

Distribution Future Energy Scenarios 2022

Local Authority:
Harborough

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 Harborough 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 Harborough 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	16364	6883	6882	0
Domestic	New dwellings	0	3510	3787	3787	4408	6855	6742	6742	6679
Electric vehicles	Electric vehicles	1631	10565	12474	23018	22869	68129	56300	57360	48122
EV Charge Point	EV charge points	801	4979	6920	12991	14341	39229	35946	38620	38531
Heat pumps	Heat pump installations	713	3463	3741	7943	12025	21806	25478	43694	39265
Hydrogen electrolysis	MW (installed capacity)	0.0	0.0	2.1	0.0	1.0	5.5	25.1	12.7	19.3
Non domestic	Floorspace (metres squared) of new I&C developments	0	51327 6	60197 9	60197 9	62893 8	70155 1	70038 1	70038 1	70155 1
Other Distributed Generation	MW (installed capacity)	7.7	15.4	7.8	7.8	7.8	8.2	0.6	0.6	0.6
Resistive electric heating	Resistive electric heating units	5136	4520	4321	4562	4421	3426	1598	3241	3442
Solar Generation	MW (installed capacity)	12.5	21.2	32.1	41.3	33.6	93.4	170.7	207.6	186.6
Storage	MW (installed capacity)	0.0	0.1	1.3	2.6	3.8	3.7	9.0	22.0	29.6
Wind	MW (installed capacity)	2.6	2.8	3.5	10.7	8.6	9.6	25.2	81.4	66.1

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.

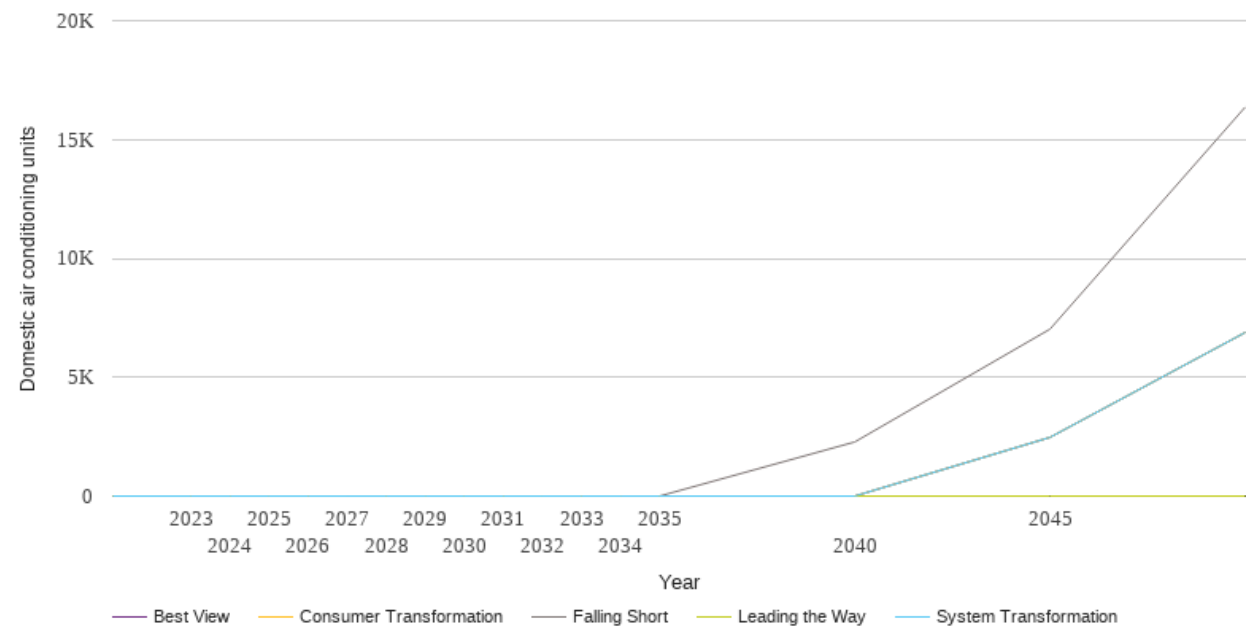
If you have any comments or queries regarding these reports, please contact

nged.energyplanning@nationalgrid.co.uk.

Technology Summary: Air conditioning

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

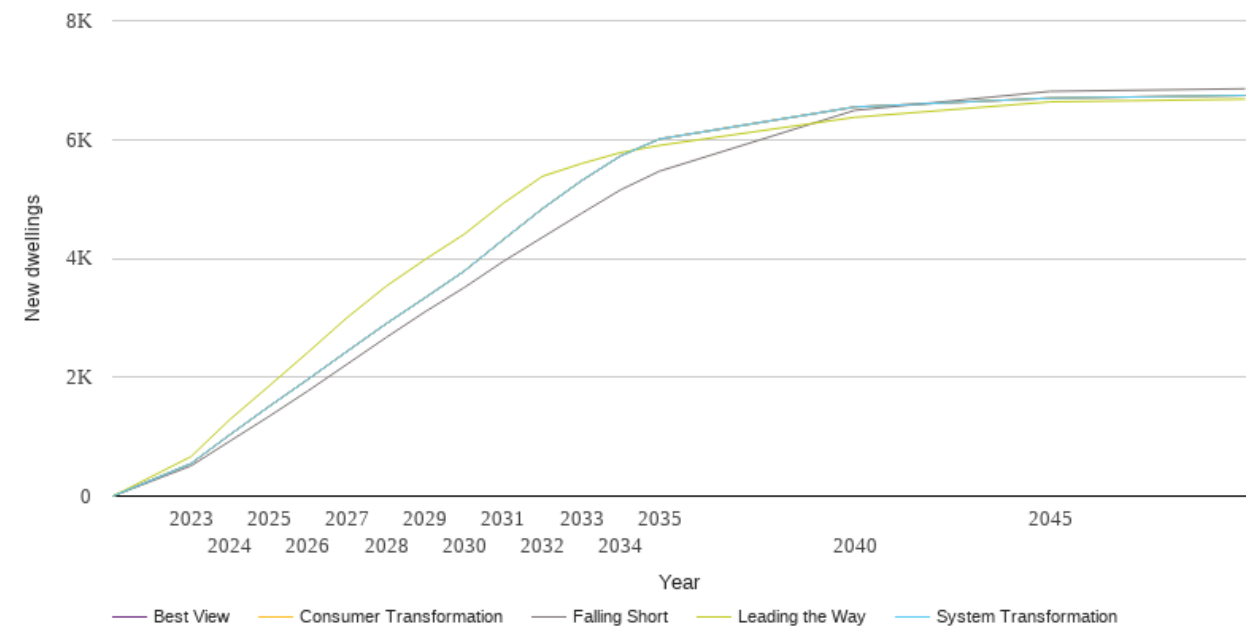
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	0	0	0	0	0
2024	0	0	0	0	0
2025	0	0	0	0	0
2026	0	0	0	0	0
2027	0	0	0	0	0
2028	0	0	0	0	0
2029	0	0	0	0	0
2030	0	0	0	0	0
2031	0	0	0	0	0
2032	0	0	0	0	0
2033	0	0	0	0	0
2034	0	0	0	0	0
2035	0	0	0	0	0
2040	2277	0	0	0	0
2045	7023	2470	2470	0	2470
2050	16364	6883	6882	0	6882



Technology Summary: Domestic

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

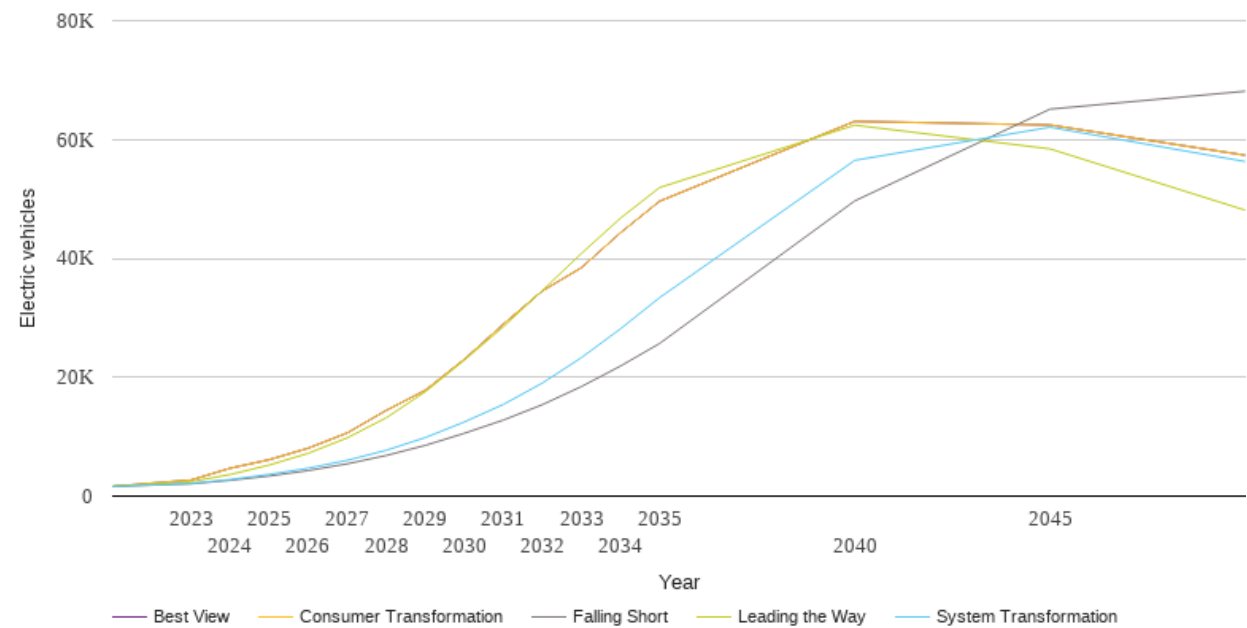
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	509	548	548	665	548
2024	927	1035	1035	1291	1035
2025	1342	1509	1509	1853	1509
2026	1772	1967	1967	2422	1967
2027	2221	2437	2437	3005	2437
2028	2670	2901	2901	3533	2901
2029	3103	3340	3340	3984	3340
2030	3510	3787	3787	4408	3787
2031	3950	4317	4317	4928	4317
2032	4354	4836	4836	5381	4836
2033	4757	5307	5307	5595	5307
2034	5153	5724	5724	5780	5724
2035	5468	6009	6009	5901	6009
2040	6491	6548	6548	6374	6548
2045	6810	6697	6697	6634	6697
2050	6855	6742	6742	6679	6742



Technology Summary: Electric vehicles

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

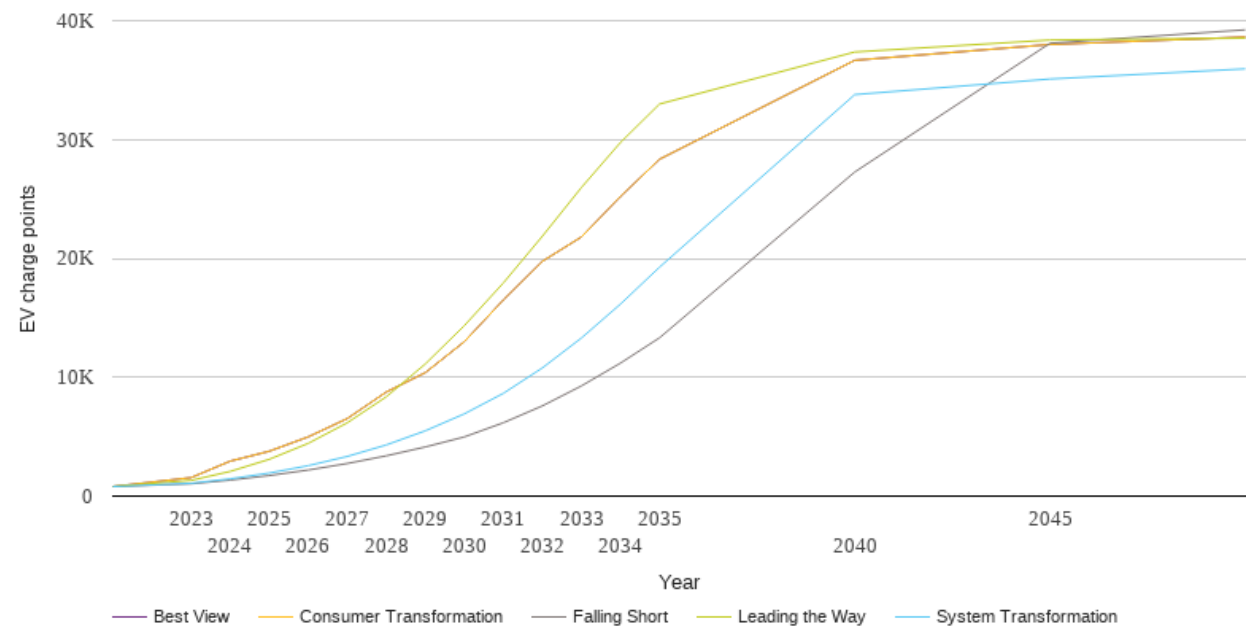
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	1631	1631	1631	1631	1631
2023	2075	2118	2704	2441	2704
2024	2652	2786	4686	3622	4686
2025	3376	3647	6123	5221	6123
2026	4290	4683	8058	7199	8058
2027	5431	6016	10631	9797	10631
2028	6832	7712	14424	13177	14424
2029	8533	9845	17805	17556	17805
2030	10565	12474	23018	22869	23018
2031	12794	15430	28946	28493	28946
2032	15388	19026	34528	34601	34528
2033	18438	23297	38440	40839	38440
2034	21880	28152	44316	46772	44316
2035	25677	33382	49619	51916	49619
2040	49678	56500	63061	62417	63061
2045	65111	62072	62446	58429	62446
2050	68129	56300	57360	48122	57360



Technology Summary: EV Charge Point

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

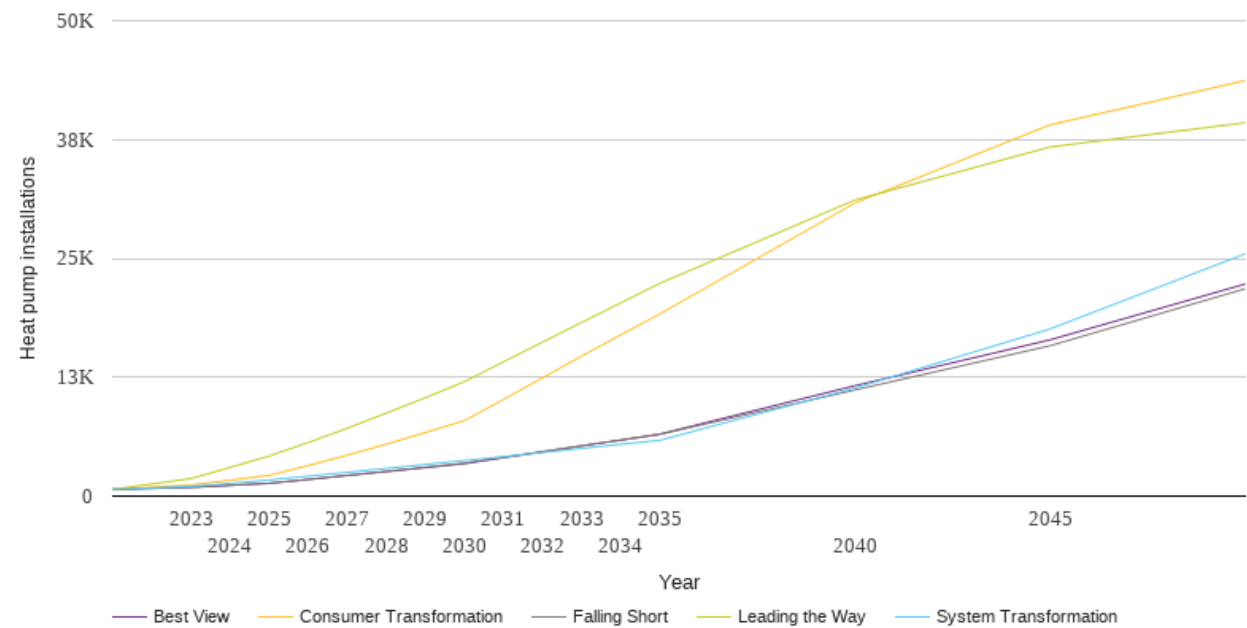
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	801	801	801	801	801
2023	1037	1076	1551	1318	1551
2024	1343	1452	2936	2072	2936
2025	1728	1936	3770	3090	3770
2026	2192	2557	4981	4433	4981
2027	2741	3336	6520	6163	6520
2028	3387	4303	8755	8351	8755
2029	4134	5492	10386	11118	10386
2030	4979	6920	12991	14341	12991
2031	6171	8647	16510	17935	16510
2032	7593	10786	19758	21870	19758
2033	9271	13304	21804	25968	21804
2034	11190	16157	25208	29754	25208
2035	13318	19262	28342	32988	28342
2040	27266	33780	36666	37365	36666
2045	38100	35092	37996	38373	37996
2050	39229	35946	38620	38531	38620



Technology Summary: Heat pumps

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

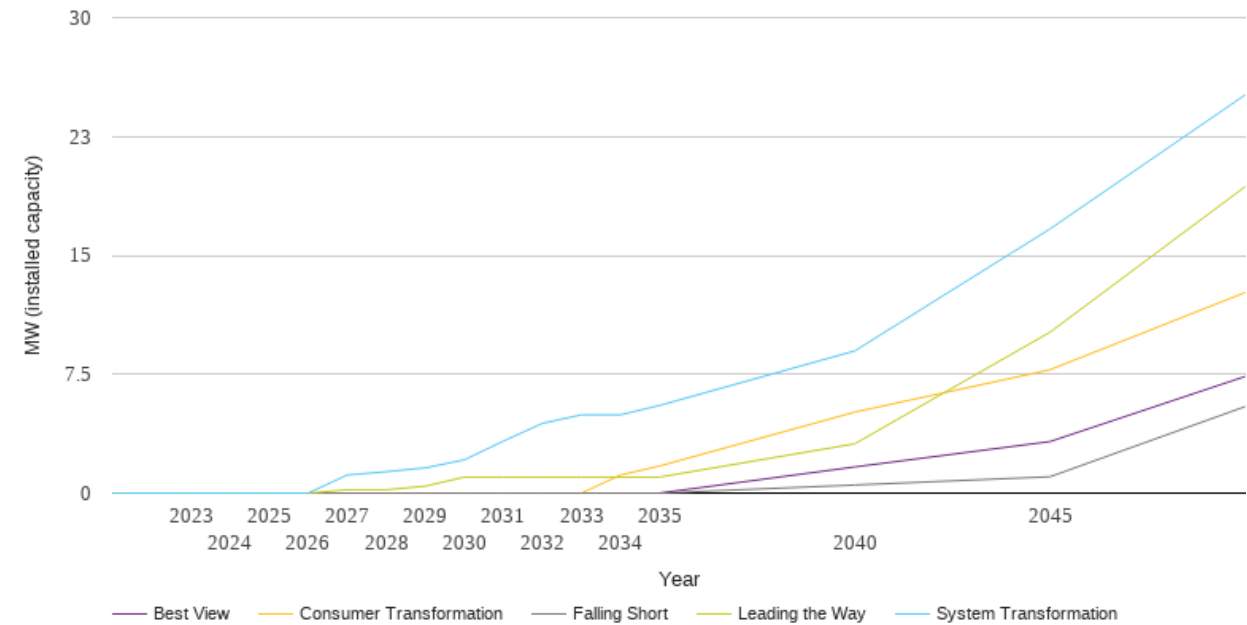
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	713	713	713	713	713
2023	918	1010	1169	1842	918
2024	1134	1345	1667	3012	1134
2025	1344	1695	2179	4216	1344
2026	1758	2099	3209	5634	1747
2027	2188	2502	4302	7132	2166
2028	2606	2912	5460	8725	2573
2029	3038	3322	6683	10344	2993
2030	3463	3741	7943	12025	3409
2031	4074	4146	10152	14110	4035
2032	4676	4582	12429	16186	4655
2033	5281	5016	14705	18249	5278
2034	5878	5443	16944	20305	5891
2035	6485	5861	19132	22359	6514
2040	11152	11354	30821	31135	11606
2045	15808	17574	39039	36716	16429
2050	21806	25478	43694	39265	22303



Technology Summary: Hydrogen electrolysis

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

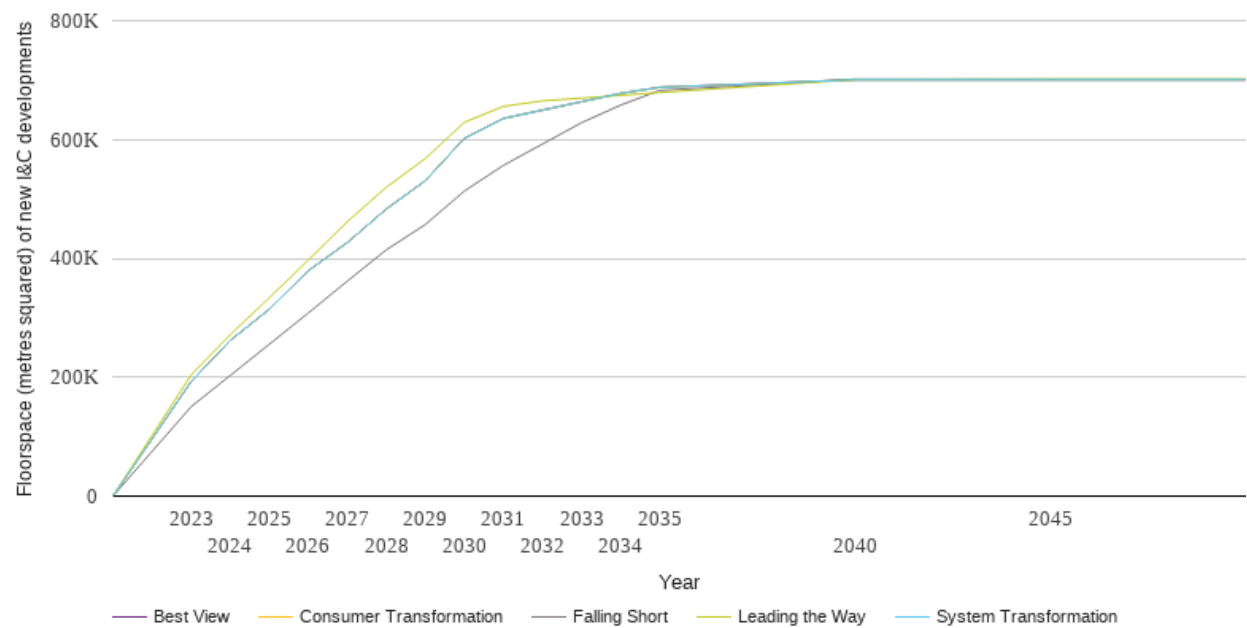
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.0	0.0	0.0	0.0
2026	0.0	0.0	0.0	0.0	0.0
2027	0.0	1.1	0.0	0.2	0.0
2028	0.0	1.4	0.0	0.2	0.0
2029	0.0	1.6	0.0	0.4	0.0
2030	0.0	2.1	0.0	1.0	0.0
2031	0.0	3.3	0.0	1.0	0.0
2032	0.0	4.4	0.0	1.0	0.0
2033	0.0	4.9	0.0	1.0	0.0
2034	0.0	4.9	1.1	1.0	0.0
2035	0.0	5.5	1.7	1.0	0.0
2040	0.5	9.0	5.1	3.1	1.6
2045	1.0	16.7	7.8	10.1	3.3
2050	5.5	25.1	12.7	19.3	7.4



Technology Summary: Non domestic

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

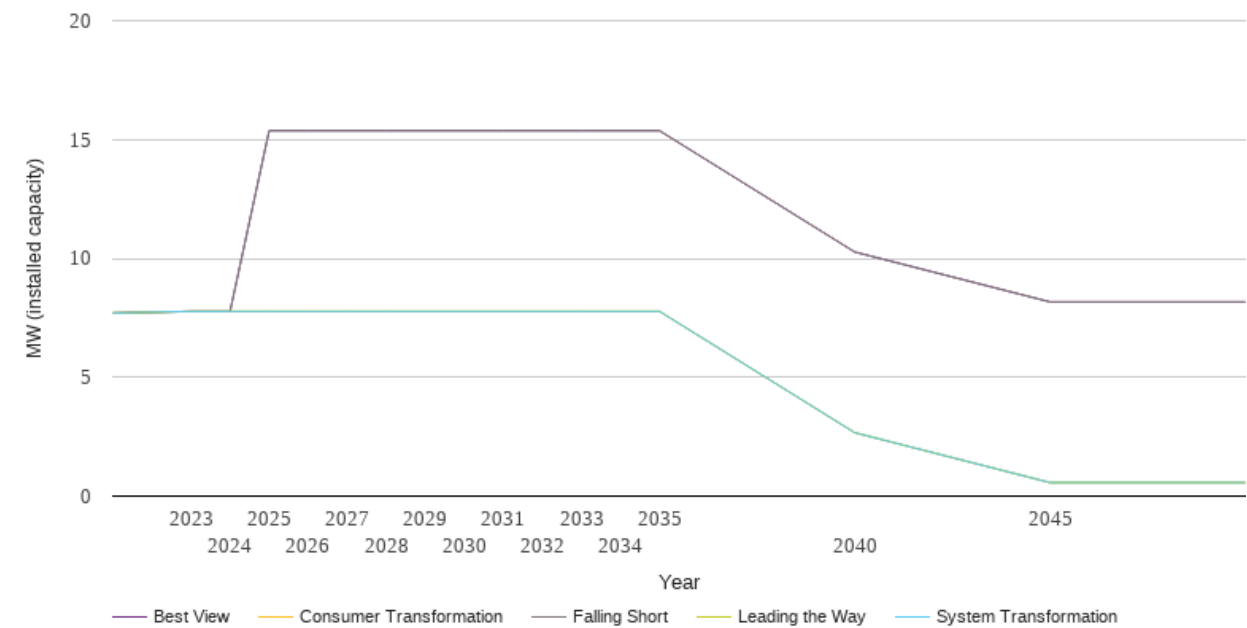
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	150316	192512	192512	203791	192512
2024	202750	261694	261694	271382	261694
2025	255213	314205	314205	333476	314205
2026	307872	378963	378963	396957	378963
2027	361551	426569	426569	461644	426569
2028	414295	482975	482975	519643	482975
2029	456922	530704	530704	568049	530704
2030	513276	601979	601979	628938	601979
2031	556461	635487	635487	655732	635487
2032	592379	649527	649527	664997	649527
2033	628297	663568	663568	669684	663568
2034	657798	677609	677609	674372	677609
2035	682595	687839	687839	679060	687839
2040	701551	700381	700381	700824	700381
2045	701551	700381	700381	701551	700381
2050	701551	700381	700381	701551	700381



Technology Summary: Other Distributed Generation

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

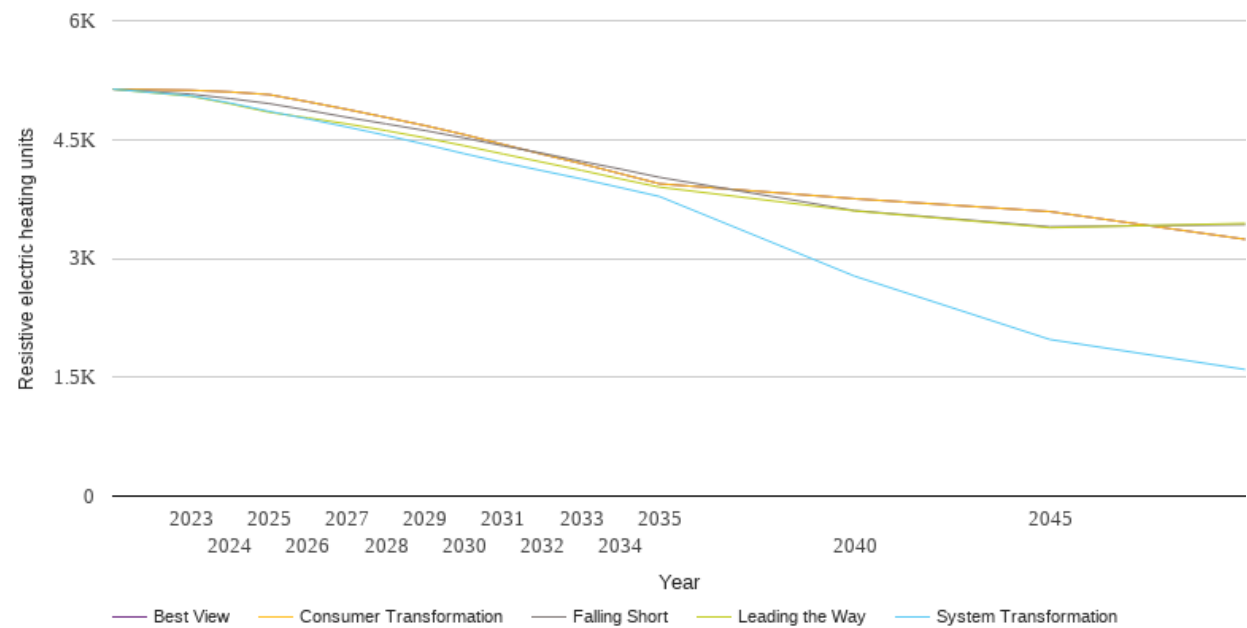
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	7.7	7.7	7.7	7.7	7.7
2023	7.8	7.8	7.8	7.8	7.8
2024	7.8	7.8	7.8	7.8	7.8
2025	15.4	7.8	7.8	7.8	15.4
2026	15.4	7.8	7.8	7.8	15.4
2027	15.4	7.8	7.8	7.8	15.4
2028	15.4	7.8	7.8	7.8	15.4
2029	15.4	7.8	7.8	7.8	15.4
2030	15.4	7.8	7.8	7.8	15.4
2031	15.4	7.8	7.8	7.8	15.4
2032	15.4	7.8	7.8	7.8	15.4
2033	15.4	7.8	7.8	7.8	15.4
2034	15.4	7.8	7.8	7.8	15.4
2035	15.4	7.8	7.8	7.8	15.4
2040	10.3	2.7	2.7	2.7	10.3
2045	8.2	0.6	0.6	0.6	8.2
2050	8.2	0.6	0.6	0.6	8.2



Technology Summary: Resistive electric heating

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

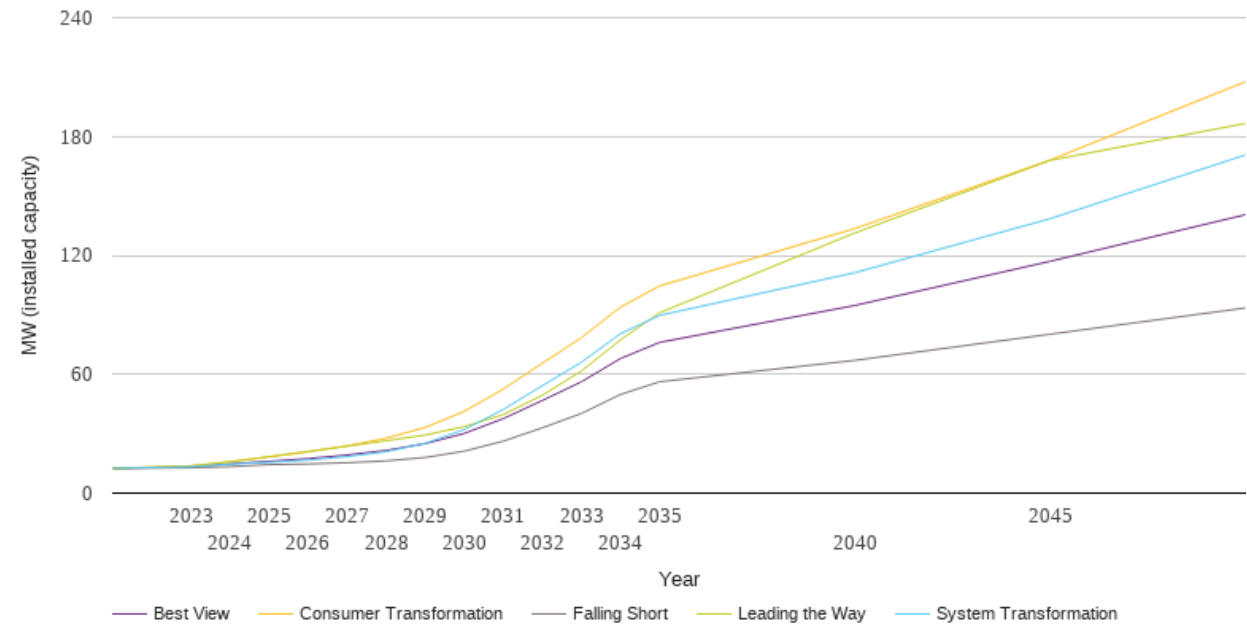
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	5136	5136	5136	5136	5136
2023	5073	5052	5122	5046	5122
2024	5017	4961	5101	4951	5101
2025	4954	4856	5067	4844	5067
2026	4869	4759	4976	4773	4976
2027	4780	4658	4880	4697	4880
2028	4697	4552	4779	4612	4779
2029	4613	4439	4675	4521	4675
2030	4520	4321	4562	4421	4562
2031	4420	4210	4437	4317	4437
2032	4327	4106	4315	4214	4315
2033	4225	4003	4196	4111	4196
2034	4127	3893	4069	4003	4069
2035	4023	3781	3942	3899	3942
2040	3603	2775	3753	3599	3753
2045	3399	1976	3591	3387	3591
2050	3426	1598	3241	3442	3241



Technology Summary: Solar Generation

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

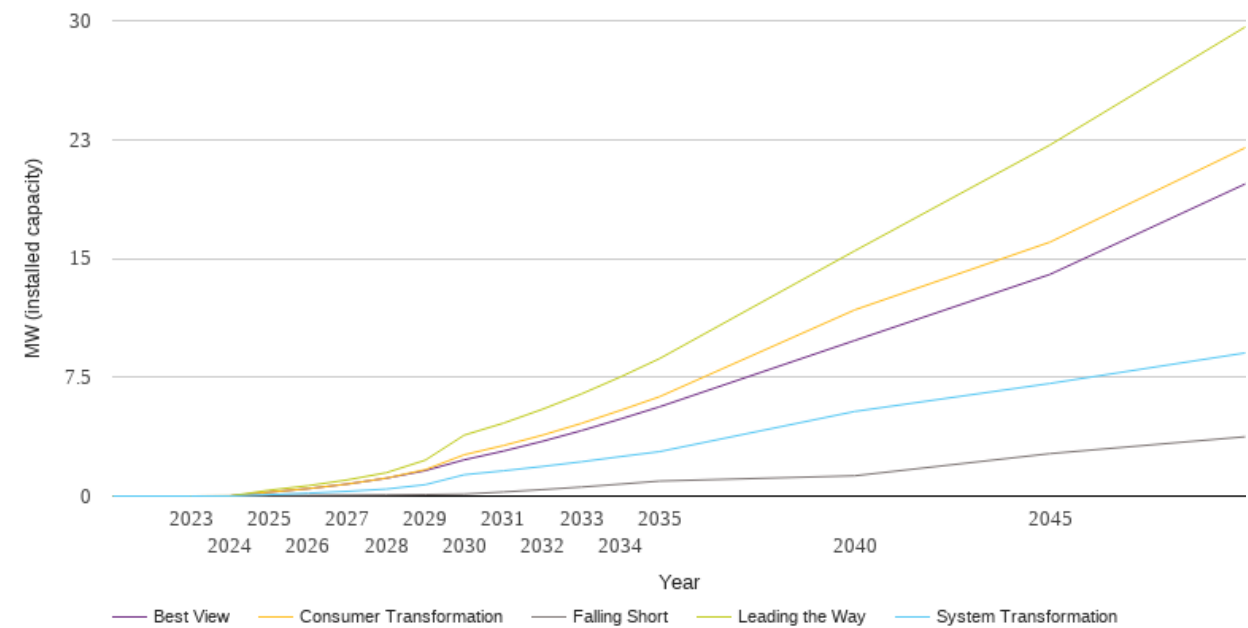
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	12.5	12.5	12.5	12.5	12.5
2023	12.8	13.3	13.7	13.7	13.3
2024	13.4	14.6	15.8	15.9	14.8
2025	14.4	15.6	18.3	18.4	16.0
2026	14.7	16.6	20.8	21.0	17.4
2027	15.3	18.4	23.9	23.7	19.3
2028	16.2	20.9	27.7	26.4	21.6
2029	18.0	25.1	33.2	29.3	25.0
2030	21.2	32.1	41.3	33.6	30.1
2031	26.2	42.2	52.5	39.7	37.6
2032	33.0	54.2	65.6	49.4	46.8
2033	40.2	66.1	78.5	61.6	56.2
2034	49.8	80.5	93.9	77.3	67.9
2035	56.2	89.7	104.6	91.0	76.1
2040	67.0	111.2	133.5	131.3	94.7
2045	80.2	138.5	168.1	168.0	117.0
2050	93.4	170.7	207.6	186.6	140.5



Technology Summary: Storage

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

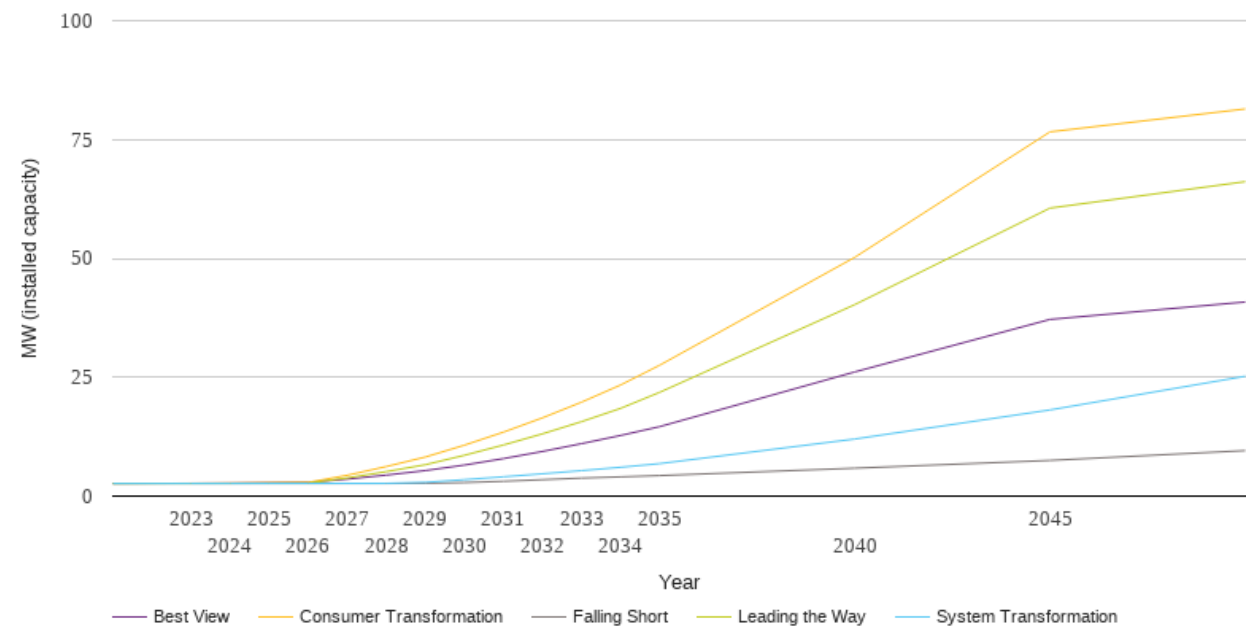
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.1	0.2	0.4	0.2
2026	0.1	0.2	0.5	0.7	0.5
2027	0.1	0.3	0.8	1.0	0.8
2028	0.1	0.4	1.1	1.5	1.1
2029	0.1	0.7	1.7	2.3	1.6
2030	0.1	1.3	2.6	3.8	2.3
2031	0.3	1.6	3.2	4.6	2.8
2032	0.4	1.9	3.8	5.5	3.5
2033	0.6	2.2	4.6	6.4	4.1
2034	0.8	2.5	5.4	7.5	4.9
2035	0.9	2.8	6.3	8.7	5.6
2040	1.3	5.3	11.7	15.5	9.8
2045	2.7	7.1	16.0	22.2	14.0
2050	3.7	9.0	22.0	29.6	19.7



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	2.6	2.6	2.6	2.6	2.6
2023	2.6	2.6	2.7	2.7	2.7
2024	2.6	2.6	2.7	2.7	2.7
2025	2.6	2.7	2.8	2.7	2.8
2026	2.6	2.7	2.9	2.7	2.9
2027	2.6	2.7	4.4	3.8	3.6
2028	2.7	2.7	6.2	5.1	4.4
2029	2.7	2.9	8.2	6.6	5.4
2030	2.8	3.5	10.7	8.6	6.5
2031	3.1	4.1	13.4	10.7	7.9
2032	3.4	4.7	16.5	13.1	9.4
2033	3.8	5.4	19.8	15.7	11.0
2034	4.0	6.1	23.4	18.4	12.7
2035	4.3	6.8	27.5	21.8	14.6
2040	5.9	12.0	50.2	40.3	26.1
2045	7.5	18.1	76.6	60.6	37.2
2050	9.6	25.2	81.4	66.1	40.8



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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