

Distribution Future Energy Scenarios 2022

Local Authority:
Erewash

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 Erewash 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 Erewash 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	315	1108	893	893	315	3118 9	1550 5	1550 5	315
Domestic	New dwellings	0	1599	1784	1784	2169	4169	4143	4143	4120
Electric vehicles	Electric vehicles	1845	1155 6	1457 3	2672 2	2665 3	8239 5	7281 9	7271 3	6102 7
EV Charge Point	EV charge points	915	5211	7817	1467 6	1616 0	4571 0	4560 3	4821 8	4782 6
Heat pumps	Heat pump installations	691	2739	2268	8294	1344 1	2681 9	3107 6	5378 1	4746 6
Hydrogen electrolysis	MW (installed capacity)	0.0	0.0	0.0	0.0	0.0	0.1	0.5	0.1	1.1
Non domestic	Floorspace (metres squared) of new I&C developments	0	2790 0	3525 8	3525 8	3915 3	8625 3	8625 3	8625 3	8625 3
Other Distributed Generation	MW (installed capacity)	14.9	15.0	15.0	15.0	15.0	15.0	15.0	0.8	22.1
Resistive electric heating	Resistive electric heating units	6000	5104	4878	5136	4957	3728	1692	3596	3730
Solar Generation	MW (installed capacity)	8.4	12.7	19.0	28.7	28.0	34.7	71.1	113. 6	114. 5
Storage	MW (installed capacity)	0.0	0.2	1.0	2.4	3.0	3.8	9.7	24.5	31.4
Wind	MW (installed capacity)	0.0	0.1	0.1	0.6	0.5	0.9	2.5	7.7	6.1

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.

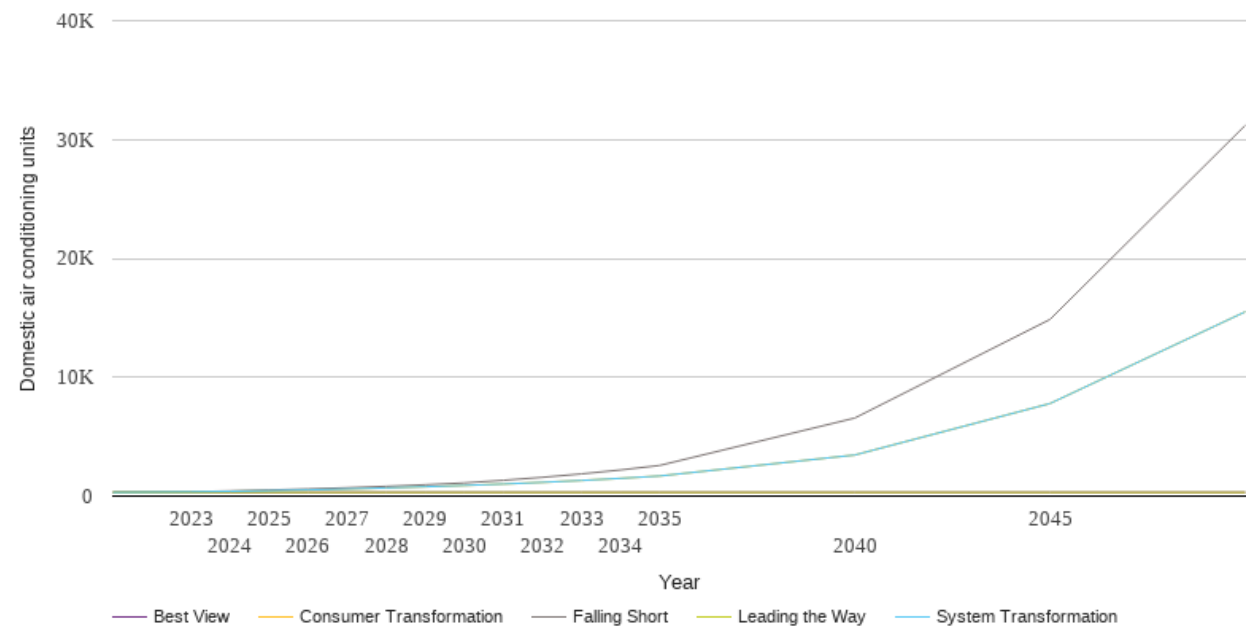
If you have any comments or queries regarding these reports, please contact

nged.energyplanning@nationalgrid.co.uk.

Technology Summary: Air conditioning

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

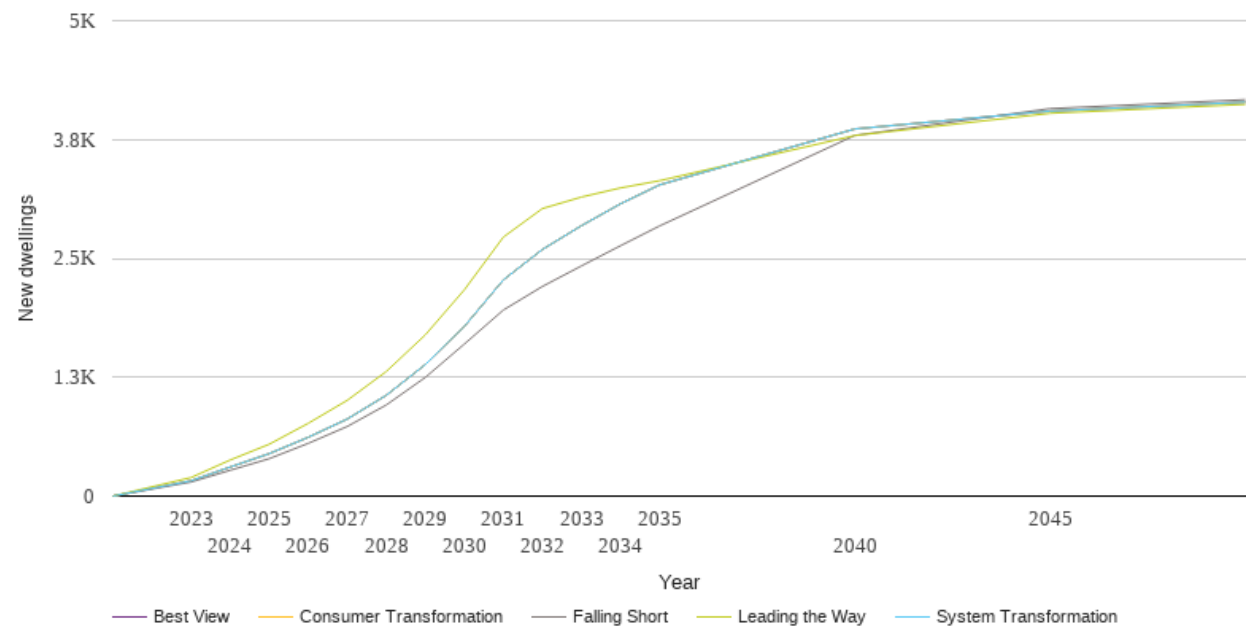
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	315	315	315	315	315
2023	363	357	357	315	315
2024	430	401	401	315	315
2025	509	452	452	315	315
2026	599	520	520	315	315
2027	702	597	597	315	315
2028	819	685	685	315	315
2029	955	784	784	315	315
2030	1108	893	893	315	315
2031	1328	1017	1017	315	315
2032	1579	1157	1157	315	315
2033	1867	1314	1314	315	315
2034	2198	1492	1492	315	315
2035	2577	1689	1689	315	315
2040	6567	3457	3457	315	315
2045	14864	7787	7787	315	315
2050	31189	15505	15505	315	315



Technology Summary: Domestic

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

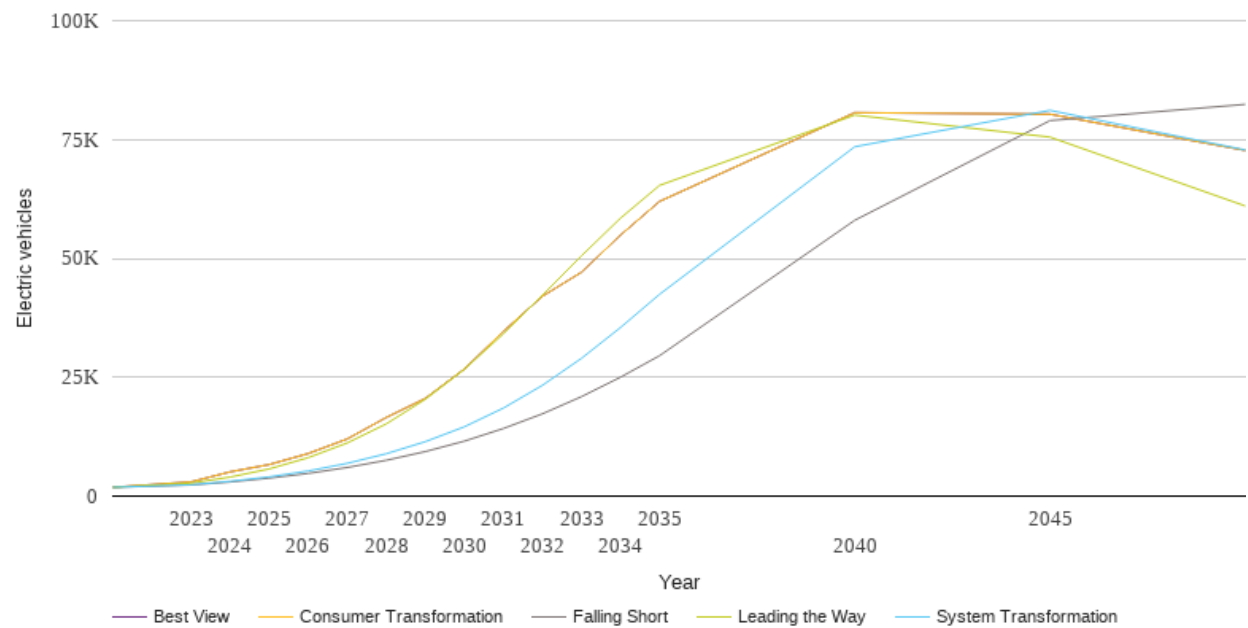
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	148	161	161	195	161
2024	271	305	305	379	305
2025	393	446	446	545	446
2026	554	618	618	765	618
2027	732	810	810	1007	810
2028	958	1060	1060	1310	1060
2029	1248	1383	1383	1695	1383
2030	1599	1784	1784	2169	1784
2031	1957	2274	2274	2724	2274
2032	2205	2594	2594	3024	2594
2033	2421	2844	2844	3145	2844
2034	2633	3074	3074	3241	3074
2035	2841	3273	3273	3317	3273
2040	3793	3861	3861	3792	3861
2045	4075	4049	4049	4026	4049
2050	4169	4143	4143	4120	4143



Technology Summary: Electric vehicles

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

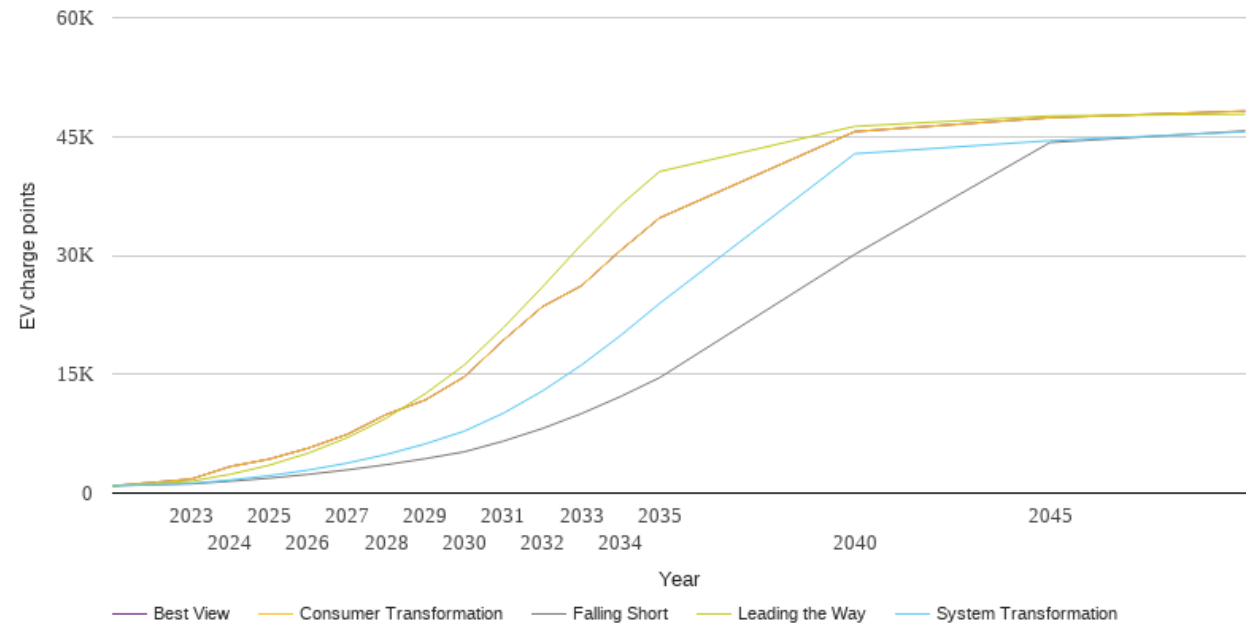
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	1845	1845	1845	1845	1845
2023	2337	2379	2988	2724	2988
2024	2973	3105	5094	3995	5094
2025	3768	4038	6627	5711	6627
2026	4769	5283	8942	8075	8942
2027	6015	6884	12017	11175	12017
2028	7529	8909	16534	15183	16534
2029	9363	11445	20544	20364	20544
2030	11556	14573	26722	26653	26722
2031	14217	18513	34660	34138	34660
2032	17307	23301	42033	42252	42033
2033	20918	28973	47088	50543	47088
2034	25007	35453	54895	58457	54895
2035	29528	42441	61986	65355	61986
2040	58013	73482	80652	80146	80652
2045	78983	81137	80333	75513	80333
2050	82395	72819	72713	61027	72713



Technology Summary: EV Charge Point

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

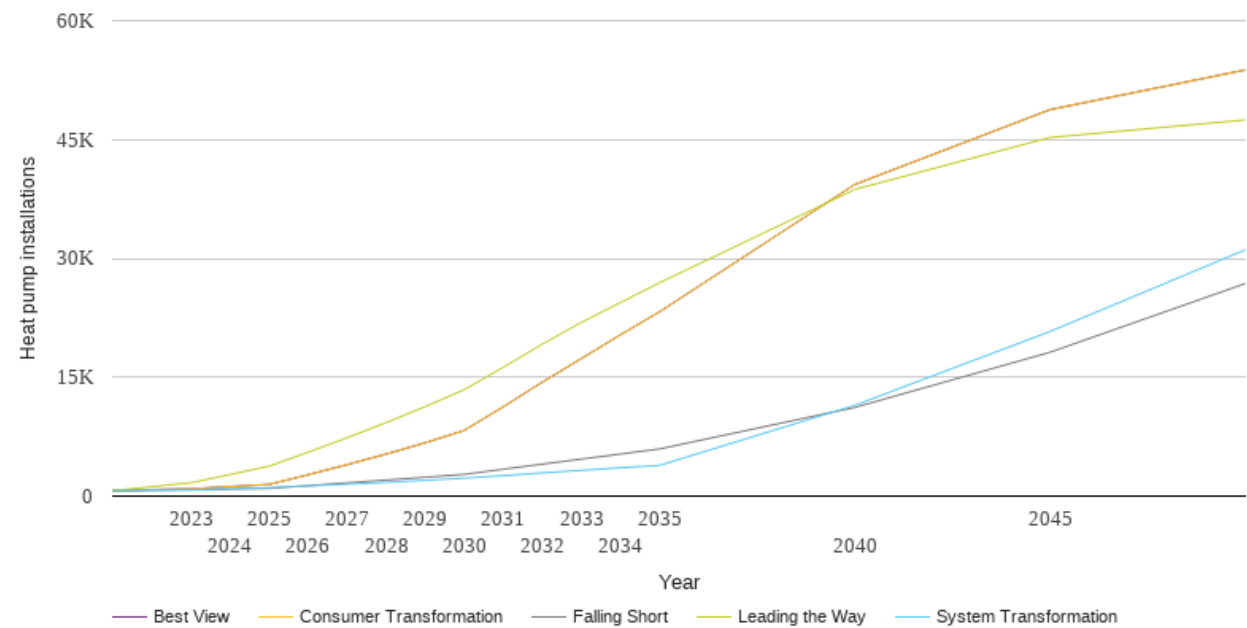
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	915	915	915	915	915
2023	1168	1225	1766	1499	1766
2024	1490	1651	3346	2361	3346
2025	1885	2201	4292	3513	4292
2026	2363	2900	5667	5034	5667
2027	2927	3782	7410	6984	7410
2028	3584	4875	9926	9444	9926
2029	4345	6210	11749	12545	11749
2030	5211	7817	14676	16160	14676
2031	6559	10078	19290	20869	19290
2032	8152	12877	23525	26005	23525
2033	10033	16158	26166	31365	26166
2034	12182	19876	30623	36333	30623
2035	14561	23926	34723	40576	34723
2040	30125	42828	45622	46285	45622
2045	44250	44477	47380	47600	47380
2050	45710	45603	48218	47826	48218



Technology Summary: Heat pumps

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

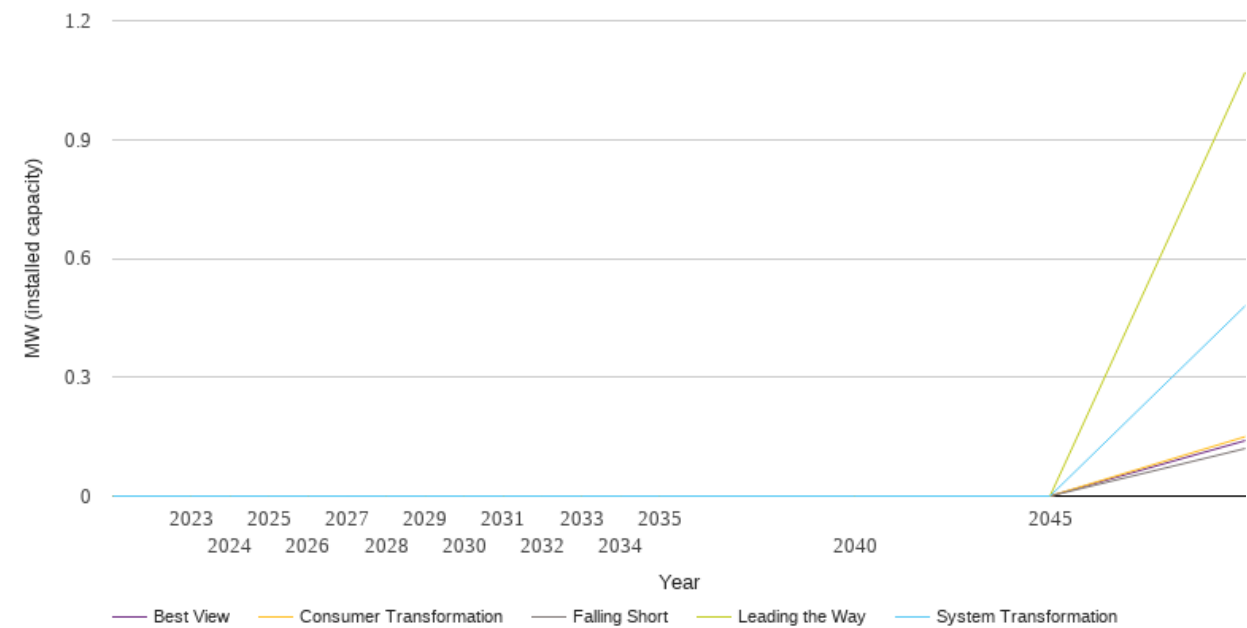
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	691	691	691	691	691
2023	780	792	925	1685	925
2024	881	927	1193	2721	1193
2025	978	1072	1471	3774	1471
2026	1318	1281	2696	5537	2696
2027	1669	1504	3972	7373	3972
2028	2019	1733	5304	9283	5304
2029	2379	1989	6737	11294	6737
2030	2739	2268	8294	13441	8294
2031	3393	2580	11277	16253	11277
2032	4035	2932	14391	19181	14391
2033	4669	3251	17366	21923	17366
2034	5311	3575	20357	24426	20357
2035	5950	3875	23255	26925	23255
2040	11188	11453	39333	38703	39333
2045	18147	20766	48768	45260	48768
2050	26819	31076	53781	47466	53781



Technology Summary: Hydrogen electrolysis

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

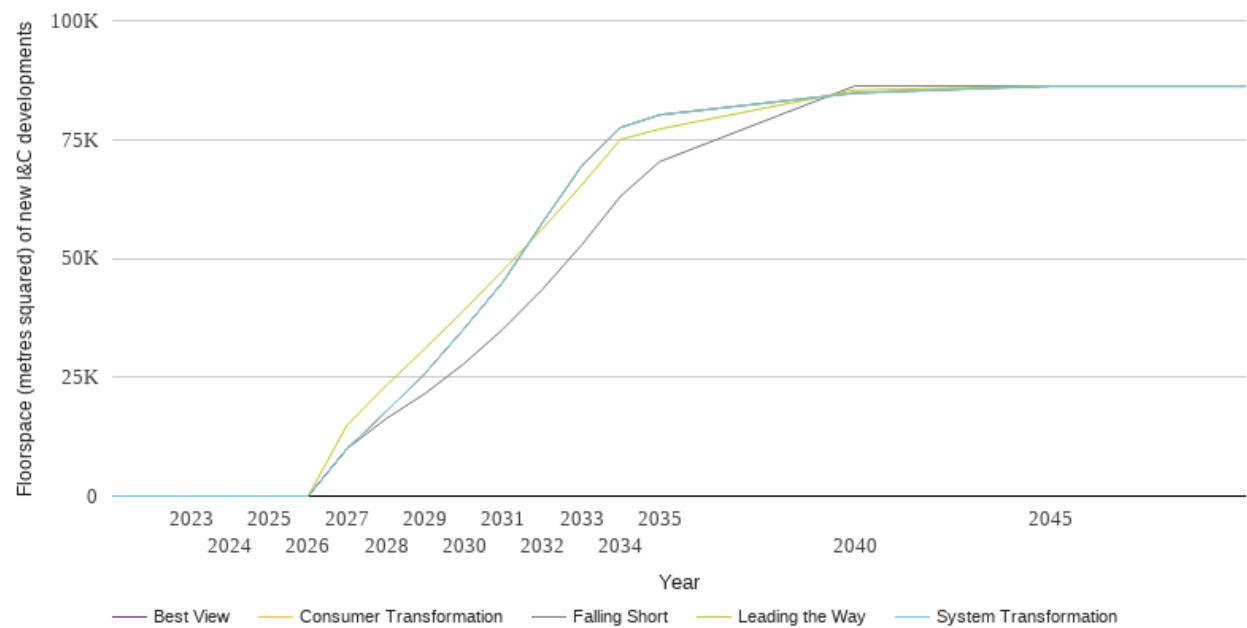
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.0	0.0	0.0	0.0
2026	0.0	0.0	0.0	0.0	0.0
2027	0.0	0.0	0.0	0.0	0.0
2028	0.0	0.0	0.0	0.0	0.0
2029	0.0	0.0	0.0	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	1.1	0.1



Technology Summary: Non domestic

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

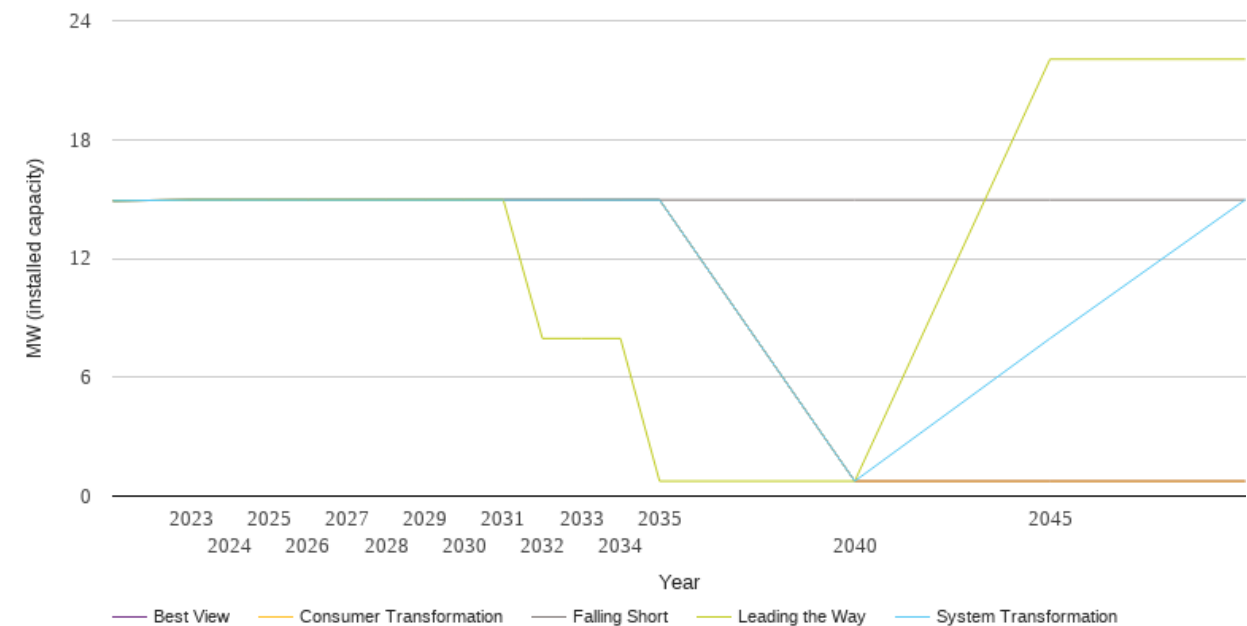
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	0	0	0	0	0
2024	0	0	0	0	0
2025	0	0	0	0	0
2026	0	0	0	0	0
2027	9991	9991	9991	14986	9991
2028	16292	17783	17783	23274	17783
2029	21599	25875	25875	31064	25875
2030	27900	35258	35258	39153	35258
2031	35196	45139	45139	47540	45139
2032	43486	57506	57506	56225	57506
2033	52770	69375	69375	65373	69375
2034	63049	77516	77516	75018	77516
2035	70344	80188	80188	77205	80188
2040	86253	84762	84762	85359	84762
2045	86253	86253	86253	86253	86253
2050	86253	86253	86253	86253	86253



Technology Summary: Other Distributed Generation

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

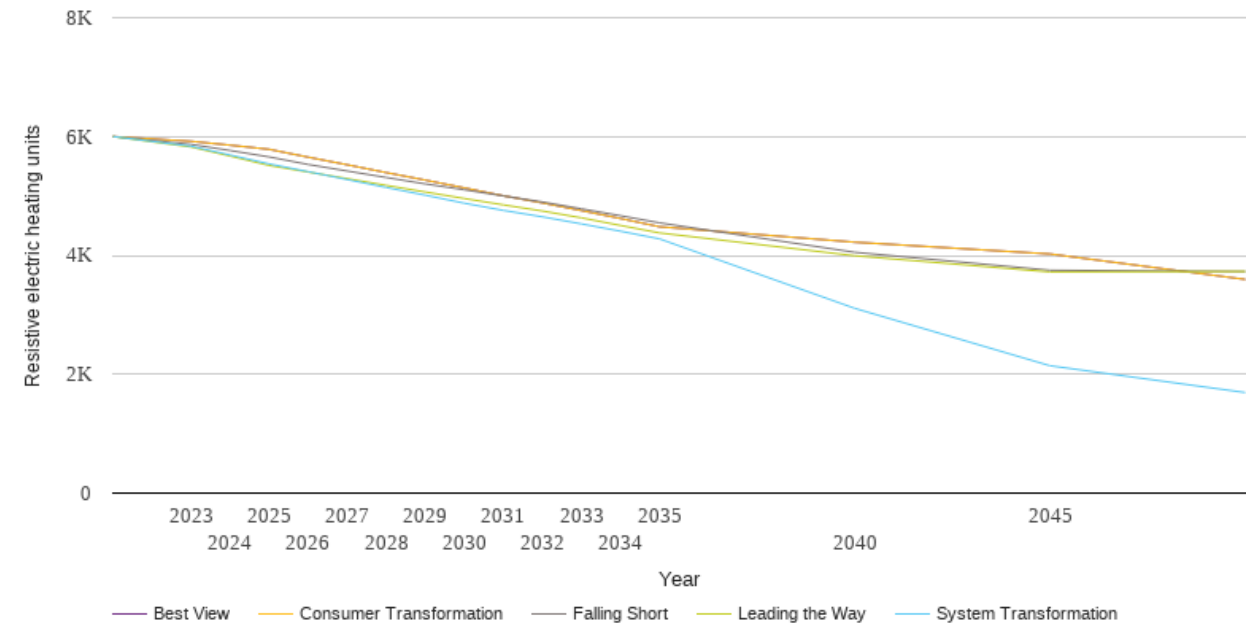
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	14.9	14.9	14.9	14.9	14.9
2023	15.0	15.0	15.0	15.0	15.0
2024	15.0	15.0	15.0	15.0	15.0
2025	15.0	15.0	15.0	15.0	15.0
2026	15.0	15.0	15.0	15.0	15.0
2027	15.0	15.0	15.0	15.0	15.0
2028	15.0	15.0	15.0	15.0	15.0
2029	15.0	15.0	15.0	15.0	15.0
2030	15.0	15.0	15.0	15.0	15.0
2031	15.0	15.0	15.0	15.0	15.0
2032	15.0	15.0	15.0	8.0	15.0
2033	15.0	15.0	15.0	8.0	15.0
2034	15.0	15.0	15.0	8.0	15.0
2035	15.0	15.0	15.0	0.8	15.0
2040	15.0	0.8	0.8	0.8	0.8
2045	15.0	8.0	0.8	22.1	0.8
2050	15.0	15.0	0.8	22.1	0.8



Technology Summary: Resistive electric heating

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

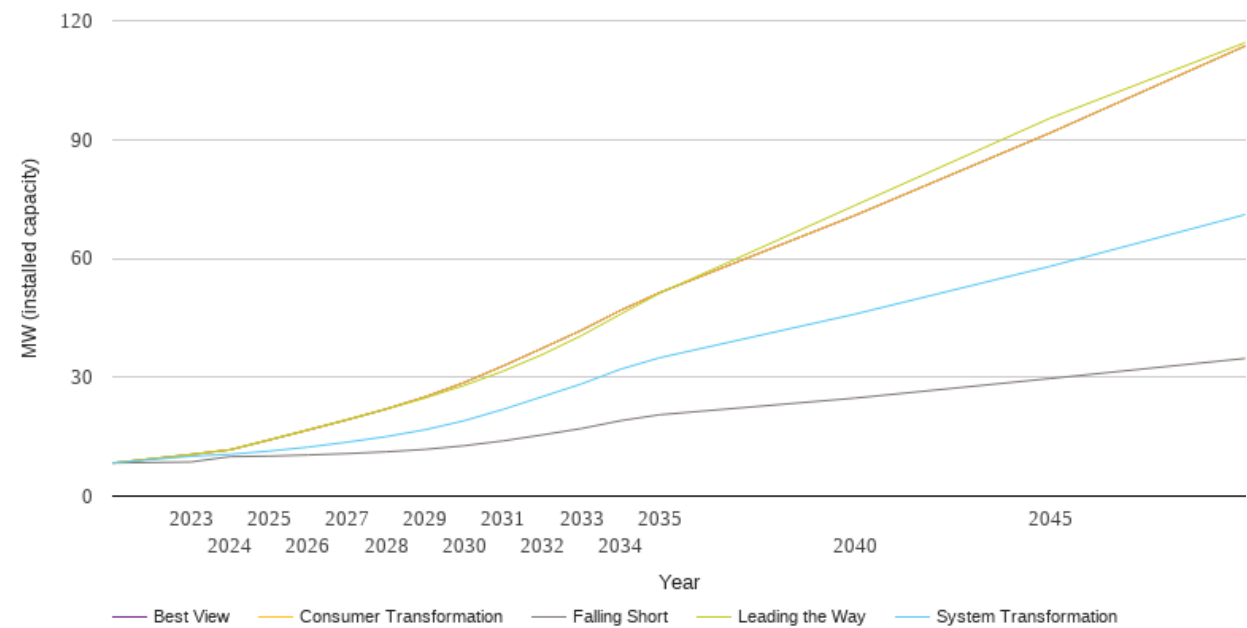
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	6000	6000	6000	6000	6000
2023	5868	5837	5920	5824	5920
2024	5765	5690	5855	5671	5855
2025	5657	5540	5785	5513	5785
2026	5530	5409	5653	5403	5653
2027	5420	5276	5525	5292	5525
2028	5311	5143	5393	5178	5393
2029	5203	5013	5267	5067	5267
2030	5104	4878	5136	4957	5136
2031	5001	4757	5003	4850	5003
2032	4899	4649	4883	4747	4883
2033	4784	4530	4754	4632	4754
2034	4668	4407	4621	4504	4621
2035	4548	4278	4482	4378	4482
2040	4052	3109	4222	3994	4222
2045	3750	2143	4024	3721	4024
2050	3728	1692	3596	3730	3596



Technology Summary: Solar Generation

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

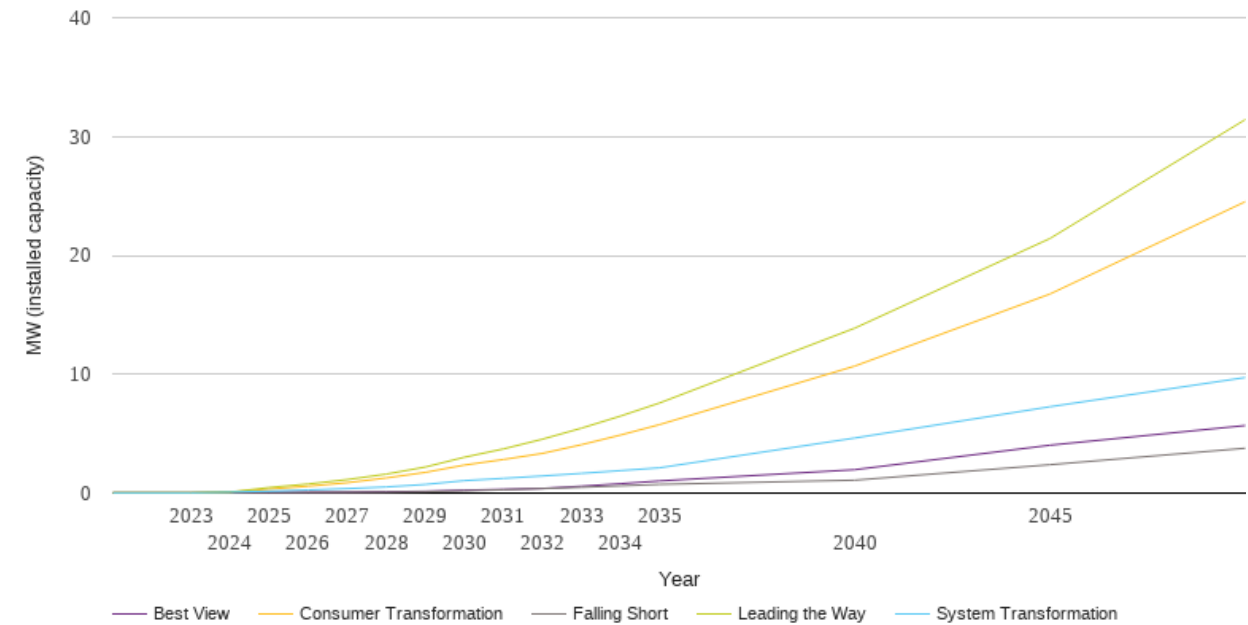
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	8.4	8.4	8.4	8.4	8.4
2023	8.6	10.1	10.5	10.5	10.5
2024	10.0	10.5	11.7	11.7	11.7
2025	10.1	11.4	14.2	14.2	14.2
2026	10.4	12.4	16.7	16.8	16.7
2027	10.7	13.6	19.3	19.3	19.3
2028	11.2	15.0	22.0	21.9	22.0
2029	11.8	16.8	25.1	24.8	25.1
2030	12.7	19.0	28.7	28.0	28.7
2031	13.9	21.9	32.9	31.6	32.9
2032	15.5	25.1	37.3	35.7	37.3
2033	17.1	28.3	41.9	40.5	41.9
2034	19.0	32.0	46.9	45.9	46.9
2035	20.5	34.9	51.3	51.2	51.3
2040	24.7	45.9	70.8	73.3	70.8
2045	29.7	58.0	91.7	95.4	91.7
2050	34.7	71.1	113.6	114.5	113.6



Technology Summary: Storage

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

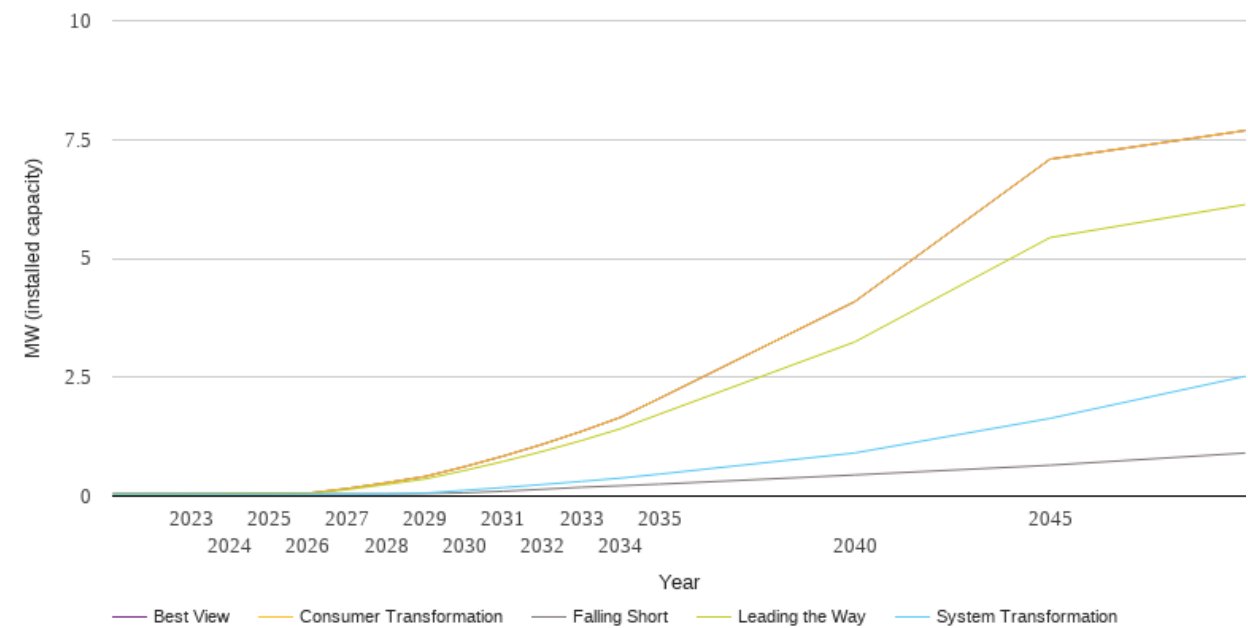
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.1	0.1	0.1	0.0
2025	0.0	0.2	0.3	0.5	0.1
2026	0.1	0.3	0.6	0.8	0.1
2027	0.1	0.4	0.9	1.1	0.1
2028	0.1	0.5	1.3	1.6	0.1
2029	0.1	0.7	1.7	2.2	0.1
2030	0.2	1.0	2.4	3.0	0.2
2031	0.3	1.2	2.8	3.7	0.3
2032	0.4	1.4	3.3	4.5	0.4
2033	0.5	1.7	4.1	5.5	0.6
2034	0.6	1.9	4.9	6.5	0.8
2035	0.7	2.1	5.8	7.6	1.0
2040	1.1	4.6	10.7	13.9	2.0
2045	2.4	7.3	16.8	21.4	4.0
2050	3.8	9.7	24.5	31.4	5.7



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	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	0.1	0.0	0.1
2025	0.0	0.0	0.1	0.0	0.1
2026	0.0	0.0	0.1	0.0	0.1
2027	0.0	0.0	0.2	0.1	0.2
2028	0.0	0.0	0.3	0.2	0.3
2029	0.1	0.1	0.4	0.4	0.4
2030	0.1	0.1	0.6	0.5	0.6
2031	0.1	0.2	0.8	0.7	0.8
2032	0.1	0.2	1.1	0.9	1.1
2033	0.2	0.3	1.4	1.2	1.4
2034	0.2	0.4	1.7	1.4	1.7
2035	0.3	0.5	2.1	1.7	2.1
2040	0.4	0.9	4.1	3.2	4.1
2045	0.6	1.6	7.1	5.4	7.1
2050	0.9	2.5	7.7	6.1	7.7



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