

# Distribution Future Energy Scenarios 2022

Local Authority:  
Blaenau Gwent

## What are Distribution Future Energy Scenarios?

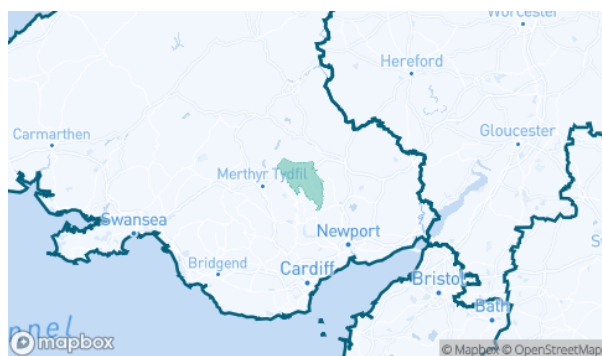
National Grid run Distribution Future Energy Scenarios (DFES) on an annual cycle for all licence areas, and represent a range of credible future scenarios of what could connect to the distribution network.

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 Blaenau Gwent 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 Blaenau Gwent 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	122	449	357	357	122	9431	4861	4861	122
Domestic	New dwellings	0	1095	1197	1197	1409	1872	1851	1851	1826
Electric vehicles	Electric vehicles	332	5152	6986	13075	13056	42537	42110	41392	32645
EV Charge Point	EV charge points	194	2286	3729	7137	7794	23828	25097	24826	25806
Heat pumps	Heat pump installations	127	1073	981	3966	7254	16681	19218	32903	26716
Hydrogen electrolysis	MW (installed capacity)	0.0	0.0	0.0	0.0	0.2	0.1	0.2	0.1	1.0
Non domestic	Floorspace (metres squared) of new I&C developments	0	264368	324749	324749	362958	465501	465501	465501	465501
Other Distributed Generation	MW (installed capacity)	3.7	3.7	3.7	3.7	3.7	0.5	0.5	0.5	0.5
Resistive electric heating	Resistive electric heating units	799	811	749	770	774	716	389	635	664
Solar Generation	MW (installed capacity)	4.2	7.2	11.4	17.1	15.9	25.5	49.7	73.5	70.7
Storage	MW (installed capacity)	0.0	7.8	8.3	9.1	9.8	10.0	13.5	21.7	25.2
Wind	MW (installed capacity)	4.6	5.6	5.7	7.5	7.1	8.0	14.7	32.9	28.1

## 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

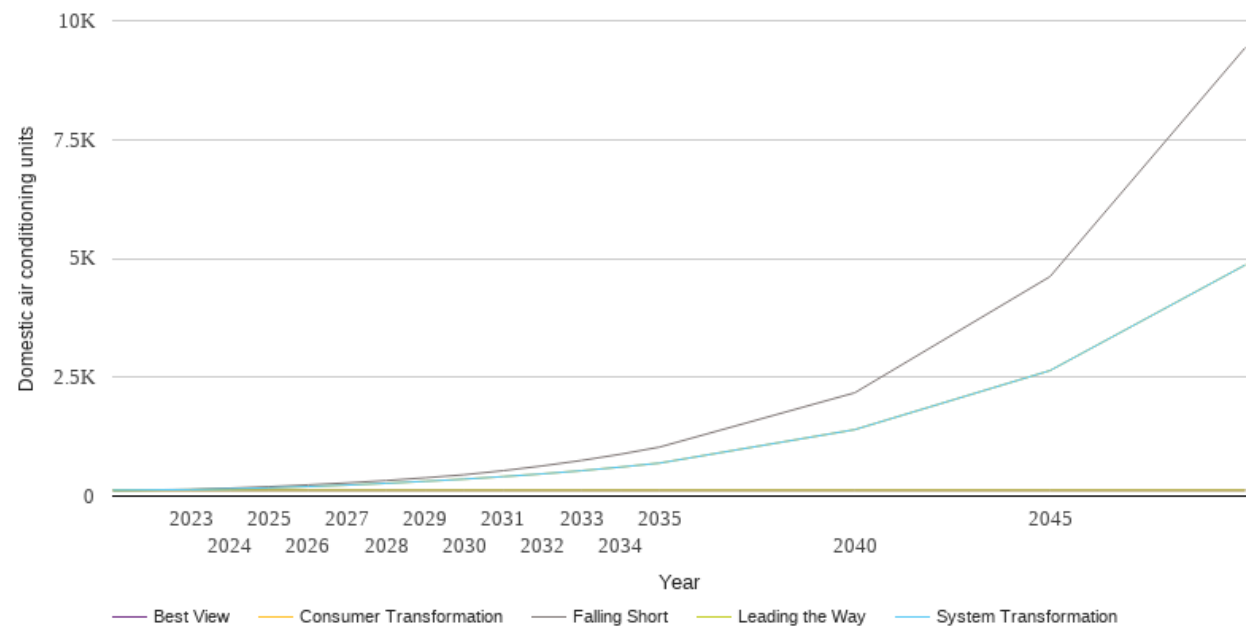
NGED is committed to continually improving the DFES process. To ensure the DFES projections fully capture local ambition, in 2022 we have appointed two DSO Strategic Engagement Officers to engage with local authorities. Any feedback will be incorporated into future Distribution Future Energy Scenarios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

If you have any comments or queries regarding these reports, please contact [nged.energyplanning@nationalgrid.co.uk](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.

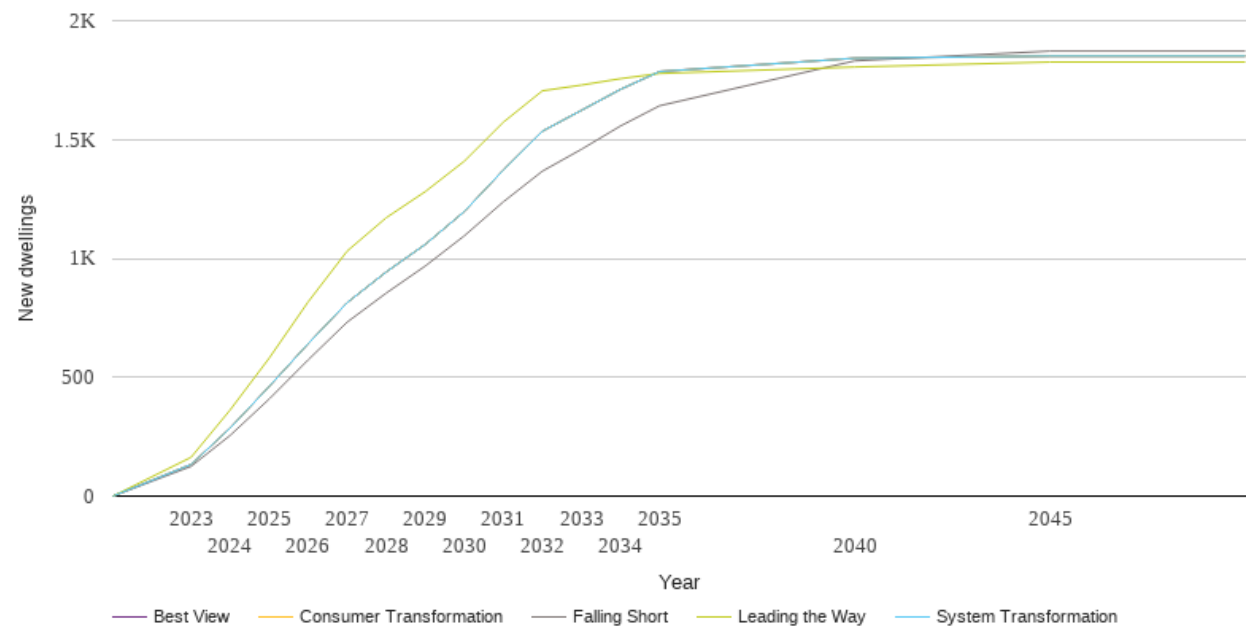
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	122	122	122	122	122
2023	140	137	137	122	122
2024	167	154	154	122	122
2025	198	173	173	122	122
2026	236	200	200	122	122
2027	278	231	231	122	122
2028	327	269	269	122	122
2029	385	311	311	122	122
2030	449	357	357	122	122
2031	535	410	410	122	122
2032	635	468	468	122	122
2033	749	534	534	122	122
2034	881	610	610	122	122
2035	1031	694	694	122	122
2040	2173	1398	1398	122	122
2045	4616	2640	2640	122	122
2050	9431	4861	4861	122	122



# Technology Summary: Domestic

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

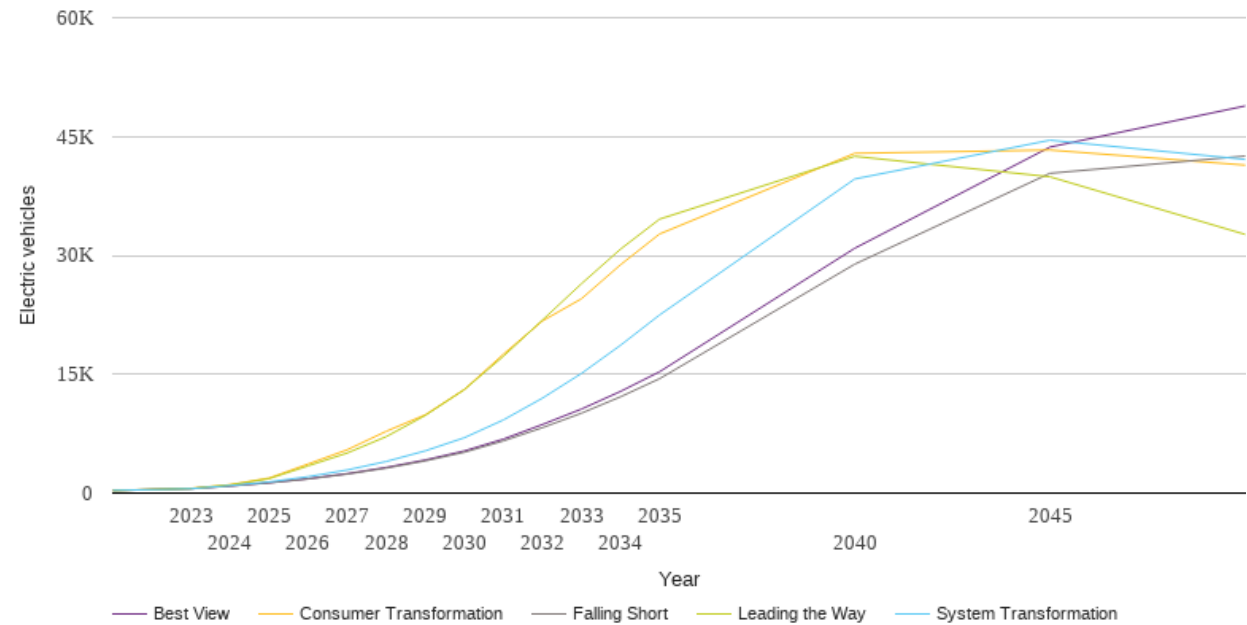
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	125	133	133	163	133
2024	255	286	286	362	286
2025	408	461	461	580	461
2026	573	641	641	817	641
2027	732	814	814	1031	814
2028	854	943	943	1171	943
2029	968	1059	1059	1281	1059
2030	1095	1197	1197	1409	1197
2031	1238	1372	1372	1573	1372
2032	1367	1535	1535	1705	1535
2033	1459	1623	1623	1729	1623
2034	1557	1711	1711	1756	1711
2035	1642	1786	1786	1778	1786
2040	1831	1842	1842	1805	1842
2045	1872	1851	1851	1826	1851
2050	1872	1851	1851	1826	1851



# Technology Summary: Electric vehicles

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

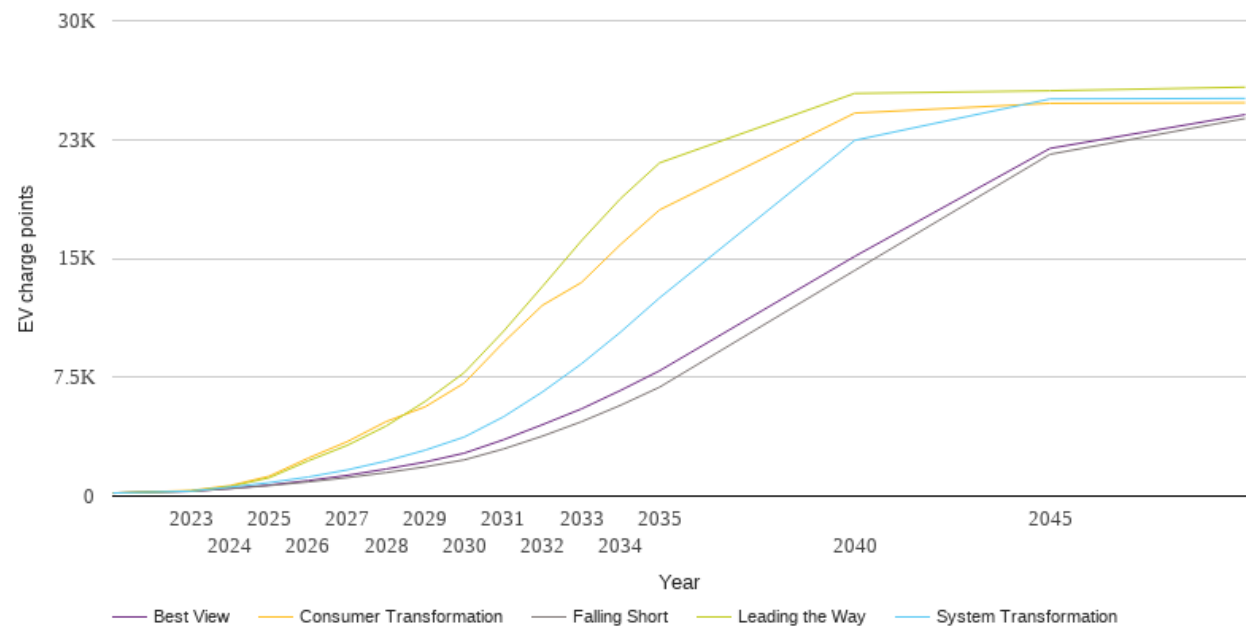
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	332	332	332	332	332
2023	557	554	592	576	563
2024	892	953	1054	1028	903
2025	1294	1410	1898	1823	1309
2026	1785	2072	3673	3438	1816
2027	2401	2919	5467	5058	2453
2028	3153	3990	7798	7128	3238
2029	4064	5331	9881	9804	4182
2030	5152	6986	13075	13056	5315
2031	6585	9231	17531	17261	6814
2032	8256	11983	21723	21830	8654
2033	10084	15101	24528	26424	10606
2034	12152	18653	28813	30786	12832
2035	14438	22480	32702	34572	15311
2040	28892	39643	42883	42503	30903
2045	40361	44537	43295	39919	43673
2050	42537	42110	41392	32645	48862



# 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	194	194	194	194	194
2023	300	312	351	318	300
2024	472	569	661	603	478
2025	663	848	1255	1154	693
2026	895	1202	2397	2221	976
2027	1166	1652	3434	3202	1307
2028	1483	2214	4704	4425	1709
2029	1848	2901	5639	5981	2151
2030	2286	3729	7137	7794	2711
2031	2972	4999	9693	10389	3554
2032	3784	6570	12038	13225	4507
2033	4694	8348	13480	16114	5503
2034	5730	10344	15874	18771	6666
2035	6874	12508	18060	21025	7908
2040	14241	22449	24170	25412	15127
2045	21568	25060	24785	25577	21940
2050	23828	25097	24826	25806	24070

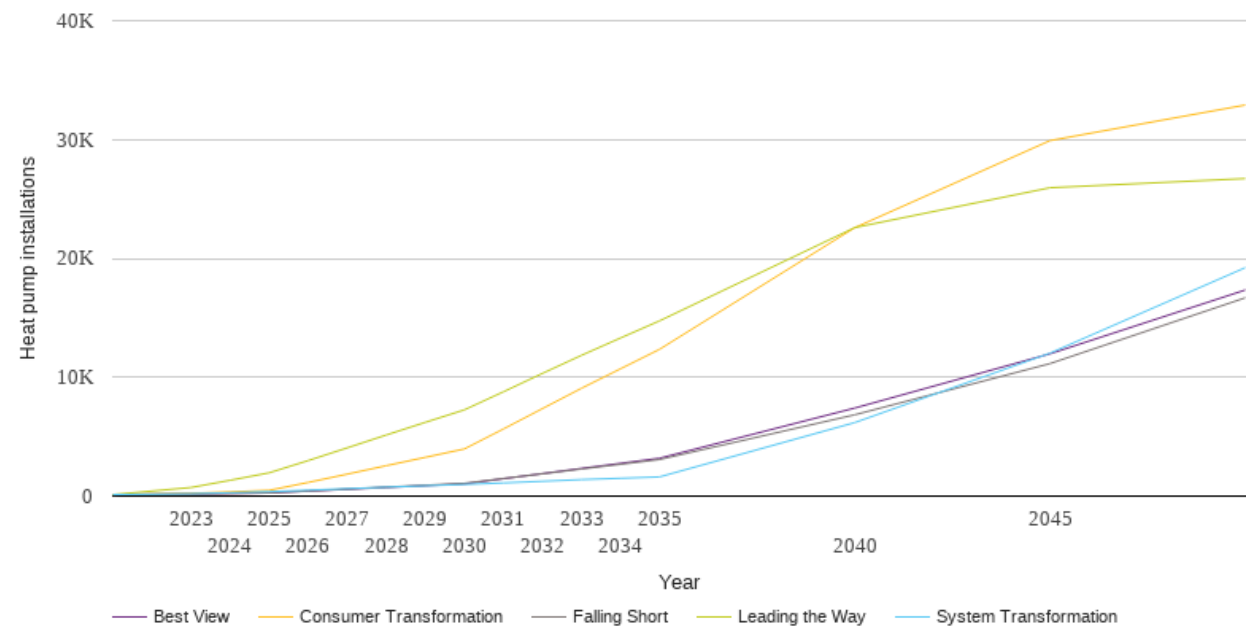




# Technology Summary: Heat pumps

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

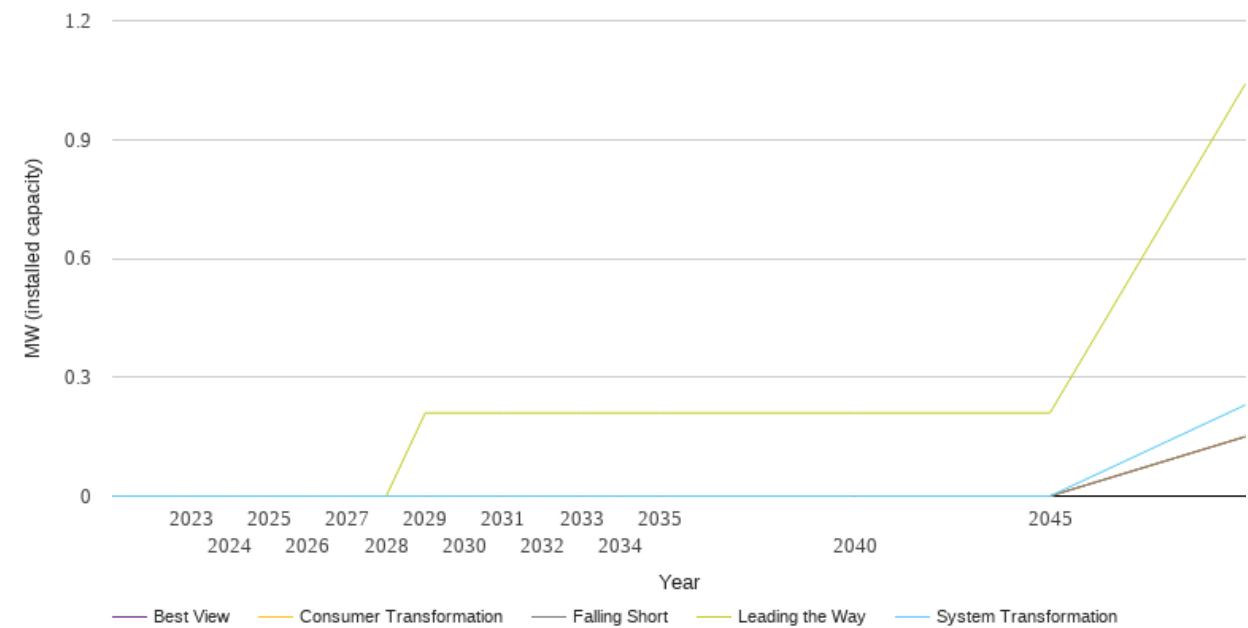
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	127	127	127	127	127
2023	171	197	233	722	171
2024	221	283	352	1329	221
2025	269	373	483	1957	269
2026	430	495	1149	2986	422
2027	590	624	1846	4059	572
2028	756	752	2558	5140	728
2029	915	868	3259	6205	878
2030	1073	981	3966	7254	1028
2031	1478	1108	5644	8775	1463
2032	1875	1245	7362	10323	1892
2033	2281	1386	9070	11843	2328
2034	2674	1497	10710	13301	2753
2035	3076	1615	12348	14744	3185
2040	6841	6185	22583	22590	7406
2045	11147	12027	29909	25944	11971
2050	16681	19218	32903	26716	17339



# Technology Summary: Hydrogen electrolysis

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

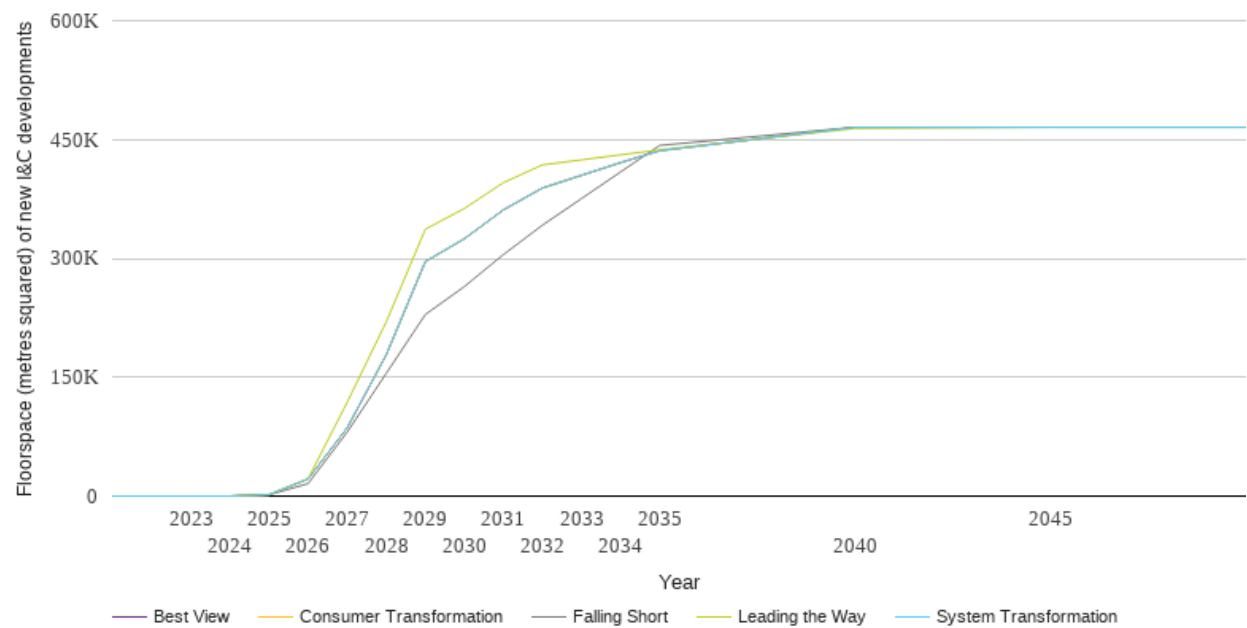
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.0	0.0	0.0	0.0
2026	0.0	0.0	0.0	0.0	0.0
2027	0.0	0.0	0.0	0.0	0.0
2028	0.0	0.0	0.0	0.0	0.0
2029	0.0	0.0	0.0	0.2	0.0
2030	0.0	0.0	0.0	0.2	0.0
2031	0.0	0.0	0.0	0.2	0.0
2032	0.0	0.0	0.0	0.2	0.0
2033	0.0	0.0	0.0	0.2	0.0
2034	0.0	0.0	0.0	0.2	0.0
2035	0.0	0.0	0.0	0.2	0.0
2040	0.0	0.0	0.0	0.2	0.0
2045	0.0	0.0	0.0	0.2	0.0
2050	0.1	0.2	0.1	1.0	0.1



# Technology Summary: Non domestic

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

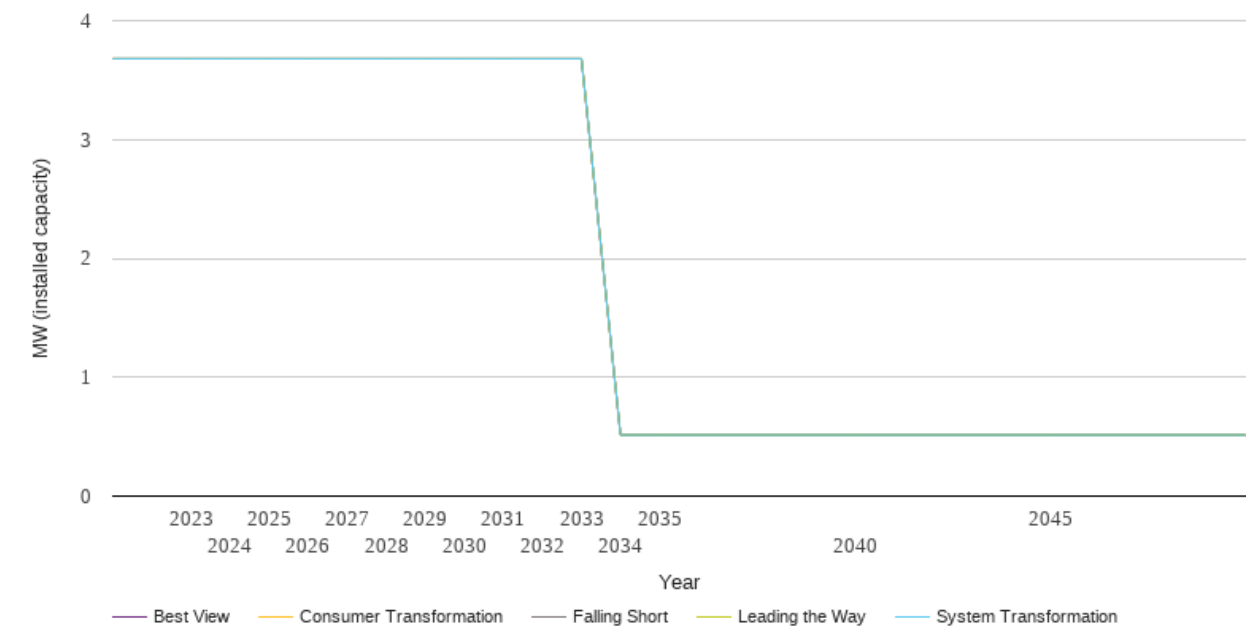
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	0	0	0	0	0
2024	0	0	0	0	0
2025	1600	1750	1750	2000	1750
2026	15780	21625	21625	21925	21625
2027	80760	86140	86140	118490	86140
2028	154908	178323	178323	219856	178323
2029	229121	295905	295905	336755	295905
2030	264368	324749	324749	362958	324749
2031	304781	361178	361178	395545	361178
2032	341861	388832	388832	417991	388832
2033	375441	404821	404821	424321	404821
2034	409021	420809	420809	430651	420809
2035	442501	435881	435881	436981	435881
2040	465501	465501	465501	464001	465501
2045	465501	465501	465501	465501	465501
2050	465501	465501	465501	465501	465501



# Technology Summary: Other Distributed Generation

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

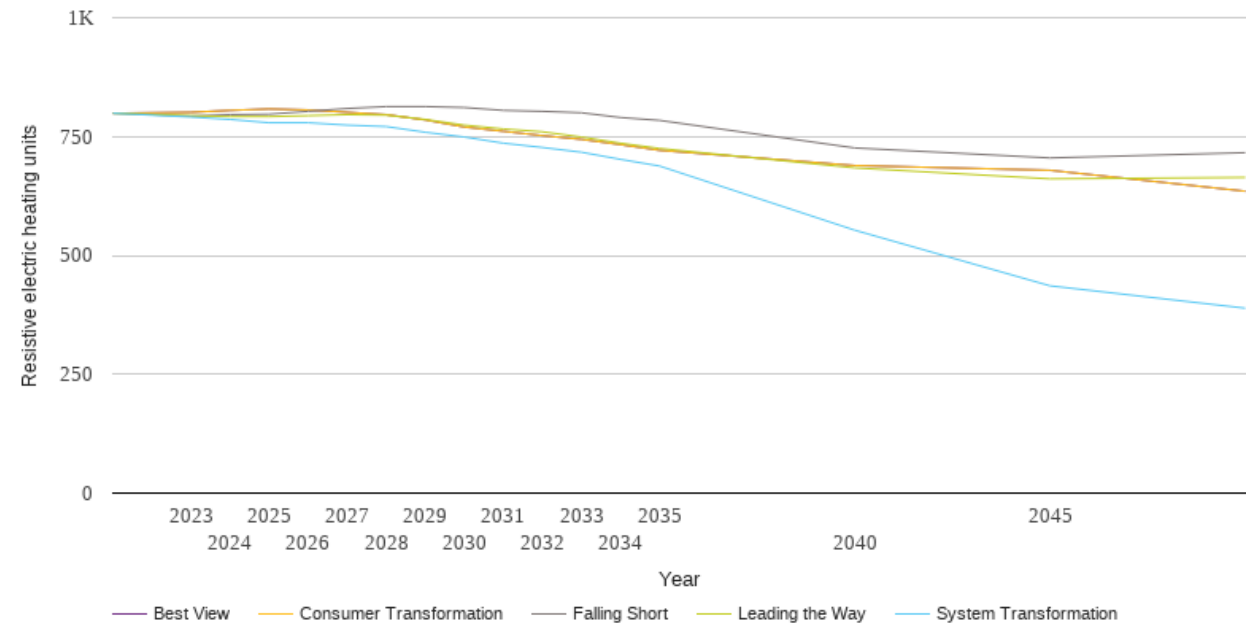
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	3.7	3.7	3.7	3.7	3.7
2023	3.7	3.7	3.7	3.7	3.7
2024	3.7	3.7	3.7	3.7	3.7
2025	3.7	3.7	3.7	3.7	3.7
2026	3.7	3.7	3.7	3.7	3.7
2027	3.7	3.7	3.7	3.7	3.7
2028	3.7	3.7	3.7	3.7	3.7
2029	3.7	3.7	3.7	3.7	3.7
2030	3.7	3.7	3.7	3.7	3.7
2031	3.7	3.7	3.7	3.7	3.7
2032	3.7	3.7	3.7	3.7	3.7
2033	3.7	3.7	3.7	3.7	3.7
2034	0.5	0.5	0.5	0.5	0.5
2035	0.5	0.5	0.5	0.5	0.5
2040	0.5	0.5	0.5	0.5	0.5
2045	0.5	0.5	0.5	0.5	0.5
2050	0.5	0.5	0.5	0.5	0.5



# Technology Summary: Resistive electric heating

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

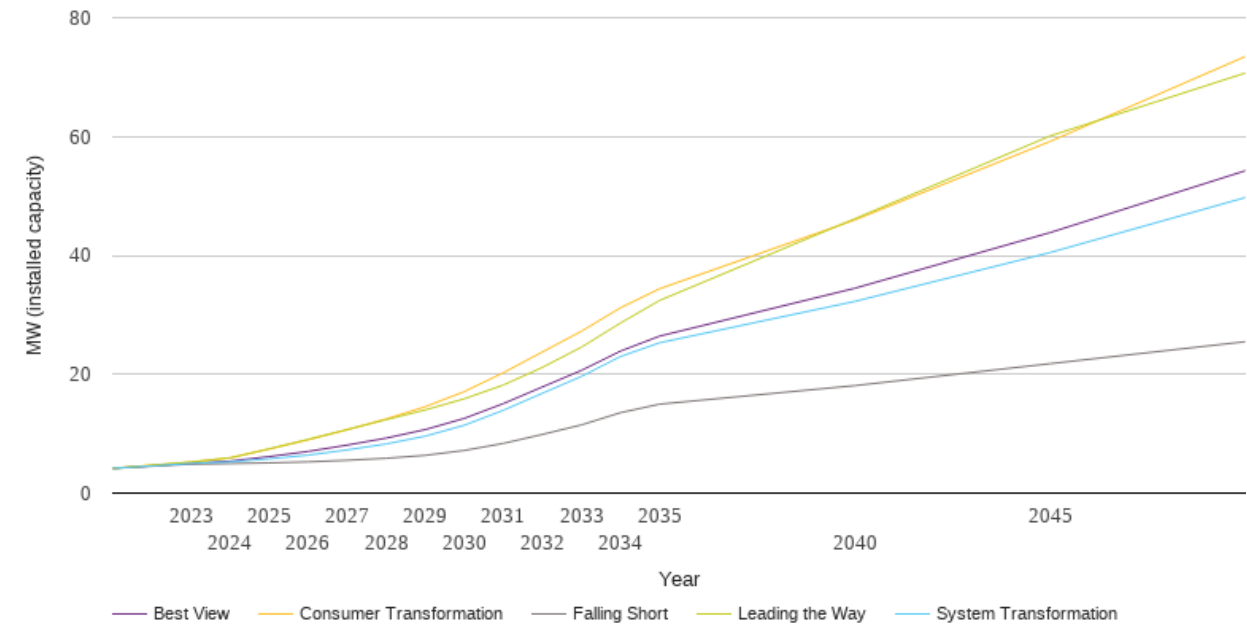
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	799	799	799	799	799
2023	793	791	801	794	801
2024	796	786	805	792	805
2025	797	779	808	792	808
2026	803	779	806	794	806
2027	809	774	801	796	801
2028	813	771	796	795	796
2029	813	759	785	786	785
2030	811	749	770	774	770
2031	805	736	761	766	761
2032	803	727	752	760	752
2033	800	717	744	749	744
2034	790	702	733	736	733
2035	784	688	721	725	721
2040	726	553	689	684	689
2045	705	436	679	661	679
2050	716	389	635	664	635



# Technology Summary: Solar Generation

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

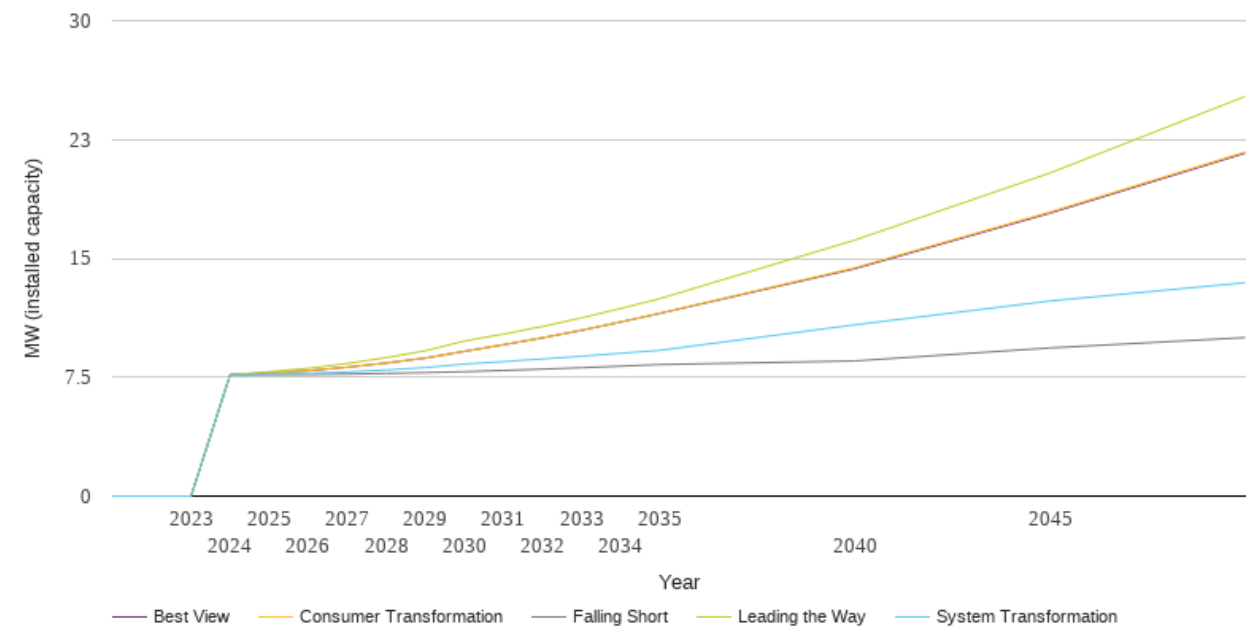
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	4.2	4.2	4.2	4.2	4.2
2023	4.9	5.0	5.2	5.2	5.0
2024	5.0	5.3	5.9	5.9	5.4
2025	5.1	5.8	7.4	7.5	6.1
2026	5.3	6.4	9.0	9.0	7.0
2027	5.5	7.3	10.7	10.7	8.1
2028	5.9	8.3	12.5	12.4	9.3
2029	6.4	9.6	14.5	14.0	10.7
2030	7.2	11.4	17.1	15.9	12.6
2031	8.4	13.9	20.3	18.2	15.1
2032	9.9	16.8	23.8	21.2	17.9
2033	11.5	19.6	27.2	24.6	20.7
2034	13.5	23.0	31.2	28.6	23.9
2035	15.0	25.3	34.4	32.4	26.4
2040	18.1	32.3	46.0	46.2	34.5
2045	21.8	40.5	59.2	60.1	43.8
2050	25.5	49.7	73.5	70.7	54.2



# Technology Summary: Storage

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

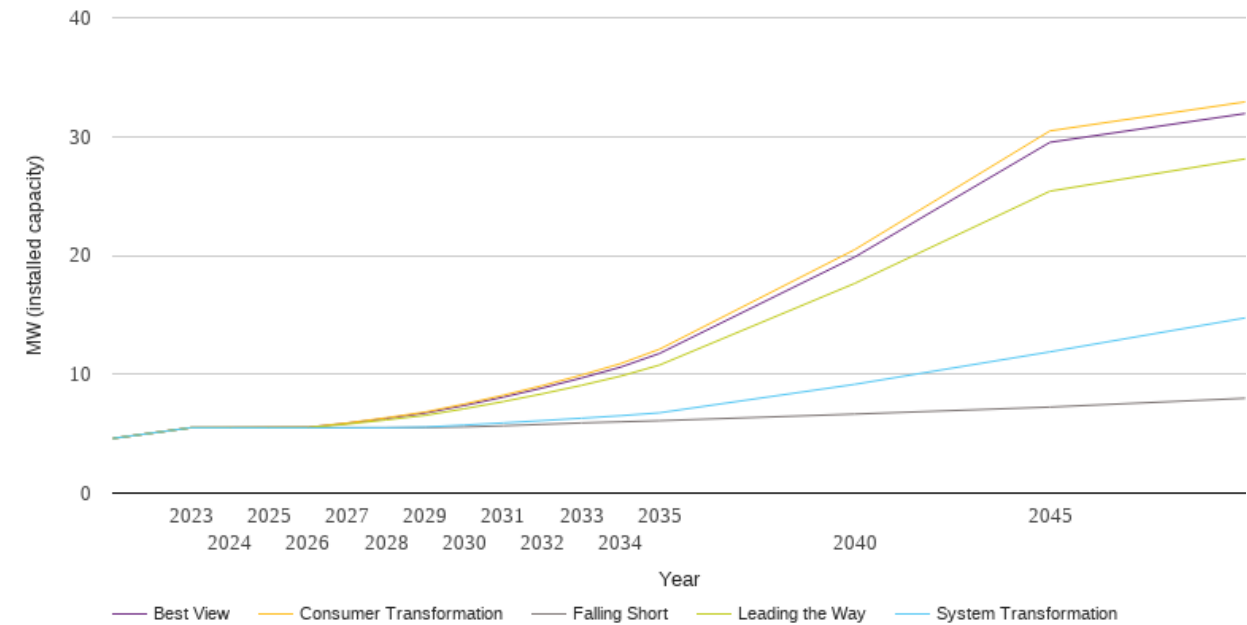
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0
2024	7.6	7.6	7.6	7.6	7.6
2025	7.7	7.7	7.8	7.9	7.8
2026	7.7	7.7	7.9	8.1	7.9
2027	7.7	7.8	8.1	8.4	8.1
2028	7.7	8.0	8.4	8.7	8.4
2029	7.8	8.1	8.7	9.2	8.7
2030	7.8	8.3	9.1	9.8	9.1
2031	7.9	8.5	9.6	10.2	9.5
2032	8.0	8.7	10.0	10.7	10.0
2033	8.1	8.8	10.5	11.2	10.5
2034	8.2	9.0	11.0	11.8	11.0
2035	8.3	9.2	11.5	12.5	11.5
2040	8.5	10.8	14.4	16.2	14.4
2045	9.3	12.3	17.9	20.4	17.9
2050	10.0	13.5	21.7	25.2	21.6



# 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	4.6	4.6	4.6	4.6	4.6
2023	5.5	5.5	5.5	5.5	5.5
2024	5.5	5.5	5.5	5.5	5.5
2025	5.5	5.5	5.5	5.5	5.5
2026	5.5	5.5	5.5	5.5	5.5
2027	5.5	5.5	5.9	5.8	5.9
2028	5.5	5.5	6.3	6.2	6.3
2029	5.5	5.6	6.8	6.5	6.7
2030	5.6	5.7	7.5	7.1	7.4
2031	5.7	5.9	8.2	7.7	8.1
2032	5.8	6.1	9.0	8.4	8.8
2033	5.9	6.3	9.9	9.1	9.7
2034	6.0	6.5	10.9	9.8	10.6
2035	6.1	6.8	12.1	10.8	11.8
2040	6.6	9.1	20.5	17.6	19.9
2045	7.2	11.9	30.5	25.4	29.5
2050	8.0	14.7	32.9	28.1	31.9





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))  
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