

Distribution Future Energy Scenarios 2022

Local Authority:
Rushcliffe

What are Distribution Future Energy Scenarios?

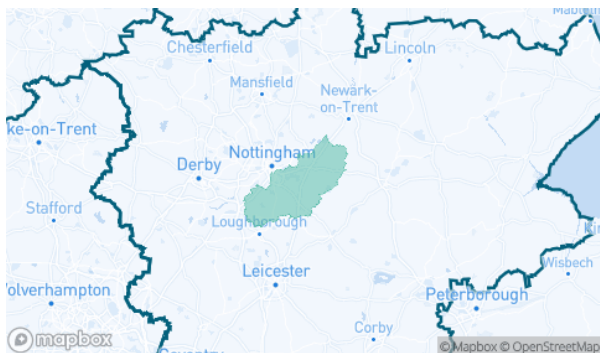
National Grid run Distribution Future Energy Scenarios (DFES) on an annual cycle for all licence areas, and represent a range of credible future scenarios of what could connect to the distribution network.

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 Rushcliffe covered by the NGED licence areas.



Scenario Summary

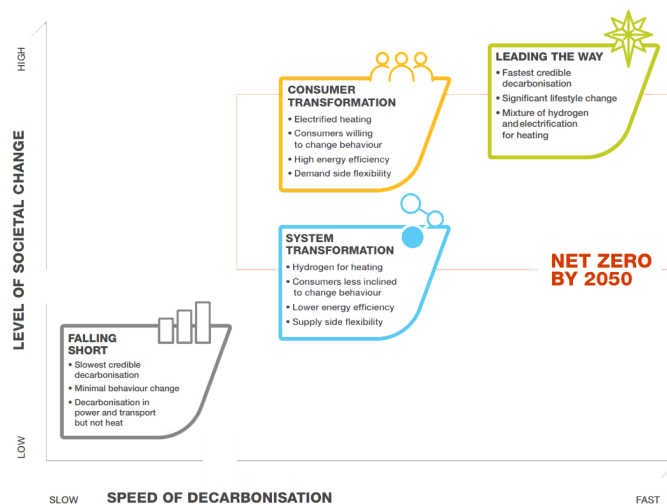
This DFES scenario framework includes three scenarios that are compliant with UK government targets of Net Zero greenhouse gas emissions by 2050. A summary of each scenario is below:

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 Rushcliffe 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	319	753	689	689	319	24314	11617	11616	319
Domestic	New dwellings	0	5881	6297	6297	7203	9380	9185	9185	9050
Electric vehicles	Electric vehicles	2184	14364	16227	29917	29547	86724	70068	72823	58606
EV Charge Point	EV charge points	1103	6878	9141	17169	18916	50245	43576	47709	47714
Heat pumps	Heat pump installations	479	3388	4050	9649	15154	24132	28918	50038	44201
Hydrogen electrolysis	MW (installed capacity)	0.0	0.0	0.2	0.0	0.0	11.9	3.0	1.5	2.5
Non domestic	Floorspace (metres squared) of new I&C developments	0	203963	240509	240509	265496	335045	335045	335045	335045
Other Distributed Generation	MW (installed capacity)	2.2	2.3	2.3	2.3	2.1	1.8	1.5	1.5	1.5
Resistive electric heating	Resistive electric heating units	2739	2942	2714	2866	2850	2715	1352	2250	2420
Solar Generation	MW (installed capacity)	20.9	27.8	37.4	49.0	44.9	74.0	133.2	178.9	170.6
Storage	MW (installed capacity)	0.0	0.2	1.4	3.1	4.2	3.8	9.5	24.8	32.2
Wind	MW (installed capacity)	0.0	0.1	0.4	4.1	3.0	3.4	10.6	38.2	30.6

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.

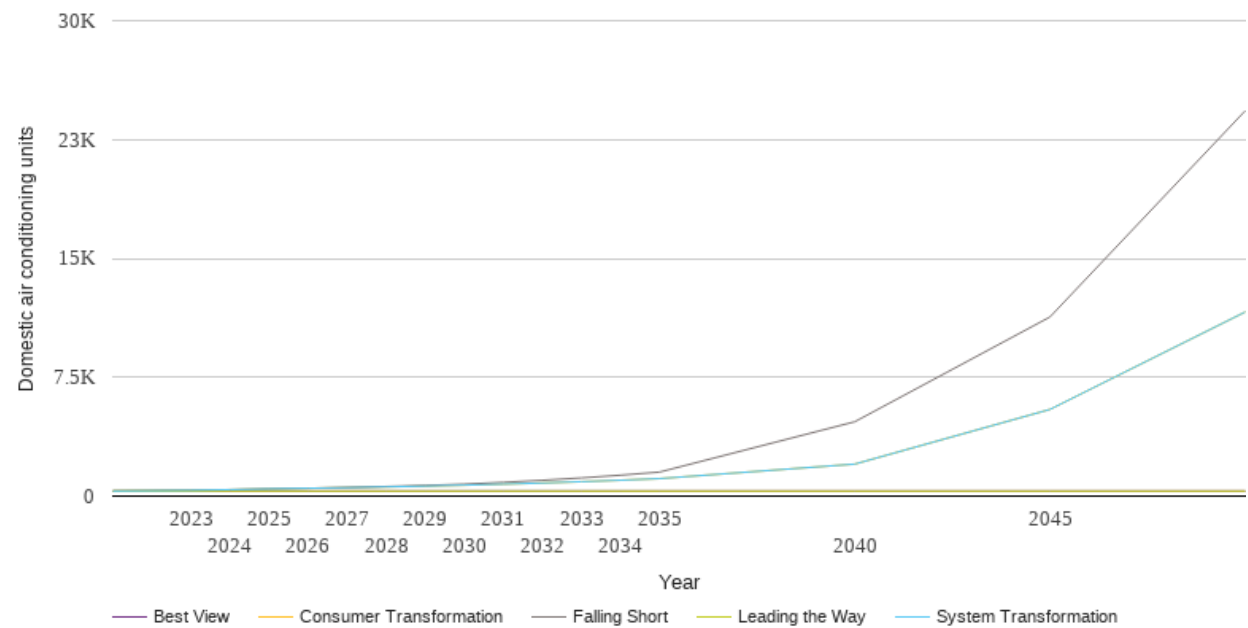
If you have any comments or queries regarding these reports, please contact

nged.energyplanning@nationalgrid.co.uk.

Technology Summary: Air conditioning

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

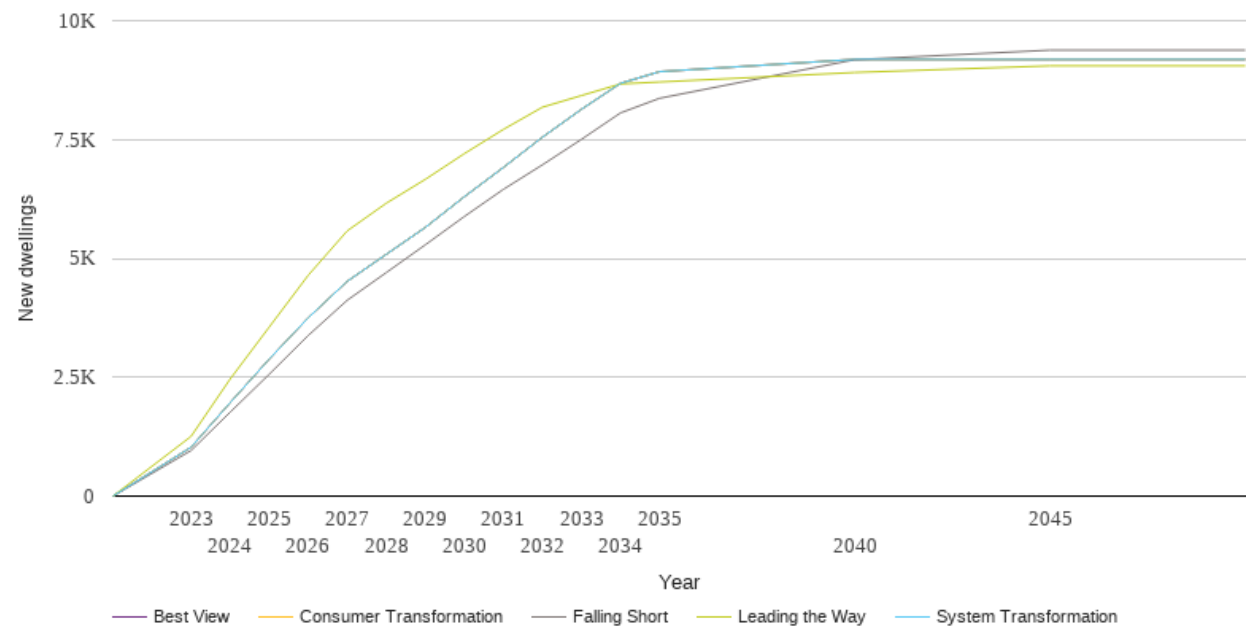
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	319	319	319	319	319
2023	368	362	362	319	319
2024	403	406	406	319	319
2025	444	458	458	319	319
2026	491	494	494	319	319
2027	544	534	534	319	319
2028	604	580	580	319	319
2029	674	632	632	319	319
2030	753	689	689	319	319
2031	867	754	754	319	319
2032	997	827	827	319	319
2033	1147	908	908	319	319
2034	1319	1001	1001	319	319
2035	1515	1103	1103	319	319
2040	4692	2018	2018	319	319
2045	11303	5469	5469	319	319
2050	24314	11617	11616	319	319



Technology Summary: Domestic

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

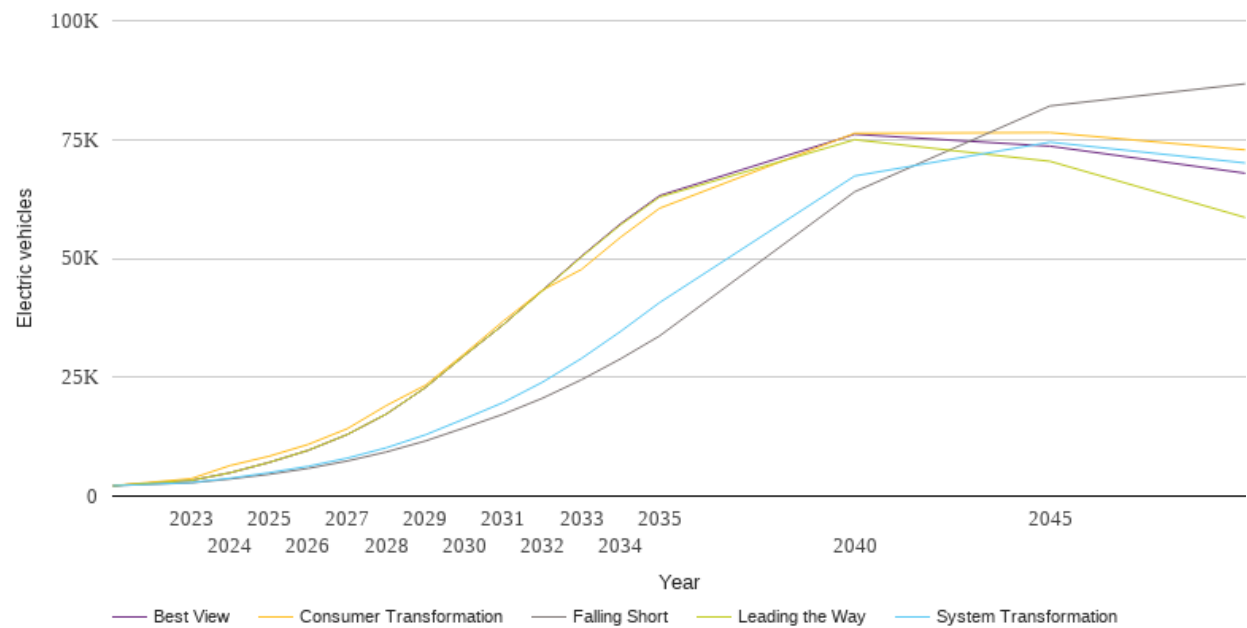
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	958	1027	1027	1255	1027
2024	1763	1963	1963	2460	1963
2025	2561	2879	2879	3552	2879
2026	3377	3750	3750	4643	3750
2027	4119	4517	4517	5579	4517
2028	4701	5085	5085	6160	5085
2029	5285	5651	5651	6662	5651
2030	5881	6297	6297	7203	6297
2031	6452	6913	6913	7713	6913
2032	6968	7549	7549	8180	7549
2033	7504	8136	8136	8425	8136
2034	8060	8682	8682	8670	8682
2035	8367	8928	8928	8710	8928
2040	9180	9185	9185	8910	9185
2045	9380	9185	9185	9050	9185
2050	9380	9185	9185	9050	9185



Technology Summary: Electric vehicles

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

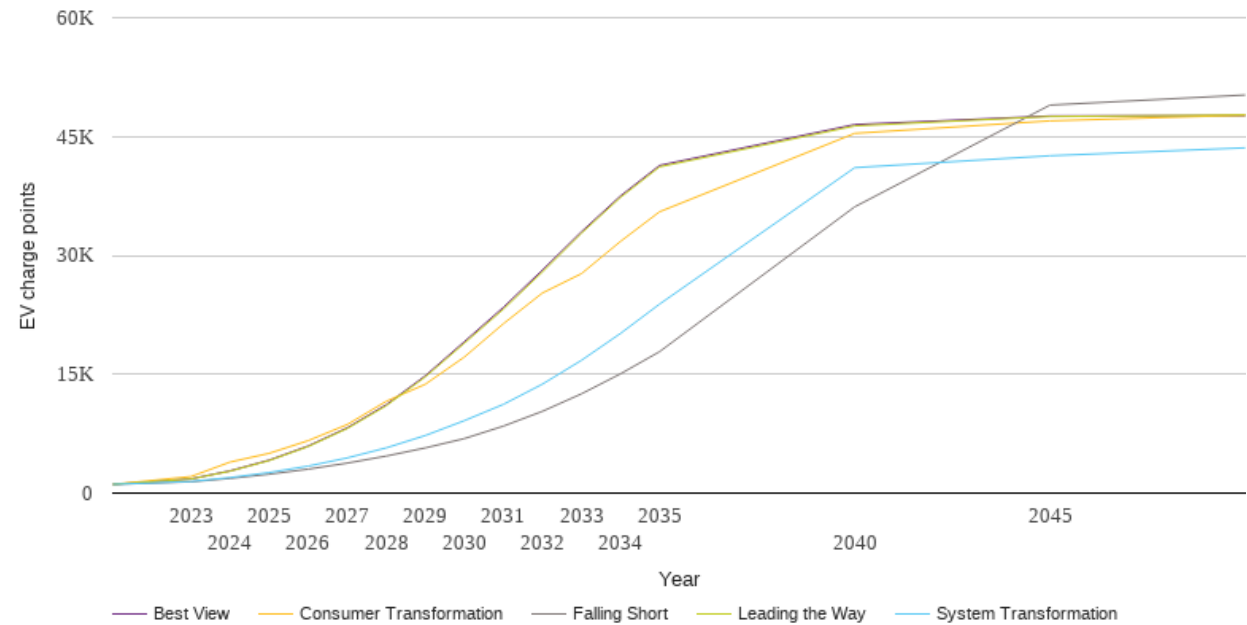
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	2184	2184	2184	2184	2184
2023	2794	2847	3665	3289	3289
2024	3585	3757	6418	4903	4903
2025	4582	4930	8383	7086	7084
2026	5827	6266	10867	9622	9616
2027	7379	7985	14165	12949	12942
2028	9277	10158	19033	17251	17243
2029	11588	12880	23303	22814	22806
2030	14364	16227	29917	29547	29536
2031	17238	19704	36827	36083	36070
2032	20583	23952	43303	43165	43278
2033	24472	28950	47676	50300	50446
2034	28860	34622	54436	57054	57271
2035	33689	40703	60540	62899	63198
2040	64021	67339	76330	74969	76111
2045	82061	74446	76472	70420	73604
2050	86724	70068	72823	58606	67918



Technology Summary: EV Charge Point

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

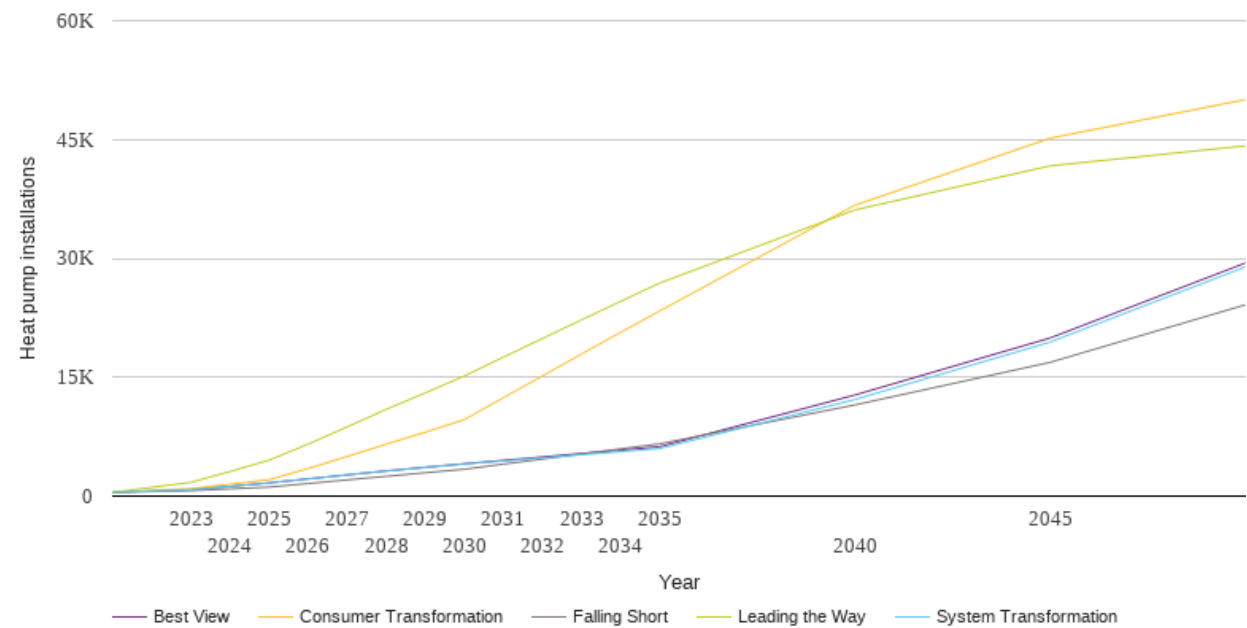
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	1103	1103	1103	1103	1103
2023	1431	1464	2087	1776	1789
2024	1852	1957	3914	2767	2808
2025	2381	2595	5018	4106	4156
2026	3020	3407	6618	5873	5941
2027	3782	4437	8648	8152	8235
2028	4673	5709	11586	11030	11154
2029	5703	7266	13734	14668	14805
2030	6878	9141	17169	18916	19107
2031	8451	11199	21374	23212	23442
2032	10319	13752	25256	27910	28149
2033	12527	16757	27697	32801	32979
2034	15053	20150	31764	37322	37498
2035	17849	23849	35504	41172	41352
2040	36130	41072	45401	46341	46512
2045	48968	42576	46977	47530	47591
2050	50245	43576	47709	47714	47643



Technology Summary: Heat pumps

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

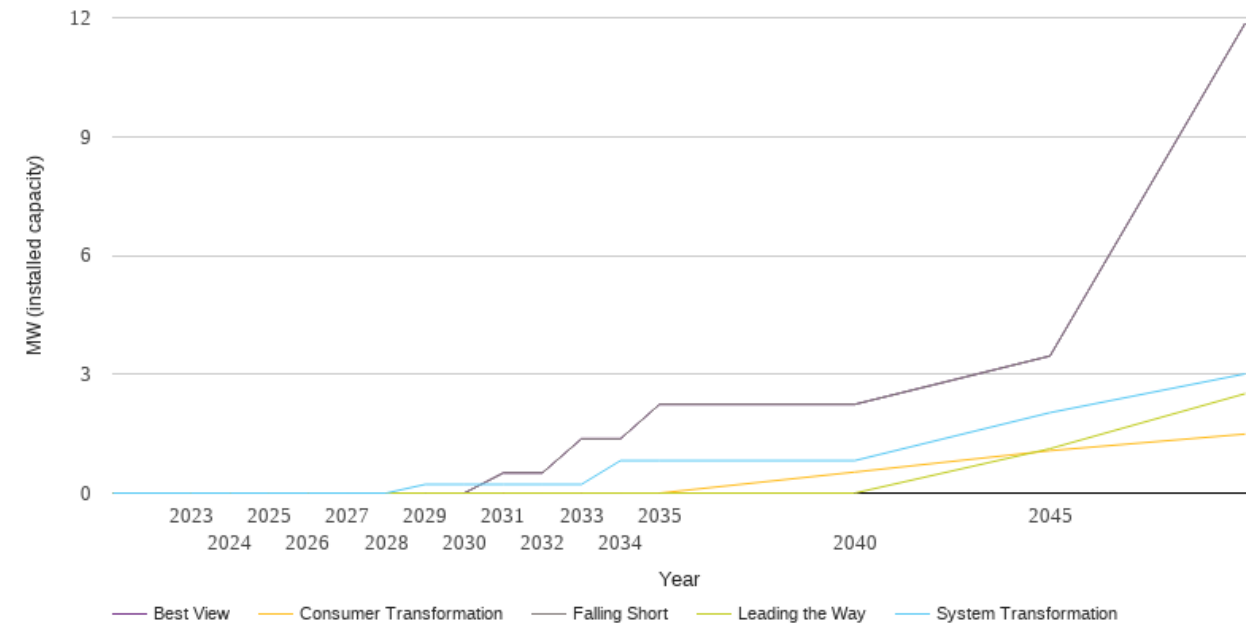
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	479	479	479	479	479
2023	687	811	948	1738	811
2024	910	1214	1492	3103	1214
2025	1135	1667	2075	4531	1667
2026	1586	2170	3484	6560	2173
2027	2047	2675	4997	8731	2683
2028	2495	3160	6555	10950	3174
2029	2946	3613	8063	13030	3633
2030	3388	4050	9649	15154	4079
2031	4037	4431	12414	17532	4506
2032	4672	4818	15156	19884	4935
2033	5317	5222	17926	22240	5380
2034	5956	5609	20650	24564	5806
2035	6592	5999	23351	26878	6236
2040	11503	12182	36705	36114	12753
2045	16872	19429	45161	41676	19945
2050	24132	28918	50038	44201	29405



Technology Summary: Hydrogen electrolysis

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

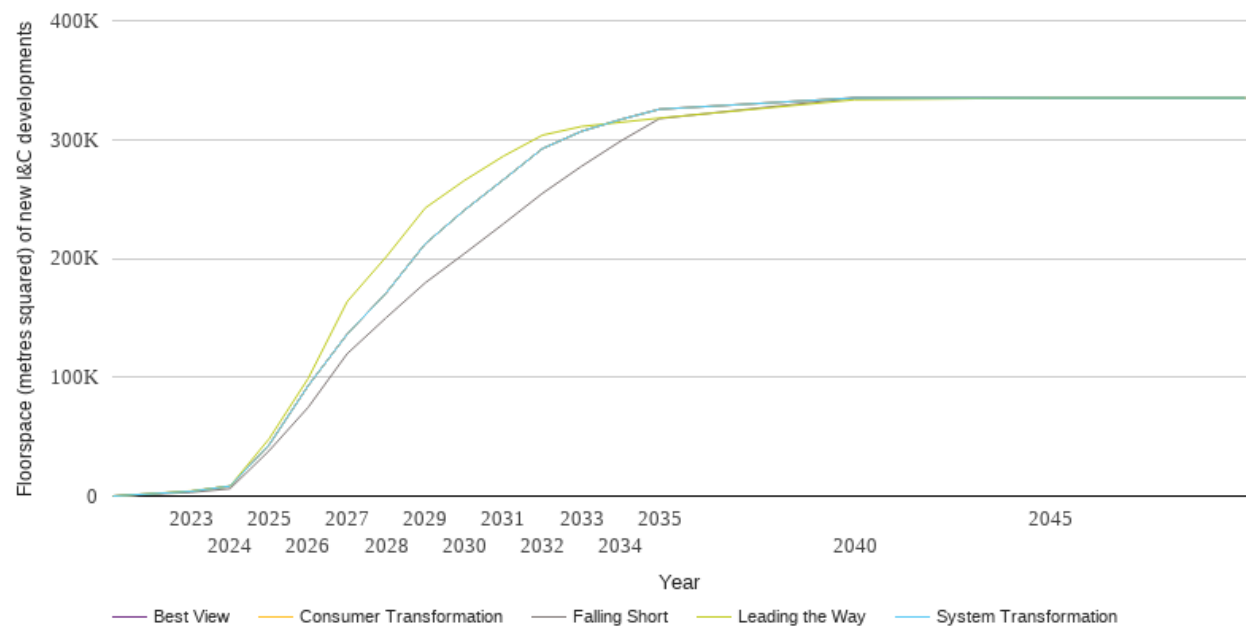
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.0	0.0	0.0	0.0
2026	0.0	0.0	0.0	0.0	0.0
2027	0.0	0.0	0.0	0.0	0.0
2028	0.0	0.0	0.0	0.0	0.0
2029	0.0	0.2	0.0	0.0	0.0
2030	0.0	0.2	0.0	0.0	0.0
2031	0.5	0.2	0.0	0.0	0.5
2032	0.5	0.2	0.0	0.0	0.5
2033	1.4	0.2	0.0	0.0	1.4
2034	1.4	0.8	0.0	0.0	1.4
2035	2.2	0.8	0.0	0.0	2.2
2040	2.2	0.8	0.5	0.0	2.2
2045	3.5	2.0	1.1	1.1	3.5
2050	11.9	3.0	1.5	2.5	11.9



Technology Summary: Non domestic

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

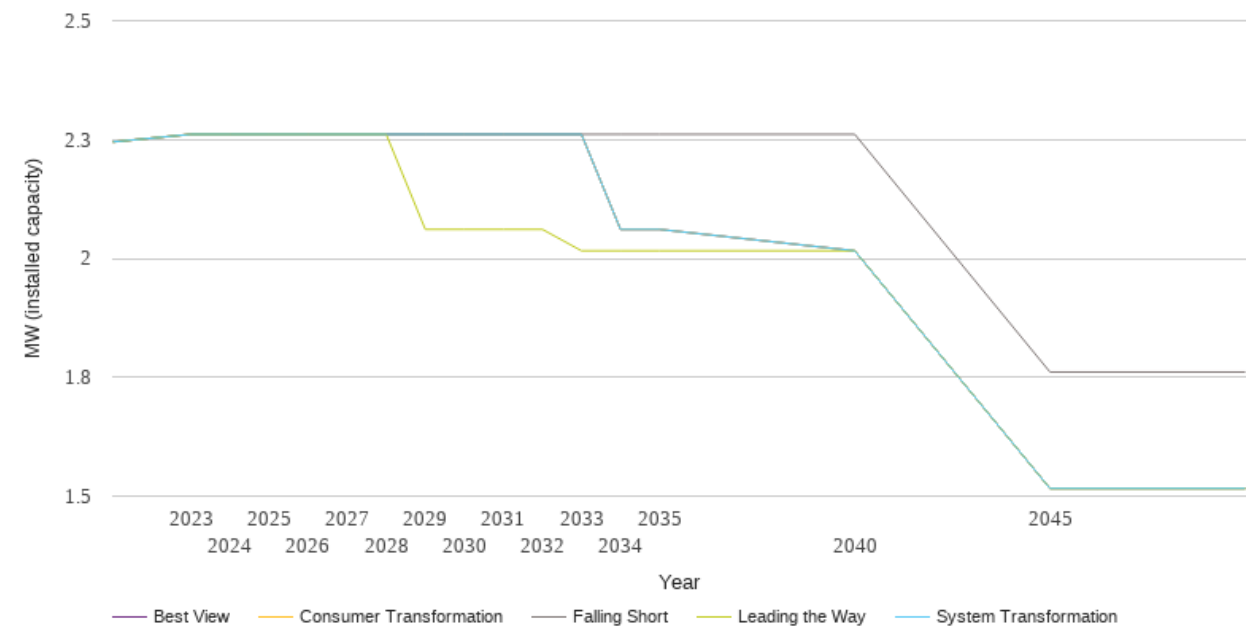
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	3117	4007	4007	4230	4007
2024	6241	8369	8369	8400	8369
2025	38165	43088	43088	48195	43088
2026	74656	92826	92826	98941	92826
2027	119835	136267	136267	163681	136267
2028	150137	170974	170974	201343	170974
2029	179475	212298	212298	242435	212298
2030	203963	240509	240509	265496	240509
2031	229006	266161	266161	285981	266161
2032	254689	292342	292342	303654	292342
2033	277466	306908	306908	310961	306908
2034	298600	316819	316819	314493	316819
2035	317626	325507	325507	318026	325507
2040	335045	335045	335045	333469	335045
2045	335045	335045	335045	335045	335045
2050	335045	335045	335045	335045	335045



Technology Summary: Other Distributed Generation

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

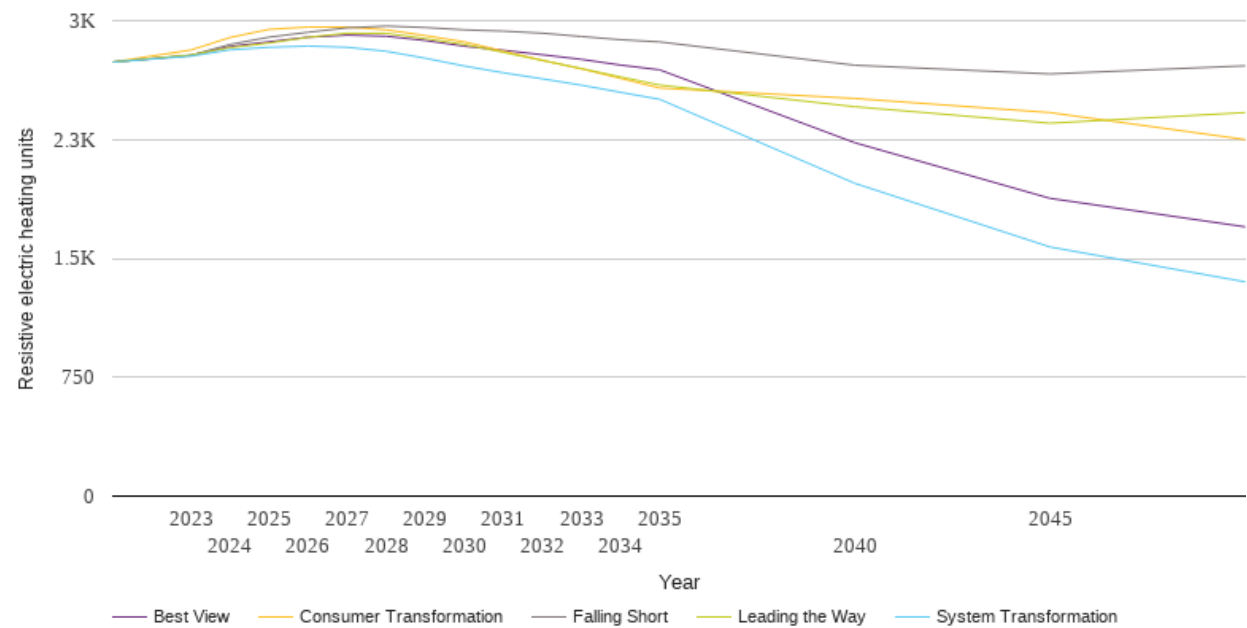
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	2.2	2.2	2.2	2.2	2.2
2023	2.3	2.3	2.3	2.3	2.3
2024	2.3	2.3	2.3	2.3	2.3
2025	2.3	2.3	2.3	2.3	2.3
2026	2.3	2.3	2.3	2.3	2.3
2027	2.3	2.3	2.3	2.3	2.3
2028	2.3	2.3	2.3	2.3	2.3
2029	2.3	2.3	2.3	2.1	2.3
2030	2.3	2.3	2.3	2.1	2.3
2031	2.3	2.3	2.3	2.1	2.3
2032	2.3	2.3	2.3	2.1	2.3
2033	2.3	2.3	2.3	2.0	2.3
2034	2.3	2.1	2.1	2.0	2.1
2035	2.3	2.1	2.1	2.0	2.1
2040	2.3	2.0	2.0	2.0	2.0
2045	1.8	1.5	1.5	1.5	1.5
2050	1.8	1.5	1.5	1.5	1.5



Technology Summary: Resistive electric heating

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

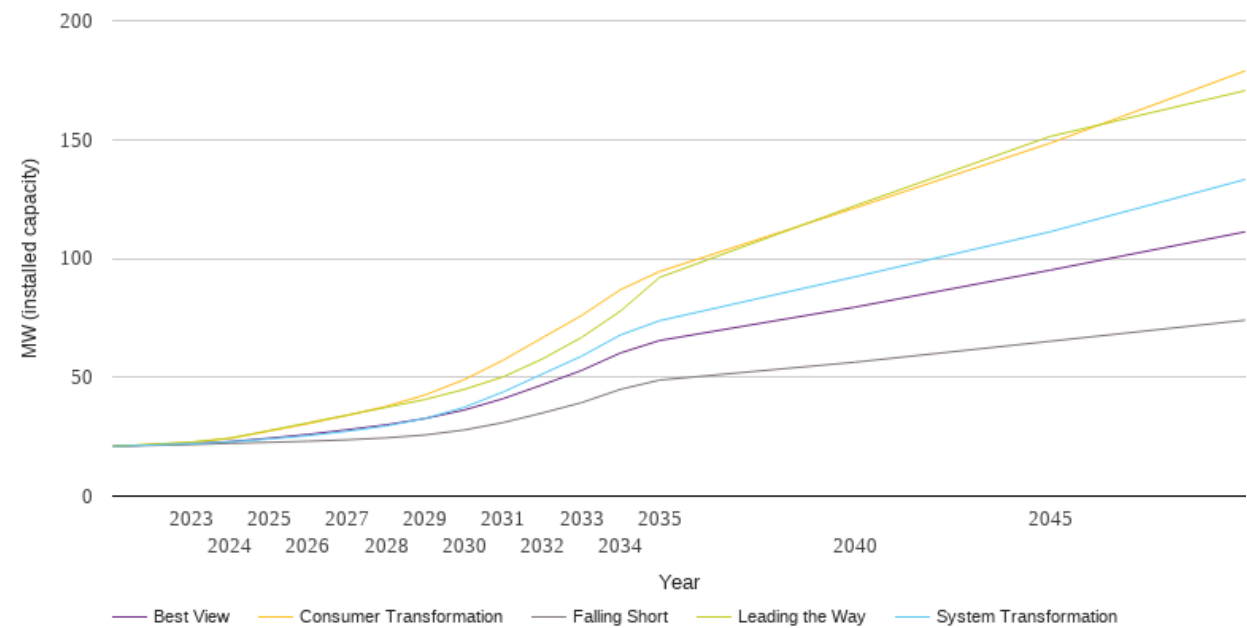
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	2739	2739	2739	2739	2739
2023	2782	2776	2815	2784	2781
2024	2850	2816	2894	2830	2837
2025	2896	2832	2945	2859	2867
2026	2927	2840	2960	2895	2896
2027	2955	2832	2960	2921	2909
2028	2966	2807	2942	2920	2902
2029	2957	2763	2906	2887	2875
2030	2942	2714	2866	2850	2839
2031	2934	2671	2808	2800	2813
2032	2921	2633	2750	2749	2785
2033	2900	2593	2696	2698	2756
2034	2880	2548	2636	2645	2720
2035	2866	2504	2575	2594	2690
2040	2719	1974	2509	2457	2230
2045	2664	1572	2420	2353	1879
2050	2715	1352	2250	2420	1699



Technology Summary: Solar Generation

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

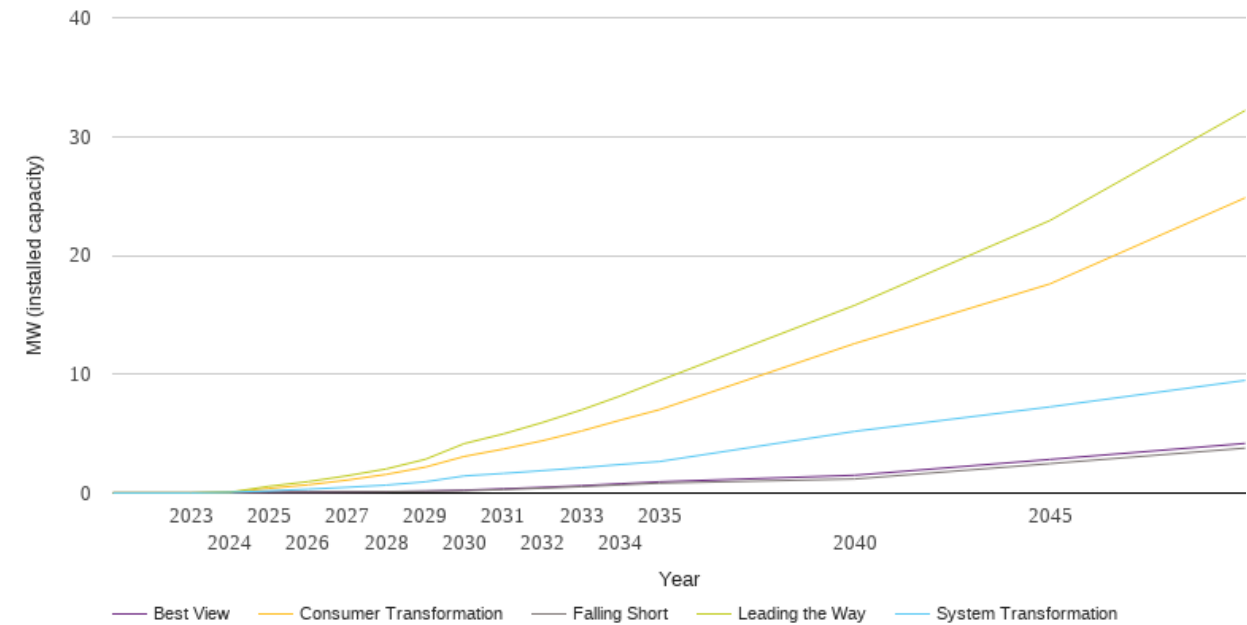
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	20.9	20.9	20.9	20.9	20.9
2023	21.7	22.0	22.6	22.7	22.1
2024	22.2	22.8	24.2	24.4	22.9
2025	22.6	24.0	27.3	27.6	24.4
2026	23.1	25.4	30.5	30.8	26.0
2027	23.7	27.3	33.9	34.1	27.9
2028	24.5	29.5	37.8	37.3	30.0
2029	25.7	32.7	42.6	40.7	32.7
2030	27.8	37.4	49.0	44.9	36.2
2031	30.9	43.8	57.2	50.2	41.0
2032	35.0	51.4	66.6	57.7	46.8
2033	39.3	58.8	75.9	66.7	52.8
2034	44.9	67.8	86.8	77.8	60.2
2035	48.8	73.8	94.5	92.0	65.4
2040	56.3	92.2	121.2	122.1	79.5
2045	65.1	111.2	148.5	151.3	95.0
2050	74.0	133.2	178.9	170.6	111.2



Technology Summary: Storage

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

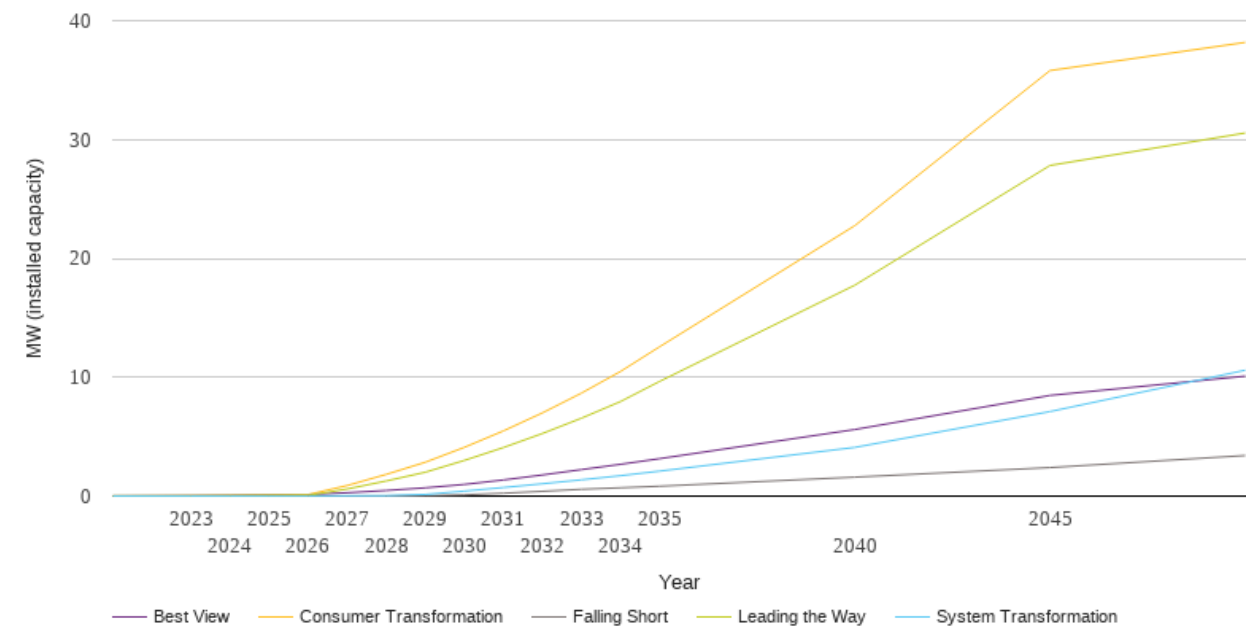
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.1	0.1	0.1	0.0
2025	0.1	0.2	0.4	0.6	0.1
2026	0.1	0.3	0.7	1.0	0.1
2027	0.1	0.5	1.1	1.5	0.1
2028	0.1	0.7	1.6	2.0	0.1
2029	0.2	0.9	2.2	2.8	0.2
2030	0.2	1.4	3.1	4.2	0.2
2031	0.3	1.7	3.7	5.0	0.4
2032	0.4	1.9	4.4	5.9	0.5
2033	0.5	2.1	5.2	7.0	0.6
2034	0.7	2.4	6.1	8.2	0.8
2035	0.8	2.7	7.0	9.5	0.9
2040	1.2	5.2	12.6	15.8	1.5
2045	2.5	7.3	17.6	22.9	2.8
2050	3.8	9.5	24.8	32.2	4.2



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	0.1	0.0	0.1
2025	0.0	0.0	0.1	0.0	0.1
2026	0.0	0.0	0.1	0.0	0.1
2027	0.0	0.0	0.9	0.6	0.3
2028	0.0	0.0	1.8	1.3	0.5
2029	0.0	0.1	2.8	2.0	0.7
2030	0.1	0.4	4.1	3.0	1.0
2031	0.2	0.7	5.5	4.1	1.4
2032	0.4	1.0	7.0	5.3	1.8
2033	0.6	1.4	8.7	6.6	2.2
2034	0.7	1.7	10.5	8.0	2.7
2035	0.8	2.1	12.6	9.6	3.1
2040	1.6	4.1	22.8	17.7	5.6
2045	2.4	7.1	35.8	27.8	8.5
2050	3.4	10.6	38.2	30.6	10.1



National Grid Electricity Distribution PLC 09223384)
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