

Distribution Future Energy Scenarios 2022

Local Authority:
North Devon

What are Distribution Future Energy Scenarios?

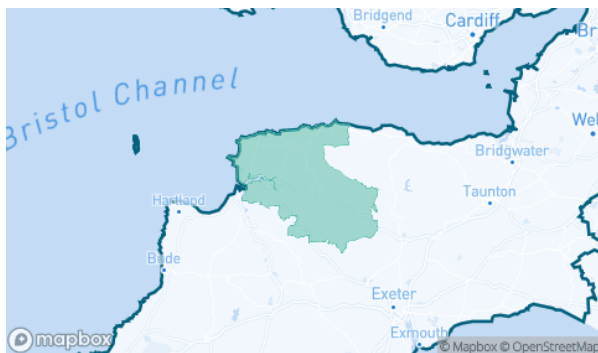
National Grid run Distribution Future Energy Scenarios (DFES) on an annual cycle for all licence areas, and represent a range of credible future scenarios of what could connect to the distribution network.

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 North 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 North 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	210	640	536	536	210	15577	7880	7880	210
Domestic	New dwellings	0	3000	3315	3315	3950	4557	4512	4512	4482
Electric vehicles	Electric vehicles	1037	8948	11688	21640	21720	70386	64745	65275	54927
EV Charge Point	EV charge points	571	3937	6003	11317	12316	36619	36708	36700	38186
Heat pumps	Heat pump installations	1085	5547	5535	10202	14575	27108	30277	47759	42757
Hydrogen electrolysis	MW (installed capacity)	0.0	0.0	0.4	0.0	0.0	3.0	29.6	21.7	33.9
Non domestic	Floorspace (metres squared) of new I&C developments	0	13980 0	18418 5	18418 5	18806 5	38453 5	38375 1	38375 1	38453 5
Other Distributed Generation	MW (installed capacity)	2.0	2.0	2.2	7.1	7.1	2.0	8.2	17.6	17.7
Resistive electric heating	Resistive electric heating units	9891	7963	7762	8303	7893	4782	1871	5075	5349
Solar Generation	MW (installed capacity)	29.1	36.3	47.8	59.4	65.4	99.1	183.8	228.9	246.8
Storage	MW (installed capacity)	4.4	4.6	5.7	7.2	8.5	8.9	16.7	33.1	41.5
Wind	MW (installed capacity)	4.2	4.4	4.9	9.1	8.4	11.1	25.9	68.2	56.3

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.

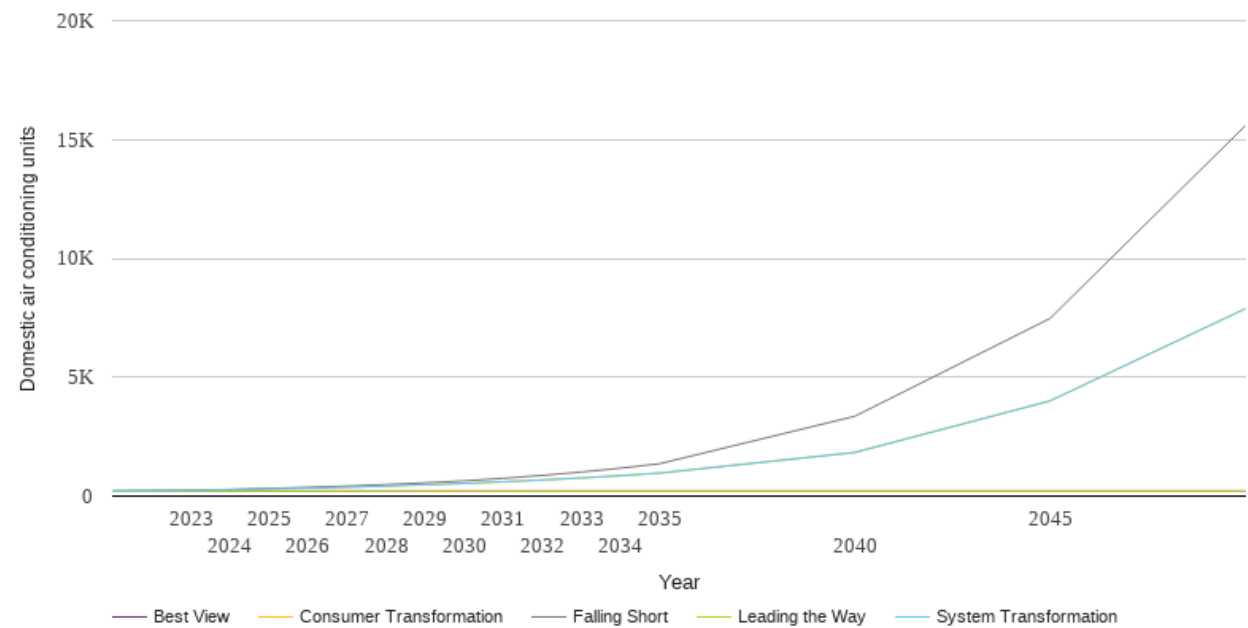
If you have any comments or queries regarding these reports, please contact

nged.energyplanning@nationalgrid.co.uk.

Technology Summary: Air conditioning

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

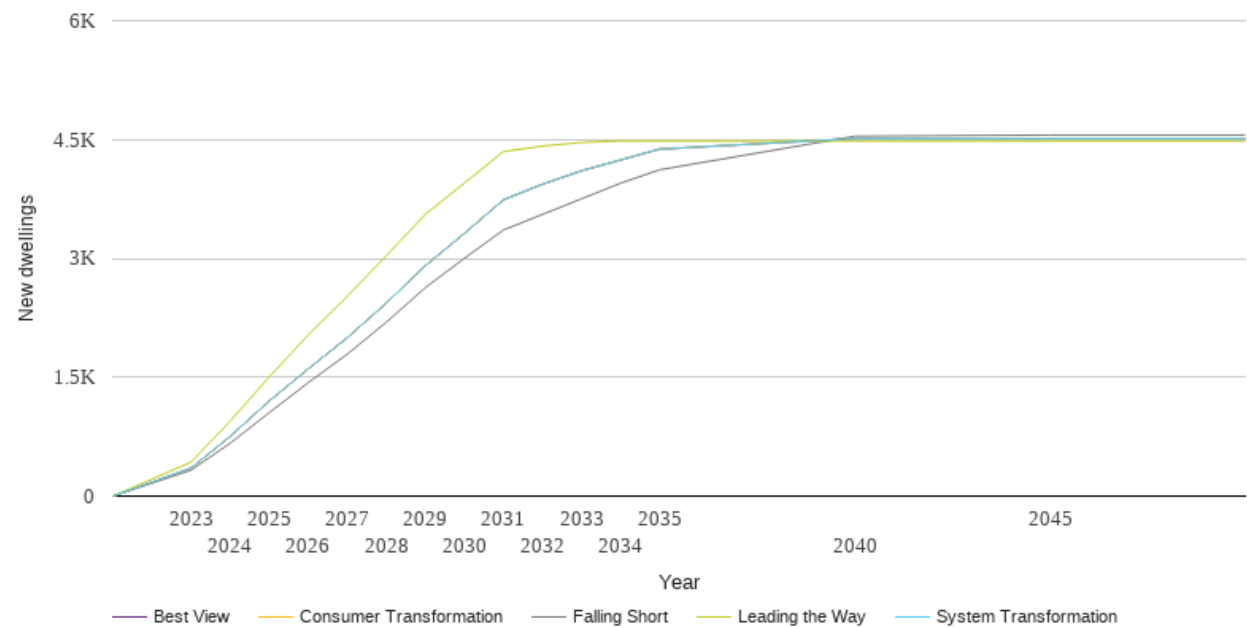
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	210	210	210	210	210
2023	242	237	237	210	210
2024	278	266	266	210	210
2025	320	300	300	210	210
2026	368	336	336	210	210
2027	423	377	377	210	210
2028	485	424	424	210	210
2029	558	476	476	210	210
2030	640	536	536	210	210
2031	747	604	604	210	210
2032	871	679	679	210	210
2033	1013	764	764	210	210
2034	1175	860	860	210	210
2035	1361	967	967	210	210
2040	3358	1836	1836	210	210
2045	7470	4004	4004	210	210
2050	15577	7880	7880	210	210



Technology Summary: Domestic

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

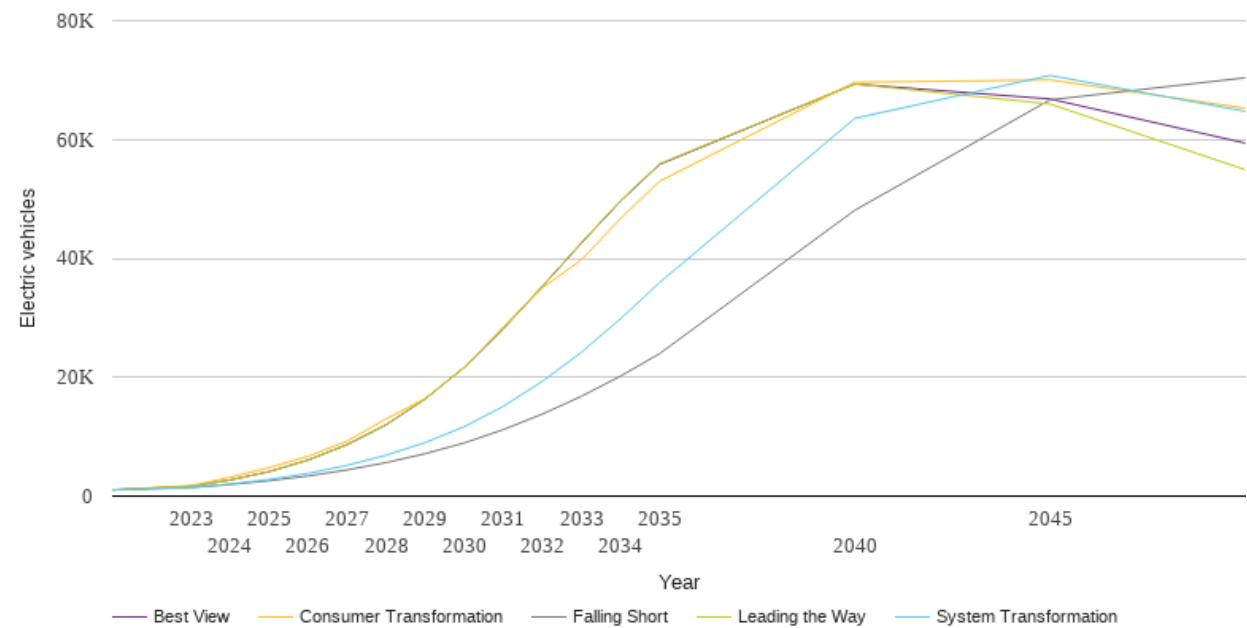
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	327	353	353	429	353
2024	666	752	752	945	752
2025	1052	1199	1199	1503	1199
2026	1430	1604	1604	2033	1604
2027	1791	1998	1998	2520	1998
2028	2193	2435	2435	3033	2435
2029	2630	2908	2908	3556	2908
2030	3000	3315	3315	3950	3315
2031	3358	3739	3739	4348	3739
2032	3555	3936	3936	4417	3936
2033	3752	4105	4105	4463	4105
2034	3949	4242	4242	4482	4242
2035	4118	4379	4379	4482	4379
2040	4541	4512	4512	4482	4512
2045	4557	4512	4512	4482	4512
2050	4557	4512	4512	4482	4512



Technology Summary: Electric vehicles

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

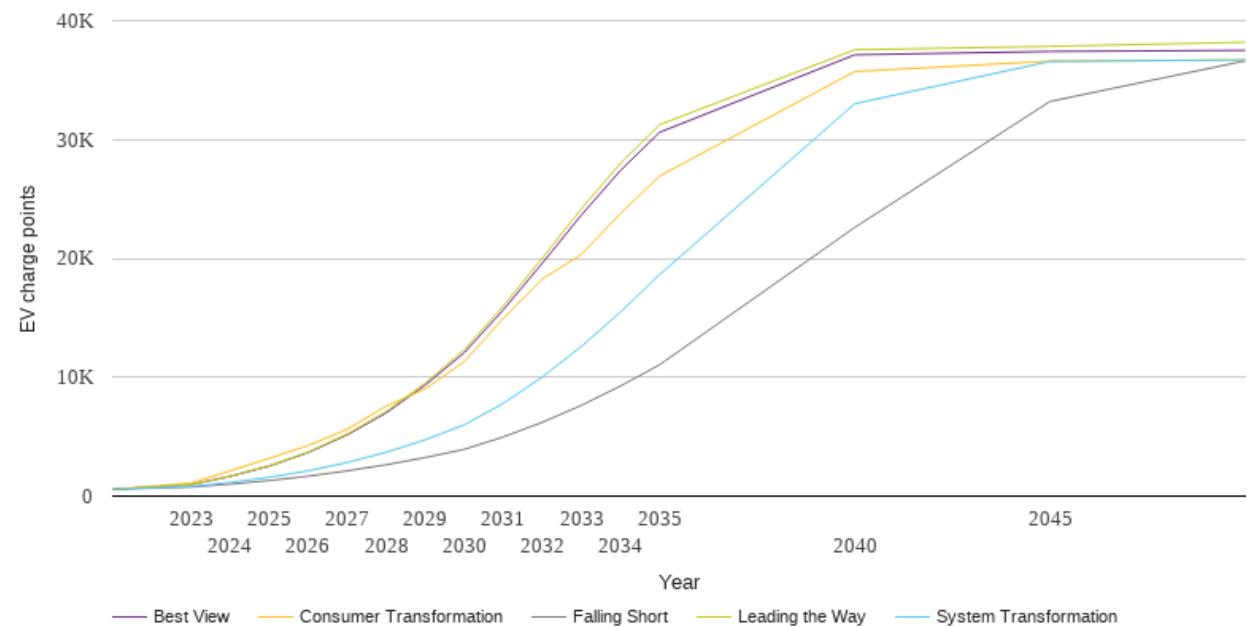
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	1037	1037	1037	1037	1037
2023	1434	1467	1767	1660	1660
2024	1949	2042	3165	2712	2712
2025	2585	2800	4797	4120	4120
2026	3388	3818	6706	6078	6078
2027	4409	5181	9264	8692	8673
2028	5641	6878	12991	12044	12018
2029	7142	9023	16425	16401	16359
2030	8948	11688	21640	21720	21667
2031	11192	15112	28492	28227	28153
2032	13807	19317	35043	35359	35285
2033	16794	24213	39777	42687	42602
2034	20192	29829	46696	49734	49638
2035	23958	35922	52987	55916	55815
2040	48099	63546	69638	69346	69334
2045	66679	70787	70033	65977	66829
2050	70386	64745	65275	54927	59403



Technology Summary: EV Charge Point

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

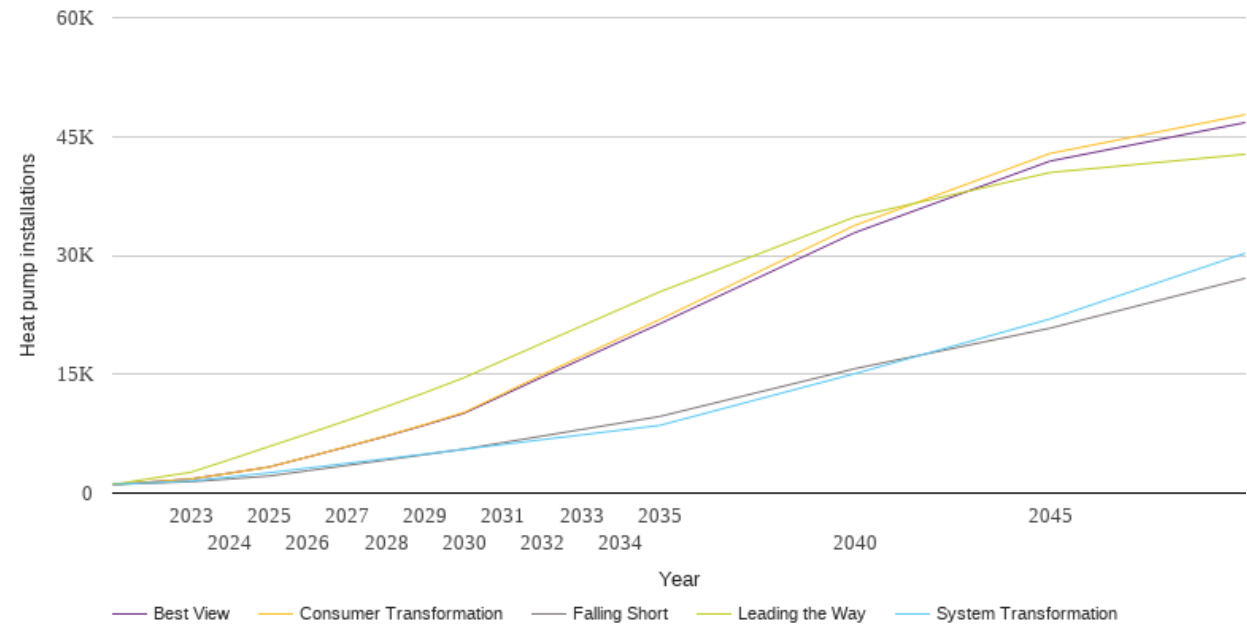
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	571	571	571	571	571
2023	764	816	1096	968	969
2024	1007	1150	2116	1664	1660
2025	1310	1577	3174	2542	2524
2026	1676	2124	4252	3702	3666
2027	2123	2831	5619	5222	5154
2028	2642	3693	7577	7115	7008
2029	3243	4738	9013	9512	9340
2030	3937	6003	11317	12316	12064
2031	4982	7807	14950	16007	15672
2032	6213	10026	18275	20035	19605
2033	7641	12594	20338	24187	23659
2034	9262	15486	23781	28005	27403
2035	11044	18625	26928	31243	30605
2040	22606	33013	35723	37549	37127
2045	33202	36565	36592	37837	37410
2050	36619	36708	36700	38186	37503



Technology Summary: Heat pumps

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

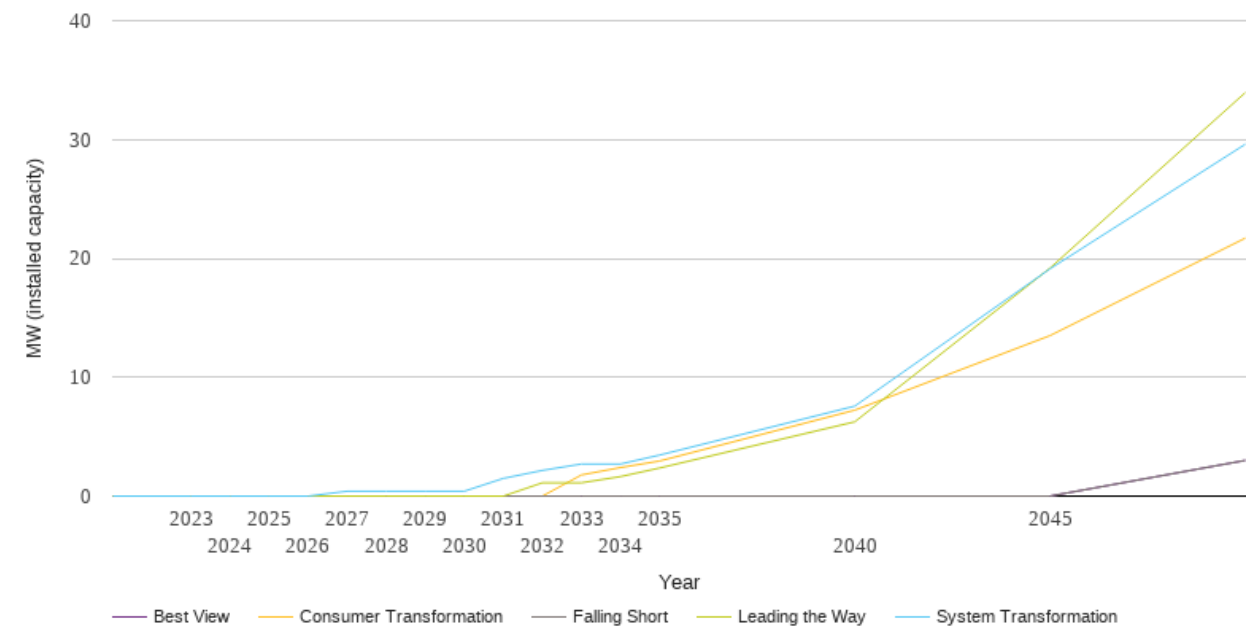
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	1085	1085	1085	1085	1085
2023	1437	1539	1784	2637	1784
2024	1788	2032	2522	4230	2522
2025	2158	2566	3297	5884	3297
2026	2833	3165	4570	7507	4562
2027	3502	3755	5883	9175	5860
2028	4180	4334	7226	10900	7182
2029	4860	4931	8675	12692	8600
2030	5547	5535	10202	14575	10087
2031	6375	6142	12561	16756	12366
2032	7201	6751	14958	18922	14654
2033	8021	7337	17264	21081	16885
2034	8836	7943	19583	23239	19127
2035	9664	8538	21889	25383	21357
2040	15696	15068	33787	34850	32871
2045	20806	21973	42858	40455	41894
2050	27108	30277	47759	42757	46760



Technology Summary: Hydrogen electrolysis

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

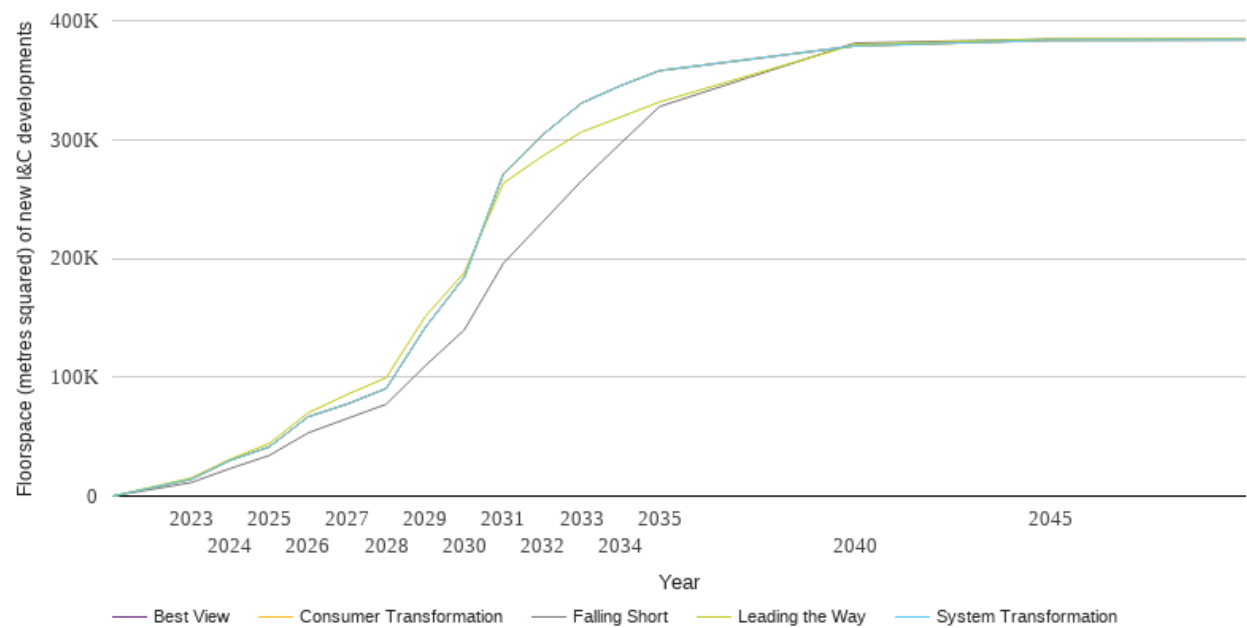
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.0	0.0	0.0	0.0
2026	0.0	0.0	0.0	0.0	0.0
2027	0.0	0.4	0.0	0.0	0.0
2028	0.0	0.4	0.0	0.0	0.0
2029	0.0	0.4	0.0	0.0	0.0
2030	0.0	0.4	0.0	0.0	0.0
2031	0.0	1.5	0.0	0.0	0.0
2032	0.0	2.2	0.0	1.1	0.0
2033	0.0	2.7	1.8	1.1	0.0
2034	0.0	2.7	2.4	1.6	0.0
2035	0.0	3.4	2.9	2.4	0.0
2040	0.0	7.6	7.2	6.2	0.0
2045	0.0	19.1	13.5	19.2	0.0
2050	3.0	29.6	21.7	33.9	3.0



Technology Summary: Non domestic

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

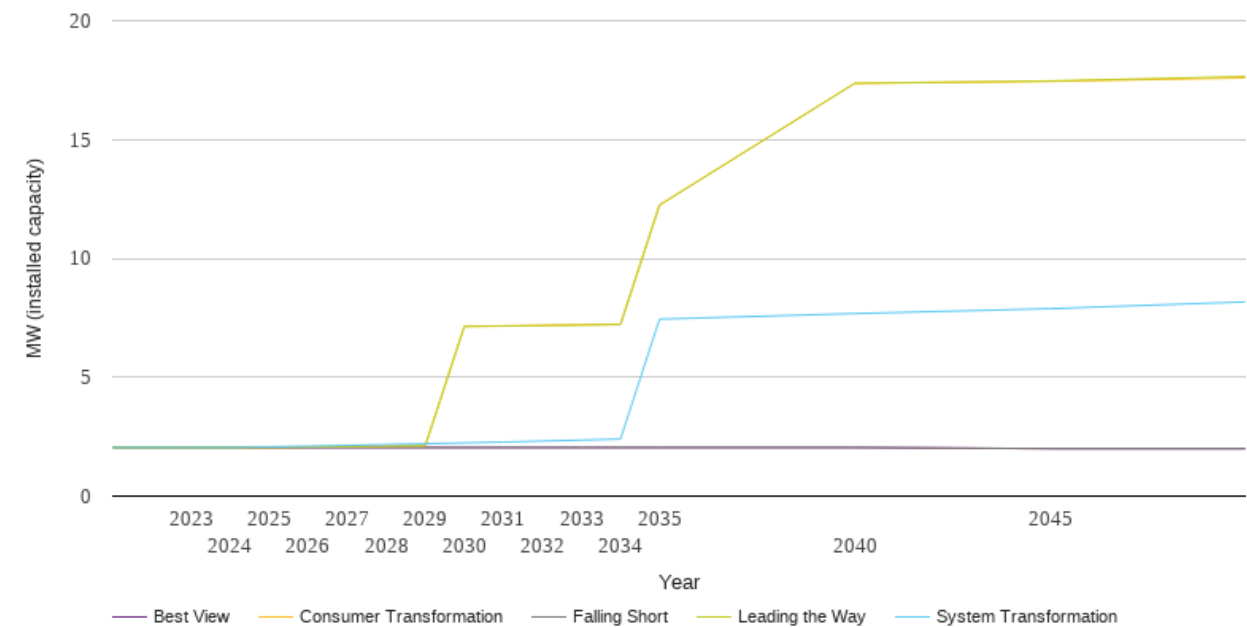
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	11357	14098	14098	15273	14098
2024	23184	30076	30076	30938	30076
2025	34149	41355	41355	44253	41355
2026	53208	66736	66736	70026	66736
2027	65266	77465	77465	85454	77465
2028	77325	90543	90543	99629	90543
2029	109617	141928	141928	151170	141928
2030	139800	184185	184185	188065	184185
2031	195821	271013	271013	263309	271013
2032	230437	303783	303783	286033	303783
2033	265144	330567	330567	306331	330567
2034	296710	345272	345272	318827	345272
2035	327742	357890	357890	331604	357890
2040	381160	378689	378689	379956	378689
2045	384535	383470	383470	384535	383470
2050	384535	383751	383751	384535	383751



Technology Summary: Other Distributed Generation

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

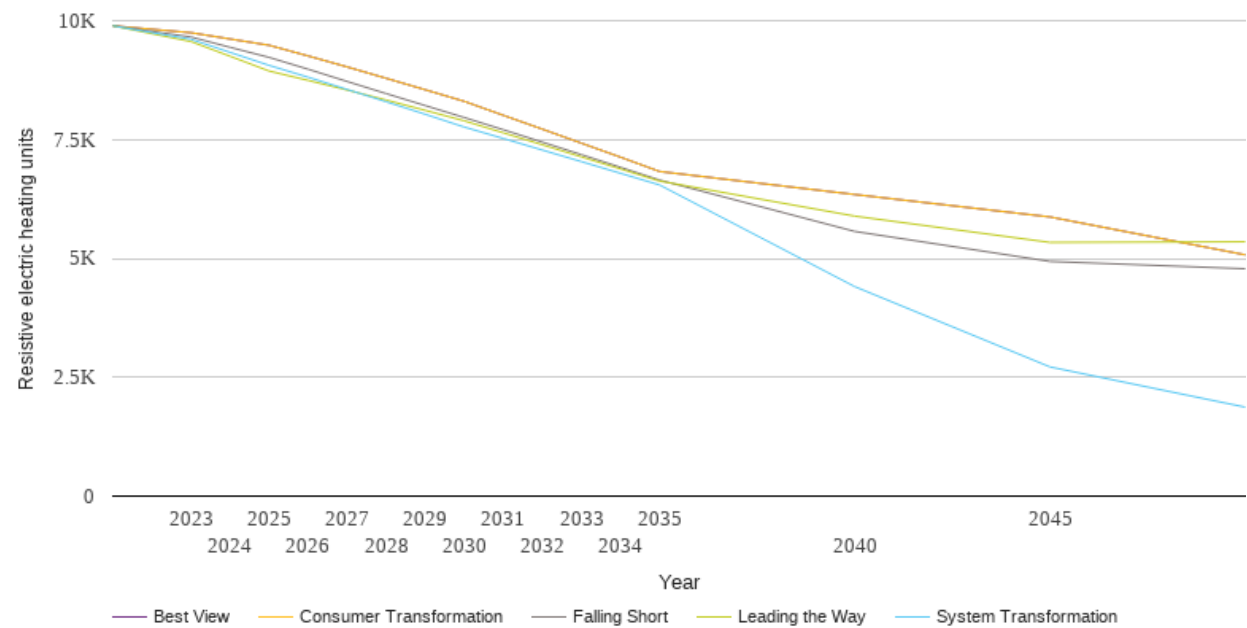
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	2.0	2.0	2.0	2.0	2.0
2023	2.0	2.0	2.0	2.0	2.0
2024	2.0	2.0	2.0	2.0	2.0
2025	2.0	2.1	2.1	2.1	2.0
2026	2.0	2.1	2.1	2.1	2.0
2027	2.0	2.1	2.1	2.1	2.0
2028	2.0	2.2	2.1	2.1	2.0
2029	2.0	2.2	2.1	2.1	2.0
2030	2.0	2.2	7.1	7.1	2.0
2031	2.0	2.3	7.2	7.2	2.0
2032	2.0	2.3	7.2	7.2	2.0
2033	2.0	2.4	7.2	7.2	2.0
2034	2.0	2.4	7.2	7.2	2.0
2035	2.0	7.4	12.3	12.2	2.0
2040	2.0	7.7	17.4	17.4	2.0
2045	2.0	7.9	17.4	17.5	2.0
2050	2.0	8.2	17.6	17.7	2.0



Technology Summary: Resistive electric heating

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

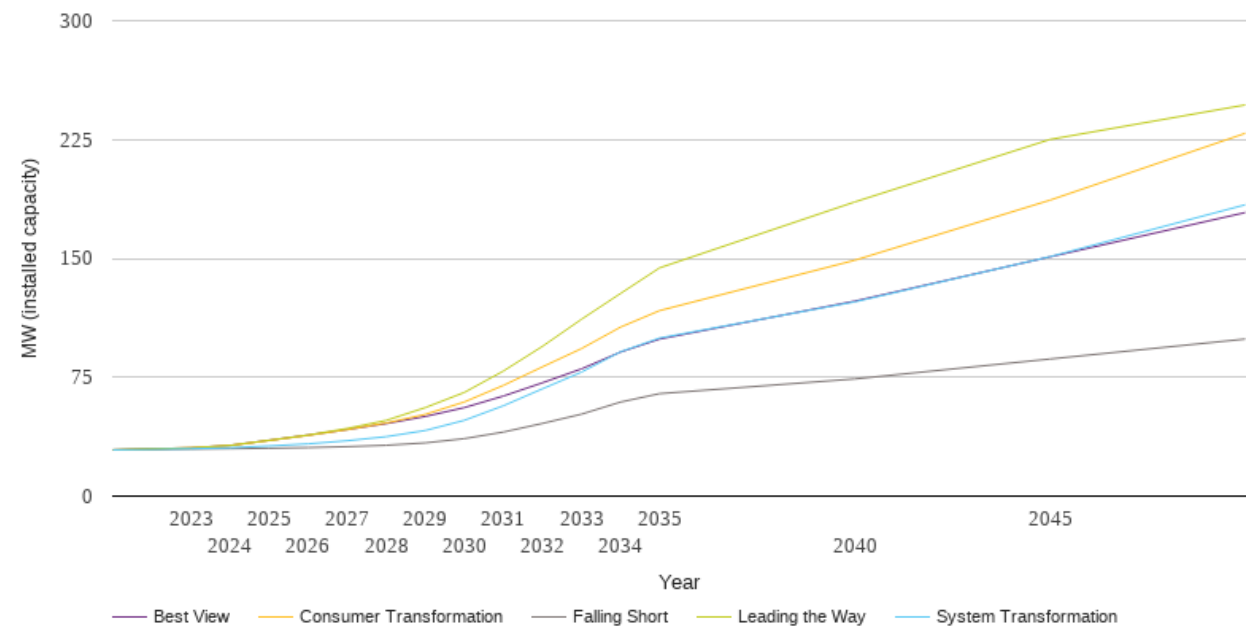
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	9891	9891	9891	9891	9891
2023	9657	9608	9747	9561	9747
2024	9440	9334	9615	9252	9615
2025	9228	9060	9483	8941	9483
2026	8979	8811	9258	8744	9258
2027	8721	8553	9027	8541	9027
2028	8466	8294	8788	8330	8788
2029	8214	8031	8547	8114	8547
2030	7963	7762	8303	7893	8303
2031	7706	7522	8009	7641	8009
2032	7445	7278	7718	7390	7718
2033	7182	7035	7423	7135	7423
2034	6916	6790	7129	6882	7129
2035	6648	6545	6828	6627	6828
2040	5567	4406	6344	5889	6344
2045	4936	2717	5872	5336	5872
2050	4782	1871	5075	5349	5075



Technology Summary: Solar Generation

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

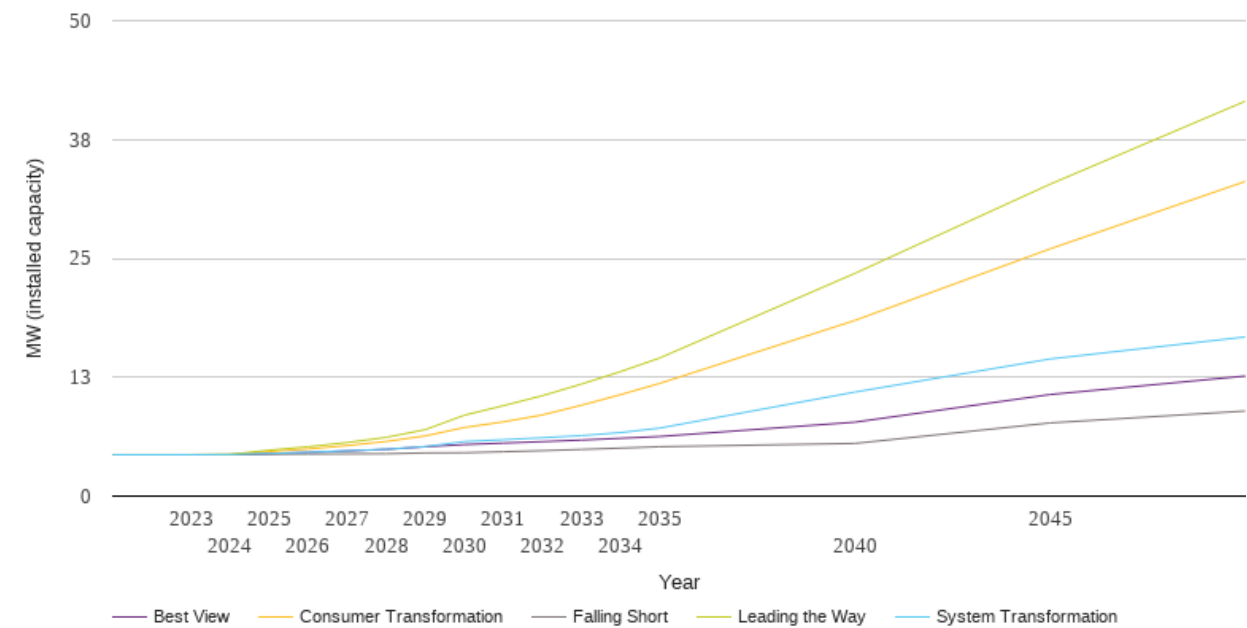
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	29.1	29.1	29.1	29.1	29.1
2023	29.7	29.9	30.4	30.4	30.4
2024	29.9	30.5	31.9	32.0	32.0
2025	30.2	31.6	35.1	35.2	35.2
2026	30.6	33.0	38.3	38.5	38.5
2027	31.2	34.9	41.9	42.7	42.0
2028	32.1	37.5	46.1	47.8	45.8
2029	33.6	41.4	51.6	55.8	50.3
2030	36.3	47.8	59.4	65.4	55.8
2031	40.4	57.0	69.9	78.9	63.1
2032	45.9	67.7	81.5	94.5	71.5
2033	51.7	78.2	93.1	111.6	80.3
2034	59.3	91.0	106.6	127.8	90.9
2035	64.6	99.7	117.0	144.0	99.1
2040	73.9	122.6	148.8	185.6	123.0
2045	86.5	151.1	186.7	225.0	150.9
2050	99.1	183.8	228.9	246.8	178.9



Technology Summary: Storage

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

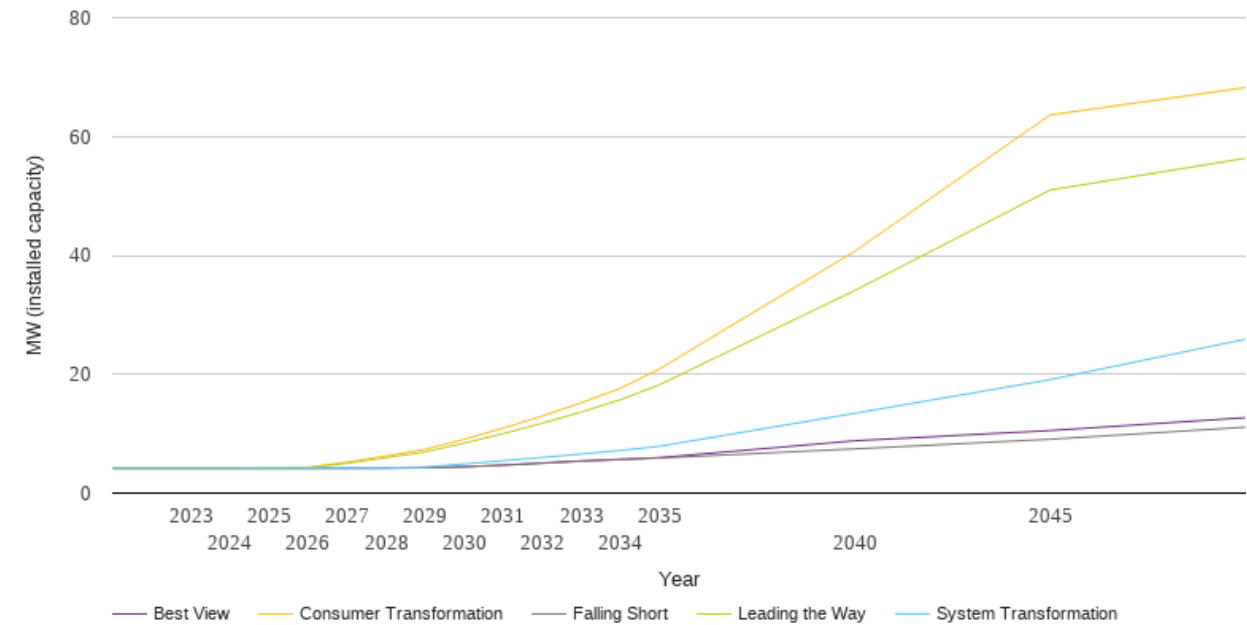
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	4.4	4.4	4.4	4.4	4.4
2023	4.4	4.4	4.4	4.4	4.4
2024	4.4	4.4	4.4	4.4	4.4
2025	4.4	4.5	4.7	4.8	4.5
2026	4.4	4.6	5.0	5.2	4.6
2027	4.4	4.8	5.3	5.6	4.7
2028	4.5	4.9	5.7	6.2	4.9
2029	4.5	5.2	6.3	7.0	5.2
2030	4.6	5.7	7.2	8.5	5.4
2031	4.7	5.9	7.8	9.5	5.6
2032	4.8	6.1	8.5	10.6	5.7
2033	4.9	6.4	9.6	11.8	5.9
2034	5.0	6.7	10.7	13.1	6.1
2035	5.2	7.1	11.8	14.5	6.3
2040	5.5	10.9	18.5	23.4	7.8
2045	7.7	14.4	26.0	32.8	10.7
2050	8.9	16.7	33.1	41.5	12.6



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	4.2	4.2	4.2	4.2	4.2
2023	4.2	4.2	4.2	4.2	4.2
2024	4.2	4.2	4.3	4.2	4.2
2025	4.2	4.2	4.3	4.2	4.2
2026	4.2	4.2	4.3	4.3	4.2
2027	4.2	4.2	5.2	5.0	4.2
2028	4.2	4.2	6.3	6.0	4.2
2029	4.3	4.4	7.4	6.9	4.3
2030	4.4	4.9	9.1	8.4	4.4
2031	4.7	5.4	10.9	10.0	4.7
2032	5.0	6.0	13.0	11.8	5.1
2033	5.4	6.6	15.2	13.7	5.4
2034	5.6	7.2	17.6	15.7	5.7
2035	5.9	7.9	20.9	18.2	6.0
2040	7.4	13.4	40.7	34.1	8.8
2045	9.1	19.1	63.6	51.0	10.5
2050	11.1	25.9	68.2	56.3	12.7



National Grid Electricity Distribution PLC 09223384)
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