Distribution Future Electricity Scenarios

March 2026

SP Electricity North West | DSO

Contents

Glossary

Abbreviation	Full Term
AD	Accelerated Decarbonisation scenario
ATLAS	Architecture of Tools for Load Scenarios
BV	Best View scenario
BSP	Bulk supply point
DESNZ	Department of Energy Security and Net Zero
DG	Distributed generation
DFES	Distribution Future Electricity Scenarios
DNO	Distribution network operator
DNOA	Distribution Network Option Assessment
DSO	Distribution system operation
EE	Electric Engagement scenario
EHV	Extra high voltage
ESO	Electricity System Operator
EV	Electric vehicles
FB	Falling Behind scenario
FES	Future Energy Scenarios
GSP	Grid supply point
HE	Hydrogen Evolution scenario
HP	Heat pumps
HT	Holistic Transition scenario
HGV	Heavy goods vehicles
HV	High voltage
I&C	Industrial and commercial
IDNO	Independent distribution network operator
LAEP	Local area energy plans
LCT	Low carbon technology
LRE	Load-related expenditure
LV	Low voltage
NDP	Network Development Plan
NESO	National Energy System Operator
PV	Photovoltaic generation
SP ENW	SP Electricity North West
tRESP	Transitional Regional Energy Strategic Plan
tRESP-HT	Transitional Regional Energy Strategic Plan – Holistic Transition Pathways
RESP	Regional Energy Strategic Plan
SEN	Strategic Energy Need
RIIO-ED3	Revenue = Incentives + Innovation + Outputs Electricity Distribution (2028–2033)
V2G	Vehicle to grid

Executive Summary

Welcome to our latest Distribution Future Electricity Scenarios (DFES) which outlines the expected electricity demand, distributed generation (DG) and battery storage uptake across the North West up to 2050. The DFES forecasts are a key component of our distribution system operation (DSO) functions, providing transparency of our network capacity strategy to support regional stakeholders and enable a stakeholder driven net zero transition for the North West. This publication marks our eighth consecutive year of delivering a comprehensive, year-long cycle of extensive stakeholder engagement and advanced bottom-up forecasting.

Executive Summary (continued)

This report presents the drivers of our yearly update on the DFES forecasts and a high level overview of key forecasting trends. More detailed data will be available in our Open Data Portal by May 2026, and additional insights on how DFES is used to release network capacity for our region will be presented in our May 2026 Network Development Plan (NDP) report.

The publication of this year's DFES data is later than usual as the National Energy System Operator (NESO) has been running its transitional Regional Energy System Plan (tRESP) whole system planning process. This requires all DNOs to validate projects identified by NESO Strategic Energy Needs (SENs) across our region with our stakeholders. The process began in March 2026 and is expected to run for a couple of months. We are pleased to see NESO drawing on our support for the tRESP and, moving forward, for the enduring RESP processes, by leveraging our forecasting capabilities and network intelligence, building on long-established regional expertise and strengths.

This year's DFES report aims to clarify to our stakeholders how the NESO's tRESP and enduring RESP interact with and complement our DSO forecasting and wider DSO planning processes.

To produce our DFES we have gathered insights and data for over 400 development areas associated with decarbonisation and economic growth plans. These stakeholder plans combined with known connections activity and the electrification of transport are the key drivers of electricity demand growth over the next ten years. An increasing certainty around the electrification of heating is also reflected in this year's DFES through the modelling of heat pumps and district heat networks across our region.

This year we have incorporated the impact of NESO's generation connection reform into our forecasts with a focus on its effect up to 2035. Under the new framework, each region (or an amalgamation of regions) is allocated a defined 'bucket' of generation and battery energy storage (BESS) capacity that can be connected to the network. While solar and wind do not show any strong constrain in our licence area, the BESS queue significantly exceeds the assigned capacity for the North West. As a result, installed BESS capacity has been capped since early 2030s to remain compliant with the regional allocation defined by DESNZ.

As in our last report, we have provided forecasts of electricity demand and low carbon technologies for over 30,000 secondary substations that supply our low voltage (LV) networks, supported by an increased number of LV monitoring devices that offer improved network visibility.

To accompany this report, stakeholders will also be able to explore our DFES data through a new interactive dashboard designed specifically for forecasting insights and aligned with industry best practice. All forecast datasets will remain available through our open data portal, both as direct downloads and via API access.

We are pleased to highlight that our ongoing analysis of the tRESP pathways shows they align with our DFES Holistic Transition scenario for all key forecasting components including EVs, heat pumps and renewable generation, which is indicative of NESO's confidence in our regional forecasting and highlights the value of DSO support to NESO processes.

What is DFES?

The Distribution Future Electricity Scenarios (DFES) are our bottom-up, granular, long term forecasts of electricity demand, distributed generation, battery storage and low carbon technologies deployment across the North West.

As in last year's report, this edition of the DFES includes six scenarios, together with NESO's tRESP scenario which is described further in the 'What is tRESP' part of this report.

The Best View scenario follows the same rationale by defining the SP ENW highest certainty trends for a ten-year horizon followed by central assumptions in the longer term.

We have continued modelling the four scenarios that align with NESO's Future Energy Scenarios (FES) to allow for a smooth transition and to align with our previous reports. These are Holistic Transition (HT), Electric Engagement (EE), Hydrogen Evolution (HE) and Falling Behind (FB).

Our sixth scenario is Accelerated Decarbonisation (AD) which shows the decarbonisation of our region at an accelerated pace, meeting net zero between 2045 and 2050.

All six scenarios are produced following our enhanced bottom-up ATLAS methodology, which is tailored to model the expected impact of demand and generation growth at each voltage level, which need to be considered in network planning processes.

The tRESP scenario uses NESO's tRESP pathways per GSP (400/132kV substation interfaces with transmission networks). These future trends are allocated downstream at lower voltage levels using the detailed results of our Holistic Transition scenario (produced by our ATLAS methodology). NESO's Common Planning Assumptions (CPAs) are also used to produce the EV and heat pump profiles, as well as to model the efficiencies of domestic appliances for this scenario.

In the following months our fully updated DFES forecasts will be available in the Open Data Portal and on an additional enhanced user interface that allows for a more intuitive slicing of the data. The forecasts provided have been expanded from 132kV to LV networks, as well as by local authority area, covering electricity demand, renewable distributed generation, battery storage, district heating, electrolysers and low carbon technologies including EVs and heat pumps.

As in last year's report, this edition of the DFES includes six scenarios

What is tRESP?

This year marks a significant shift in whole system planning with the introduction of a coordinated approach by the NESO transitional Regional Energy Strategic Plan (tRESP). The tRESP was released in January 2026 and signals a substantive shift in the way Great Britain will structure, finance and implement the energy transition. For developers, network operators, investors, and—above all—our customers, the tRESP establishes the basis for a new, integrated approach to infrastructure coordination and investment planning, underpinning the delivery of the government's objectives for a decarbonised electricity system by 2030 and net zero by 2050.

The tRESP provides a spatial view of future energy demand, supply and infrastructure needs across nine regions in England and two nations (Scotland and Wales). The aim of tRESP is to align national decarbonisation and economic growth objectives with regional energy planning to increase consistency in DNO business planning, enhance whole system coordination, reduce fragmentation across GB and limit delivery risks.

The tRESP is structured in three main components that interact with DSO forecasting processes: pathways, CPAs and SENs.

The pathways provide future trends for the volumes of demand and generation components including EVs, heat pumps, battery storage, onshore wind and solar photovoltaic installations. The associated data are provided for each GSP, i.e. large geographical areas across our region that supply hundreds of thousands of customers and are the interface substations with the electricity transmission network. The tRESP pathways have been produced using this year's DFES data as the main input, then adjusted by NESO to take into account, among others, the Clean Power 2030 action plan and the carbon budget review alignment.

NESO has provided DNOs with three pathways aligned with the FES-DFES common scenario framework—Holistic Transition, Electric Engagement and Hydrogen Evolution. Holistic Transition is particularly significant since it serves as the reference pathway which our regulator, Ofgem has asked DNOs to consider for the next ten years. For simplicity in this report we will refer to NESO's tRESP Holistic Transition scenario as the 'tRESP scenario', which is becoming the 'single pathway' used for planning up to 2035. Beyond 2035, this single pathway branches into multiple long-term pathways to reflect the increasing uncertainty in the period from 2035 to 2050.

What is tRESP? (continued)

The tRESP scenario is itself strongly linked with this year's DFES Holistic Transition scenario, as we have provided NESO with more than 40 datasets of our DSO forecasts. We have also held a series of bilateral and industry meetings and technical working groups to explain the mechanics, assumptions and particular considerations for the North West region. These interactions have also ensured that NESO has clear understanding of our DFES forecasts and the assumptions underpinning them.

We are proud to have supported and continue to support NESO in developing the tRESP through extensive engagement and leveraging our in-house DFES expertise. While the pathways were issued at large supply areas (GSPs), our detailed understanding of the North West has enabled us to translate these high level regional forecasts into more granular views, supported by hundreds of millions of data points from our monitoring systems, advanced bottom-up forecasting and insights from engagement with over 400 stakeholders.

Other key components of the tRESP are the CPAs. These provide guidance on how to model three critical demand components: EVs, domestic heat pumps and efficiencies of domestic appliances. Using NESO data the CPAs define the detailed assumptions that need to be followed to produce granular half-hourly demand profiles for EVs and heat pumps. The objective of CPAs is to have a consistent approach in modelling key technologies across the regions and nations when it comes to all DNO RIIO-ED3 business plan submissions.

Finally, the SEN defines regional projects of strategic value as defined by the NESO. The SENs provided by NESO for our area are a selection of the full list of projects SP ENW and our stakeholders provided to NESO following a request for information. These exclude projects with an existing connection application. We are proud that NESO has identified our region as having the highest number of areas (12) with successful SENs. In the stakeholder engagement inputs section of this report we expand on the SEN outcomes and the next stages of interaction with our stakeholders.

The role of DFES – focus on interactions with tRESP and enduring RESP

For the past eight years the DFES have been the cornerstone of our network planning approach, as well as a valuable source of insights and data for our stakeholders and customers, helping them to produce well informed plans.

To enhance whole system planning coordination the NESO has introduced the tRESP this year, and in the coming years, plans to publish the first enduring RESP. We are actively engaging with NESO to help develop a fit-for-purpose whole system planning process that provides value for our stakeholders and customers by reducing whole system costs and accelerating regional economic growth and decarbonisation.

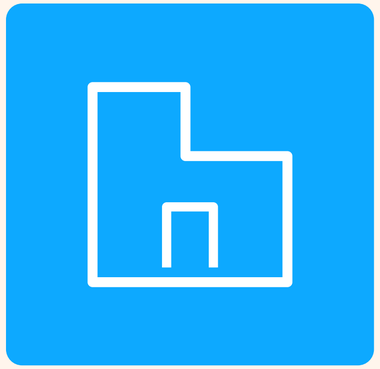
The RESP is not planned to replicate or duplicate forecasting in the DFES. The RESP will enhance whole system value in energy planning and is expected to help DNOs deliver proactive network investment aligned with national and regional whole system pathways and strategic investment needs. The RESP is also expected to improve consistency in planning across DNOs and other energy vectors (including gas and electricity, transmission and distribution).

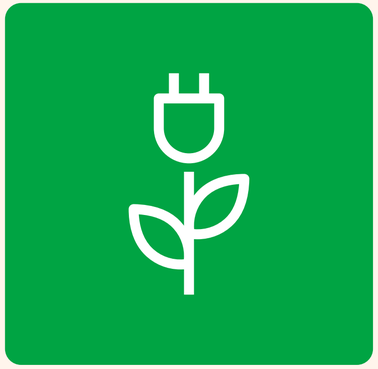
Our DFES and our DSO forecasting will remain a key tool that will allow us meet our license condition requirements for security of supply and economic network development. Put simply this means that it is still the responsibility of the DNO to make sure that network assets are not exceeding capacity or stranded, requirements met by DSO forecasting.

Importantly, we expect that our DFES and wider DSO forecasting and planning data will become even more critical to NESO's RESP and whole system planning processes. The exchange of data and insights can help enhance both DFES and the RESP.

In May 2026 our new Network Development Plan (NDP) will be driven predominantly by the tRESP scenario, which combines NESO's pathways, CPAs and SENs with our granular DFES forecasts. The DFES scenarios will be used as an assurance layer to validate the tRESP scenario assumptions. By doing this we will ensure that our network development proposals do not only enhance whole system value and facilitate stakeholder plans as per NESO's data and guidance, but will also allow us develop and operate a secure and economic network.

Stakeholder engagement inputs





Our role is to use DFES to facilitate the decarbonisation and economic growth plans of our local stakeholders (including LAEPs). To do that we use data and insights from their various planned developments. Importantly there is also a bidirectional flow of information and insights between SP ENW and our stakeholders, where we provide further data, transparency of our planning methodologies and insights that help local government and their partners better inform their plans.

Beyond that DFES considers the industrial and commercial customer plans from the pipeline of demand and generation connections across all voltage levels on our network. This ranges from a small sample of 132 and 33kV demand connections with high impact on the network to hundreds of lower voltage connections across our 11 to 0.4kV networks. For larger projects we consider bespoke information for each project, whereas a larger sample is used for smaller projects, based on historical performance in our modelling assumptions and confidence factors, as explained in previous DFES publications.

Stakeholder engagement inputs continued

This year we have submitted 72 local stakeholder plans to NESO as part of the tRESP process. Of these, 33 plans have achieved NESO SEN approval status, together with three more submitted by our stakeholders. Two of these were projects previously identified but subsequently amended by our stakeholders. The other will be excluded since an accepted connection is already in place and cannot be considered as a SEN under NESO's framework.

In summary all approved SENs are projects identified through regular bilateral engagement with local authorities and their developers, which highlights NESO's recognition of the quantity and quality of our stakeholder engagement.

For 29 of the remaining 39 planned development areas, NESO has assigned 'Strategic for the Region' status. Through the data validation process requested by NESO, these projects can be included in our ED3 business plans if strong evidence can be demonstrated that there are no overlaps with the pathway assumptions.

Beyond these projects, there are over 300 smaller planned development areas. For these we have carried out our certainty assessment process, following the ENA Best View scenario framework, standardised across all GB DNOs. In addition to this we tried to replicate the NESO process by correlating our certainty assessment for the approved SENs. This showed that over three quarters of the approved SENs were projects where we would identify higher certainty levels (high or medium certainty). In our DFES scenarios (and the tRESP scenario) we consider learning from NESO's tRESP SEN process to inform the assumptions for the smaller stakeholder plans.

Lower certainty stakeholder projects are considered in our Accelerated Decarbonisation scenario. This avoids foreclosing the longer-term more ambitious regional decarbonisation and economic growth plans that currently have lower certainty in future network reinforcement stages.

As part of the tRESP process required by NESO we are currently contacting our stakeholders with NESO's ask to validate the SEN data. This is a critical process as only by complying with NESO's validation requirements will we be allowed to consider stakeholder plans in our December 2026 RIIO-ED3 business plan submission.

Beyond the tRESP process, our DSO team works closely with a wide range of regional partners, recognising that strong local relationships are essential. By engaging with them early and often, we can reflect their priorities in DFES and better enable progress toward net zero and sustainable economic development. Some of our previous and future engagement events are listed below:

- DSO conference, 3 April 2025
- DSO functions webinar, 21 August 2025
- DSO conference, 29 October 2026
- Flex forum webinar, 5 March 2026
- DSO conference, 26 March 2026

33
plans have achieved NESO SEN approval status

72
local stakeholder plans submitted to NESO as part of the tRESP process

29
of the planned development areas assigned 'Strategic for the Region' status

The scenario framework

This year’s DFES uses NESO’s FES scenario framework which is consistent across all DNOs. We still have the six scenarios produced by our ATLAS methodology, with a fifth scenario being the tRESP scenario that combines NESO’s tRESP pathways data and common planning assumptions with our granular DFES forecasts.

Best View

Highest certainty assumptions in demand and generation forecasts up to 2030. Electrification of transport and heating are the main paths. This is an SP ENW scenario based on our understanding and stakeholder insights of what the future is likely to look like in the next ten years. Based on the ongoing analysis of the pathways provided by tRESP, this is the scenario that shows the strongest alignment with the tRESP Holistic Transition scenario, on which the ED3 business plan will be based.

Falling Behind

Misses net zero. Heavy reliance on gas across all sectors, particularly electricity supply and space heating. EV and heat pump uptakes are the slowest.

Hydrogen Evolution

Hydrogen used widely across industry and also used for domestic heating close to industrial clusters. Hydrogen is also prevalent for heavy goods vehicles. However, electrification of transport and heating are still the main decarbonisation paths.

tRESP scenario

This scenario uses the future trends from NESO's tRESP Holistic Transition pathway and the granular forecasts from our DFES Holistic Transition scenario produced following NESO's tRESP guidance granular pathways. GSP pathways for the tRESP building blocks (LCT volumes, renewable capacities etc) were produced by NESO using the DFES Holistic Transition scenario forecasts and their adjustments considering Clean Power 2030 and carbon budget considerations and data.

Holistic Transition

Achieving net zero relies on electrification with a critical role for hydrogen at industrial clusters. Assumes highest consumer engagement in energy transition that is reflected in accelerated adoption of domestic heat pumps.

Electric Engagement

In this scenario net zero is met through electrification with high levels of EVs and heat pumps. Consumers are highly engaged in the energy transition.

Accelerated Decarbonisation

This scenario depicts a future with the strongest electrification across all energy sectors, including transport, heating and electricity generation. Developed by SP ENW, it explores the potential impacts on the network under conditions of very high electrification, enabled by stronger policy incentives and faster adoption of low carbon technologies.

Electrification of transport

Electrification is expected to be the main path for the decarbonisation of the transport sector. EVs are increasingly a more cost-efficient whole life cost alternative to internal combustion engine vehicles, and their use aligns with the government's focus on increasing energy security. Between 2024 and 2025 nearly 70,000 new electric cars and vans were registered in the North West (cleansed data excluding corporate registrations). This means that there are now around 239,000 EVs in our region, giving us increased confidence that shortly after 2030 we could expect over one million on our roads.

This year's forecasts show a slightly slower uptake of EVs in the short term compared to last year. However, we are still reaching similar EV volumes in the longer term compared to last year's forecasts. The early lower numbers stem from lower EV sales (both total sales and the proportion of purely battery EVs) seen in 2025 compared to the 2024 projections, consistent with current market trends.

The model has been refreshed to incorporate the latest market, policy, tax and technology developments. Battery cost assumptions have been lowered to reflect the sharp decline in prices seen over the past year. On the manufacturing supply side, constraints have been updated to align with 2024 sales performance and the latest ZEV mandate consultation outcomes. Finally, car and van sale trajectories have been recalibrated to match actual 2024 registrations and early 2025 trends.

In this graph, we also present the EV uptake trends from the tRESP scenario (tRESP-HT). It should be noted that the tRESP scenario is closely aligned with our DFES Holistic Transition in terms of EV volumes, which is indicative of NESO's confidence in our submitted DFES data to inform its tRESP pathways.

EV uptake

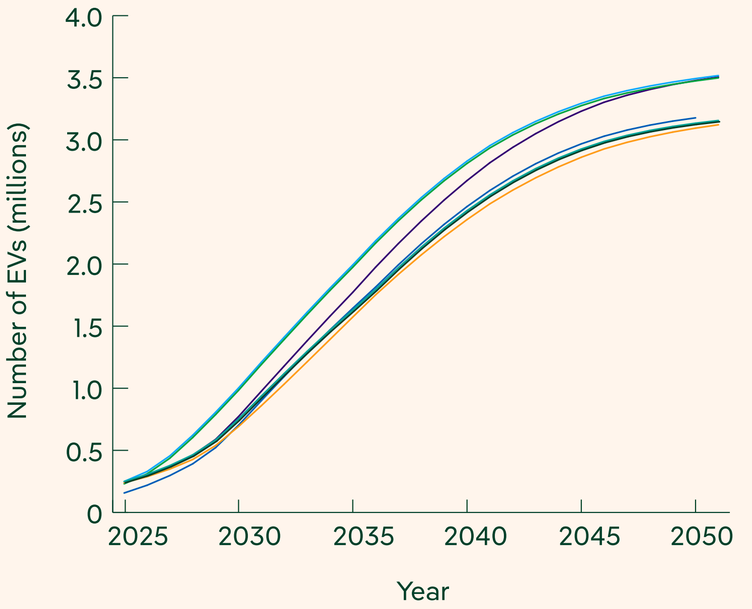


Figure 1:
EV projections in SP ENW area for all six DFES scenarios and the tRESP Holistic Transition pathway

Key

- tRESP-HT
- Hydrogen Evolution
- Electric Engagement
- Accelerated Decarbonisation
- Falling Behind
- Holistic Transition
- Best View

*Due to the scale of the charts some lines have been adjusted for visual clarity

Electrification of heating

This year's modelling approach follows the same underlying rationale as last year. The modelling updates mainly reflect the most recent policy developments. Specifically, during the last year the government reversed the planned 2035 ban on sales of new gas boilers. However, the soon-to-be-released Future Homes Standard is expected to prohibit the installation of gas boilers in new-build homes, maintaining a strong policy signal toward low carbon heating in the construction sector.

At the same time, the government's support for low carbon heating has increased with the expansion of the Boiler Upgrade Scheme, strengthening financial incentives for heat pump deployment.

In addition to these changes, a broader package of retrofit and decarbonisation funding has been announced. This includes the Warm Homes Plan, which aims to deliver £15 billion of public investment to upgrade up to five million homes. The scheme is expected to provide grants and loans to support the installation of heat pumps, solar PV and domestic batteries.

In our Best View scenario, the DFES pathway with the highest certainty over the next decade, we anticipate around one million domestic heat pumps installed across our region by 2040, representing approximately 45% of customer properties.

Compared with last year's outlook, the short-term trajectory to 2030 remains broadly unchanged. The key difference is the later implementation date for the ban on gas boiler installations in new and existing buildings, in line with the latest national policy. This adjustment results in a slower heat pump uptake to around 2035 across all scenarios, and up to 2037 in the most conservative pathway.

Similarly to EVs, we are encouraged that the tRESP Holistic Transition pathway has not diverted significantly from our DFES Holistic Transition scenario. Both scenarios show a steady increase in heat pump adoption to 2035, followed by a more pronounced acceleration through the late 2030s.

Domestic HP uptake

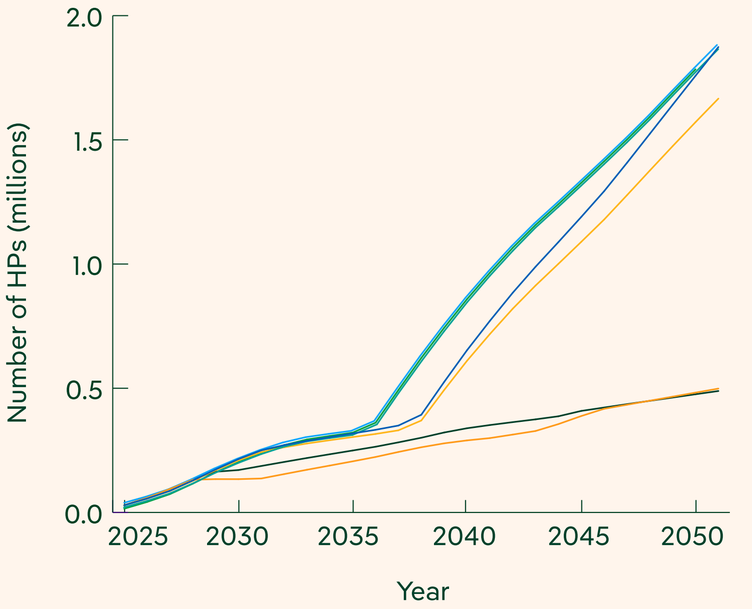


Figure 2:
Domestic heat pumps forecast in the SP ENW area for the six DFES scenarios and for the tRESP Holistic Transition (noting that DFES Holistic Transition and DFES Accelerated Decarbonisation overlap, and that both overlap with the tRESP Holistic Transition)

Key*

- tRESP-HT
- Hydrogen Evolution
- Electric Engagement
- Accelerated Decarbonisation
- Falling Behind
- Holistic Transition
- Best View

*Due to the scale of the charts some lines have been adjusted for visual clarity

Photovoltaics

We still expect photovoltaic (PV) generation to be the most dominant distributed generation (DG) technology moving forward. In this year's DFES we have reflected the impact of connections reform by using the latest insights and data from the connections pipeline for all generation technologies. For PV generation we expect that the installed capacity connected to our networks will increase by around eight times from today's levels by 2050.

In the short term and assuming no major policy changes we anticipate that PV deployment will continue growing in a broadly linear fashion and consistent with the current trends. By 2030 we expect approximately 1.5 GW of installed capacity, aligned with the Clean Power 2030 target for our region.

Across the Electric Engagement, Holistic Transition and Best View scenarios, we see a steeper increase in PV deployment, with all three pathways reaching roughly 1.5 GW by 2030. This reflects investor willingness to utilise the full 2030 capacity allocation established under Clean Power 2030. Financial drivers, such as falling PV costs and the introduction of more favourable export tariffs, further strengthen the economic case for solar power.

Post 2035 there is still uncertainty in projections due to the fact that Clean Power 2030 and the associated connections reform focus only on the ten-year horizon to 2035, without addressing impacts beyond this date. By next year, we expect greater clarity on the post-2035 landscape.

Based on PV projects currently submitted, including those that have secured Gate 2 approval, we do not expect the 2035 headroom to be fully utilised. As a result, unused capacity is likely to roll forward into the post-2035 period, alongside capacity associated with ongoing connection applications

PV Installed Capacity Forecast

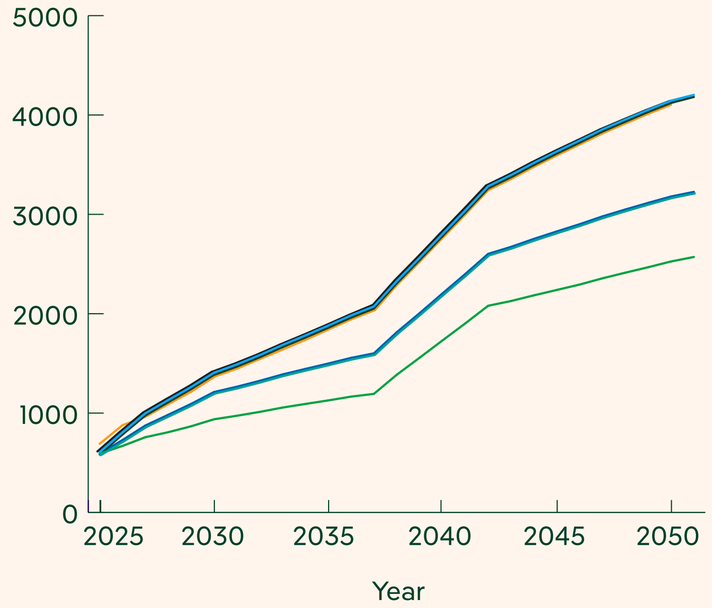


Figure 3:
Photovoltaic installed capacity forecast in the SP ENW area for the six DFES scenarios and the tRESP Holistic Transition pathway (note that DFES Holistic Transition and DFES Accelerated Decarbonisation overlaps and in turn they almost overlap with the tRESP)

Key*

- tRESP-HT
- Hydrogen Evolution
- Electric Engagement
- Accelerated Decarbonisation
- Falling Behind
- Holistic Transition
- Best View

*Due to the scale of the charts some lines have been adjusted for visual clarity

Wind uptake

Similar to the outlook for photovoltaics, wind generation is expected to follow a broadly linear growth trend in the near term, increasing steadily until it reaches the maximum capacity permitted for England and Wales under Clean Power 2030 (CP30) in 2030.

However, the CP30 allocation for wind in 2035 – over 15 GW for the combined England and Wales region – is more than three times today's installed capacity. Given this substantial long-term headroom, alongside increasingly favourable policy conditions for onshore wind (including the removal of planning restrictions), we expect a sharper acceleration in deployment between 2030 and 2035 with investors trying to fill this gap.

As with PV, there remains significant uncertainty beyond 2035, as CP30 and the associated connections reform framework focus solely on the ten-year horizon. We anticipate greater clarity on the post-2035 position in future iterations of the DFES.

Wind Installed Capacity Forecast

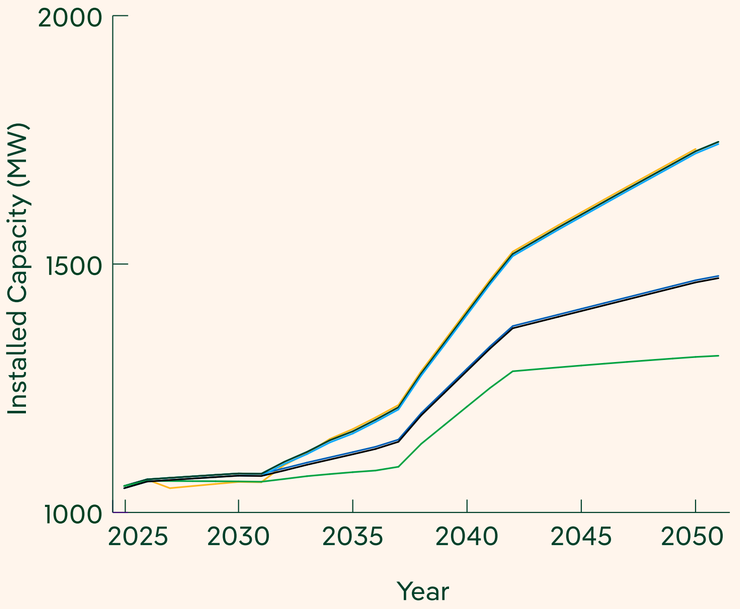


Figure 4:
Wind uptake for the DFES scenarios and tRESP Holistic Transition

Key*

- tRESP-HT
- Hydrogen Evolution
- Electric Engagement
- Accelerated Decarbonisation
- Falling Behind
- Holistic Transition
- Best View

*Due to the scale of the charts some lines have been adjusted for visual clarity

Battery uptake

Batteries are still seen as the most dominant technology for storage and a key technology for balancing the future energy system where significant amounts of stochastic generation (wind farms and PV) will be the main supply sources.

Battery storage is expected to be the technology most directly constrained by the Clean Power 2030 allocated capacity limits. Unlike PV and wind farms that benefit from national level allocations, battery capacity is capped regionally. For the North West, CP30 sets a limit of 900 MW in 2030 and 1,000 MW in 2035 – volumes that are small compared to the level of connection activity currently observed in the region.

In practice, the 2035 cap is expected to be reached well ahead of schedule, as a significant number of battery projects have already secured Gate 2 approval, many of them now in the construction phase. Because the regional allocation is likely to be fully subscribed early, we anticipate that only a very limited number of additional projects will progress between 2030 and 2035.

Beyond 2035, assuming that more projects in the connection queue are able to proceed, we expect a faster increase in installed capacity. However, this outlook remains highly dependent on the post-2035 connections reform framework, which has yet to be defined.

Storage Installed Capacity Forecast

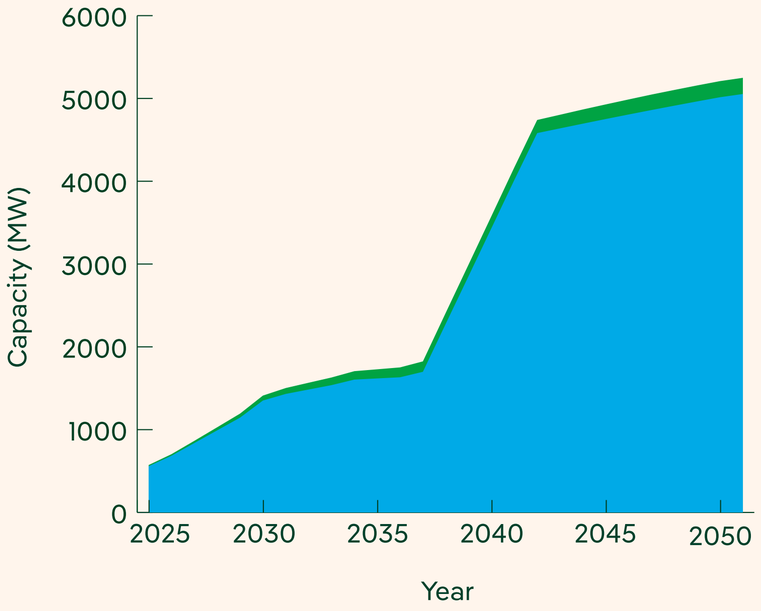


Figure 5:
Battery installed capacity in DFES Best View scenario

Key

Domestic Storage

Large Storage

Electricity energy consumption

Our highest certainty scenario (Best View) shows that the overall electricity consumption across the North West is expected to double by 2040.

The relative distribution of energy consumption across the different sectors is expected to change substantially over time. At present, and continuing through to around 2030, industrial and commercial customers (I&C) remain the largest consumers, accounting for over 40% of total estimated regional demand when their baseline demand without low carbon technologies impact is considered.

However, this balance is projected to shift as EV uptake accelerates. By the late 2040s, EV-related consumption is expected to narrow the gap with I&C demand and eventually surpass it. Looking ahead to 2050, EVs, I&C baseline demand and heat pumps together are anticipated to represent around 60% of our region's electricity consumption.

Although EVs and HPs are expected to have similar levels of electricity consumption by the late 2040s, their load profiles differ significantly. EV charging is assumed to be highly flexible, with customers successfully incentivised to charge during periods of lower electricity demand. In contrast, heat pump operation, despite the use of hot-water storage, is less flexible, as heating is required within specific time windows and there are practical limits to how much heat can be generated during low demand periods and stored for later use.

These different behaviours have distinct implications for the network, and this has been fully reflected in our modelling approach.

Areas of higher uncertainty in the longer-term are the extent of electrolysers and the levels of penetration for data centres. Our modelling for electrolysers considers DESNZ hydrogen allocation rounds to inform short-term trends and FES data to understand longer-term projections and the split with transmission connected projects. For data centres we are not yet modelling longer-term projections, but we will be considering the projects in our connections pipeline with the associated likelihood/certainty levels across the scenarios to calculate the peak demand across our 132 to 33kV networks.

Best View

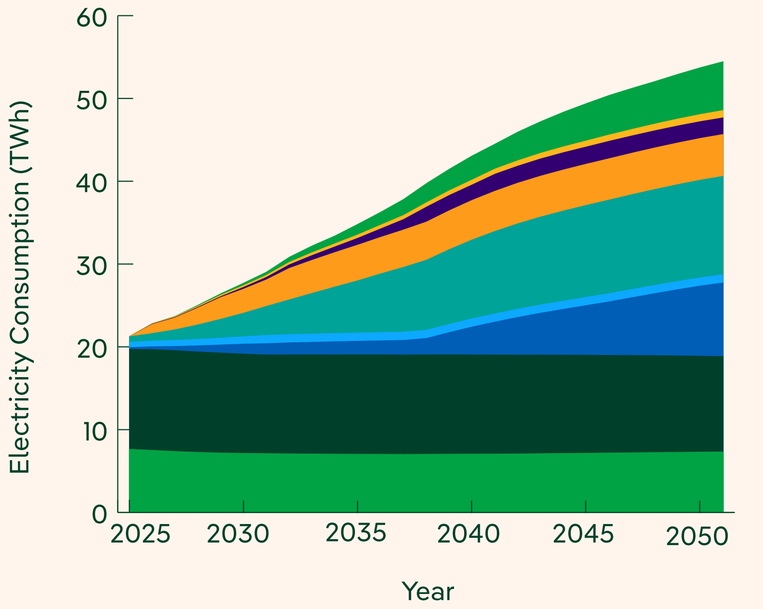


Figure 6:
Electricity consumption forecast for DFES Best View scenario

Key

- Electrolyser
- District Heating
- Large industry
- Planned Developments
- Electric Vehicles
- Air Conditioning
- Heat pumps
- I & C
- Domestic

Electricity energy consumption continued

Best View Electricity Energy Consumption

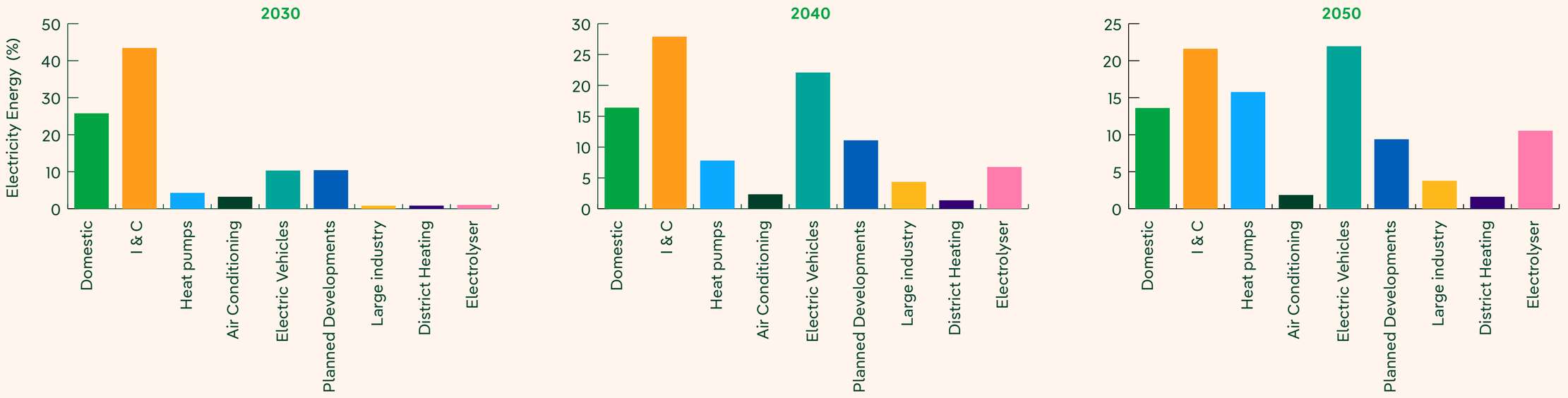


Figure 7:
DFES Best View scenario – electricity energy consumption percentage per demand type in 2030-2040-2050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DFES 2025 at a glance

Minimum to maximum range of DFES long-term forecasts

	2030	2040	2050
EV	3.6-5.0x	10.4-12.3x	13.0-14.7x
HP	7.1-12.5x	14.7-45.7x	23.7-87.0x
BESS	1.1-3.1x	1.3-7.7x	1.5-10.0x
Energy	1.2-1.5x	1.6-2.5x	1.8-3.2x
PV	1.2-2.1x	1.7-3.7x	2.6-5.4x

By 2030, there could be around 1.2 million EVs in the North West – five times the 2024 total. The DFES forecast also incorporates the projected uptake of electric vans, buses, coaches and heavy-duty vehicles, reflecting the broader electrification of transport.

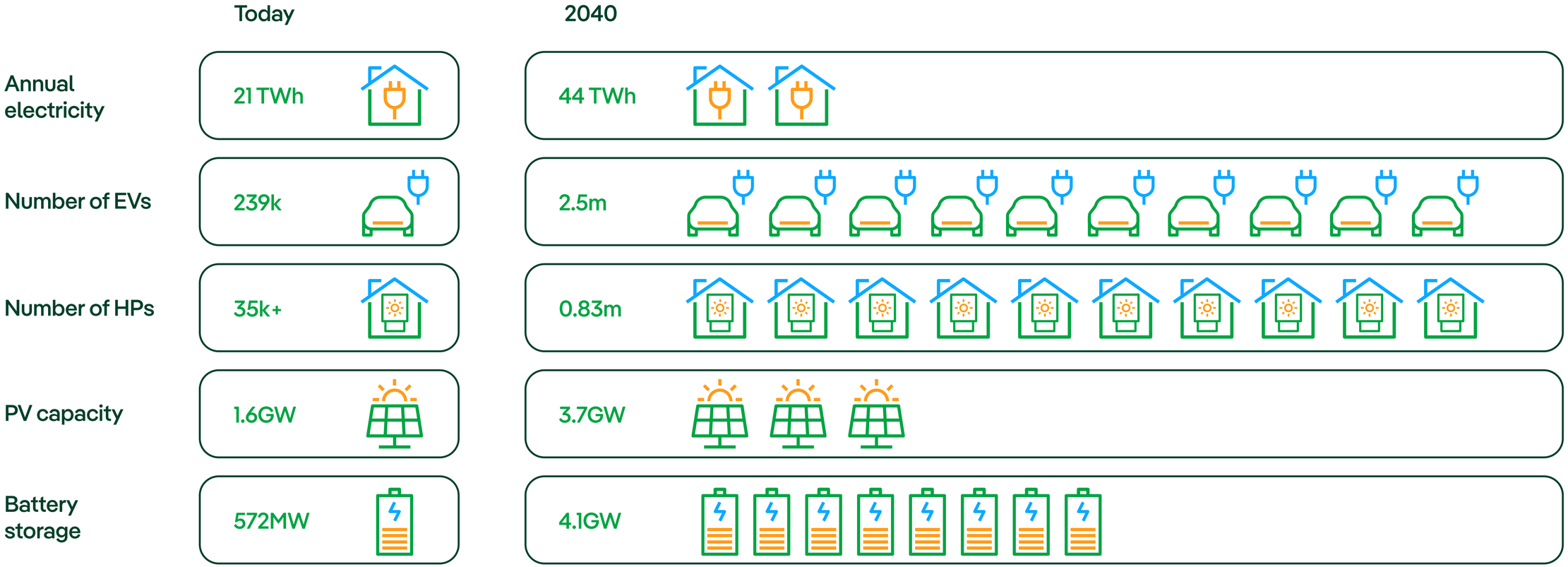
Heat pump deployment is projected to reach almost 2.5 million installations by 2040. Our scenarios explicitly account for the potential influence of district heating, including existing networks and the DESNZ heat network zones, which reduce heat pump uptake in areas where district heating is projected to expand.

Battery storage capacity is forecast to grow rapidly – a four-fold increase by 2030, rising to ten times today's levels by 2040, and up to ten times by 2050. While regional volumes are still dominated by large grid-scale systems, we expect a steady rise in domestic battery adoption. It is worth noting that the Holistic Transition scenario shows comparatively lower growth in battery storage due to the constraining effect of Clean Power 2030.

Electricity consumption is projected to rise by around 36% by 2030 in the Best View scenario, and to more than double by 2040. The primary drivers of this increase are heat pumps and EVs, a trend observed across all scenarios except Falling Behind and Hydrogen Evolution, where electrification is more limited.

PV generation is projected to grow by around 70% by 2030, and to almost quadruple by 2050. Over the longer term, the connections reform framework will play a critical role in shaping the scale and timing of this growth.

A day in 2040
(Best View)



Get in touch

If you have any questions or suggestions about our forecasts, please contact us. We're always here to help.

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