3062
2045	2196	1163	2795	2454	2795
2050	2114	723	2388	2487	2388



# Technology Summary: Solar Generation

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

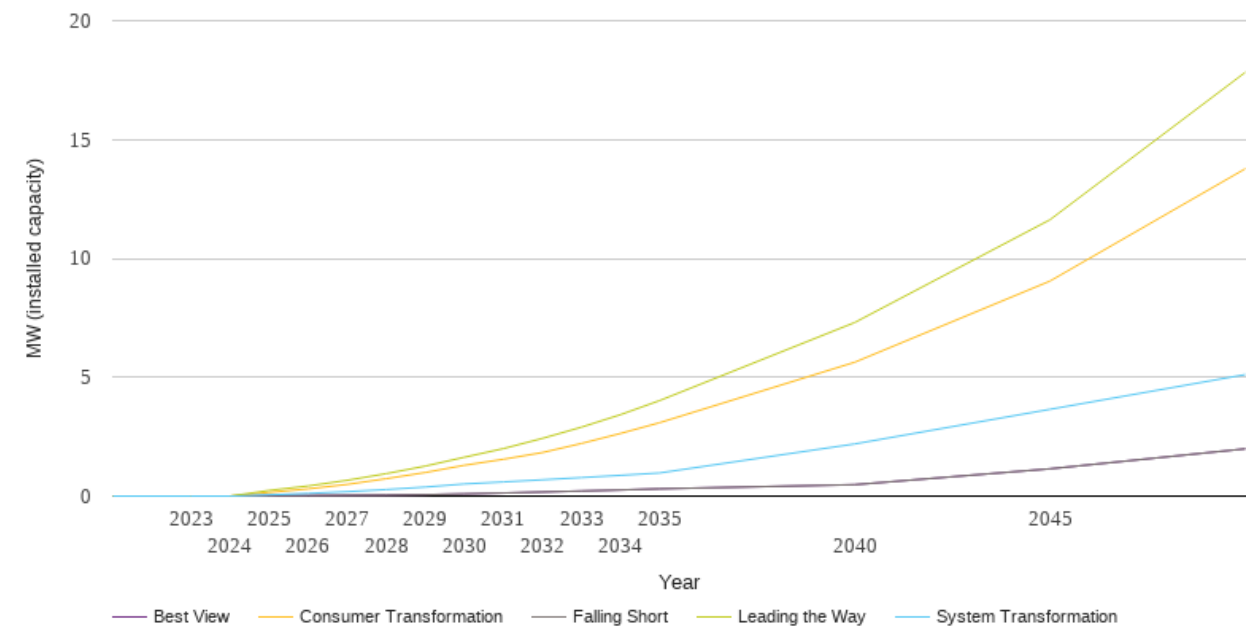
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	4.6	4.6	4.6	4.6	4.6
2023	4.7	5.2	5.4	5.5	5.2
2024	5.2	6.5	7.2	7.2	6.5
2025	6.3	7.0	8.7	8.8	7.2
2026	6.5	7.7	10.3	10.4	8.0
2027	6.7	8.4	11.9	12.0	8.9
2028	6.9	9.2	13.4	13.7	9.8
2029	7.2	9.9	15.0	15.3	10.6
2030	7.5	10.7	16.6	16.9	11.5
2031	7.8	11.5	18.4	18.7	12.4
2032	8.0	12.4	20.2	20.6	13.4
2033	8.3	13.2	22.0	22.5	14.4
2034	8.6	14.1	23.8	24.4	15.4
2035	8.9	15.0	25.6	26.9	16.4
2040	10.5	20.0	35.4	37.4	21.8
2045	12.4	25.3	46.0	48.6	27.7
2050	14.4	30.7	56.7	60.0	33.7



# Technology Summary: Storage

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

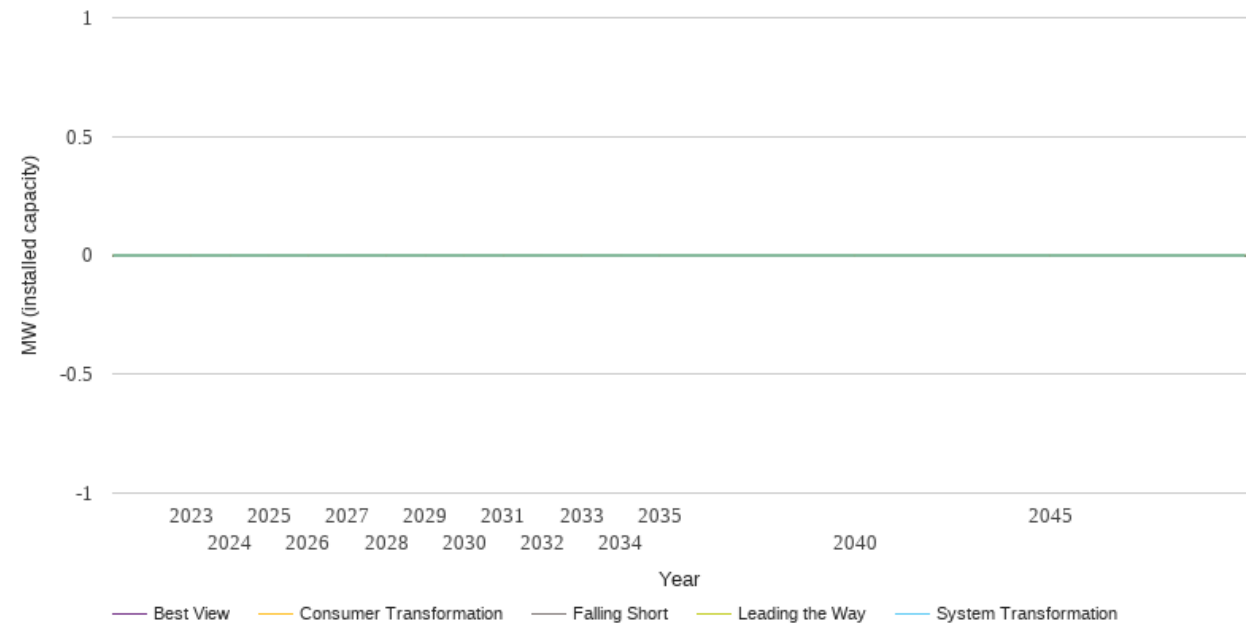
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.1	0.2	0.2	0.0
2026	0.0	0.1	0.3	0.4	0.0
2027	0.0	0.2	0.5	0.7	0.0
2028	0.0	0.3	0.7	0.9	0.0
2029	0.1	0.4	1.0	1.3	0.1
2030	0.1	0.5	1.3	1.6	0.1
2031	0.1	0.6	1.5	2.0	0.1
2032	0.2	0.7	1.8	2.4	0.2
2033	0.2	0.8	2.2	2.9	0.2
2034	0.3	0.9	2.6	3.4	0.3
2035	0.3	1.0	3.1	4.0	0.3
2040	0.5	2.2	5.6	7.3	0.5
2045	1.1	3.6	9.0	11.6	1.1
2050	2.0	5.1	13.8	17.8	2.0



# 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	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	0.0	0.0	0.0	0.0
2028	0.0	0.0	0.0	0.0	0.0
2029	0.0	0.0	0.0	0.0	0.0
2030	0.0	0.0	0.0	0.0	0.0
2031	0.0	0.0	0.0	0.0	0.0
2032	0.0	0.0	0.0	0.0	0.0
2033	0.0	0.0	0.0	0.0	0.0
2034	0.0	0.0	0.0	0.0	0.0
2035	0.0	0.0	0.0	0.0	0.0
2040	0.0	0.0	0.0	0.0	0.0
2045	0.0	0.0	0.0	0.0	0.0
2050	0.0	0.0	0.0	0.0	0.0





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))  
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