

# Distribution Future Energy Scenarios 2022

Local Authority:  
Peterborough

## 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 Peterborough covered by the NGED licence areas.



## Scenario Summary

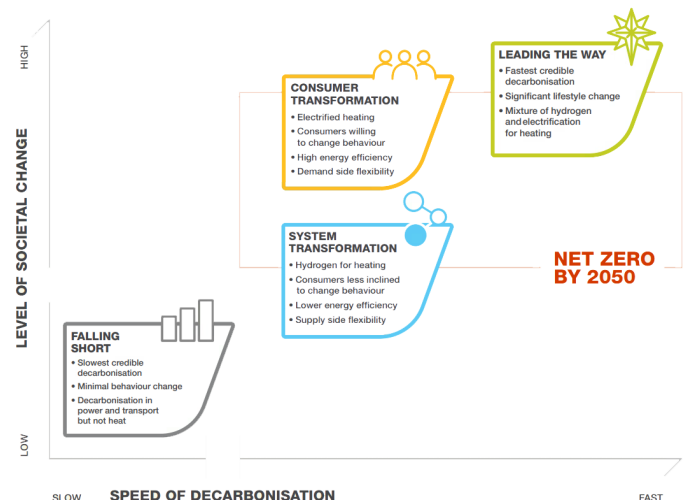
This DFES scenario framework includes three scenarios that are compliant with UK government targets of Net Zero greenhouse gas emissions by 2050. A summary of each scenario is below:

**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 Peterborough 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	0	0	0	0
Domestic	New dwellings	0	276	290	290	314	336	325	325	318
Electric vehicles	Electric vehicles	181	118 6	143 4	262 2	260 0	759 6	605 3	603 7	533 3
EV Charge Point	EV charge points	95	531	757	144 6	158 8	437 2	408 6	437 9	435 0
Heat pumps	Heat pump installations	106	719	911	141 0	196 0	335 1	386 0	616 6	584 7
Hydrogen electrolysis	MW (installed capacity)	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.4
Non domestic	Floorspace (metres squared) of new I&C developments	0	0	0	0	0	0	0	0	0
Other Distributed Generation	MW (installed capacity)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Resistive electric heating	Resistive electric heating units	320	322	298	316	310	374	185	288	319
Solar Generation	MW (installed capacity)	1.6	2.8	4.2	4.9	3.6	14. 8	24. 3	27. 2	23. 8
Storage	MW (installed capacity)	0.0	0.0	0.2	0.3	0.4	0.6	1.3	2.8	3.8
Wind	MW (installed capacity)	0.1	0.1	0.2	1.0	0.7	0.8	2.5	8.6	6.9

## 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.

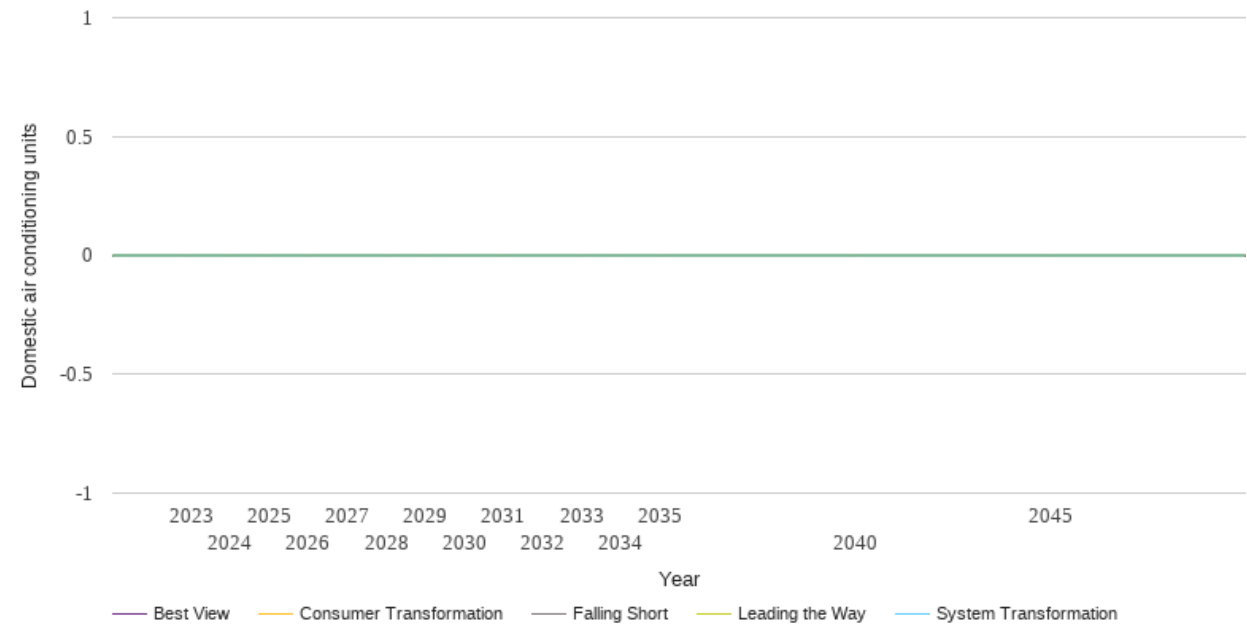
If you have any comments or queries regarding these reports, please contact

[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.

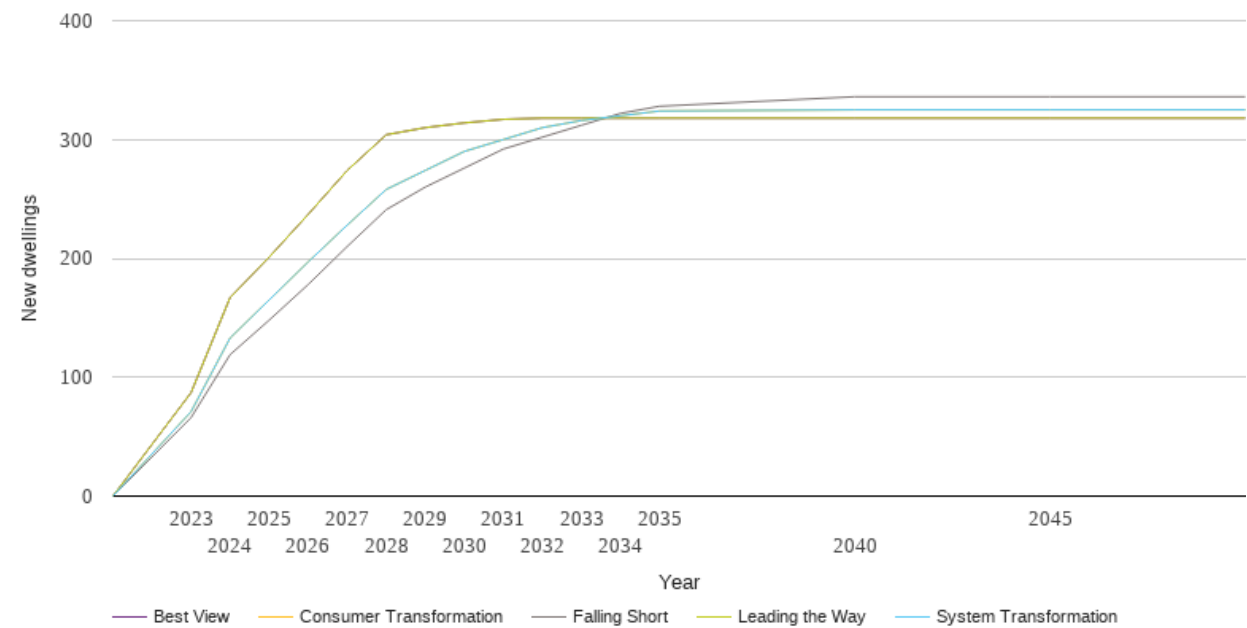
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	0	0	0	0	0
2024	0	0	0	0	0
2025	0	0	0	0	0
2026	0	0	0	0	0
2027	0	0	0	0	0
2028	0	0	0	0	0
2029	0	0	0	0	0
2030	0	0	0	0	0
2031	0	0	0	0	0
2032	0	0	0	0	0
2033	0	0	0	0	0
2034	0	0	0	0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



# Technology Summary: Domestic

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

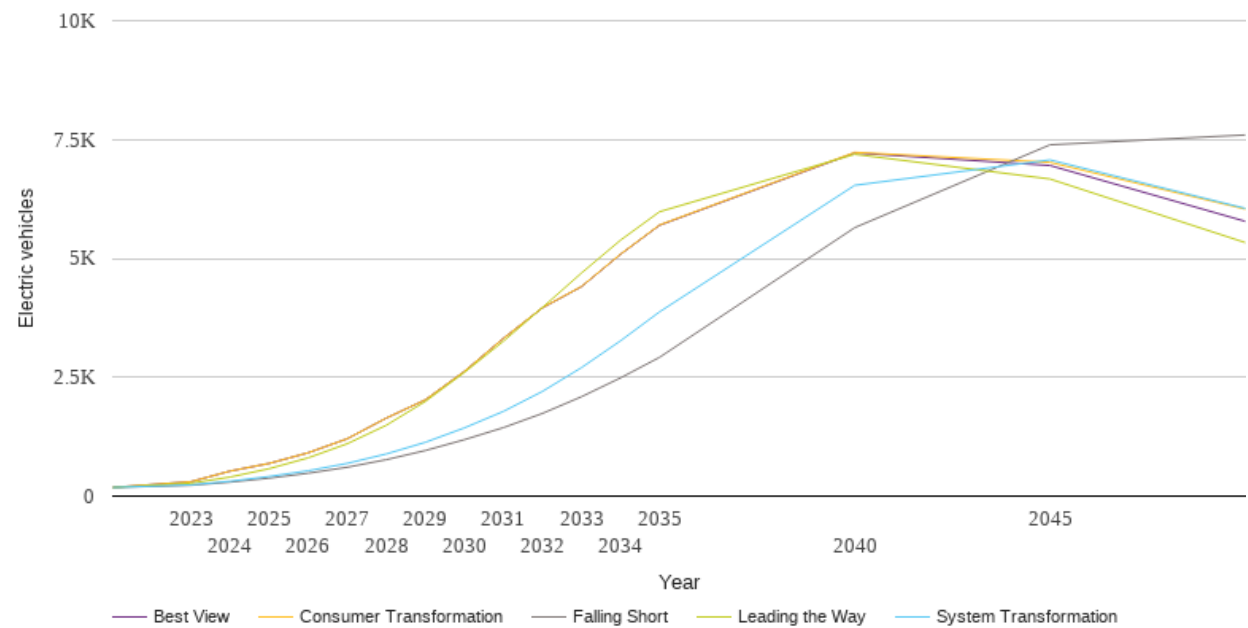
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	66	71	71	87	87
2024	119	133	133	167	167
2025	148	165	165	201	201
2026	178	197	197	237	237
2027	210	228	228	274	274
2028	241	258	258	304	304
2029	260	274	274	310	310
2030	276	290	290	314	314
2031	292	300	300	317	317
2032	302	310	310	318	318
2033	312	316	316	318	318
2034	322	320	320	318	318
2035	328	324	324	318	318
2040	336	325	325	318	318
2045	336	325	325	318	318
2050	336	325	325	318	318



# Technology Summary: Electric vehicles

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

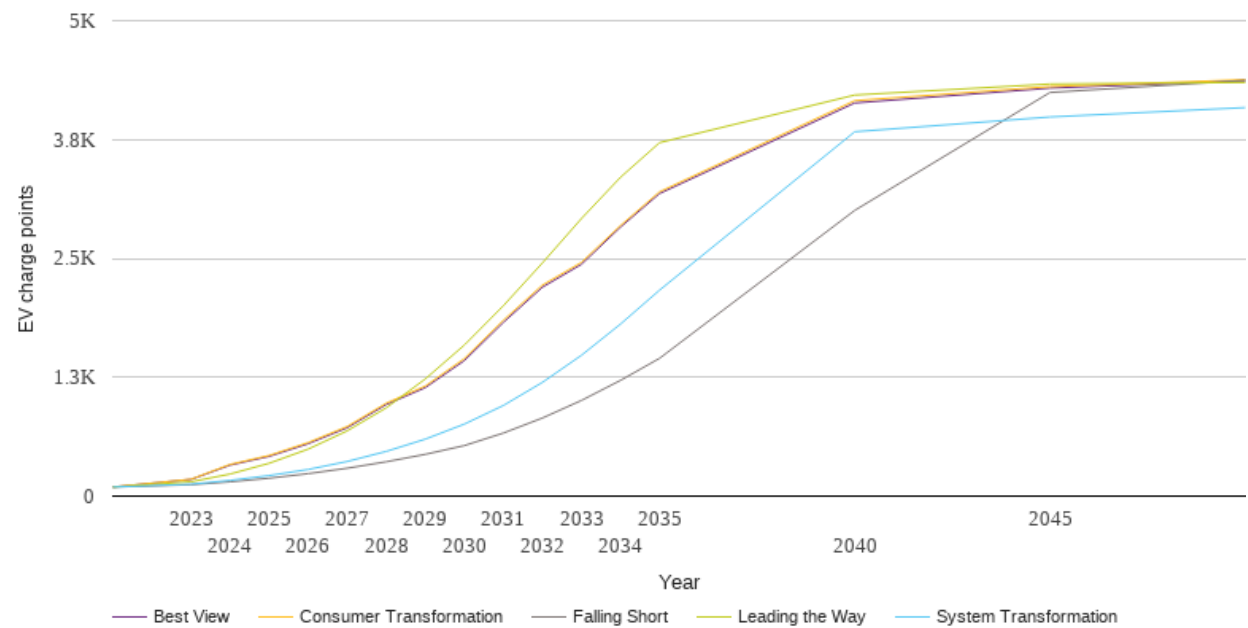
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	181	181	181	181	181
2023	228	236	303	271	303
2024	294	312	526	400	526
2025	377	412	687	576	687
2026	481	533	911	804	911
2027	607	688	1206	1101	1206
2028	766	886	1640	1489	1640
2029	958	1131	2024	1990	2024
2030	1186	1434	2622	2600	2623
2031	1440	1781	3317	3257	3319
2032	1739	2202	3963	3966	3959
2033	2090	2702	4409	4692	4405
2034	2486	3266	5089	5383	5085
2035	2919	3875	5703	5981	5697
2040	5647	6537	7230	7190	7220
2045	7389	7071	7020	6670	6954
2050	7596	6053	6037	5333	5780



# Technology Summary: EV Charge Point

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

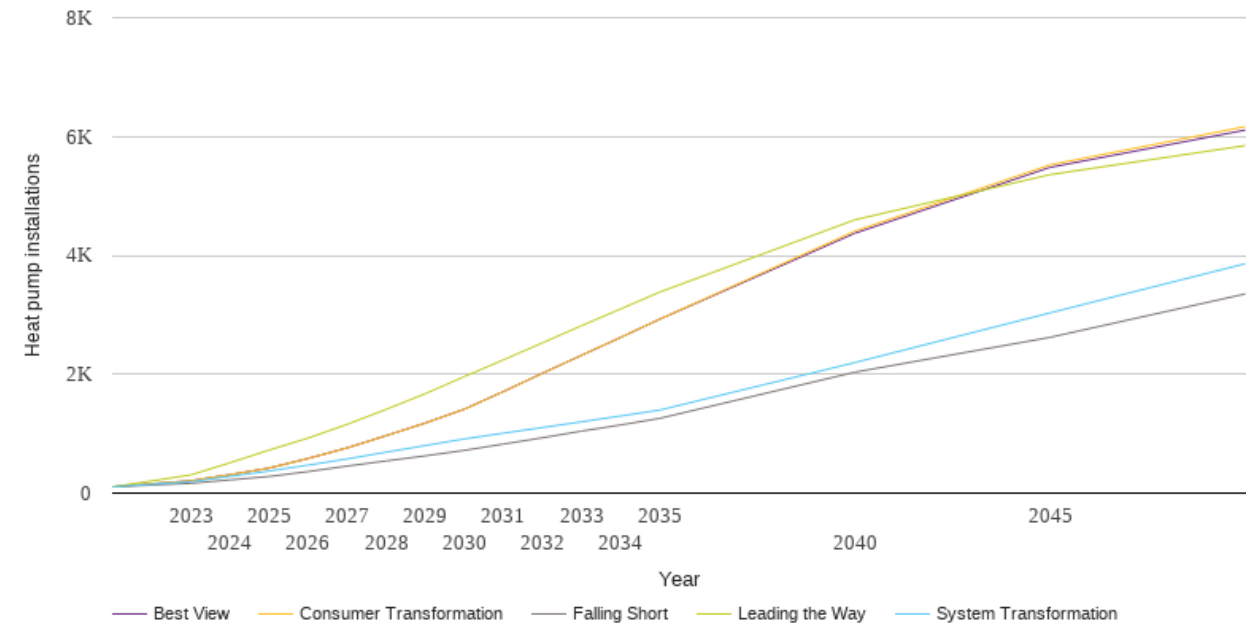
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	95	95	95	95	95
2023	120	125	177	150	175
2024	150	165	333	232	326
2025	188	216	427	345	418
2026	236	280	563	494	551
2027	293	364	732	686	719
2028	361	470	977	928	963
2029	439	599	1157	1232	1141
2030	531	757	1446	1588	1425
2031	663	953	1849	2002	1827
2032	821	1196	2219	2452	2197
2033	1006	1481	2458	2919	2438
2034	1217	1809	2845	3353	2829
2035	1449	2166	3200	3717	3182
2040	3005	3832	4159	4218	4135
2045	4245	3987	4307	4334	4291
2050	4372	4086	4379	4350	4370



# Technology Summary: Heat pumps

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

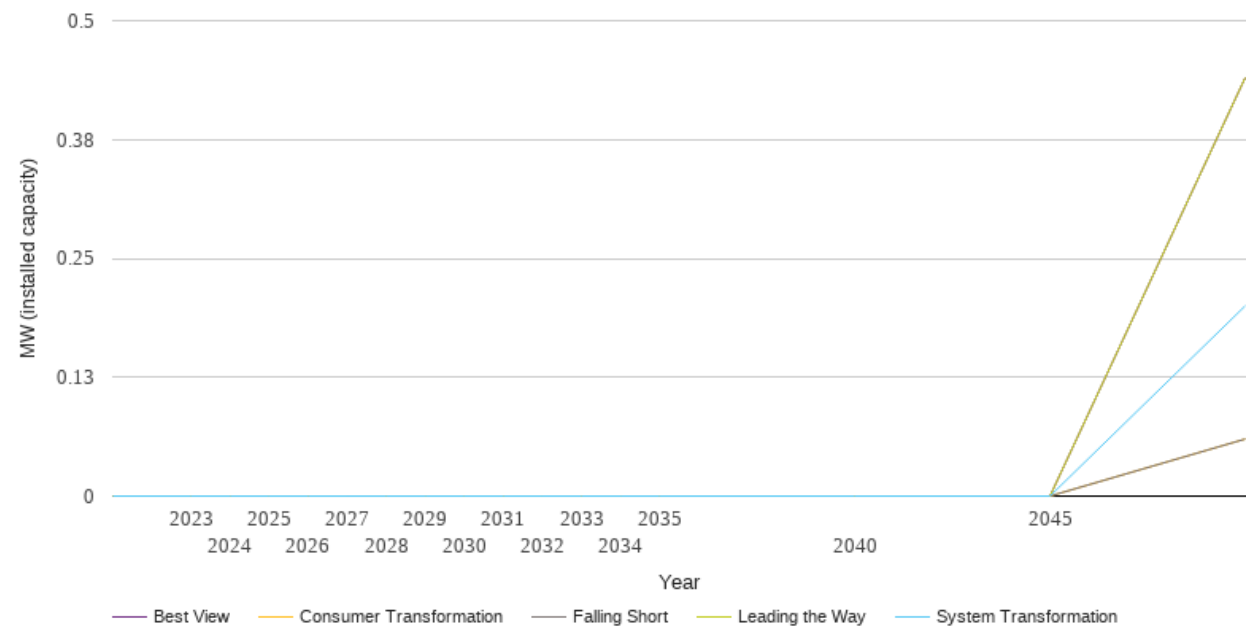
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	106	106	106	106	106
2023	164	191	208	306	208
2024	222	281	310	511	310
2025	279	371	421	724	421
2026	362	471	582	926	583
2027	455	575	760	1157	761
2028	541	689	966	1409	967
2029	627	800	1178	1673	1179
2030	719	911	1410	1960	1412
2031	825	1008	1707	2241	1708
2032	931	1103	2015	2528	2016
2033	1043	1199	2317	2816	2318
2034	1146	1297	2618	3097	2618
2035	1257	1396	2925	3381	2925
2040	2034	2196	4408	4598	4372
2045	2620	3032	5523	5359	5481
2050	3351	3860	6166	5847	6108



# 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	0.2	0.1	0.4	0.4



# 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	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	0	0	0	0	0
2045	0	0	0	0	0
2050	0	0	0	0	0



# Technology Summary: Other Distributed Generation

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

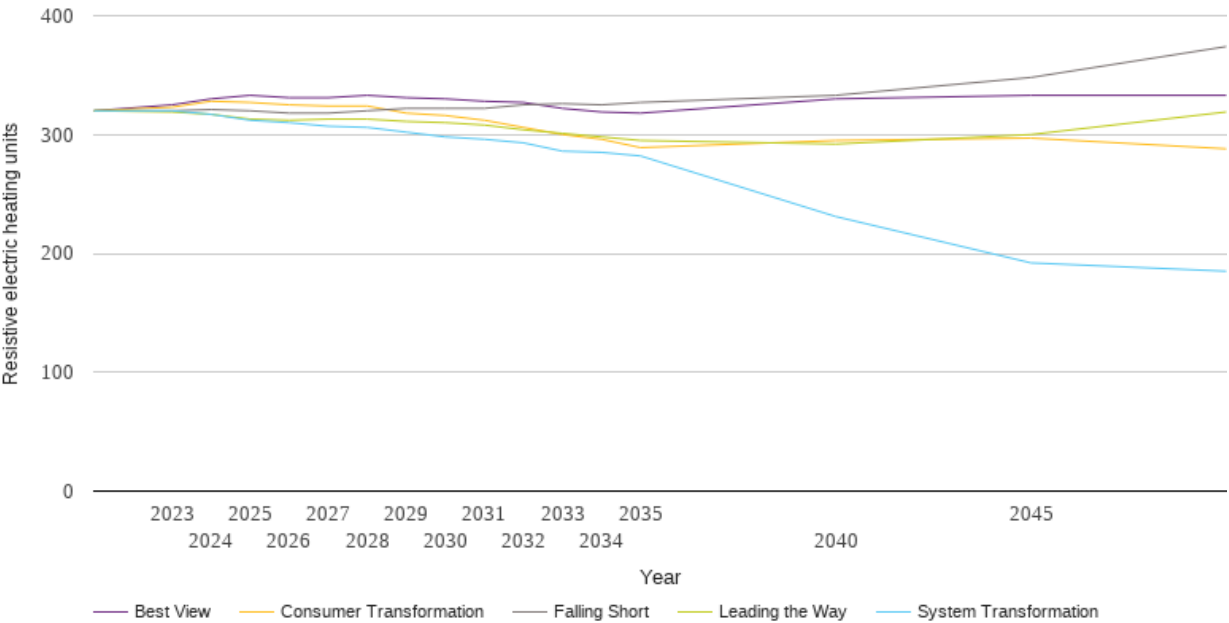
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.0	0.0	0.0	0.0
2026	0.0	0.0	0.0	0.0	0.0
2027	0.0	0.0	0.0	0.0	0.0
2028	0.0	0.0	0.0	0.0	0.0
2029	0.0	0.0	0.0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



# Technology Summary: Resistive electric heating

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

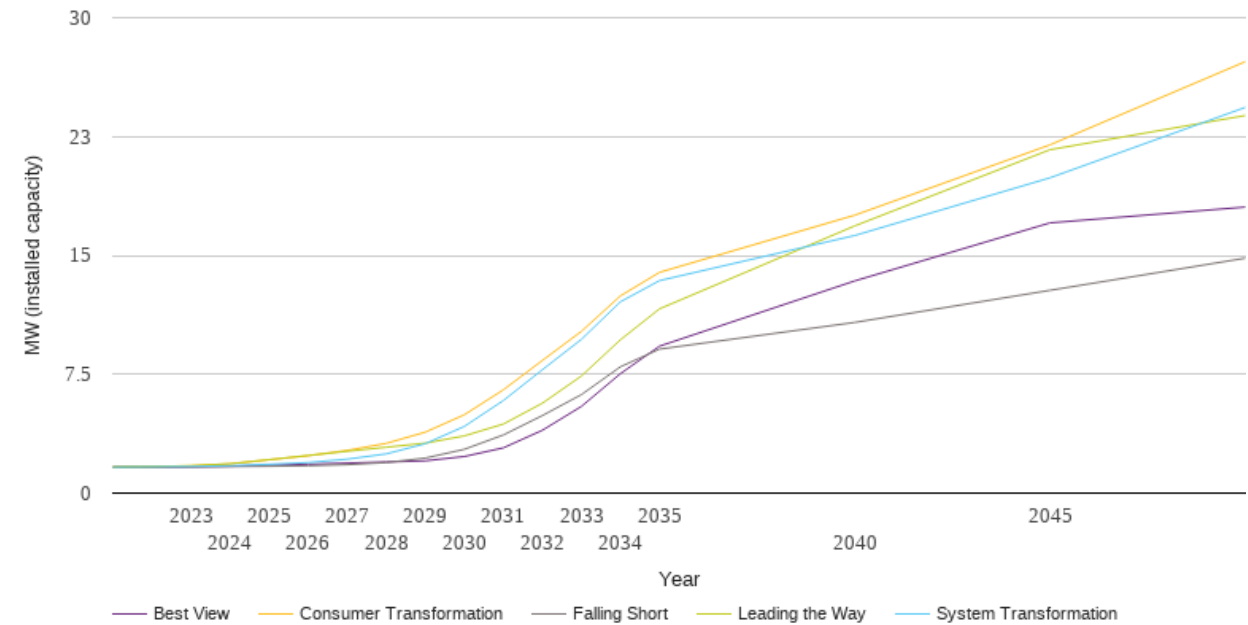
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	320	320	320	320	320
2023	320	320	323	319	325
2024	321	317	328	317	330
2025	320	312	327	313	333
2026	318	310	325	312	331
2027	318	307	324	313	331
2028	320	306	324	313	333
2029	322	302	318	311	331
2030	322	298	316	310	330
2031	322	296	312	308	328
2032	325	293	306	304	327
2033	326	286	300	301	322
2034	325	285	296	298	319
2035	327	282	289	295	318
2040	333	231	295	292	330
2045	348	192	297	300	333
2050	374	185	288	319	333



# Technology Summary: Solar Generation

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

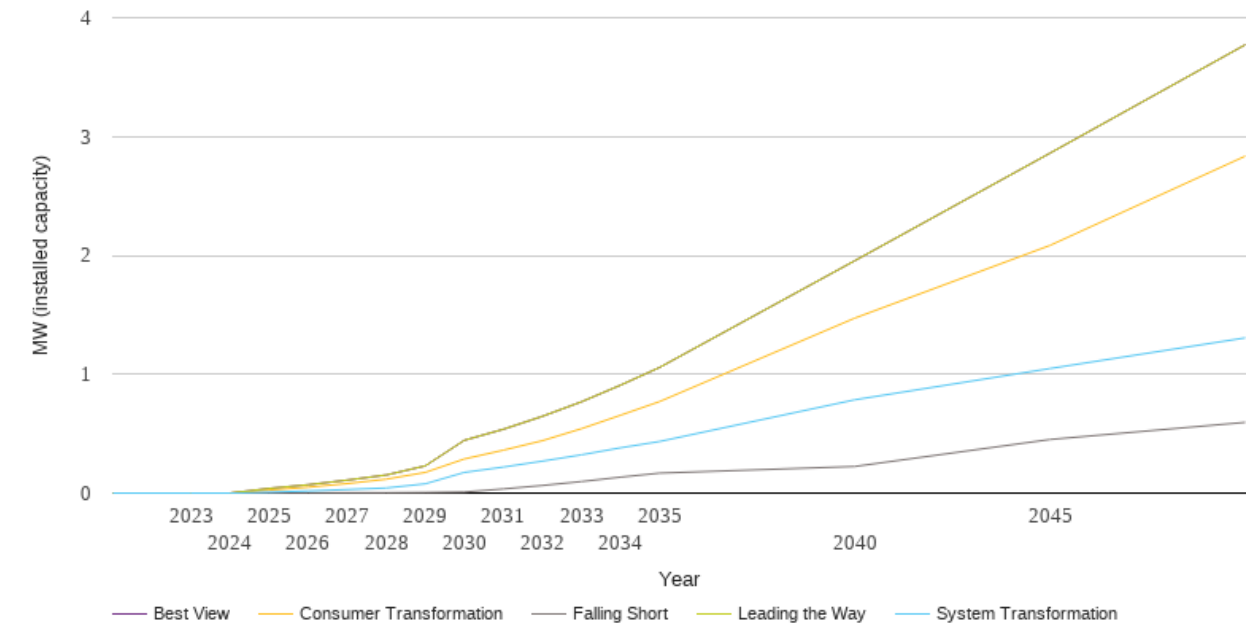
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	1.6	1.6	1.6	1.6	1.6
2023	1.7	1.7	1.7	1.7	1.7
2024	1.7	1.7	1.8	1.9	1.7
2025	1.7	1.8	2.1	2.1	1.8
2026	1.7	1.9	2.4	2.4	1.8
2027	1.8	2.1	2.7	2.6	1.9
2028	1.9	2.5	3.1	2.9	2.0
2029	2.2	3.1	3.8	3.2	2.0
2030	2.8	4.2	4.9	3.6	2.3
2031	3.7	5.8	6.5	4.4	2.9
2032	4.9	7.8	8.4	5.7	4.0
2033	6.2	9.7	10.2	7.4	5.5
2034	8.0	12.1	12.4	9.7	7.5
2035	9.1	13.4	13.9	11.6	9.3
2040	10.8	16.3	17.5	16.9	13.4
2045	12.8	19.9	22.0	21.7	17.1
2050	14.8	24.3	27.2	23.8	18.0



# Technology Summary: Storage

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

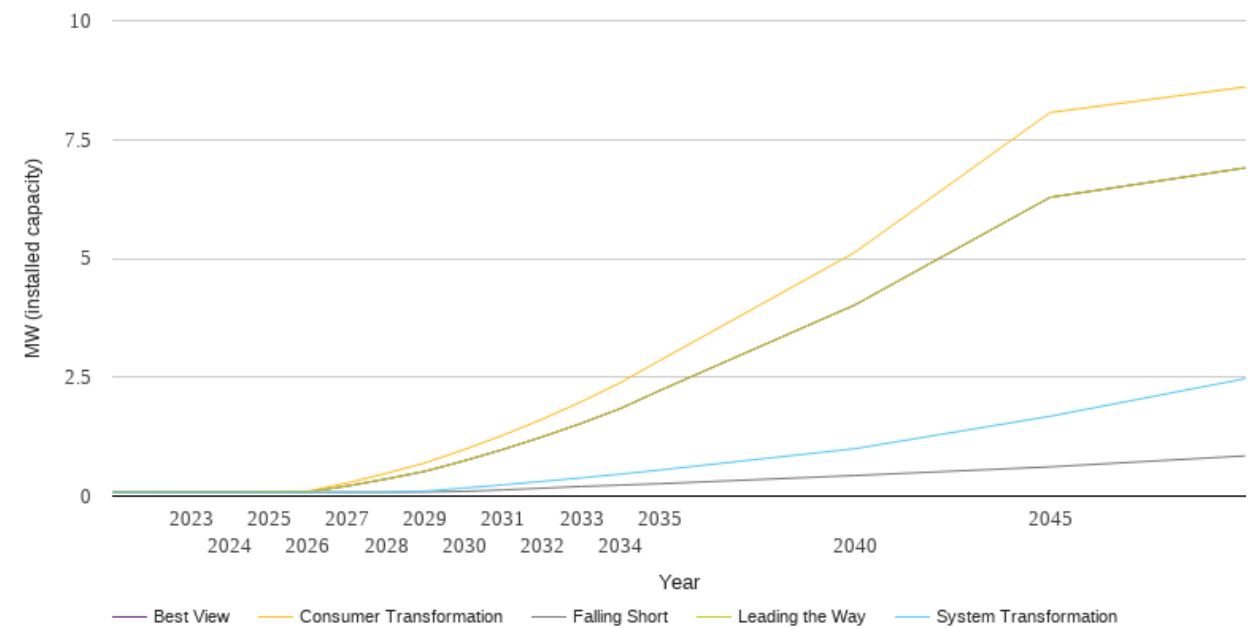
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.0	0.0	0.0	0.0
2026	0.0	0.0	0.0	0.1	0.1
2027	0.0	0.0	0.1	0.1	0.1
2028	0.0	0.0	0.1	0.2	0.2
2029	0.0	0.1	0.2	0.2	0.2
2030	0.0	0.2	0.3	0.4	0.4
2031	0.0	0.2	0.4	0.5	0.5
2032	0.1	0.3	0.4	0.6	0.6
2033	0.1	0.3	0.5	0.8	0.8
2034	0.1	0.4	0.7	0.9	0.9
2035	0.2	0.4	0.8	1.1	1.1
2040	0.2	0.8	1.5	2.0	2.0
2045	0.5	1.0	2.1	2.9	2.9
2050	0.6	1.3	2.8	3.8	3.8



# 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	0.1	0.1	0.1	0.1	0.1
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	0.1	0.1	0.1	0.1
2027	0.1	0.1	0.3	0.2	0.2
2028	0.1	0.1	0.5	0.4	0.4
2029	0.1	0.1	0.7	0.5	0.5
2030	0.1	0.2	1.0	0.7	0.7
2031	0.1	0.2	1.3	1.0	1.0
2032	0.2	0.3	1.6	1.2	1.2
2033	0.2	0.4	2.0	1.5	1.5
2034	0.2	0.5	2.4	1.8	1.8
2035	0.3	0.5	2.8	2.2	2.2
2040	0.4	1.0	5.1	4.0	4.0
2045	0.6	1.7	8.1	6.3	6.3
2050	0.8	2.5	8.6	6.9	6.9



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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