

# Distribution Future Energy Scenarios 2022

Local Authority:  
Gedling

## 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 Gedling 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 Gedling 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	0	835	495	495	0	33155	16291	16291	0
Domestic	New dwellings	0	2882	3127	3127	3614	3817	3759	3759	3702
Electric vehicles	Electric vehicles	1929	12294	15083	27643	27522	83394	76013	75466	59464
EV Charge Point	EV charge points	977	5788	8504	16080	17671	49409	48135	51218	50957
Heat pumps	Heat pump installations	547	3107	2789	8816	13806	27251	31252	52466	46822
Hydrogen electrolysis	MW (installed capacity)	0.0	0.0	0.2	0.0	1.1	0.2	0.8	0.4	1.5
Non domestic	Floorspace (metres squared) of new I&C developments	0	13711 6	15968 3	15968 3	16951 7	23086 8	23086 8	23086 8	23086 8
Other Distributed Generation	MW (installed capacity)	30.4	30.5	30.5	30.5	24.1	28.1	14.1	14.1	25.2
Resistive electric heating	Resistive electric heating units	5967	5071	4870	5153	4972	3525	1620	3521	3697
Solar Generation	MW (installed capacity)	12.1	16.1	22.7	33.3	32.0	38.5	73.8	118.6	119.6
Storage	MW (installed capacity)	0.0	0.1	1.0	2.5	3.2	3.2	8.2	23.1	30.1
Wind	MW (installed capacity)	3.6	3.6	3.7	5.3	4.7	4.4	8.2	19.3	16.9

## 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

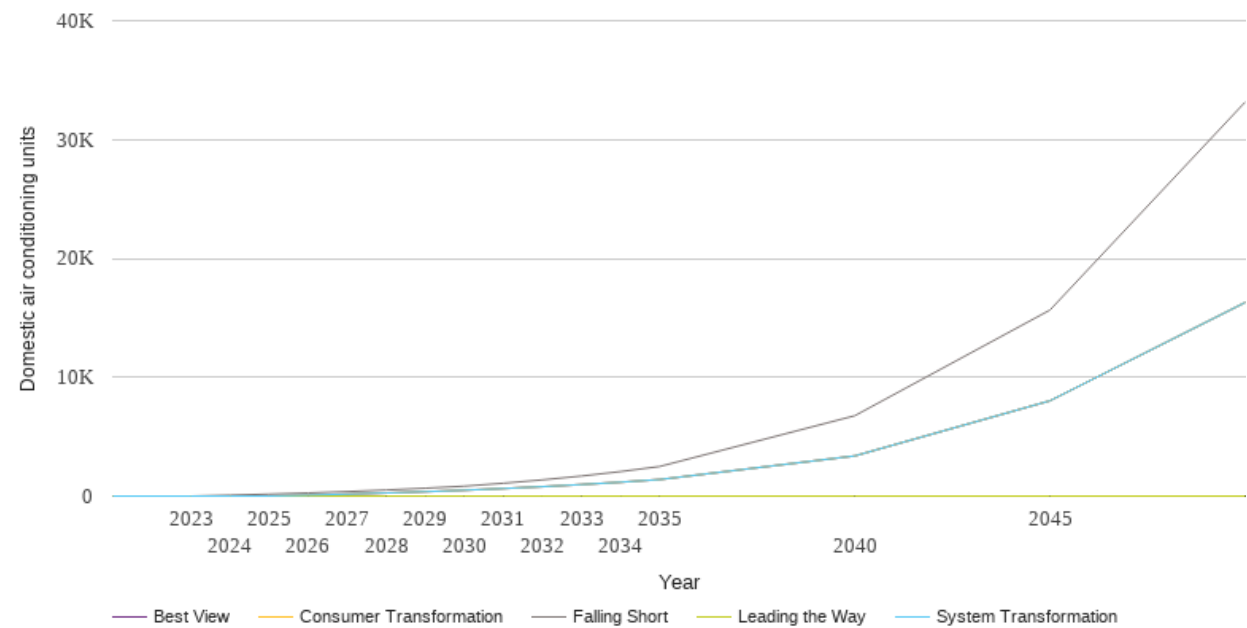
NGED is committed to continually improving the DFES process. To ensure the DFES projections fully capture local ambition, in 2022 we have appointed two DSO Strategic Engagement Officers to engage with local authorities. Any feedback will be incorporated into future Distribution Future Energy Scenarios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

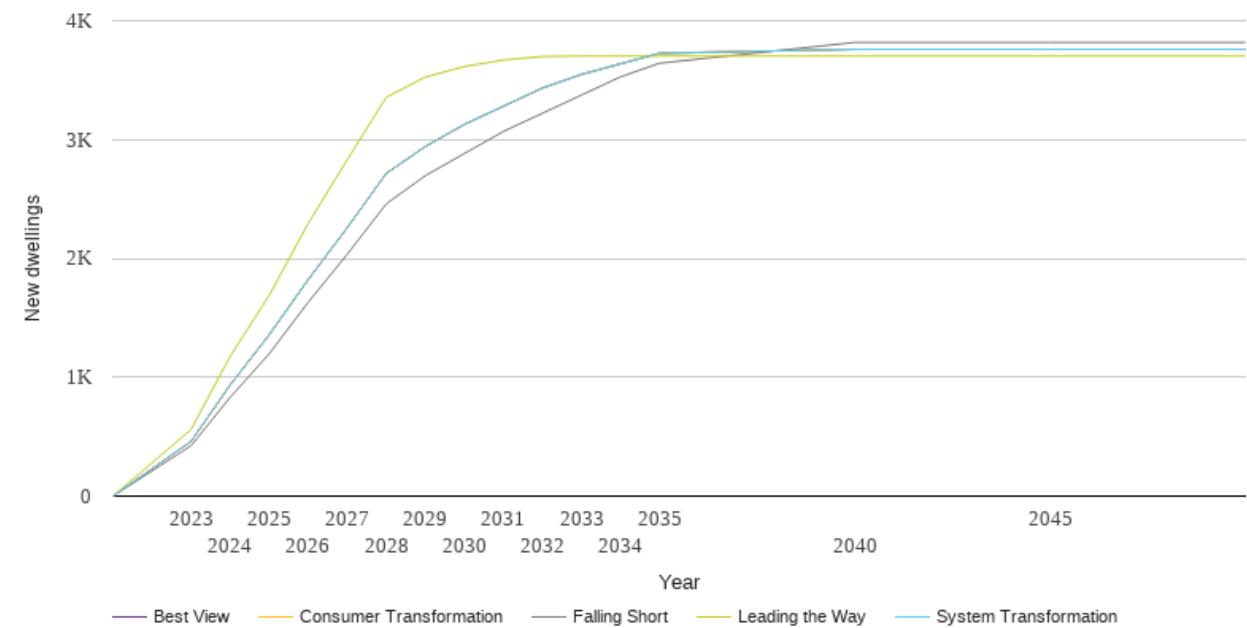
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	0	0	0	0	0
2024	76	0	0	0	0
2025	164	0	0	0	0
2026	265	77	77	0	77
2027	380	164	164	0	164
2028	511	262	262	0	262
2029	663	372	372	0	372
2030	835	495	495	0	495
2031	1081	636	636	0	636
2032	1364	793	793	0	793
2033	1688	970	970	0	970
2034	2062	1170	1170	0	1170
2035	2488	1392	1392	0	1392
2040	6762	3379	3379	0	3379
2045	15654	8020	8020	0	8020
2050	33155	16291	16291	0	16291



# Technology Summary: Domestic

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

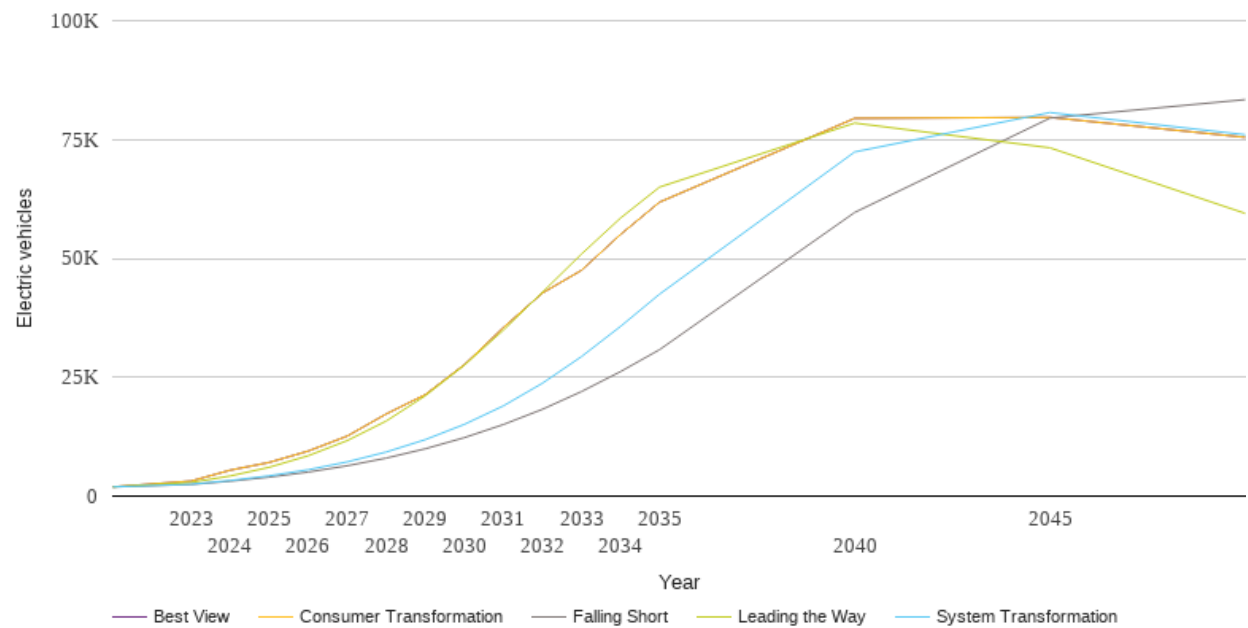
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	424	460	460	560	460
2024	830	934	934	1174	934
2025	1196	1356	1356	1687	1356
2026	1630	1821	1821	2293	1821
2027	2034	2258	2258	2830	2258
2028	2459	2715	2715	3355	2715
2029	2696	2941	2941	3525	2941
2030	2882	3127	3127	3614	3127
2031	3068	3280	3280	3669	3280
2032	3221	3433	3433	3698	3433
2033	3374	3548	3548	3702	3548
2034	3527	3637	3637	3702	3637
2035	3642	3726	3726	3702	3726
2040	3817	3759	3759	3702	3759
2045	3817	3759	3759	3702	3759
2050	3817	3759	3759	3702	3759



# Technology Summary: Electric vehicles

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

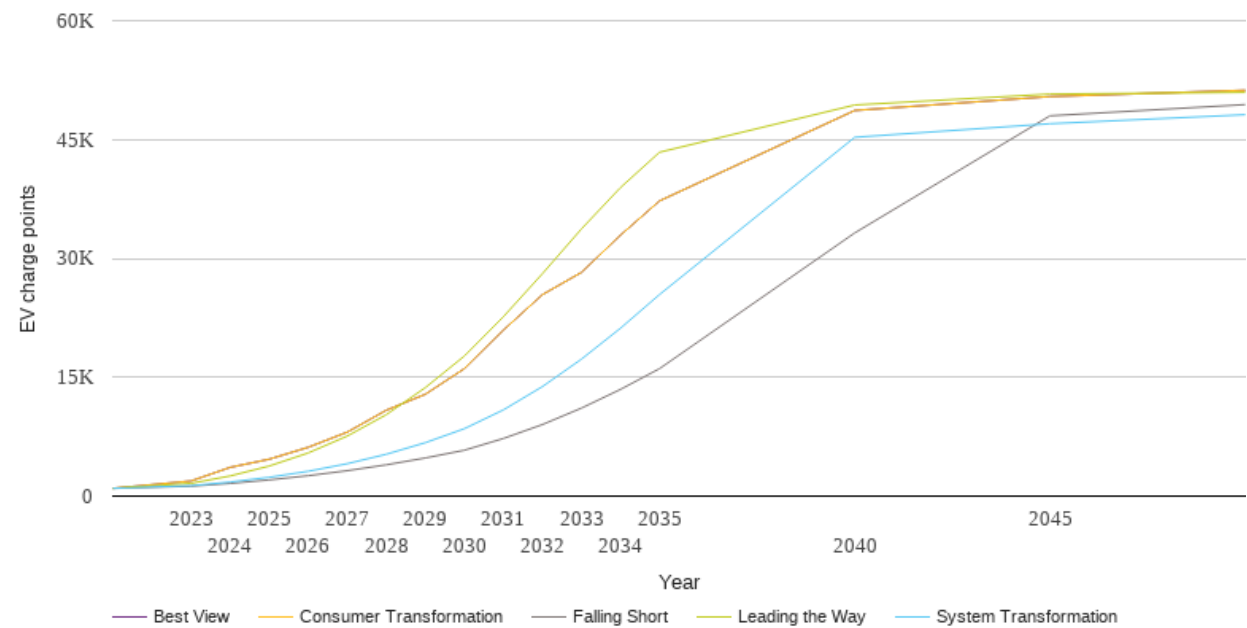
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	1929	1929	1929	1929	1929
2023	2453	2497	3160	2868	3160
2024	3132	3267	5441	4223	5441
2025	3987	4259	7080	6052	7080
2026	5052	5541	9466	8486	9466
2027	6378	7193	12625	11673	12625
2028	7993	9274	17278	15789	17278
2029	9951	11876	21342	21103	21342
2030	12294	15083	27643	27522	27643
2031	15054	18979	35459	34899	35459
2032	18255	23739	42712	42870	42712
2033	21985	29340	47488	50908	47488
2034	26185	35684	55025	58479	55025
2035	30796	42475	61830	64997	61830
2040	59669	72395	79465	78467	79465
2045	79508	80676	79668	73256	79668
2050	83394	76013	75466	59464	75466



# 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	977	977	977	977	977
2023	1249	1312	1904	1608	1904
2024	1599	1771	3619	2538	3619
2025	2041	2369	4652	3790	4652
2026	2574	3130	6158	5442	6158
2027	3207	4086	8068	7573	8068
2028	3947	5278	10833	10269	10833
2029	4807	6741	12849	13684	12849
2030	5788	8504	16080	17671	16080
2031	7271	10879	20942	22636	20942
2032	9027	13821	25423	28068	25423
2033	11103	17284	28234	33721	28234
2034	13466	21189	32933	38941	32933
2035	16086	25439	37256	43395	37256
2040	33216	45284	48671	49360	48671
2045	47993	46995	50422	50741	50422
2050	49409	48135	51218	50957	51218

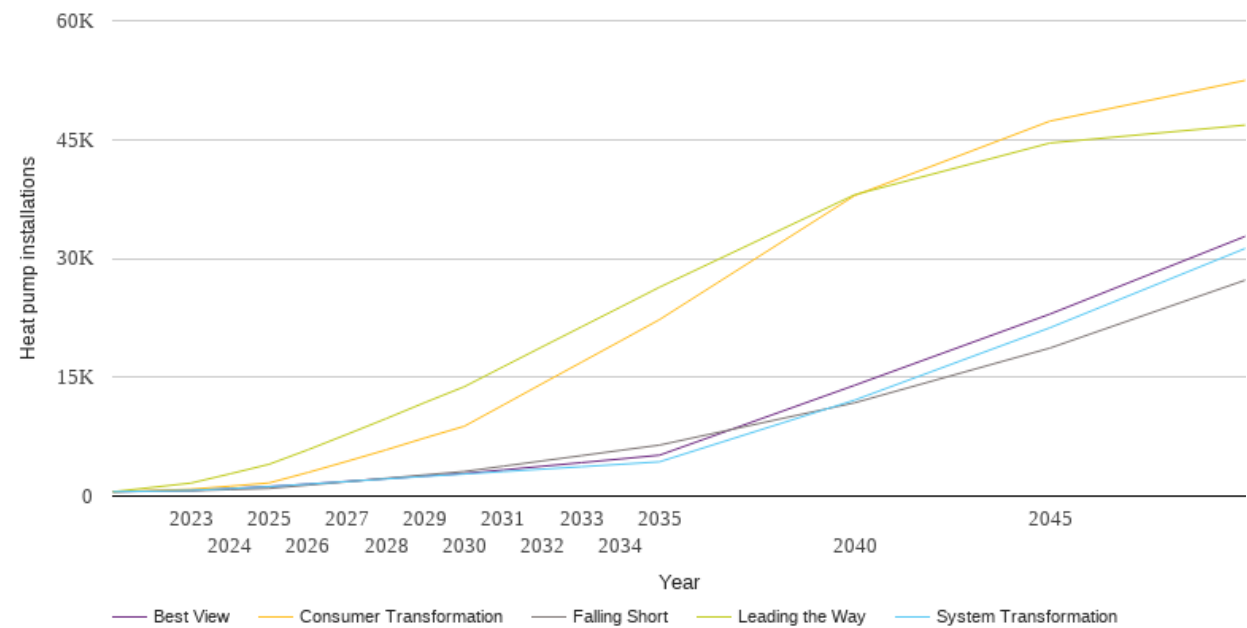




# Technology Summary: Heat pumps

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

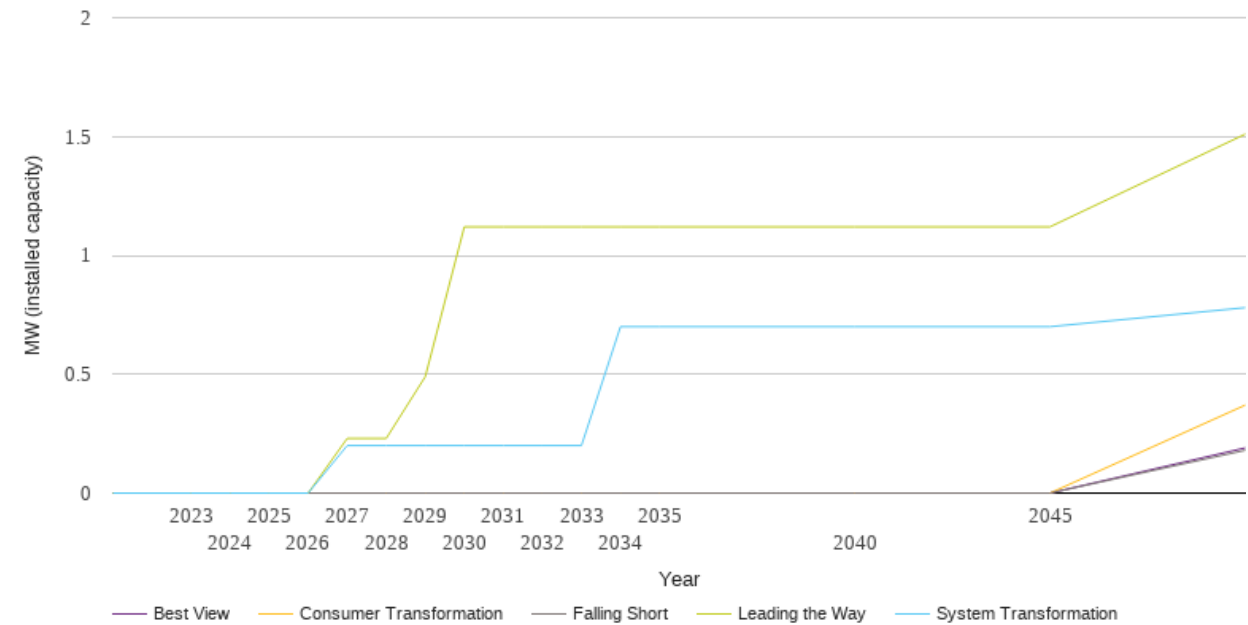
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	547	547	547	547	547
2023	673	716	871	1645	716
2024	818	945	1249	2809	945
2025	964	1202	1659	4019	1202
2026	1383	1512	2985	5853	1514
2027	1813	1843	4395	7803	1859
2028	2245	2165	5838	9784	2193
2029	2681	2491	7353	11827	2536
2030	3107	2789	8816	13806	2858
2031	3773	3091	11505	16335	3306
2032	4442	3401	14209	18852	3767
2033	5107	3708	16892	21353	4221
2034	5774	4013	19576	23853	4687
2035	6437	4327	22277	26364	5165
2040	11783	12120	37931	38038	13990
2045	18683	21246	47326	44561	22973
2050	27251	31252	52466	46822	32784



# Technology Summary: Hydrogen electrolysis

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

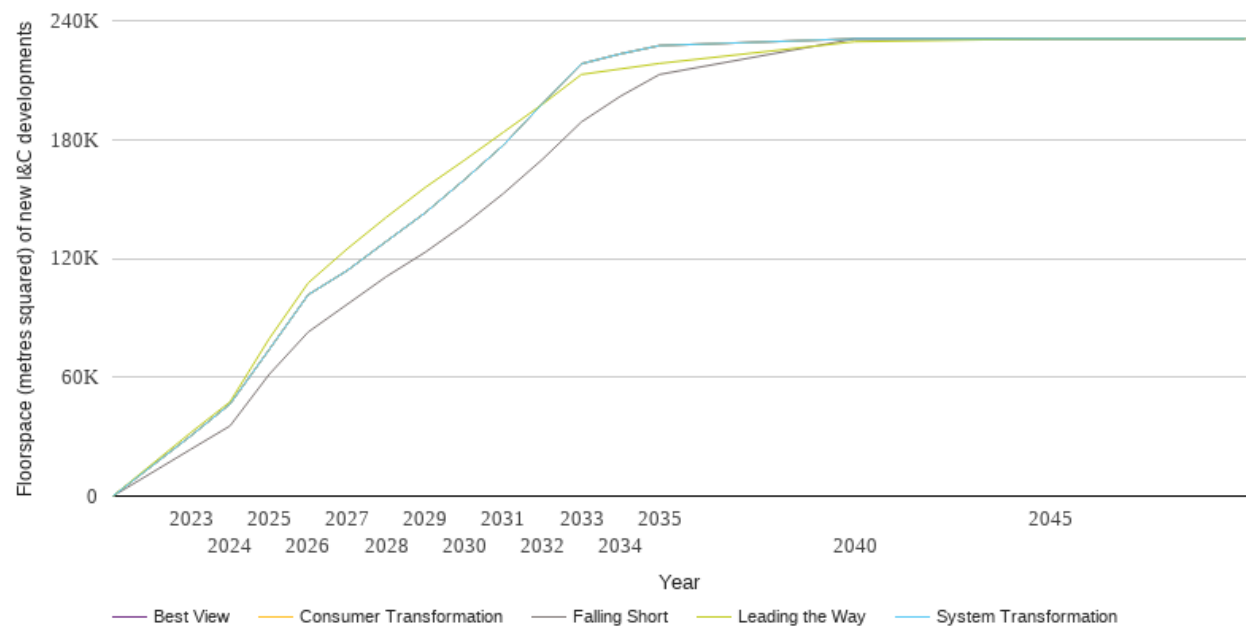
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.0	0.0	0.0	0.0
2026	0.0	0.0	0.0	0.0	0.0
2027	0.0	0.2	0.0	0.2	0.0
2028	0.0	0.2	0.0	0.2	0.0
2029	0.0	0.2	0.0	0.5	0.0
2030	0.0	0.2	0.0	1.1	0.0
2031	0.0	0.2	0.0	1.1	0.0
2032	0.0	0.2	0.0	1.1	0.0
2033	0.0	0.2	0.0	1.1	0.0
2034	0.0	0.7	0.0	1.1	0.0
2035	0.0	0.7	0.0	1.1	0.0
2040	0.0	0.7	0.0	1.1	0.0
2045	0.0	0.7	0.0	1.1	0.0
2050	0.2	0.8	0.4	1.5	0.2



# Technology Summary: Non domestic

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

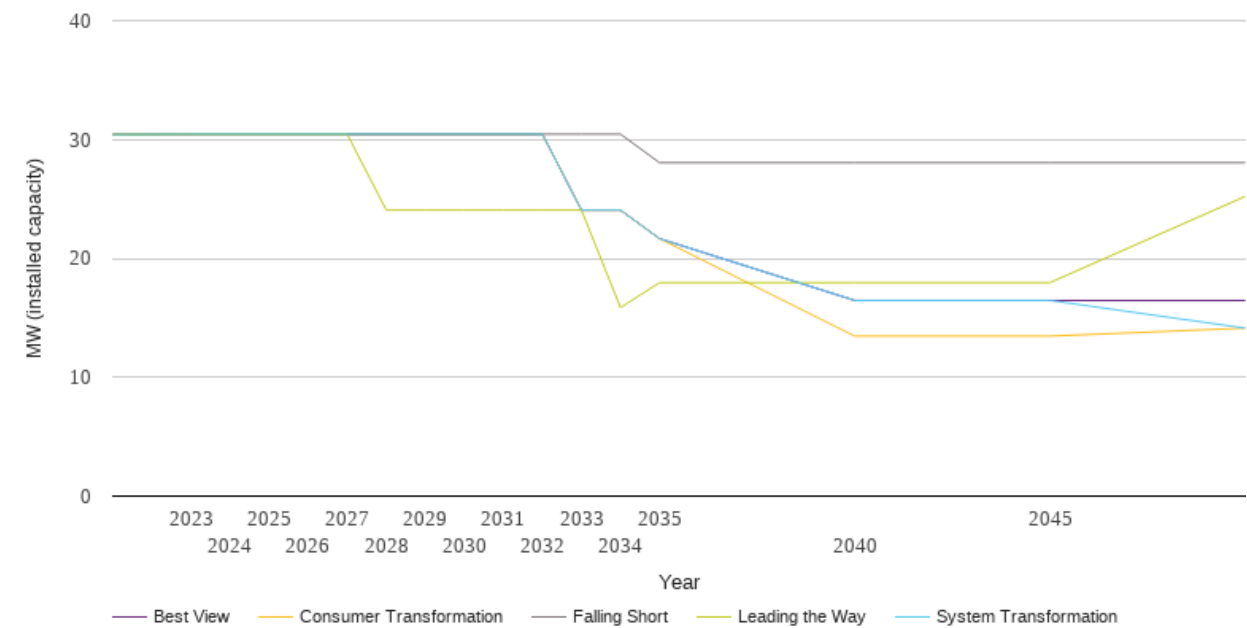
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0	0	0	0	0
2023	23695	30464	30464	32157	30464
2024	35441	46471	46471	47567	46471
2025	61403	73931	73931	79405	73931
2026	82813	101637	101637	107582	101637
2027	96799	113866	113866	124814	113866
2028	110784	128552	128552	140735	128552
2029	123131	143053	143053	155837	143053
2030	137116	159683	159683	169517	159683
2031	152739	177132	177132	183689	177132
2032	170000	198102	198102	197777	198102
2033	188900	218252	218252	212849	218252
2034	201869	223250	223250	215633	223250
2035	212849	227428	227428	218418	227428
2040	230868	230868	230868	229394	230868
2045	230868	230868	230868	230868	230868
2050	230868	230868	230868	230868	230868



# Technology Summary: Other Distributed Generation

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

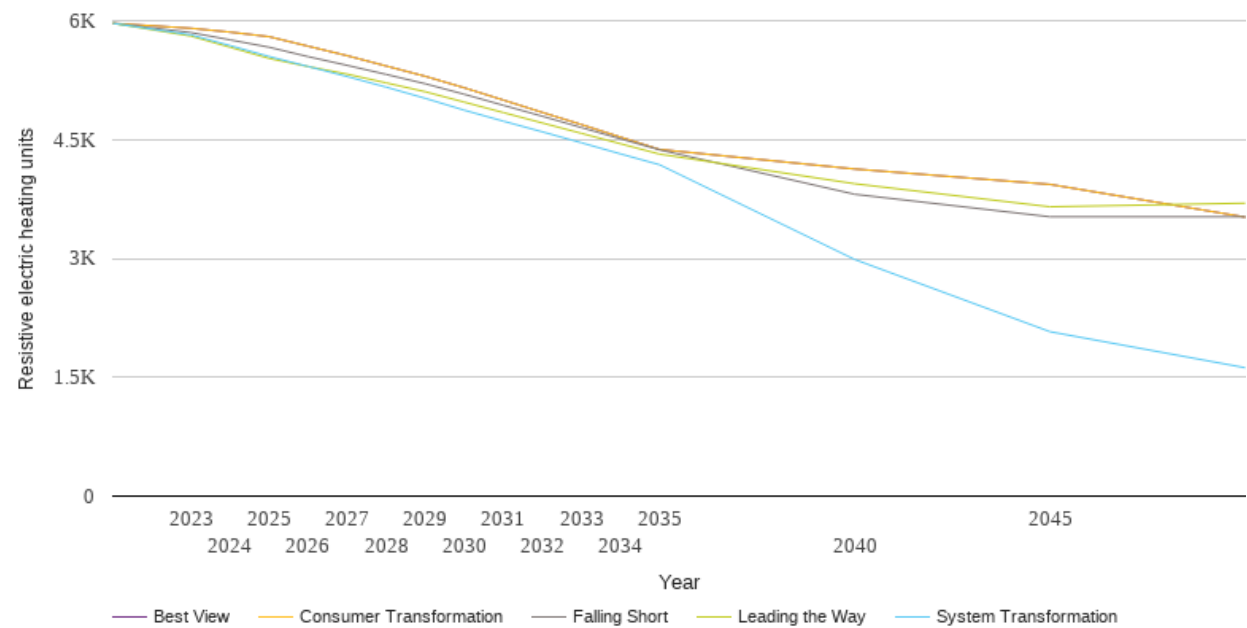
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	30.4	30.4	30.4	30.4	30.4
2023	30.5	30.5	30.5	30.5	30.5
2024	30.5	30.5	30.5	30.5	30.5
2025	30.5	30.5	30.5	30.5	30.5
2026	30.5	30.5	30.5	30.5	30.5
2027	30.5	30.5	30.5	30.5	30.5
2028	30.5	30.5	30.5	30.5	30.5
2029	30.5	30.5	30.5	24.1	30.5
2030	30.5	30.5	30.5	24.1	30.5
2031	30.5	30.5	30.5	24.1	30.5
2032	30.5	30.5	30.5	24.1	30.5
2033	30.5	24.1	24.1	24.1	24.1
2034	30.5	24.1	24.1	15.9	24.1
2035	28.1	21.7	21.7	18.0	21.7
2040	28.1	16.5	13.5	18.0	16.5
2045	28.1	16.5	13.5	18.0	16.5
2050	28.1	14.1	14.1	25.2	16.5



# Technology Summary: Resistive electric heating

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

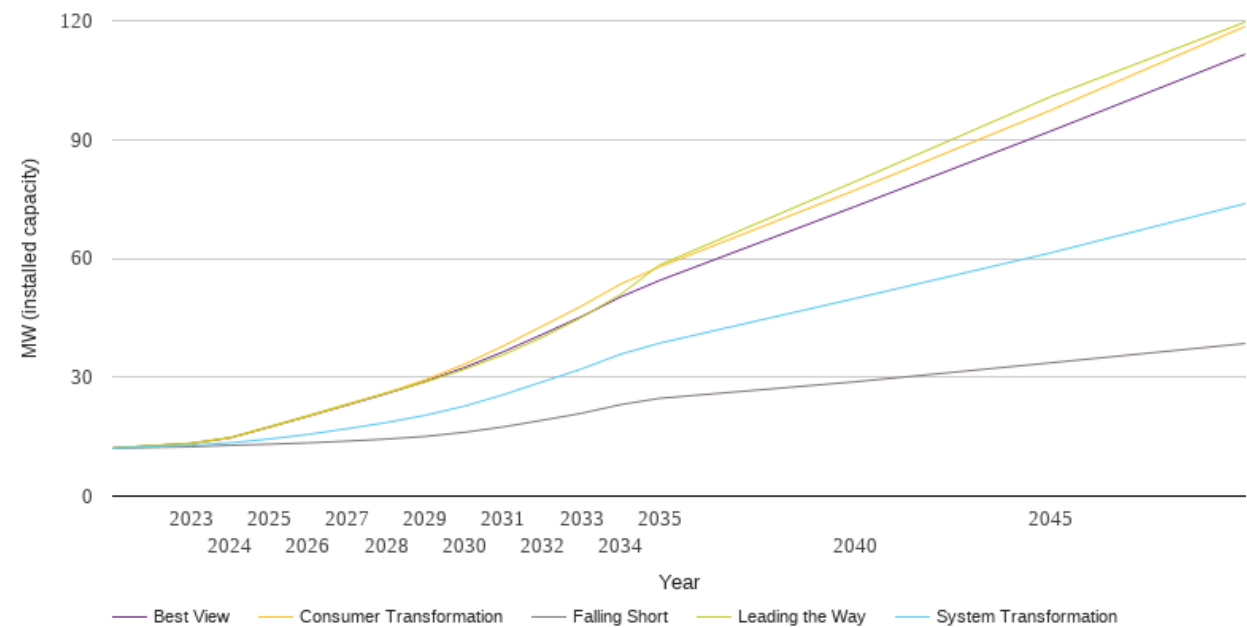
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	5967	5967	5967	5967	5967
2023	5850	5821	5904	5805	5904
2024	5758	5686	5856	5665	5856
2025	5665	5548	5798	5524	5798
2026	5546	5422	5678	5421	5678
2027	5436	5295	5558	5325	5558
2028	5322	5161	5428	5215	5428
2029	5204	5020	5298	5103	5298
2030	5071	4870	5153	4972	5153
2031	4932	4732	4998	4840	4998
2032	4794	4597	4842	4709	4842
2033	4651	4459	4689	4578	4689
2034	4509	4319	4531	4447	4531
2035	4370	4182	4375	4316	4375
2040	3809	2986	4128	3942	4128
2045	3525	2075	3934	3651	3934
2050	3525	1620	3521	3697	3521



# Technology Summary: Solar Generation

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

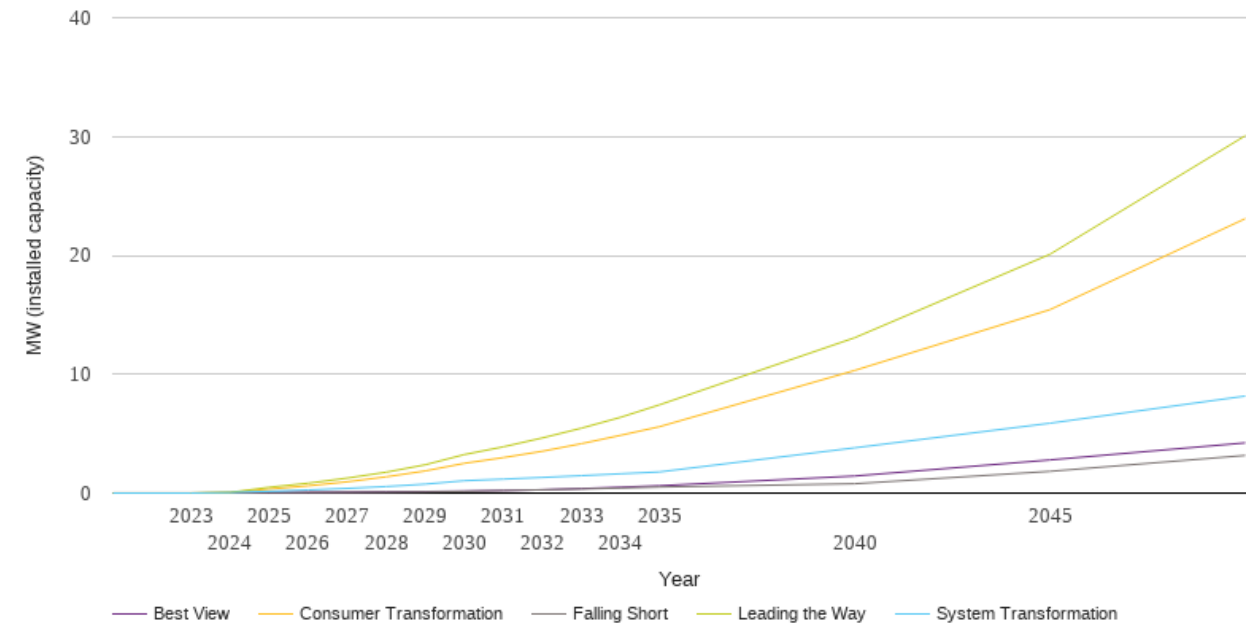
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	12.1	12.1	12.1	12.1	12.1
2023	12.4	12.8	13.3	13.3	13.3
2024	12.8	13.4	14.7	14.8	14.7
2025	13.1	14.4	17.4	17.5	17.4
2026	13.4	15.6	20.2	20.3	20.2
2027	13.9	17.0	23.0	23.2	23.0
2028	14.4	18.6	26.0	26.0	25.9
2029	15.1	20.4	29.4	28.8	28.9
2030	16.1	22.7	33.3	32.0	32.4
2031	17.5	25.6	37.9	35.6	36.4
2032	19.1	28.9	42.9	40.1	40.8
2033	20.9	32.1	47.9	45.1	45.3
2034	23.1	35.8	53.5	50.9	50.3
2035	24.7	38.6	57.9	58.3	54.4
2040	28.8	49.9	77.2	79.3	73.1
2045	33.6	61.3	97.3	100.7	92.1
2050	38.5	73.8	118.6	119.6	111.5



# Technology Summary: Storage

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

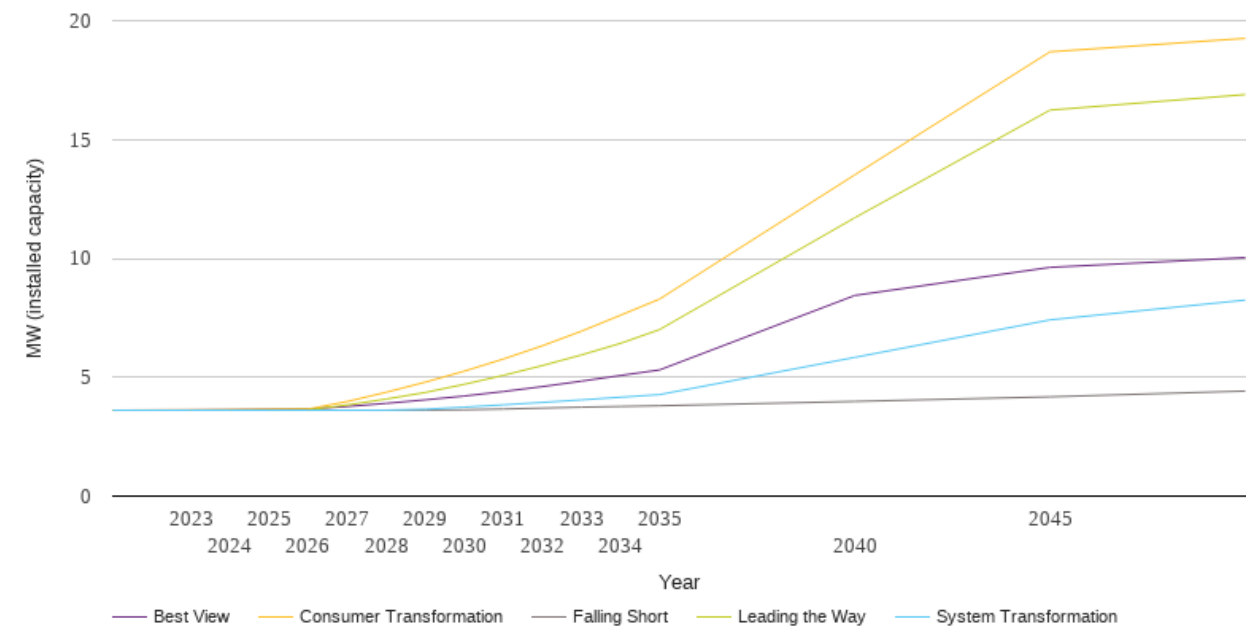
Year	Scenario				
	Falling Short	System Transformation	Consumer Transformation	Leading the Way	Best View
Baseline	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.1	0.1	0.1	0.0
2025	0.0	0.2	0.3	0.5	0.1
2026	0.1	0.3	0.6	0.8	0.1
2027	0.1	0.4	0.9	1.3	0.1
2028	0.1	0.6	1.4	1.8	0.1
2029	0.1	0.8	1.9	2.4	0.1
2030	0.1	1.0	2.5	3.2	0.2
2031	0.2	1.2	3.0	3.9	0.2
2032	0.3	1.3	3.5	4.6	0.3
2033	0.3	1.5	4.2	5.5	0.4
2034	0.4	1.6	4.9	6.4	0.5
2035	0.5	1.8	5.6	7.4	0.6
2040	0.8	3.8	10.3	13.1	1.4
2045	1.8	5.9	15.4	20.1	2.8
2050	3.2	8.2	23.1	30.1	4.2



# 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	3.6	3.6	3.6	3.6	3.6
2023	3.6	3.6	3.6	3.6	3.6
2024	3.6	3.6	3.6	3.6	3.6
2025	3.6	3.6	3.6	3.6	3.6
2026	3.6	3.6	3.7	3.6	3.7
2027	3.6	3.6	4.0	3.8	3.8
2028	3.6	3.6	4.4	4.1	3.9
2029	3.6	3.7	4.8	4.4	4.0
2030	3.6	3.7	5.3	4.7	4.2
2031	3.7	3.8	5.8	5.1	4.4
2032	3.7	3.9	6.3	5.5	4.6
2033	3.7	4.0	6.9	5.9	4.8
2034	3.8	4.2	7.6	6.4	5.1
2035	3.8	4.3	8.3	7.0	5.3
2040	4.0	5.8	13.5	11.7	8.4
2045	4.2	7.4	18.7	16.2	9.6
2050	4.4	8.2	19.3	16.9	10.0





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