

Distribution Future Energy Scenarios 2022

Local Authority:
Cheshire East

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 Cheshire East 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 Cheshire East 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	6091	2596	2596	0
Domestic	New dwellings	0	400	400	400	410	458	429	429	410
Electric vehicles	Electric vehicles	381	3104	3759	7025	7012	2243 3	1887 2	1977 9	1673 6
EV Charge Point	EV charge points	177	1432	2023	3832	4204	1191 2	1108 6	1166 3	1184 3
Heat pumps	Heat pump installations	24	659	606	2214	3718	6627	7719	1357 6	1201 9
Hydrogen electrolysis	MW (installed capacity)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2
Non domestic	Floorspace (metres squared) of new I&C developments	0	2897 0	3485 6	3485 6	3983 4	5400 4	5400 4	5400 4	5400 4
Other Distributed Generation	MW (installed capacity)	0.0	0.1	0.4	0.6	0.6	0.1	0.4	0.7	0.9
Resistive electric heating	Resistive electric heating units	1130	1014	968	1011	987	815	410	765	805
Solar Generation	MW (installed capacity)	1.7	2.7	4.2	6.8	6.5	7.5	14.7	25.6	25.5
Storage	MW (installed capacity)	0.0	0.2	0.4	0.7	1.1	1.5	3.5	7.3	8.7
Wind	MW (installed capacity)	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.6	0.5

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.

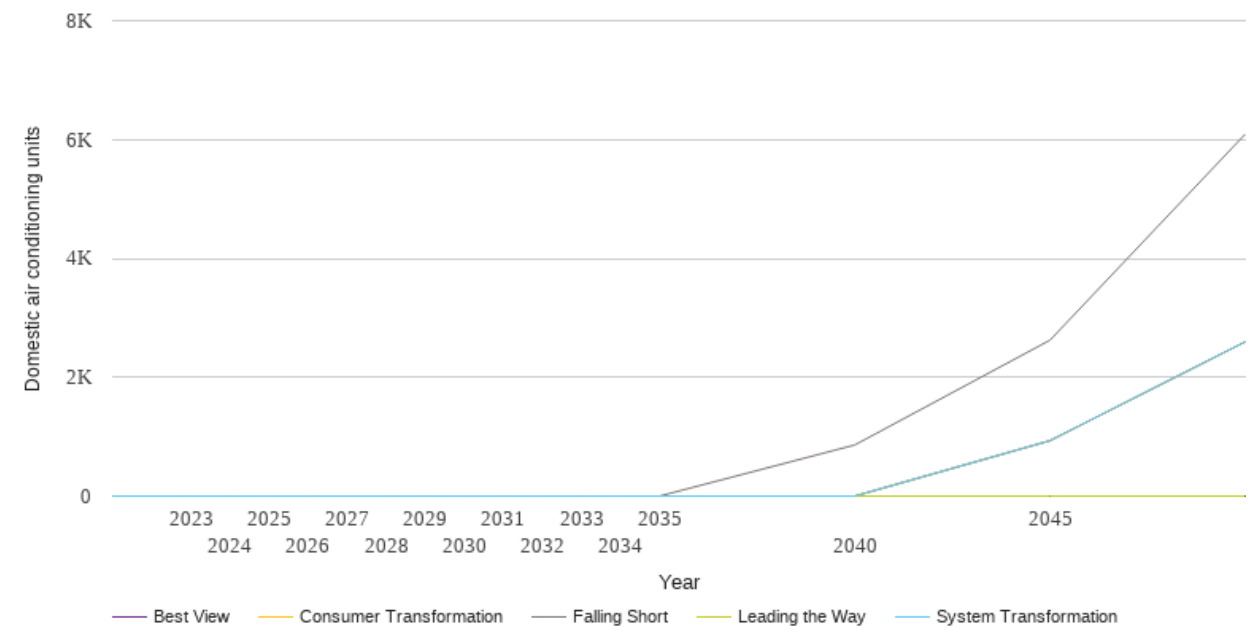
If you have any comments or queries regarding these reports, please contact

nged.energyplanning@nationalgrid.co.uk.

Technology Summary: Air conditioning

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

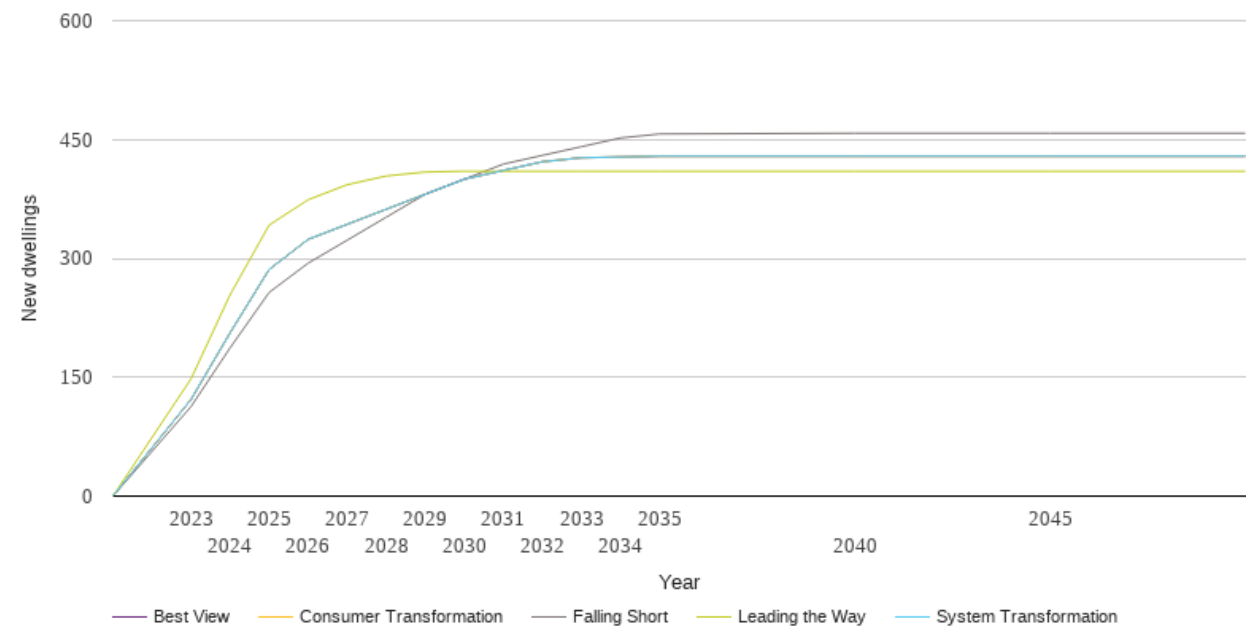
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	0	0	0	0	0
2024	0	0	0	0	0
2025	0	0	0	0	0
2026	0	0	0	0	0
2027	0	0	0	0	0
2028	0	0	0	0	0
2029	0	0	0	0	0
2030	0	0	0	0	0
2031	0	0	0	0	0
2032	0	0	0	0	0
2033	0	0	0	0	0
2034	0	0	0	0	0
2035	0	0	0	0	0
2040	860	0	0	0	0
2045	2623	933	933	0	933
2050	6091	2596	2596	0	2596



Technology Summary: Domestic

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

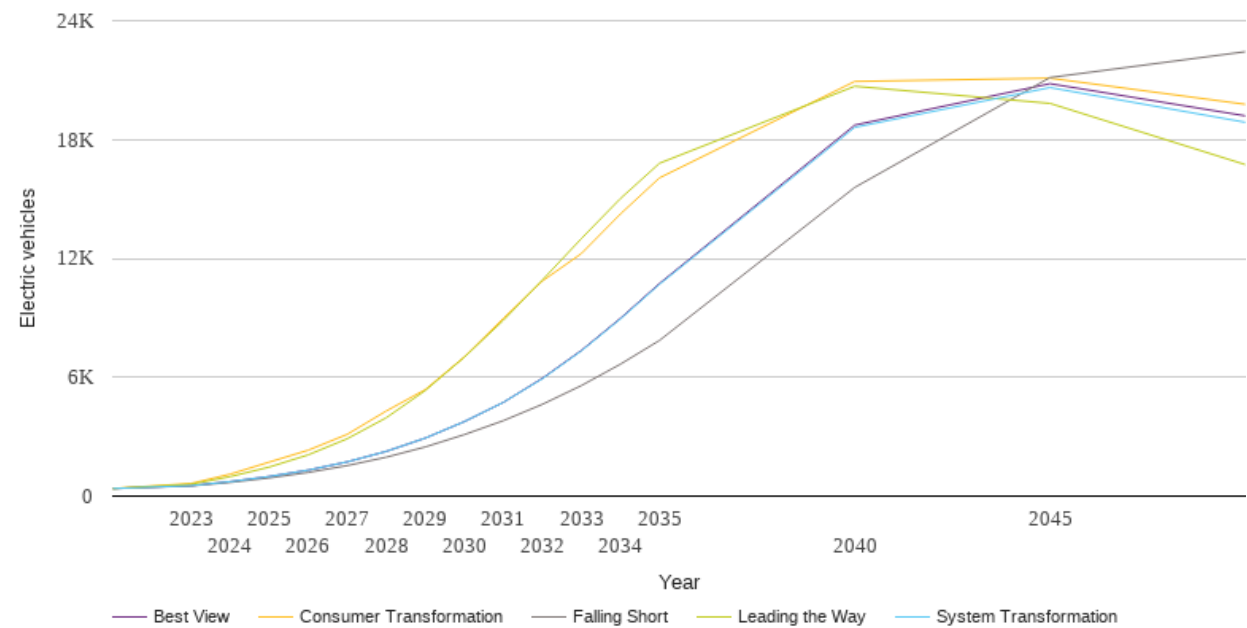
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	113	122	122	148	122
2024	187	206	206	254	206
2025	257	286	286	342	286
2026	294	324	324	374	324
2027	323	343	343	393	343
2028	352	362	362	404	362
2029	381	381	381	409	381
2030	400	400	400	410	400
2031	419	411	411	410	411
2032	430	422	422	410	422
2033	441	427	427	410	427
2034	452	428	428	410	428
2035	457	429	429	410	429
2040	458	429	429	410	429
2045	458	429	429	410	429
2050	458	429	429	410	429



Technology Summary: Electric vehicles

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

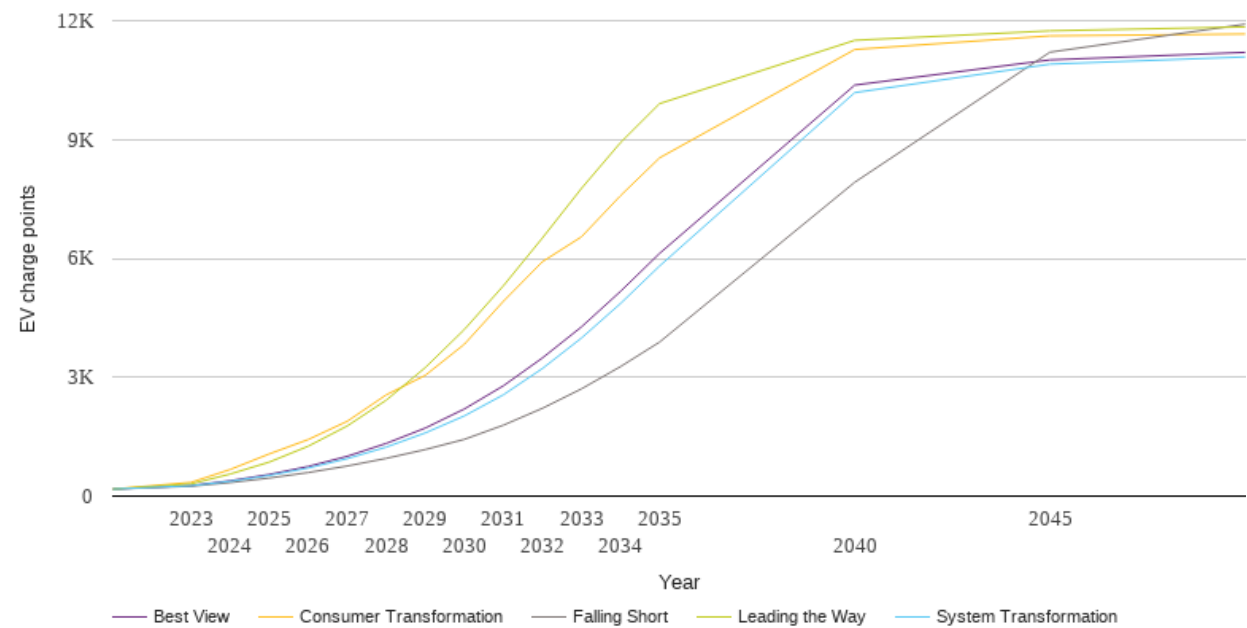
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	381	381	381	381	381
2023	516	528	636	597	528
2024	692	728	1107	981	728
2025	915	986	1714	1463	986
2026	1193	1310	2316	2080	1310
2027	1540	1726	3117	2894	1726
2028	1964	2257	4295	3954	2257
2029	2482	2928	5377	5331	2928
2030	3104	3759	7025	7012	3759
2031	3808	4732	8977	8872	4732
2032	4634	5926	10859	10909	5949
2033	5582	7332	12247	13004	7359
2034	6661	8942	14244	15024	8978
2035	7861	10691	16067	16804	10737
2040	15583	18614	20933	20691	18729
2045	21128	20624	21099	19826	20820
2050	22433	18872	19779	16736	19197



Technology Summary: EV Charge Point

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

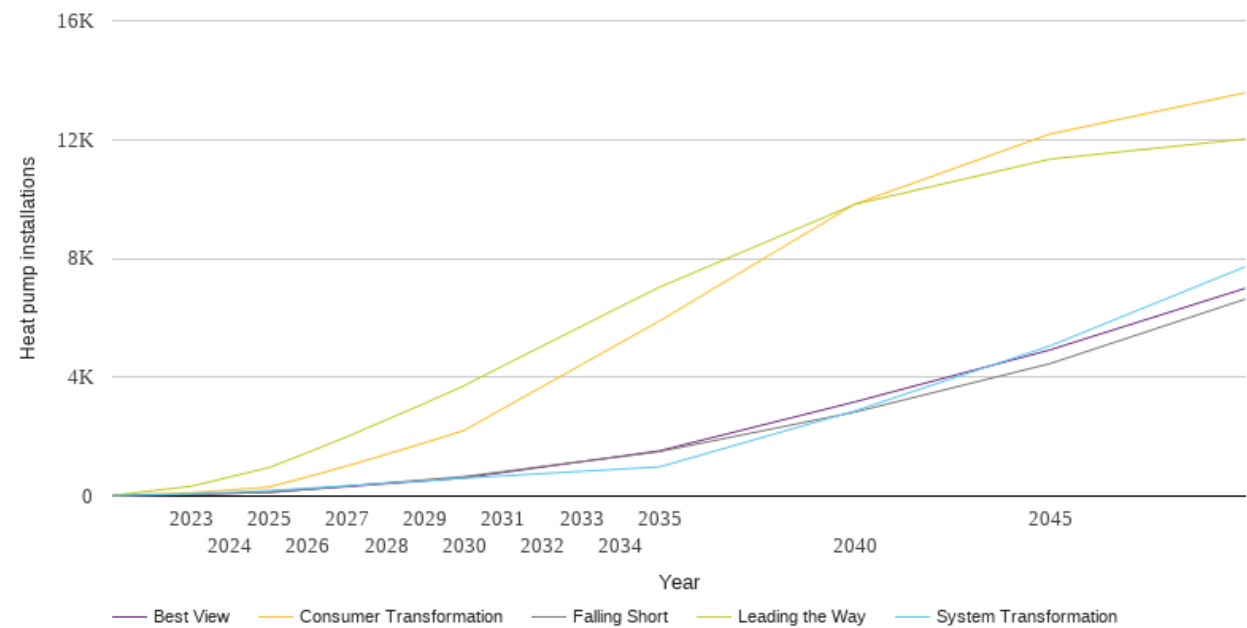
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	177	177	177	177	177
2023	249	261	346	307	264
2024	341	374	670	556	387
2025	455	520	1063	857	546
2026	594	708	1427	1258	748
2027	759	945	1888	1770	1004
2028	952	1237	2556	2421	1330
2029	1175	1595	3048	3244	1717
2030	1432	2023	3832	4204	2199
2031	1790	2557	4916	5308	2784
2032	2216	3220	5916	6515	3487
2033	2707	3989	6544	7766	4271
2034	3268	4860	7583	8922	5167
2035	3887	5807	8537	9906	6125
2040	7922	10184	11273	11504	10374
2045	11205	10903	11617	11744	11010
2050	11912	11086	11663	11843	11200



Technology Summary: Heat pumps

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

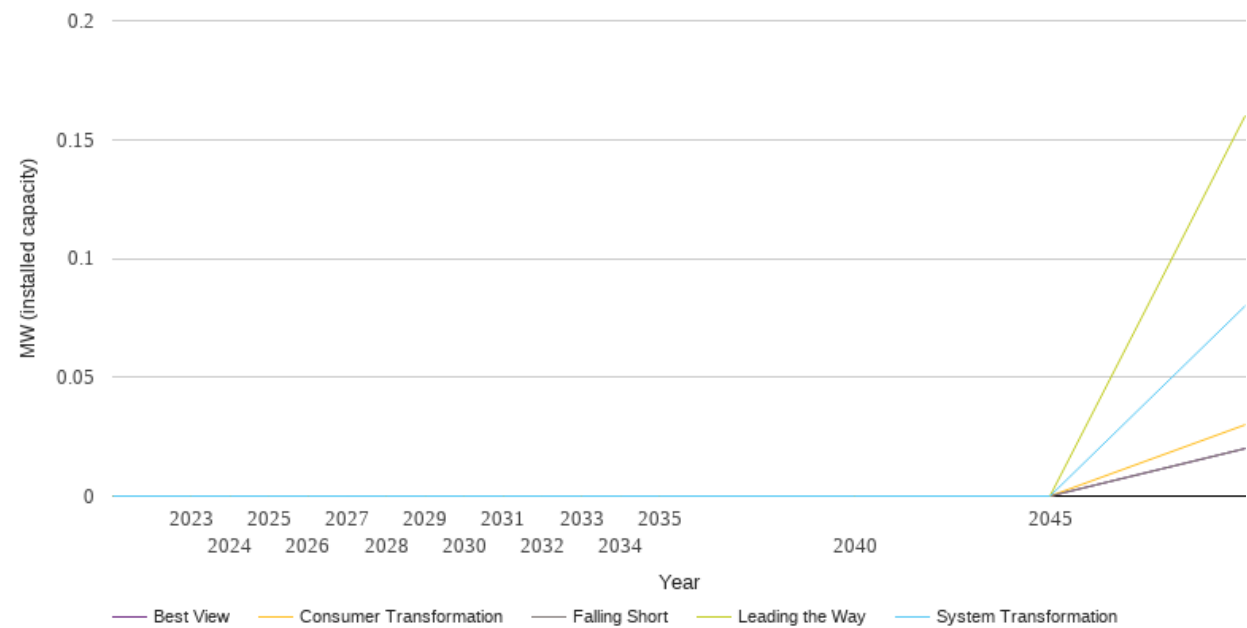
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	24	24	24	24	24
2023	57	75	113	330	57
2024	93	130	208	645	93
2025	127	187	307	960	127
2026	233	268	655	1474	224
2027	338	346	1018	2004	320
2028	444	434	1407	2566	417
2029	550	520	1803	3131	514
2030	659	606	2214	3718	614
2031	826	681	2955	4391	796
2032	995	757	3690	5052	978
2033	1160	833	4424	5715	1159
2034	1326	908	5162	6376	1339
2035	1497	983	5893	7031	1524
2040	2826	2866	9828	9819	3169
2045	4457	5055	12187	11340	4919
2050	6627	7719	13576	12019	6992



Technology Summary: Hydrogen electrolysis

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

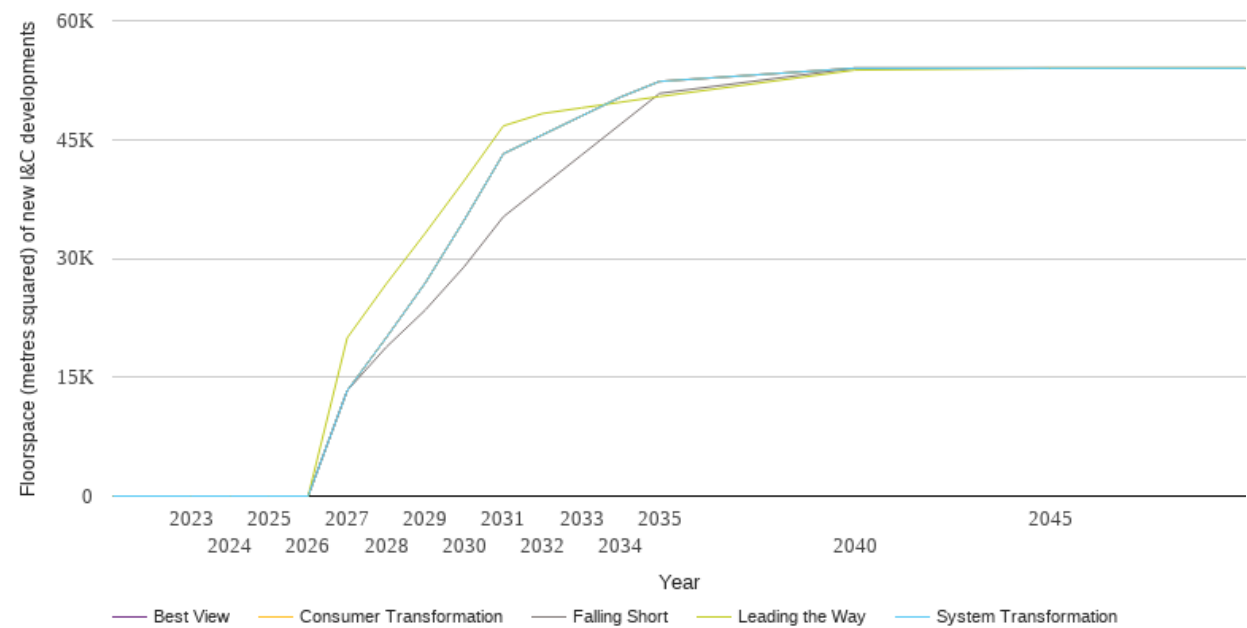
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.0	0.0	0.0	0.0
2026	0.0	0.0	0.0	0.0	0.0
2027	0.0	0.0	0.0	0.0	0.0
2028	0.0	0.0	0.0	0.0	0.0
2029	0.0	0.0	0.0	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	0.0	0.1	0.0	0.2	0.0



Technology Summary: Non domestic

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

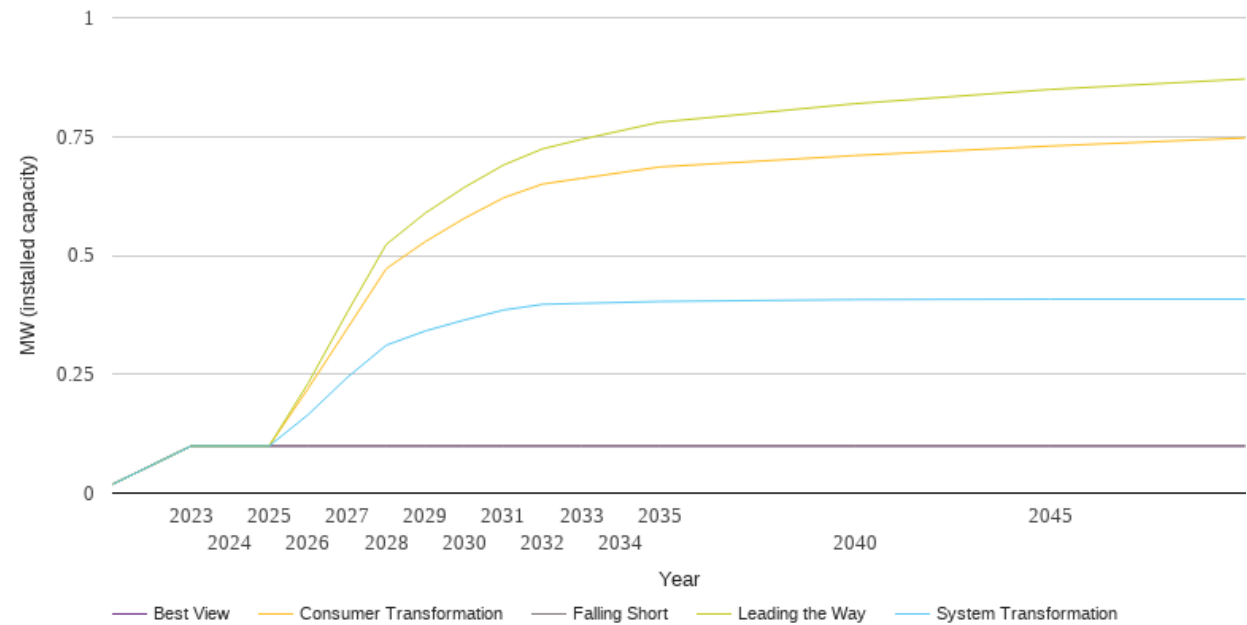
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	0	0	0	0	0
2024	0	0	0	0	0
2025	0	0	0	0	0
2026	0	0	0	0	0
2027	13313	13313	13313	19970	13313
2028	18797	19990	19990	26777	19990
2029	23486	26906	26906	33186	26906
2030	28970	34856	34856	39834	34856
2031	35249	43203	43203	46720	43203
2032	39143	45585	45585	48277	45585
2033	43036	47967	47967	48993	47967
2034	46929	50350	50350	49709	50350
2035	50823	52334	52334	50425	52334
2040	54004	54004	54004	53766	54004
2045	54004	54004	54004	54004	54004
2050	54004	54004	54004	54004	54004



Technology Summary: Other Distributed Generation

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

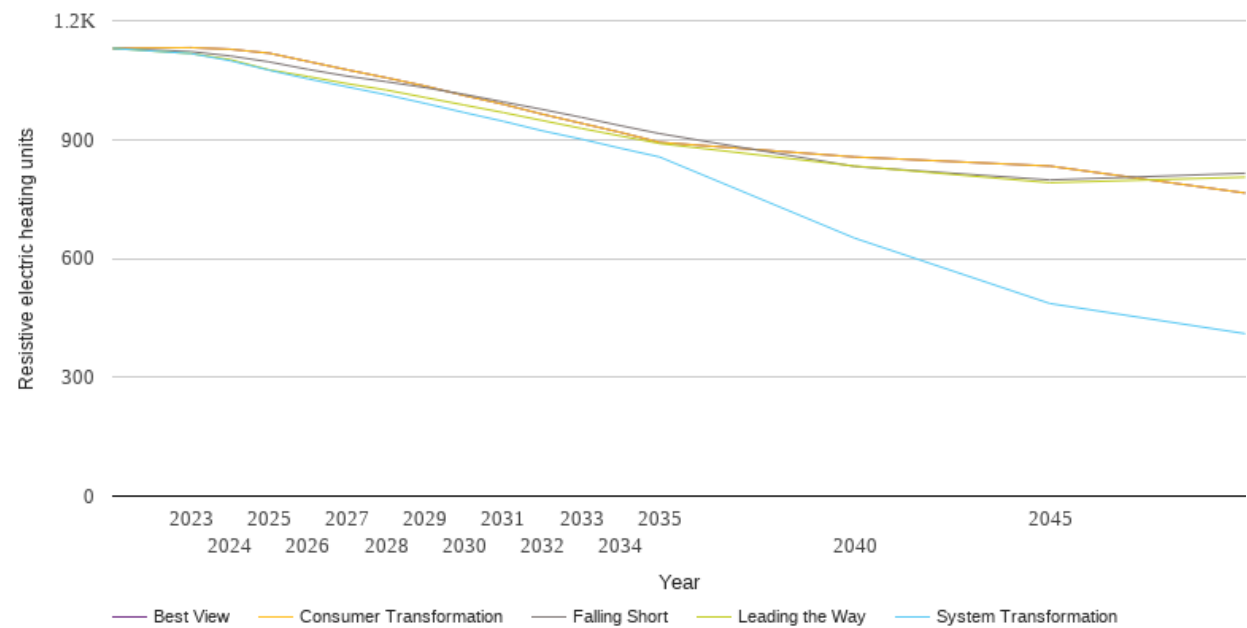
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0.0	0.0	0.0	0.0	0.0
2023	0.1	0.1	0.1	0.1	0.1
2024	0.1	0.1	0.1	0.1	0.1
2025	0.1	0.1	0.1	0.1	0.1
2026	0.1	0.2	0.2	0.2	0.1
2027	0.1	0.2	0.3	0.4	0.1
2028	0.1	0.3	0.5	0.5	0.1
2029	0.1	0.3	0.5	0.6	0.1
2030	0.1	0.4	0.6	0.6	0.1
2031	0.1	0.4	0.6	0.7	0.1
2032	0.1	0.4	0.6	0.7	0.1
2033	0.1	0.4	0.7	0.7	0.1
2034	0.1	0.4	0.7	0.8	0.1
2035	0.1	0.4	0.7	0.8	0.1
2040	0.1	0.4	0.7	0.8	0.1
2045	0.1	0.4	0.7	0.8	0.1
2050	0.1	0.4	0.7	0.9	0.1



Technology Summary: Resistive electric heating

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

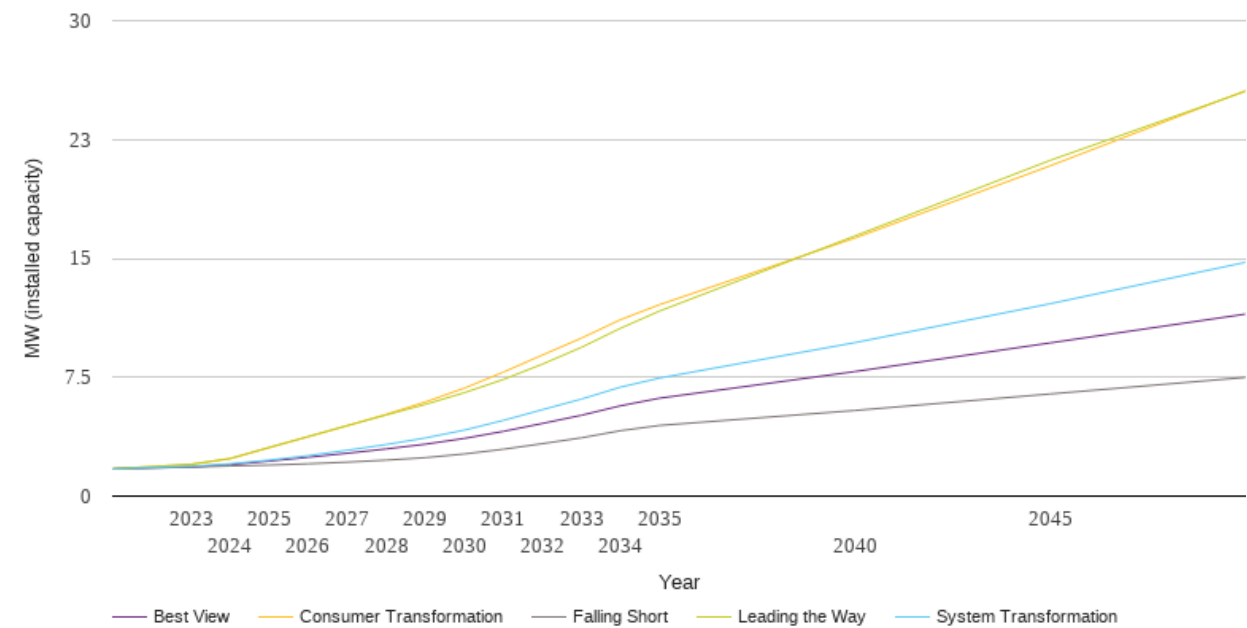
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	1130	1130	1130	1130	1130
2023	1122	1117	1132	1117	1132
2024	1111	1099	1128	1102	1128
2025	1096	1075	1118	1076	1118
2026	1077	1053	1097	1059	1097
2027	1060	1033	1076	1041	1076
2028	1046	1013	1056	1025	1056
2029	1031	991	1035	1006	1035
2030	1014	968	1011	987	1011
2031	995	946	989	968	989
2032	976	922	964	948	964
2033	956	901	941	928	941
2034	935	878	918	909	918
2035	915	856	893	890	893
2040	832	651	856	833	856
2045	798	486	833	791	833
2050	815	410	765	805	765



Technology Summary: Solar Generation

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

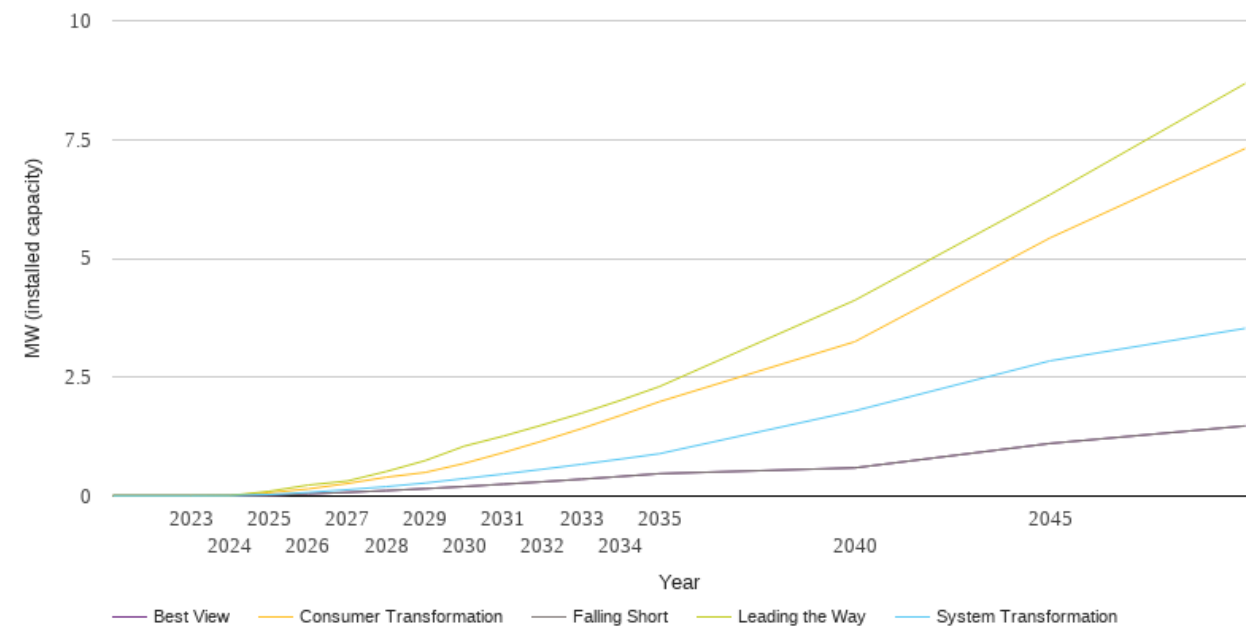
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	1.7	1.7	1.7	1.7	1.7
2023	1.8	1.9	2.0	2.0	1.8
2024	1.9	2.0	2.4	2.4	2.0
2025	2.0	2.3	3.1	3.1	2.2
2026	2.0	2.6	3.7	3.8	2.4
2027	2.1	2.9	4.4	4.4	2.7
2028	2.3	3.3	5.2	5.1	3.0
2029	2.4	3.7	5.9	5.8	3.3
2030	2.7	4.2	6.8	6.5	3.6
2031	3.0	4.8	7.8	7.4	4.1
2032	3.3	5.5	8.9	8.3	4.6
2033	3.7	6.1	10.0	9.4	5.1
2034	4.1	6.9	11.1	10.6	5.7
2035	4.5	7.4	12.1	11.7	6.2
2040	5.4	9.7	16.3	16.4	7.9
2045	6.4	12.1	20.8	21.2	9.7
2050	7.5	14.7	25.6	25.5	11.5



Technology Summary: Storage

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

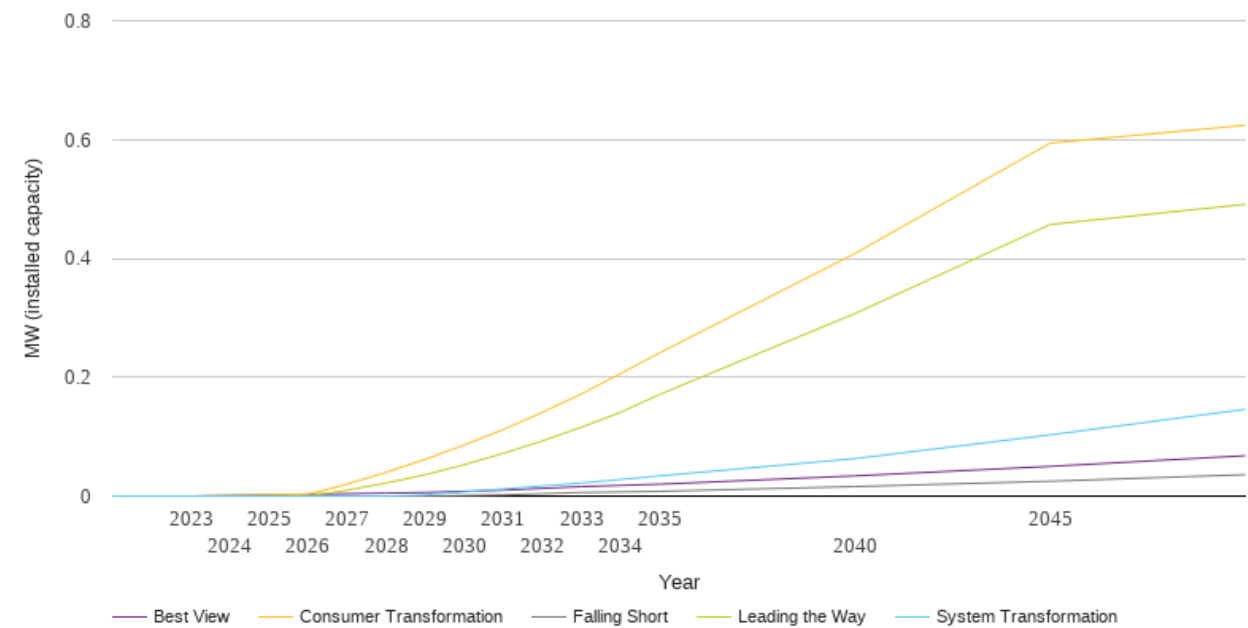
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.0	0.1	0.1	0.0
2026	0.0	0.1	0.2	0.2	0.0
2027	0.1	0.1	0.3	0.3	0.1
2028	0.1	0.2	0.4	0.5	0.1
2029	0.2	0.3	0.5	0.7	0.2
2030	0.2	0.4	0.7	1.1	0.2
2031	0.2	0.5	0.9	1.3	0.2
2032	0.3	0.6	1.2	1.5	0.3
2033	0.4	0.7	1.4	1.7	0.4
2034	0.4	0.8	1.7	2.0	0.4
2035	0.5	0.9	2.0	2.3	0.5
2040	0.6	1.8	3.2	4.1	0.6
2045	1.1	2.8	5.4	6.3	1.1
2050	1.5	3.5	7.3	8.7	1.5



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	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	0.1	0.0	0.0
2030	0.0	0.0	0.1	0.1	0.0
2031	0.0	0.0	0.1	0.1	0.0
2032	0.0	0.0	0.1	0.1	0.0
2033	0.0	0.0	0.2	0.1	0.0
2034	0.0	0.0	0.2	0.1	0.0
2035	0.0	0.0	0.2	0.2	0.0
2040	0.0	0.1	0.4	0.3	0.0
2045	0.0	0.1	0.6	0.5	0.1
2050	0.0	0.1	0.6	0.5	0.1



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))
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