

# Distribution Future Energy Scenarios 2022

Local Authority:  
South Holland

## What are Distribution Future Energy Scenarios?

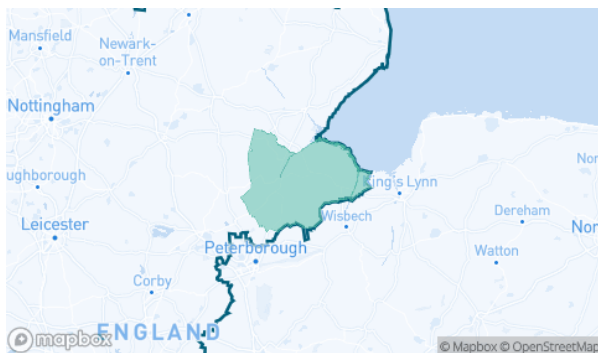
National Grid run Distribution Future Energy Scenarios (DFES) on an annual cycle for all licence areas, and represent a range of credible future scenarios of what could connect to the distribution network.

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 South Holland 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 South Holland 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	153	91	91	0	16531	7394	7394	0
Domestic	New dwellings	0	2303	2469	2469	2868	4451	4356	4356	4286
Electric vehicles	Electric vehicles	1317	8148	10691	19666	19680	61382	53670	52642	46759
EV Charge Point	EV charge points	657	3587	5660	10549	11656	33964	35280	36736	36325
Heat pumps	Heat pump installations	1485	4836	5479	8988	13201	24484	27933	43347	39486
Hydrogen electrolysis	MW (installed capacity)	0.0	0.0	0.5	0.0	0.0	1.9	8.7	4.5	6.4
Non domestic	Floorspace (metres squared) of new I&C developments	0	282773	338588	338588	363609	650594	650594	650594	650594
Other Distributed Generation	MW (installed capacity)	1.4	1.4	5.1	12.0	13.6	0.8	5.8	15.6	18.5
Resistive electric heating	Resistive electric heating units	4193	3575	3447	3663	3518	2665	1201	2552	2716
Solar Generation	MW (installed capacity)	19.0	22.2	27.0	35.6	36.0	32.1	55.4	92.2	96.0
Storage	MW (installed capacity)	0.0	0.2	0.8	1.9	2.4	2.8	7.4	19.3	24.3
Wind	MW (installed capacity)	2.7	2.7	2.7	2.7	2.7	2.7	3.9	5.3	5.3

## 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.

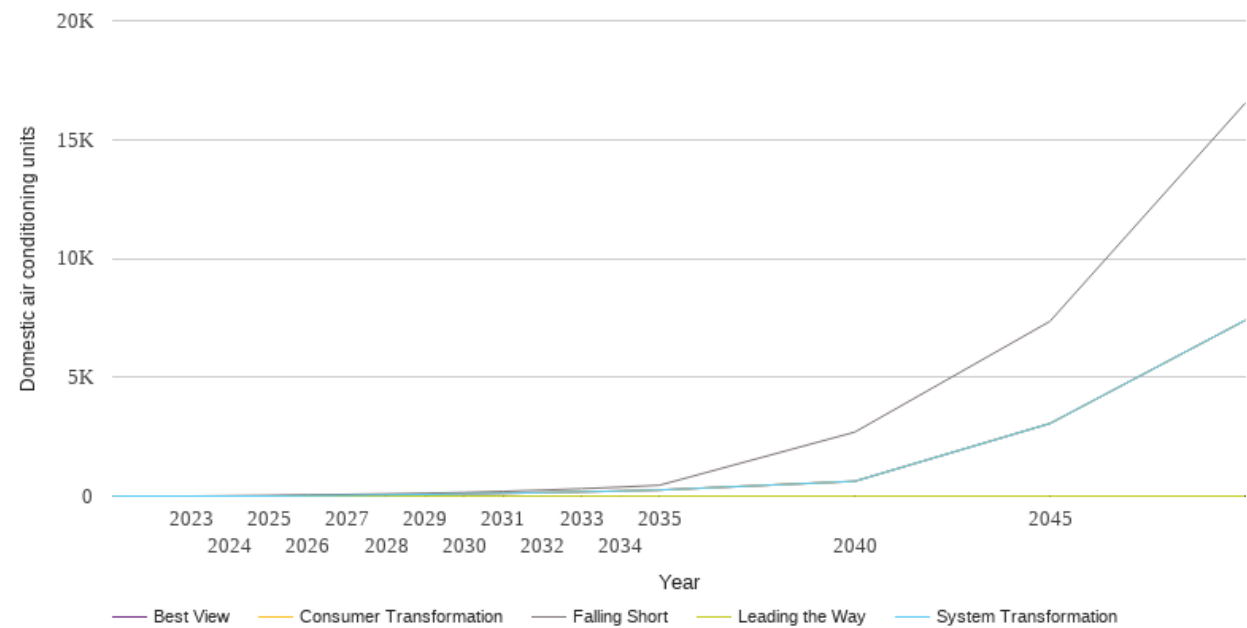
If you have any comments or queries regarding these reports, please contact

[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.

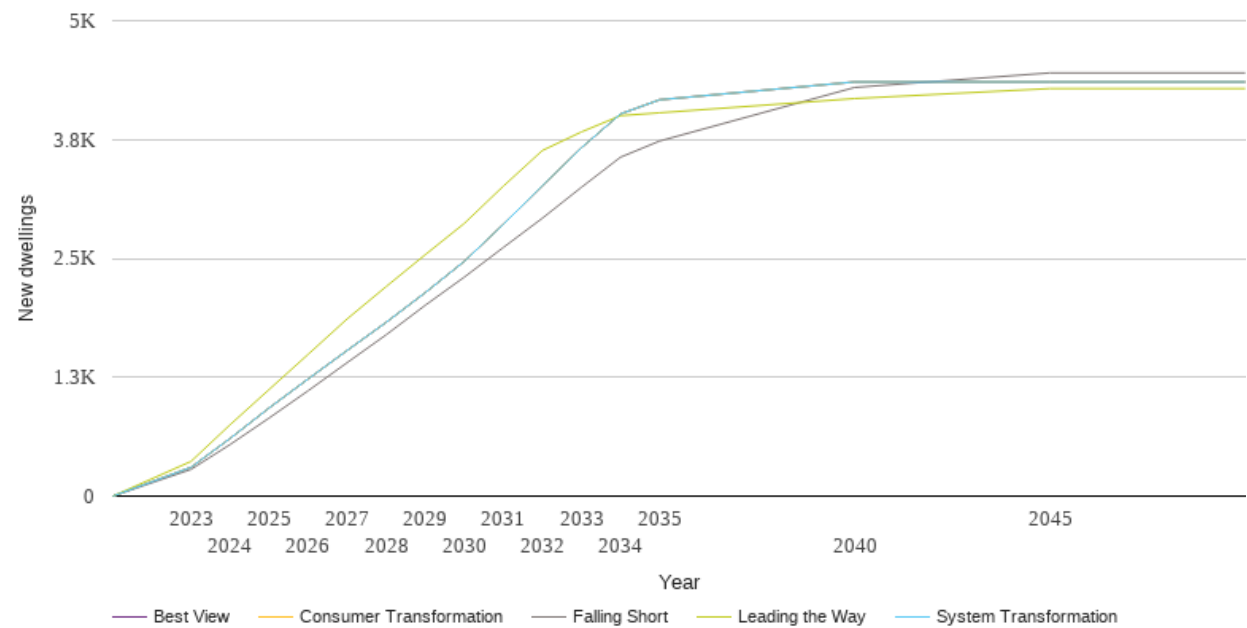
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	0	0	0	0	0
2024	14	0	0	0	0
2025	30	0	0	0	0
2026	48	14	14	0	14
2027	69	30	30	0	30
2028	93	48	48	0	48
2029	121	68	68	0	68
2030	153	91	91	0	91
2031	198	117	117	0	117
2032	250	146	146	0	146
2033	310	178	178	0	178
2034	379	215	215	0	215
2035	457	256	256	0	256
2040	2692	623	623	0	623
2045	7352	3054	3054	0	3054
2050	16531	7394	7394	0	7394



# Technology Summary: Domestic

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

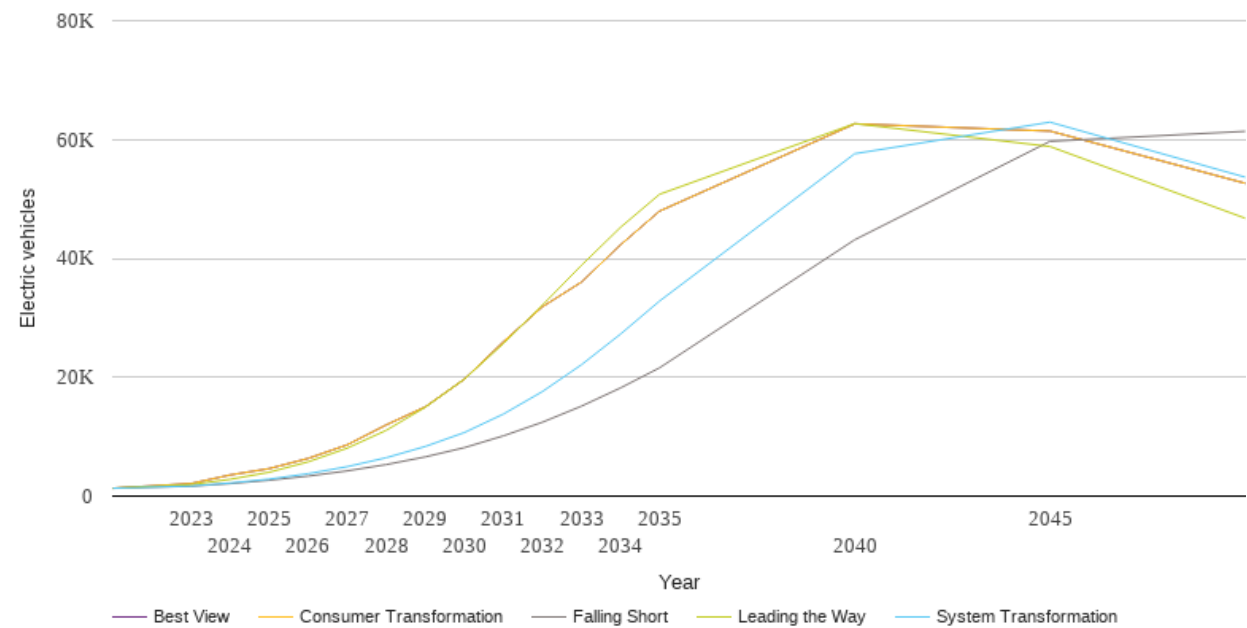
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	281	303	303	365	303
2024	542	606	606	750	606
2025	821	927	927	1121	927
2026	1108	1232	1232	1491	1232
2027	1404	1532	1532	1864	1532
2028	1697	1828	1828	2204	1828
2029	2007	2140	2140	2539	2140
2030	2303	2469	2469	2868	2469
2031	2615	2859	2859	3260	2859
2032	2923	3264	3264	3635	3264
2033	3248	3664	3664	3830	3664
2034	3564	4019	4019	4001	4019
2035	3734	4168	4168	4031	4168
2040	4298	4356	4356	4181	4356
2045	4451	4356	4356	4286	4356
2050	4451	4356	4356	4286	4356



# Technology Summary: Electric vehicles

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

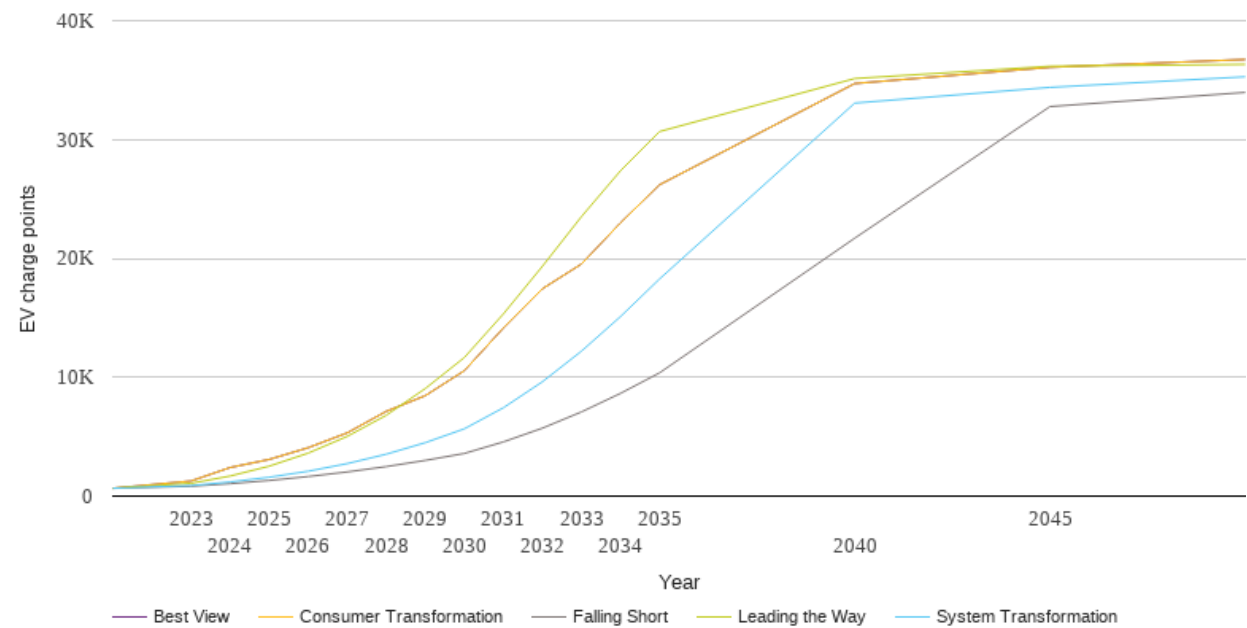
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	1317	1317	1317	1317	1317
2023	1661	1689	2105	1931	2105
2024	2107	2196	3552	2819	3552
2025	2664	2848	4622	4010	4622
2026	3365	3767	6338	5763	6338
2027	4240	4954	8625	8070	8625
2028	5303	6458	11983	11066	11983
2029	6597	8350	15016	14951	15016
2030	8148	10691	19666	19680	19666
2031	10136	13802	25976	25646	25976
2032	12430	17588	31855	32136	31855
2033	15135	22104	36013	38839	36013
2034	18199	27255	42277	45220	42277
2035	21586	32820	47954	50790	47954
2040	43136	57614	62640	62677	62640
2045	59697	62925	61426	58827	61426
2050	61382	53670	52642	46759	52642



# 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	657	657	657	657	657
2023	826	883	1267	1074	1267
2024	1045	1188	2400	1685	2400
2025	1314	1585	3082	2515	3082
2026	1644	2092	4069	3613	4069
2027	2032	2734	5318	5022	5318
2028	2483	3525	7131	6799	7131
2029	3003	4495	8451	9048	8451
2030	3587	5660	10549	11656	10549
2031	4559	7432	14140	15327	14140
2032	5715	9620	17445	19337	17445
2033	7082	12196	19527	23514	19527
2034	8642	15103	22995	27371	22995
2035	10368	18270	26195	30671	26195
2040	21702	33068	34712	35132	34712
2045	32774	34389	36077	36166	36077
2050	33964	35280	36736	36325	36736

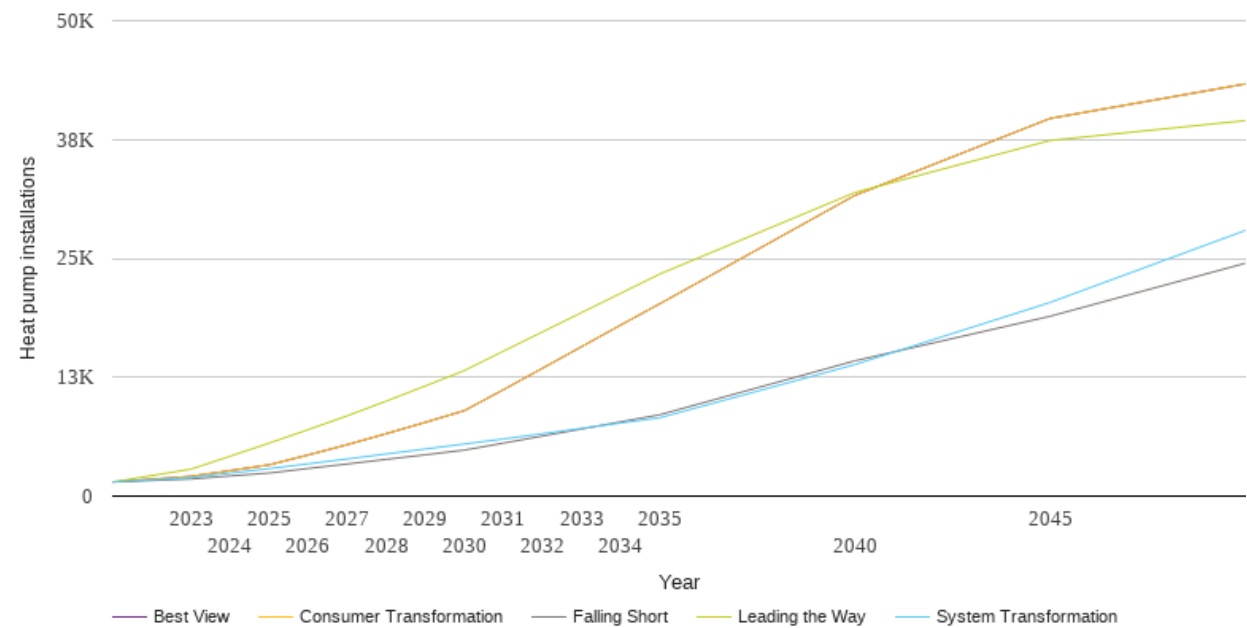




# Technology Summary: Heat pumps

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

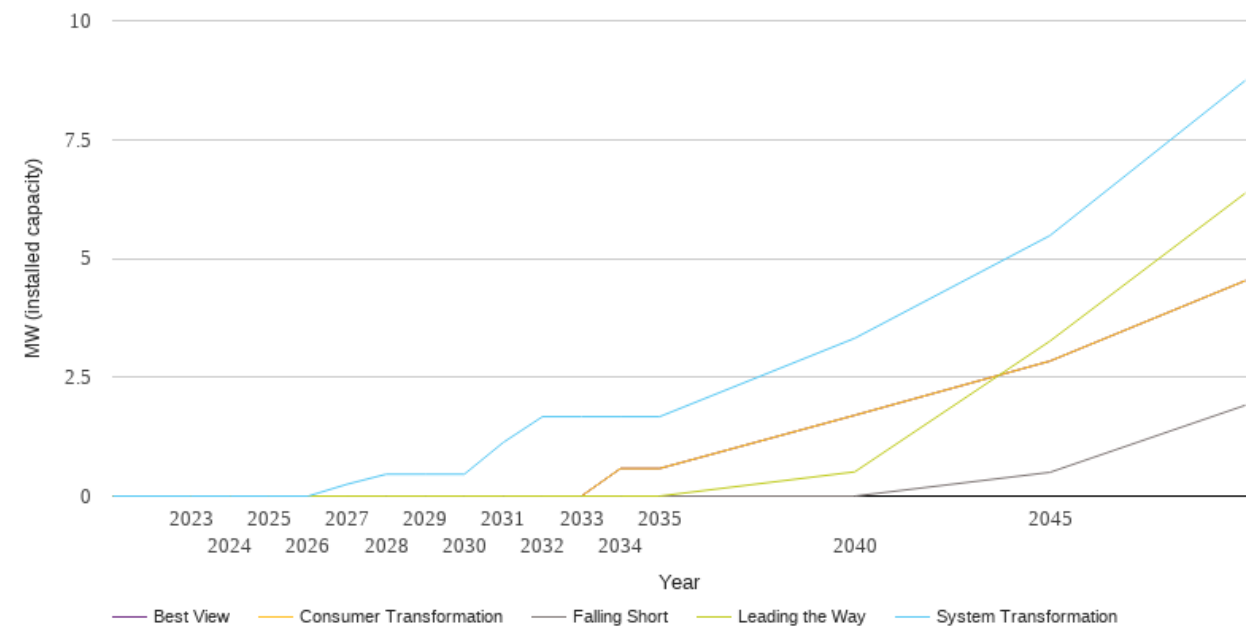
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	1485	1485	1485	1485	1485
2023	1798	1943	2079	2834	2079
2024	2114	2411	2675	4189	2675
2025	2424	2892	3283	5571	3283
2026	2904	3394	4326	6985	4326
2027	3377	3905	5409	8444	5409
2028	3863	4431	6565	9991	6565
2029	4344	4956	7760	11581	7760
2030	4836	5479	8988	13201	8988
2031	5572	6012	11187	15236	11187
2032	6316	6559	13438	17264	13438
2033	7058	7118	15705	19292	15705
2034	7805	7686	17978	21315	17978
2035	8547	8228	20212	23341	20212
2040	14224	13828	31619	31926	31619
2045	18908	20361	39714	37400	39714
2050	24484	27933	43347	39486	43347



# Technology Summary: Hydrogen electrolysis

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

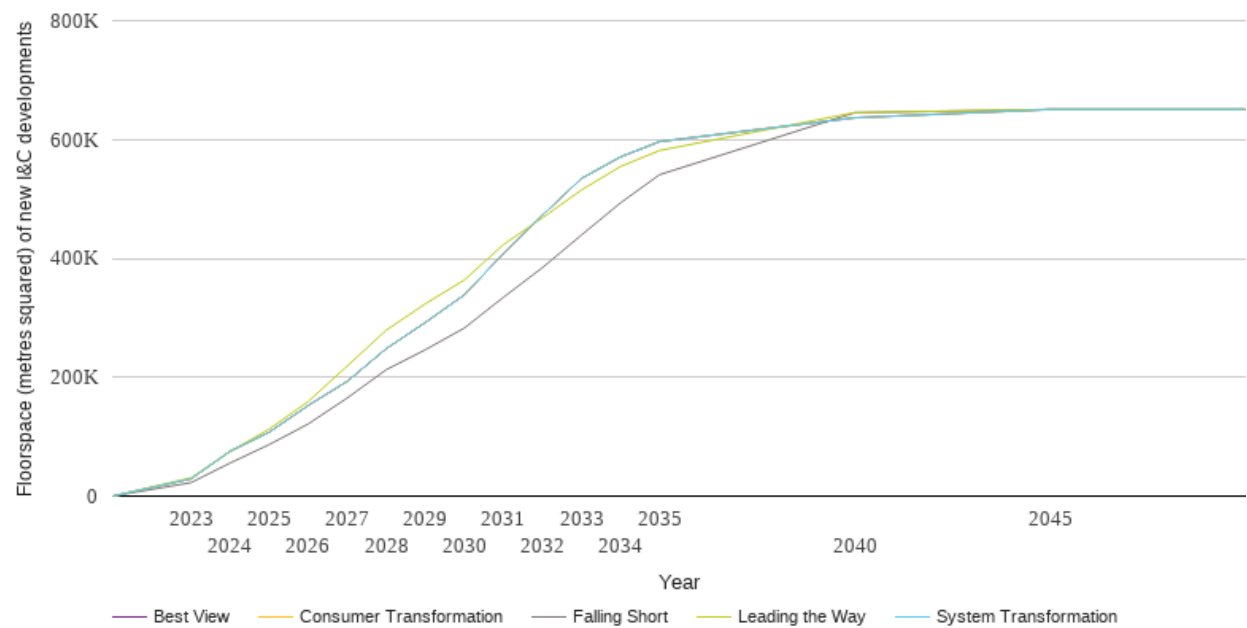
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.0	0.0	0.0	0.0
2026	0.0	0.0	0.0	0.0	0.0
2027	0.0	0.3	0.0	0.0	0.0
2028	0.0	0.5	0.0	0.0	0.0
2029	0.0	0.5	0.0	0.0	0.0
2030	0.0	0.5	0.0	0.0	0.0
2031	0.0	1.1	0.0	0.0	0.0
2032	0.0	1.7	0.0	0.0	0.0
2033	0.0	1.7	0.0	0.0	0.0
2034	0.0	1.7	0.6	0.0	0.6
2035	0.0	1.7	0.6	0.0	0.6
2040	0.0	3.3	1.7	0.5	1.7
2045	0.5	5.5	2.8	3.3	2.8
2050	1.9	8.7	4.5	6.4	4.5



# Technology Summary: Non domestic

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

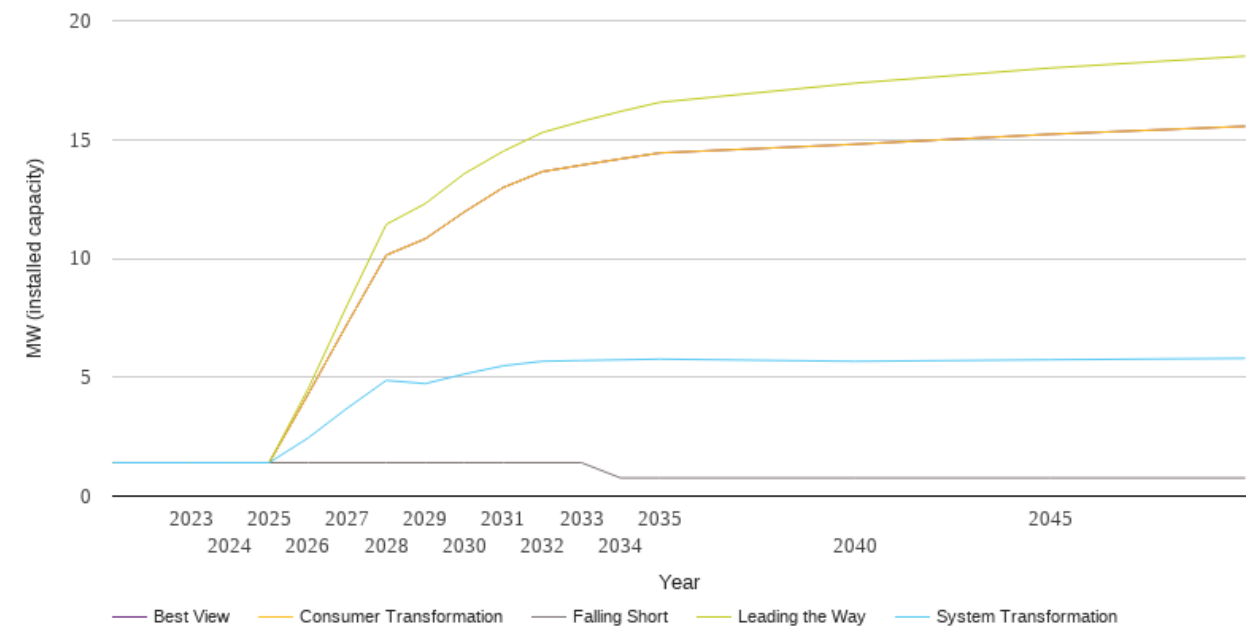
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	22664	29139	29139	30758	29139
2024	55599	75450	75450	74947	75450
2025	86623	107468	107468	112751	107468
2026	121304	152418	152418	159091	152418
2027	165060	193077	193077	218855	193077
2028	212680	248084	248084	279213	248084
2029	246157	292017	292017	323555	292017
2030	282773	338588	338588	363609	338588
2031	334369	408094	408094	423088	408094
2032	384330	472556	472556	468224	472556
2033	439325	534500	534500	515155	534500
2034	493401	570713	570713	554638	570713
2035	540863	596524	596524	581536	596524
2040	645119	636582	636582	645395	636582
2045	650594	650594	650594	650594	650594
2050	650594	650594	650594	650594	650594



# Technology Summary: Other Distributed Generation

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

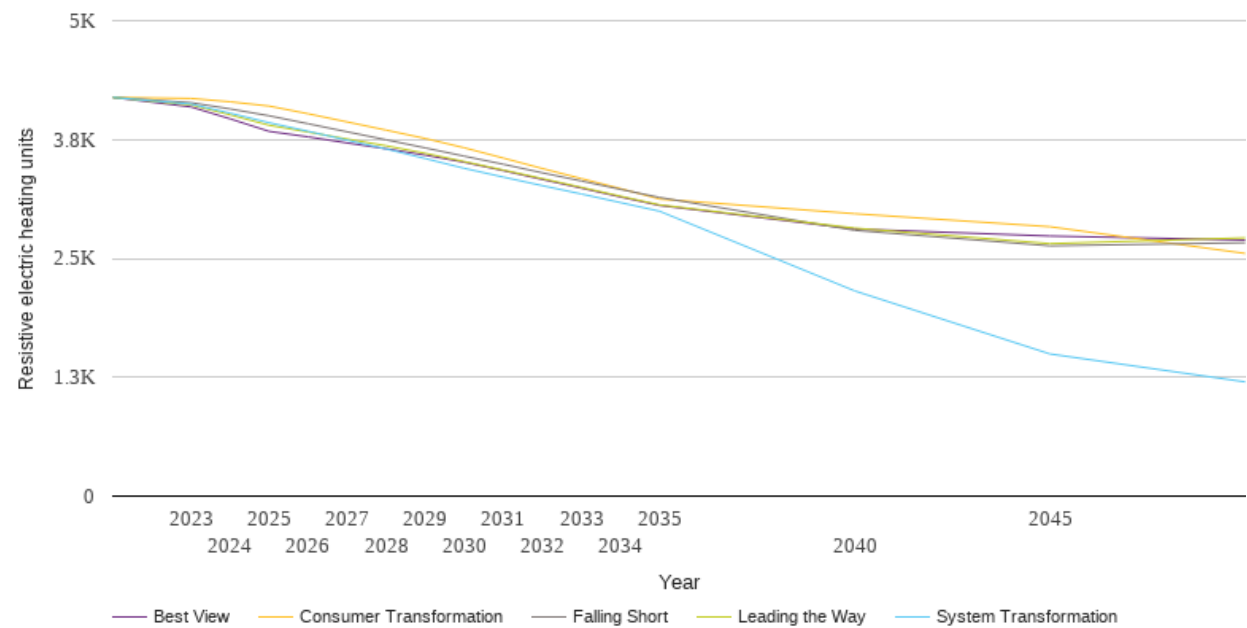
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	1.4	1.4	1.4	1.4	1.4
2023	1.4	1.4	1.4	1.4	1.4
2024	1.4	1.4	1.4	1.4	1.4
2025	1.4	1.4	1.4	1.4	1.4
2026	1.4	2.4	4.3	4.5	4.3
2027	1.4	3.7	7.2	8.0	7.2
2028	1.4	4.9	10.1	11.4	10.1
2029	1.4	4.7	10.8	12.3	10.8
2030	1.4	5.1	12.0	13.6	12.0
2031	1.4	5.5	13.0	14.5	13.0
2032	1.4	5.7	13.6	15.3	13.6
2033	1.4	5.7	13.9	15.8	13.9
2034	0.8	5.7	14.2	16.2	14.2
2035	0.8	5.8	14.4	16.6	14.4
2040	0.8	5.7	14.8	17.4	14.8
2045	0.8	5.7	15.2	18.0	15.2
2050	0.8	5.8	15.6	18.5	15.6



# Technology Summary: Resistive electric heating

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

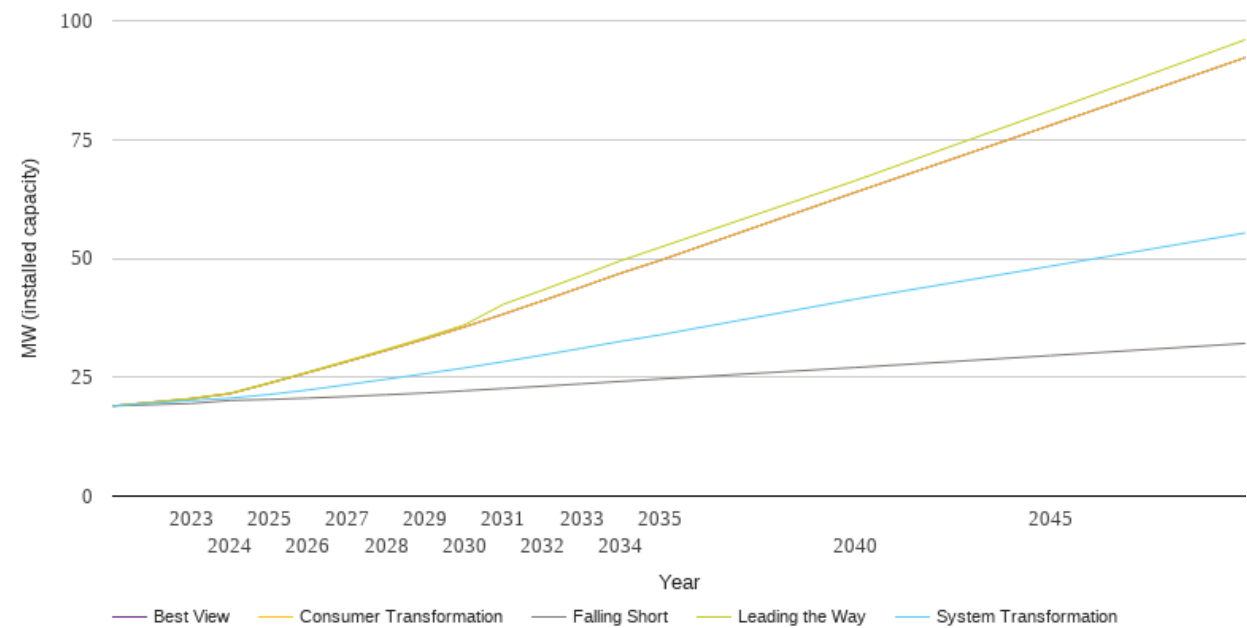
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	4193	4193	4193	4193	4193
2023	4138	4123	4182	4114	4093
2024	4072	4028	4147	4010	3968
2025	4000	3927	4102	3900	3836
2026	3916	3837	4021	3829	3778
2027	3831	3743	3935	3755	3714
2028	3747	3651	3849	3684	3653
2029	3662	3550	3761	3605	3586
2030	3575	3447	3663	3518	3511
2031	3490	3355	3555	3429	3423
2032	3400	3265	3445	3339	3330
2033	3314	3177	3339	3247	3239
2034	3226	3087	3234	3154	3146
2035	3141	2996	3124	3063	3057
2040	2795	2158	2970	2818	2809
2045	2632	1495	2833	2655	2735
2050	2665	1201	2552	2716	2693



# Technology Summary: Solar Generation

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

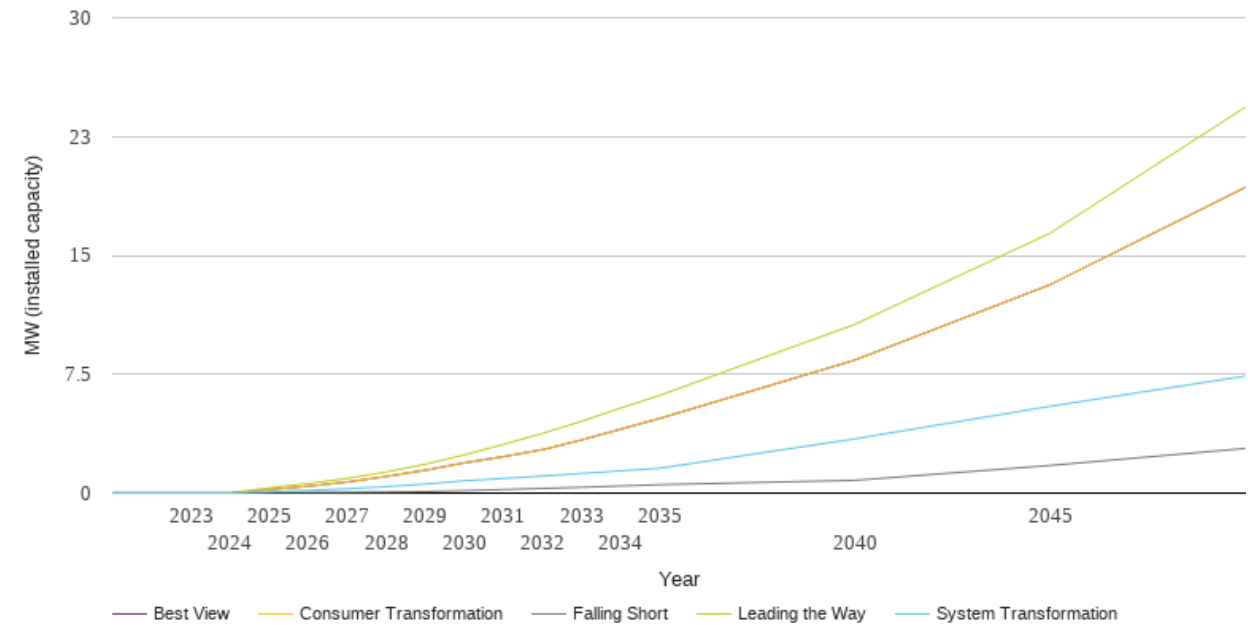
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	19.0	19.0	19.0	19.0	19.0
2023	19.5	20.1	20.5	20.5	20.5
2024	20.1	20.6	21.6	21.6	21.6
2025	20.3	21.4	23.7	23.8	23.7
2026	20.6	22.3	26.0	26.1	26.0
2027	20.9	23.4	28.3	28.5	28.3
2028	21.3	24.6	30.6	30.9	30.6
2029	21.7	25.8	33.0	33.4	33.0
2030	22.2	27.0	35.6	36.0	35.6
2031	22.6	28.3	38.3	40.3	38.3
2032	23.1	29.6	41.1	43.3	41.1
2033	23.6	31.1	44.0	46.4	44.0
2034	24.1	32.5	46.9	49.5	46.9
2035	24.6	33.9	49.5	52.3	49.5
2040	27.0	41.4	63.9	66.3	63.9
2045	29.5	48.3	78.0	81.0	78.0
2050	32.1	55.4	92.2	96.0	92.2



# Technology Summary: Storage

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

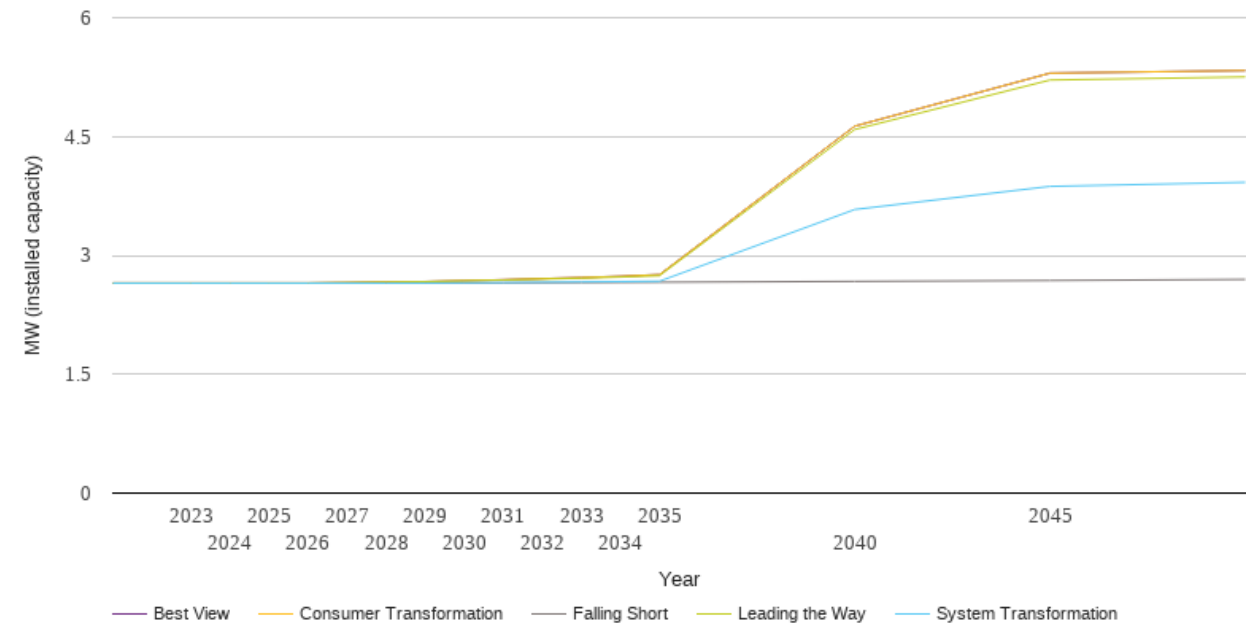
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.1	0.2	0.3	0.2
2026	0.0	0.2	0.4	0.6	0.4
2027	0.1	0.3	0.7	0.9	0.7
2028	0.1	0.4	1.1	1.3	1.1
2029	0.1	0.6	1.4	1.8	1.4
2030	0.2	0.8	1.9	2.4	1.9
2031	0.2	0.9	2.3	3.1	2.3
2032	0.3	1.1	2.7	3.8	2.7
2033	0.4	1.2	3.4	4.5	3.4
2034	0.4	1.4	4.0	5.4	4.0
2035	0.5	1.6	4.7	6.2	4.7
2040	0.8	3.4	8.4	10.6	8.4
2045	1.7	5.5	13.1	16.4	13.1
2050	2.8	7.4	19.3	24.3	19.3



# 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	2.7	2.7	2.7	2.7	2.7
2023	2.7	2.7	2.7	2.7	2.7
2024	2.7	2.7	2.7	2.7	2.7
2025	2.7	2.7	2.7	2.7	2.7
2026	2.7	2.7	2.7	2.7	2.7
2027	2.7	2.7	2.7	2.7	2.7
2028	2.7	2.7	2.7	2.7	2.7
2029	2.7	2.7	2.7	2.7	2.7
2030	2.7	2.7	2.7	2.7	2.7
2031	2.7	2.7	2.7	2.7	2.7
2032	2.7	2.7	2.7	2.7	2.7
2033	2.7	2.7	2.7	2.7	2.7
2034	2.7	2.7	2.7	2.7	2.7
2035	2.7	2.7	2.8	2.7	2.8
2040	2.7	3.6	4.6	4.6	4.6
2045	2.7	3.9	5.3	5.2	5.3
2050	2.7	3.9	5.3	5.3	5.3





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)

