

Distribution Future Energy Scenarios 2022

Local Authority:
Sandwell

What are Distribution Future Energy Scenarios?

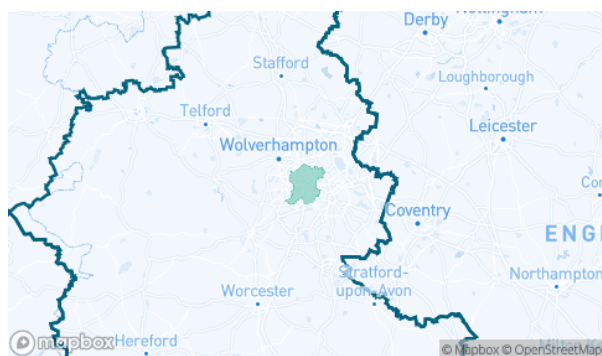
National Grid run Distribution Future Energy Scenarios (DFES) on an annual cycle for all licence areas, and represent a range of credible future scenarios of what could connect to the distribution network.

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 Sandwell 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 Sandwell 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	2051	5924	5072	5072	2051	97051	53415	53412	2053
Domestic	New dwellings	0	8299	9152	9152	10886	11894	11770	11770	11692
Electric vehicles	Electric vehicles	2889	23126	30694	56665	56788	192478	197352	198748	148374
EV Charge Point	EV charge points	1316	9614	15195	29315	31654	95109	98971	102553	103908
Heat pumps	Heat pump installations	226	7665	6587	22582	34934	71715	80821	136750	121128
Hydrogen electrolysis	MW (installed capacity)	0.0	0.0	2.0	0.2	2.0	0.7	3.7	1.6	5.8
Non domestic	Floorspace (metres squared) of new I&C developments	0	73337	89605	89605	95113	125185	124612	124612	125185
Other Distributed Generation	MW (installed capacity)	35.4	45.9	45.9	45.9	42.2	42.1	37.7	27.9	52.6
Resistive electric heating	Resistive electric heating units	18348	15622	14982	15773	15268	10960	5179	10975	11462
Solar Generation	MW (installed capacity)	12.3	20.5	32.1	52.9	54.1	44.2	96.2	182.5	188.0
Storage	MW (installed capacity)	0.0	1.3	2.7	5.4	8.0	9.8	24.4	54.2	65.0
Wind	MW (installed capacity)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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

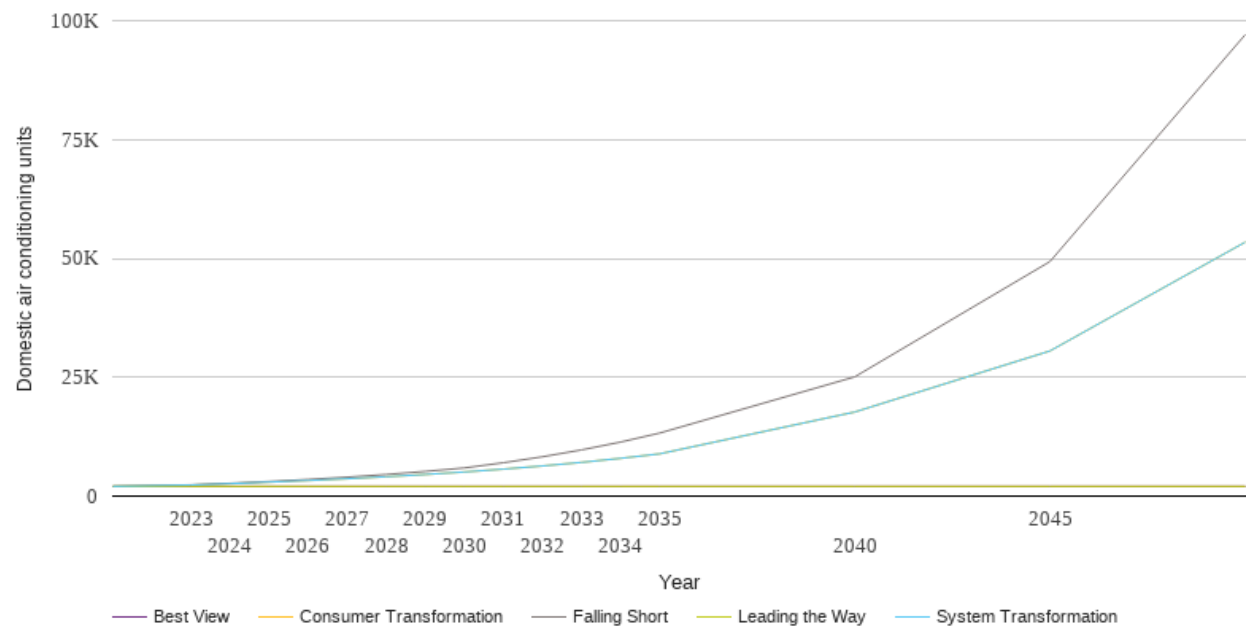
NGED is committed to continually improving the DFES process. To ensure the DFES projections fully capture local ambition, in 2022 we have appointed two DSO Strategic Engagement Officers to engage with local authorities. Any feedback will be incorporated into future Distribution Future Energy Scenarios 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.

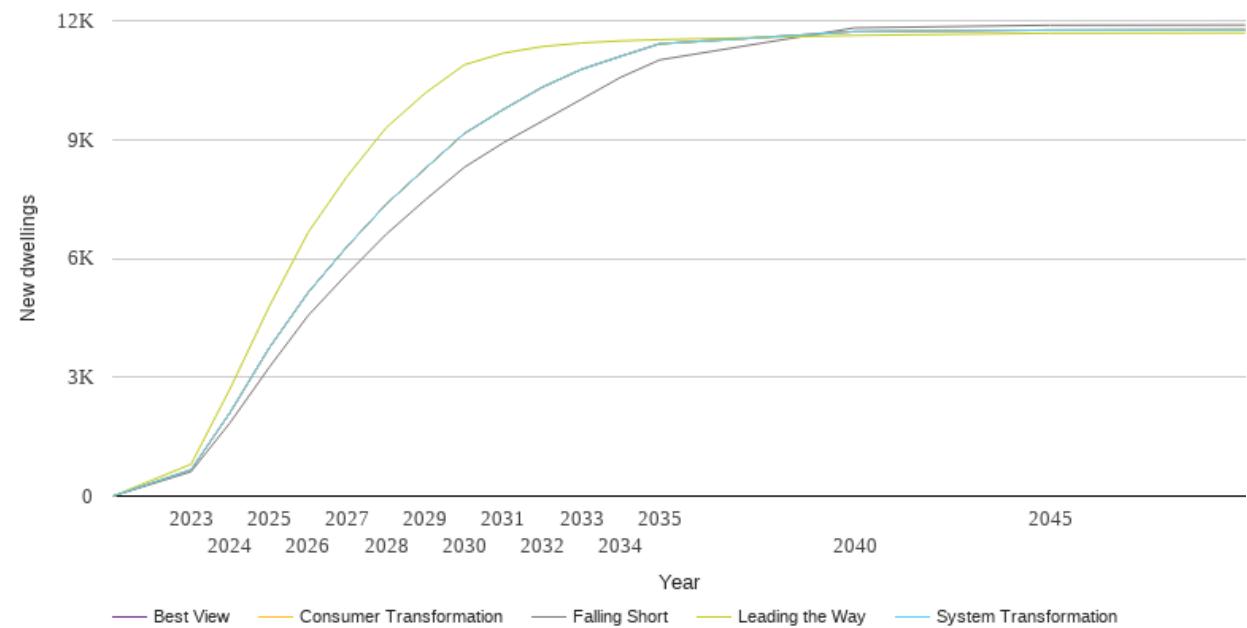
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	2051	2051	2051	2051	2051
2023	2363	2326	2326	2051	2051
2024	2687	2611	2611	2051	2051
2025	3064	2944	2944	2051	2051
2026	3493	3275	3275	2051	2051
2027	3986	3646	3646	2051	2051
2028	4542	4070	4070	2051	2051
2029	5192	4545	4545	2051	2051
2030	5924	5072	5072	2051	2051
2031	7017	5671	5671	2051	2051
2032	8270	6340	6340	2051	2051
2033	9710	7090	7090	2051	2051
2034	11360	7942	7942	2051	2051
2035	13248	8883	8883	2051	2051
2040	25083	17687	17687	2053	2053
2045	49335	30530	30529	2053	2053
2050	97051	53415	53412	2053	2053



Technology Summary: Domestic

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

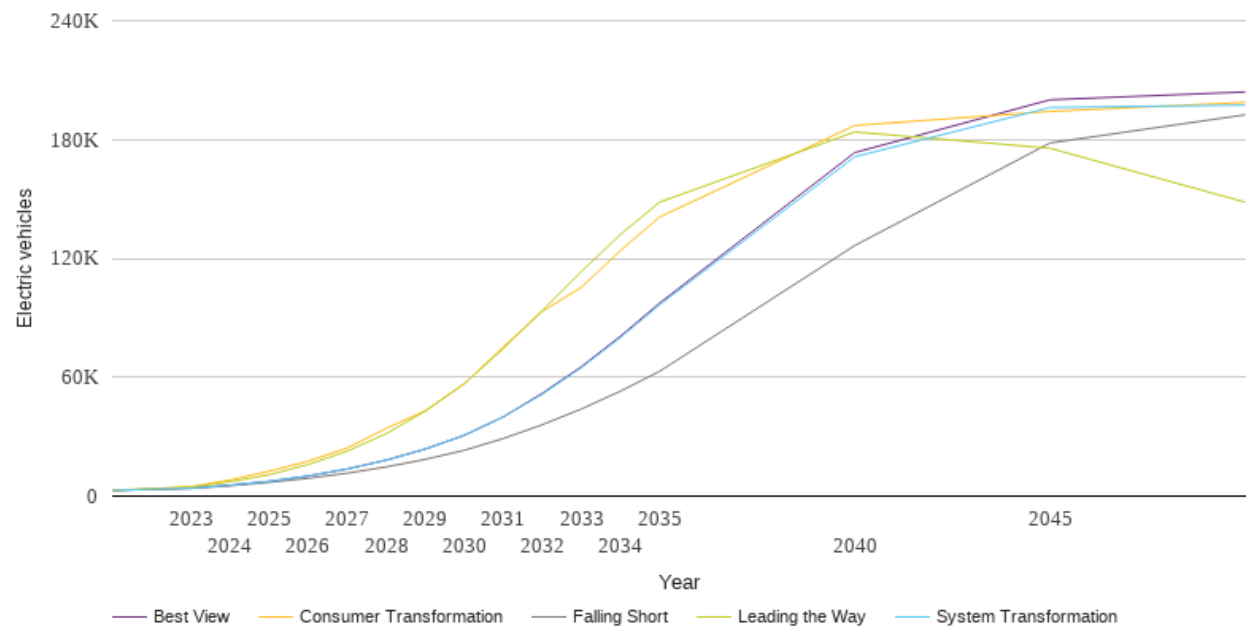
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	616	664	664	805	664
2024	1853	2110	2110	2710	2110
2025	3246	3735	3735	4777	3735
2026	4557	5139	5139	6655	5139
2027	5612	6302	6302	8075	6302
2028	6612	7370	7370	9301	7370
2029	7478	8270	8270	10172	8270
2030	8299	9152	9152	10886	9152
2031	8919	9759	9759	11180	9759
2032	9466	10321	10321	11347	10321
2033	10016	10772	10772	11437	10772
2034	10568	11100	11100	11490	11100
2035	11009	11416	11416	11521	11416
2040	11819	11724	11724	11628	11724
2045	11886	11762	11762	11684	11762
2050	11894	11770	11770	11692	11770



Technology Summary: Electric vehicles

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

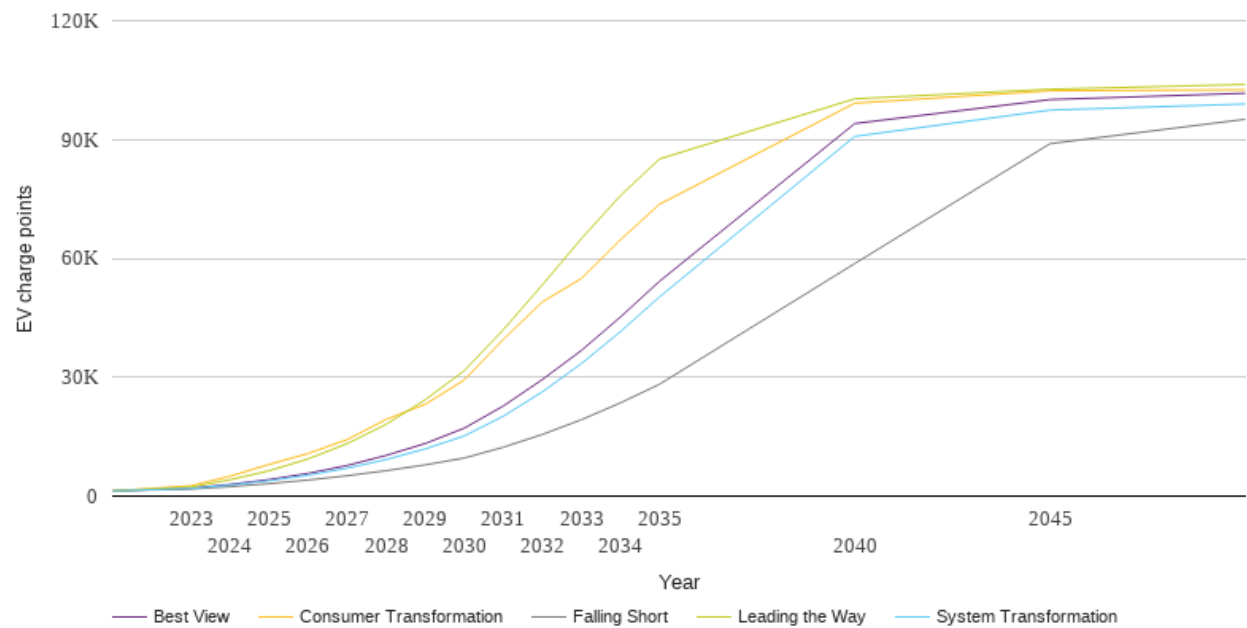
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	2889	2889	2889	2889	2889
2023	3911	3994	4740	4491	3994
2024	5232	5496	8159	7292	5496
2025	6907	7420	12550	10778	7420
2026	8980	10150	17606	15947	10150
2027	11574	13680	24329	22741	13680
2028	14726	18149	34201	31542	18150
2029	18548	23762	43056	42936	23764
2030	23126	30694	56665	56788	30696
2031	29075	39995	75379	74445	39998
2032	36060	51489	93248	93767	51922
2033	44002	64831	105419	113396	65344
2034	52995	80051	123950	132087	80725
2035	62950	96523	140850	148377	97383
2040	126495	171275	187084	183835	173421
2045	178261	196163	194197	175622	200053
2050	192478	197352	198748	148374	204018



Technology Summary: EV Charge Point

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

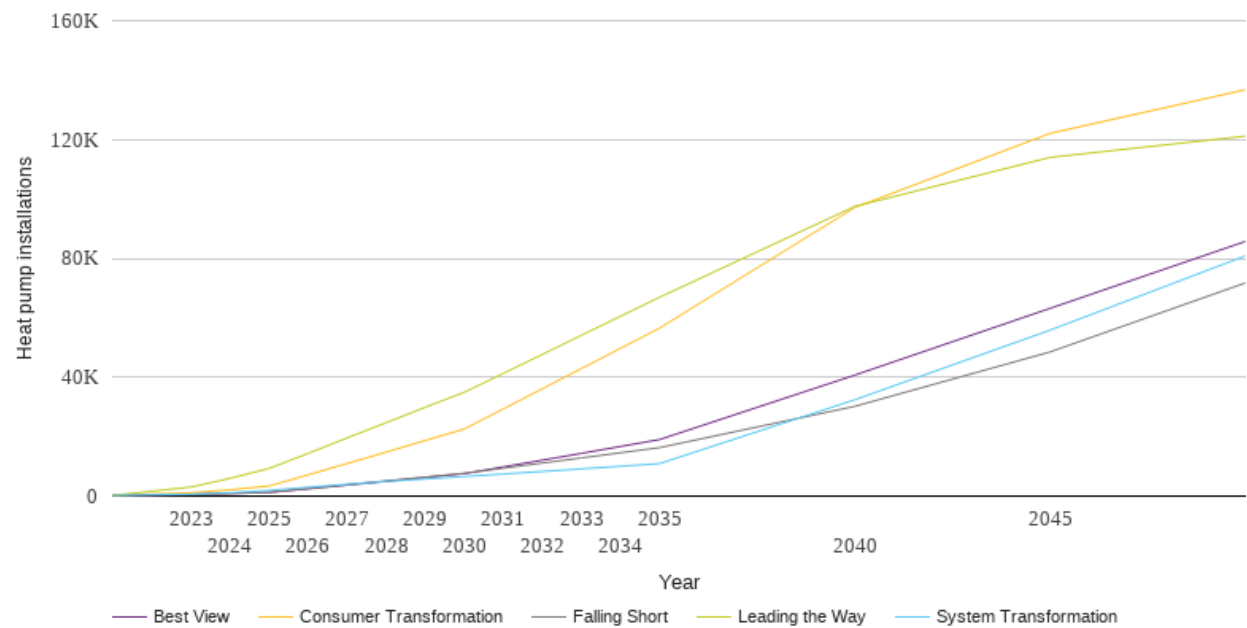
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	1316	1316	1316	1316	1316
2023	1782	1927	2598	2272	1992
2024	2387	2776	5028	4135	2940
2025	3143	3865	7991	6394	4169
2026	4057	5275	10757	9392	5731
2027	5143	7045	14276	13248	7722
2028	6419	9237	19371	18135	10279
2029	7888	11926	23180	24335	13281
2030	9614	15195	29315	31654	17151
2031	12344	20171	39564	41991	22755
2032	15567	26321	49012	53311	29426
2033	19294	33467	54936	65029	36767
2034	23539	41518	64718	75863	45211
2035	28237	50285	73682	85106	54225
2040	58698	90792	99175	100274	94032
2045	88948	97426	102298	102691	100081
2050	95109	98971	102553	103908	101680



Technology Summary: Heat pumps

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

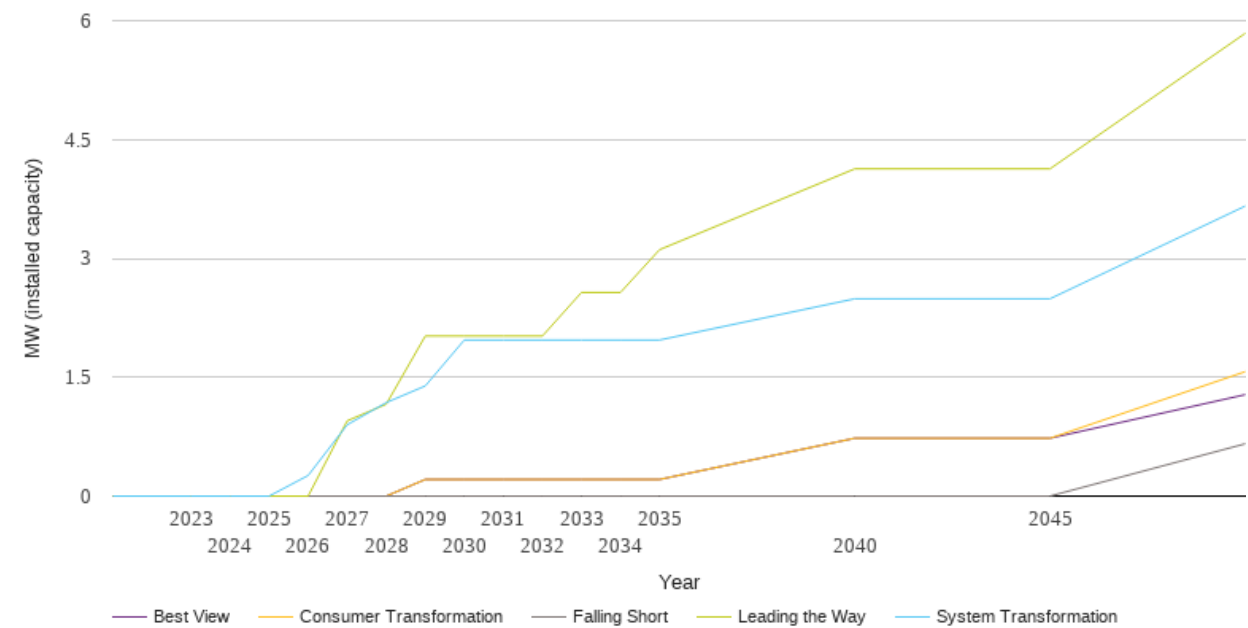
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	226	226	226	226	226
2023	533	632	1129	3044	533
2024	867	1124	2116	5972	867
2025	1239	1915	3398	9299	1239
2026	2532	2996	7156	14379	2451
2027	3834	3990	10984	19592	3709
2028	5112	4899	14810	24732	4971
2029	6392	5763	18715	29898	6268
2030	7665	6587	22582	34934	7569
2031	9397	7434	29362	41295	9823
2032	11125	8294	36136	47693	12096
2033	12848	9169	42934	54116	14389
2034	14580	10046	49726	60514	16702
2035	16305	10936	56511	66905	19023
2040	30207	32418	97128	97497	40708
2045	48497	55824	122064	113984	63162
2050	71715	80821	136750	121128	85683



Technology Summary: Hydrogen electrolysis

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

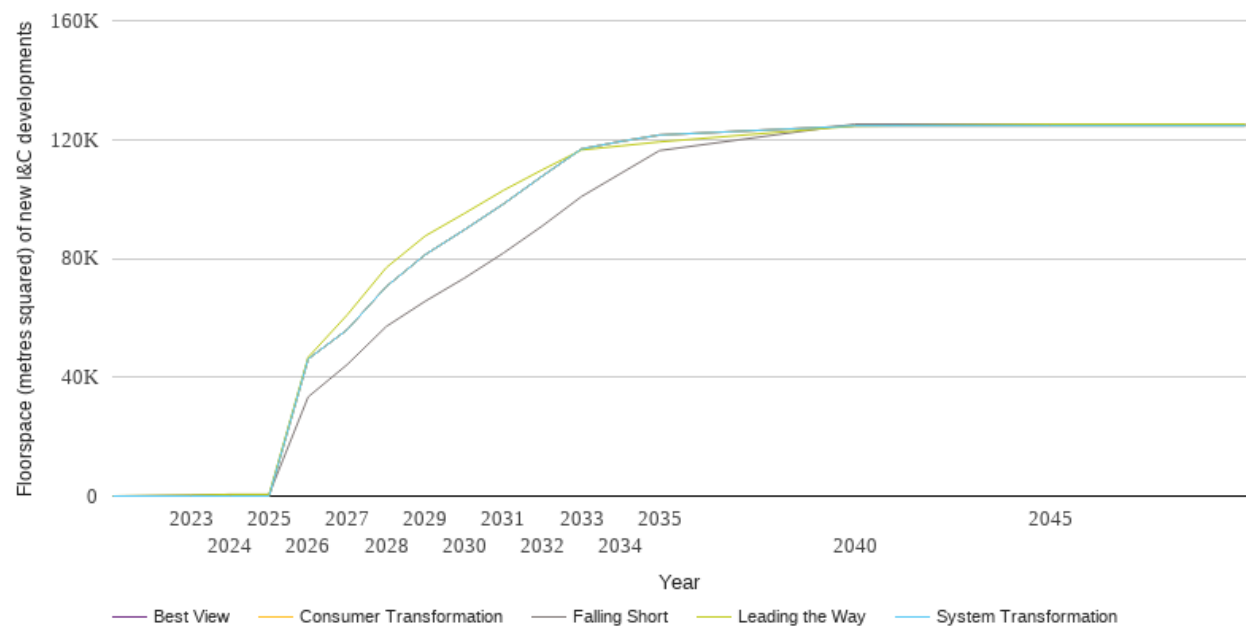
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.0	0.0	0.0	0.0
2026	0.0	0.3	0.0	0.0	0.0
2027	0.0	0.9	0.0	1.0	0.0
2028	0.0	1.2	0.0	1.2	0.0
2029	0.0	1.4	0.2	2.0	0.2
2030	0.0	2.0	0.2	2.0	0.2
2031	0.0	2.0	0.2	2.0	0.2
2032	0.0	2.0	0.2	2.0	0.2
2033	0.0	2.0	0.2	2.6	0.2
2034	0.0	2.0	0.2	2.6	0.2
2035	0.0	2.0	0.2	3.1	0.2
2040	0.0	2.5	0.7	4.1	0.7
2045	0.0	2.5	0.7	4.1	0.7
2050	0.7	3.7	1.6	5.8	1.3



Technology Summary: Non domestic

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

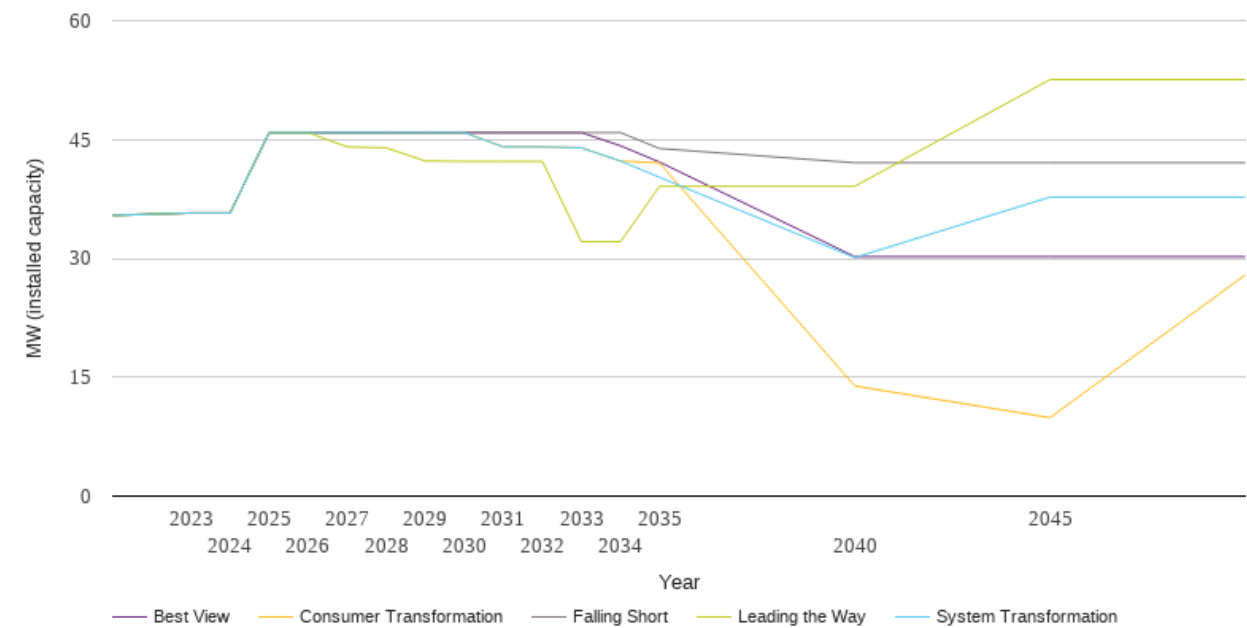
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	287	0	0	287	0
2024	574	0	0	574	0
2025	574	0	0	574	0
2026	33379	46132	46132	46706	46132
2027	44267	55995	55995	60987	55995
2028	57068	70502	70502	76874	70502
2029	65598	81268	81268	87562	81268
2030	73337	89605	89605	95113	89605
2031	81784	98296	98296	102876	98296
2032	90940	107733	107733	109827	107733
2033	100804	116816	116816	116494	116816
2034	108542	119347	119347	117848	119347
2035	116281	121523	121523	119202	121523
2040	125185	124612	124612	124548	124612
2045	125185	124612	124612	125185	124612
2050	125185	124612	124612	125185	124612



Technology Summary: Other Distributed Generation

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

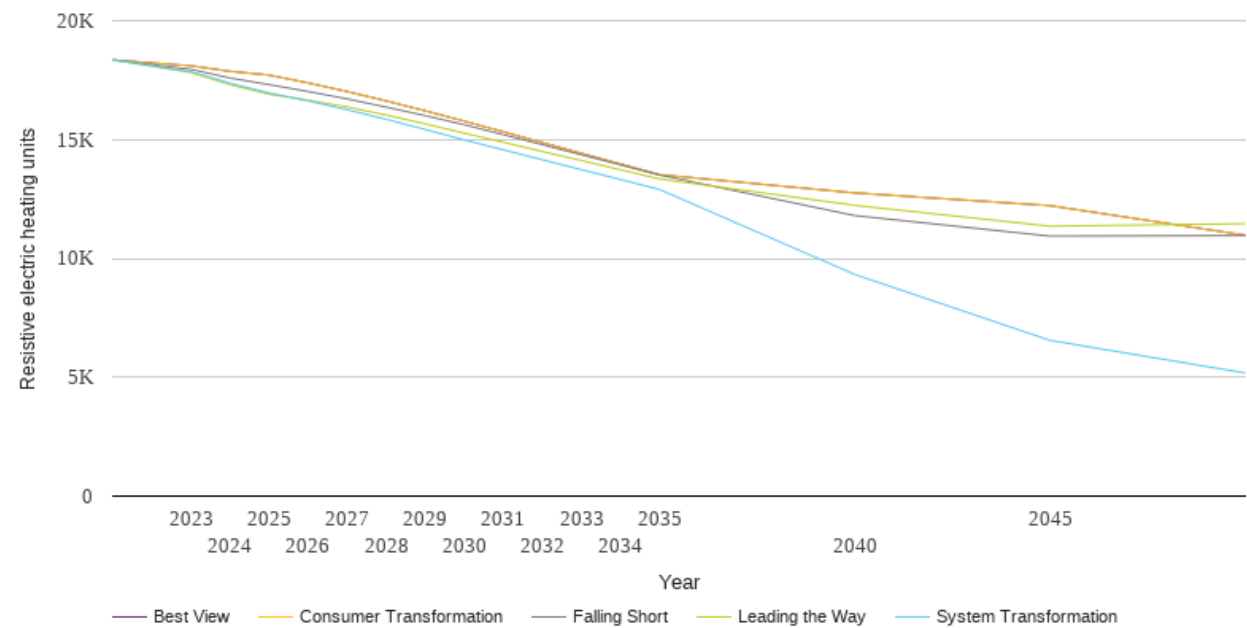
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	35.4	35.4	35.4	35.4	35.4
2023	35.7	35.7	35.7	35.7	35.7
2024	35.7	35.7	35.7	35.7	35.7
2025	45.9	45.9	45.9	45.9	45.9
2026	45.9	45.9	45.9	45.9	45.9
2027	45.9	45.9	45.9	44.1	45.9
2028	45.9	45.9	45.9	44.0	45.9
2029	45.9	45.9	45.9	42.3	45.9
2030	45.9	45.9	45.9	42.2	45.9
2031	45.9	44.1	44.1	42.2	45.9
2032	45.9	44.1	44.1	42.2	45.9
2033	45.9	44.0	44.0	32.1	45.9
2034	45.9	42.3	42.3	32.1	44.2
2035	43.9	40.2	42.0	39.1	42.2
2040	42.1	30.1	13.9	39.1	30.2
2045	42.1	37.7	9.9	52.6	30.2
2050	42.1	37.7	27.9	52.6	30.2



Technology Summary: Resistive electric heating

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

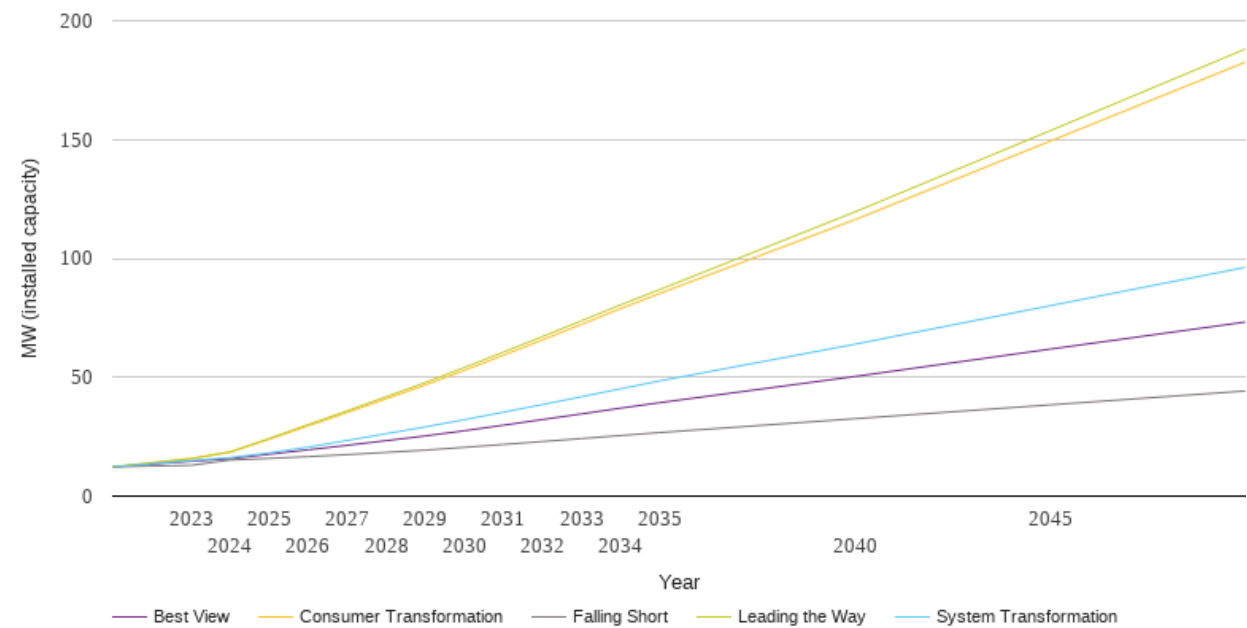
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	18348	18348	18348	18348	18348
2023	17950	17855	18100	17815	18100
2024	17588	17372	17870	17307	17870
2025	17309	16959	17710	16903	17710
2026	17020	16626	17381	16654	17381
2027	16709	16253	17018	16368	17018
2028	16363	15849	16624	16029	16624
2029	16003	15422	16208	15658	16208
2030	15622	14982	15773	15268	15773
2031	15204	14566	15324	14883	15324
2032	14784	14149	14872	14497	14872
2033	14358	13731	14422	14115	14422
2034	13934	13319	13970	13728	13970
2035	13508	12899	13521	13343	13521
2040	11800	9325	12754	12232	12754
2045	10937	6551	12219	11354	12219
2050	10960	5179	10975	11462	10975



Technology Summary: Solar Generation

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

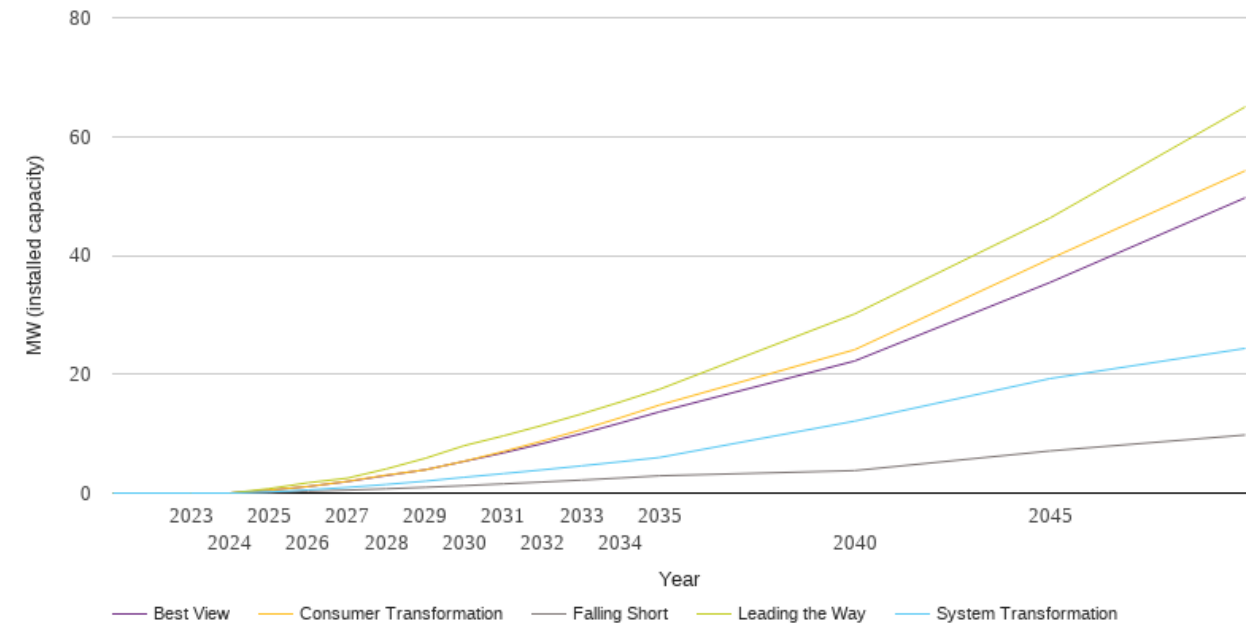
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	12.3	12.3	12.3	12.3	12.3
2023	13.0	14.9	15.7	15.8	14.6
2024	15.2	16.2	18.4	18.6	15.7
2025	15.9	18.2	23.9	24.2	17.6
2026	16.6	20.6	29.5	30.1	19.5
2027	17.4	23.4	35.2	35.9	21.4
2028	18.4	26.2	40.9	41.8	23.3
2029	19.3	29.1	46.7	47.8	25.3
2030	20.5	32.1	52.9	54.1	27.5
2031	21.7	35.3	59.2	60.5	29.8
2032	23.0	38.5	65.7	67.1	32.2
2033	24.2	41.8	72.2	73.7	34.6
2034	25.5	45.1	78.9	80.4	37.0
2035	26.7	48.4	85.2	86.8	39.3
2040	32.6	63.9	116.3	119.5	50.3
2045	38.4	80.1	149.3	153.7	61.8
2050	44.2	96.2	182.5	188.0	73.2



Technology Summary: Storage

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

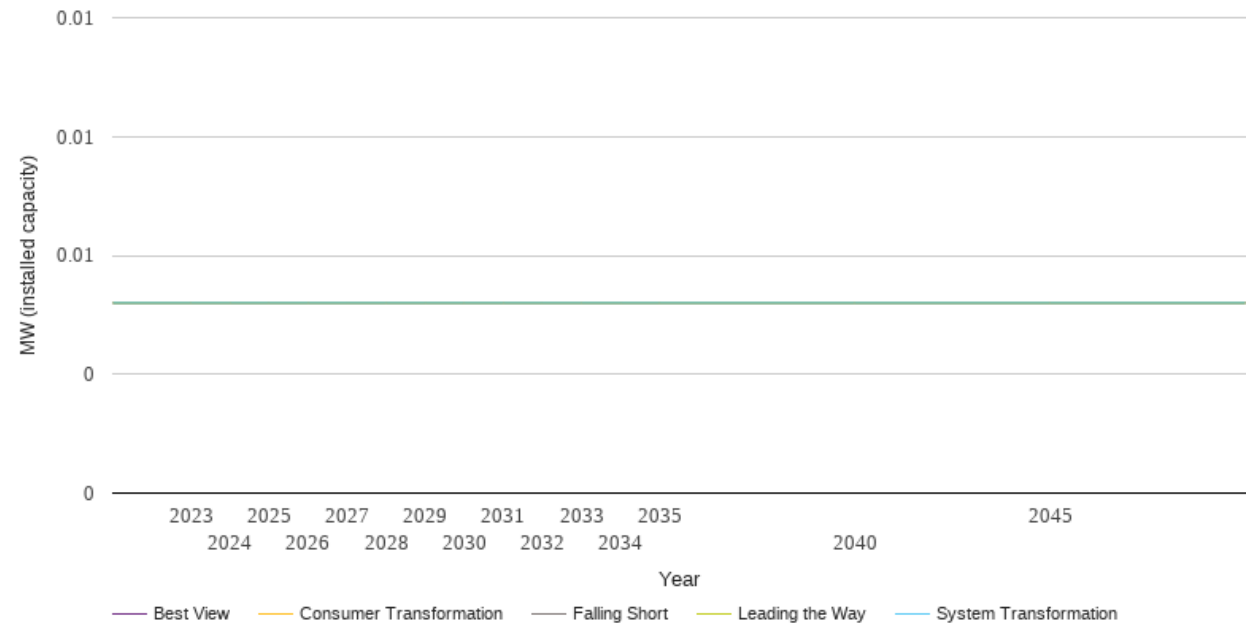
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0
2025	0.1	0.2	0.5	0.7	0.5
2026	0.3	0.5	1.1	1.7	1.1
2027	0.5	1.0	2.0	2.5	1.9
2028	0.7	1.4	3.0	4.1	3.0
2029	1.0	2.0	3.9	5.9	3.9
2030	1.3	2.7	5.4	8.0	5.3
2031	1.6	3.3	7.0	9.6	6.8
2032	1.9	3.9	8.8	11.4	8.3
2033	2.2	4.6	10.7	13.3	10.0
2034	2.5	5.3	12.7	15.3	11.8
2035	2.9	6.0	14.8	17.5	13.7
2040	3.8	12.1	24.1	30.2	22.2
2045	7.1	19.3	39.4	46.3	35.4
2050	9.8	24.4	54.2	65.0	49.7



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	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



National Grid Electricity Distribution PLC 09223384)
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