

Distribution Future Energy Scenarios 2022

Local Authority:
Mid Devon

What are Distribution Future Energy Scenarios?

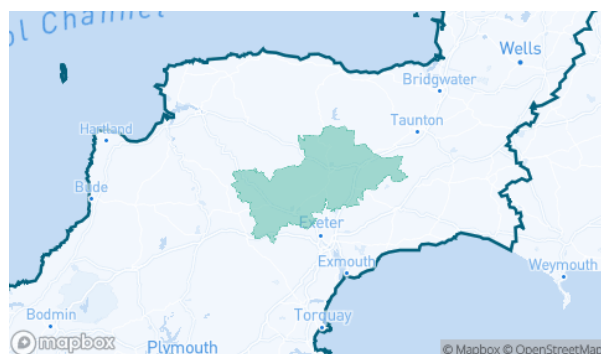
National Grid run Distribution Future Energy Scenarios (DFES) on an annual cycle for all licence areas, and represent a range of credible future scenarios of what could connect to the distribution network.

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 Mid Devon covered by the NGED licence areas.



Scenario Summary

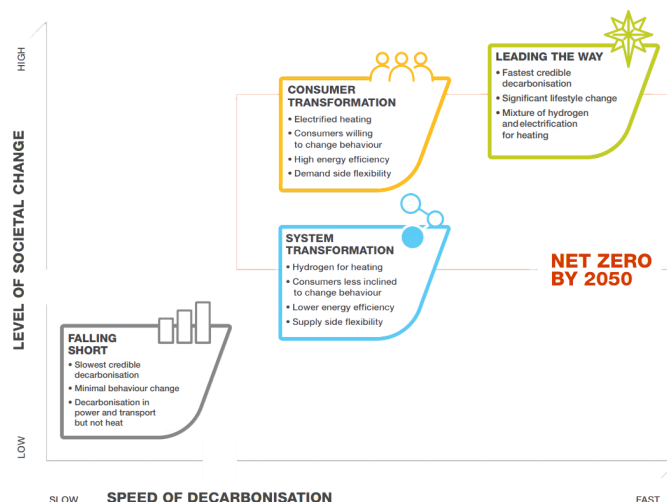
This DFES scenario framework includes three scenarios that are compliant with UK government targets of Net Zero greenhouse gas emissions by 2050. A summary of each scenario is below:

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 Mid Devon 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	135	81	81	0	11140	5097	5097	0
Domestic	New dwellings	0	2991	3275	3275	3892	6146	6073	6073	6020
Electric vehicles	Electric vehicles	897	7739	9806	18183	18172	57270	50635	50929	43383
EV Charge Point	EV charge points	518	3415	5080	9560	10510	30447	29720	29995	31283
Heat pumps	Heat pump installations	1130	5339	5690	9015	12462	22583	25150	38133	34757
Hydrogen electrolysis	MW (installed capacity)	0.0	0.0	1.0	0.3	0.9	1.0	10.2	7.3	10.5
Non domestic	Floorspace (metres squared) of new I&C developments	0	23750	38013	38013	36568	71790	71790	71790	71790
Other Distributed Generation	MW (installed capacity)	9.9	9.9	10.3	11.2	11.2	4.7	4.8	6.0	6.2
Resistive electric heating	Resistive electric heating units	7523	6054	5909	6364	6026	3637	1311	3780	4022
Solar Generation	MW (installed capacity)	36.7	42.3	51.0	60.9	65.3	86.9	149.7	188.8	204.2
Storage	MW (installed capacity)	0.0	0.2	1.2	2.6	3.7	3.7	10.2	24.5	31.0
Wind	MW (installed capacity)	1.2	1.4	1.9	7.0	5.6	6.3	17.2	55.7	45.2

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

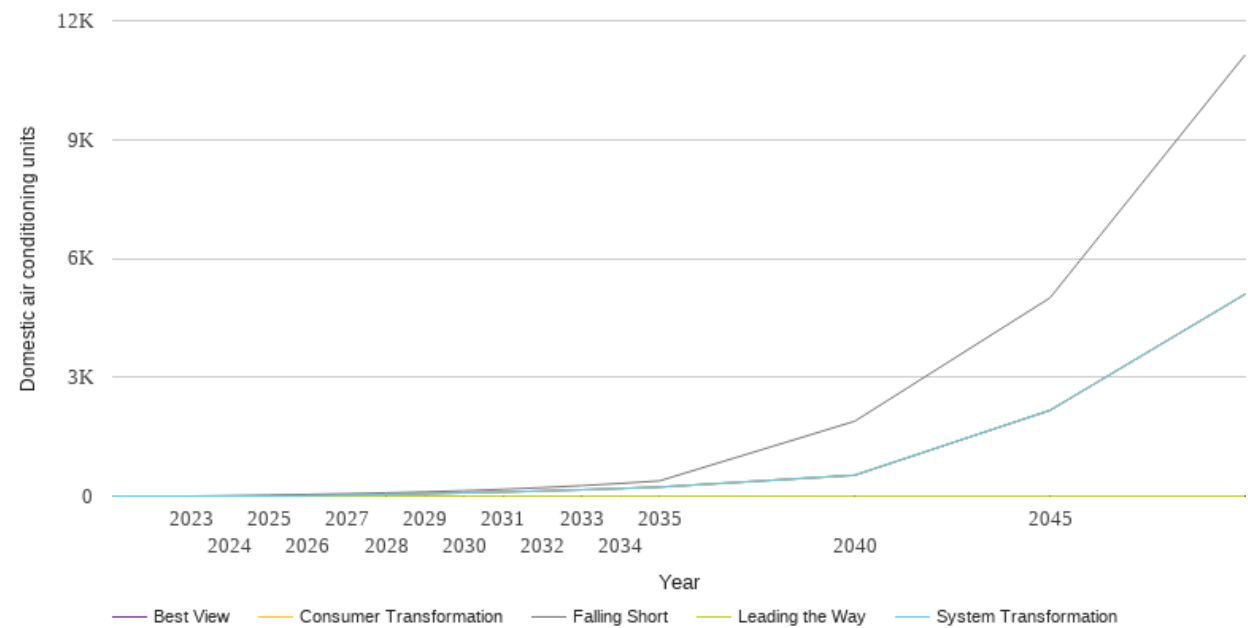
NGED is committed to continually improving the DFES process. To ensure the DFES projections fully capture local ambition, in 2022 we have appointed two DSO Strategic Engagement Officers to engage with local authorities. Any feedback will be incorporated into future Distribution Future Energy Scenarios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

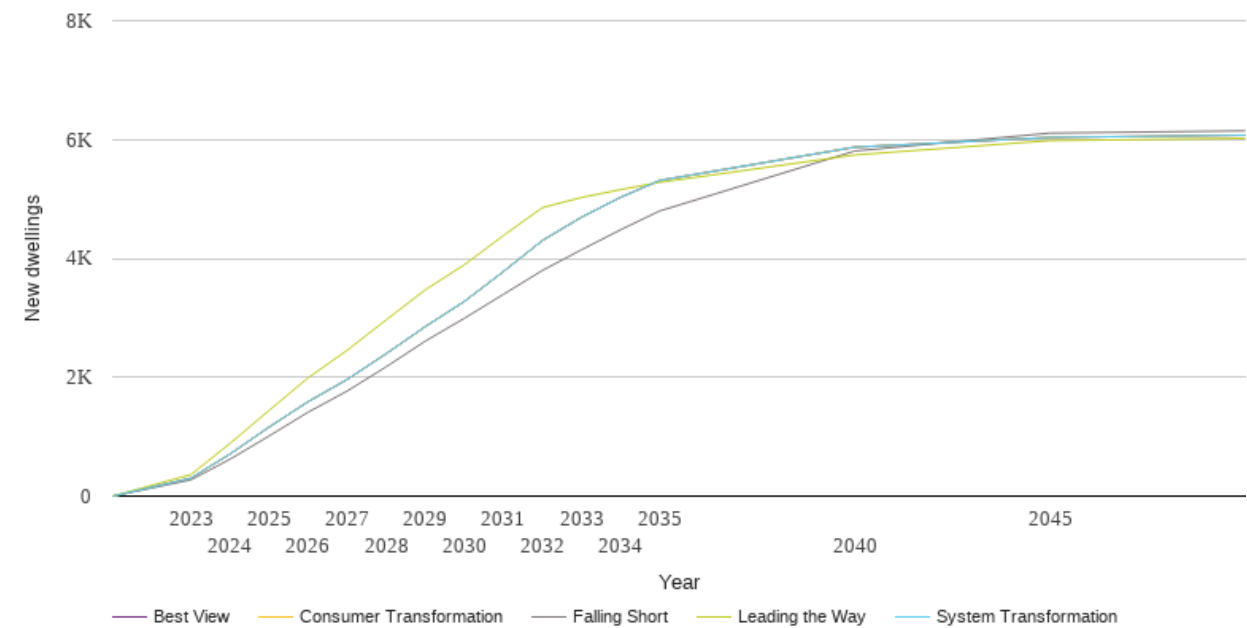
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	0	0	0	0	0
2024	12	0	0	0	0
2025	26	0	0	0	0
2026	42	13	13	0	13
2027	61	27	27	0	27
2028	82	43	43	0	43
2029	107	61	61	0	61
2030	135	81	81	0	81
2031	172	104	104	0	104
2032	215	130	130	0	130
2033	264	159	159	0	159
2034	320	192	192	0	192
2035	384	228	228	0	228
2040	1890	527	527	0	527
2045	5003	2165	2165	0	2165
2050	11140	5097	5097	0	5097



Technology Summary: Domestic

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

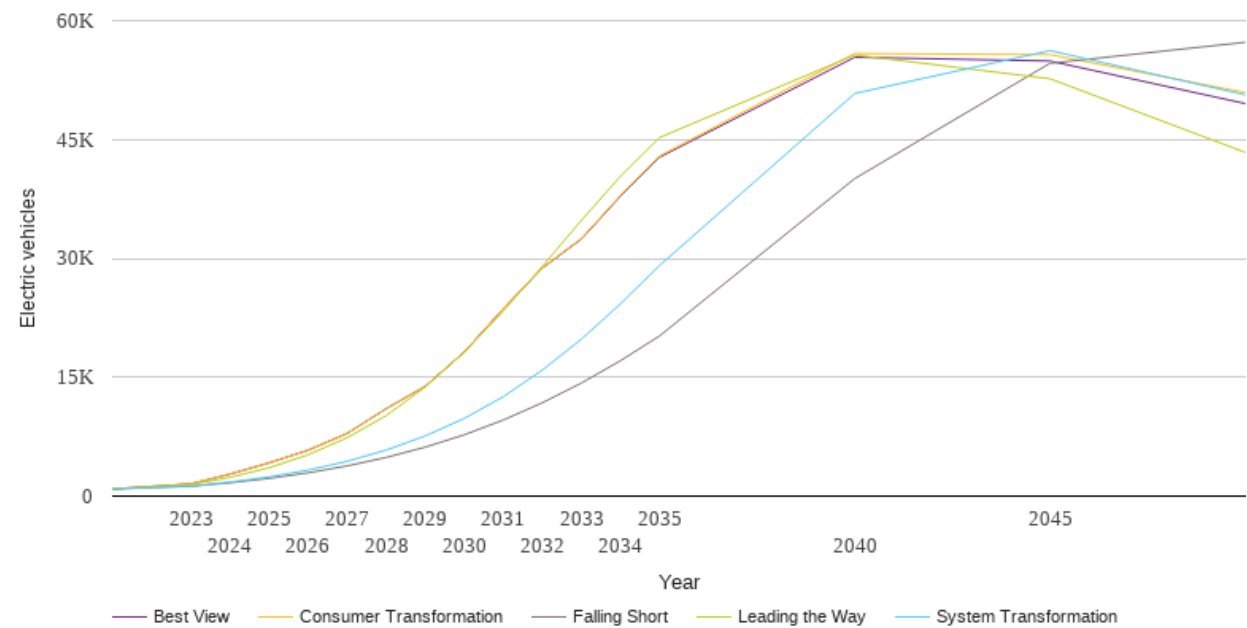
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	274	303	303	363	303
2024	621	708	708	887	708
2025	1012	1162	1162	1442	1162
2026	1412	1589	1589	1991	1589
2027	1768	1963	1963	2453	1963
2028	2176	2396	2396	2966	2396
2029	2608	2852	2852	3471	2852
2030	2991	3275	3275	3892	3275
2031	3394	3778	3778	4384	3778
2032	3797	4301	4301	4854	4301
2033	4145	4693	4693	5025	4693
2034	4481	5027	5027	5157	5027
2035	4797	5311	5311	5279	5311
2040	5807	5872	5872	5741	5872
2045	6108	6035	6035	5982	6035
2050	6146	6073	6073	6020	6073



Technology Summary: Electric vehicles

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

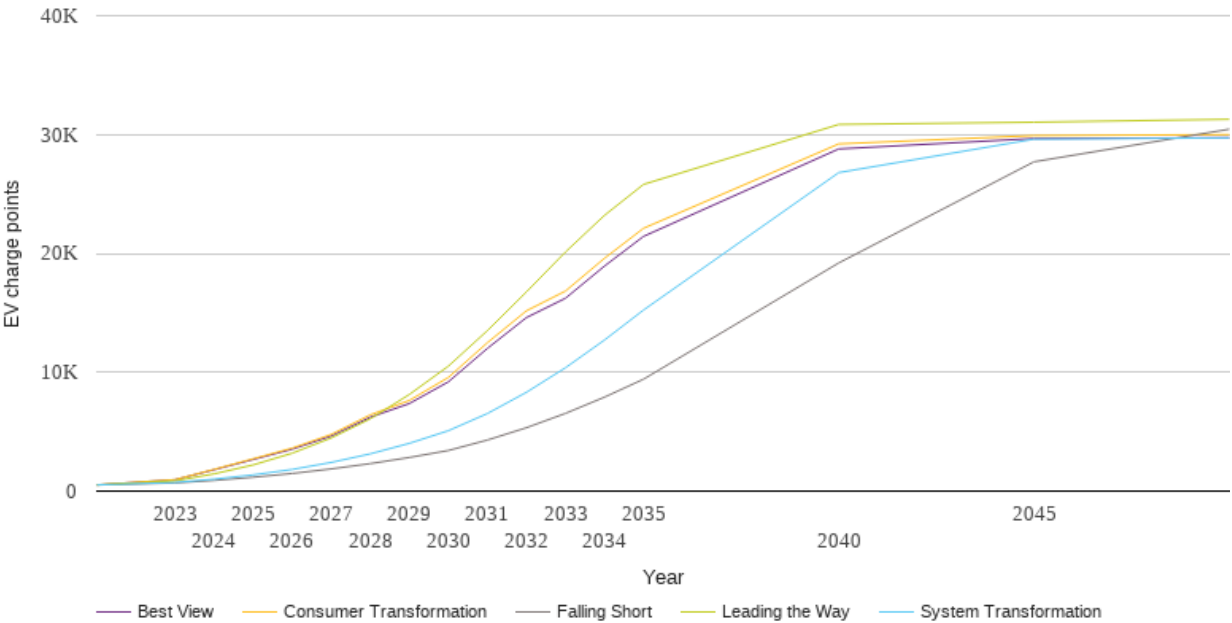
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	897	897	897	897	897
2023	1241	1262	1547	1448	1547
2024	1686	1769	2776	2370	2777
2025	2236	2419	4194	3581	4196
2026	2936	3276	5789	5217	5794
2027	3811	4391	7911	7372	7920
2028	4879	5812	11027	10160	11035
2029	6178	7593	13858	13772	13865
2030	7739	9806	18183	18172	18193
2031	9605	12550	23647	23351	23654
2032	11786	15908	28830	29011	28784
2033	14271	19812	32523	34812	32454
2034	17086	24268	37965	40378	37859
2035	20209	29098	42920	45247	42769
2040	40073	50812	55858	55671	55382
2045	54620	56224	55719	52671	54910
2050	57270	50635	50929	43383	49543



Technology Summary: EV Charge Point

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

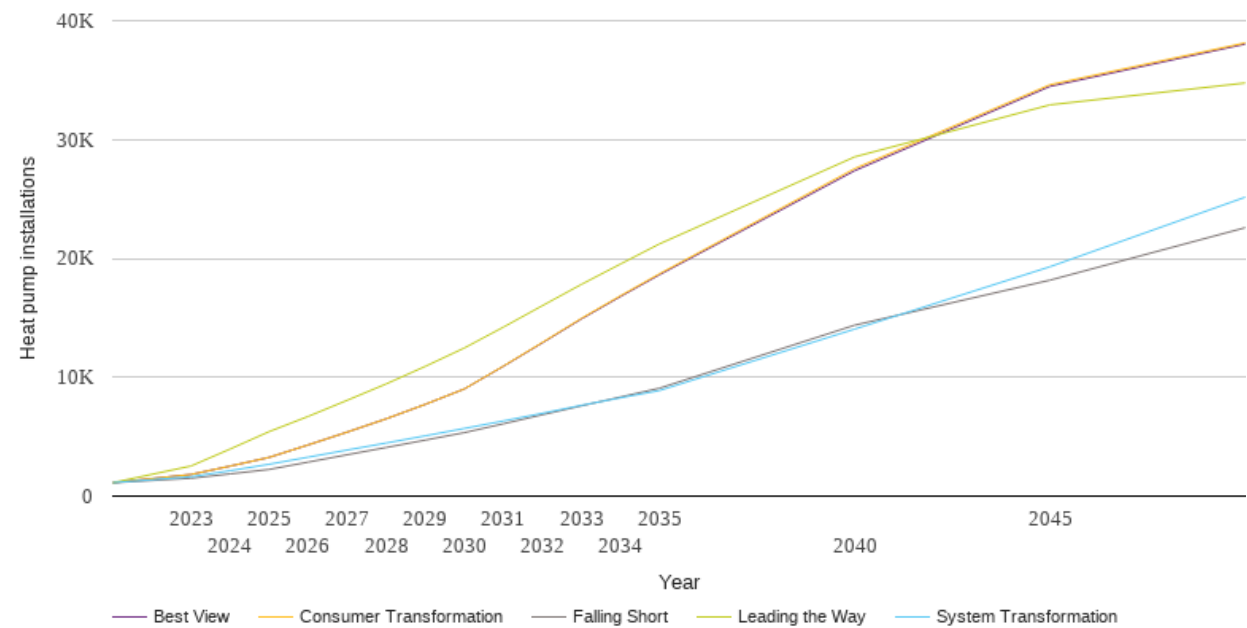
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	518	518	518	518	518
2023	688	724	961	857	955
2024	900	1004	1825	1450	1797
2025	1165	1362	2716	2201	2660
2026	1482	1819	3616	3186	3527
2027	1866	2412	4766	4471	4634
2028	2311	3132	6415	6080	6214
2029	2828	4017	7626	8127	7364
2030	3415	5080	9560	10510	9191
2031	4294	6525	12485	13501	12004
2032	5332	8309	15169	16757	14598
2033	6537	10378	16830	20119	16223
2034	7904	12710	19590	23202	18932
2035	9416	15236	22112	25805	21431
2040	19197	26796	29212	30848	28788
2045	27706	29610	29911	31038	29664
2050	30447	29720	29995	31283	29732



Technology Summary: Heat pumps

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

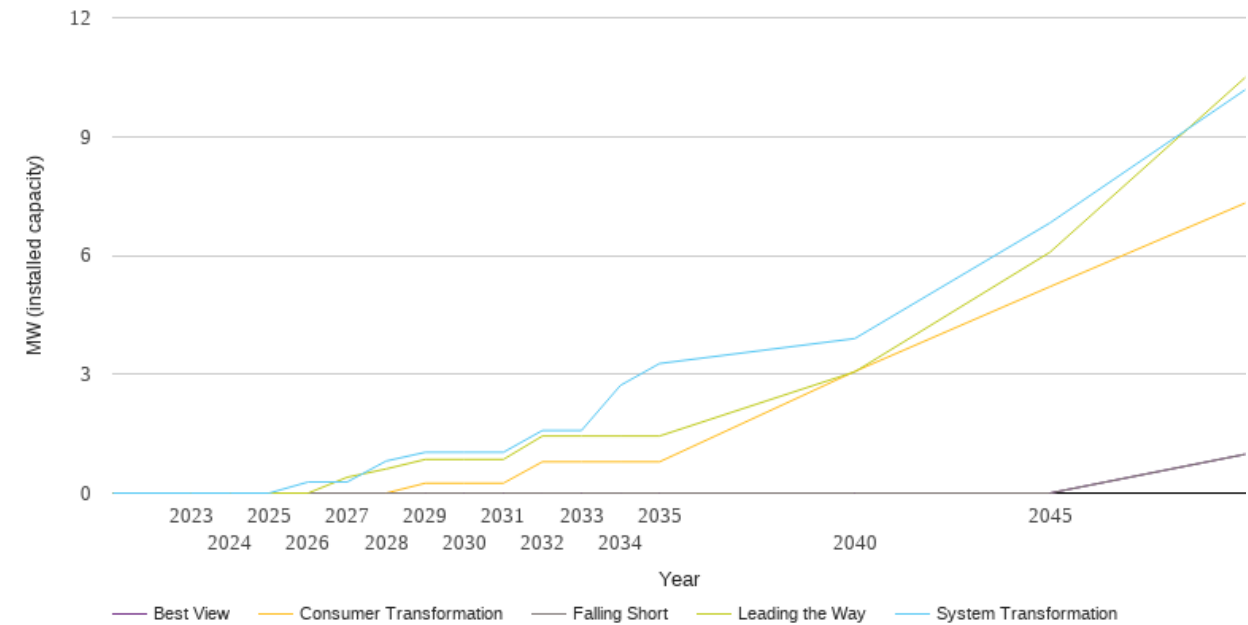
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	1130	1130	1130	1130	1130
2023	1499	1627	1816	2532	1816
2024	1867	2136	2522	3955	2522
2025	2242	2679	3256	5424	3256
2026	2859	3275	4304	6702	4304
2027	3479	3874	5385	8062	5385
2028	4089	4465	6504	9441	6505
2029	4711	5070	7720	10914	7719
2030	5339	5690	9015	12462	9015
2031	6084	6320	10938	14215	10920
2032	6846	6968	12929	16024	12896
2033	7592	7636	14955	17814	14908
2034	8335	8268	16855	19527	16793
2035	9079	8883	18707	21221	18628
2040	14383	14052	27558	28543	27381
2045	18168	19297	34610	32917	34475
2050	22583	25150	38133	34757	38034



Technology Summary: Hydrogen electrolysis

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

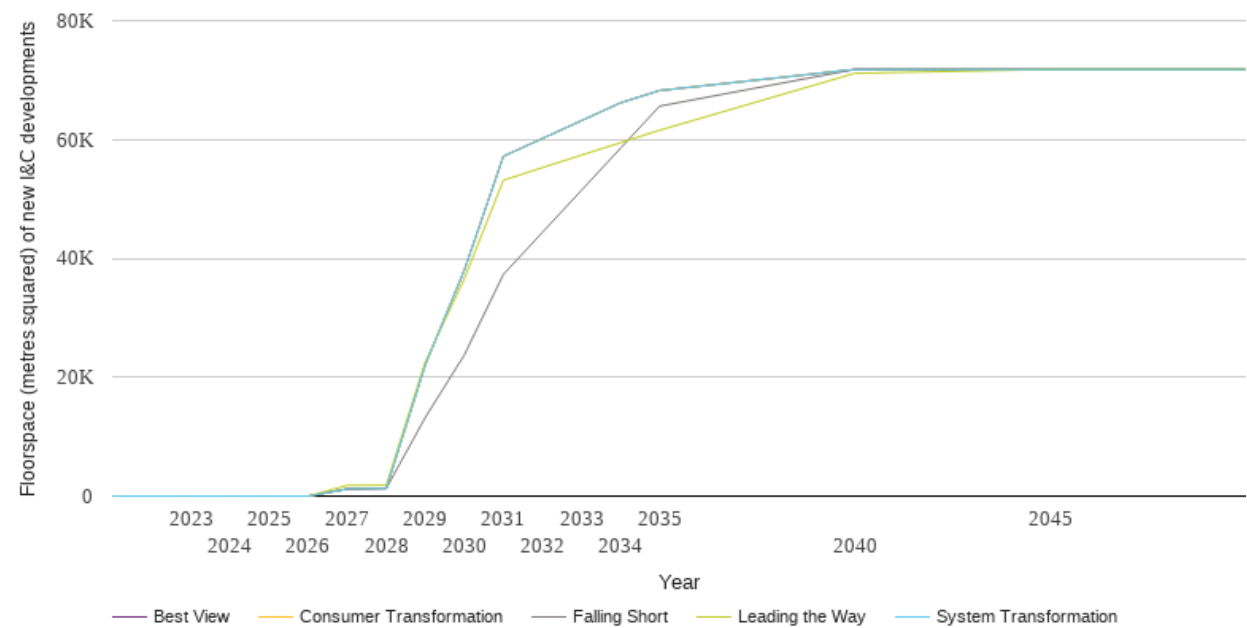
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.0	0.0	0.0	0.0
2026	0.0	0.3	0.0	0.0	0.0
2027	0.0	0.3	0.0	0.4	0.0
2028	0.0	0.8	0.0	0.6	0.0
2029	0.0	1.0	0.3	0.9	0.0
2030	0.0	1.0	0.3	0.9	0.0
2031	0.0	1.0	0.3	0.9	0.0
2032	0.0	1.6	0.8	1.4	0.0
2033	0.0	1.6	0.8	1.4	0.0
2034	0.0	2.7	0.8	1.4	0.0
2035	0.0	3.3	0.8	1.4	0.0
2040	0.0	3.9	3.1	3.1	0.0
2045	0.0	6.8	5.2	6.1	0.0
2050	1.0	10.2	7.3	10.5	1.0



Technology Summary: Non domestic

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

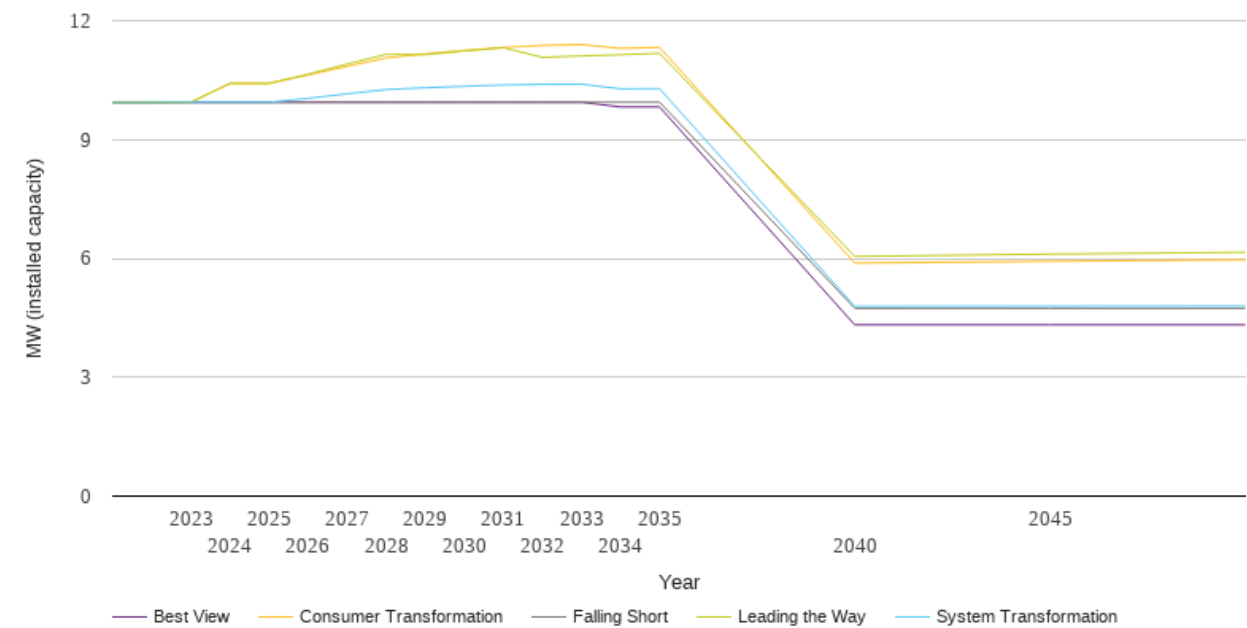
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	0	0	0	0	0
2024	0	0	0	0	0
2025	0	0	0	0	0
2026	0	0	0	0	0
2027	1200	1200	1200	1800	1200
2028	1300	1300	1300	1840	1300
2029	13233	22108	22108	22588	22108
2030	23750	38013	38013	36568	38013
2031	37297	57181	57181	53147	57181
2032	44376	60179	60179	55281	60179
2033	51455	63177	63177	57375	63177
2034	58534	66175	66175	59469	66175
2035	65613	68240	68240	61562	68240
2040	71790	71790	71790	71143	71790
2045	71790	71790	71790	71790	71790
2050	71790	71790	71790	71790	71790



Technology Summary: Other Distributed Generation

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

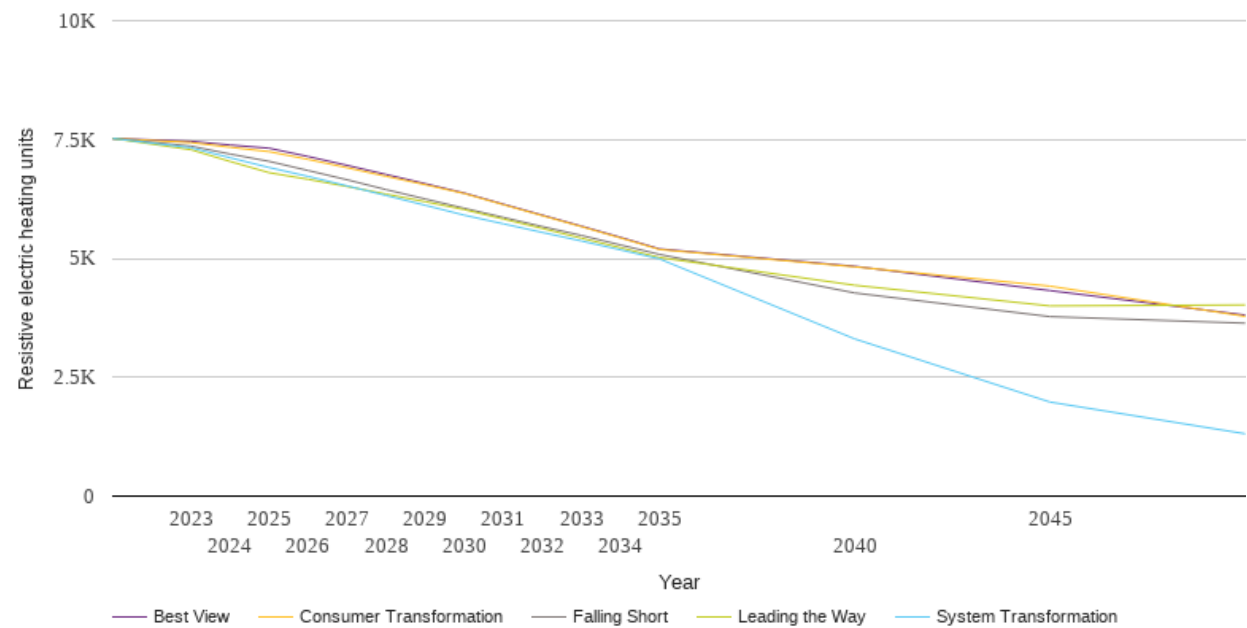
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	9.9	9.9	9.9	9.9	9.9
2023	9.9	9.9	9.9	9.9	9.9
2024	9.9	9.9	10.4	10.4	9.9
2025	9.9	9.9	10.4	10.4	9.9
2026	9.9	10.0	10.6	10.6	9.9
2027	9.9	10.2	10.8	10.9	9.9
2028	9.9	10.3	11.1	11.2	9.9
2029	9.9	10.3	11.2	11.1	9.9
2030	9.9	10.3	11.2	11.2	9.9
2031	9.9	10.4	11.3	11.3	9.9
2032	9.9	10.4	11.4	11.1	9.9
2033	9.9	10.4	11.4	11.1	9.9
2034	9.9	10.3	11.3	11.1	9.8
2035	9.9	10.3	11.3	11.2	9.8
2040	4.7	4.8	5.9	6.0	4.3
2045	4.7	4.8	5.9	6.1	4.3
2050	4.7	4.8	6.0	6.2	4.3



Technology Summary: Resistive electric heating

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

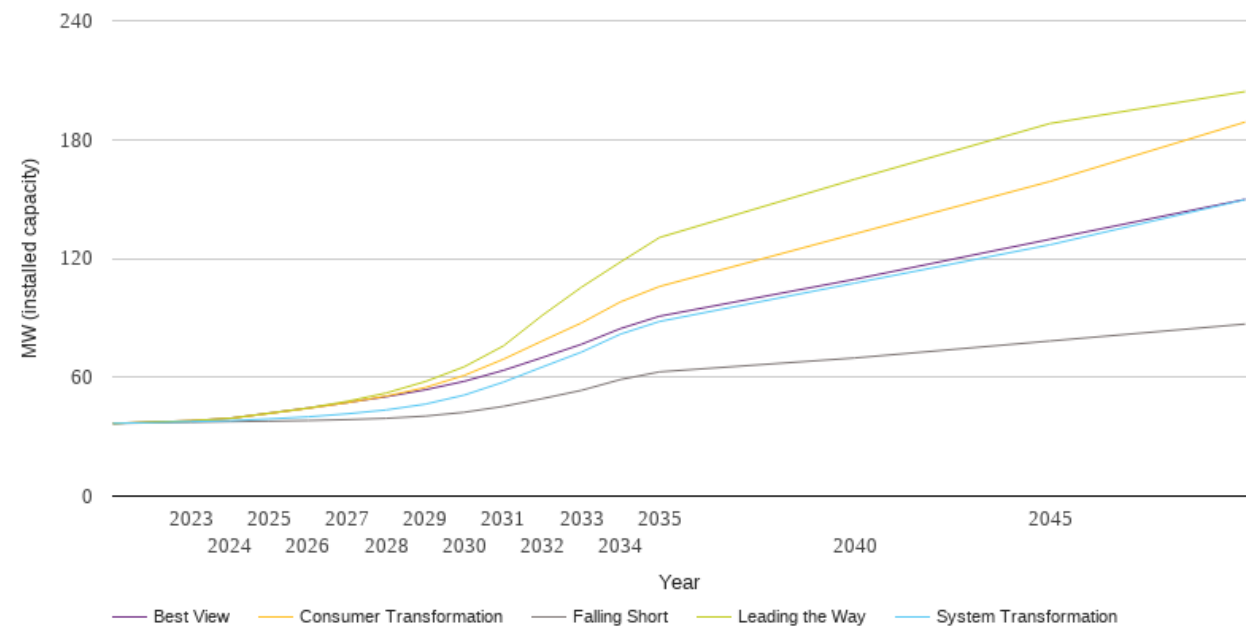
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	7523	7523	7523	7523	7523
2023	7361	7327	7436	7286	7461
2024	7195	7117	7338	7039	7385
2025	7041	6912	7245	6803	7318
2026	6848	6724	7082	6663	7143
2027	6653	6525	6907	6512	6956
2028	6446	6322	6726	6352	6764
2029	6250	6117	6549	6193	6571
2030	6054	5909	6364	6026	6374
2031	5862	5727	6129	5828	6140
2032	5668	5546	5898	5630	5909
2033	5483	5366	5667	5425	5678
2034	5283	5180	5430	5225	5443
2035	5084	4989	5187	5018	5199
2040	4273	3306	4822	4435	4833
2045	3775	1978	4416	4000	4323
2050	3637	1311	3780	4022	3808



Technology Summary: Solar Generation

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

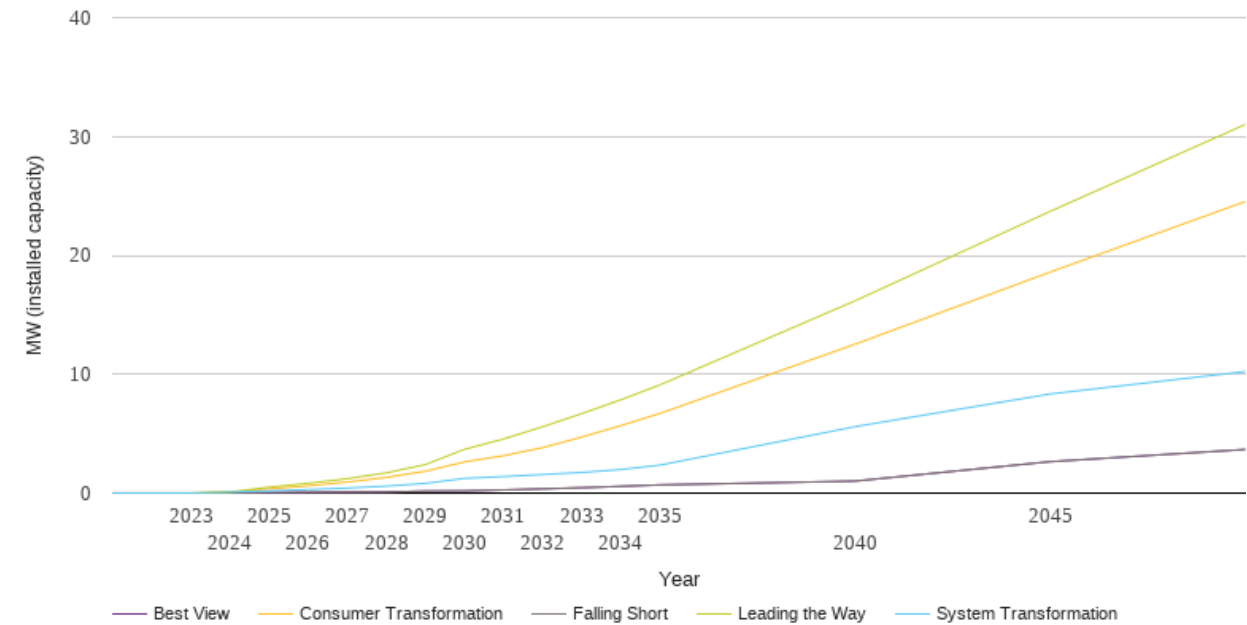
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	36.7	36.7	36.7	36.7	36.7
2023	37.3	37.6	38.0	38.0	38.0
2024	37.6	38.1	39.2	39.3	39.3
2025	37.8	38.9	41.7	41.8	41.8
2026	38.1	40.0	44.3	44.5	44.5
2027	38.6	41.5	47.2	47.8	47.2
2028	39.3	43.5	50.5	52.0	50.2
2029	40.4	46.4	54.8	57.8	53.7
2030	42.3	51.0	60.9	65.3	57.9
2031	45.3	57.5	69.1	75.8	63.5
2032	49.2	65.2	78.4	91.3	69.9
2033	53.4	72.7	87.4	105.4	76.6
2034	58.8	81.8	98.0	118.2	84.6
2035	62.7	88.1	105.8	130.5	90.8
2040	69.7	107.5	132.4	159.9	109.5
2045	78.3	126.9	158.9	188.1	129.6
2050	86.9	149.7	188.8	204.2	149.8



Technology Summary: Storage

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

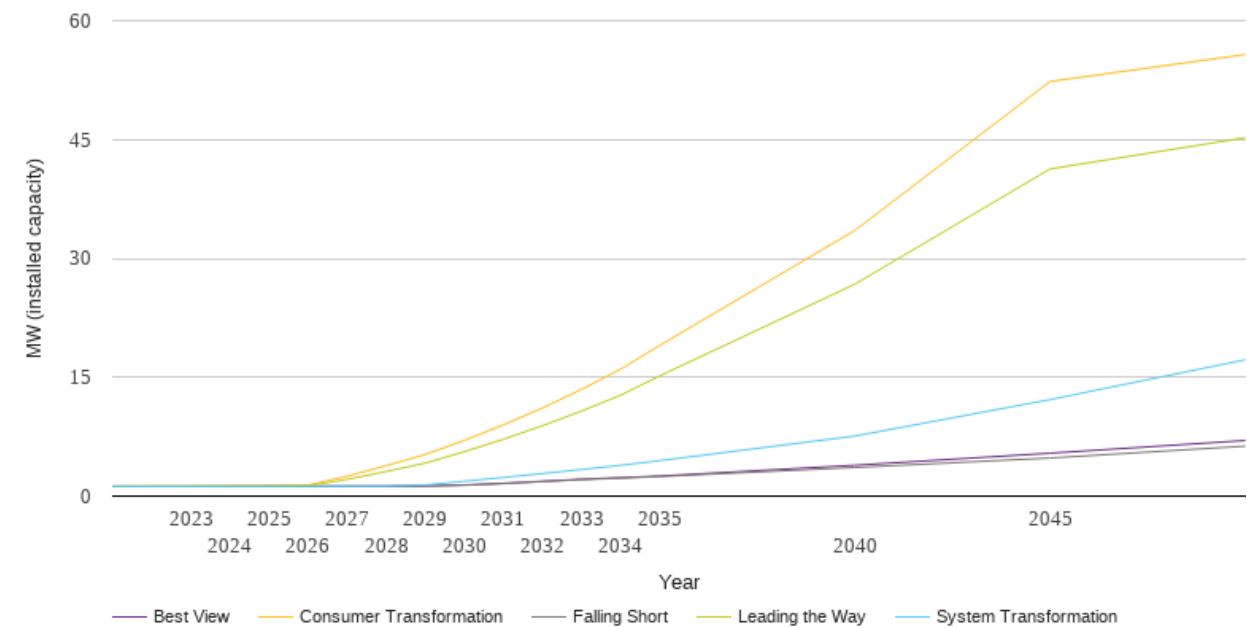
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.1	0.1	0.1	0.0
2025	0.1	0.2	0.4	0.5	0.1
2026	0.1	0.3	0.6	0.8	0.1
2027	0.1	0.4	0.9	1.2	0.1
2028	0.1	0.6	1.3	1.7	0.1
2029	0.2	0.8	1.8	2.4	0.2
2030	0.2	1.2	2.6	3.7	0.2
2031	0.3	1.4	3.1	4.5	0.3
2032	0.4	1.6	3.8	5.6	0.4
2033	0.5	1.7	4.7	6.7	0.5
2034	0.6	2.0	5.7	7.8	0.6
2035	0.7	2.3	6.7	9.1	0.7
2040	1.0	5.6	12.5	16.2	1.0
2045	2.6	8.3	18.6	23.7	2.6
2050	3.7	10.2	24.5	31.0	3.7



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	1.2	1.2	1.2	1.2	1.2
2023	1.2	1.2	1.3	1.2	1.2
2024	1.2	1.2	1.3	1.2	1.2
2025	1.2	1.2	1.3	1.3	1.2
2026	1.2	1.2	1.4	1.3	1.2
2027	1.2	1.2	2.5	2.1	1.2
2028	1.2	1.3	3.8	3.1	1.3
2029	1.3	1.4	5.3	4.2	1.3
2030	1.4	1.9	7.0	5.6	1.4
2031	1.6	2.3	9.0	7.2	1.6
2032	1.8	2.8	11.1	8.9	1.9
2033	2.1	3.4	13.5	10.7	2.1
2034	2.3	3.9	16.0	12.7	2.3
2035	2.5	4.5	19.0	15.2	2.5
2040	3.6	7.6	33.5	26.7	3.9
2045	4.8	12.2	52.3	41.3	5.4
2050	6.3	17.2	55.7	45.2	7.0



National Grid Electricity Distribution PLC 09223384)
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