

# Distribution Future Energy Scenarios 2022

Local Authority:  
Shropshire

## What are Distribution Future Energy Scenarios?

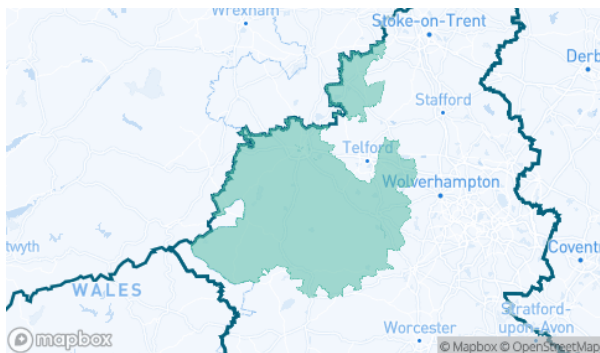
National Grid run Distribution Future Energy Scenarios (DFES) on an annual cycle for all licence areas, and represent a range of credible future scenarios of what could connect to the distribution network.

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 Shropshire covered by the NGED licence areas.



## Scenario Summary

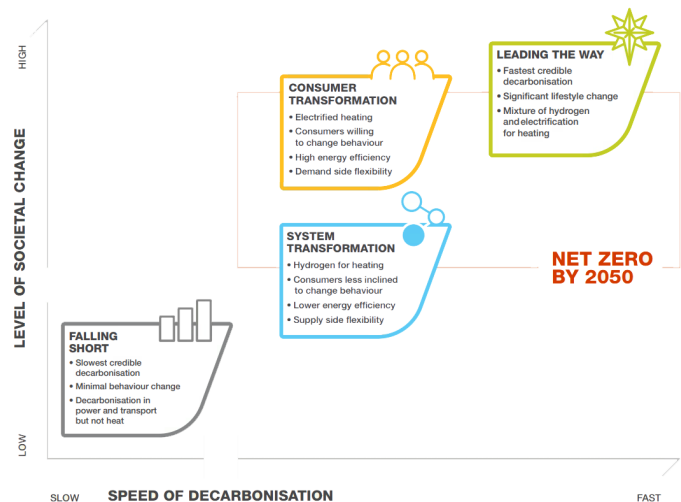
This DFES scenario framework includes three scenarios that are compliant with UK government targets of Net Zero greenhouse gas emissions by 2050. A summary of each scenario is below:

**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 Shropshire 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	172	481	416	416	172	41648	18705	18705	172
Domestic	New dwellings	0	5343	5844	5844	6886	10442	10327	10327	10250
Electric vehicles	Electric vehicles	2759	22756	27864	51783	51432	155966	131027	131364	112371
EV Charge Point	EV charge points	1402	10334	14960	28273	31124	88162	84084	87829	88998
Heat pumps	Heat pump installations	2143	12352	13224	23192	33114	61495	69293	109271	100150
Hydrogen electrolysis	MW (installed capacity)	0.0	0.5	15.3	2.4	1.8	9.2	26.9	11.2	11.8
Non domestic	Floorspace (metres squared) of new I&C developments	0	40062	49953	49953	53523	93831	93741	93741	93831
Other Distributed Generation	MW (installed capacity)	69.8	70.0	69.8	74.7	69.1	67.6	77.1	68.3	82.3
Resistive electric heating	Resistive electric heating units	20489	16847	16331	17333	16570	11099	4741	11314	11932
Solar Generation	MW (installed capacity)	52.0	64.4	79.2	98.8	91.5	138.5	228.6	308.3	293.9
Storage	MW (installed capacity)	0.0	0.9	2.6	5.1	7.7	9.0	22.2	49.6	62.5
Wind	MW (installed capacity)	1.6	1.6	1.7	3.3	2.7	2.6	5.6	16.4	13.5

## 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.

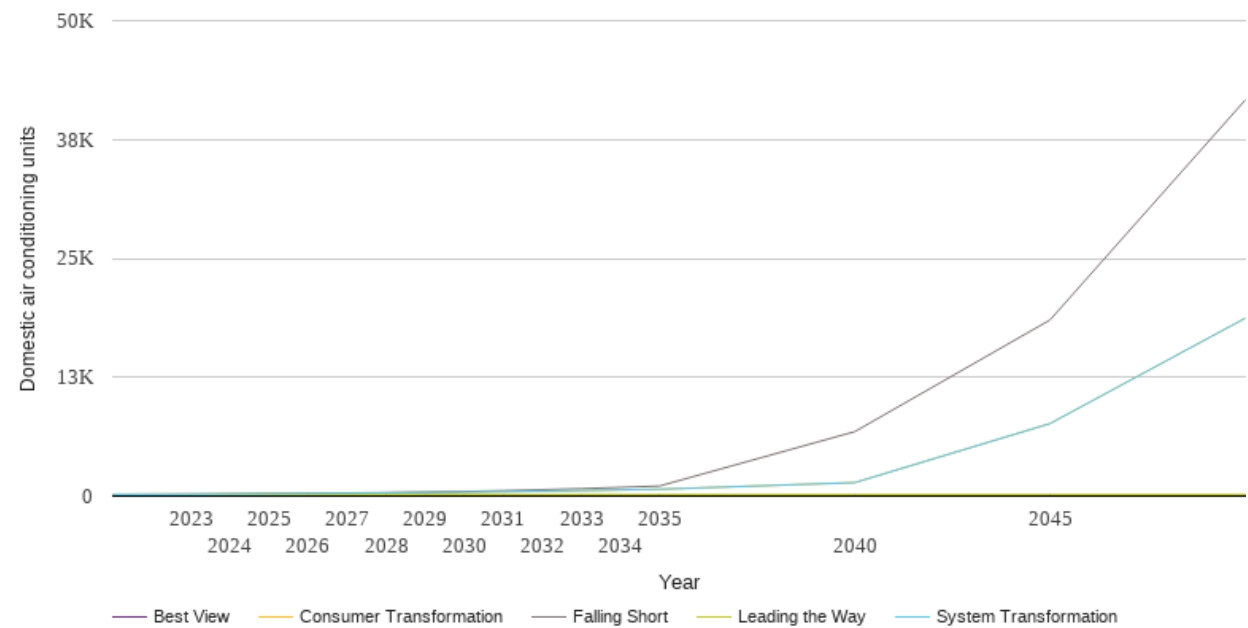
If you have any comments or queries regarding these reports, please contact

[nged.energyplanning@nationalgrid.co.uk](mailto:nged.energyplanning@nationalgrid.co.uk).

# Technology Summary: Air conditioning

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

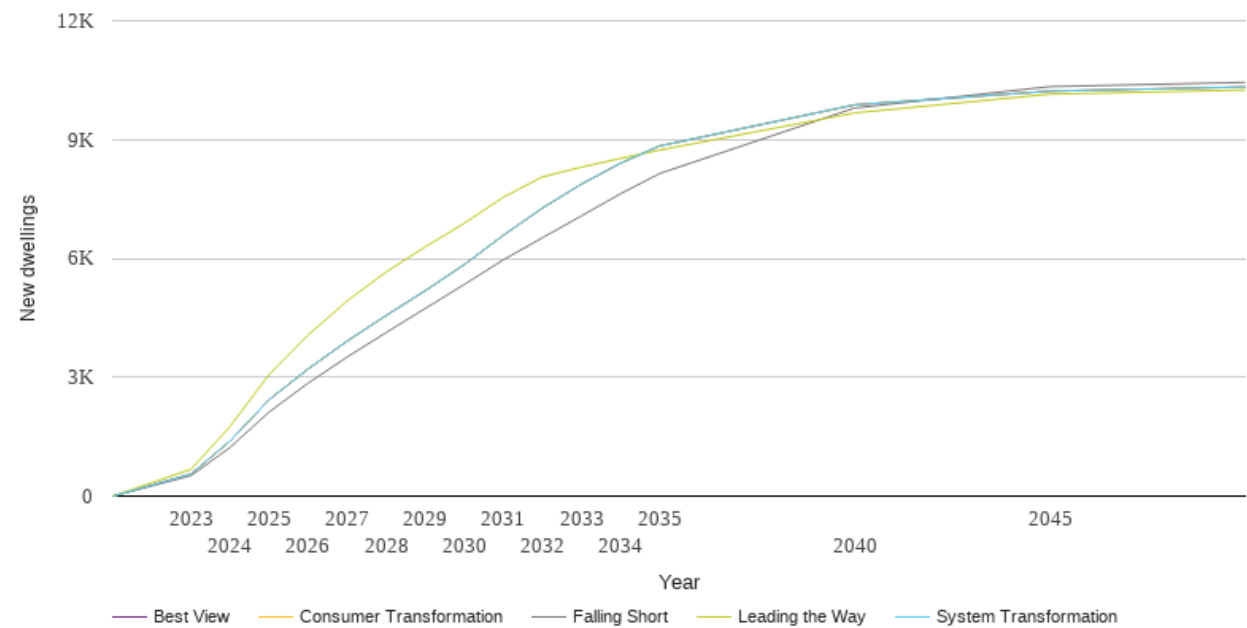
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	172	172	172	172	172
2023	198	195	195	172	172
2024	224	219	219	172	172
2025	254	247	247	172	172
2026	288	273	273	172	172
2027	327	302	302	172	172
2028	371	336	336	172	172
2029	423	374	374	172	172
2030	481	416	416	172	172
2031	568	463	463	172	172
2032	668	516	516	172	172
2033	782	576	576	172	172
2034	913	644	644	172	172
2035	1063	719	719	172	172
2040	6778	1417	1417	172	172
2045	18520	7625	7625	172	172
2050	41648	18705	18705	172	172



# Technology Summary: Domestic

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

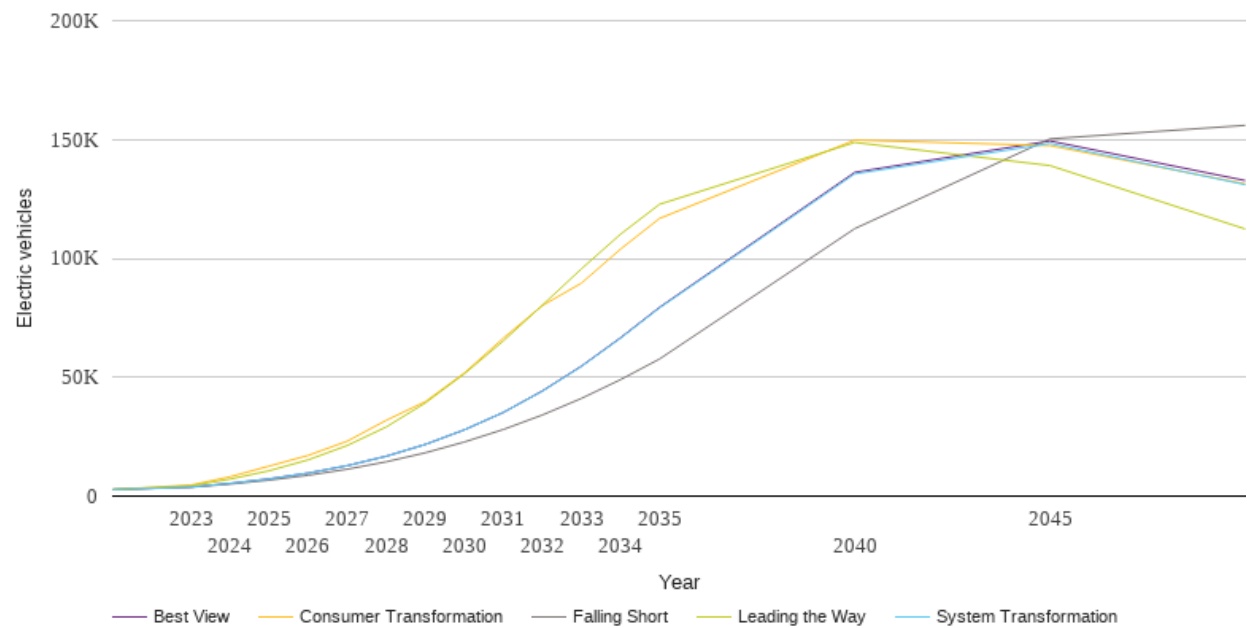
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	517	557	557	678	557
2024	1228	1389	1389	1759	1389
2025	2123	2434	2434	3069	2434
2026	2850	3210	3210	4066	3210
2027	3510	3913	3913	4928	3913
2028	4129	4559	4559	5660	4559
2029	4736	5184	5184	6292	5184
2030	5343	5844	5844	6886	5844
2031	5964	6585	6585	7544	6585
2032	6520	7270	7270	8058	7270
2033	7073	7876	7876	8304	7876
2034	7632	8402	8402	8525	8402
2035	8141	8837	8837	8732	8837
2040	9796	9876	9876	9672	9876
2045	10336	10221	10221	10144	10221
2050	10442	10327	10327	10250	10327



# Technology Summary: Electric vehicles

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

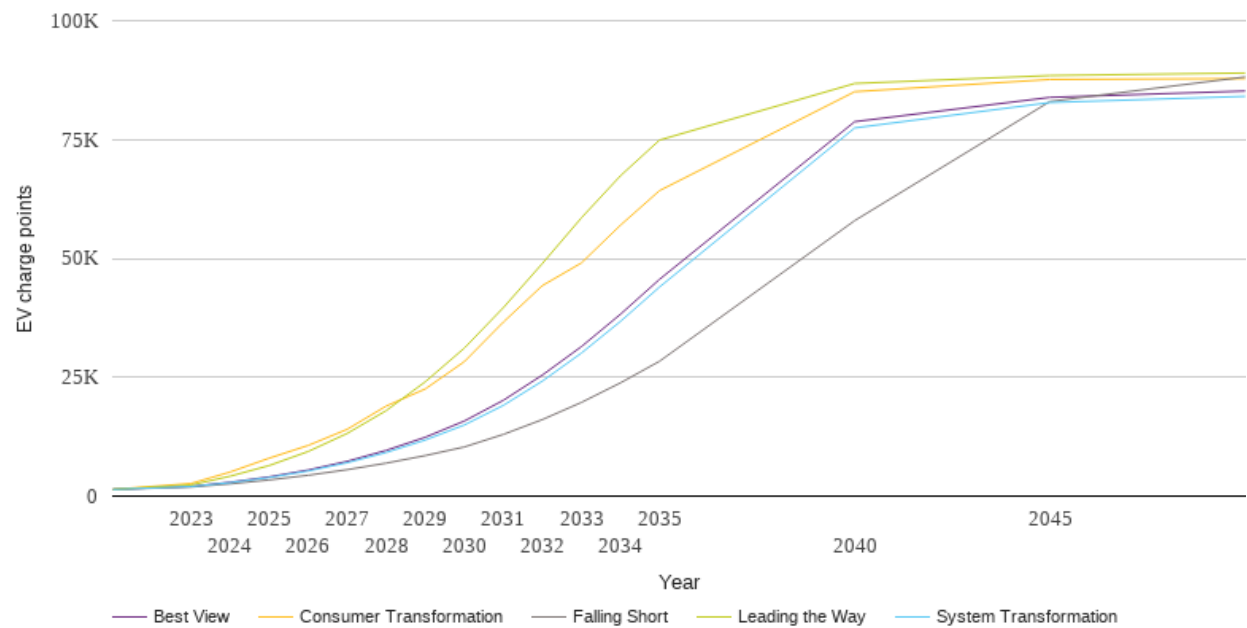
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	2759	2759	2759	2759	2759
2023	3759	3846	4634	4342	3846
2024	5056	5321	8126	7157	5321
2025	6706	7232	12606	10656	7232
2026	8755	9661	17116	15246	9661
2027	11310	12795	23092	21278	12795
2028	14424	16764	31888	29080	16765
2029	18215	21730	39722	39180	21732
2030	22756	27864	51783	51432	27866
2031	28023	35202	66470	65290	35205
2032	34128	44123	80160	80318	44255
2033	41103	54531	89591	95616	54688
2034	48982	66380	103886	110162	66587
2035	57679	79153	116813	122772	79413
2040	112516	135546	149757	148773	136189
2045	150285	148339	147462	139053	149398
2050	155966	131027	131364	112371	132752



# 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	1402	1402	1402	1402	1402
2023	1912	2002	2650	2342	2025
2024	2572	2836	5058	4176	2906
2025	3396	3901	7971	6419	4036
2026	4380	5279	10651	9379	5483
2027	5556	7019	14049	13181	7314
2028	6934	9176	18947	17984	9616
2029	8523	11798	22542	24047	12377
2030	10334	14960	28273	31124	15791
2031	12977	19085	36604	39642	20154
2032	16098	24192	44282	48936	25463
2033	19708	30093	49052	58541	31450
2034	23820	36748	56984	67381	38257
2035	28367	43984	64258	74889	45595
2040	57949	77444	85064	86794	78762
2045	83008	82786	87639	88457	83871
2050	88162	84084	87829	88998	85205

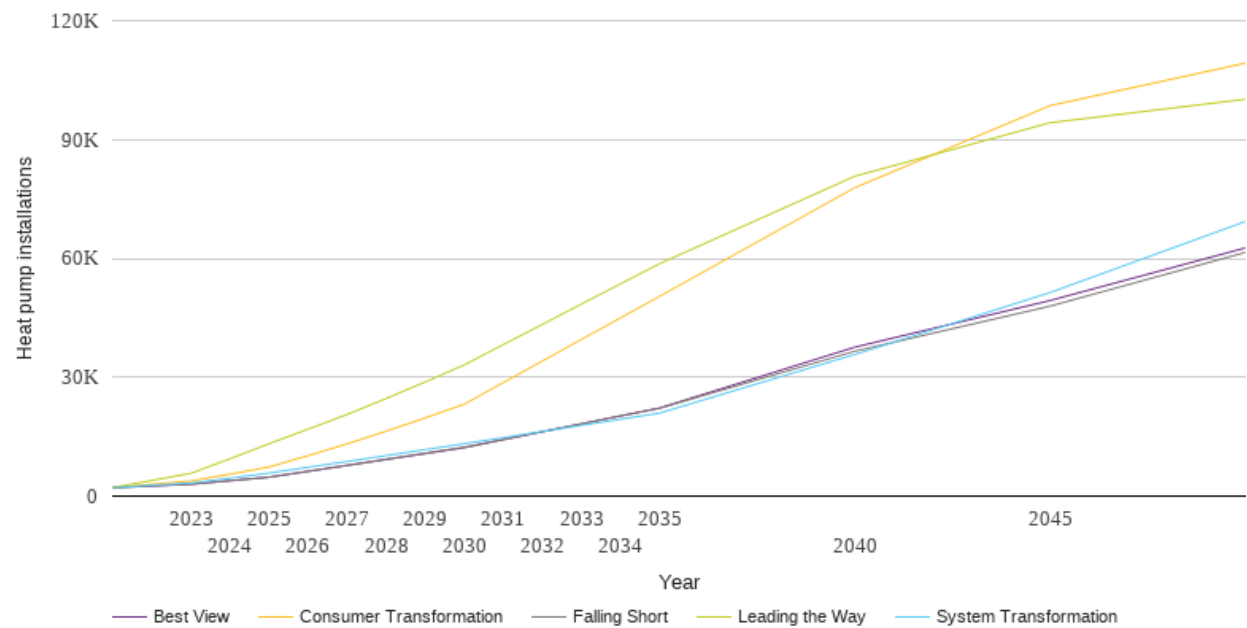




# Technology Summary: Heat pumps

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

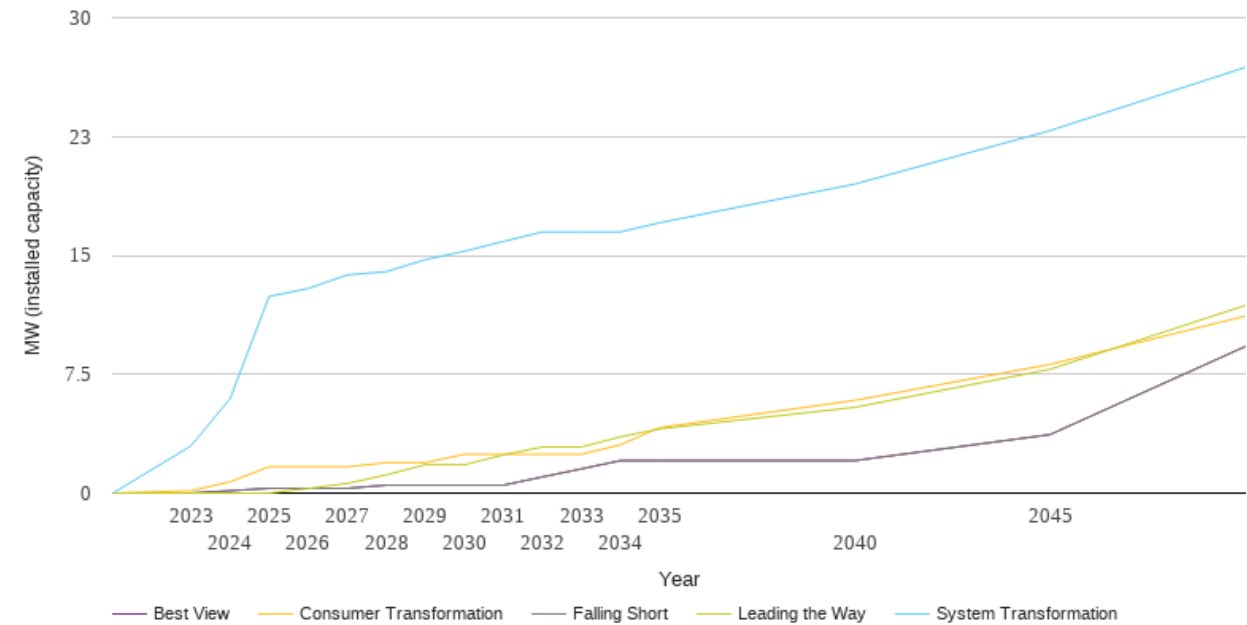
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	2143	2143	2143	2143	2143
2023	3001	3308	3821	5764	3001
2024	3890	4521	5529	9431	3890
2025	4776	5812	7340	13231	4776
2026	6275	7282	10220	16898	6252
2027	7780	8726	13177	20618	7735
2028	9307	10216	16399	24642	9232
2029	10832	11727	19744	28817	10733
2030	12352	13224	23192	33114	12231
2031	14314	14757	28652	38243	14238
2032	16282	16293	34095	43331	16237
2033	18235	17850	39539	48473	18239
2034	20203	19390	44966	53569	20248
2035	22148	20943	50416	58657	22232
2040	36558	35733	77842	80736	37584
2045	47934	51364	98539	94237	49356
2050	61495	69293	109271	100150	62629



# Technology Summary: Hydrogen electrolysis

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

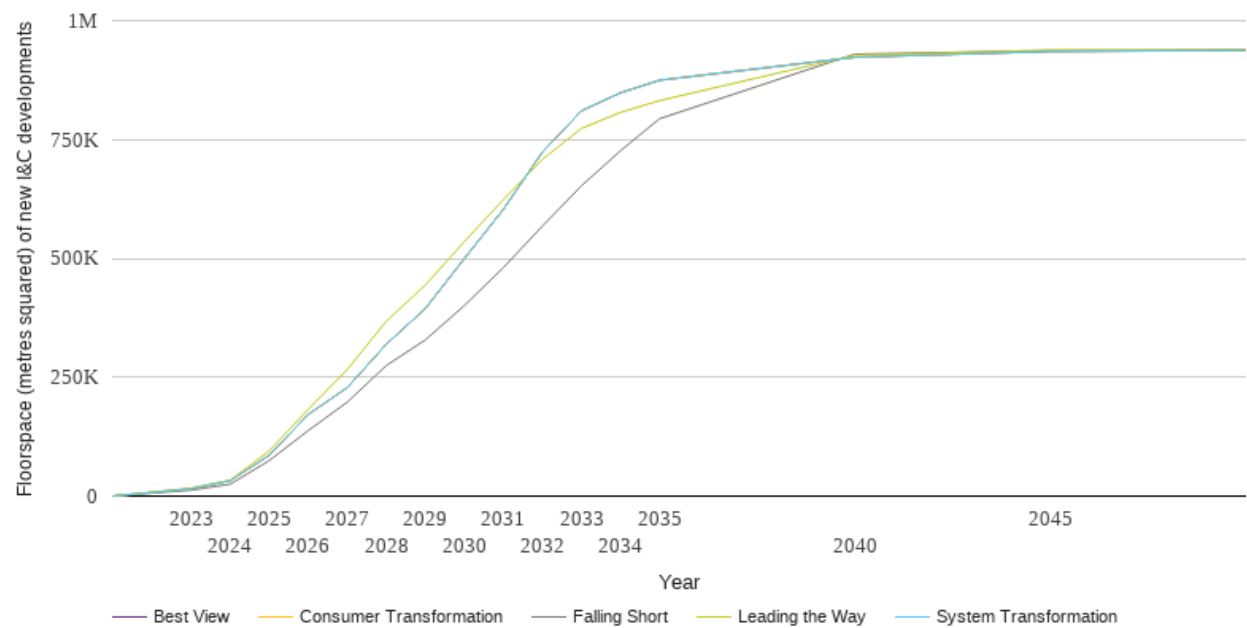
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0.0	0.0	0.0	0.0	0.0
2023	0.0	3.0	0.2	0.0	0.0
2024	0.2	6.0	0.7	0.0	0.2
2025	0.3	12.4	1.7	0.0	0.3
2026	0.3	12.9	1.7	0.3	0.3
2027	0.3	13.8	1.7	0.6	0.3
2028	0.5	14.0	1.9	1.1	0.5
2029	0.5	14.7	1.9	1.8	0.5
2030	0.5	15.3	2.4	1.8	0.5
2031	0.5	15.9	2.4	2.4	0.5
2032	1.0	16.5	2.4	2.9	1.0
2033	1.5	16.5	2.4	2.9	1.5
2034	2.0	16.5	3.1	3.5	2.0
2035	2.0	17.1	4.1	4.0	2.0
2040	2.0	19.5	5.9	5.4	2.0
2045	3.7	22.9	8.1	7.8	3.7
2050	9.2	26.9	11.2	11.8	9.3



# Technology Summary: Non domestic

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

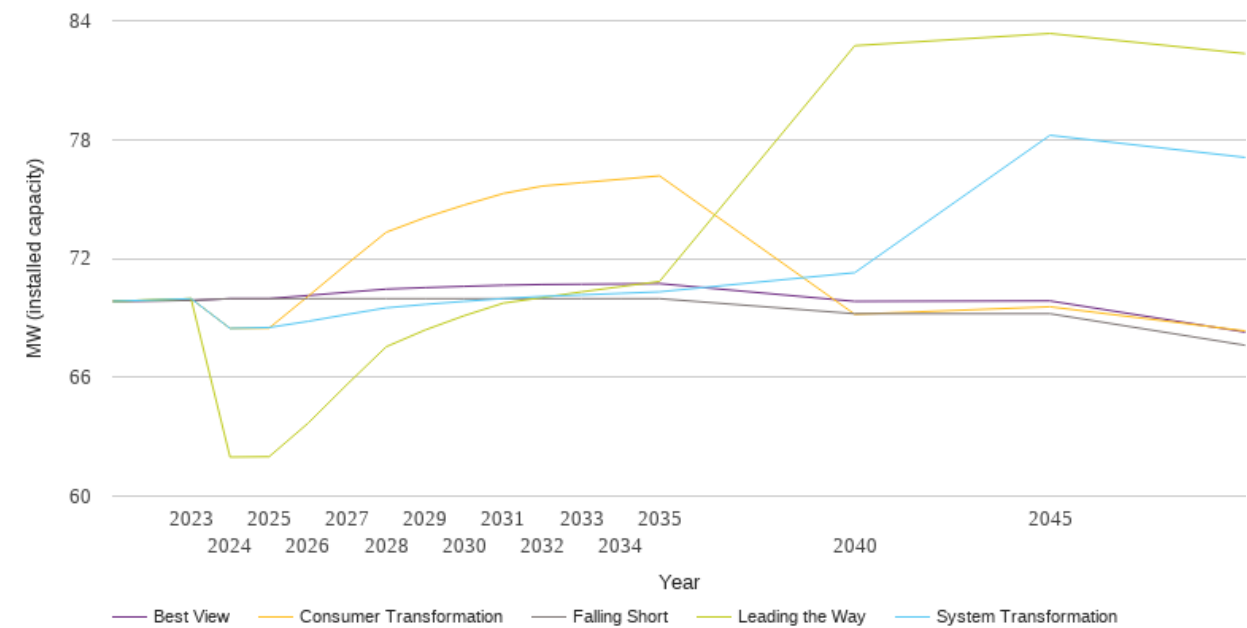
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	12515	15510	15510	16823	15510
2024	24931	32208	32208	33241	32208
2025	74518	85687	85687	94806	85687
2026	137738	171525	171525	182226	171525
2027	197560	228076	228076	265990	228076
2028	274462	319385	319385	367654	319385
2029	328397	394317	394317	443858	394317
2030	400622	499536	499536	535238	499536
2031	480483	603053	603053	623572	603053
2032	567898	723608	723608	708206	723608
2033	652798	810345	810345	773401	810345
2034	726416	848276	848276	807114	848276
2035	793712	874707	874707	831810	874707
2040	929707	922982	922982	927313	922982
2045	936932	935340	935340	938312	935340
2050	938312	937410	937410	938312	937410



# Technology Summary: Other Distributed Generation

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

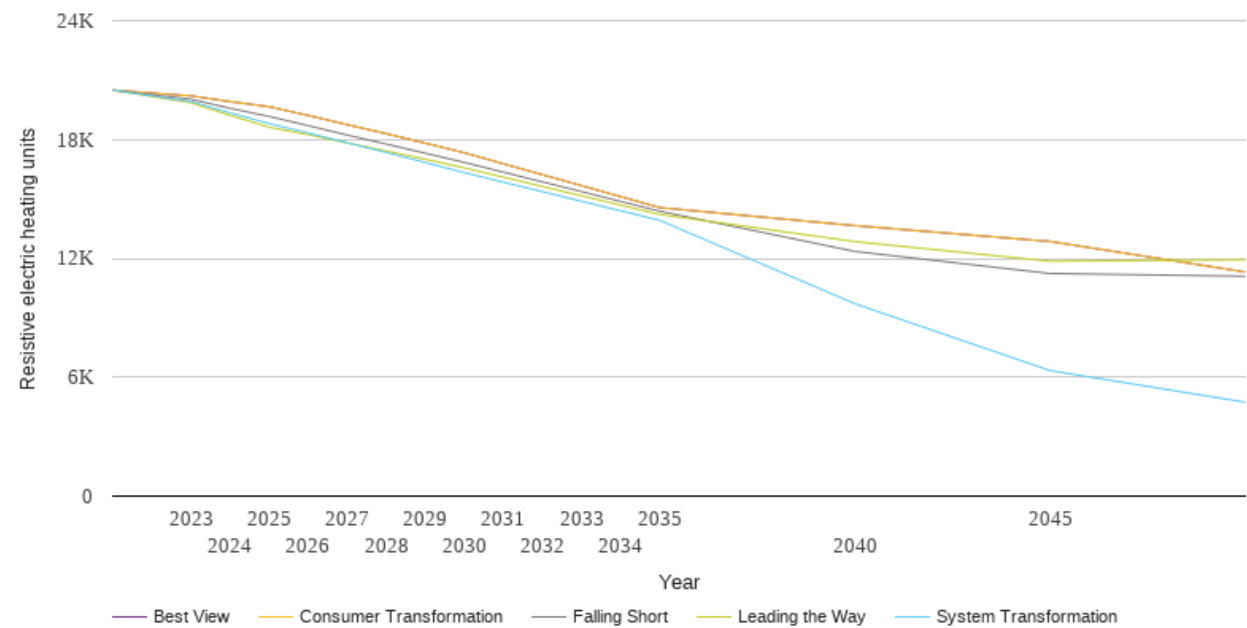
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	69.8	69.8	69.8	69.8	69.8
2023	69.9	70.0	70.0	70.0	69.9
2024	70.0	68.5	68.5	62.0	70.0
2025	70.0	68.5	68.5	62.0	70.0
2026	70.0	68.8	70.1	63.7	70.1
2027	70.0	69.2	71.7	65.6	70.3
2028	70.0	69.5	73.3	67.5	70.5
2029	70.0	69.7	74.1	68.4	70.5
2030	70.0	69.8	74.7	69.1	70.6
2031	70.0	70.0	75.3	69.7	70.6
2032	70.0	70.1	75.7	70.0	70.7
2033	70.0	70.2	75.8	70.3	70.7
2034	70.0	70.2	76.0	70.6	70.7
2035	70.0	70.3	76.2	70.8	70.7
2040	69.2	71.3	69.2	82.7	69.8
2045	69.2	78.2	69.6	83.4	69.9
2050	67.6	77.1	68.3	82.3	68.3



# Technology Summary: Resistive electric heating

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

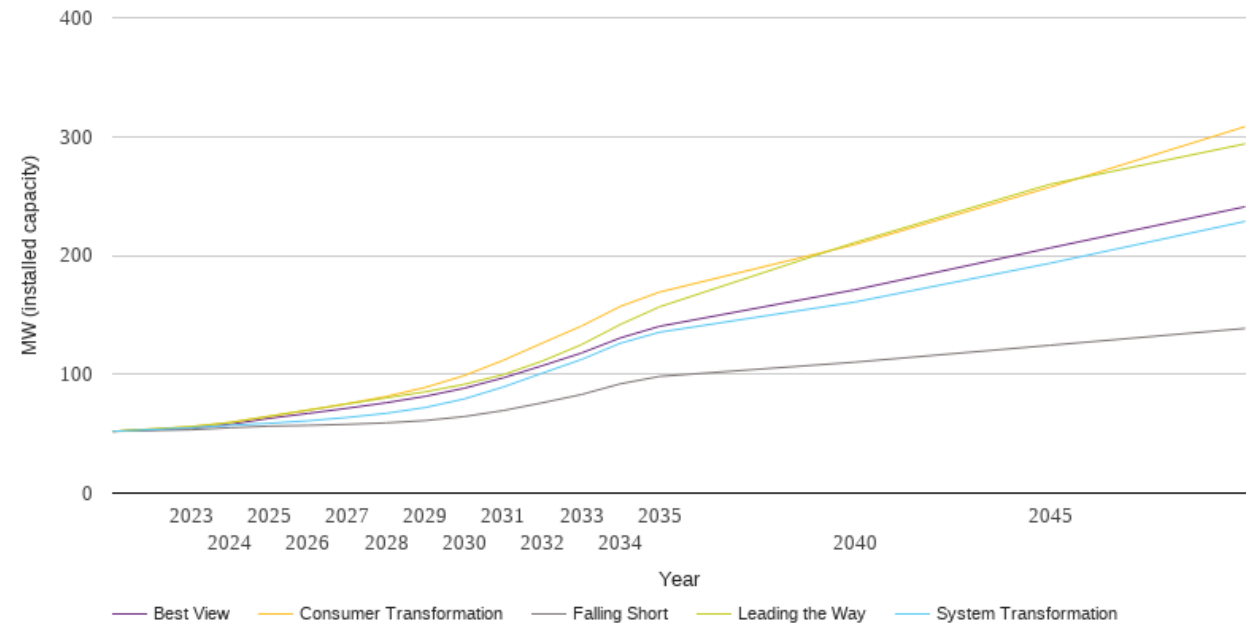
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	20489	20489	20489	20489	20489
2023	20031	19920	20202	19853	20202
2024	19578	19350	19915	19225	19915
2025	19166	18802	19656	18623	19656
2026	18702	18333	19216	18248	19216
2027	18227	17839	18750	17831	18750
2028	17772	17351	18297	17423	18297
2029	17309	16841	17819	17003	17819
2030	16847	16331	17333	16570	17333
2031	16353	15848	16777	16100	16777
2032	15864	15372	16226	15631	16226
2033	15375	14884	15676	15163	15676
2034	14878	14405	15120	14693	15120
2035	14384	13925	14565	14221	14565
2040	12352	9716	13654	12848	13654
2045	11237	6337	12856	11856	12856
2050	11099	4741	11314	11932	11314



# Technology Summary: Solar Generation

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

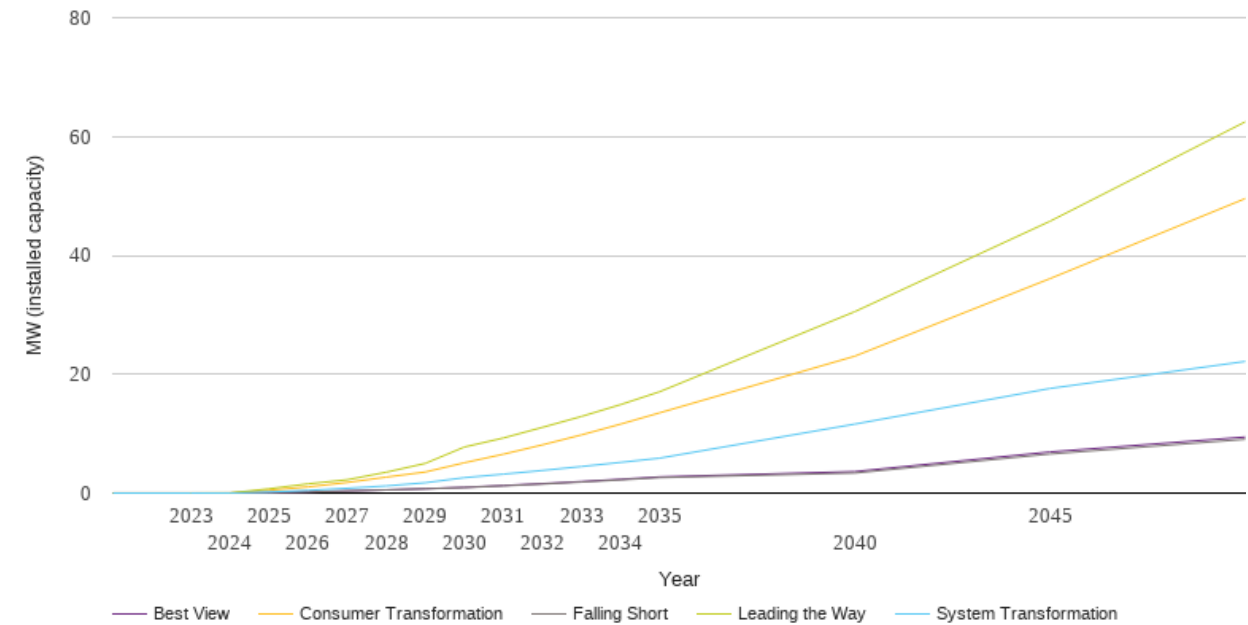
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	52.0	52.0	52.0	52.0	52.0
2023	53.3	54.9	55.8	55.9	54.5
2024	55.0	57.0	59.3	59.4	57.8
2025	56.4	58.7	64.5	64.7	62.9
2026	57.0	60.8	69.7	69.9	67.0
2027	57.8	63.6	75.2	75.1	71.4
2028	59.1	67.1	81.3	80.1	76.0
2029	61.0	72.0	88.9	85.2	81.4
2030	64.4	79.2	98.8	91.5	88.2
2031	69.5	89.3	111.7	99.7	97.0
2032	76.0	100.9	126.2	111.1	107.2
2033	82.9	112.4	140.5	124.9	117.8
2034	92.0	126.1	157.1	141.9	130.6
2035	98.2	135.4	169.1	156.7	140.3
2040	110.1	160.7	209.1	210.8	171.0
2045	124.3	193.4	257.4	259.8	206.2
2050	138.5	228.6	308.3	293.9	240.9



# Technology Summary: Storage

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

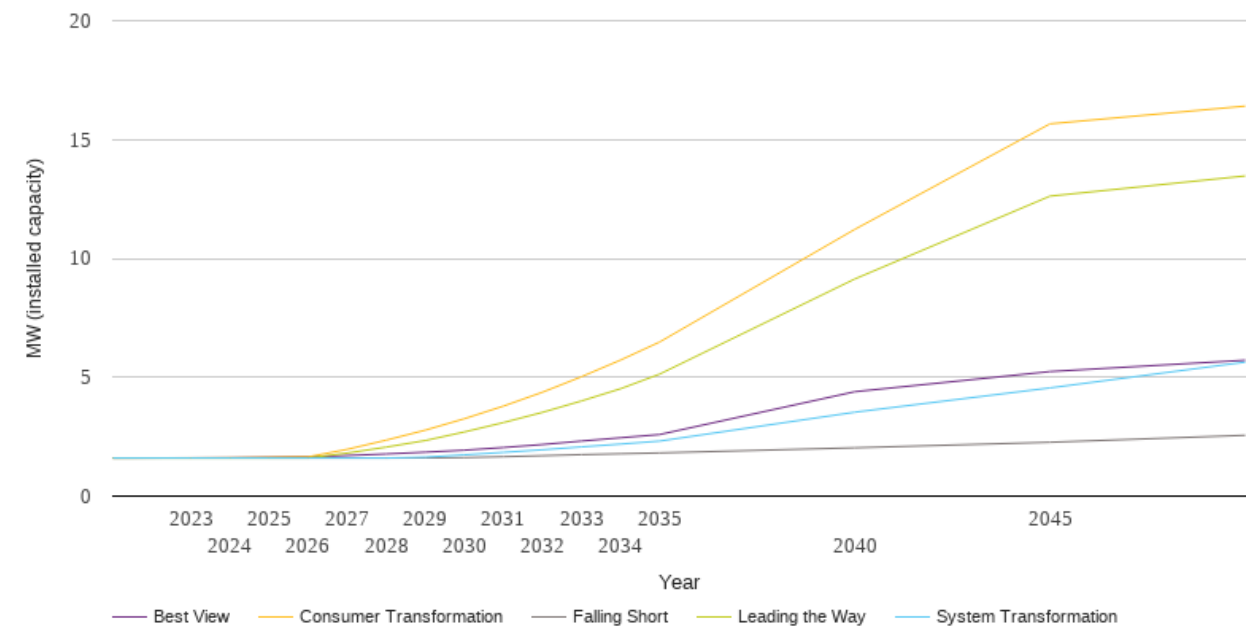
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0
2025	0.1	0.2	0.5	0.7	0.1
2026	0.2	0.5	1.0	1.6	0.2
2027	0.4	0.8	1.8	2.2	0.4
2028	0.5	1.2	2.7	3.5	0.5
2029	0.7	1.7	3.5	5.0	0.7
2030	0.9	2.6	5.1	7.7	1.0
2031	1.2	3.2	6.5	9.3	1.3
2032	1.5	3.8	8.1	11.1	1.6
2033	1.9	4.5	9.8	12.9	1.9
2034	2.2	5.2	11.6	14.9	2.3
2035	2.6	5.9	13.5	17.1	2.7
2040	3.4	11.6	23.0	30.5	3.6
2045	6.6	17.6	36.1	45.7	6.9
2050	9.0	22.2	49.6	62.5	9.4



# 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	1.6	1.6	1.6	1.6	1.6
2023	1.6	1.6	1.6	1.6	1.6
2024	1.6	1.6	1.6	1.6	1.6
2025	1.6	1.6	1.6	1.6	1.6
2026	1.6	1.6	1.6	1.6	1.6
2027	1.6	1.6	2.0	1.8	1.7
2028	1.6	1.6	2.4	2.1	1.8
2029	1.6	1.6	2.8	2.3	1.8
2030	1.6	1.7	3.3	2.7	1.9
2031	1.7	1.8	3.8	3.1	2.0
2032	1.7	1.9	4.4	3.5	2.2
2033	1.7	2.1	5.0	4.0	2.3
2034	1.8	2.2	5.7	4.5	2.5
2035	1.8	2.3	6.5	5.1	2.6
2040	2.0	3.5	11.2	9.1	4.4
2045	2.3	4.6	15.7	12.6	5.2
2050	2.6	5.6	16.4	13.5	5.7





National Grid Electricity Distribution PLC 09223384)  
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