

Distribution Future Energy Scenarios 2022

Local Authority:
North Somerset

What are Distribution Future Energy Scenarios?

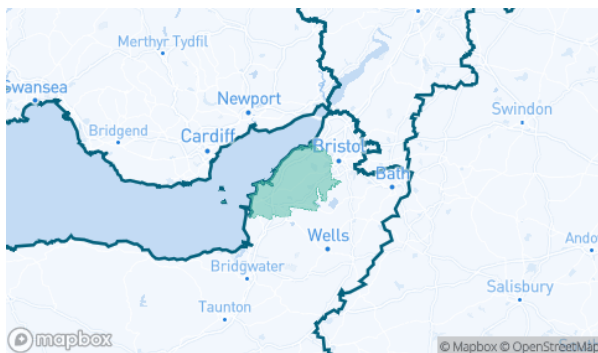
National Grid run Distribution Future Energy Scenarios (DFES) on an annual cycle for all licence areas, and represent a range of credible future scenarios of what could connect to the distribution network.

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 Somerset 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 Somerset 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	551	1714	1429	1429	551	41098	20879	20878	551
Domestic	New dwellings	0	6197	6478	6478	7110	7600	7339	7339	7160
Electric vehicles	Electric vehicles	2571	2196 4	27069	49985	49850	15449 8	13720 2	13874 7	11376 7
EV Charge Point	EV charge points	1559	1035 7	14813	27861	30564	86916	82539	84140	87850
Heat pumps	Heat pump installations	669	6697	6738	17339	26902	52098	60058	10159 0	89987
Hydrogen electrolysis	MW (installed capacity)	0.0	0.7	4.5	5.3	8.0	3.0	16.7	22.7	24.9
Non domestic	Floorspace (metres squared) of new I&C developments	0	8810 0	14768 7	14768 7	13733 3	33549 2	33516 1	33516 1	33549 2
Other Distributed Generation	MW (installed capacity)	13.0	5.0	3.0	3.0	2.6	5.0	10.5	2.6	14.4
Resistive electric heating	Resistive electric heating units	13281	1164 0	11179	11738	11407	8298	4049	8248	8624
Solar Generation	MW (installed capacity)	38.1	49.4	65.5	89.8	94.0	108.3	194.5	289.7	308.1
Storage	MW (installed capacity)	0.1	0.5	2.6	6.0	7.9	7.8	20.1	53.7	68.6
Wind	MW (installed capacity)	3.3	3.4	4.8	8.8	8.1	6.3	14.1	37.2	31.2

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

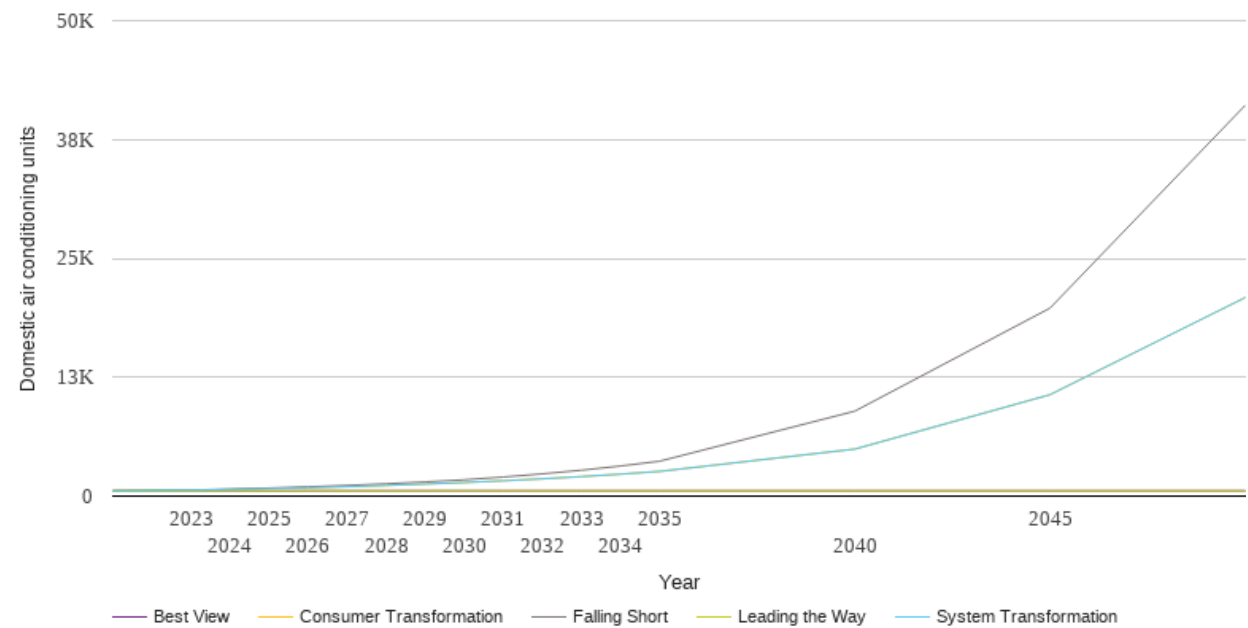
NGED is committed to continually improving the DFES process. To ensure the DFES projections fully capture local ambition, in 2022 we have appointed two DSO Strategic Engagement Officers to engage with local authorities. Any feedback will be incorporated into future Distribution Future Energy Scenarios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

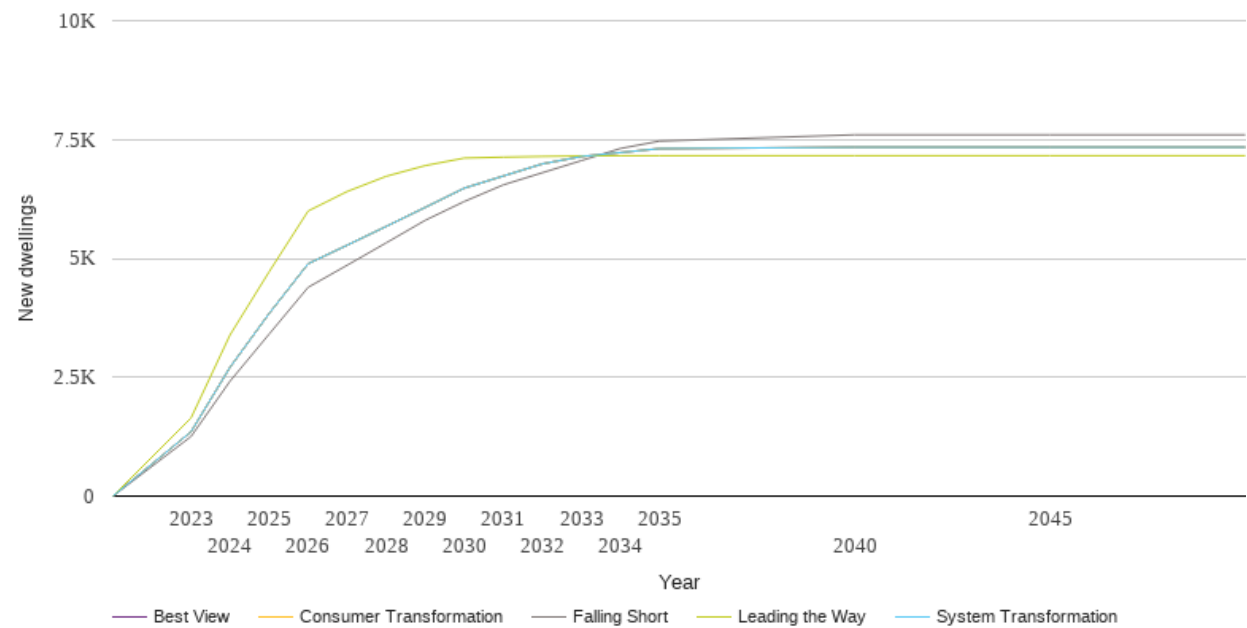
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	551	551	551	551	551
2023	635	625	625	551	551
2024	731	700	700	551	551
2025	844	787	787	551	551
2026	975	885	885	551	551
2027	1125	997	997	551	551
2028	1294	1126	1126	551	551
2029	1491	1271	1271	551	551
2030	1714	1429	1429	551	551
2031	2005	1612	1612	551	551
2032	2339	1817	1817	551	551
2033	2722	2047	2047	551	551
2034	3162	2308	2308	551	551
2035	3666	2597	2597	551	551
2040	8933	4943	4943	551	551
2045	19765	10664	10664	551	551
2050	41098	20879	20878	551	551



Technology Summary: Domestic

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

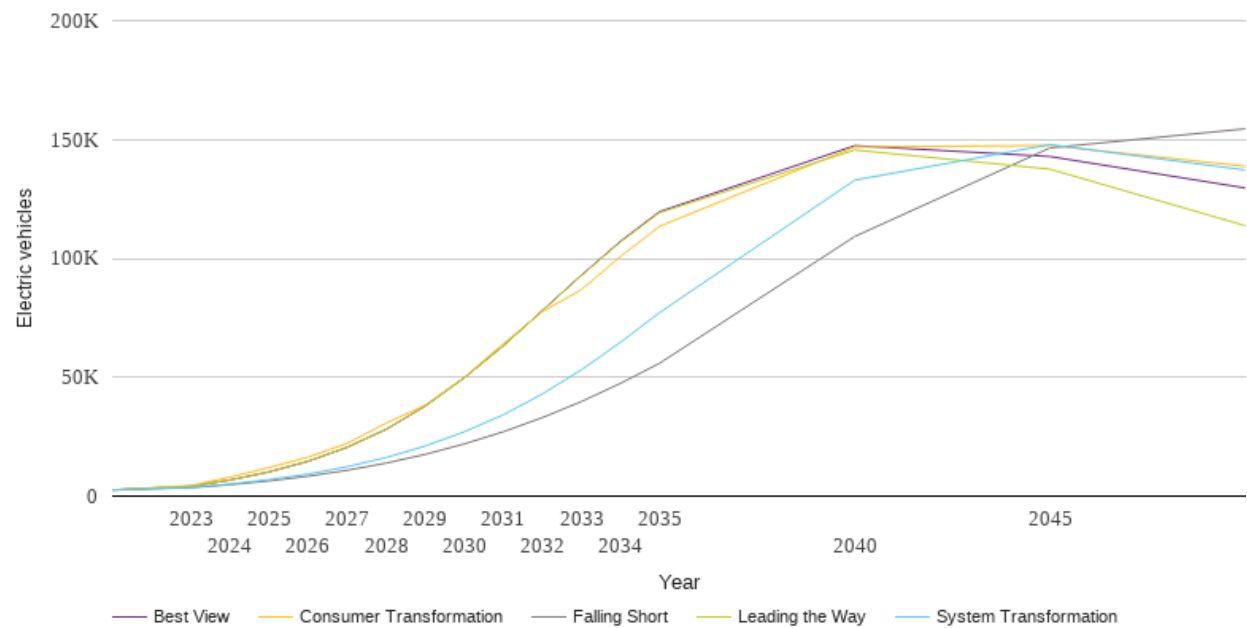
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	1253	1353	1353	1643	1353
2024	2418	2711	2711	3391	2711
2025	3407	3840	3840	4718	3840
2026	4392	4888	4888	5997	4888
2027	4857	5278	5278	6407	5278
2028	5327	5673	5673	6727	5673
2029	5802	6073	6073	6952	6073
2030	6197	6478	6478	7110	6478
2031	6547	6733	6733	7130	6733
2032	6802	6988	6988	7145	6988
2033	7057	7143	7143	7155	7143
2034	7312	7226	7226	7160	7226
2035	7467	7309	7309	7160	7309
2040	7600	7339	7339	7160	7339
2045	7600	7339	7339	7160	7339
2050	7600	7339	7339	7160	7339



Technology Summary: Electric vehicles

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

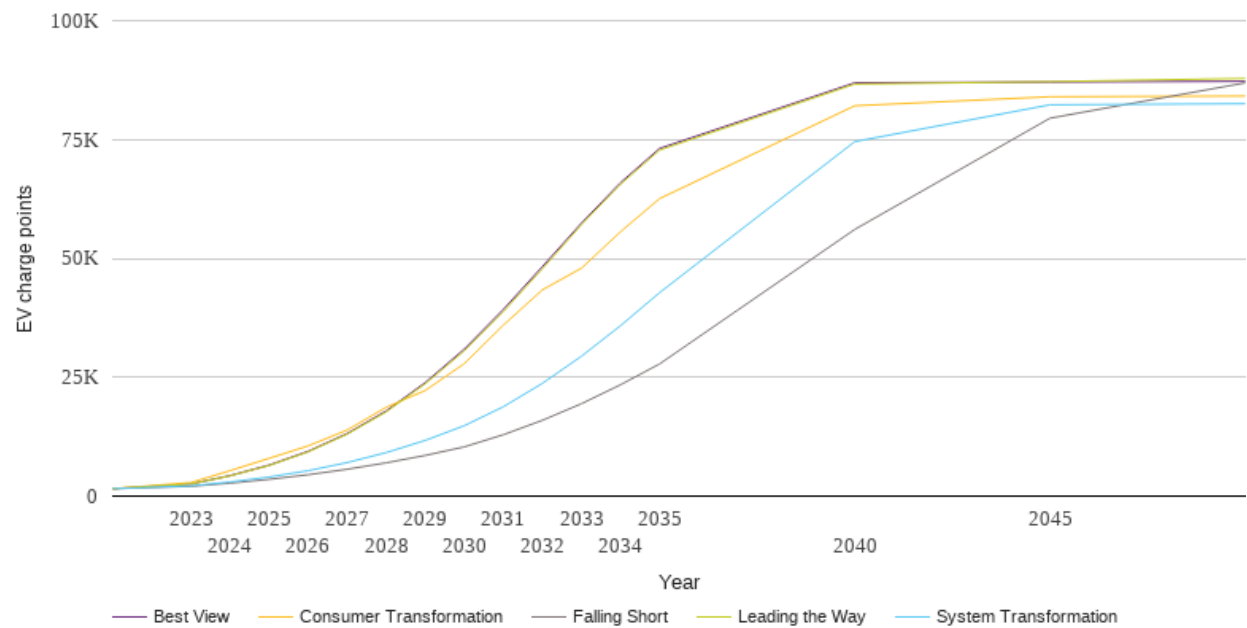
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	2571	2571	2571	2571	2571
2023	3542	3631	4446	4148	4148
2024	4803	5069	7989	6771	6768
2025	6385	6923	12033	10202	10196
2026	8367	9276	16386	14658	14649
2027	10862	12364	22211	20565	20529
2028	13880	16229	30702	28149	28110
2029	17549	21075	38316	37955	37906
2030	21964	27069	49985	49850	49789
2031	27071	34224	64183	63312	63242
2032	33019	42977	77585	77948	78087
2033	39782	53134	86849	92773	92967
2034	47430	64701	100824	106908	107211
2035	55869	77189	113500	119227	119668
2040	109214	132918	146863	145597	147422
2045	146469	147861	147537	137545	142858
2050	154498	137202	138747	113767	129622



Technology Summary: EV Charge Point

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

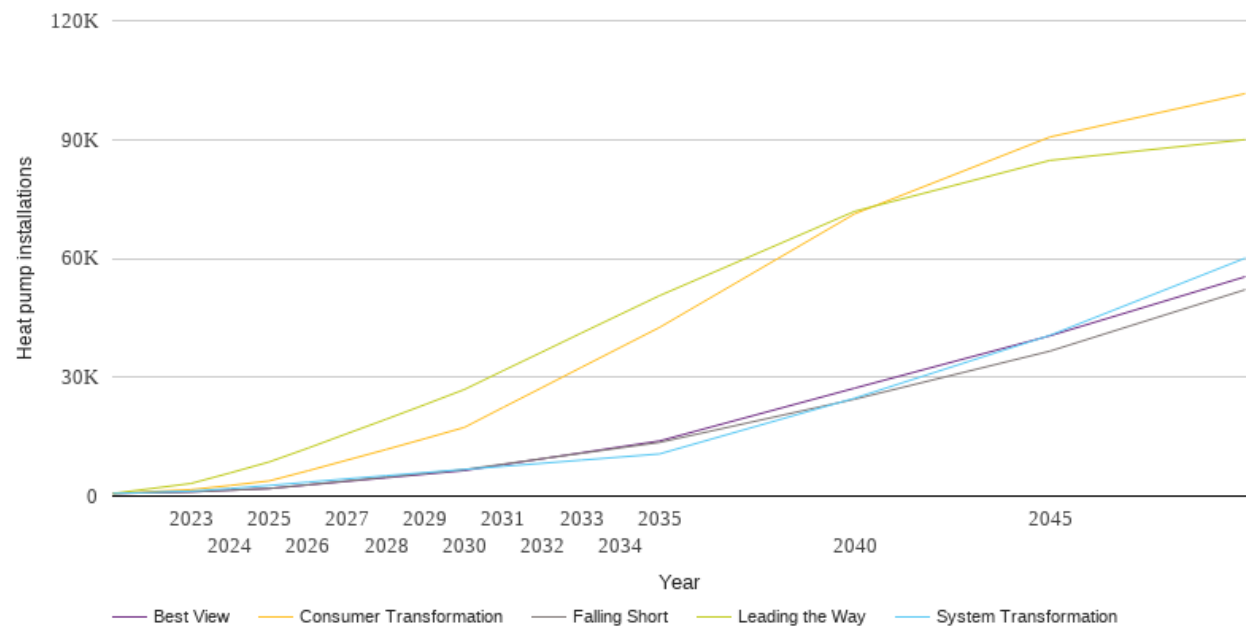
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	1559	1559	1559	1559	1559
2023	2067	2156	2849	2543	2554
2024	2715	2967	5351	4261	4309
2025	3526	4011	7938	6438	6513
2026	4494	5344	10560	9314	9421
2027	5650	7054	13891	13034	13167
2028	7000	9152	18693	17716	17933
2029	8556	11719	22215	23637	23878
2030	10357	14813	27861	30564	30917
2031	12917	18799	35964	38824	39265
2032	15940	23718	43379	47824	48277
2033	19436	29420	47941	57097	57418
2034	23412	35838	55594	65595	65921
2035	27794	42787	62575	72787	73119
2040	56090	74562	82101	86674	86933
2045	79488	82304	83998	87175	87095
2050	86916	82539	84140	87850	87249



Technology Summary: Heat pumps

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

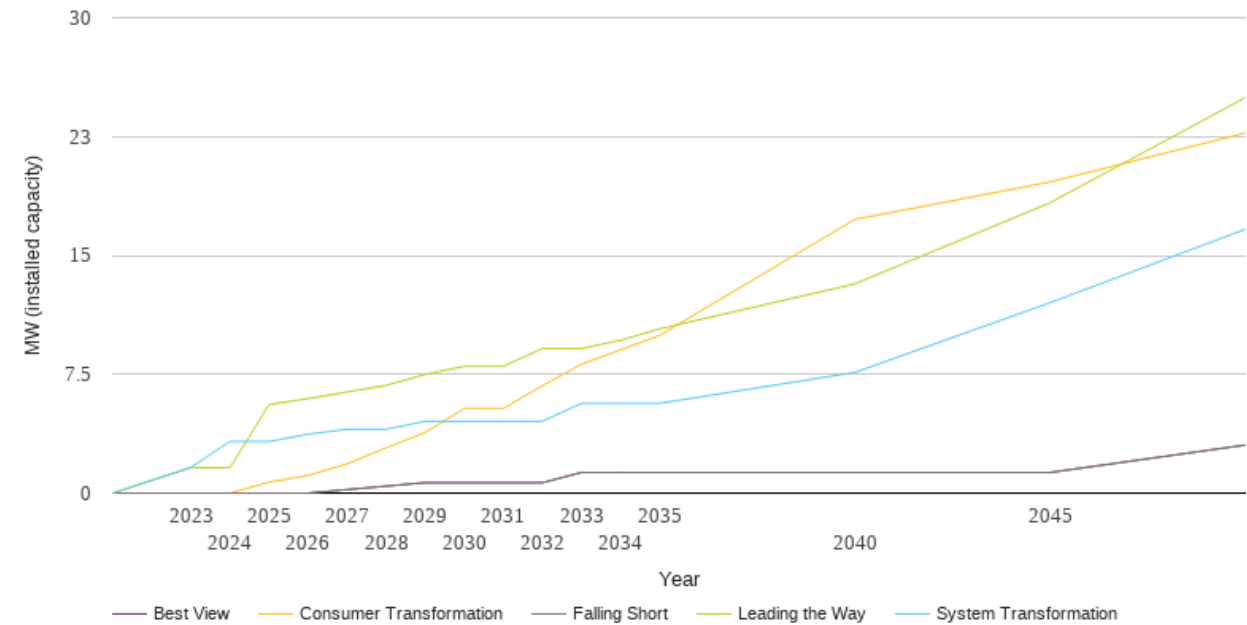
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	669	669	669	669	669
2023	1063	1245	1635	3188	1063
2024	1490	1921	2682	5843	1490
2025	1912	2678	3826	8615	1912
2026	2873	3523	6397	12121	2814
2027	3843	4366	9091	15782	3730
2028	4796	5160	11769	19403	4635
2029	5745	5943	14518	23124	5535
2030	6697	6738	17339	26902	6440
2031	8067	7512	22408	31683	7934
2032	9445	8285	27440	36408	9434
2033	10806	9080	32505	41173	10925
2034	12178	9860	37543	45884	12425
2035	13545	10645	42578	50592	13918
2040	24466	24720	71259	71888	27253
2045	36594	40591	90645	84737	40462
2050	52098	60058	101590	89987	55372



Technology Summary: Hydrogen electrolysis

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

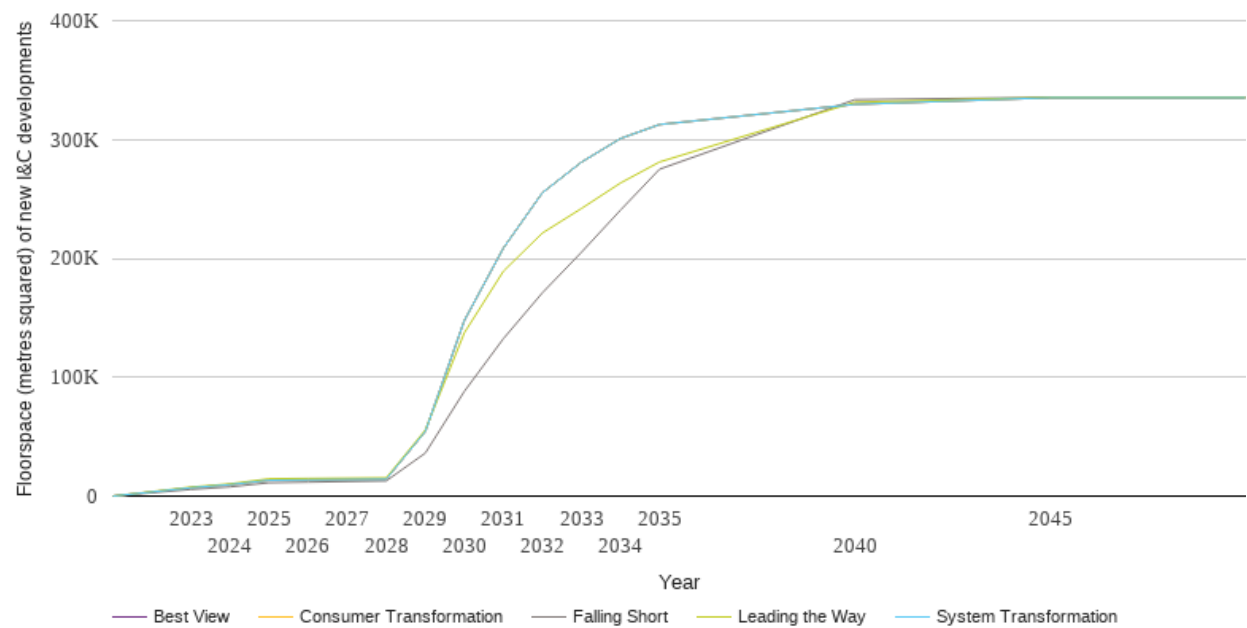
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0.0	0.0	0.0	0.0	0.0
2023	0.0	1.6	0.0	1.6	0.0
2024	0.0	3.3	0.0	1.6	0.0
2025	0.0	3.3	0.7	5.6	0.0
2026	0.0	3.7	1.1	6.0	0.0
2027	0.2	4.0	1.8	6.4	0.2
2028	0.4	4.0	2.9	6.8	0.4
2029	0.7	4.5	3.8	7.5	0.7
2030	0.7	4.5	5.3	8.0	0.7
2031	0.7	4.5	5.3	8.0	0.7
2032	0.7	4.5	6.8	9.1	0.7
2033	1.3	5.7	8.1	9.1	1.3
2034	1.3	5.7	9.0	9.6	1.3
2035	1.3	5.7	10.0	10.4	1.3
2040	1.3	7.6	17.3	13.2	1.3
2045	1.3	12.0	19.6	18.3	1.3
2050	3.0	16.7	22.7	24.9	3.0



Technology Summary: Non domestic

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

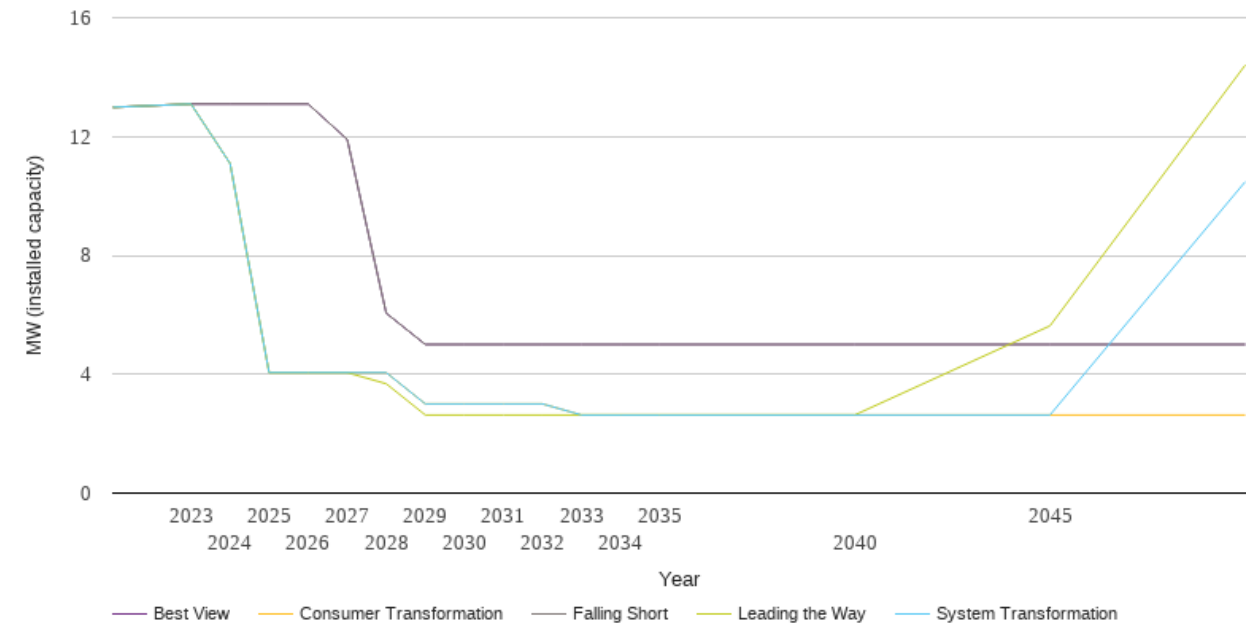
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	5622	7015	7015	7570	7015
2024	7771	9670	9670	10306	9670
2025	11280	13326	13326	14563	13326
2026	11789	13632	13632	14876	13632
2027	12298	13938	13938	15126	13938
2028	12807	14244	14244	15376	14244
2029	36142	54341	54341	55572	54341
2030	88100	147687	147687	137333	147687
2031	132440	208645	208645	189181	208645
2032	171052	255283	255283	221331	255283
2033	205170	280976	280976	241992	280976
2034	240609	300837	300837	263430	300837
2035	275062	312640	312640	281113	312640
2040	333503	329600	329600	331347	329600
2045	335492	335161	335161	335492	335161
2050	335492	335161	335161	335492	335161



Technology Summary: Other Distributed Generation

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

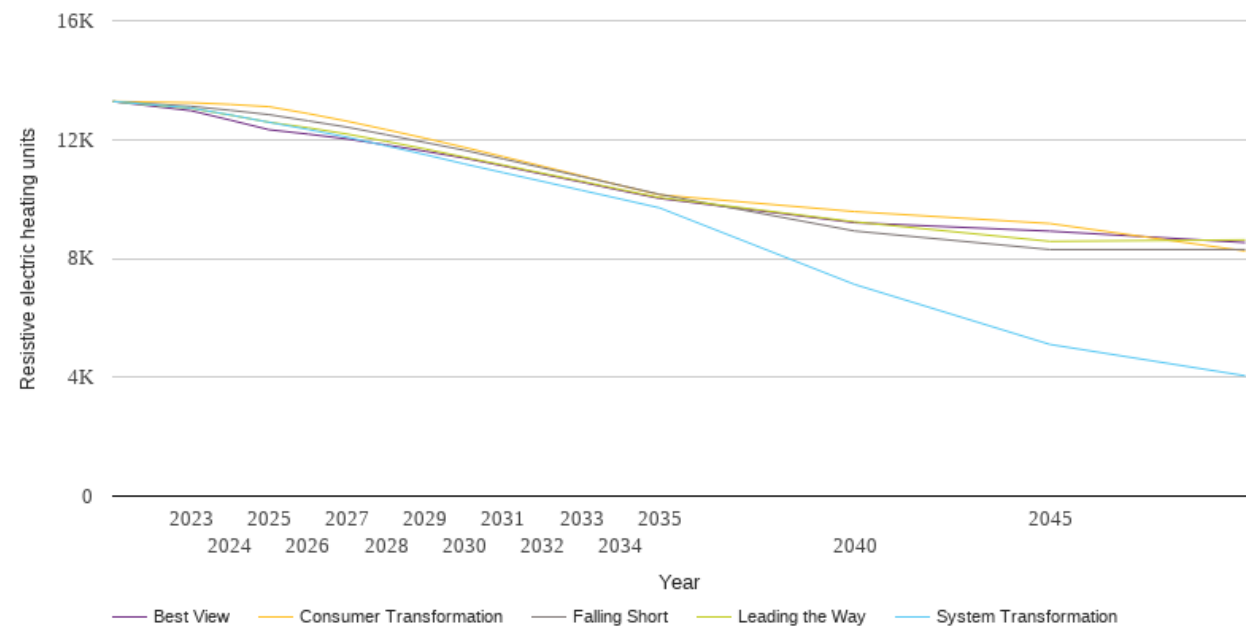
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	13.0	13.0	13.0	13.0	13.0
2023	13.1	13.1	13.1	13.1	13.1
2024	13.1	11.1	11.1	11.1	13.1
2025	13.1	4.1	4.1	4.1	13.1
2026	13.1	4.1	4.1	4.1	13.1
2027	11.9	4.1	4.1	4.1	11.9
2028	6.1	4.1	4.1	3.7	6.1
2029	5.0	3.0	3.0	2.6	5.0
2030	5.0	3.0	3.0	2.6	5.0
2031	5.0	3.0	3.0	2.6	5.0
2032	5.0	3.0	3.0	2.6	5.0
2033	5.0	2.6	2.6	2.6	5.0
2034	5.0	2.6	2.6	2.6	5.0
2035	5.0	2.6	2.6	2.6	5.0
2040	5.0	2.6	2.6	2.6	5.0
2045	5.0	2.6	2.6	5.6	5.0
2050	5.0	10.5	2.6	14.4	5.0



Technology Summary: Resistive electric heating

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

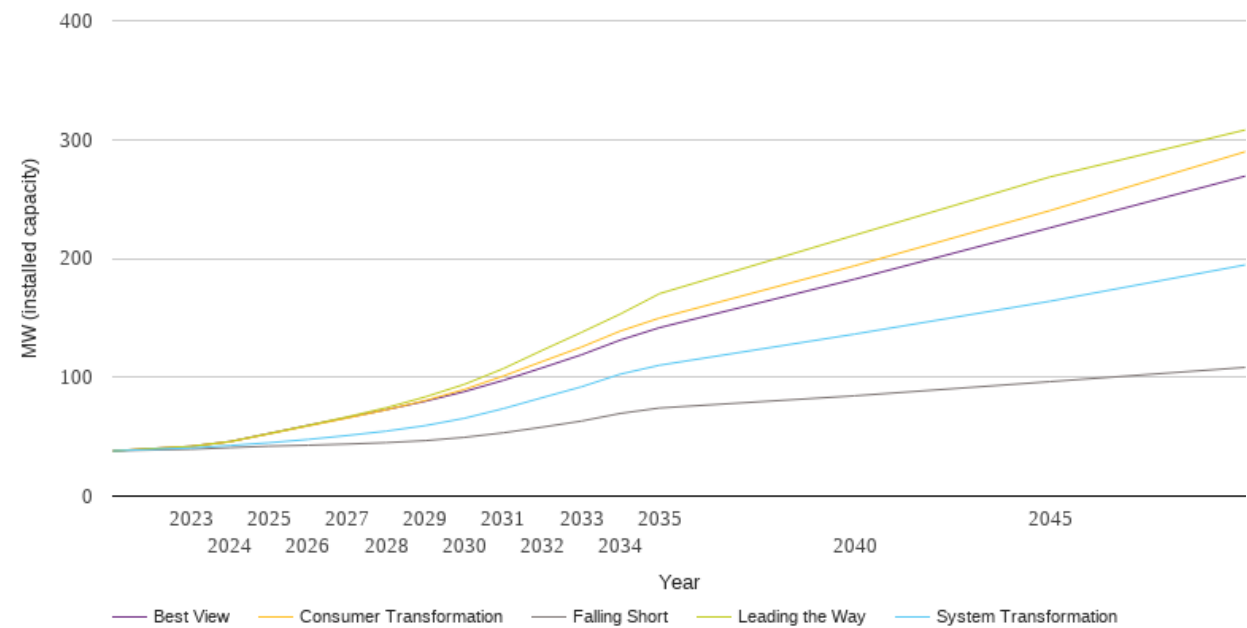
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	13281	13281	13281	13281	13281
2023	13118	13061	13240	13051	12970
2024	12985	12831	13183	12824	12656
2025	12837	12580	13105	12583	12330
2026	12629	12338	12873	12396	12183
2027	12416	12078	12617	12184	12019
2028	12163	11788	12333	11938	11817
2029	11901	11490	12042	11683	11605
2030	11640	11179	11738	11407	11377
2031	11346	10883	11421	11139	11110
2032	11050	10591	11101	10866	10836
2033	10754	10292	10781	10598	10568
2034	10457	9999	10454	10319	10286
2035	10157	9700	10139	10048	10018
2040	8921	7122	9574	9230	9201
2045	8296	5104	9173	8572	8916
2050	8298	4049	8248	8624	8532



Technology Summary: Solar Generation

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

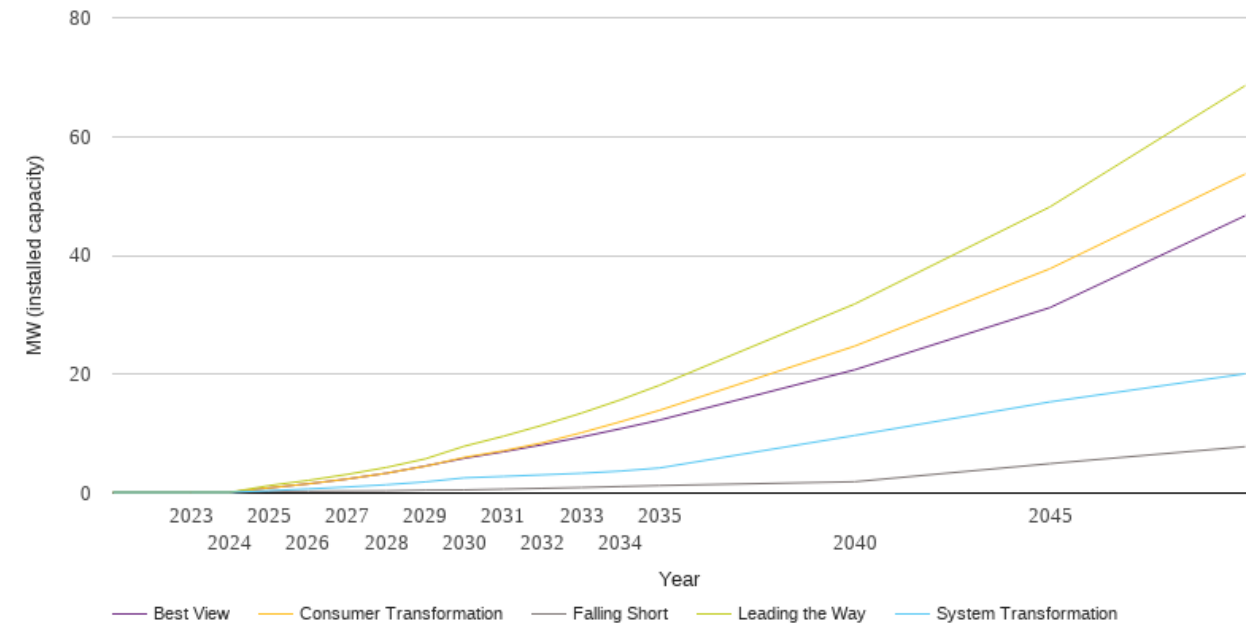
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	38.1	38.1	38.1	38.1	38.1
2023	39.4	40.5	41.7	41.9	41.9
2024	40.8	42.6	45.7	45.9	45.9
2025	42.0	44.9	52.3	52.7	52.7
2026	42.8	47.7	59.0	59.5	59.5
2027	43.8	51.0	65.6	66.6	66.1
2028	45.0	54.7	72.6	74.3	72.7
2029	46.7	59.3	80.4	83.5	79.8
2030	49.4	65.5	89.8	94.0	87.9
2031	53.2	73.6	101.0	107.3	97.4
2032	58.0	82.8	113.3	122.7	108.0
2033	63.1	92.0	125.4	137.7	118.9
2034	69.6	102.6	138.9	153.2	131.3
2035	74.1	110.1	149.8	170.3	141.7
2040	84.4	136.3	193.8	219.5	182.5
2045	96.3	163.9	240.2	268.5	225.7
2050	108.3	194.5	289.7	308.1	269.2



Technology Summary: Storage

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

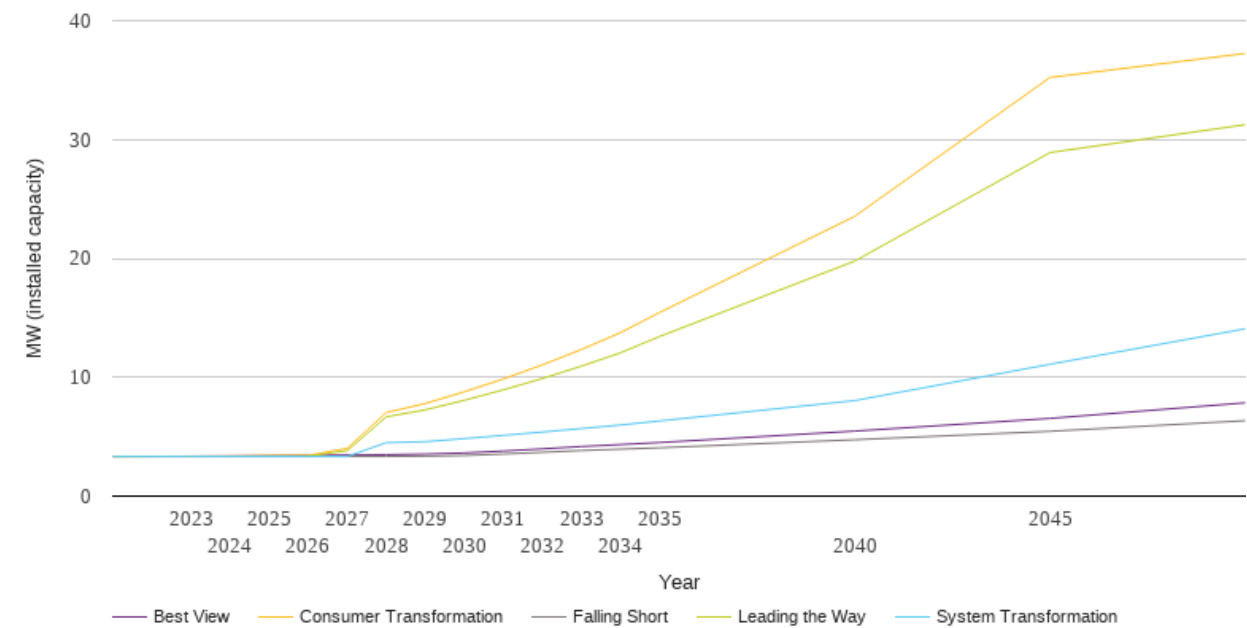
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0.1	0.1	0.1	0.1	0.1
2023	0.1	0.1	0.1	0.1	0.1
2024	0.1	0.1	0.1	0.1	0.1
2025	0.3	0.4	0.9	1.3	0.9
2026	0.3	0.7	1.6	2.1	1.6
2027	0.3	1.0	2.4	3.1	2.4
2028	0.4	1.4	3.3	4.3	3.3
2029	0.5	1.9	4.5	5.8	4.6
2030	0.5	2.6	6.0	7.9	5.9
2031	0.7	2.8	7.1	9.6	6.9
2032	0.8	3.1	8.5	11.4	8.1
2033	0.9	3.3	10.2	13.5	9.4
2034	1.1	3.7	12.0	15.7	10.8
2035	1.3	4.2	13.9	18.1	12.3
2040	1.9	9.7	24.7	31.8	20.8
2045	5.0	15.3	37.8	48.2	31.2
2050	7.8	20.1	53.7	68.6	46.7



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	3.3	3.3	3.3	3.3	3.3
2023	3.3	3.3	3.3	3.3	3.3
2024	3.3	3.3	3.4	3.3	3.4
2025	3.3	3.3	3.4	3.4	3.4
2026	3.3	3.3	3.4	3.4	3.4
2027	3.3	3.3	4.0	3.8	3.5
2028	3.3	4.5	7.0	6.7	3.5
2029	3.4	4.6	7.8	7.3	3.5
2030	3.4	4.8	8.8	8.1	3.6
2031	3.5	5.1	9.9	8.9	3.8
2032	3.7	5.4	11.0	9.9	4.0
2033	3.8	5.7	12.3	10.9	4.2
2034	3.9	6.0	13.7	12.1	4.3
2035	4.1	6.3	15.4	13.4	4.5
2040	4.7	8.0	23.5	19.8	5.5
2045	5.5	11.1	35.2	28.9	6.5
2050	6.3	14.1	37.2	31.2	7.8



National Grid Electricity Distribution PLC 09223384)
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