

Distribution Future Energy Scenarios 2022

Local Authority:
Sedgemoor

What are Distribution Future Energy Scenarios?

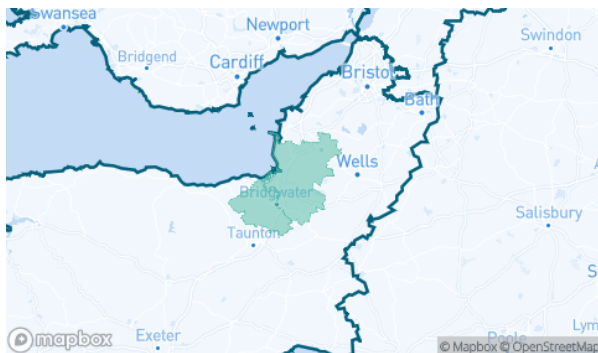
National Grid run Distribution Future Energy Scenarios (DFES) on an annual cycle for all licence areas, and represent a range of credible future scenarios of what could connect to the distribution network.

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 Sedgemoor 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 Sedgemoor 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	180	689	542	542	180	20548	10179	10178	180
Domestic	New dwellings	0	3265	3481	3481	4000	4703	4572	4572	4470
Electric vehicles	Electric vehicles	1289	10897	13917	25717	25745	80328	72498	71836	60596
EV Charge Point	EV charge points	736	4899	7370	13912	15298	44627	44198	44460	46372
Heat pumps	Heat pump installations	926	6413	6158	11836	17055	31819	35327	55649	50091
Hydrogen electrolysis	MW (installed capacity)	0.0	0.0	0.9	0.0	0.7	1.5	15.1	10.6	18.4
Non domestic	Floorspace (metres squared) of new I&C developments	0	93312	115016	115016	122872	235690	235690	235690	235690
Other Distributed Generation	MW (installed capacity)	30.2	43.2	42.8	44.0	38.0	36.2	30.6	25.3	40.8
Resistive electric heating	Resistive electric heating units	12384	9775	9585	10322	9741	5662	2080	6122	6462
Solar Generation	MW (installed capacity)	24.6	32.5	44.5	59.0	65.0	93.6	173.4	231.1	250.9
Storage	MW (installed capacity)	0.3	0.5	1.8	3.7	5.0	4.7	11.4	29.5	39.0
Wind	MW (installed capacity)	0.3	0.5	0.9	5.5	4.3	5.1	15.0	49.9	40.2

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.

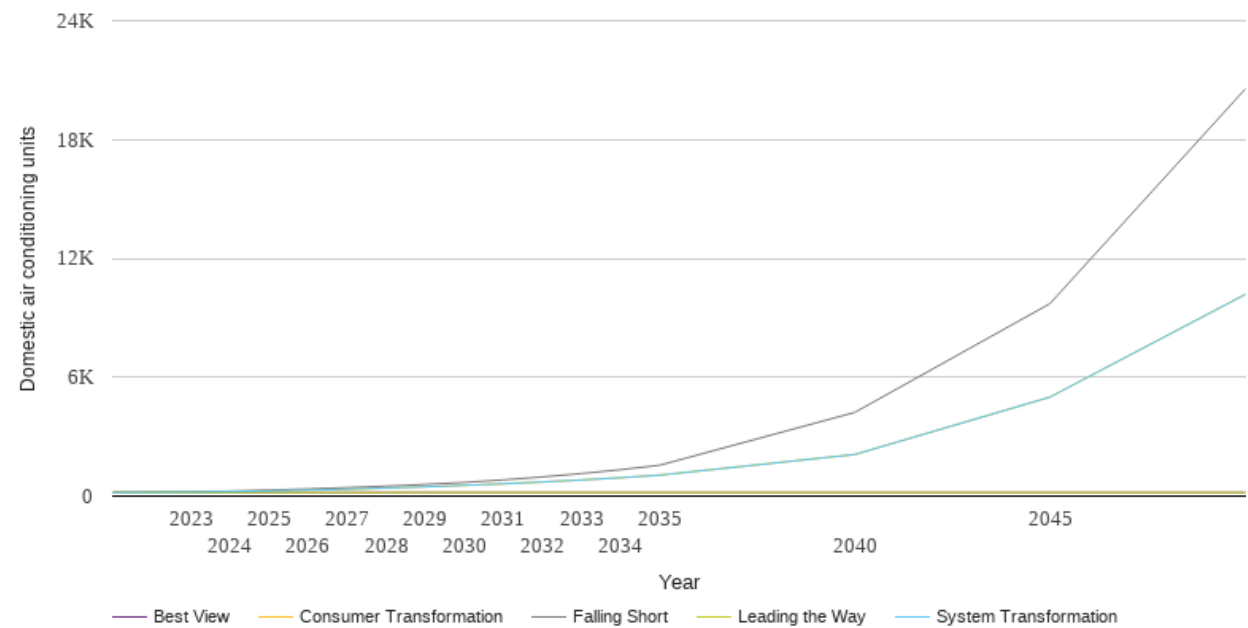
If you have any comments or queries regarding these reports, please contact

nged.energyplanning@nationalgrid.co.uk.

Technology Summary: Air conditioning

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

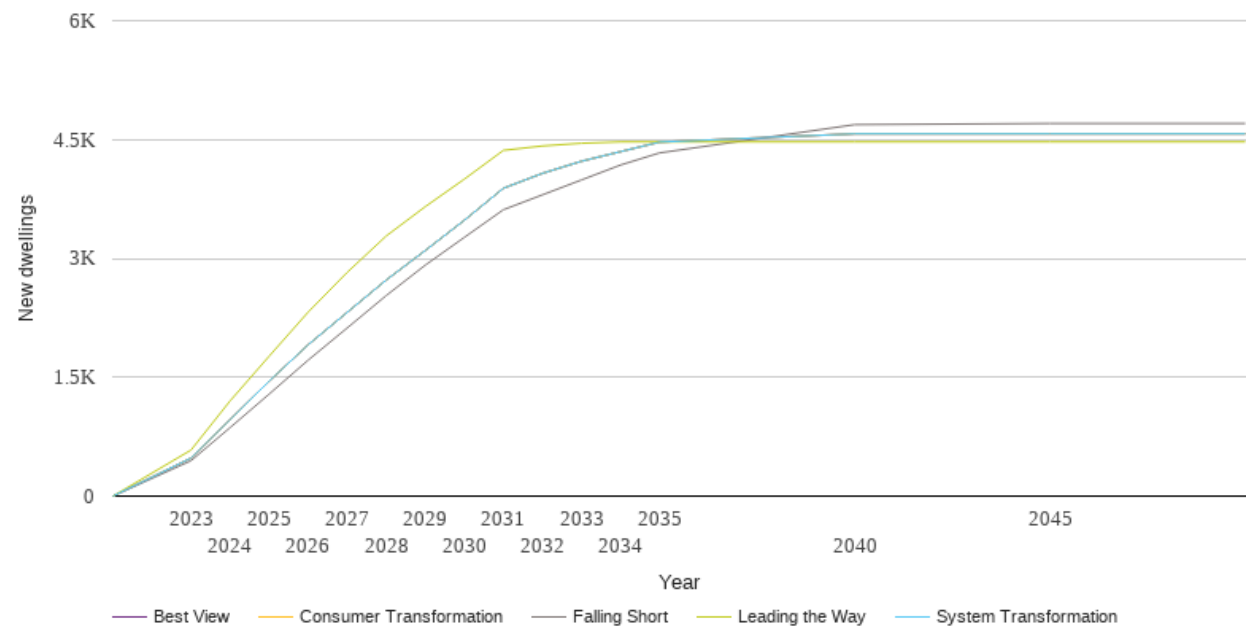
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	180	180	180	180	180
2023	207	203	203	180	180
2024	250	228	228	180	180
2025	301	257	257	180	180
2026	360	301	301	180	180
2027	426	351	351	180	180
2028	502	407	407	180	180
2029	590	471	471	180	180
2030	689	542	542	180	180
2031	818	622	622	180	180
2032	967	712	712	180	180
2033	1137	814	814	180	180
2034	1333	929	929	180	180
2035	1556	1057	1057	180	180
2040	4225	2100	2100	180	180
2045	9716	4999	4999	180	180
2050	20548	10179	10178	180	180



Technology Summary: Domestic

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

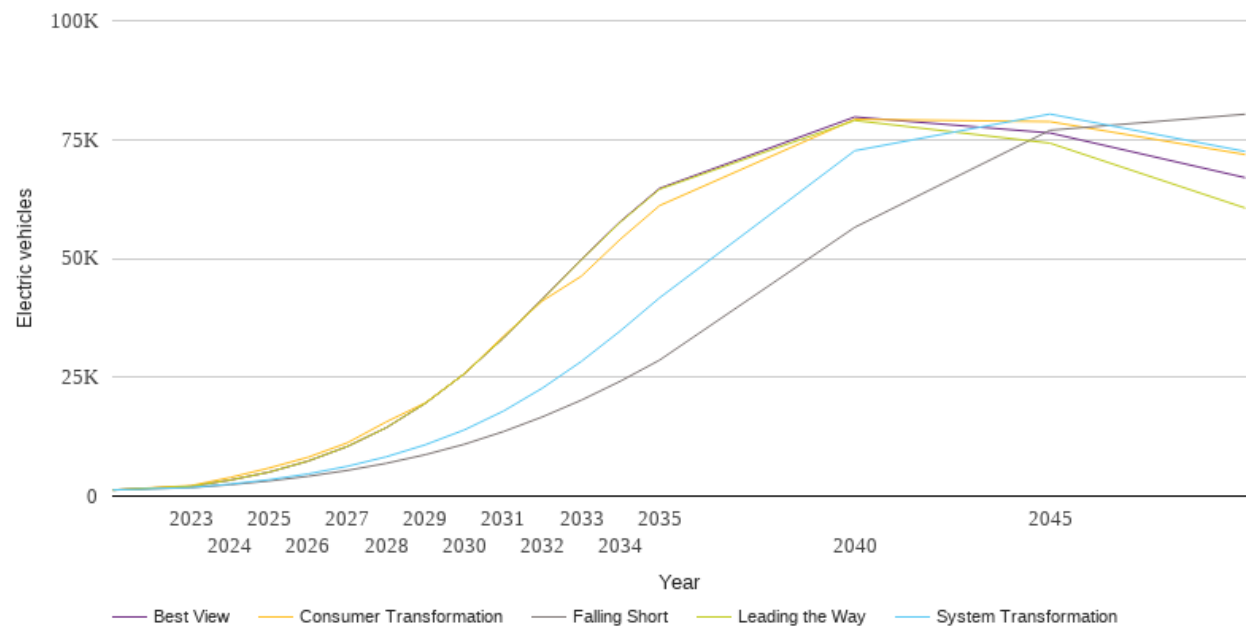
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	447	480	480	581	480
2024	864	965	965	1201	965
2025	1287	1450	1450	1765	1450
2026	1716	1910	1910	2322	1910
2027	2122	2319	2319	2824	2319
2028	2531	2727	2727	3283	2727
2029	2915	3100	3100	3653	3100
2030	3265	3481	3481	4000	3481
2031	3614	3885	3885	4363	3885
2032	3802	4073	4073	4419	4073
2033	3990	4226	4226	4453	4226
2034	4178	4347	4347	4470	4347
2035	4331	4468	4468	4470	4468
2040	4688	4572	4572	4470	4572
2045	4703	4572	4572	4470	4572
2050	4703	4572	4572	4470	4572



Technology Summary: Electric vehicles

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

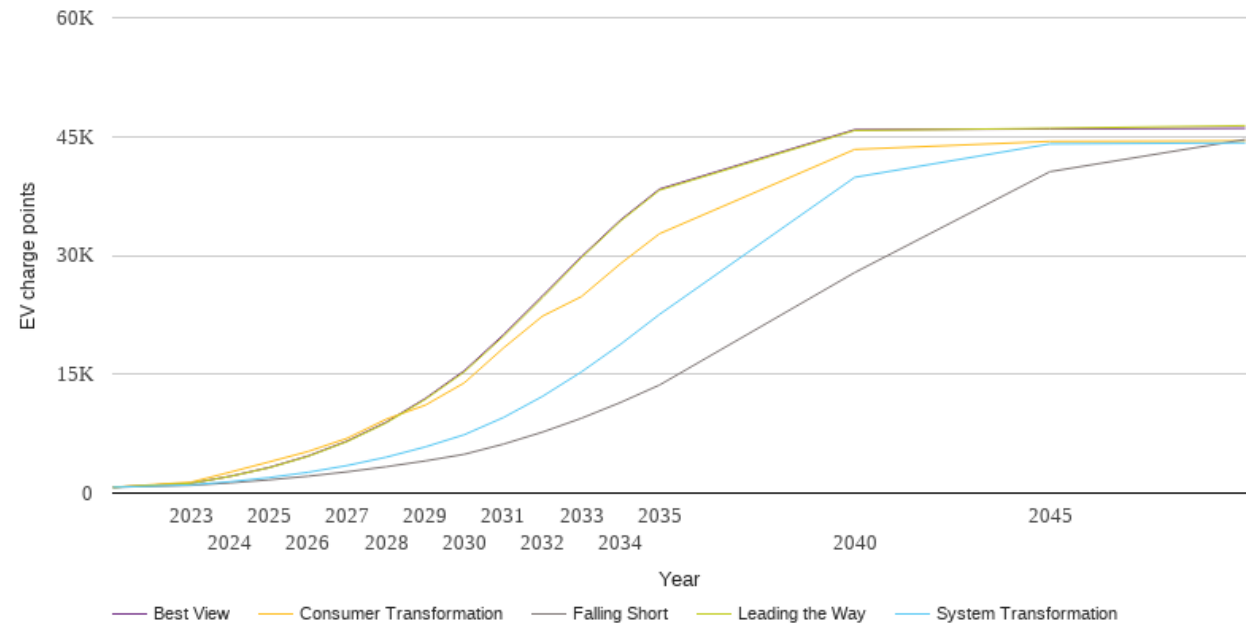
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	1289	1289	1289	1289	1289
2023	1773	1812	2196	2059	2059
2024	2396	2522	3919	3352	3352
2025	3178	3442	5903	5046	5046
2026	4162	4670	8175	7371	7371
2027	5393	6257	11191	10427	10424
2028	6891	8267	15610	14383	14382
2029	8710	10793	19604	19513	19511
2030	10897	13917	25717	25745	25742
2031	13561	17877	33621	33242	33239
2032	16662	22716	41063	41407	41484
2033	20191	28347	46271	49719	49813
2034	24183	34774	54057	57646	57776
2035	28597	41703	61104	64546	64724
2040	56529	72648	79250	79015	79746
2045	76952	80360	78767	74238	76390
2050	80328	72498	71836	60596	66976



Technology Summary: EV Charge Point

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

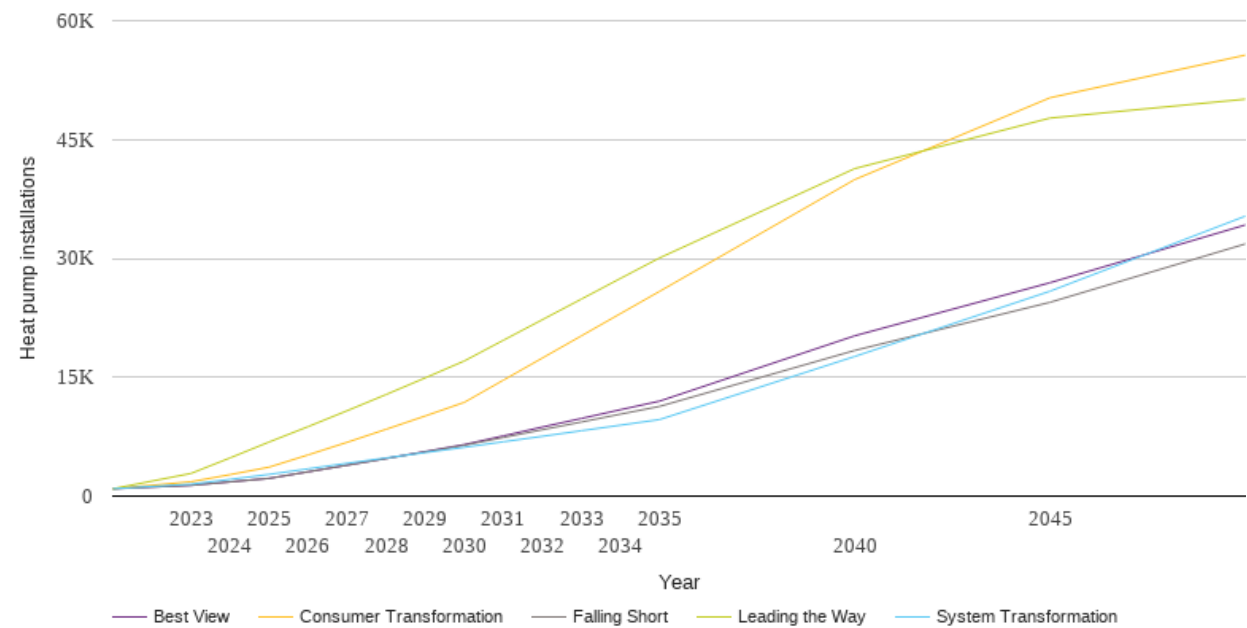
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	736	736	736	736	736
2023	978	1033	1382	1232	1237
2024	1287	1438	2637	2101	2122
2025	1672	1958	3934	3199	3231
2026	2131	2625	5250	4640	4689
2027	2684	3479	6926	6507	6570
2028	3327	4535	9332	8856	8956
2029	4058	5826	11097	11826	11935
2030	4899	7370	13912	15298	15450
2031	6179	9534	18304	19780	19974
2032	7694	12203	22327	24666	24866
2033	9446	15299	24804	29704	29840
2034	11438	18780	28955	34324	34458
2035	13640	22558	32740	38235	38366
2040	27837	39854	43374	45767	45868
2045	40565	44066	44388	46043	45965
2050	44627	44198	44460	46372	46046



Technology Summary: Heat pumps

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

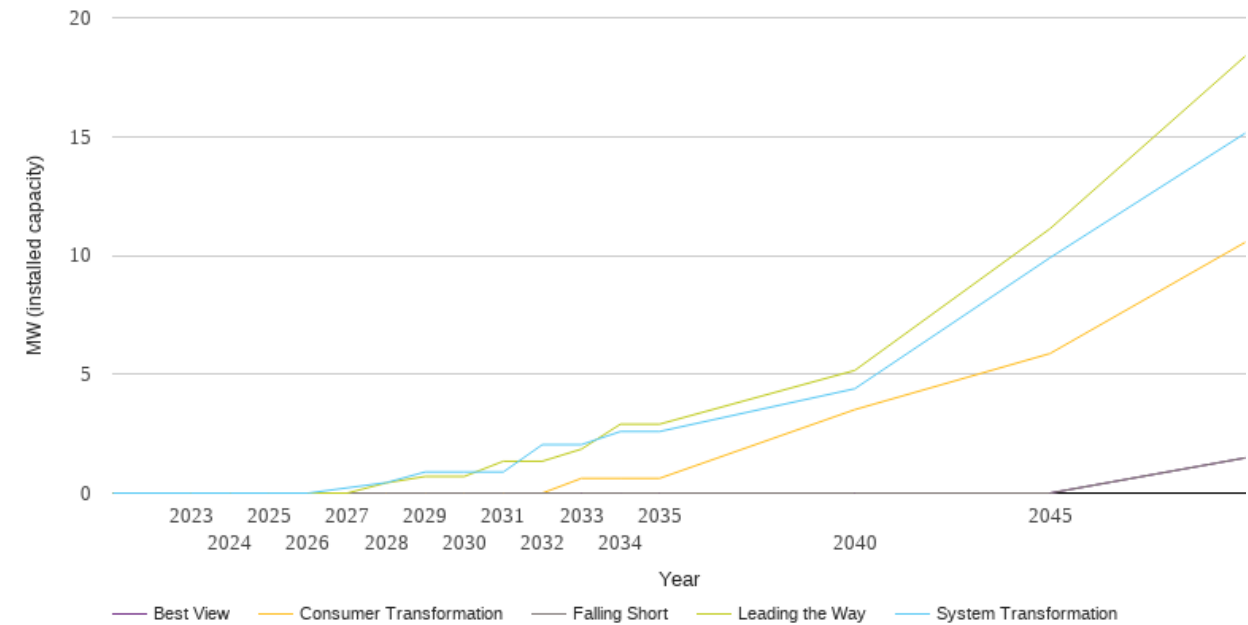
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	926	926	926	926	926
2023	1361	1508	1811	2860	1361
2024	1795	2109	2708	4818	1795
2025	2234	2740	3654	6827	2234
2026	3071	3444	5199	8767	3061
2027	3905	4144	6793	10778	3904
2028	4737	4817	8435	12826	4752
2029	5575	5491	10114	14922	5623
2030	6413	6158	11836	17055	6500
2031	7395	6856	14633	19666	7600
2032	8380	7545	17428	22266	8718
2033	9353	8250	20229	24869	9800
2034	10344	8950	23035	27473	10904
2035	11318	9659	25837	30059	11986
2040	18381	17622	39950	41333	20230
2045	24456	25858	50270	47707	26930
2050	31819	35327	55649	50091	34215



Technology Summary: Hydrogen electrolysis

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

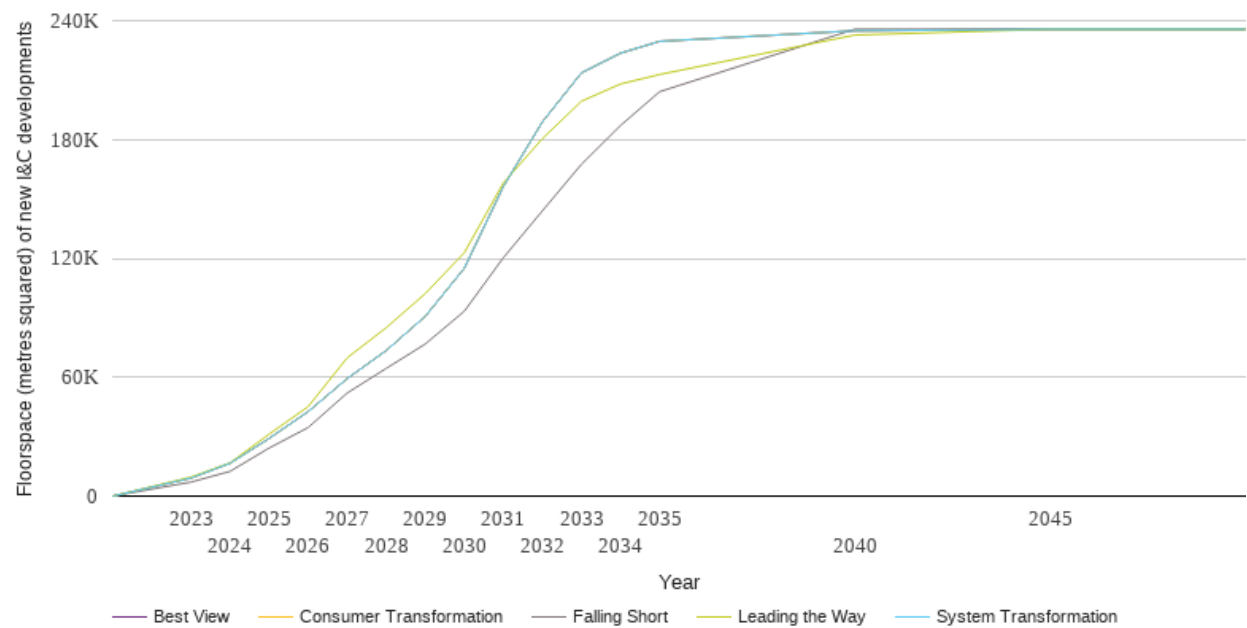
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.0	0.0	0.0	0.0
2026	0.0	0.0	0.0	0.0	0.0
2027	0.0	0.2	0.0	0.0	0.0
2028	0.0	0.4	0.0	0.4	0.0
2029	0.0	0.9	0.0	0.7	0.0
2030	0.0	0.9	0.0	0.7	0.0
2031	0.0	0.9	0.0	1.3	0.0
2032	0.0	2.0	0.0	1.3	0.0
2033	0.0	2.0	0.6	1.9	0.0
2034	0.0	2.6	0.6	2.9	0.0
2035	0.0	2.6	0.6	2.9	0.0
2040	0.0	4.4	3.5	5.2	0.0
2045	0.0	9.9	5.9	11.1	0.0
2050	1.5	15.1	10.6	18.4	1.5



Technology Summary: Non domestic

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

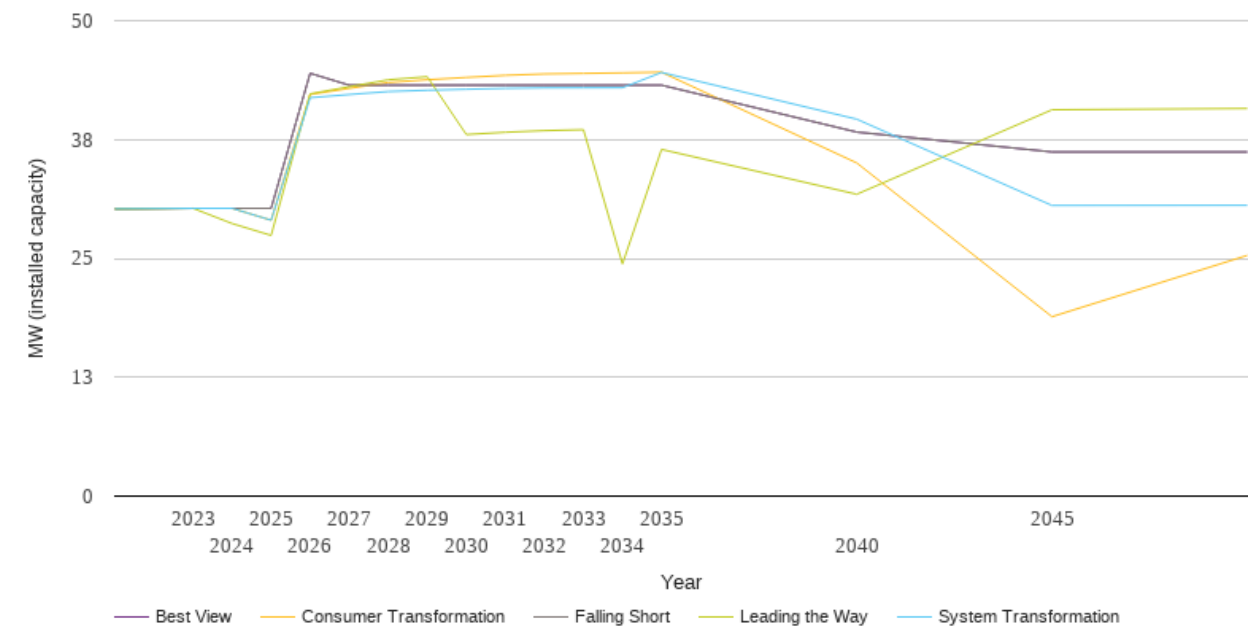
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	7076	9098	9098	9603	9098
2024	12482	16589	16589	16780	16589
2025	24262	29105	29105	31288	29105
2026	34612	42667	42667	45182	42667
2027	52048	59321	59321	69806	59321
2028	64456	73487	73487	85032	73487
2029	76771	90758	90758	102211	90758
2030	93312	115016	115016	122872	115016
2031	120335	156300	156300	158070	156300
2032	144015	188940	188940	180476	188940
2033	167514	213657	213657	199328	213657
2034	187064	223573	223573	208024	223573
2035	204129	229572	229572	212814	229572
2040	235690	234909	234909	232749	234909
2045	235690	235690	235690	235690	235690
2050	235690	235690	235690	235690	235690



Technology Summary: Other Distributed Generation

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

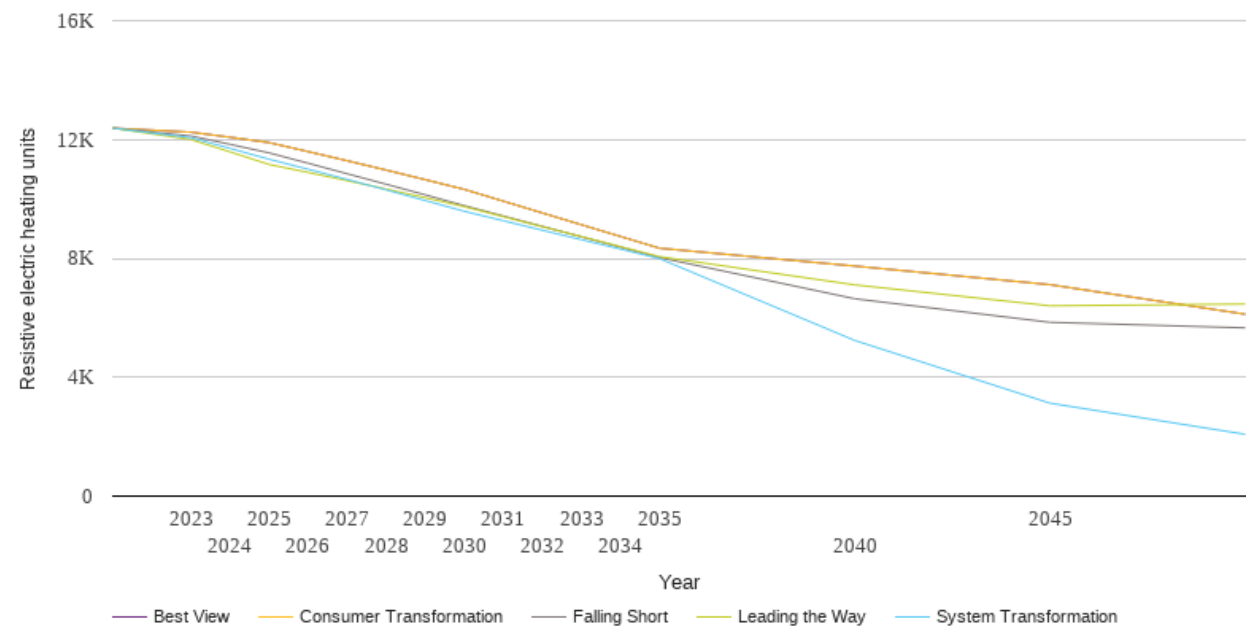
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	30.2	30.2	30.2	30.2	30.2
2023	30.3	30.3	30.3	30.3	30.3
2024	30.3	30.3	30.3	28.7	30.3
2025	30.3	29.0	29.0	27.4	30.3
2026	44.5	41.9	42.2	42.3	44.5
2027	43.2	42.2	42.9	43.1	43.2
2028	43.2	42.5	43.5	43.8	43.2
2029	43.2	42.7	43.8	44.1	43.2
2030	43.2	42.8	44.0	38.0	43.2
2031	43.2	42.9	44.3	38.3	43.2
2032	43.2	42.9	44.4	38.4	43.2
2033	43.2	42.9	44.5	38.5	43.2
2034	43.2	42.9	44.5	24.4	43.2
2035	43.2	44.6	44.6	36.5	43.2
2040	38.3	39.6	35.0	31.7	38.3
2045	36.2	30.6	18.9	40.6	36.2
2050	36.2	30.6	25.3	40.8	36.2



Technology Summary: Resistive electric heating

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

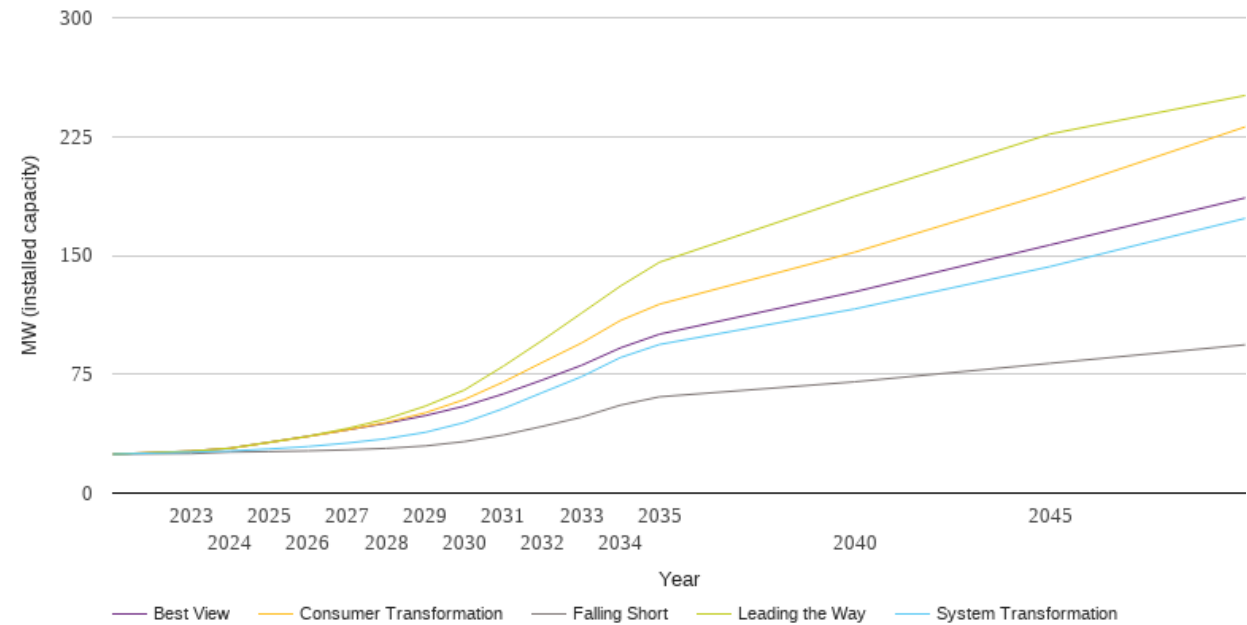
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	12384	12384	12384	12384	12384
2023	12118	12060	12248	12000	12248
2024	11839	11702	12077	11584	12077
2025	11551	11338	11896	11161	11896
2026	11203	11000	11594	10893	11594
2027	10848	10657	11286	10617	11286
2028	10495	10306	10972	10332	10972
2029	10138	9947	10649	10042	10649
2030	9775	9585	10322	9741	10322
2031	9425	9267	9926	9406	9926
2032	9077	8947	9529	9067	9529
2033	8727	8630	9132	8732	9132
2034	8376	8314	8738	8396	8738
2035	8027	7993	8342	8059	8342
2040	6642	5238	7742	7109	7742
2045	5848	3127	7116	6404	7116
2050	5662	2080	6122	6462	6122



Technology Summary: Solar Generation

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

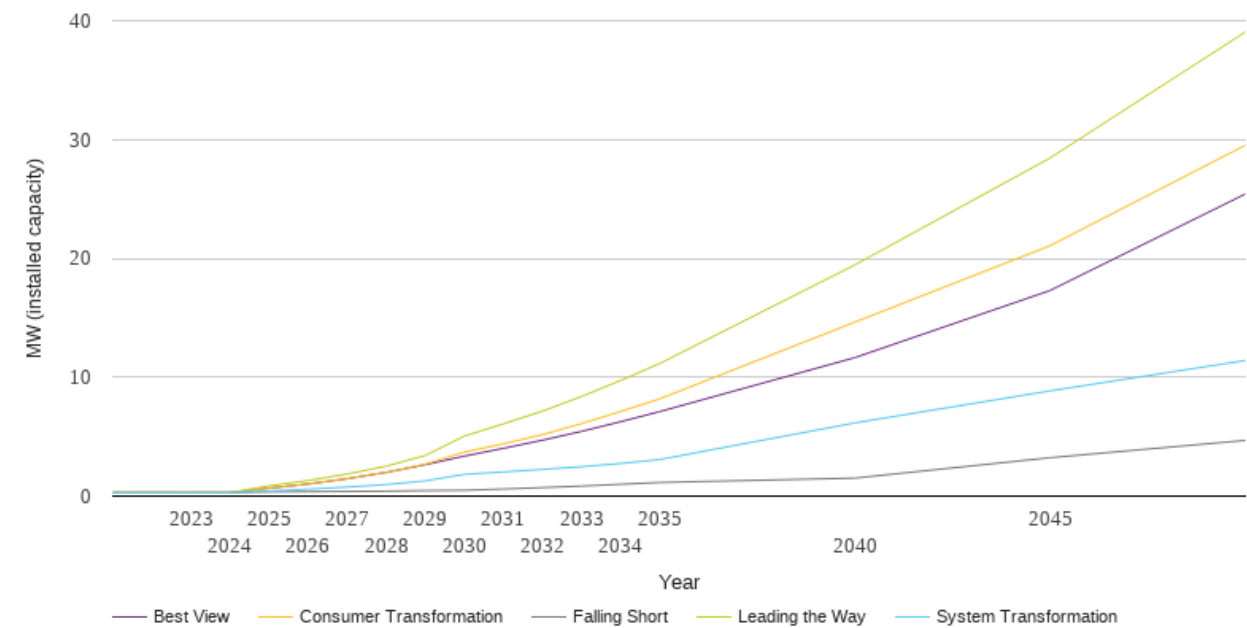
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	24.6	24.6	24.6	24.6	24.6
2023	24.9	25.8	26.4	26.5	26.5
2024	25.9	26.6	28.2	28.3	28.3
2025	26.2	27.8	31.9	32.0	32.0
2026	26.6	29.4	35.7	35.9	35.9
2027	27.3	31.6	39.9	40.8	39.9
2028	28.2	34.3	44.6	46.8	44.1
2029	29.8	38.3	50.7	54.9	48.9
2030	32.5	44.5	59.0	65.0	54.9
2031	36.7	53.3	70.1	80.1	62.6
2032	42.1	63.4	82.5	96.4	71.4
2033	47.9	73.4	94.7	113.5	80.6
2034	55.5	85.5	108.9	130.6	91.6
2035	60.8	93.8	119.2	145.7	100.3
2040	70.2	116.2	152.0	187.3	127.0
2045	81.9	142.9	189.6	226.6	156.6
2050	93.6	173.4	231.1	250.9	186.3



Technology Summary: Storage

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

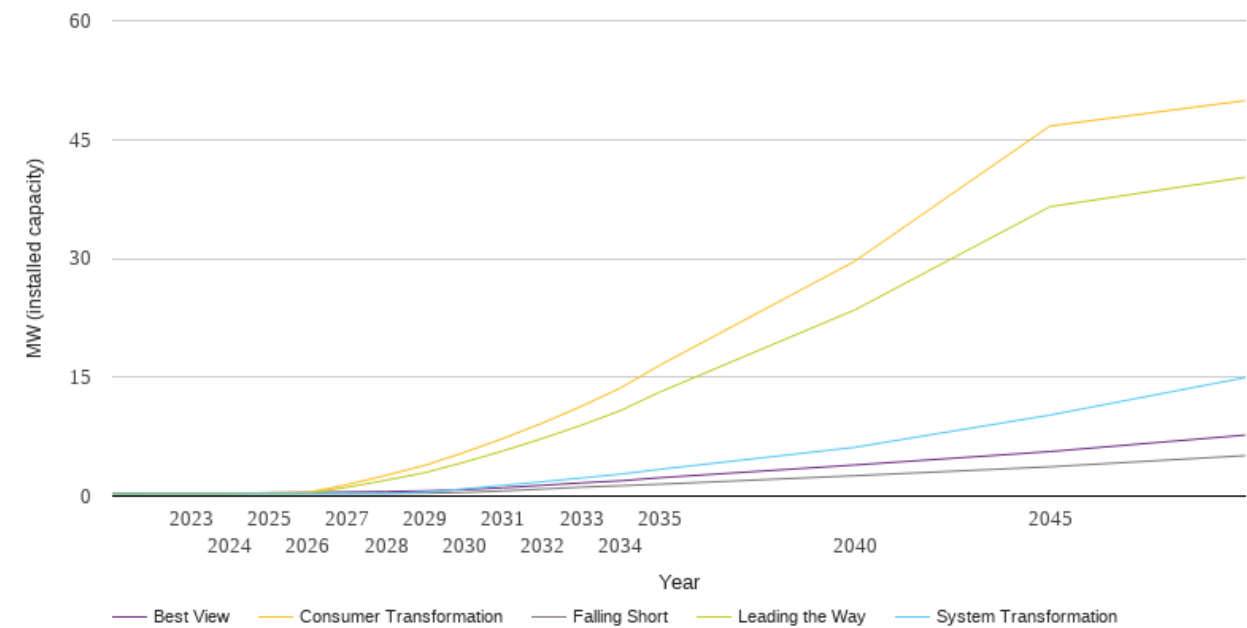
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0.3	0.3	0.3	0.3	0.3
2023	0.3	0.3	0.3	0.3	0.3
2024	0.3	0.3	0.3	0.3	0.3
2025	0.4	0.4	0.7	0.9	0.7
2026	0.4	0.6	1.0	1.3	1.0
2027	0.4	0.8	1.5	1.9	1.5
2028	0.4	1.0	2.0	2.5	2.0
2029	0.5	1.3	2.7	3.4	2.6
2030	0.5	1.8	3.7	5.0	3.4
2031	0.6	2.0	4.4	6.1	4.0
2032	0.7	2.2	5.2	7.1	4.7
2033	0.8	2.5	6.1	8.4	5.4
2034	1.0	2.7	7.1	9.7	6.3
2035	1.1	3.1	8.2	11.1	7.1
2040	1.5	6.2	14.6	19.4	11.6
2045	3.2	8.9	21.1	28.4	17.3
2050	4.7	11.4	29.5	39.0	25.4



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	0.3	0.3	0.3	0.3	0.3
2023	0.3	0.3	0.3	0.3	0.3
2024	0.3	0.3	0.4	0.3	0.4
2025	0.3	0.3	0.4	0.3	0.4
2026	0.3	0.3	0.5	0.4	0.5
2027	0.3	0.3	1.5	1.1	0.5
2028	0.3	0.3	2.6	2.0	0.6
2029	0.4	0.5	3.9	3.0	0.7
2030	0.5	0.9	5.5	4.3	0.8
2031	0.7	1.4	7.3	5.7	1.1
2032	0.9	1.8	9.2	7.3	1.4
2033	1.1	2.3	11.3	9.0	1.7
2034	1.3	2.8	13.6	10.8	1.9
2035	1.5	3.4	16.5	13.1	2.3
2040	2.6	6.2	29.6	23.5	3.9
2045	3.7	10.2	46.7	36.5	5.6
2050	5.1	15.0	49.9	40.2	7.7



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

