

Distribution Future Energy Scenarios 2022

Local Authority:
Coventry

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 Coventry covered by the NGED licence areas.



Scenario Summary

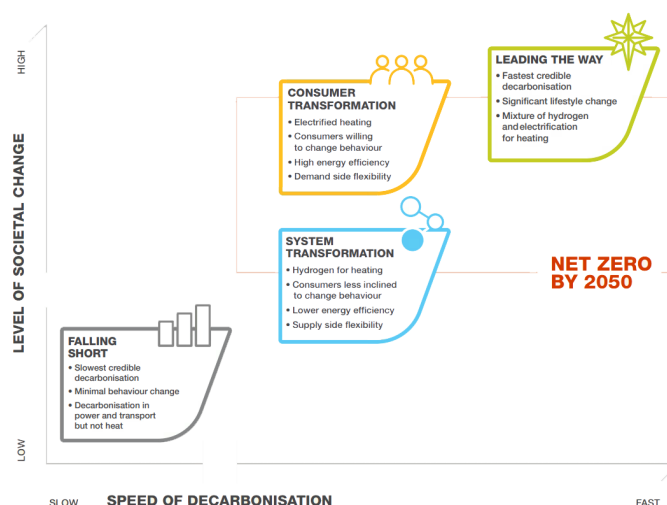
This DFES scenario framework includes three scenarios that are compliant with UK government targets of Net Zero greenhouse gas emissions by 2050. A summary of each scenario is below:

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 Coventry 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	2858	8393	7155	7155	2865	108937	62792	62792	2879
Domestic	New dwellings	0	6833	7522	7522	8858	10654	10808	10518	10437
Electric vehicles	Electric vehicles	4770	29986	37966	69623	69450	224050	220367	221578	167067
EV Charge Point	EV charge points	2423	12928	19367	36521	39827	113353	114037	120870	120111
Heat pumps	Heat pump installations	623	8991	7163	24247	36430	79112	88799	152675	136583
Hydrogen electrolysis	MW (installed capacity)	0.0	0.0	0.0	0.0	0.0	0.1	0.5	0.1	1.2
Non domestic	Floorspace (metres squared) of new I&C developments	0	370675	423066	424586	485892	524606	529731	525251	524606
Other Distributed Generation	MW (installed capacity)	21.2	21.3	15.1	15.1	6.5	9.1	14.4	6.2	21.5
Resistive electric heating	Resistive electric heating units	22911	19405	18691	19641	18955	13965	6561	13800	14454
Solar Generation	MW (installed capacity)	11.6	18.9	31.2	52.4	54.1	44.6	102.9	194.8	205.1
Storage	MW (installed capacity)	0.1	0.5	2.2	4.9	6.3	7.6	19.5	49.3	62.9
Wind	MW (installed capacity)	0.0	0.0	0.0	0.2	0.1	0.2	0.7	2.1	1.7

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.

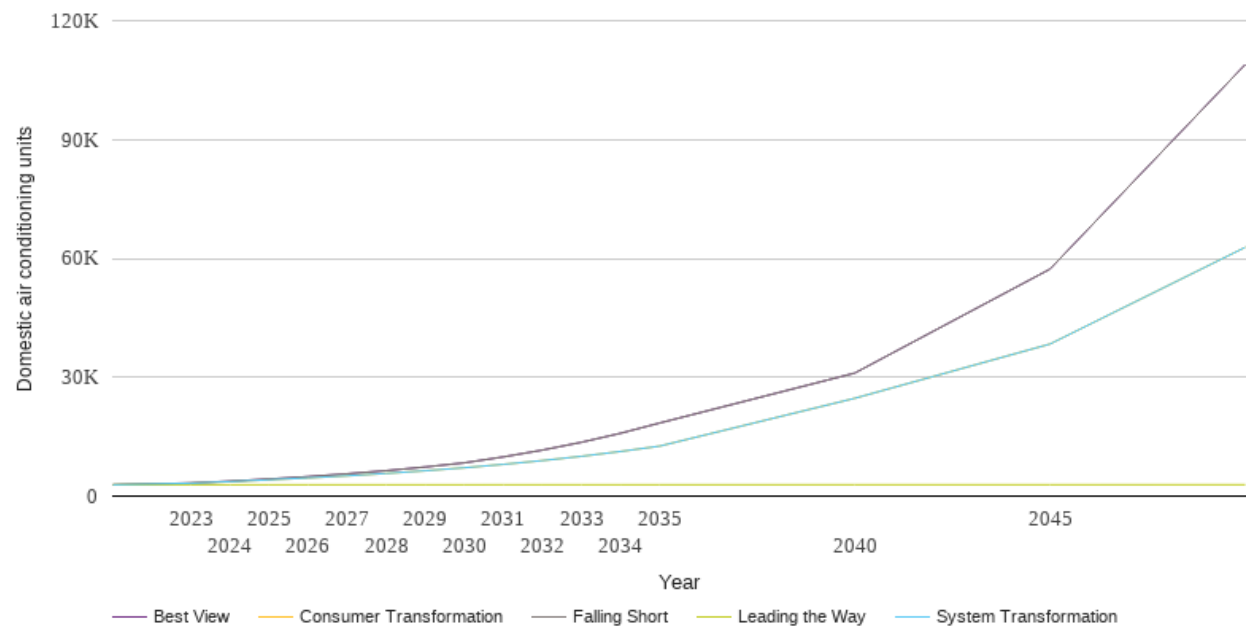
If you have any comments or queries regarding these reports, please contact

nged.energyplanning@nationalgrid.co.uk.

Technology Summary: Air conditioning

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

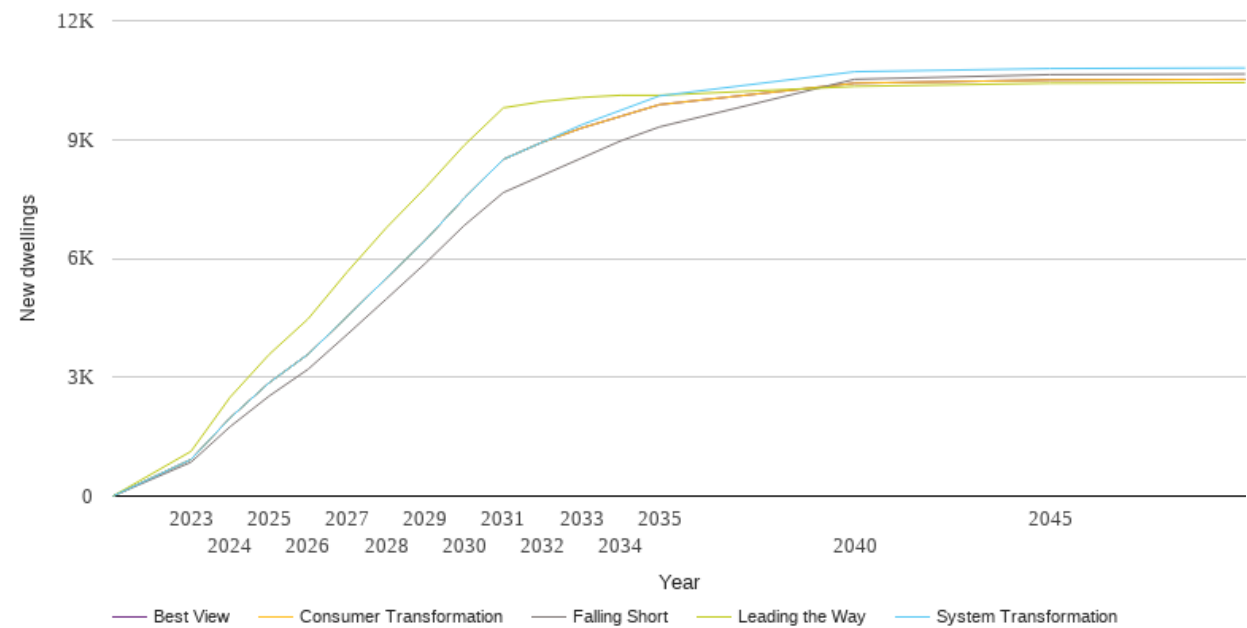
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	2858	2858	2858	2858	2858
2023	3296	3244	3244	2860	3296
2024	3760	3645	3645	2861	3760
2025	4300	4110	4110	2862	4300
2026	4915	4584	4584	2863	4915
2027	5621	5117	5117	2863	5621
2028	6416	5723	5723	2864	6416
2029	7346	6402	6402	2865	7346
2030	8393	7155	7155	2865	8393
2031	9894	8010	8010	2866	9894
2032	11612	8967	8967	2867	11612
2033	13586	10040	10040	2867	13586
2034	15851	11261	11261	2868	15851
2035	18439	12609	12609	2868	18439
2040	31050	24686	24686	2873	31050
2045	57291	38379	38379	2876	57291
2050	108937	62792	62792	2879	108937



Technology Summary: Domestic

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

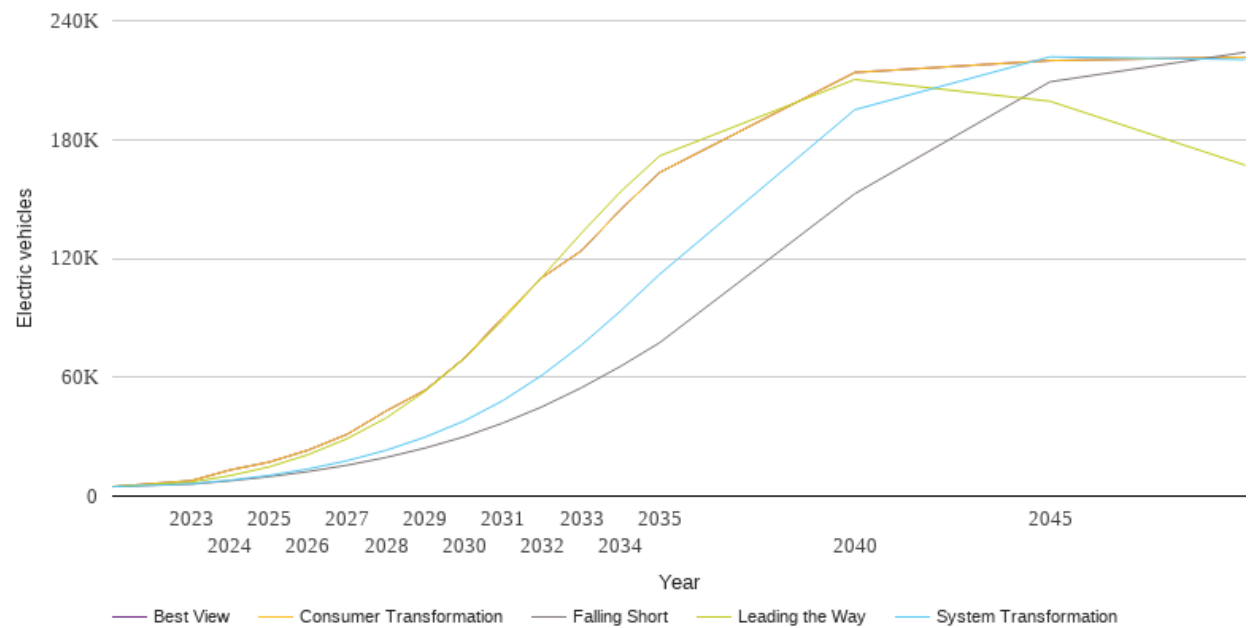
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	856	925	925	1129	925
2024	1751	1974	1974	2494	1974
2025	2525	2861	2861	3575	2861
2026	3203	3582	3582	4474	3582
2027	4080	4533	4533	5659	4533
2028	4973	5496	5496	6769	5496
2029	5874	6455	6455	7780	6455
2030	6833	7522	7522	8858	7522
2031	7662	8500	8500	9800	8500
2032	8096	8934	8934	9959	8934
2033	8530	9370	9289	10062	9289
2034	8964	9736	9585	10117	9585
2035	9319	10102	9881	10117	9881
2040	10521	10712	10422	10341	10422
2045	10638	10792	10502	10421	10502
2050	10654	10808	10518	10437	10518



Technology Summary: Electric vehicles

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

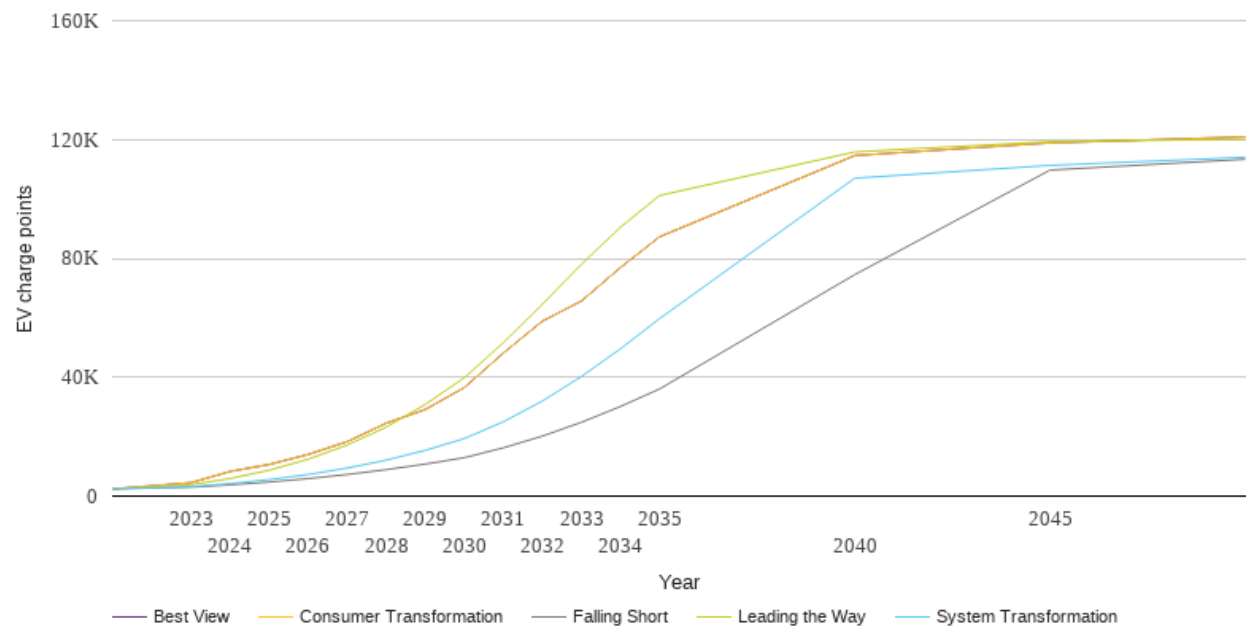
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	4770	4770	4770	4770	4770
2023	6044	6152	7743	7042	7743
2024	7698	8034	13192	10327	13192
2025	9783	10448	17160	14747	17160
2026	12379	13685	23203	20909	23203
2027	15602	17871	31218	28998	31218
2028	19526	23151	43018	39469	43018
2029	24282	29787	53482	53019	53482
2030	29986	37966	69623	69450	69623
2031	36980	48352	90571	89207	90571
2032	45175	61161	110439	110804	110439
2033	54709	76247	123859	132773	123859
2034	65485	93413	144557	153617	144557
2035	77384	111912	163347	171703	163347
2040	152620	195026	213854	210298	213854
2045	209113	221750	219865	199319	219865
2050	224050	220367	221578	167067	221578



Technology Summary: EV Charge Point

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

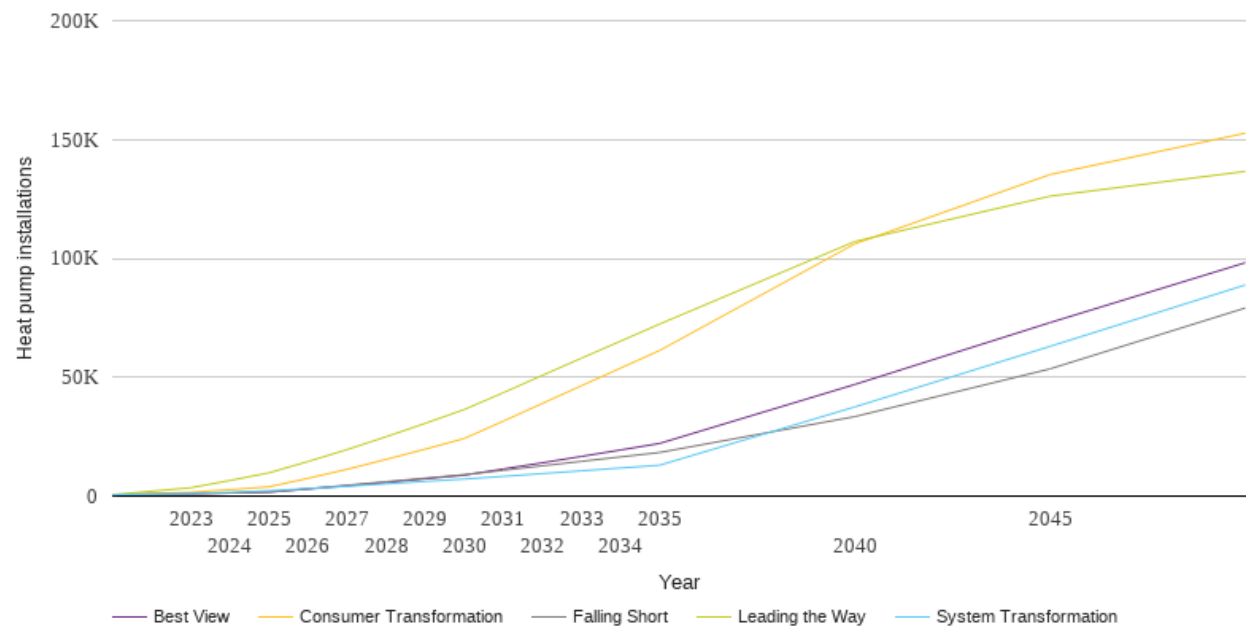
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	2423	2423	2423	2423	2423
2023	3011	3172	4491	3828	4491
2024	3773	4207	8310	5900	8310
2025	4725	5552	10633	8707	10633
2026	5886	7261	14017	12407	14017
2027	7273	9429	18327	17187	18327
2028	8903	12111	24545	23220	24545
2029	10776	15401	29140	30858	29140
2030	12928	19367	36521	39827	36521
2031	16251	25013	48151	51620	48151
2032	20196	32009	58882	64543	58882
2033	24849	40257	65655	78030	65655
2034	30159	49567	76917	90502	76917
2035	36049	59709	87271	101159	87271
2040	74529	106992	114615	115840	114615
2045	109710	111304	118874	119295	118874
2050	113353	114037	120870	120111	120870



Technology Summary: Heat pumps

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

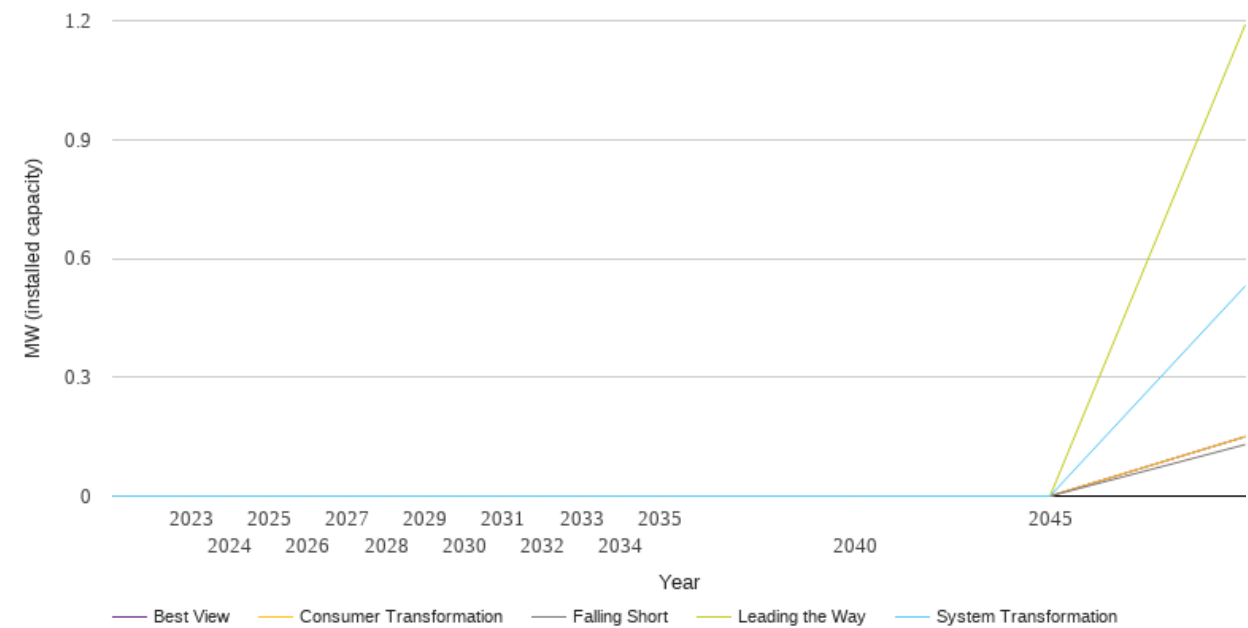
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	623	623	623	623	623
2023	960	1047	1602	3532	960
2024	1317	1599	2705	6581	1317
2025	1689	2248	3908	9796	1689
2026	3110	3165	7484	14562	2972
2027	4559	4131	11295	19577	4328
2028	6036	5163	15450	24998	5783
2029	7518	6169	19761	30616	7280
2030	8991	7163	24247	36430	8821
2031	10868	8289	31545	43513	11404
2032	12738	9467	39001	50788	13995
2033	14615	10636	46429	58016	16686
2034	16472	11808	53820	65173	19392
2035	18341	12983	61231	72353	22137
2040	33431	37514	106111	107094	46952
2045	53506	62979	135263	126162	72962
2050	79112	88799	152675	136583	98164



Technology Summary: Hydrogen electrolysis

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

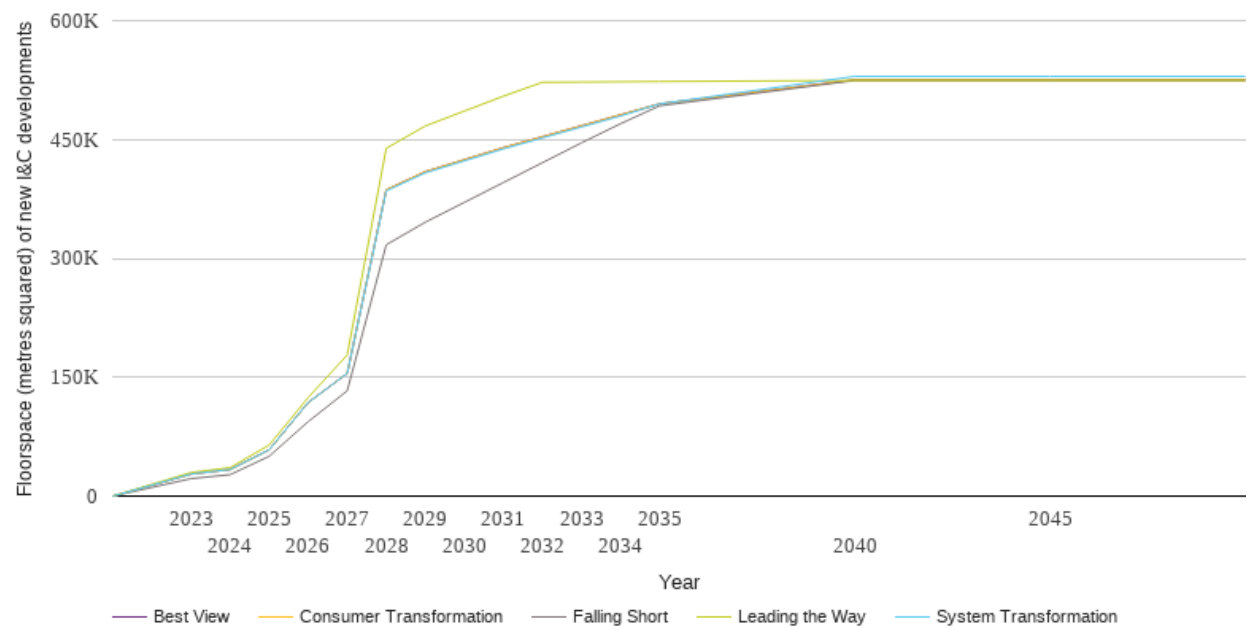
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.0	0.0	0.0	0.0
2026	0.0	0.0	0.0	0.0	0.0
2027	0.0	0.0	0.0	0.0	0.0
2028	0.0	0.0	0.0	0.0	0.0
2029	0.0	0.0	0.0	0.0	0.0
2030	0.0	0.0	0.0	0.0	0.0
2031	0.0	0.0	0.0	0.0	0.0
2032	0.0	0.0	0.0	0.0	0.0
2033	0.0	0.0	0.0	0.0	0.0
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	0.1	0.5	0.1	1.2	0.1



Technology Summary: Non domestic

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

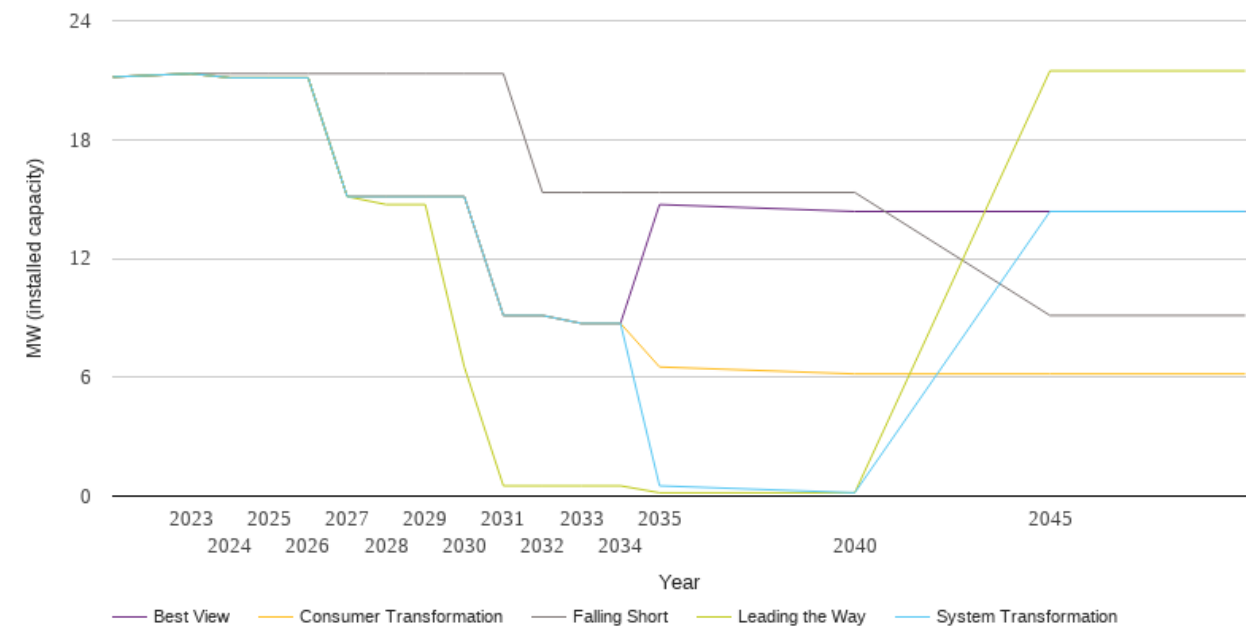
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	22042	27778	27778	29758	27778
2024	27010	33543	33543	35858	33543
2025	50206	58349	58349	64403	58349
2026	93930	118028	118028	124285	118028
2027	132822	154822	154822	178077	154822
2028	317156	385186	386586	438908	386586
2029	345628	407950	409410	467089	409410
2030	370675	423066	424586	485892	424586
2031	395722	438181	439701	504695	439701
2032	420768	452007	453527	522209	453527
2033	445815	465832	467352	522551	467352
2034	469936	479658	481178	522894	481178
2035	492521	494984	495004	523236	495004
2040	524606	529731	525251	524606	525251
2045	524606	529731	525251	524606	525251
2050	524606	529731	525251	524606	525251



Technology Summary: Other Distributed Generation

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

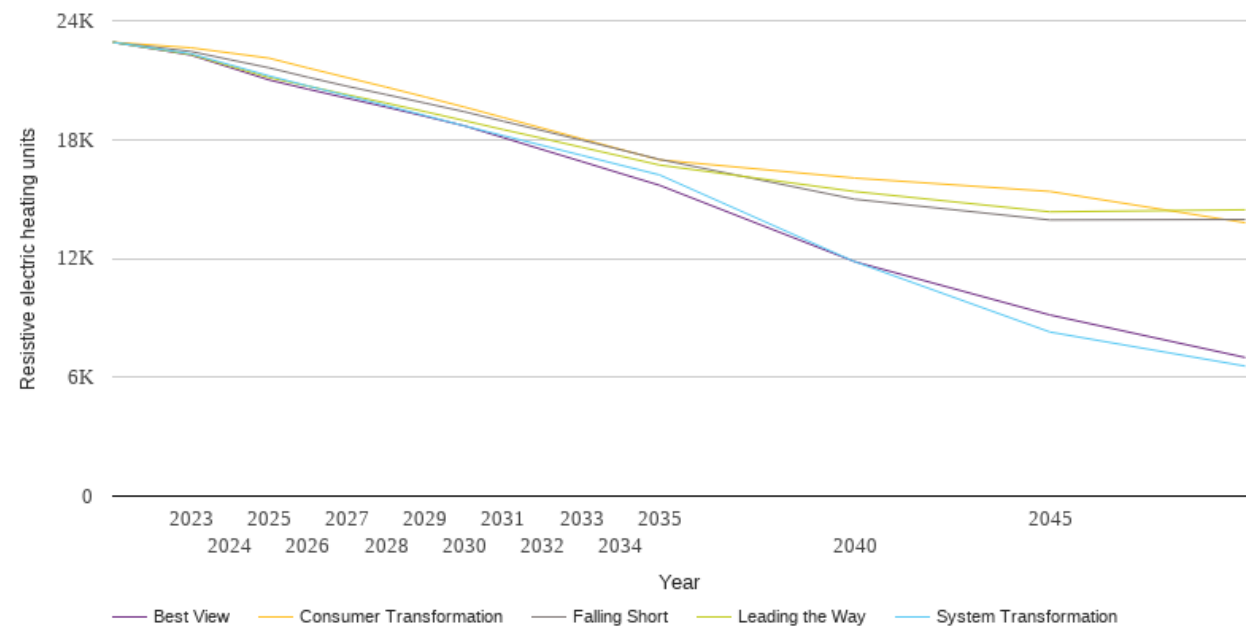
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	21.2	21.2	21.2	21.2	21.2
2023	21.3	21.3	21.3	21.3	21.3
2024	21.3	21.1	21.1	21.1	21.1
2025	21.3	21.1	21.1	21.1	21.1
2026	21.3	21.1	21.1	21.1	21.1
2027	21.3	15.1	15.1	15.1	15.1
2028	21.3	15.1	15.1	14.7	15.1
2029	21.3	15.1	15.1	14.7	15.1
2030	21.3	15.1	15.1	6.5	15.1
2031	21.3	9.1	9.1	0.5	9.1
2032	15.3	9.1	9.1	0.5	9.1
2033	15.3	8.7	8.7	0.5	8.7
2034	15.3	8.7	8.7	0.5	8.7
2035	15.3	0.5	6.5	0.2	14.7
2040	15.3	0.2	6.2	0.2	14.4
2045	9.1	14.4	6.2	21.5	14.4
2050	9.1	14.4	6.2	21.5	14.4



Technology Summary: Resistive electric heating

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

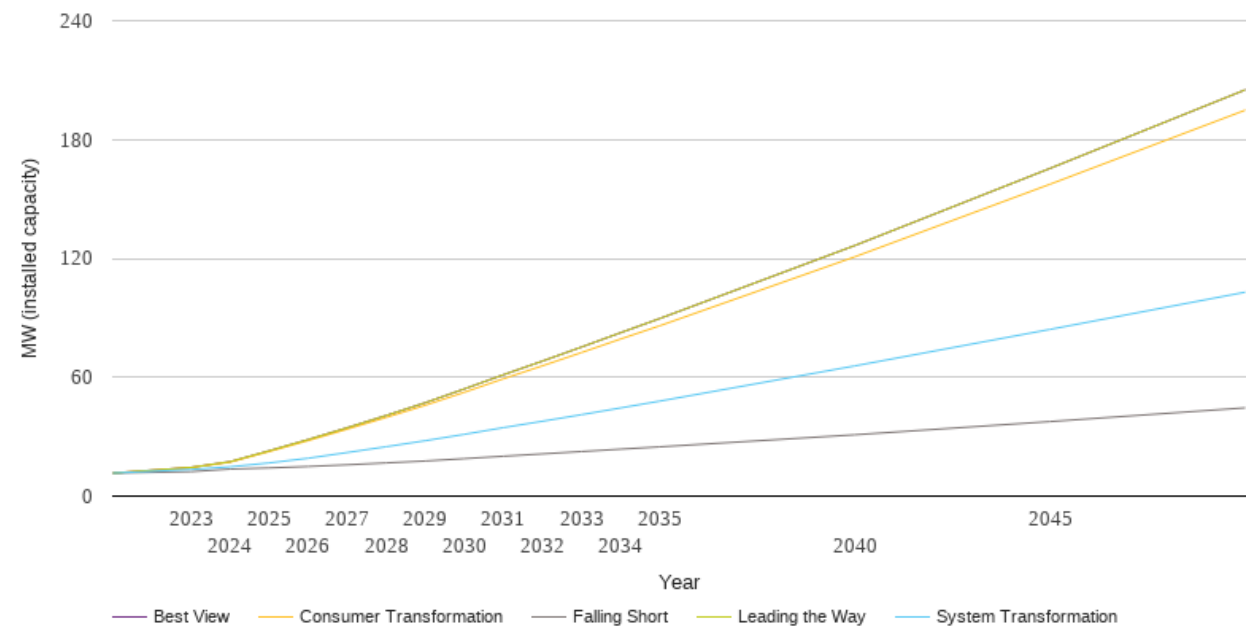
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	22911	22911	22911	22911	22911
2023	22446	22327	22631	22287	22261
2024	22029	21772	22370	21703	21637
2025	21620	21211	22108	21129	21008
2026	21141	20702	21609	20696	20540
2027	20688	20207	21126	20260	20085
2028	20268	19717	20646	19841	19637
2029	19838	19210	20149	19405	19170
2030	19405	18691	19641	18955	18692
2031	18923	18196	19109	18500	18095
2032	18449	17701	18572	18061	17491
2033	17972	17206	18041	17610	16894
2034	17485	16708	17504	17164	16290
2035	16997	16215	16974	16712	15691
2040	14985	11833	16055	15376	11834
2045	13940	8282	15380	14350	9143
2050	13965	6561	13800	14454	6996



Technology Summary: Solar Generation

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

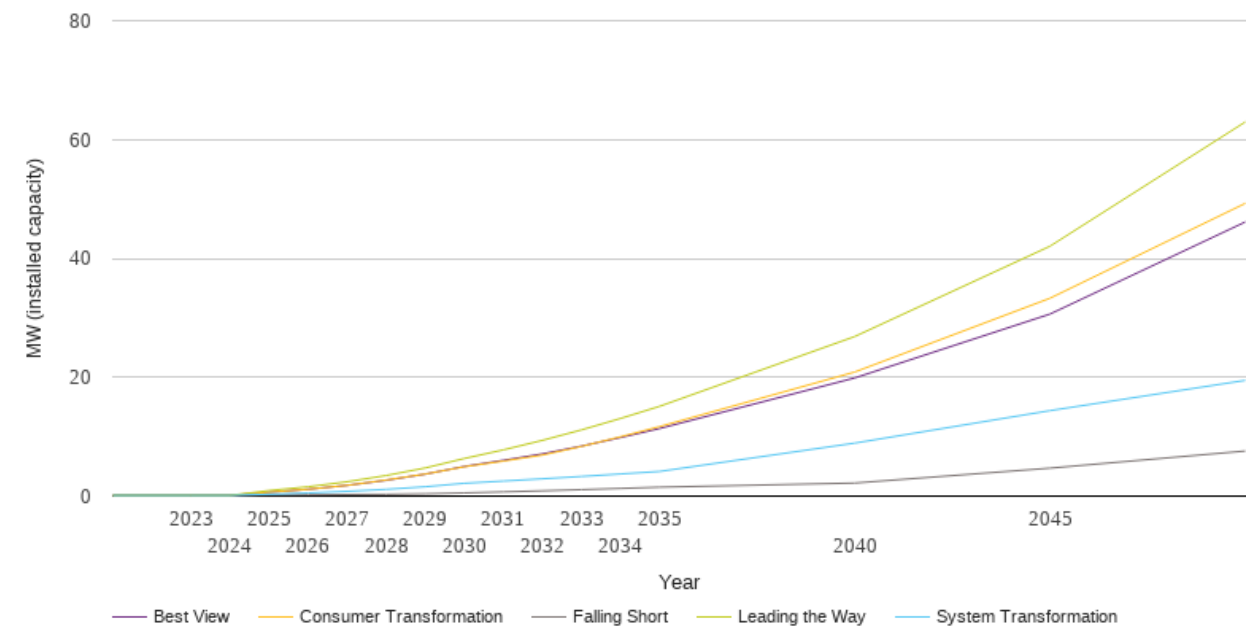
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	11.6	11.6	11.6	11.6	11.6
2023	12.3	13.5	14.4	14.5	14.5
2024	13.6	14.8	17.1	17.4	17.4
2025	14.2	16.7	22.5	22.8	22.8
2026	14.9	19.1	28.0	28.5	28.5
2027	15.8	22.0	33.8	34.5	34.5
2028	16.8	24.9	39.7	40.7	40.7
2029	17.7	28.0	45.8	47.1	47.1
2030	18.9	31.2	52.4	54.1	54.1
2031	20.1	34.6	59.2	61.3	61.3
2032	21.3	37.8	65.8	68.1	68.1
2033	22.5	41.1	72.5	75.2	75.2
2034	23.7	44.5	79.3	82.5	82.5
2035	24.9	47.9	85.9	89.6	89.6
2040	30.9	65.7	120.8	126.5	126.5
2045	37.6	84.1	157.4	165.4	165.4
2050	44.6	102.9	194.8	205.1	205.1



Technology Summary: Storage

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

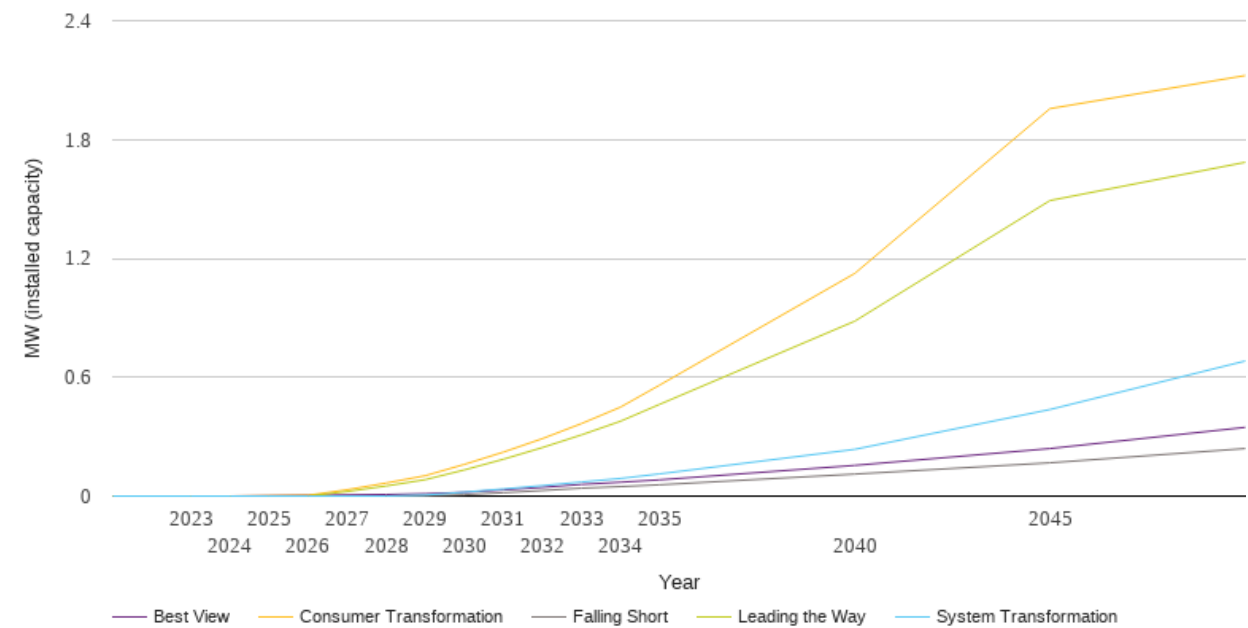
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0.1	0.1	0.1	0.1	0.1
2023	0.1	0.1	0.1	0.1	0.1
2024	0.1	0.1	0.1	0.1	0.1
2025	0.2	0.3	0.6	0.9	0.6
2026	0.2	0.5	1.1	1.6	1.1
2027	0.3	0.8	1.8	2.4	1.8
2028	0.3	1.1	2.7	3.5	2.7
2029	0.4	1.6	3.7	4.7	3.7
2030	0.5	2.2	4.9	6.3	5.0
2031	0.7	2.5	5.9	7.8	6.0
2032	0.9	2.9	6.9	9.4	7.1
2033	1.1	3.3	8.4	11.1	8.4
2034	1.3	3.7	10.0	13.1	9.9
2035	1.5	4.1	11.7	15.1	11.4
2040	2.2	8.9	20.9	26.9	19.9
2045	4.7	14.4	33.3	42.0	30.6
2050	7.6	19.5	49.3	62.9	46.1



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	0.0	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	0.1	0.1	0.0
2029	0.0	0.0	0.1	0.1	0.0
2030	0.0	0.0	0.2	0.1	0.0
2031	0.0	0.0	0.2	0.2	0.0
2032	0.0	0.1	0.3	0.2	0.0
2033	0.0	0.1	0.4	0.3	0.1
2034	0.0	0.1	0.4	0.4	0.1
2035	0.1	0.1	0.6	0.5	0.1
2040	0.1	0.2	1.1	0.9	0.2
2045	0.2	0.4	2.0	1.5	0.2
2050	0.2	0.7	2.1	1.7	0.3



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