

# Distribution Future Energy Scenarios 2022

Local Authority:  
Solihull

## What are Distribution Future Energy Scenarios?

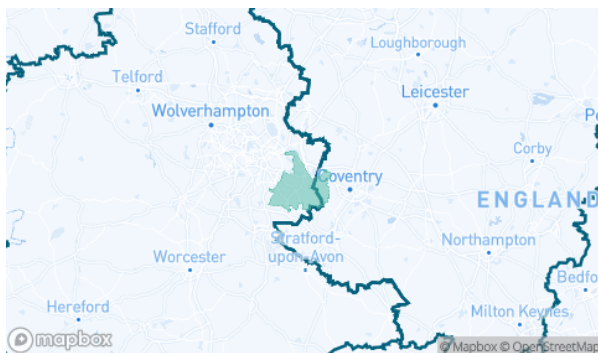
National Grid run Distribution Future Energy Scenarios (DFES) on an annual cycle for all licence areas, and represent a range of credible future scenarios of what could connect to the distribution network.

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 Solihull 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 Solihull 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	595	1828	1536	1536	595	56303	27810	27810	595
Domestic	New dwellings	0	4800	5329	5329	6535	9565	9453	9453	9372
Electric vehicles	Electric vehicles	2697	22429	26411	48917	48497	146931	128369	130651	102187
EV Charge Point	EV charge points	1795	11338	15587	29275	32000	88288	81154	86047	87398
Heat pumps	Heat pump installations	245	5710	4550	16376	26579	46291	53691	93179	82779
Hydrogen electrolysis	MW (installed capacity)	0.0	0.0	0.4	0.0	0.0	7.2	5.2	3.4	4.4
Non domestic	Floorspace (metres squared) of new I&C developments	0	83158	97957	97957	108398	132095	132000	132000	132095
Other Distributed Generation	MW (installed capacity)	3.9	3.9	3.6	2.0	2.9	3.0	2.7	1.7	4.0
Resistive electric heating	Resistive electric heating units	12078	9846	9534	10178	9704	6611	2768	6663	6945
Solar Generation	MW (installed capacity)	9.7	15.7	26.6	44.3	43.0	48.0	103.1	175.1	172.5
Storage	MW (installed capacity)	0.0	0.4	1.8	4.4	6.0	5.3	13.5	36.8	47.0
Wind	MW (installed capacity)	0.0	0.0	0.1	1.9	1.2	0.8	2.9	13.1	10.5

## 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

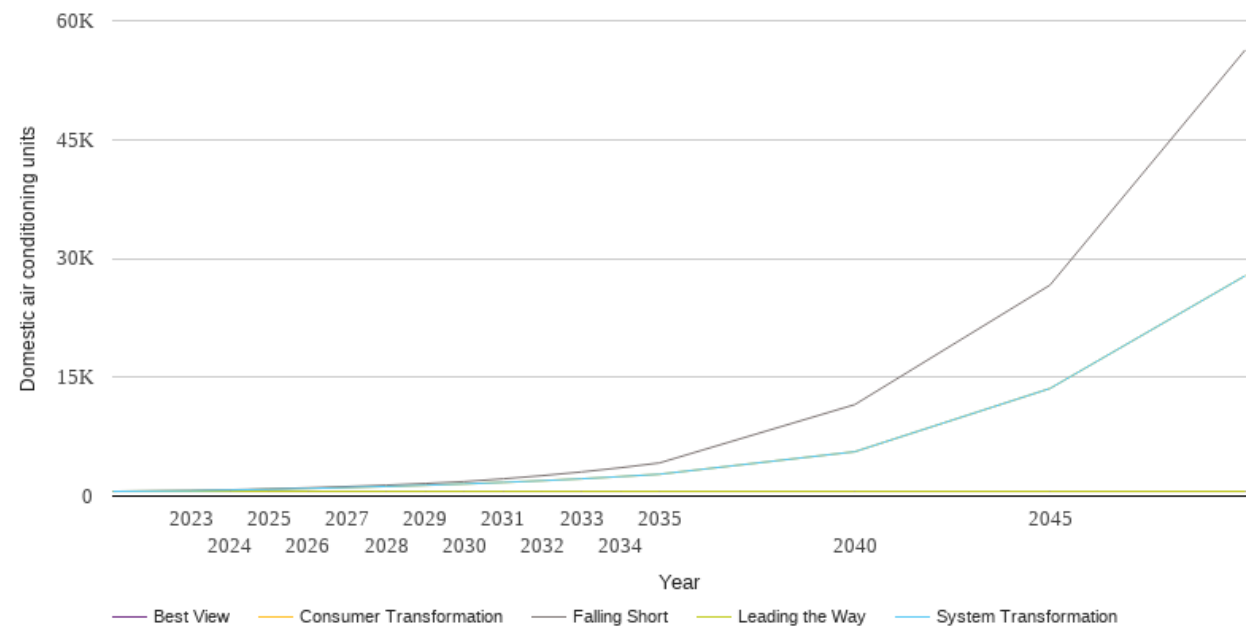
NGED is committed to continually improving the DFES process. To ensure the DFES projections fully capture local ambition, in 2022 we have appointed two DSO Strategic Engagement Officers to engage with local authorities. Any feedback will be incorporated into future Distribution Future Energy Scenarios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

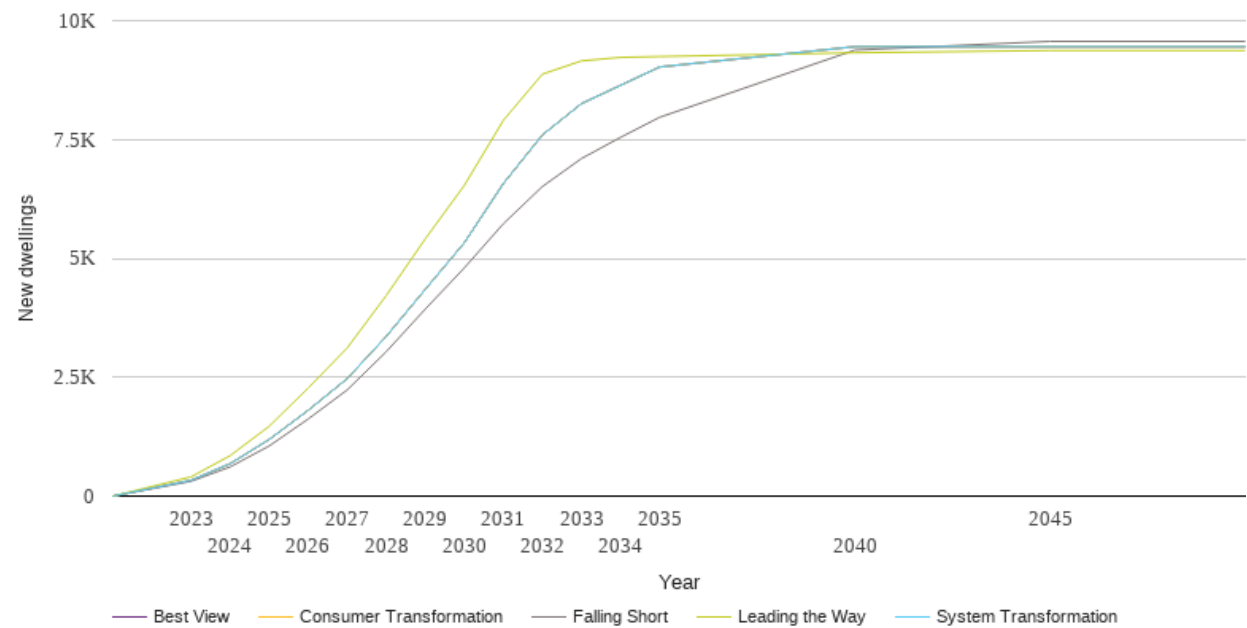
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	595	595	595	595	595
2023	686	674	674	595	595
2024	789	757	757	595	595
2025	910	853	853	595	595
2026	1047	959	959	595	595
2027	1205	1078	1078	595	595
2028	1384	1214	1214	595	595
2029	1592	1367	1367	595	595
2030	1828	1536	1536	595	595
2031	2180	1729	1729	595	595
2032	2584	1944	1944	595	595
2033	3047	2185	2185	595	595
2034	3579	2459	2459	595	595
2035	4187	2762	2762	595	595
2040	11545	5597	5597	595	595
2045	26627	13582	13582	595	595
2050	56303	27810	27810	595	595



# Technology Summary: Domestic

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

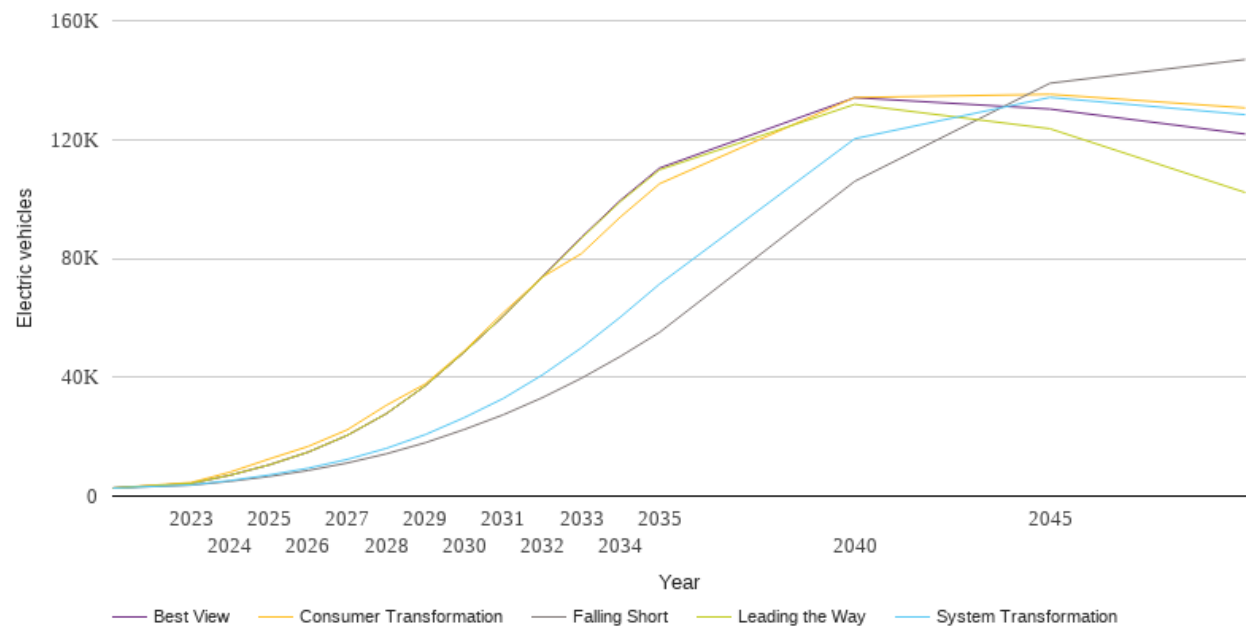
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	311	332	332	404	332
2024	614	681	681	850	681
2025	1054	1190	1190	1467	1190
2026	1621	1804	1804	2271	1804
2027	2233	2471	2471	3116	2471
2028	3037	3360	3360	4219	3360
2029	3933	4349	4349	5411	4349
2030	4800	5329	5329	6535	5329
2031	5729	6575	6575	7904	6575
2032	6512	7597	7597	8875	7597
2033	7100	8255	8255	9154	8255
2034	7545	8640	8640	9228	8640
2035	7967	9025	9025	9245	9025
2040	9381	9453	9453	9325	9453
2045	9565	9453	9453	9372	9453
2050	9565	9453	9453	9372	9453



# Technology Summary: Electric vehicles

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

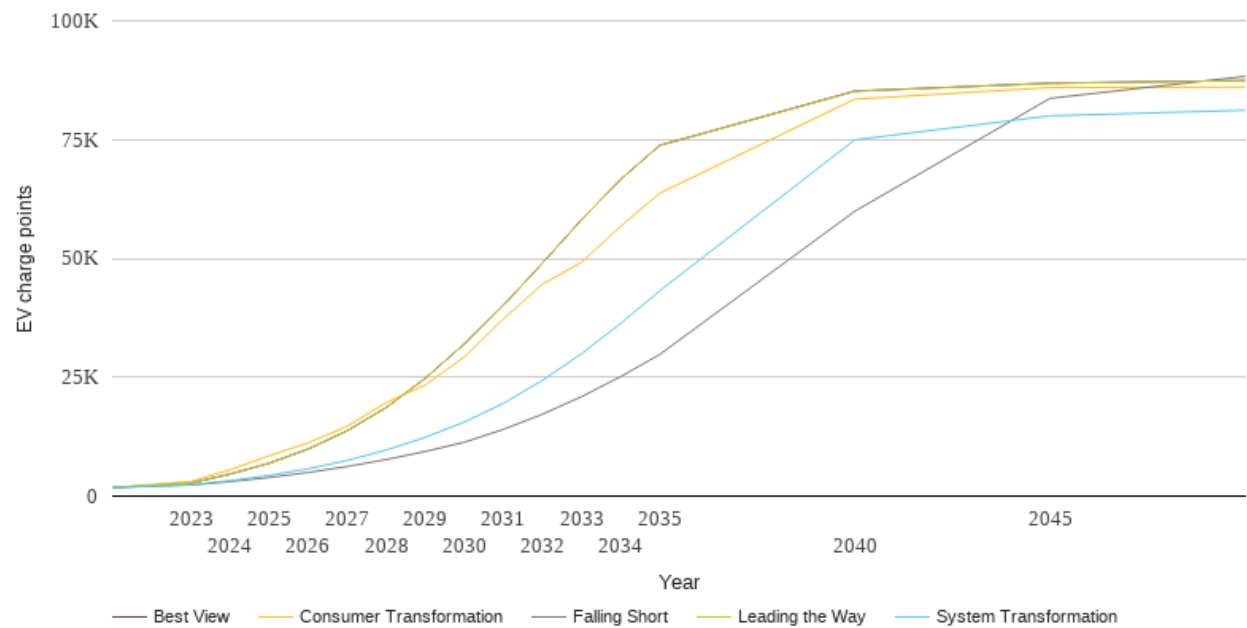
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	2697	2697	2697	2697	2697
2023	3680	3766	4561	4252	4252
2024	4968	5225	8068	7031	7031
2025	6591	7107	12482	10497	10496
2026	8621	9391	16708	14805	14797
2027	11145	12333	22304	20446	20434
2028	14220	16047	30537	27729	27712
2029	17955	20695	37749	37129	37107
2030	22429	26411	48917	48497	48468
2031	27379	32877	61731	60605	60568
2032	33142	40779	73716	73692	73911
2033	39671	49912	81620	86789	87070
2034	47025	60268	93962	99161	99569
2035	55115	71369	105125	109821	110399
2040	105941	120278	134162	131837	134100
2045	138953	134178	135226	123633	130252
2050	146931	128369	130651	102187	121847



# 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	1795	1795	1795	1795	1795
2023	2342	2410	3079	2761	2767
2024	3039	3256	5541	4624	4638
2025	3912	4345	8470	6892	6911
2026	4968	5743	11211	9894	9909
2027	6221	7506	14680	13745	13756
2028	7689	9688	19684	18619	18631
2029	9384	12362	23363	24784	24791
2030	11338	15587	29275	32000	32015
2031	14033	19499	37242	40103	40125
2032	17220	24335	44579	48962	48990
2033	20911	29947	49138	58118	58140
2034	25111	36274	56742	66561	66581
2035	29760	43152	63700	73736	73760
2040	59909	74939	83490	85136	85183
2045	83657	79978	85929	86833	86853
2050	88288	81154	86047	87398	87420

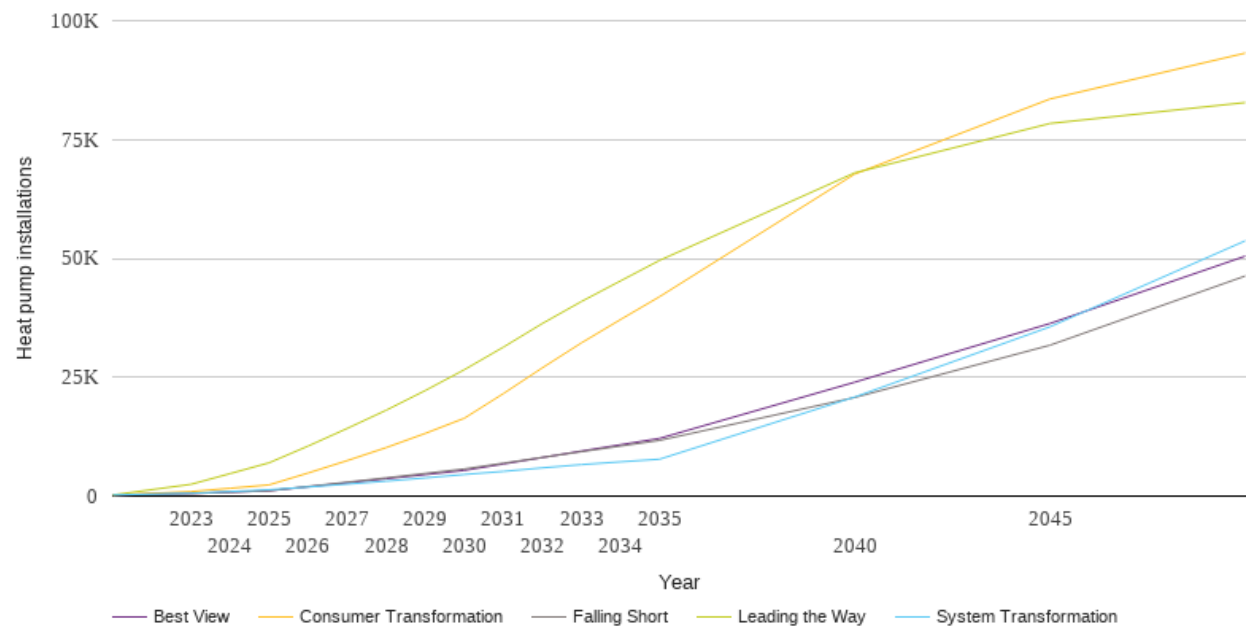




# Technology Summary: Heat pumps

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

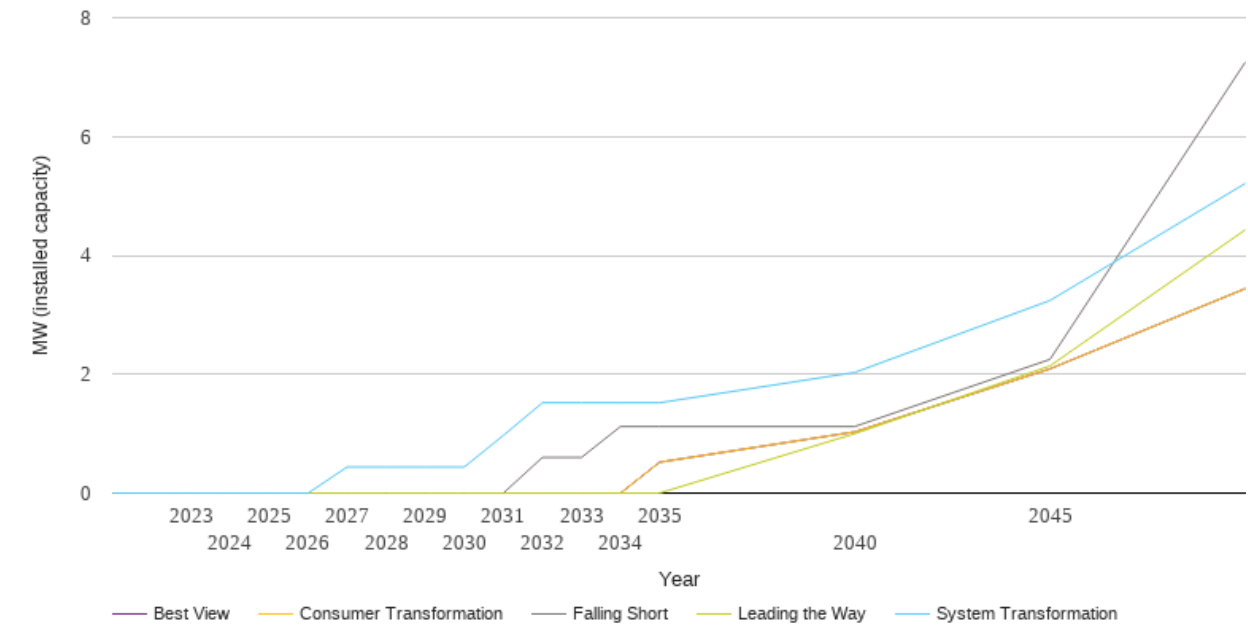
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	245	245	245	245	245
2023	539	595	942	2481	539
2024	828	955	1643	4727	828
2025	1124	1333	2362	7003	1124
2026	2019	1911	4856	10527	1951
2027	2927	2523	7467	14233	2797
2028	3840	3144	10203	18068	3649
2029	4766	3824	13189	22209	4516
2030	5710	4550	16376	26579	5405
2031	6919	5194	21558	31331	6755
2032	8135	5940	26991	36313	8114
2033	9346	6624	32232	40933	9473
2034	10529	7203	37134	45262	10793
2035	11713	7757	41940	49576	12131
2040	20742	20843	67743	68000	23955
2045	31741	35605	83526	78380	36305
2050	46291	53691	93179	82779	50467



# Technology Summary: Hydrogen electrolysis

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

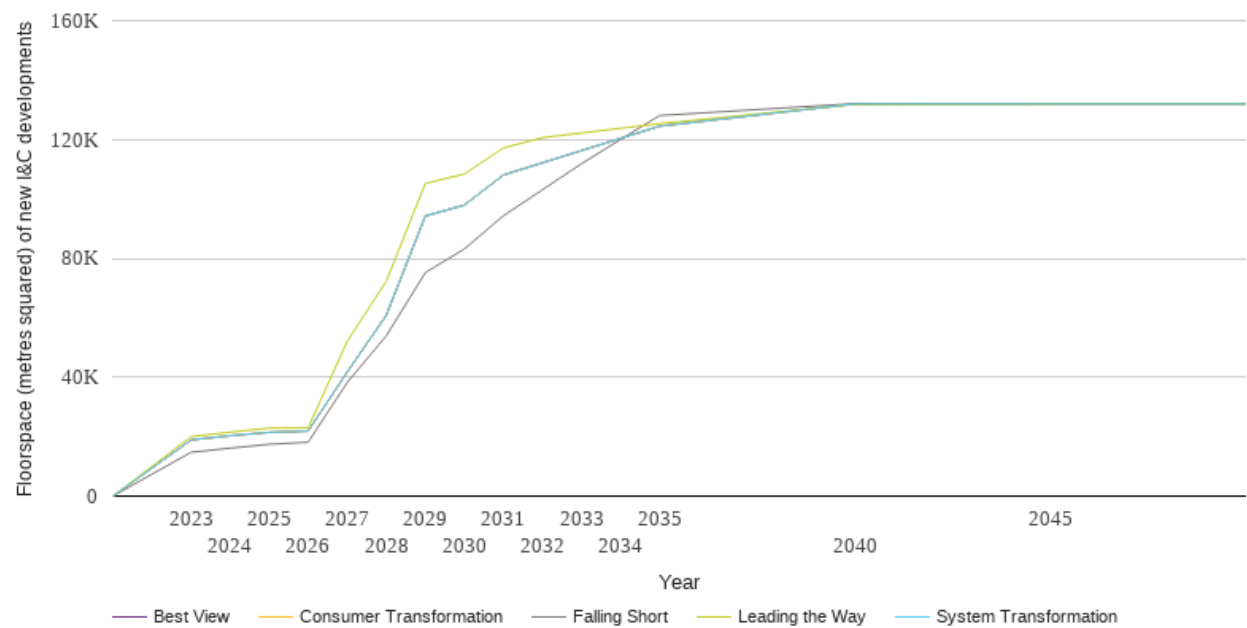
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.0	0.0	0.0	0.0
2026	0.0	0.0	0.0	0.0	0.0
2027	0.0	0.4	0.0	0.0	0.0
2028	0.0	0.4	0.0	0.0	0.0
2029	0.0	0.4	0.0	0.0	0.0
2030	0.0	0.4	0.0	0.0	0.0
2031	0.0	1.0	0.0	0.0	0.0
2032	0.6	1.5	0.0	0.0	0.0
2033	0.6	1.5	0.0	0.0	0.0
2034	1.1	1.5	0.0	0.0	0.0
2035	1.1	1.5	0.5	0.0	0.5
2040	1.1	2.0	1.0	1.0	1.0
2045	2.3	3.2	2.1	2.1	2.1
2050	7.2	5.2	3.4	4.4	3.4



# Technology Summary: Non domestic

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

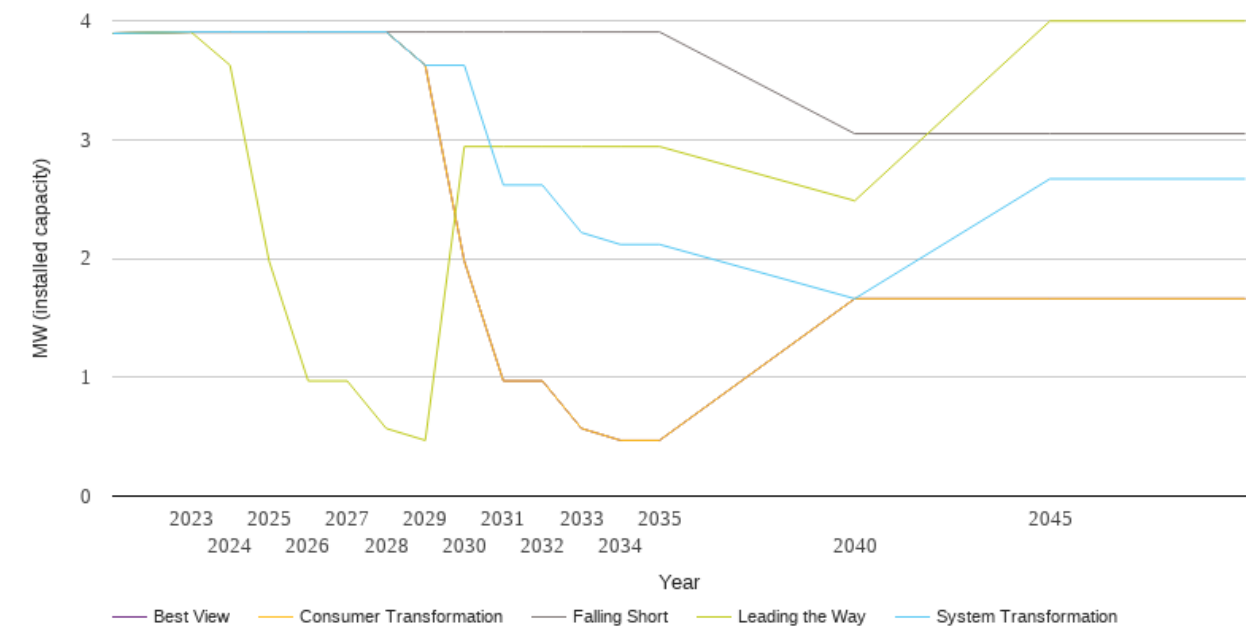
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	14748	18900	18900	19998	18900
2024	16125	20320	20320	21520	20320
2025	17425	21440	21440	22870	21440
2026	18125	21890	21890	22945	21890
2027	38225	41740	41740	52095	41740
2028	53925	60840	60840	72258	60840
2029	75192	94250	94250	105205	94250
2030	83158	97957	97957	108398	97957
2031	94325	108063	108063	117192	108063
2032	103092	112170	112170	120625	112170
2033	111858	116277	116277	122195	116277
2034	119995	120383	120383	123765	120383
2035	128062	124490	124490	125335	124490
2040	132095	132000	132000	131855	132000
2045	132095	132000	132000	132095	132000
2050	132095	132000	132000	132095	132000



# Technology Summary: Other Distributed Generation

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

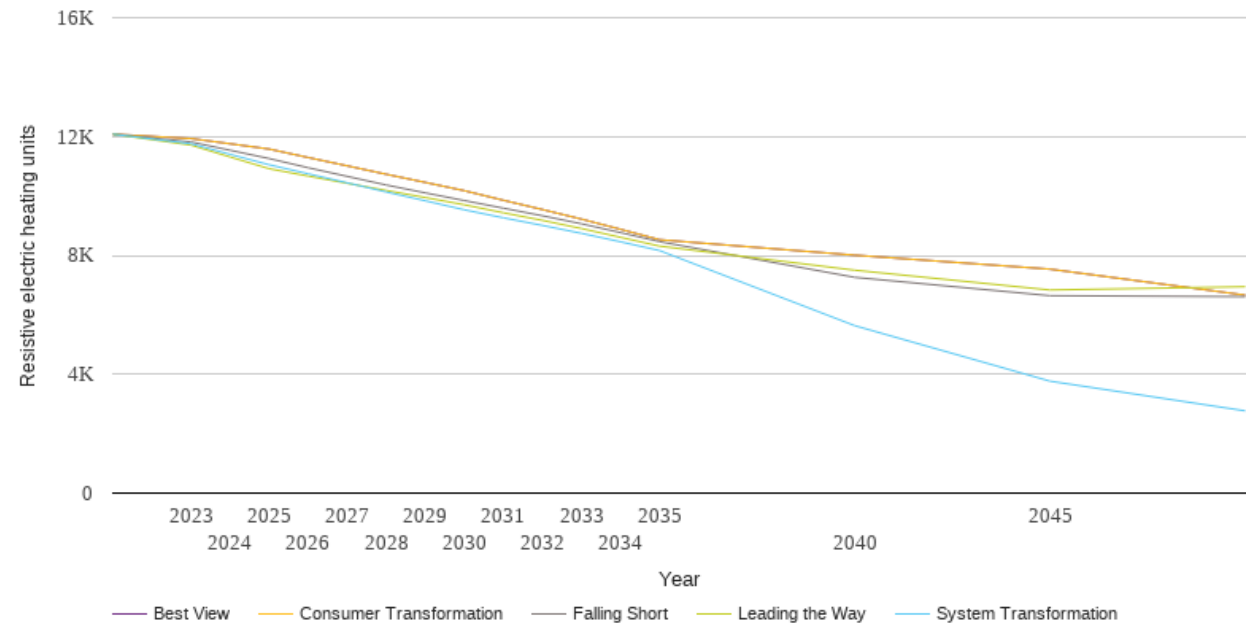
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	3.9	3.9	3.9	3.9	3.9
2023	3.9	3.9	3.9	3.9	3.9
2024	3.9	3.9	3.9	3.6	3.9
2025	3.9	3.9	3.9	2.0	3.9
2026	3.9	3.9	3.9	1.0	3.9
2027	3.9	3.9	3.9	1.0	3.9
2028	3.9	3.9	3.9	0.6	3.9
2029	3.9	3.6	3.6	0.5	3.6
2030	3.9	3.6	2.0	2.9	2.0
2031	3.9	2.6	1.0	2.9	1.0
2032	3.9	2.6	1.0	2.9	1.0
2033	3.9	2.2	0.6	2.9	0.6
2034	3.9	2.1	0.5	2.9	0.5
2035	3.9	2.1	0.5	2.9	0.5
2040	3.0	1.7	1.7	2.5	1.7
2045	3.0	2.7	1.7	4.0	1.7
2050	3.0	2.7	1.7	4.0	1.7



# Technology Summary: Resistive electric heating

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

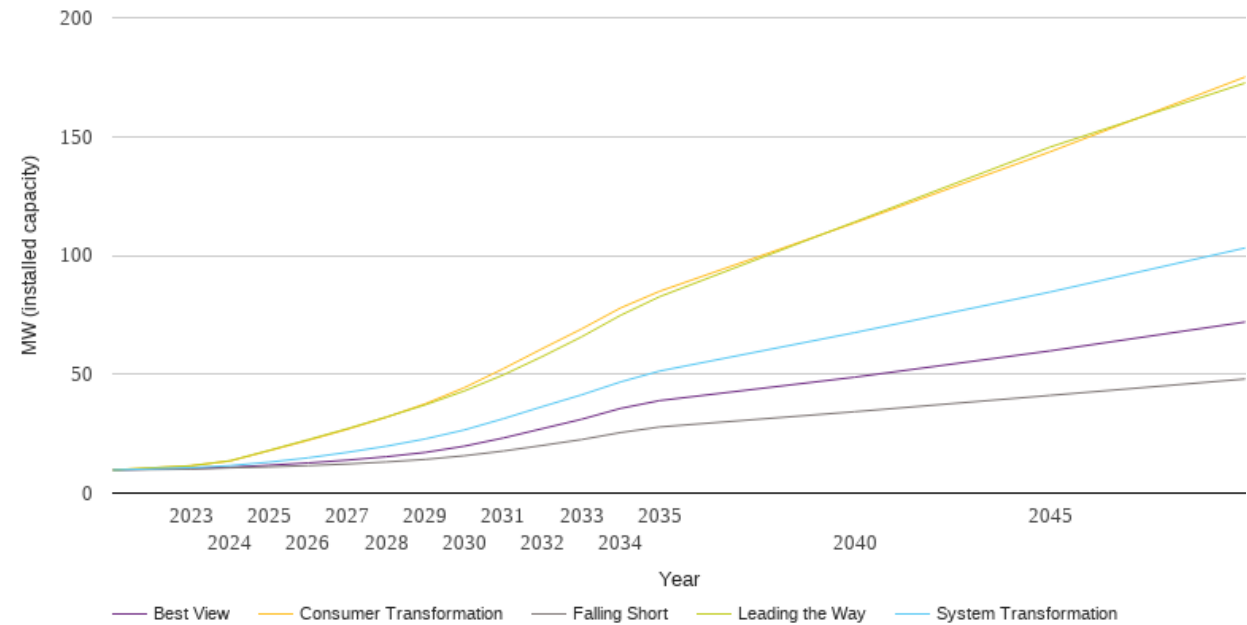
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	12078	12078	12078	12078	12078
2023	11818	11758	11931	11712	11931
2024	11539	11402	11757	11312	11757
2025	11260	11051	11579	10918	11579
2026	10950	10746	11294	10669	11294
2027	10659	10443	11014	10427	11014
2028	10369	10134	10730	10184	10730
2029	10104	9837	10456	9948	10456
2030	9846	9534	10178	9704	10178
2031	9589	9265	9855	9434	9855
2032	9334	9009	9543	9179	9543
2033	9064	8742	9221	8904	9221
2034	8768	8458	8878	8608	8878
2035	8463	8163	8527	8312	8527
2040	7261	5635	8006	7501	8006
2045	6643	3767	7537	6835	7537
2050	6611	2768	6663	6945	6663



# Technology Summary: Solar Generation

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

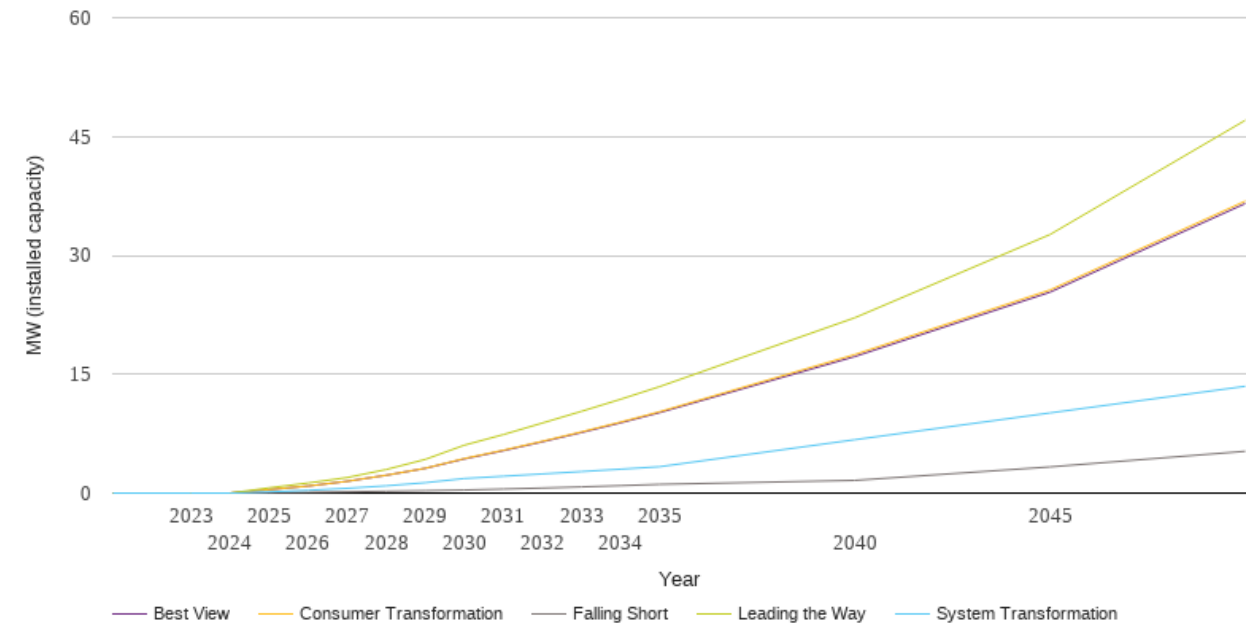
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	9.7	9.7	9.7	9.7	9.7
2023	10.1	10.7	11.5	11.5	10.4
2024	10.6	11.6	13.5	13.6	10.9
2025	11.0	13.0	17.8	18.0	11.7
2026	11.6	14.8	22.2	22.5	12.7
2027	12.2	17.1	26.8	27.1	13.9
2028	13.1	19.7	31.9	32.0	15.3
2029	14.2	22.8	37.6	37.1	17.1
2030	15.7	26.6	44.3	43.0	19.7
2031	17.7	31.3	52.3	49.7	23.2
2032	20.1	36.4	60.8	57.5	27.1
2033	22.5	41.3	69.0	65.7	31.0
2034	25.5	46.8	77.9	74.8	35.6
2035	27.8	51.3	84.9	82.6	38.9
2040	34.2	67.5	113.7	114.1	48.8
2045	41.1	84.6	143.6	145.5	59.8
2050	48.0	103.1	175.1	172.5	72.0



# Technology Summary: Storage

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

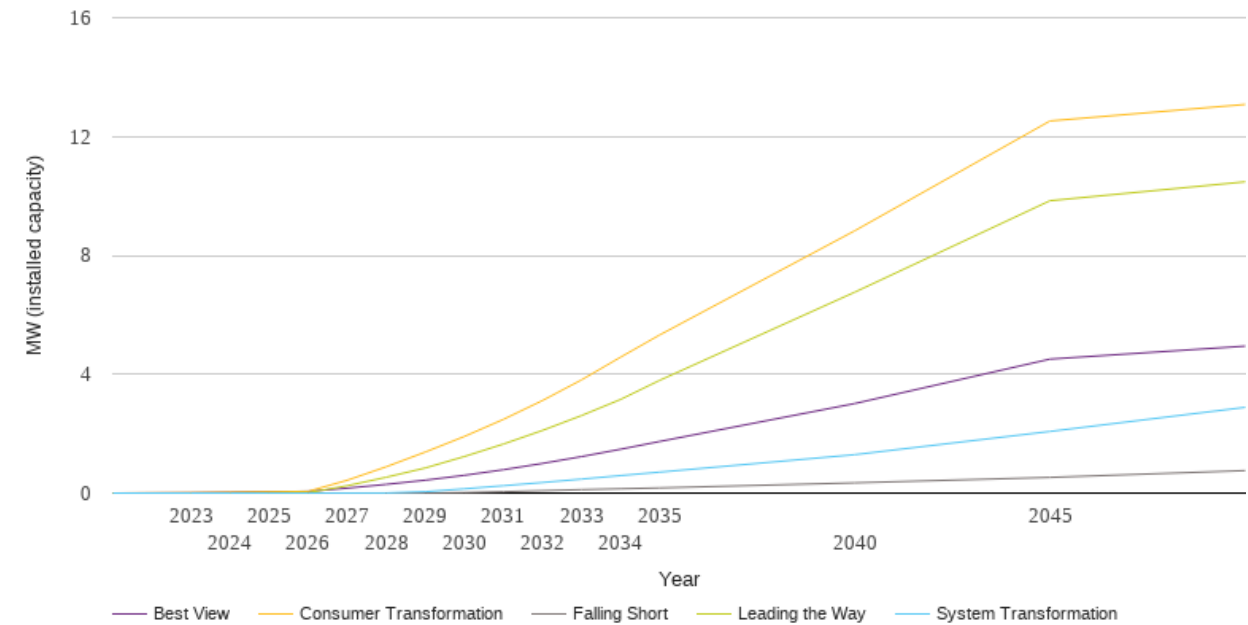
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0
2025	0.1	0.2	0.4	0.7	0.4
2026	0.1	0.4	0.9	1.3	0.9
2027	0.2	0.6	1.5	2.0	1.5
2028	0.2	0.9	2.3	3.0	2.3
2029	0.3	1.3	3.1	4.3	3.1
2030	0.4	1.8	4.4	6.0	4.3
2031	0.5	2.1	5.4	7.4	5.4
2032	0.6	2.4	6.5	8.8	6.5
2033	0.8	2.7	7.7	10.3	7.6
2034	0.9	3.0	9.0	11.8	8.9
2035	1.1	3.3	10.3	13.4	10.2
2040	1.6	6.7	17.5	22.1	17.2
2045	3.3	10.1	25.6	32.6	25.4
2050	5.3	13.5	36.8	47.0	36.5



# 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	0.1	0.0	0.1
2027	0.0	0.0	0.4	0.2	0.2
2028	0.0	0.0	0.9	0.5	0.3
2029	0.0	0.0	1.4	0.8	0.4
2030	0.0	0.1	1.9	1.2	0.6
2031	0.0	0.2	2.5	1.6	0.8
2032	0.1	0.4	3.1	2.1	1.0
2033	0.1	0.5	3.8	2.6	1.2
2034	0.1	0.6	4.6	3.2	1.5
2035	0.2	0.7	5.3	3.8	1.7
2040	0.3	1.3	8.8	6.8	3.0
2045	0.5	2.1	12.5	9.8	4.5
2050	0.8	2.9	13.1	10.5	4.9





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