

Distribution Future Energy Scenarios 2022

Local Authority:
South Hams

What are Distribution Future Energy Scenarios?

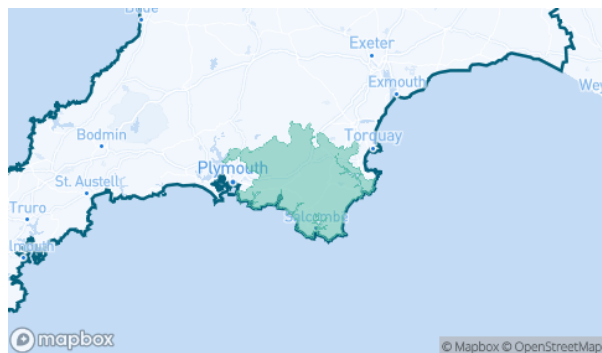
National Grid run Distribution Future Energy Scenarios (DFES) on an annual cycle for all licence areas, and represent a range of credible future scenarios of what could connect to the distribution network.

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 South Hams covered by the NGED licence areas.



Scenario Summary

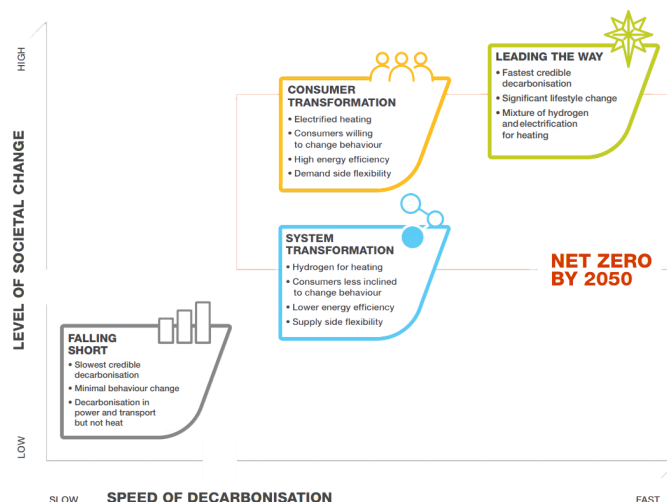
This DFES scenario framework includes three scenarios that are compliant with UK government targets of Net Zero greenhouse gas emissions by 2050. A summary of each scenario is below:

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 South Hams 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	86	51	51	0	11065	4918	4918	0
Domestic	New dwellings	0	2026	2235	2235	2709	4405	4359	4359	4322
Electric vehicles	Electric vehicles	1099	9360	11583	21495	21395	65767	55897	56682	48881
EV Charge Point	EV charge points	588	4189	6023	11449	12572	35691	33777	34362	35806
Heat pumps	Heat pump installations	1242	6290	6080	10501	14683	26492	29364	44236	39618
Hydrogen electrolysis	MW (installed capacity)	0.0	10.0	11.4	10.2	11.7	11.1	21.3	18.1	23.0
Non domestic	Floorspace (metres squared) of new I&C developments	0	8374	9337	9337	10014	10650	10639	10639	10650
Other Distributed Generation	MW (installed capacity)	18.8	23.1	20.7	22.1	20.6	19.4	21.0	20.1	30.3
Resistive electric heating	Resistive electric heating units	13578	10814	10585	11287	10715	6185	2381	6771	7064
Solar Generation	MW (installed capacity)	26.5	33.5	44.3	55.9	62.2	95.2	166.9	212.5	231.0
Storage	MW (installed capacity)	0.1	0.3	1.4	2.9	4.1	4.3	11.0	26.1	33.5
Wind	MW (installed capacity)	0.8	1.0	1.6	7.7	5.9	6.5	18.6	62.6	50.7

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

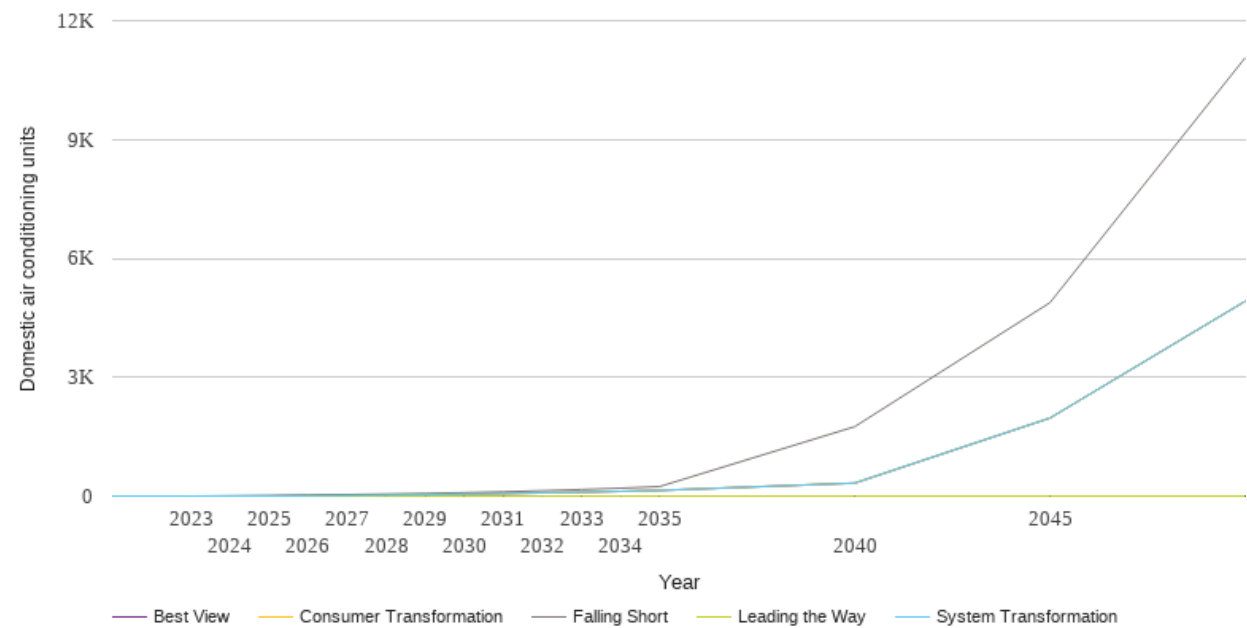
NGED is committed to continually improving the DFES process. To ensure the DFES projections fully capture local ambition, in 2022 we have appointed two DSO Strategic Engagement Officers to engage with local authorities. Any feedback will be incorporated into future Distribution Future Energy Scenarios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

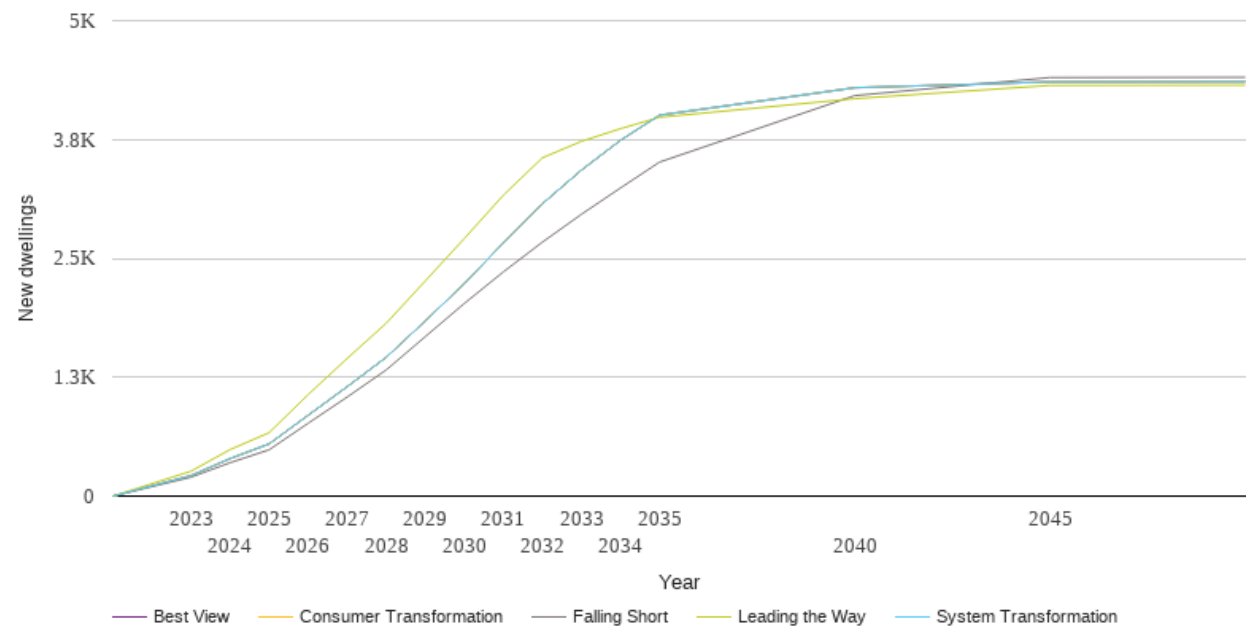
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	0	0	0	0	0
2024	8	0	0	0	0
2025	17	0	0	0	0
2026	27	8	8	0	8
2027	39	17	17	0	17
2028	52	27	27	0	27
2029	68	38	38	0	38
2030	86	51	51	0	51
2031	109	65	65	0	65
2032	135	81	81	0	81
2033	165	99	99	0	99
2034	200	120	120	0	120
2035	240	143	143	0	143
2040	1753	328	328	0	328
2045	4883	1970	1970	0	1970
2050	11065	4918	4918	0	4918



Technology Summary: Domestic

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

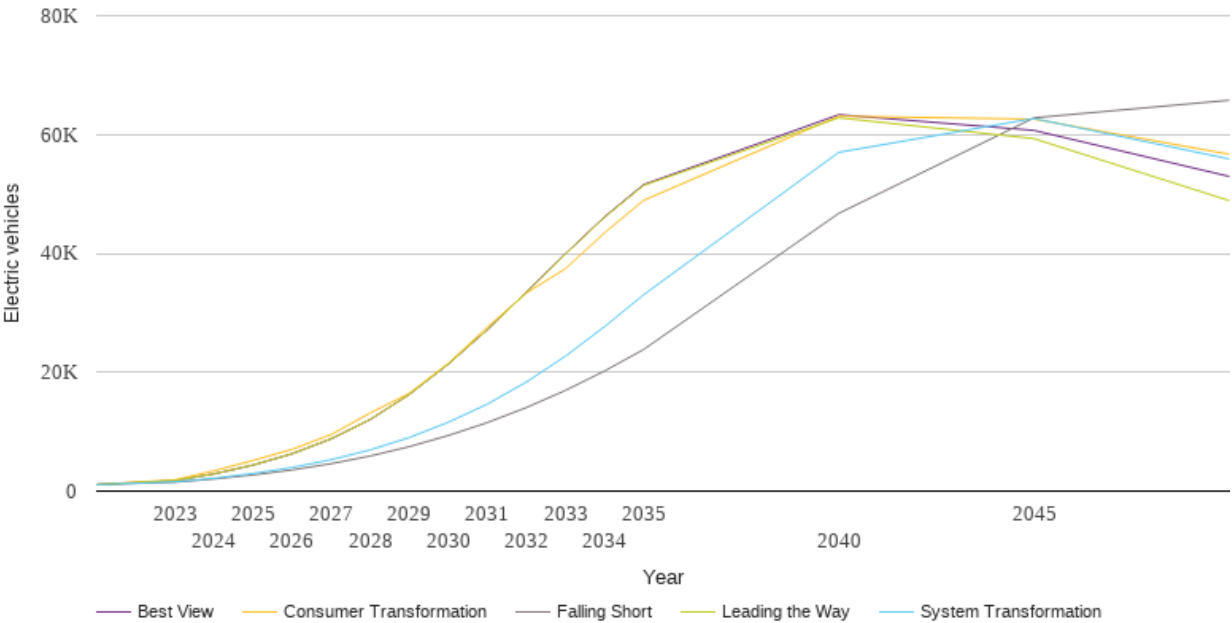
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	199	216	216	262	216
2024	351	394	394	489	394
2025	487	549	549	667	549
2026	766	850	850	1067	850
2027	1042	1151	1151	1448	1151
2028	1327	1460	1460	1818	1460
2029	1677	1842	1842	2263	1842
2030	2026	2235	2235	2709	2235
2031	2358	2663	2663	3165	2663
2032	2671	3075	3075	3558	3075
2033	2964	3429	3429	3731	3429
2034	3241	3742	3742	3864	3742
2035	3513	4006	4006	3984	4006
2040	4212	4295	4295	4180	4295
2045	4402	4356	4356	4319	4356
2050	4405	4359	4359	4322	4359



Technology Summary: Electric vehicles

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

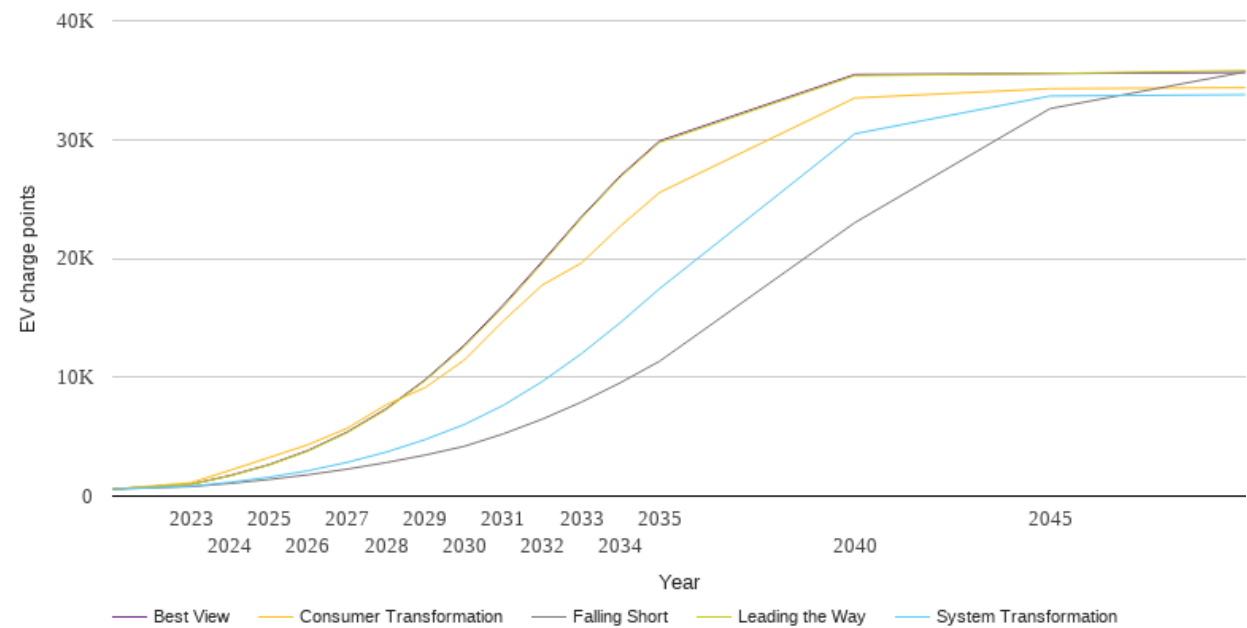
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	1099	1099	1099	1099	1099
2023	1508	1548	1897	1767	1767
2024	2042	2163	3415	2901	2900
2025	2717	2964	5158	4382	4380
2026	3560	3971	7026	6289	6285
2027	4618	5282	9506	8811	8800
2028	5907	6933	13150	12057	12048
2029	7476	9012	16456	16276	16265
2030	9360	11583	21495	21395	21382
2031	11526	14639	27589	27161	27149
2032	14060	18358	33333	33444	33495
2033	16944	22703	37424	39879	39943
2034	20210	27661	43455	46047	46139
2035	23815	33025	48922	51438	51564
2040	46734	57003	63077	62819	63338
2045	62807	62707	62598	59314	60694
2050	65767	55897	56682	48881	52953



Technology Summary: EV Charge Point

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

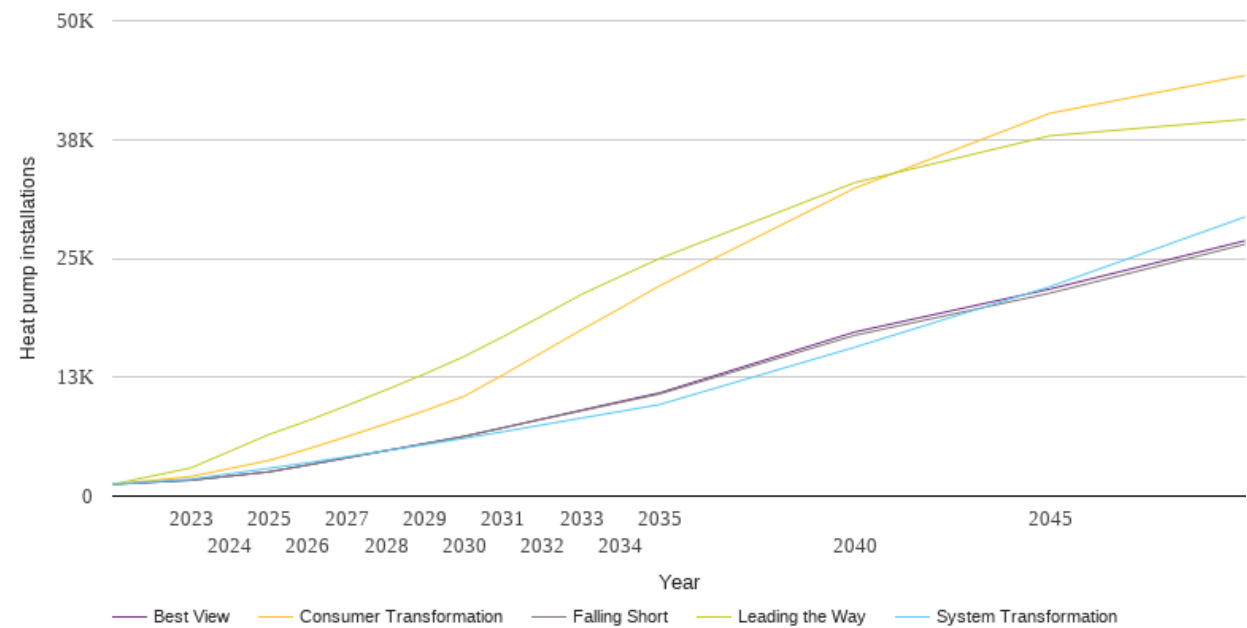
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	588	588	588	588	588
2023	796	831	1125	994	999
2024	1064	1164	2171	1710	1729
2025	1398	1591	3247	2615	2646
2026	1794	2135	4330	3800	3846
2027	2268	2837	5709	5341	5395
2028	2820	3702	7690	7276	7353
2029	3455	4761	9138	9718	9802
2030	4189	6023	11449	12572	12693
2031	5237	7643	14751	15940	16089
2032	6478	9646	17762	19605	19753
2033	7911	11980	19618	23388	23494
2034	9546	14606	22723	26850	26958
2035	11346	17449	25547	29762	29875
2040	23003	30482	33495	35373	35469
2045	32600	33659	34278	35557	35557
2050	35691	33777	34362	35806	35646



Technology Summary: Heat pumps

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

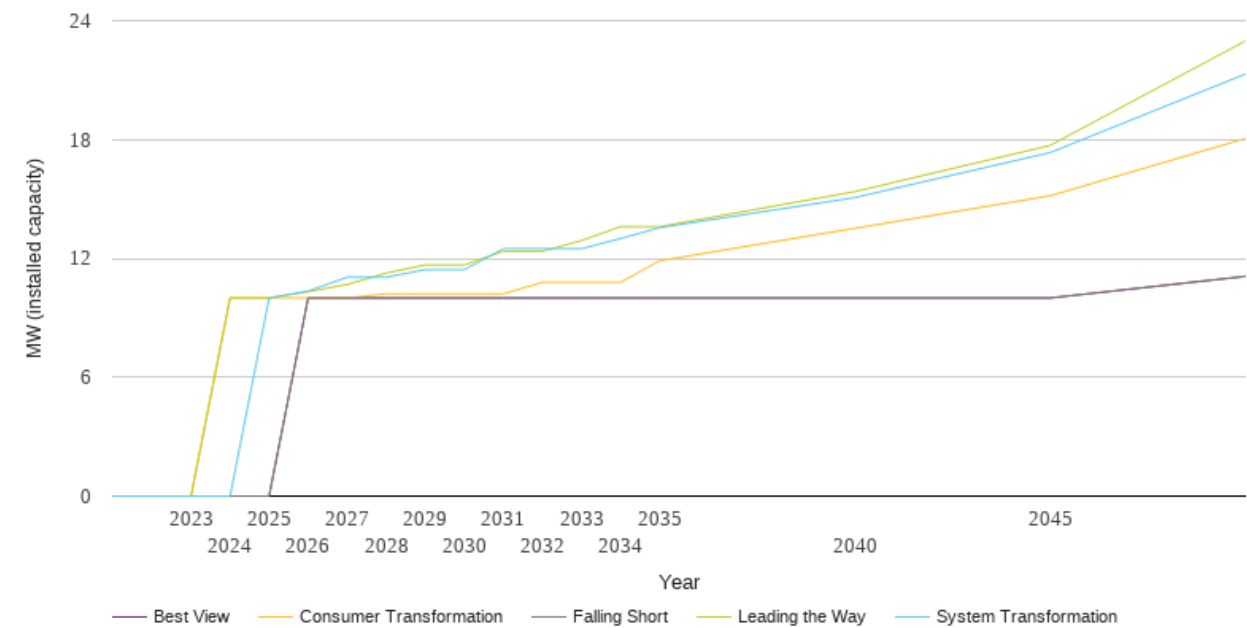
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	1242	1242	1242	1242	1242
2023	1674	1786	2059	2970	1674
2024	2110	2356	2907	4724	2110
2025	2552	2929	3751	6487	2552
2026	3280	3512	4960	7939	3274
2027	4039	4148	6266	9531	4032
2028	4786	4783	7608	11179	4778
2029	5532	5421	8998	12869	5525
2030	6290	6080	10501	14683	6289
2031	7182	6777	12776	16779	7198
2032	8080	7486	15121	18965	8121
2033	8966	8206	17478	21208	9037
2034	9852	8906	19769	23109	9951
2035	10736	9628	22108	24983	10852
2040	16909	15653	32383	32967	17251
2045	21342	22028	40259	37893	21776
2050	26492	29364	44236	39618	26859



Technology Summary: Hydrogen electrolysis

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

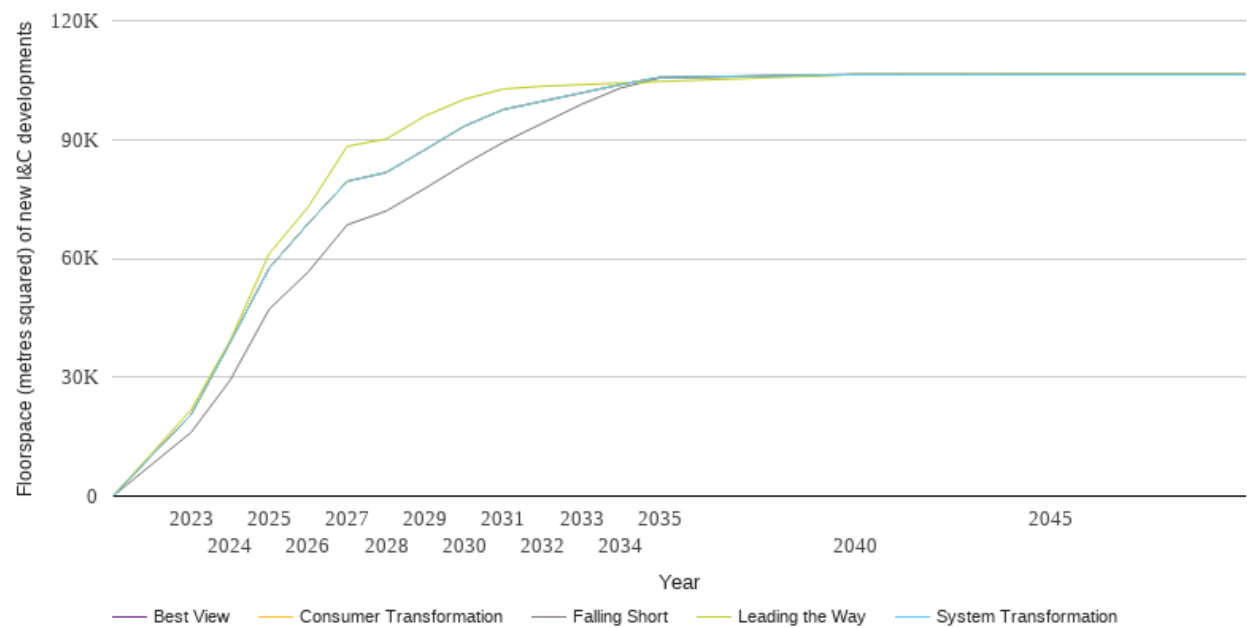
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	10.0	10.0	0.0
2025	0.0	10.0	10.0	10.0	0.0
2026	10.0	10.3	10.0	10.3	10.0
2027	10.0	11.0	10.0	10.7	10.0
2028	10.0	11.0	10.2	11.3	10.0
2029	10.0	11.4	10.2	11.7	10.0
2030	10.0	11.4	10.2	11.7	10.0
2031	10.0	12.5	10.2	12.4	10.0
2032	10.0	12.5	10.8	12.4	10.0
2033	10.0	12.5	10.8	12.9	10.0
2034	10.0	13.0	10.8	13.6	10.0
2035	10.0	13.6	11.9	13.6	10.0
2040	10.0	15.1	13.5	15.4	10.0
2045	10.0	17.3	15.2	17.7	10.0
2050	11.1	21.3	18.1	23.0	11.1



Technology Summary: Non domestic

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

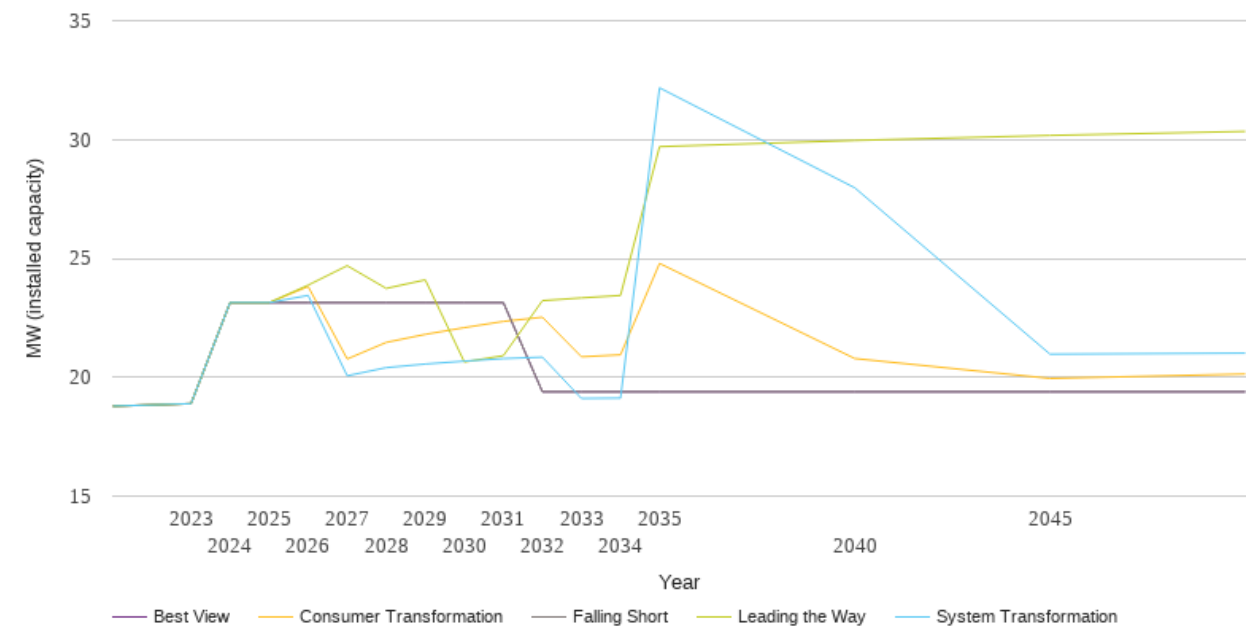
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	16054	20564	20564	21766	20564
2024	29203	38742	38742	39232	38742
2025	47149	57496	57496	61157	57496
2026	56558	68787	68787	72957	68787
2027	68477	79461	79461	88301	79461
2028	71954	81693	81693	90138	81693
2029	77724	87481	87481	95988	87481
2030	83747	93374	93374	100144	93374
2031	89290	97568	97568	102744	97568
2032	94083	99663	99663	103446	99663
2033	98877	101758	101758	103841	101758
2034	102985	103853	103853	104236	103853
2035	105515	105702	105702	104631	105702
2040	106509	106390	106390	106434	106390
2045	106509	106390	106390	106509	106390
2050	106509	106390	106390	106509	106390



Technology Summary: Other Distributed Generation

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

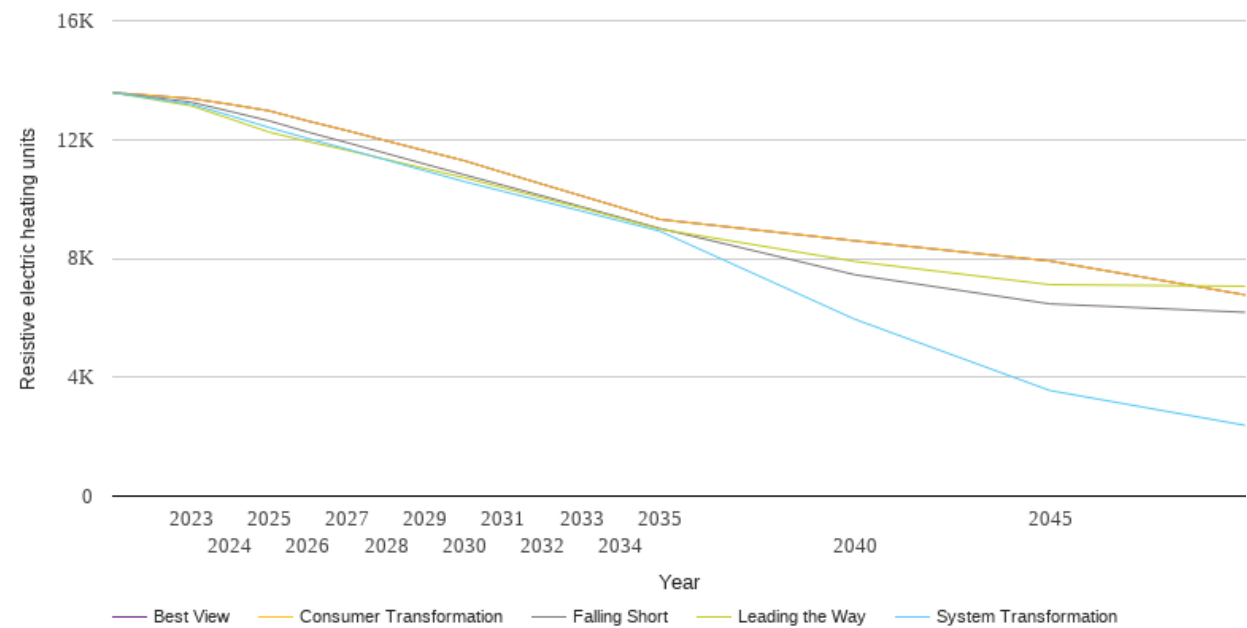
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	18.8	18.8	18.8	18.8	18.8
2023	18.9	18.9	18.9	18.9	18.9
2024	23.1	23.1	23.1	23.1	23.1
2025	23.1	23.1	23.1	23.1	23.1
2026	23.1	23.4	23.8	23.9	23.1
2027	23.1	20.1	20.8	24.7	23.1
2028	23.1	20.4	21.5	23.7	23.1
2029	23.1	20.6	21.8	24.1	23.1
2030	23.1	20.7	22.1	20.6	23.1
2031	23.1	20.8	22.3	20.9	23.1
2032	19.4	20.8	22.5	23.2	19.4
2033	19.4	19.1	20.9	23.3	19.4
2034	19.4	19.1	20.9	23.4	19.4
2035	19.4	32.2	24.8	29.7	19.4
2040	19.4	28.0	20.8	30.0	19.4
2045	19.4	21.0	20.0	30.2	19.4
2050	19.4	21.0	20.1	30.3	19.4



Technology Summary: Resistive electric heating

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

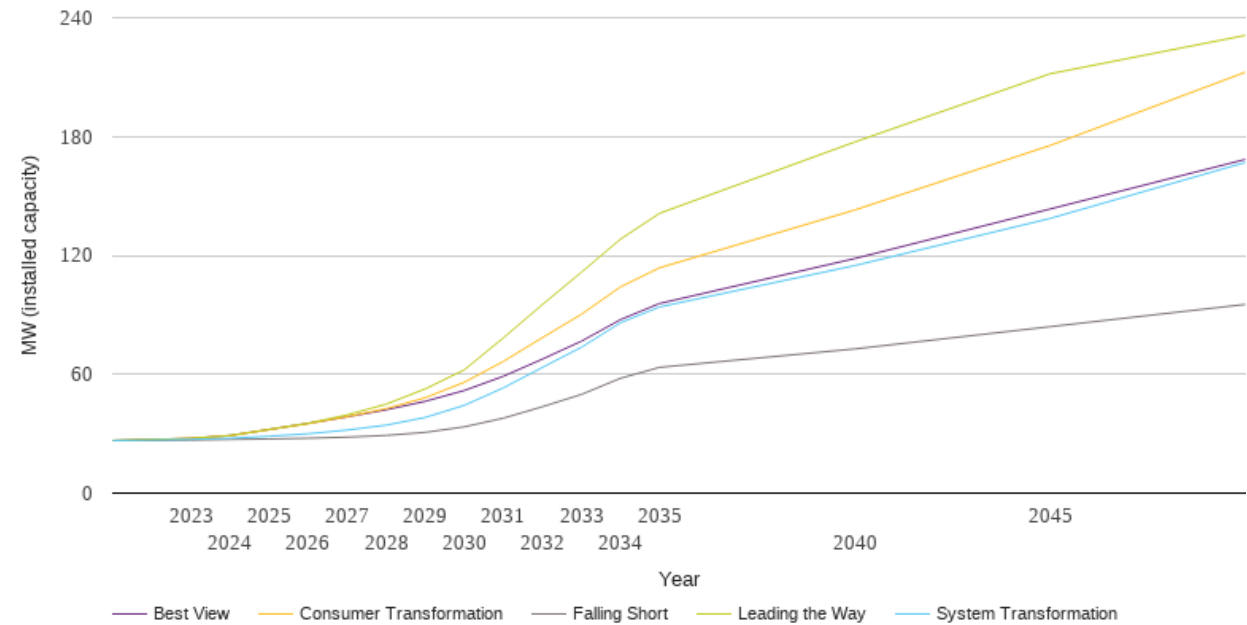
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	13578	13578	13578	13578	13578
2023	13259	13191	13381	13136	13381
2024	12946	12803	13185	12696	13185
2025	12630	12404	12966	12250	12966
2026	12249	12033	12621	11932	12621
2027	11893	11678	12299	11639	12299
2028	11533	11313	11958	11331	11958
2029	11171	10946	11620	11021	11620
2030	10814	10585	11287	10715	11287
2031	10459	10254	10889	10374	10889
2032	10103	9926	10496	10037	10496
2033	9739	9592	10105	9696	10105
2034	9377	9257	9714	9343	9714
2035	9012	8921	9313	8987	9313
2040	7450	5952	8592	7898	8592
2045	6469	3552	7912	7116	7912
2050	6185	2381	6771	7064	6771



Technology Summary: Solar Generation

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

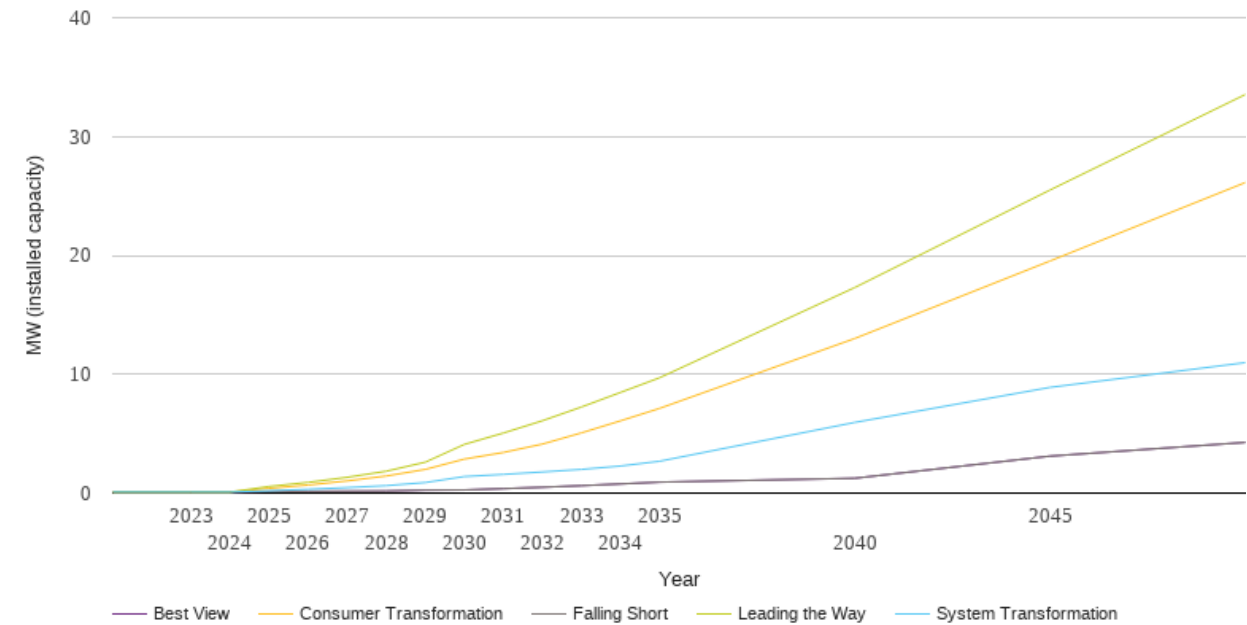
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	26.5	26.5	26.5	26.5	26.5
2023	26.8	27.1	27.6	27.6	27.6
2024	27.1	27.7	29.0	29.0	29.0
2025	27.3	28.7	32.0	32.1	32.1
2026	27.7	30.0	35.1	35.2	35.2
2027	28.3	31.8	38.6	39.5	38.5
2028	29.1	34.3	42.6	44.9	42.1
2029	30.7	38.2	48.1	52.6	46.3
2030	33.5	44.3	55.9	62.2	51.8
2031	37.8	53.1	66.5	78.4	59.0
2032	43.6	63.4	78.5	95.2	67.6
2033	49.8	73.6	90.3	111.5	76.7
2034	58.0	86.0	104.1	128.2	87.6
2035	63.5	94.0	113.7	141.2	95.7
2040	72.8	114.8	142.9	177.2	118.4
2045	84.0	138.6	175.5	211.7	143.4
2050	95.2	166.9	212.5	231.0	168.4



Technology Summary: Storage

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

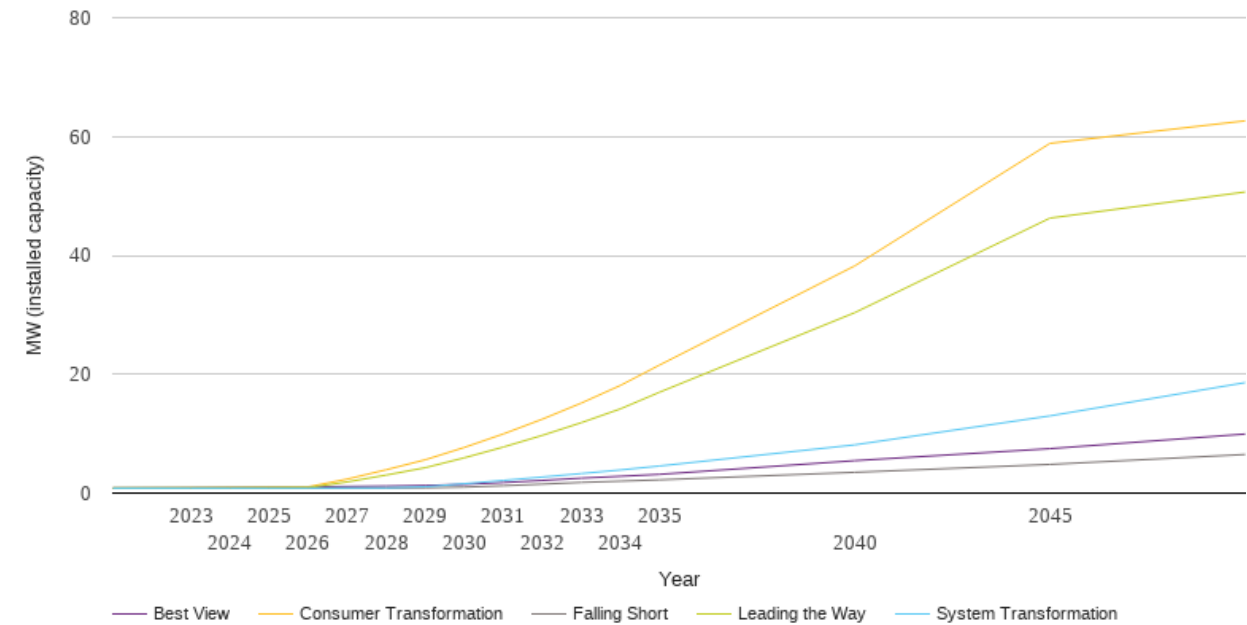
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0.1	0.1	0.1	0.1	0.1
2023	0.1	0.1	0.1	0.1	0.1
2024	0.1	0.1	0.1	0.1	0.1
2025	0.1	0.2	0.4	0.6	0.1
2026	0.1	0.3	0.7	0.9	0.1
2027	0.2	0.5	1.0	1.3	0.2
2028	0.2	0.6	1.4	1.8	0.2
2029	0.2	0.9	2.0	2.6	0.2
2030	0.3	1.4	2.9	4.1	0.3
2031	0.4	1.6	3.4	5.1	0.4
2032	0.5	1.8	4.1	6.1	0.5
2033	0.6	2.0	5.1	7.2	0.6
2034	0.8	2.3	6.1	8.5	0.8
2035	0.9	2.7	7.1	9.7	0.9
2040	1.2	5.9	13.0	17.3	1.2
2045	3.1	8.9	19.5	25.5	3.1
2050	4.3	11.0	26.1	33.5	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	0.8	0.8	0.8	0.8	0.8
2023	0.8	0.8	0.9	0.9	0.9
2024	0.8	0.8	0.9	0.9	0.9
2025	0.8	0.9	1.0	0.9	1.0
2026	0.8	0.9	1.0	0.9	1.0
2027	0.8	0.9	2.4	1.9	1.1
2028	0.9	0.9	3.9	3.0	1.2
2029	0.9	1.1	5.6	4.3	1.3
2030	1.0	1.6	7.7	5.9	1.5
2031	1.2	2.1	10.0	7.7	1.8
2032	1.5	2.7	12.4	9.7	2.1
2033	1.8	3.3	15.2	11.9	2.5
2034	2.0	3.9	18.1	14.2	2.8
2035	2.2	4.6	21.6	17.0	3.2
2040	3.5	8.1	38.2	30.4	5.5
2045	4.8	13.0	58.9	46.3	7.5
2050	6.5	18.6	62.6	50.7	9.9



National Grid Electricity Distribution PLC 09223384)
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