

# Distribution Future Energy Scenarios 2022

Local Authority:  
Walsall

## 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 Walsall covered by the NGED licence areas.



## Scenario Summary

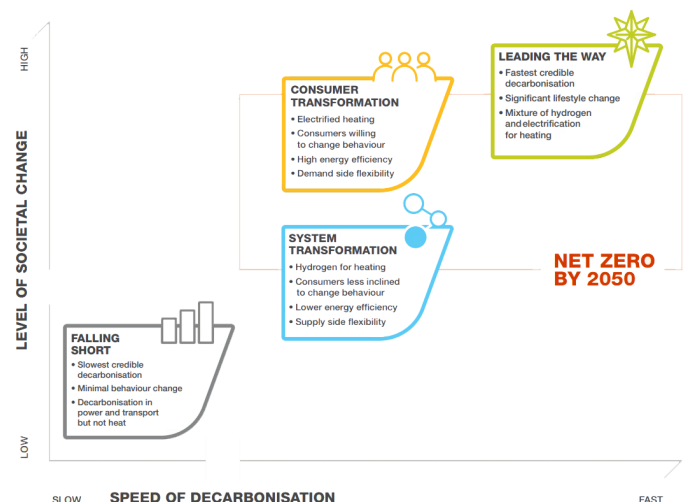
This DFES scenario framework includes three scenarios that are compliant with UK government targets of Net Zero greenhouse gas emissions by 2050. A summary of each scenario is below:

**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 Walsall 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	1342	4207	3512	3512	1348	81729	43649	43649	1359
Domestic	New dwellings	0	1847	1959	1959	2237	2486	2415	2415	2383
Electric vehicles	Electric vehicles	2668	21569	27969	51631	51717	164136	153087	151584	123012
EV Charge Point	EV charge points	1263	9243	14351	27328	29879	88274	90013	92930	93929
Heat pumps	Heat pump installations	1050	6636	4950	18591	29812	62229	70921	122042	108175
Hydrogen electrolysis	MW (installed capacity)	0.0	0.2	2.2	0.4	2.9	1.4	6.7	3.5	9.1
Non domestic	Floorspace (metres squared) of new I&C developments	0	107801	123273	123273	134701	189579	189428	189428	189579
Other Distributed Generation	MW (installed capacity)	4.3	4.6	4.6	4.6	4.6	0.3	0.3	0.3	0.3
Resistive electric heating	Resistive electric heating units	14855	11984	11643	12395	11794	8181	3507	8266	8586
Solar Generation	MW (installed capacity)	10.2	15.1	24.9	42.7	42.2	40.9	90.0	166.7	170.7
Storage	MW (installed capacity)	0.0	0.9	2.1	4.4	6.4	8.2	20.4	47.1	57.6
Wind	MW (installed capacity)	0.0	0.0	0.0	0.2	0.2	0.1	0.5	1.9	1.5

## 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

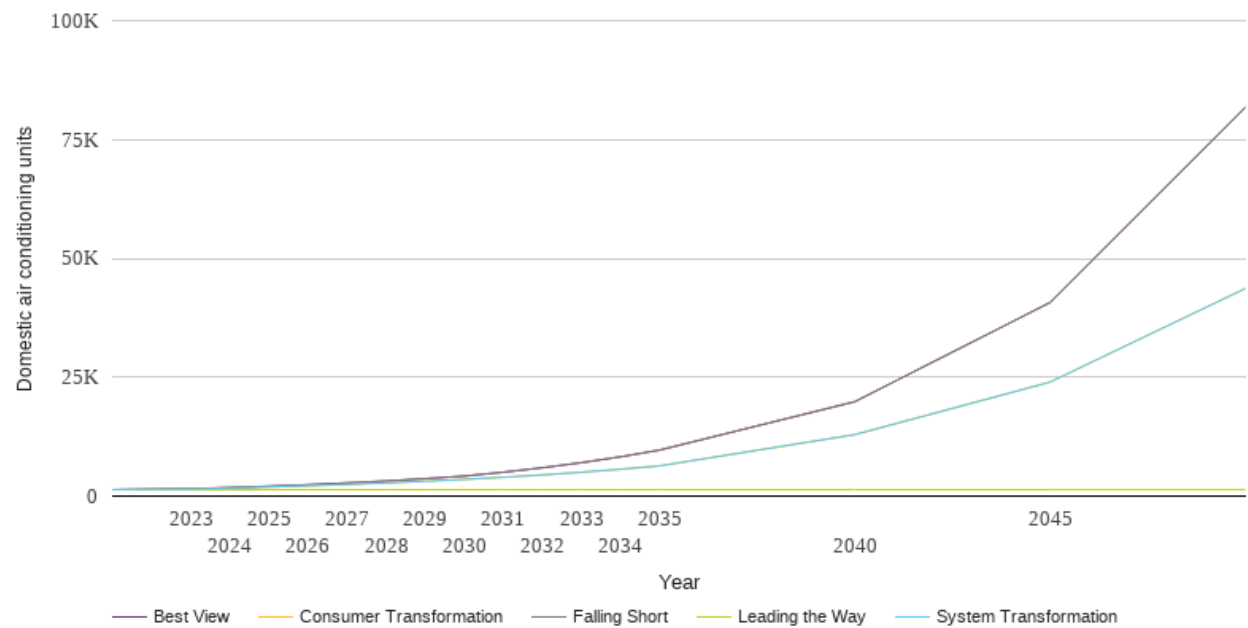
NGED is committed to continually improving the DFES process. To ensure the DFES projections fully capture local ambition, in 2022 we have appointed two DSO Strategic Engagement Officers to engage with local authorities. Any feedback will be incorporated into future Distribution Future Energy Scenarios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

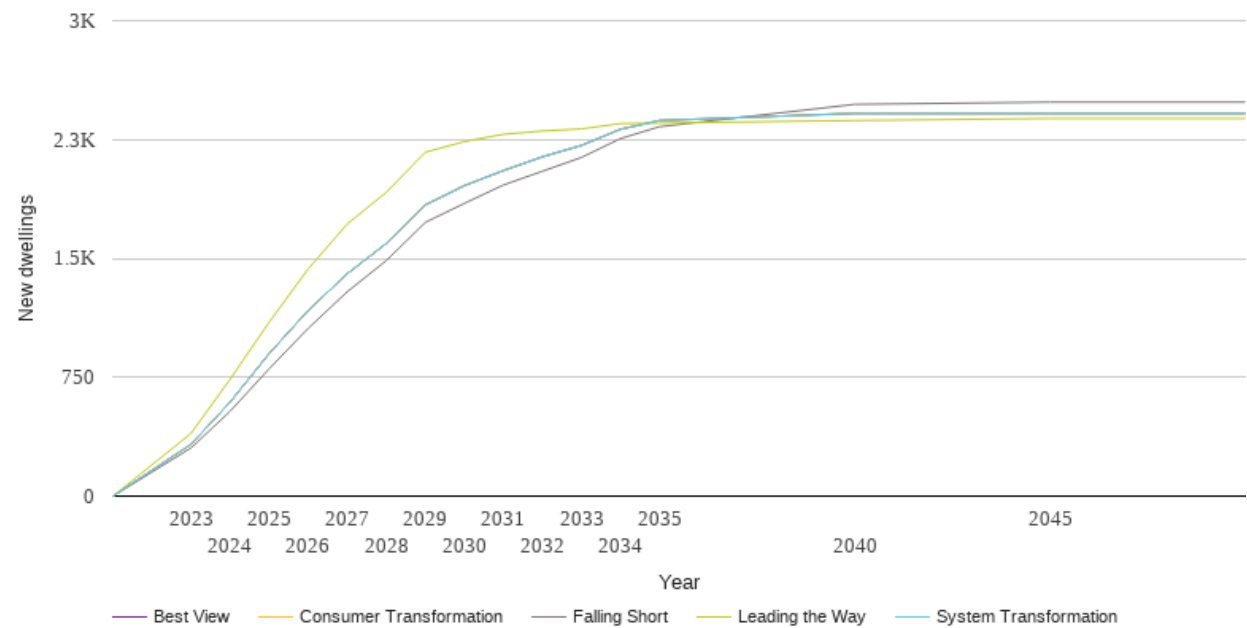
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	1342	1342	1342	1342	1342
2023	1547	1522	1522	1343	1547
2024	1790	1709	1709	1344	1790
2025	2073	1927	1927	1345	2073
2026	2393	2172	2172	1346	2393
2027	2760	2450	2450	1346	2760
2028	3175	2765	2765	1347	3175
2029	3660	3120	3120	1348	3660
2030	4207	3512	3512	1348	4207
2031	5023	3958	3958	1349	5023
2032	5959	4457	4457	1350	5959
2033	7033	5017	5017	1350	7033
2034	8266	5653	5653	1351	8266
2035	9675	6355	6355	1351	9675
2040	19853	12924	12924	1354	19853
2045	40708	23970	23970	1356	40708
2050	81729	43649	43649	1359	81729



# Technology Summary: Domestic

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

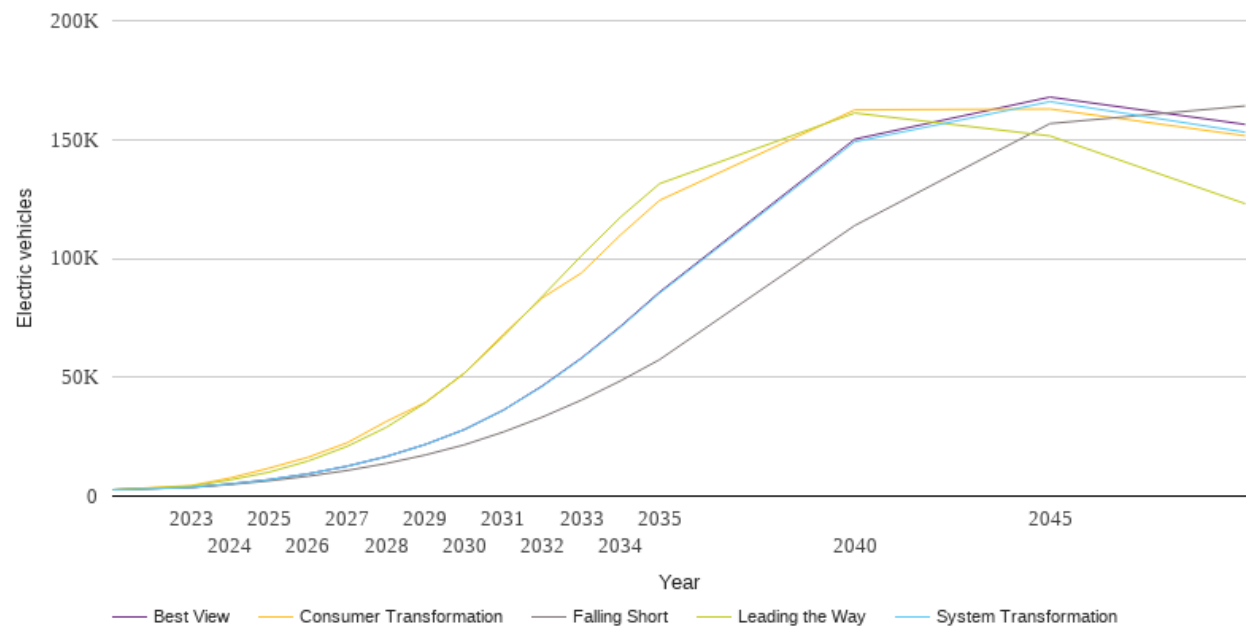
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	304	327	327	396	327
2024	535	593	593	737	593
2025	803	899	899	1097	899
2026	1058	1171	1171	1433	1171
2027	1289	1403	1403	1717	1403
2028	1486	1594	1594	1917	1594
2029	1727	1837	1837	2170	1837
2030	1847	1959	1959	2237	1959
2031	1963	2054	2054	2283	2054
2032	2050	2141	2141	2304	2141
2033	2137	2213	2213	2317	2213
2034	2256	2315	2315	2351	2315
2035	2331	2370	2370	2354	2370
2040	2472	2415	2415	2370	2415
2045	2486	2415	2415	2383	2415
2050	2486	2415	2415	2383	2415



# Technology Summary: Electric vehicles

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

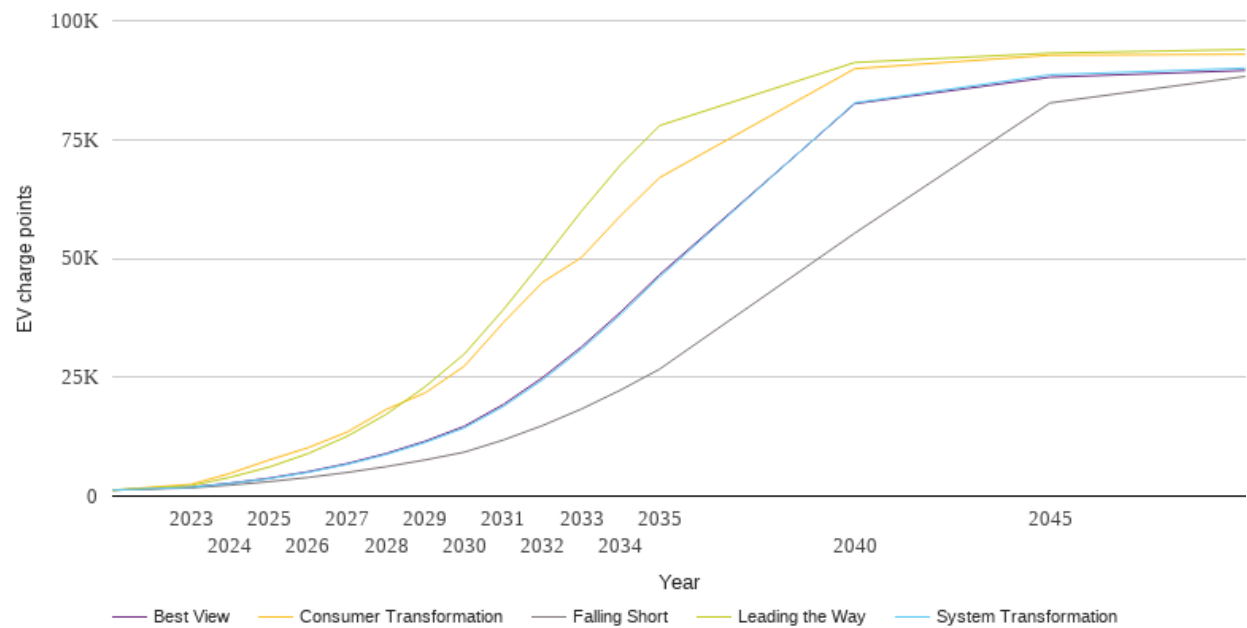
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	2668	2668	2668	2668	2668
2023	3623	3697	4406	4160	3697
2024	4859	5099	7626	6794	5099
2025	6420	6895	11756	10068	6896
2026	8358	9374	16346	14767	9375
2027	10780	12577	22434	20931	12579
2028	13720	16624	31378	28900	16628
2029	17292	21703	39351	39210	21710
2030	21569	27969	51631	51717	27978
2031	26965	36157	68055	67226	36169
2032	33241	46156	83422	84076	46384
2033	40392	57808	93867	101149	58079
2034	48475	71058	109876	117346	71412
2035	57409	85347	124394	131413	85796
2040	113825	149051	162474	161152	150138
2045	156705	165947	162864	151526	167860
2050	164136	153087	151584	123012	156353



# Technology Summary: EV Charge Point

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

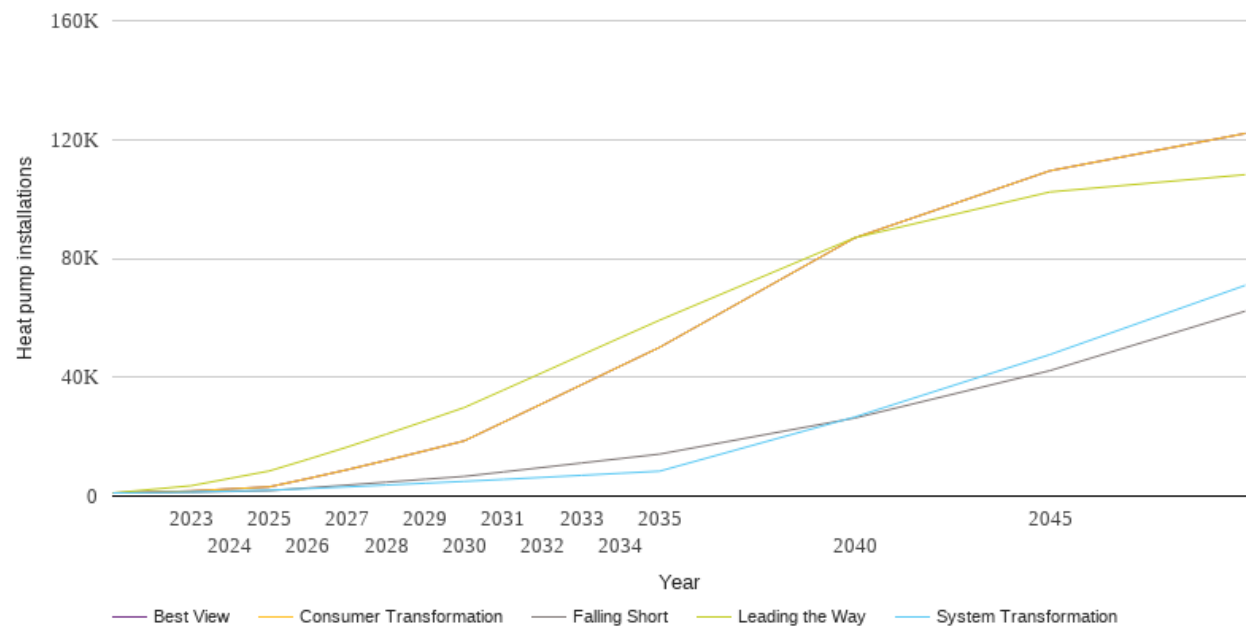
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	1263	1263	1263	1263	1263
2023	1720	1853	2474	2180	1872
2024	2306	2651	4781	3953	2702
2025	3038	3683	7589	6101	3772
2026	3924	5011	10187	8946	5136
2027	4970	6684	13478	12587	6845
2028	6197	8757	18224	17197	8971
2029	7609	11293	21726	23036	11554
2030	9243	14351	27328	29879	14689
2031	11800	18853	36501	39205	19277
2032	14828	24420	44949	49397	24909
2033	18320	30879	50209	59938	31373
2034	22297	38165	58965	69656	38672
2035	26702	46090	66982	77927	46561
2040	55308	82704	89896	91205	82544
2045	82700	88615	92736	93175	88116
2050	88274	90013	92930	93929	89535



# Technology Summary: Heat pumps

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

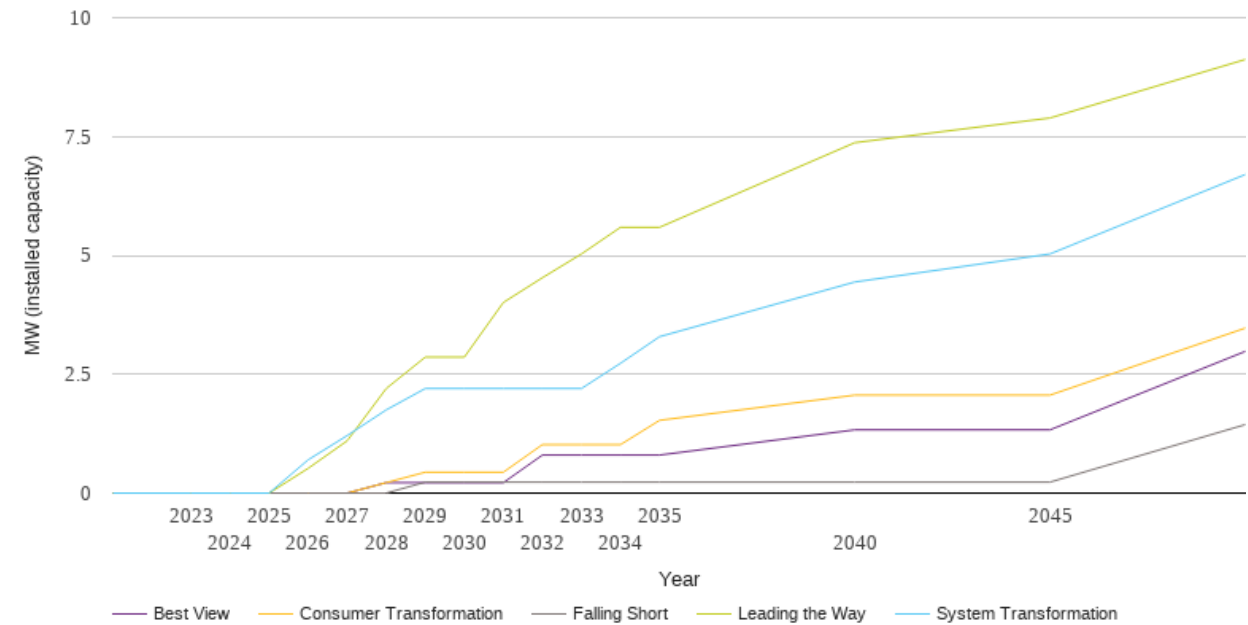
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	1050	1050	1050	1050	1050
2023	1306	1344	1711	3486	1711
2024	1560	1656	2400	5957	2400
2025	1815	1985	3087	8439	3087
2026	2760	2523	5918	12394	5918
2027	3718	3096	8876	16502	8876
2028	4688	3718	12022	20836	12022
2029	5663	4332	15257	25271	15257
2030	6636	4950	18591	29812	18591
2031	8129	5614	24848	35669	24848
2032	9632	6291	31132	41543	31132
2033	11133	6984	37446	47451	37446
2034	12628	7682	43765	53339	43765
2035	14128	8380	50057	59197	50057
2040	26258	26624	86890	86952	86890
2045	42227	47631	109487	102350	109487
2050	62229	70921	122042	108175	122042



# Technology Summary: Hydrogen electrolysis

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

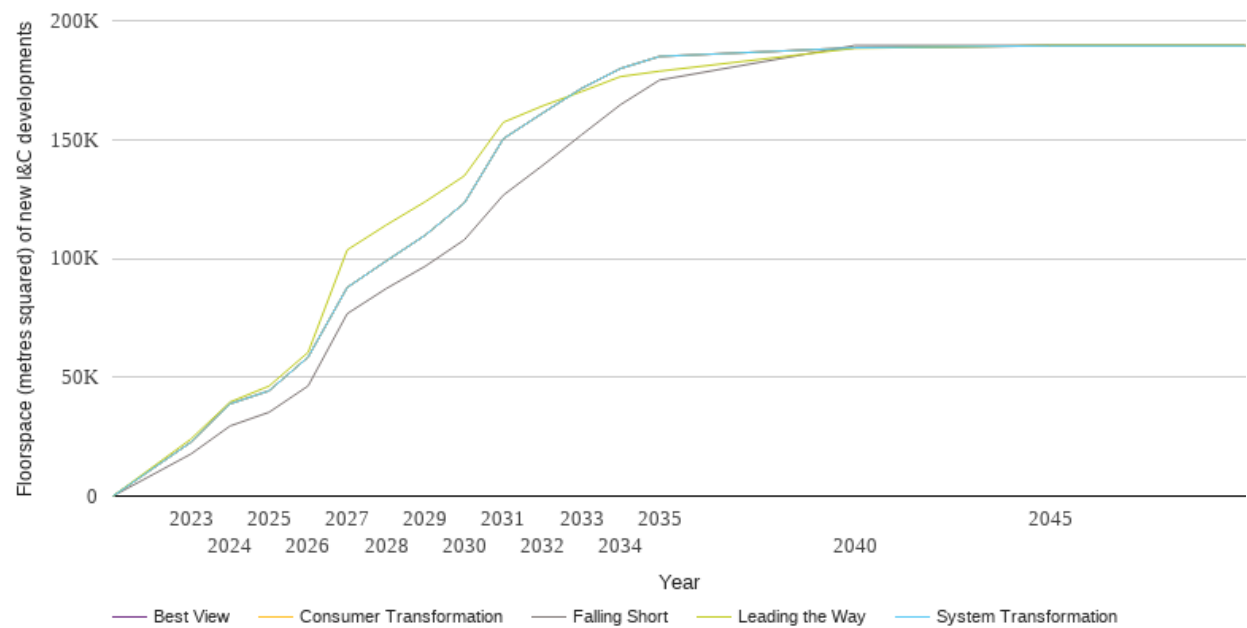
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.0	0.0	0.0	0.0
2026	0.0	0.7	0.0	0.5	0.0
2027	0.0	1.2	0.0	1.1	0.0
2028	0.0	1.7	0.2	2.2	0.2
2029	0.2	2.2	0.4	2.9	0.2
2030	0.2	2.2	0.4	2.9	0.2
2031	0.2	2.2	0.4	4.0	0.2
2032	0.2	2.2	1.0	4.5	0.8
2033	0.2	2.2	1.0	5.0	0.8
2034	0.2	2.7	1.0	5.6	0.8
2035	0.2	3.3	1.5	5.6	0.8
2040	0.2	4.4	2.1	7.4	1.3
2045	0.2	5.0	2.1	7.9	1.3
2050	1.4	6.7	3.5	9.1	3.0



# Technology Summary: Non domestic

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

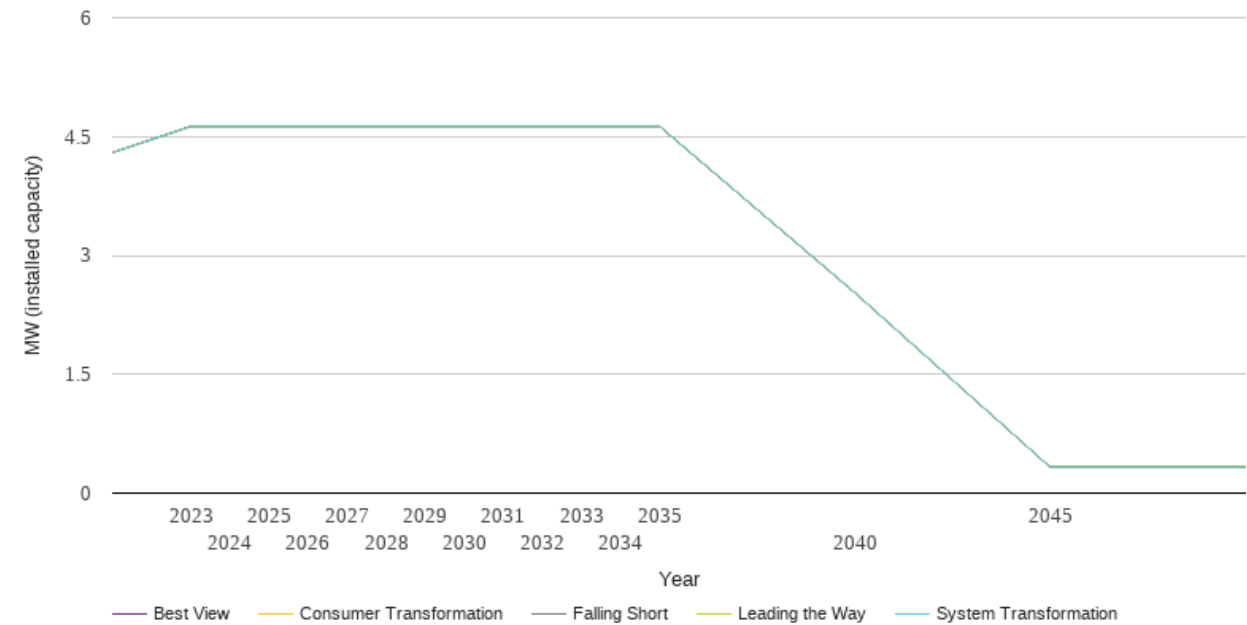
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	17729	22698	22698	24034	22698
2024	29489	38812	38812	39570	38812
2025	35278	44309	44309	46296	44309
2026	46347	58470	58470	60486	58470
2027	76736	87768	87768	103563	87768
2028	87301	98907	98907	114035	98907
2029	96707	109786	109786	123865	109786
2030	107801	123273	123273	134701	123273
2031	126625	150355	150355	157262	150355
2032	139016	161053	161053	164108	161053
2033	151947	171480	171480	170161	171480
2034	164662	179879	179879	176484	179879
2035	175002	184950	184950	178749	184950
2040	189579	188617	188617	188395	188617
2045	189579	189428	189428	189579	189428
2050	189579	189428	189428	189579	189428



# Technology Summary: Other Distributed Generation

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

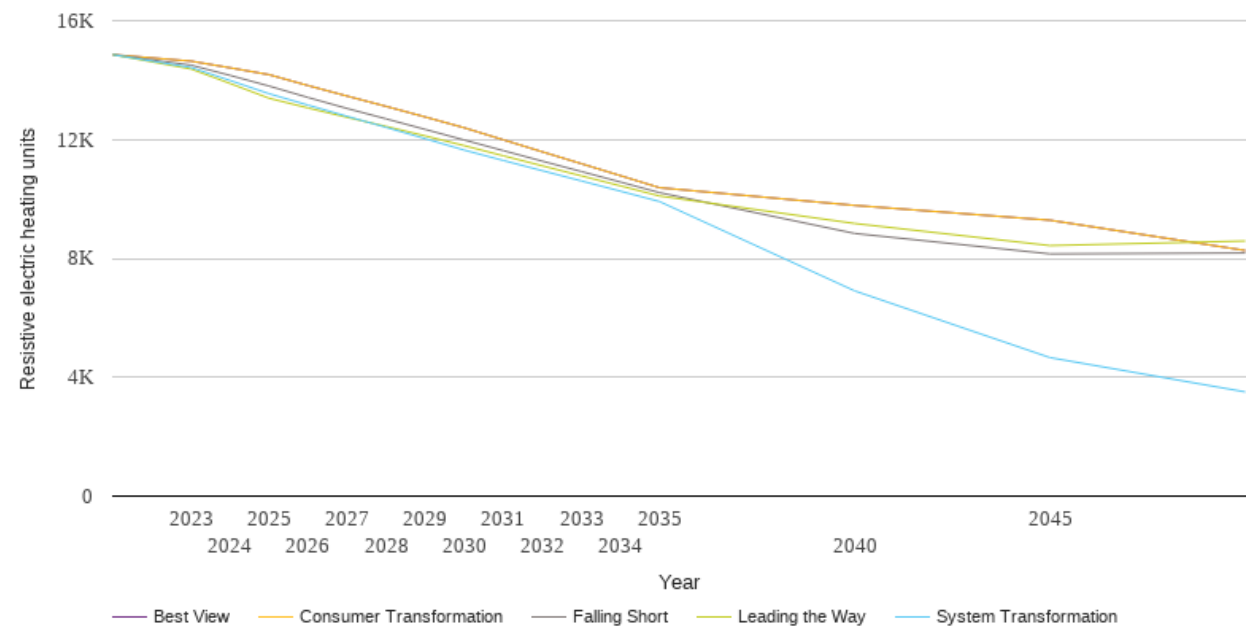
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	4.3	4.3	4.3	4.3	4.3
2023	4.6	4.6	4.6	4.6	4.6
2024	4.6	4.6	4.6	4.6	4.6
2025	4.6	4.6	4.6	4.6	4.6
2026	4.6	4.6	4.6	4.6	4.6
2027	4.6	4.6	4.6	4.6	4.6
2028	4.6	4.6	4.6	4.6	4.6
2029	4.6	4.6	4.6	4.6	4.6
2030	4.6	4.6	4.6	4.6	4.6
2031	4.6	4.6	4.6	4.6	4.6
2032	4.6	4.6	4.6	4.6	4.6
2033	4.6	4.6	4.6	4.6	4.6
2034	4.6	4.6	4.6	4.6	4.6
2035	4.6	4.6	4.6	4.6	4.6
2040	2.5	2.5	2.5	2.5	2.5
2045	0.3	0.3	0.3	0.3	0.3
2050	0.3	0.3	0.3	0.3	0.3



# Technology Summary: Resistive electric heating

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

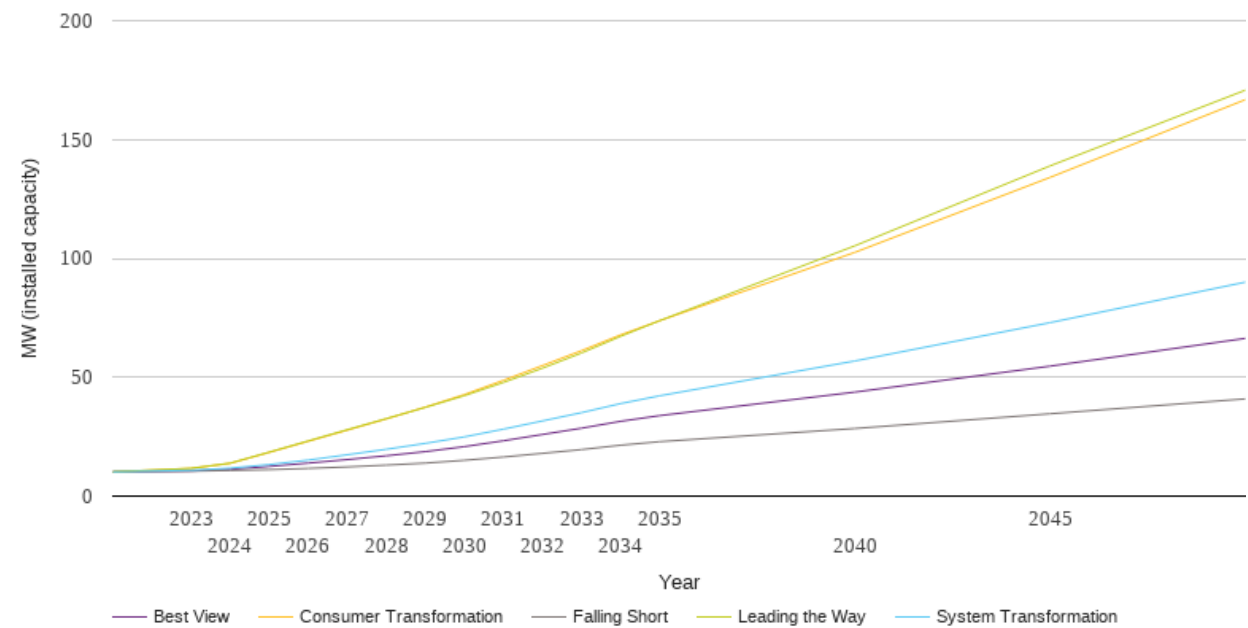
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	14855	14855	14855	14855	14855
2023	14504	14425	14638	14374	14638
2024	14159	13988	14414	13887	14414
2025	13800	13542	14183	13389	14183
2026	13414	13158	13816	13062	13816
2027	13045	12781	13462	12746	13462
2028	12695	12408	13115	12440	13115
2029	12340	12029	12759	12121	12759
2030	11984	11643	12395	11794	12395
2031	11627	11295	11990	11453	11990
2032	11272	10950	11586	11115	11586
2033	10923	10606	11186	10778	11186
2034	10570	10262	10784	10441	10784
2035	10214	9913	10379	10100	10379
2040	8839	6906	9783	9174	9783
2045	8152	4661	9285	8431	9285
2050	8181	3507	8266	8586	8266



# Technology Summary: Solar Generation

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

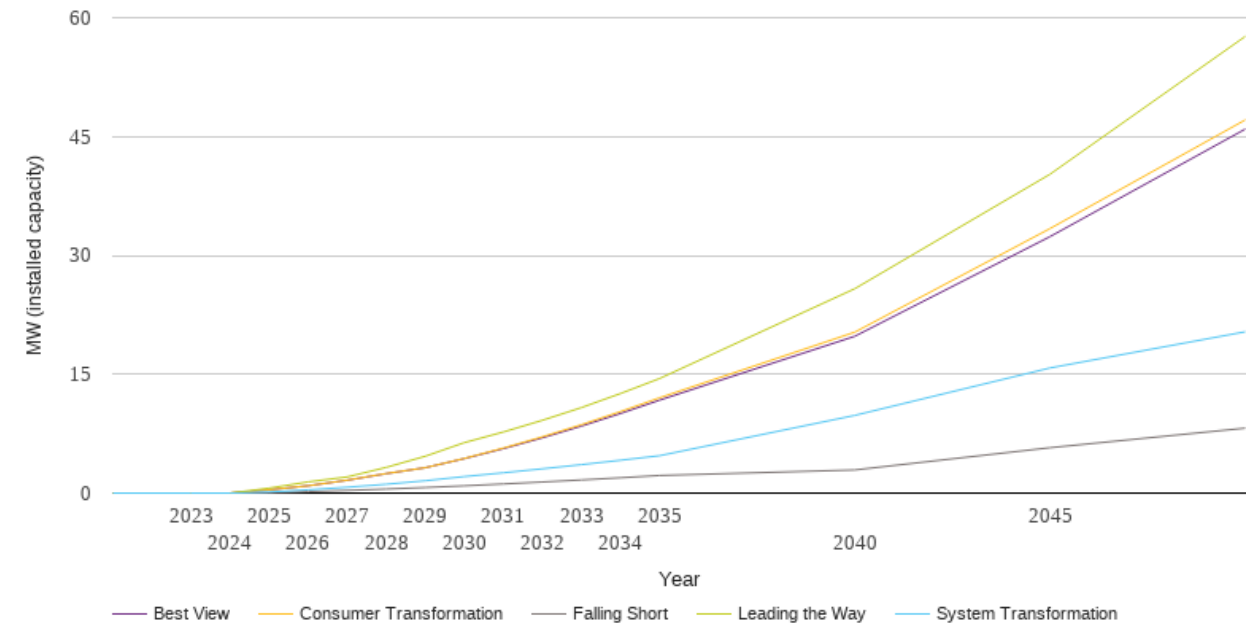
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	10.2	10.2	10.2	10.2	10.2
2023	10.5	10.9	11.6	11.7	10.6
2024	10.8	11.8	13.8	13.8	11.2
2025	11.1	13.3	18.4	18.5	12.5
2026	11.6	15.1	23.0	23.2	13.9
2027	12.3	17.4	27.7	27.9	15.4
2028	13.0	19.7	32.5	32.6	17.0
2029	13.9	22.2	37.4	37.3	18.7
2030	15.1	24.9	42.7	42.2	20.8
2031	16.4	28.2	48.7	47.8	23.3
2032	18.0	31.6	54.9	53.8	25.9
2033	19.6	35.1	61.2	60.2	28.6
2034	21.4	38.9	67.8	67.2	31.5
2035	22.9	42.2	73.8	73.8	33.8
2040	28.4	56.8	102.5	105.3	43.7
2045	34.6	73.0	134.1	138.9	54.7
2050	40.9	90.0	166.7	170.7	66.3



# Technology Summary: Storage

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

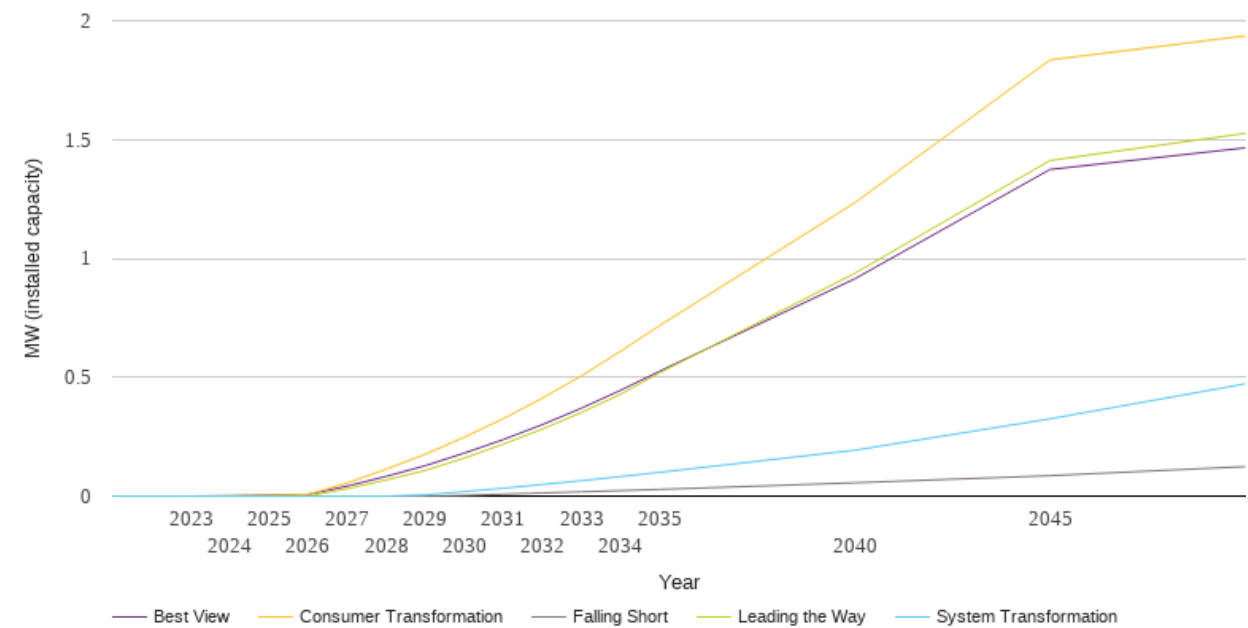
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.1	0.4	0.6	0.4
2026	0.2	0.4	0.9	1.4	0.9
2027	0.3	0.7	1.6	2.0	1.6
2028	0.5	1.1	2.5	3.2	2.5
2029	0.7	1.6	3.2	4.7	3.2
2030	0.9	2.1	4.4	6.4	4.4
2031	1.2	2.6	5.7	7.7	5.6
2032	1.4	3.1	7.1	9.2	7.0
2033	1.7	3.6	8.6	10.8	8.5
2034	1.9	4.1	10.3	12.6	10.0
2035	2.2	4.7	12.0	14.5	11.7
2040	2.9	9.8	20.3	25.8	19.8
2045	5.7	15.8	33.4	40.2	32.4
2050	8.2	20.4	47.1	57.6	45.9



# 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	0.1	0.0	0.0
2028	0.0	0.0	0.1	0.1	0.1
2029	0.0	0.0	0.2	0.1	0.1
2030	0.0	0.0	0.2	0.2	0.2
2031	0.0	0.0	0.3	0.2	0.2
2032	0.0	0.0	0.4	0.3	0.3
2033	0.0	0.1	0.5	0.4	0.4
2034	0.0	0.1	0.6	0.4	0.4
2035	0.0	0.1	0.7	0.5	0.5
2040	0.1	0.2	1.2	0.9	0.9
2045	0.1	0.3	1.8	1.4	1.4
2050	0.1	0.5	1.9	1.5	1.5



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National Grid Electricity Distribution (West Midlands) Plc (company number 03600574))  
National Grid Electricity Distribution (South West) Plc (company number 02366894))  
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