

Distribution Future Energy Scenarios 2022

Local Authority:
West Lindsey

What are Distribution Future Energy Scenarios?

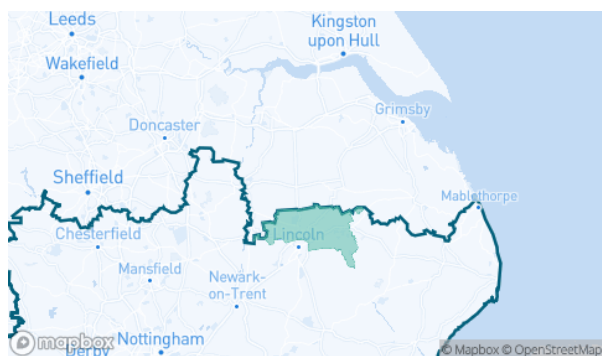
National Grid run Distribution Future Energy Scenarios (DFES) on an annual cycle for all licence areas, and represent a range of credible future scenarios of what could connect to the distribution network.

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 West Lindsey covered by the NGED licence areas.



Scenario Summary

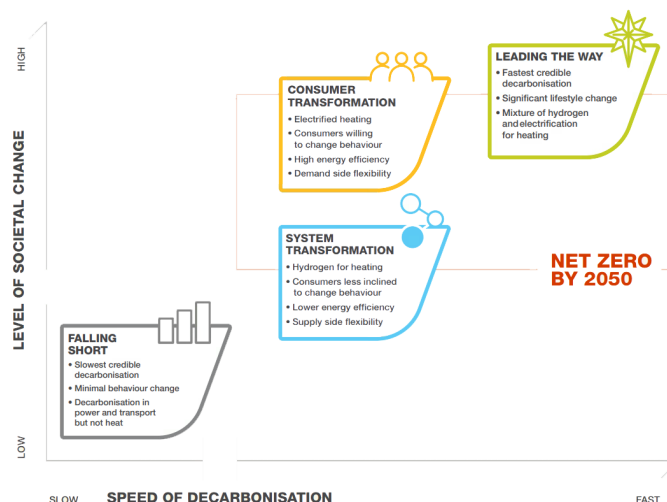
This DFES scenario framework includes three scenarios that are compliant with UK government targets of Net Zero greenhouse gas emissions by 2050. A summary of each scenario is below:

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 West Lindsey 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	4381	1846	1846	0
Domestic	New dwellings	0	1610	1732	1732	2011	2314	2267	2267	2228
Electric vehicles	Electric vehicles	528	3410	4135	7620	7563	22556	18051	18117	16079
EV Charge Point	EV charge points	266	1598	2306	4322	4783	13257	12594	13462	13339
Heat pumps	Heat pump installations	287	1423	1717	3451	5338	8190	9557	15355	13894
Hydrogen electrolysis	MW (installed capacity)	0.0	0.0	0.3	0.0	0.0	1.0	4.7	2.4	3.5
Non domestic	Floorspace (metres squared) of new I&C developments	0	26526	27872	27872	32343	50359	50290	50290	50359
Other Distributed Generation	MW (installed capacity)	2.5	2.5	2.5	2.5	2.5	0.0	0.0	0.0	0.0
Resistive electric heating	Resistive electric heating units	752	769	708	762	748	661	308	559	616
Solar Generation	MW (installed capacity)	5.9	9.0	12.9	16.3	13.5	33.3	63.3	76.7	68.2
Storage	MW (installed capacity)	0.0	0.1	0.6	1.0	1.5	1.5	3.7	8.6	11.4
Wind	MW (installed capacity)	0.6	0.6	0.7	2.1	1.7	1.8	4.6	15.0	12.2

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.

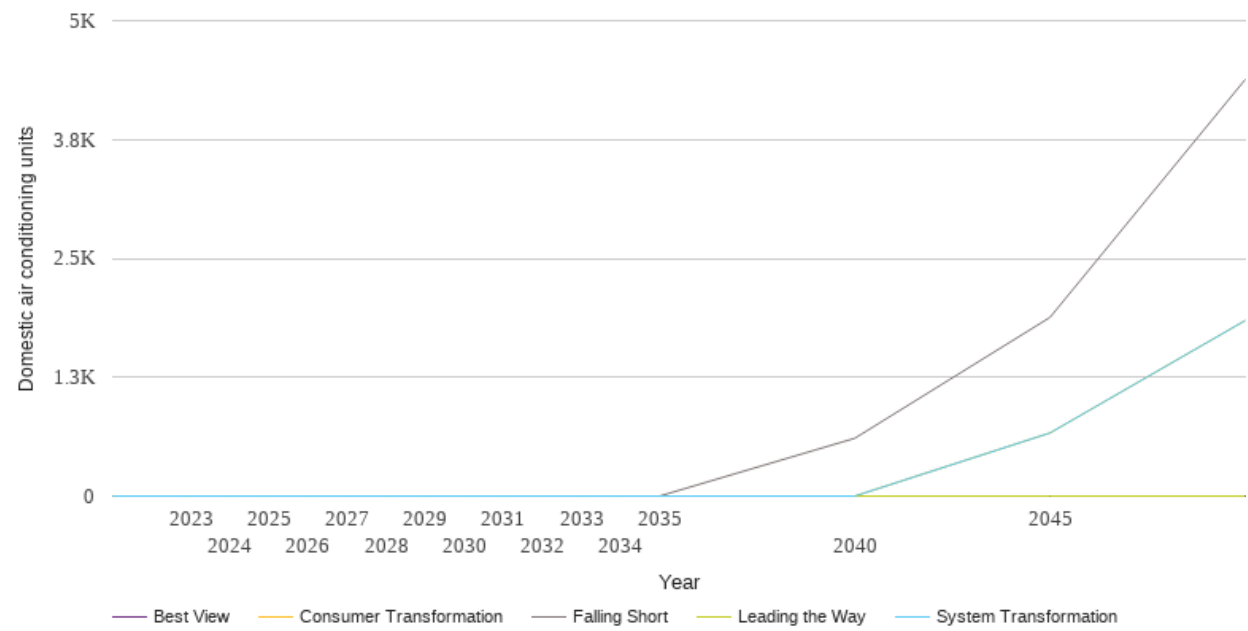
If you have any comments or queries regarding these reports, please contact

nged.energyplanning@nationalgrid.co.uk.

Technology Summary: Air conditioning

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

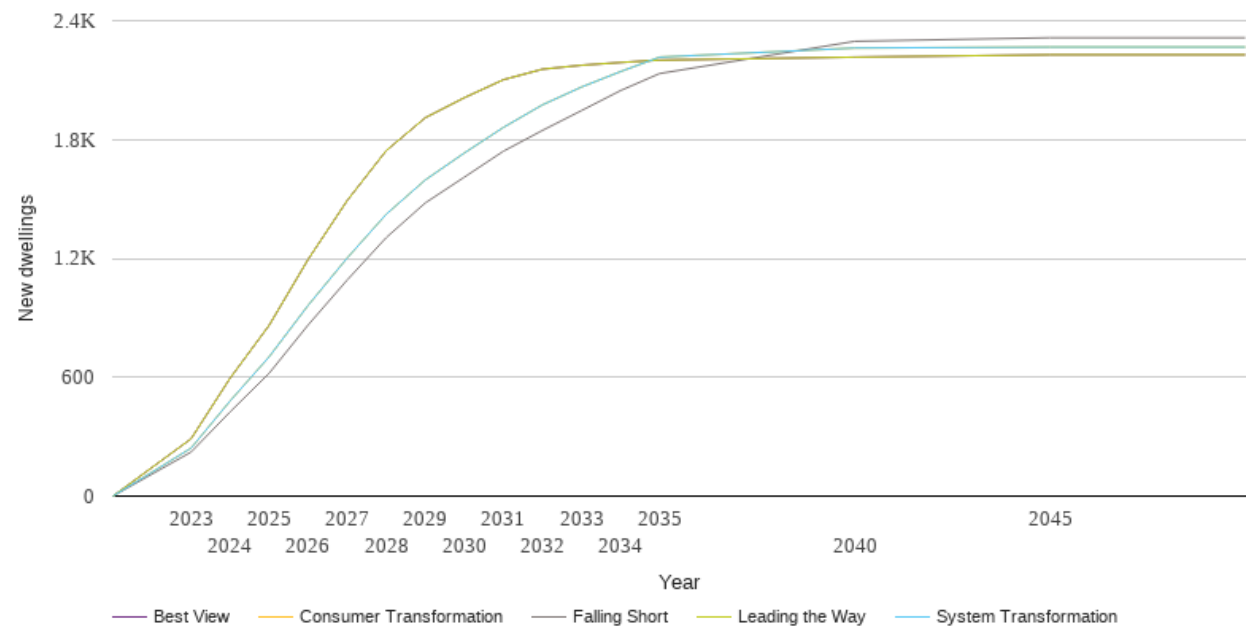
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	0	0	0	0	0
2024	0	0	0	0	0
2025	0	0	0	0	0
2026	0	0	0	0	0
2027	0	0	0	0	0
2028	0	0	0	0	0
2029	0	0	0	0	0
2030	0	0	0	0	0
2031	0	0	0	0	0
2032	0	0	0	0	0
2033	0	0	0	0	0
2034	0	0	0	0	0
2035	0	0	0	0	0
2040	608	0	0	0	0
2045	1879	664	664	0	0
2050	4381	1846	1846	0	0



Technology Summary: Domestic

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

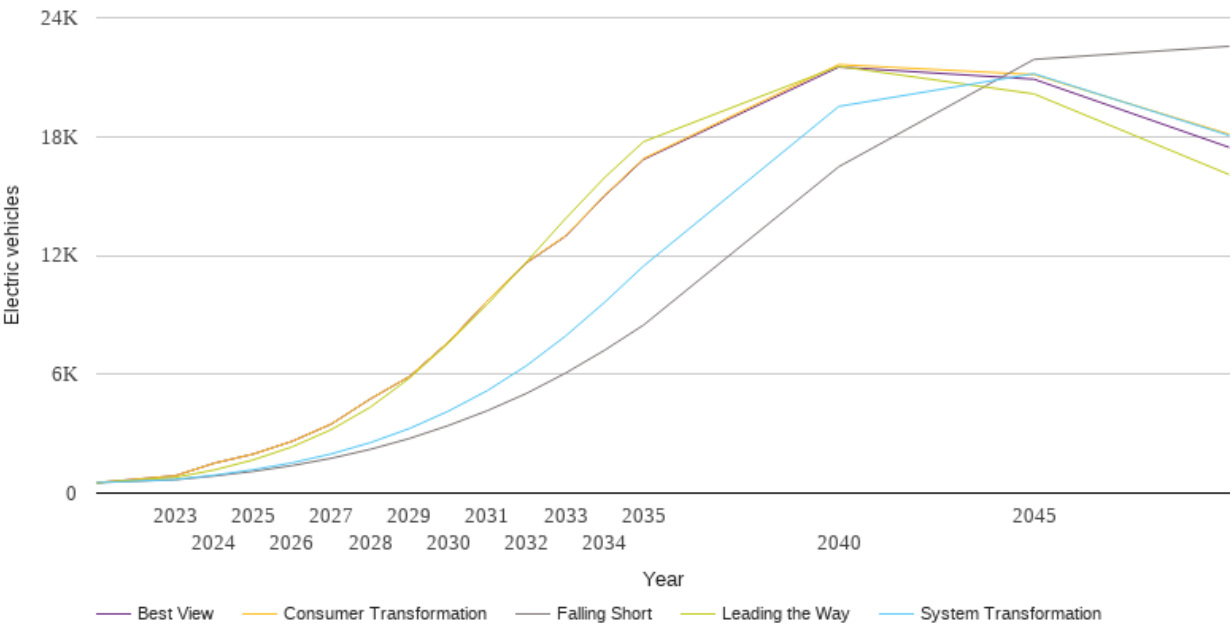
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	222	242	242	289	289
2024	425	480	480	595	595
2025	620	703	703	862	862
2026	864	963	963	1195	1195
2027	1091	1202	1202	1492	1492
2028	1305	1423	1423	1744	1744
2029	1480	1596	1596	1910	1910
2030	1610	1732	1732	2011	2011
2031	1741	1861	1861	2102	2102
2032	1846	1975	1975	2155	2155
2033	1946	2065	2065	2175	2175
2034	2047	2143	2143	2189	2189
2035	2133	2216	2216	2201	2201
2040	2296	2262	2262	2216	2216
2045	2314	2267	2267	2228	2228
2050	2314	2267	2267	2228	2228



Technology Summary: Electric vehicles

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

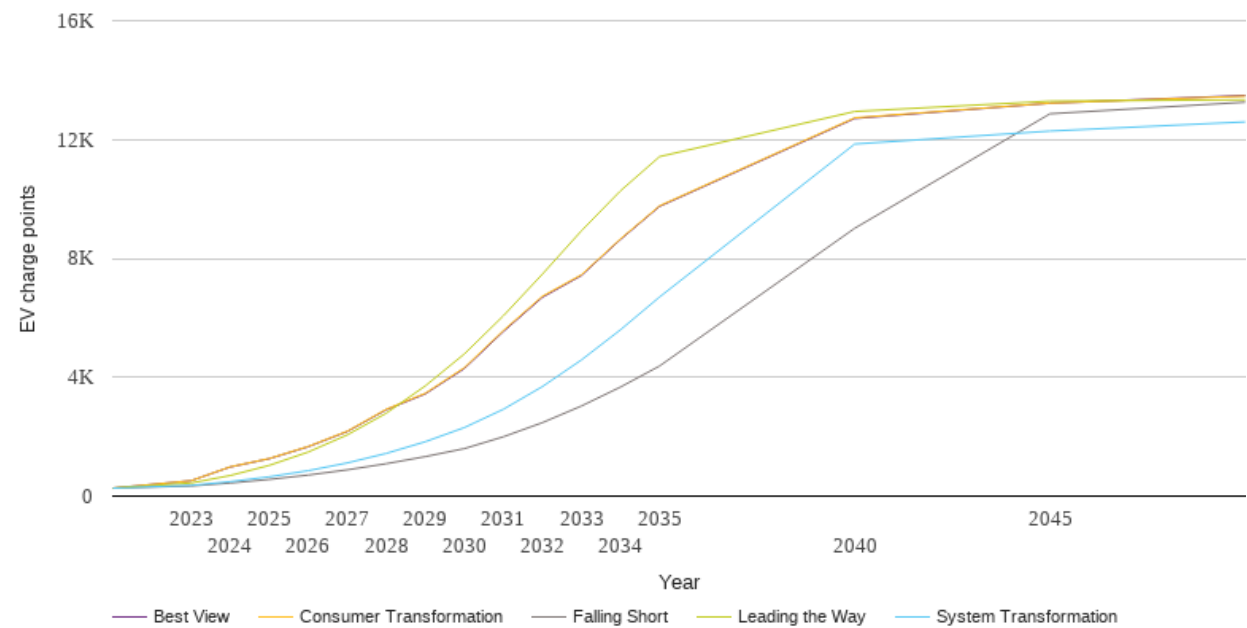
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	528	528	528	528	528
2023	673	687	872	787	872
2024	862	903	1508	1166	1508
2025	1096	1181	1969	1675	1968
2026	1389	1529	2618	2335	2617
2027	1756	1977	3483	3204	3481
2028	2208	2545	4752	4332	4749
2029	2753	3256	5881	5792	5878
2030	3410	4135	7620	7563	7618
2031	4160	5173	9704	9532	9703
2032	5030	6430	11638	11665	11622
2033	6054	7924	12984	13852	12962
2034	7207	9625	15031	15928	14995
2035	8483	11462	16886	17737	16842
2040	16476	19520	21634	21546	21509
2045	21894	21174	21126	20150	20893
2050	22556	18051	18117	16079	17453



Technology Summary: EV Charge Point

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

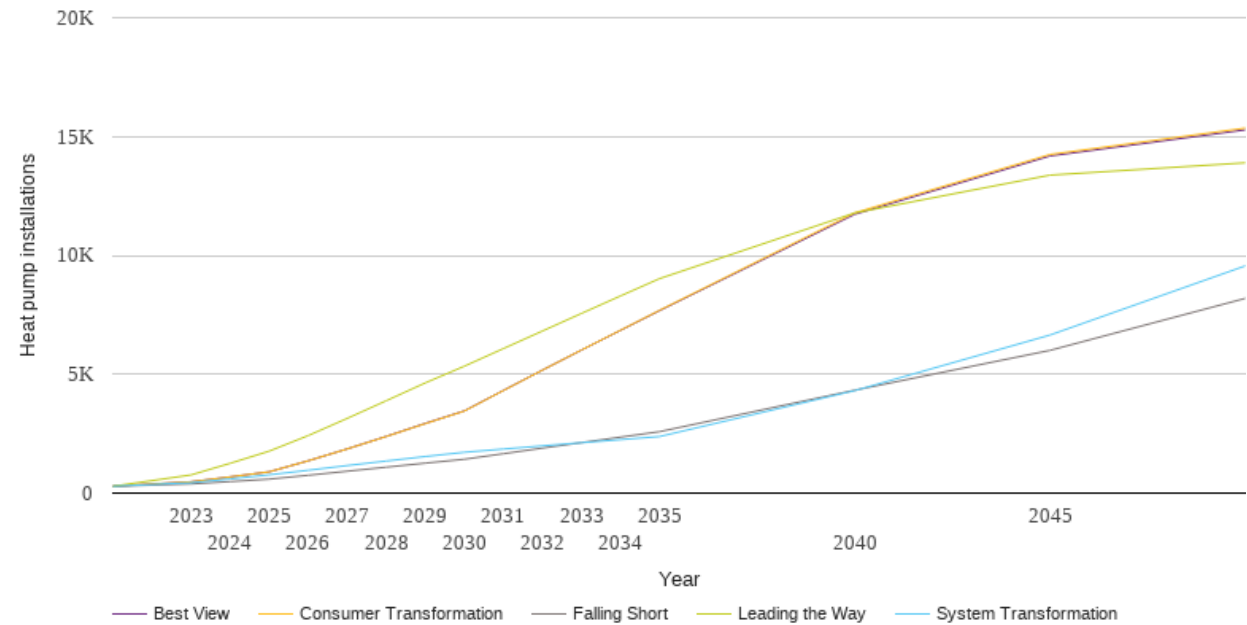
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	266	266	266	266	266
2023	341	359	516	439	516
2024	439	485	983	691	978
2025	561	648	1263	1032	1257
2026	708	855	1669	1482	1661
2027	883	1116	2183	2059	2172
2028	1090	1437	2922	2788	2906
2029	1329	1830	3460	3709	3440
2030	1598	2306	4322	4783	4293
2031	1996	2922	5572	6067	5539
2032	2472	3686	6726	7470	6692
2033	3033	4583	7449	8929	7425
2034	3670	5597	8657	10275	8636
2035	4378	6700	9769	11424	9750
2040	9015	11849	12731	12944	12711
2045	12867	12285	13226	13292	13224
2050	13257	12594	13462	13339	13482



Technology Summary: Heat pumps

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

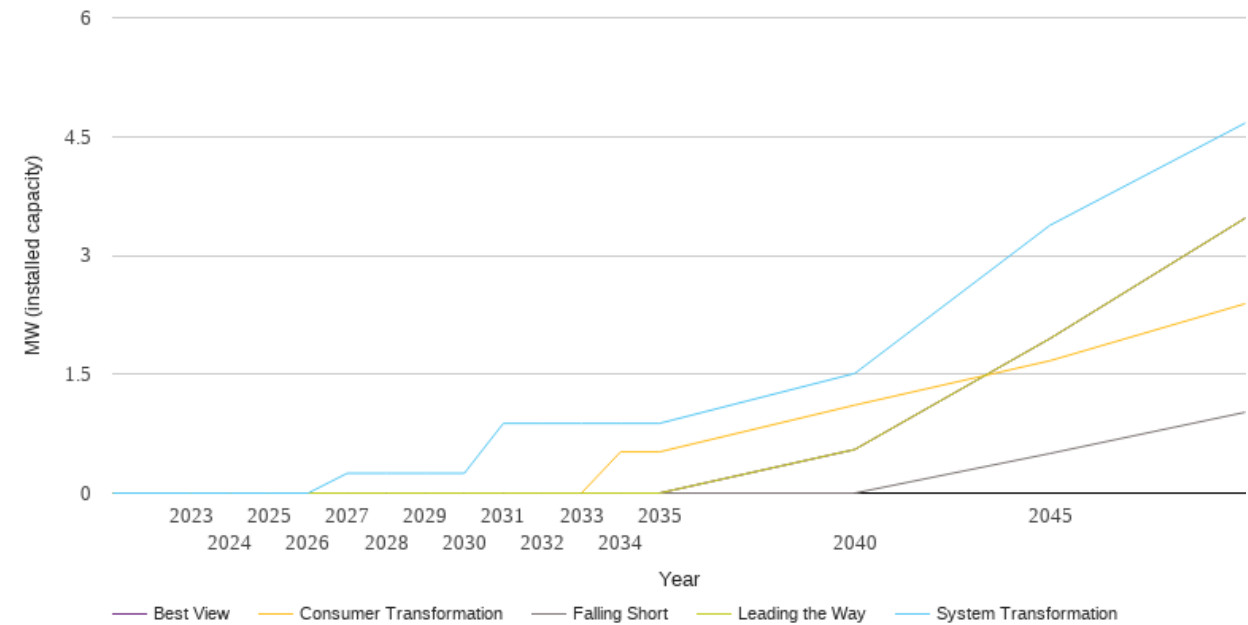
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	287	287	287	287	287
2023	386	435	474	763	474
2024	483	594	678	1252	678
2025	587	768	894	1764	894
2026	749	960	1357	2418	1358
2027	920	1159	1857	3142	1859
2028	1090	1349	2379	3885	2386
2029	1260	1539	2923	4636	2932
2030	1423	1717	3451	5338	3458
2031	1657	1853	4313	6079	4319
2032	1892	1987	5173	6818	5174
2033	2123	2119	6020	7558	6016
2034	2354	2249	6853	8294	6845
2035	2584	2379	7690	9022	7676
2040	4329	4311	11790	11786	11729
2045	6004	6649	14246	13376	14182
2050	8190	9557	15355	13894	15281



Technology Summary: Hydrogen electrolysis

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

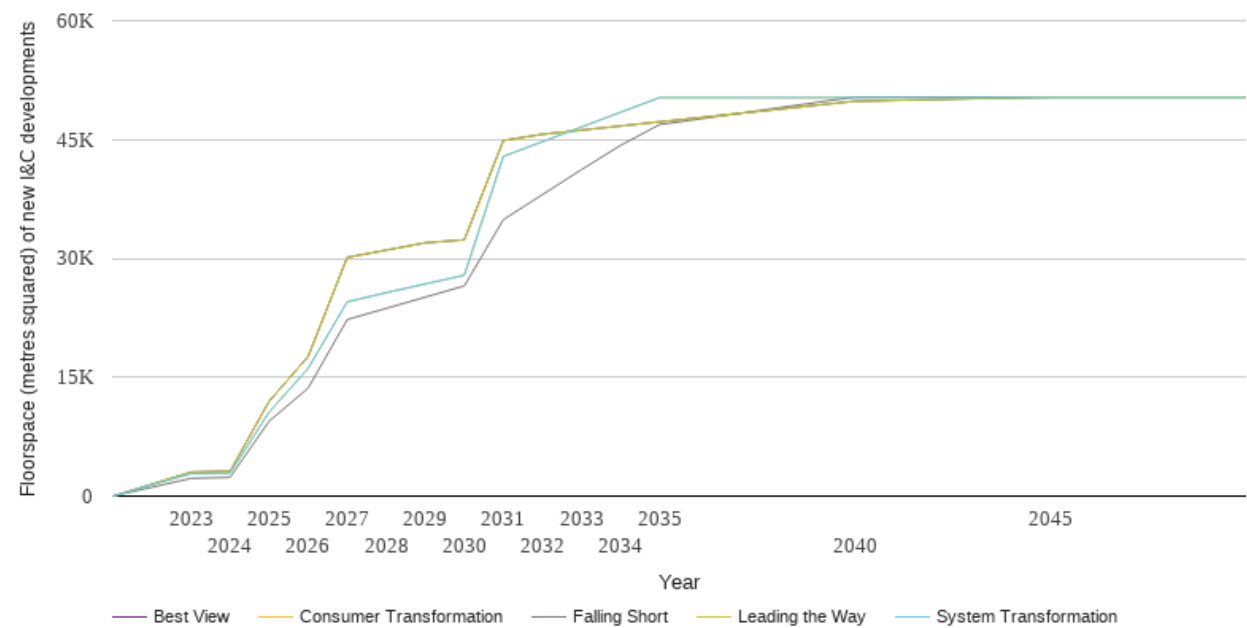
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.0	0.0	0.0	0.0
2026	0.0	0.0	0.0	0.0	0.0
2027	0.0	0.3	0.0	0.0	0.0
2028	0.0	0.3	0.0	0.0	0.0
2029	0.0	0.3	0.0	0.0	0.0
2030	0.0	0.3	0.0	0.0	0.0
2031	0.0	0.9	0.0	0.0	0.0
2032	0.0	0.9	0.0	0.0	0.0
2033	0.0	0.9	0.0	0.0	0.0
2034	0.0	0.9	0.5	0.0	0.0
2035	0.0	0.9	0.5	0.0	0.0
2040	0.0	1.5	1.1	0.6	0.6
2045	0.5	3.4	1.7	2.0	2.0
2050	1.0	4.7	2.4	3.5	3.5



Technology Summary: Non domestic

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

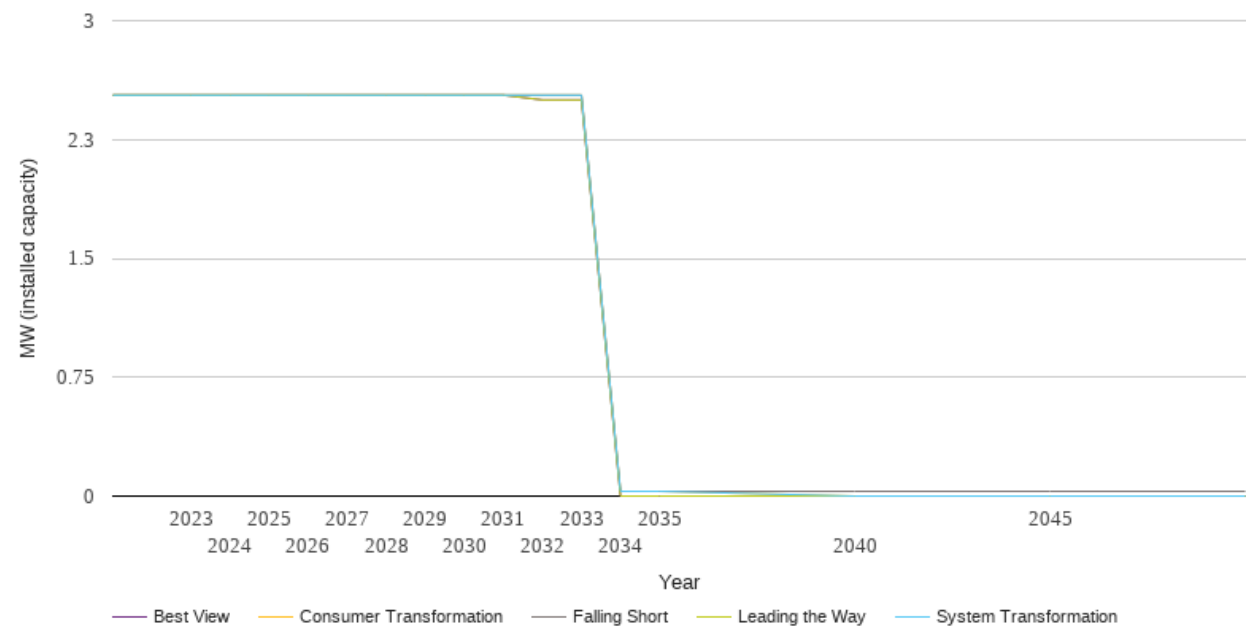
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	2241	2837	2837	3029	3029
2024	2370	2900	2900	3142	3142
2025	9455	10608	10608	11959	11959
2026	13623	16113	16113	17619	17619
2027	22276	24512	24512	30120	30120
2028	23693	25674	25674	31043	31043
2029	25109	26773	26773	31966	31966
2030	26526	27872	27872	32343	32343
2031	34893	42873	42873	44883	44883
2032	38047	44727	44727	45668	45668
2033	41202	46582	46582	46189	46189
2034	44261	48436	48436	46710	46710
2035	46884	50290	50290	47232	47232
2040	50359	50290	50290	49838	49838
2045	50359	50290	50290	50359	50359
2050	50359	50290	50290	50359	50359



Technology Summary: Other Distributed Generation

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

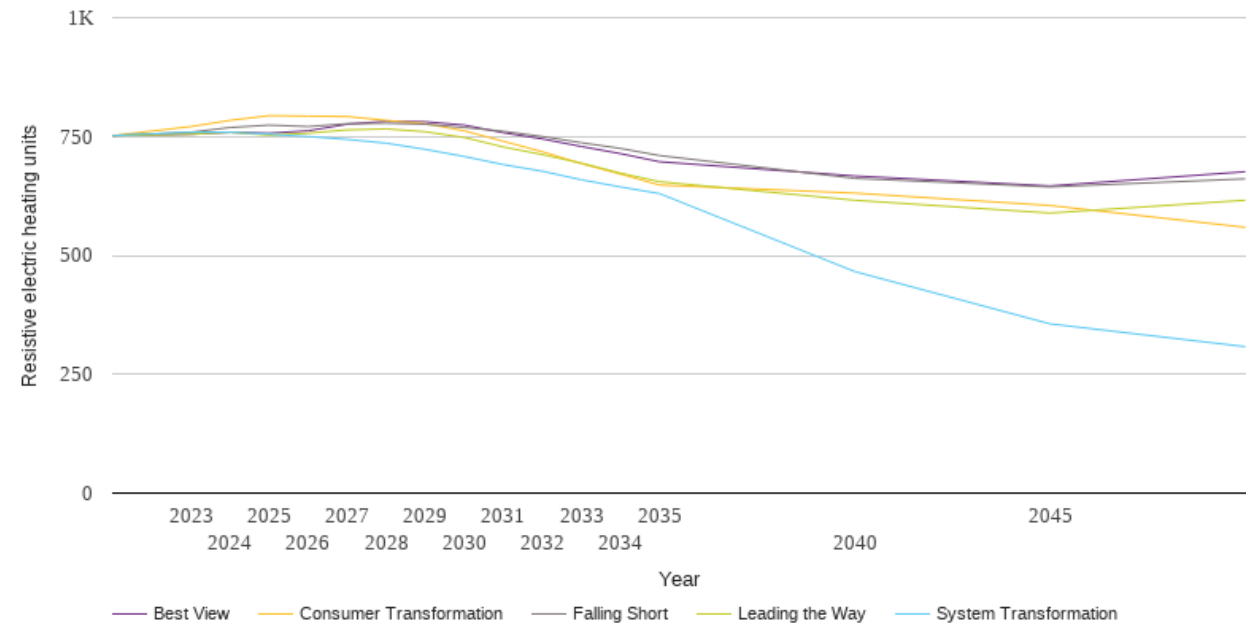
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	2.5	2.5	2.5	2.5	2.5
2023	2.5	2.5	2.5	2.5	2.5
2024	2.5	2.5	2.5	2.5	2.5
2025	2.5	2.5	2.5	2.5	2.5
2026	2.5	2.5	2.5	2.5	2.5
2027	2.5	2.5	2.5	2.5	2.5
2028	2.5	2.5	2.5	2.5	2.5
2029	2.5	2.5	2.5	2.5	2.5
2030	2.5	2.5	2.5	2.5	2.5
2031	2.5	2.5	2.5	2.5	2.5
2032	2.5	2.5	2.5	2.5	2.5
2033	2.5	2.5	2.5	2.5	2.5
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



Technology Summary: Resistive electric heating

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

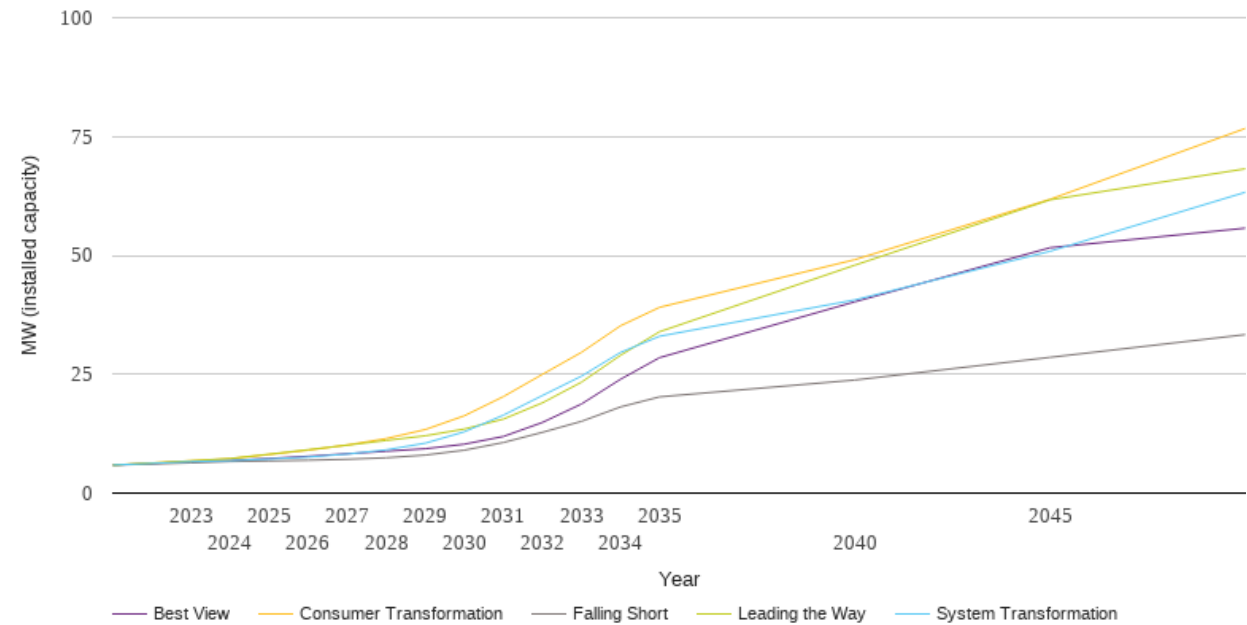
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	752	752	752	752	752
2023	759	759	771	755	755
2024	769	759	784	759	759
2025	774	755	794	753	757
2026	771	750	793	757	762
2027	777	744	792	764	776
2028	778	736	784	766	782
2029	776	723	777	760	781
2030	769	708	762	748	774
2031	761	691	740	728	758
2032	750	677	718	712	745
2033	737	659	693	694	729
2034	725	644	671	673	714
2035	710	630	648	655	697
2040	662	466	631	616	667
2045	644	356	605	589	646
2050	661	308	559	616	676



Technology Summary: Solar Generation

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

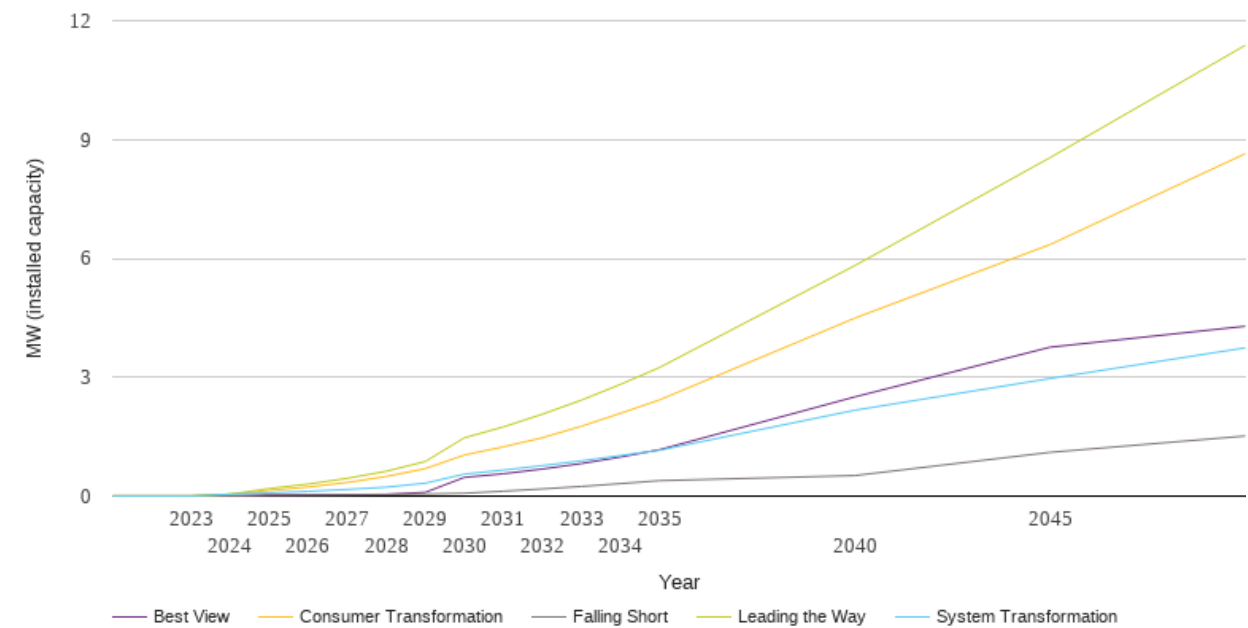
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	5.9	5.9	5.9	5.9	5.9
2023	6.4	6.6	6.8	6.8	6.6
2024	6.6	6.8	7.2	7.3	6.9
2025	6.8	7.2	8.1	8.2	7.3
2026	6.9	7.6	9.0	9.1	7.7
2027	7.1	8.2	10.1	10.1	8.3
2028	7.4	9.1	11.5	11.1	8.8
2029	8.0	10.5	13.4	12.1	9.3
2030	9.0	12.9	16.3	13.5	10.3
2031	10.6	16.4	20.3	15.6	11.9
2032	12.8	20.5	25.0	19.0	14.9
2033	15.1	24.6	29.6	23.3	18.7
2034	18.1	29.6	35.2	29.0	23.9
2035	20.2	33.0	39.1	33.9	28.5
2040	23.8	40.6	49.1	47.9	40.2
2045	28.6	50.9	61.8	61.7	51.6
2050	33.3	63.3	76.7	68.2	55.7



Technology Summary: Storage

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

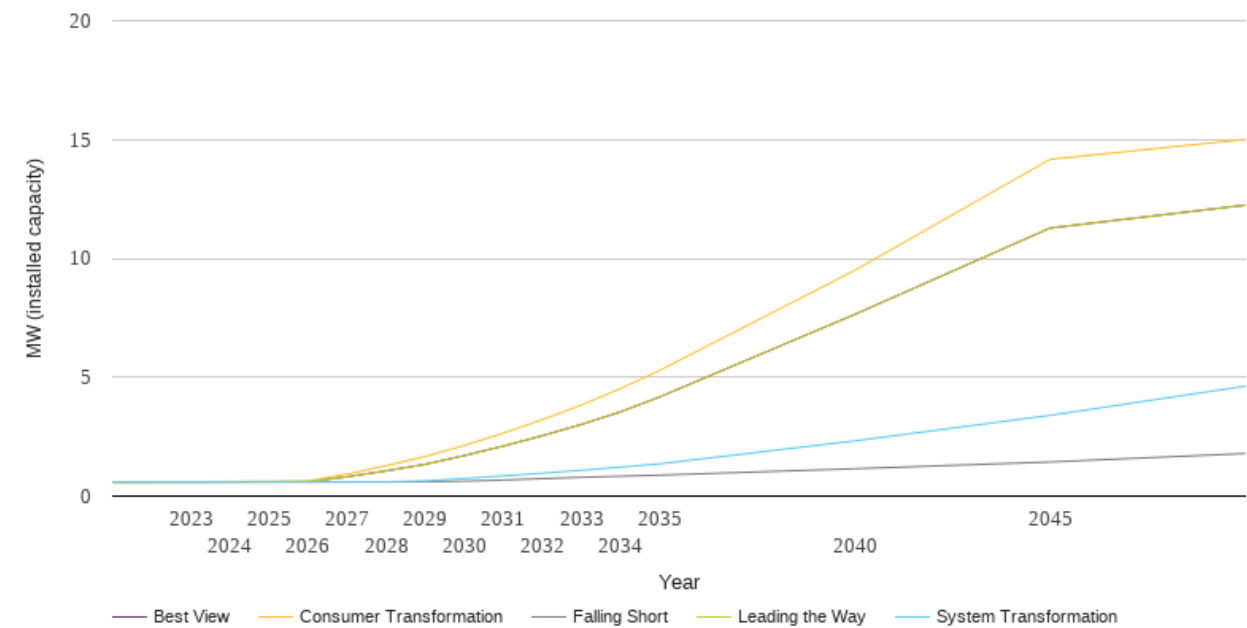
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.1	0.1	0.2	0.0
2026	0.0	0.1	0.2	0.3	0.0
2027	0.0	0.2	0.3	0.4	0.0
2028	0.0	0.2	0.5	0.6	0.0
2029	0.1	0.3	0.7	0.9	0.1
2030	0.1	0.6	1.0	1.5	0.5
2031	0.1	0.7	1.2	1.7	0.6
2032	0.2	0.8	1.5	2.1	0.7
2033	0.2	0.9	1.8	2.4	0.8
2034	0.3	1.0	2.1	2.8	1.0
2035	0.4	1.2	2.4	3.2	1.2
2040	0.5	2.2	4.5	5.8	2.5
2045	1.1	3.0	6.3	8.5	3.8
2050	1.5	3.7	8.6	11.4	4.3



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	0.6	0.6	0.6	0.6	0.6
2023	0.6	0.6	0.6	0.6	0.6
2024	0.6	0.6	0.6	0.6	0.6
2025	0.6	0.6	0.6	0.6	0.6
2026	0.6	0.6	0.6	0.6	0.6
2027	0.6	0.6	0.9	0.8	0.8
2028	0.6	0.6	1.3	1.1	1.1
2029	0.6	0.6	1.7	1.3	1.3
2030	0.6	0.7	2.1	1.7	1.7
2031	0.7	0.8	2.7	2.1	2.1
2032	0.7	1.0	3.2	2.5	2.5
2033	0.8	1.1	3.8	3.0	3.0
2034	0.8	1.2	4.5	3.5	3.5
2035	0.9	1.4	5.3	4.2	4.2
2040	1.2	2.3	9.5	7.6	7.6
2045	1.4	3.4	14.2	11.3	11.3
2050	1.8	4.6	15.0	12.2	12.2



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))
National Grid Electricity Distribution (South Wales) Plc (company number 02366985))
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