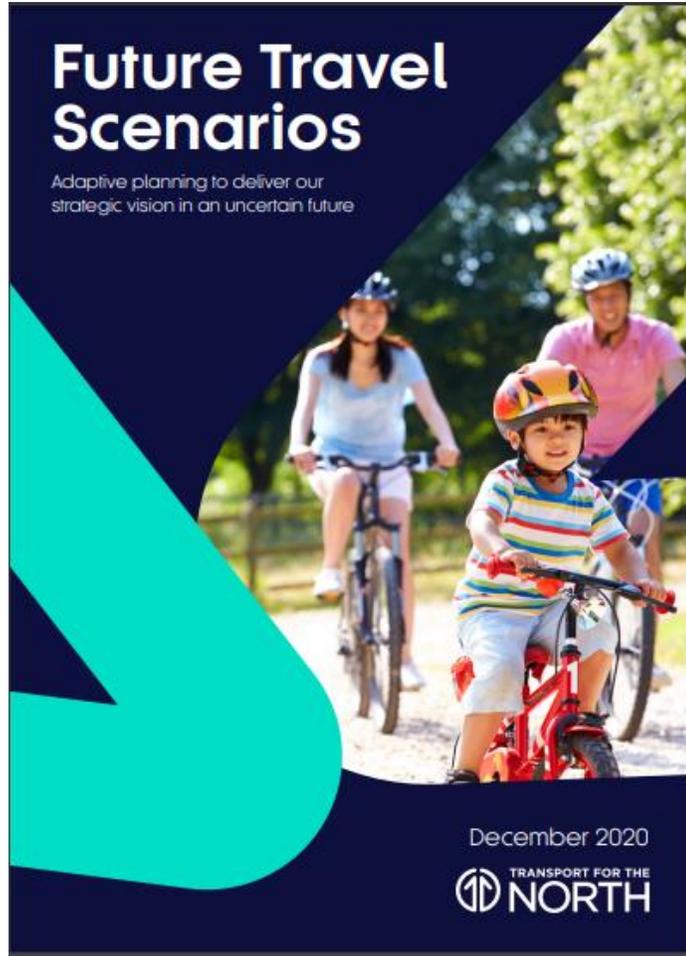


Transport for the North

EV Charging Infrastructure Framework



Transport decarbonisation - *From strategy to delivery* - *EV Charging Infrastructure Framework*



EV infrastructure deployment – the challenge through a regional and local lens

Public charging devices per 100,000 of population (ZapMap), March 2022

North average – 28 devices per 100,000
UK average – 42 devices per 100,000

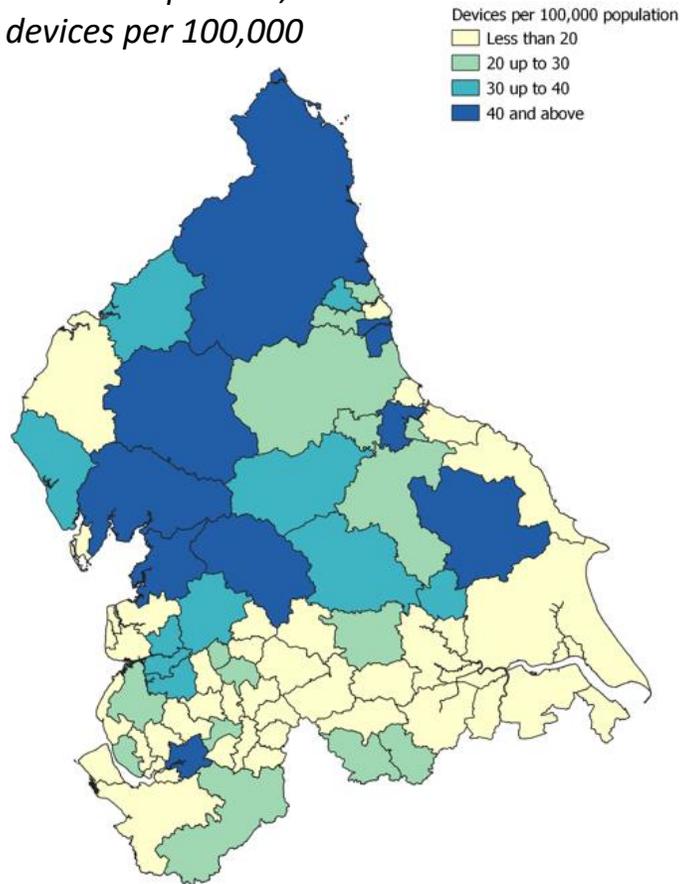
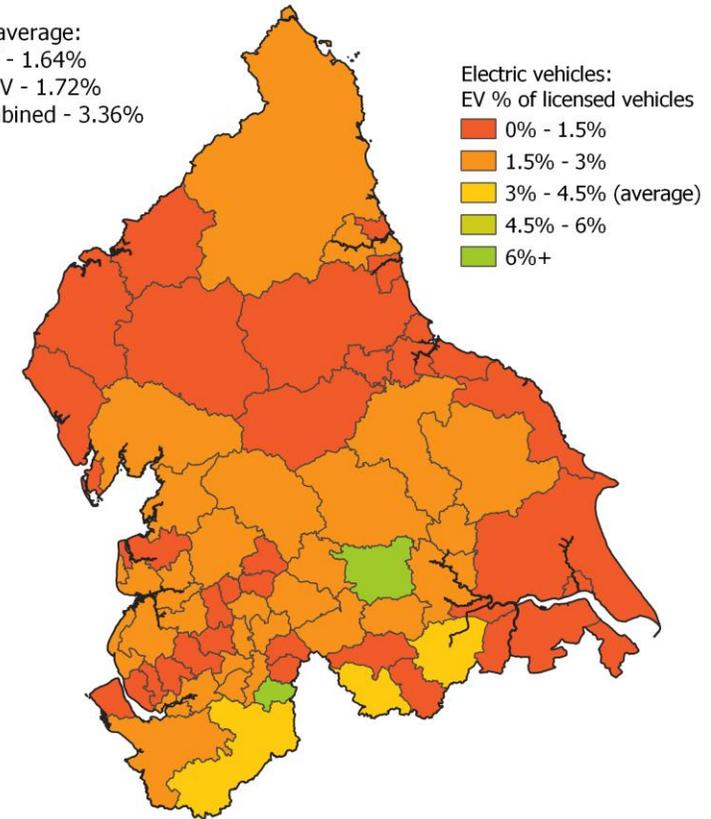


Figure 2: EV % of vehicle licenses in the North of England (2021)

UK average:
BEV - 1.64%
PHEV - 1.72%
combined - 3.36%



DfT statistics 2022

How a regional EV Charging Infrastructure Framework can support our decarbonisation ambitions

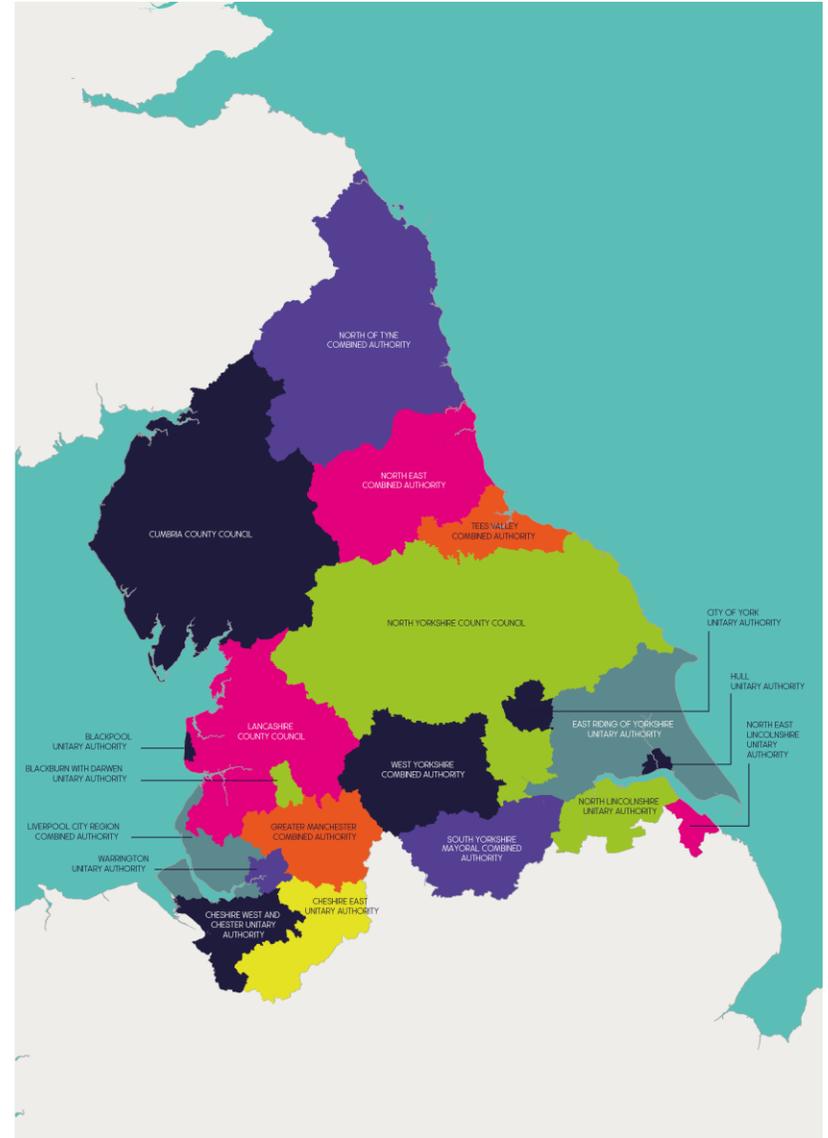
Objectives:

- Improve outcomes for Electric Vehicles based on robust and data driven evidence of requirements - *'the right infrastructure in the right place, at the right time'*
- Provide a collective routemap towards an effective, attractive and inclusive network - *'Supporting action across the region at scale and pace'*.
- Support delivery of an integrated EV network through public and private partnerships – *'Capacity & Capability'*; *'Driving economies of scale'*.
- Future-proof EV infrastructure decision making - *'Ensuring resilience and grasping opportunity'*.

Regional EV Steering Group – “*Whole network; Whole System*”

Collaborative partnership which consolidate multi-agency approaches and actions to deliver mutual goals.

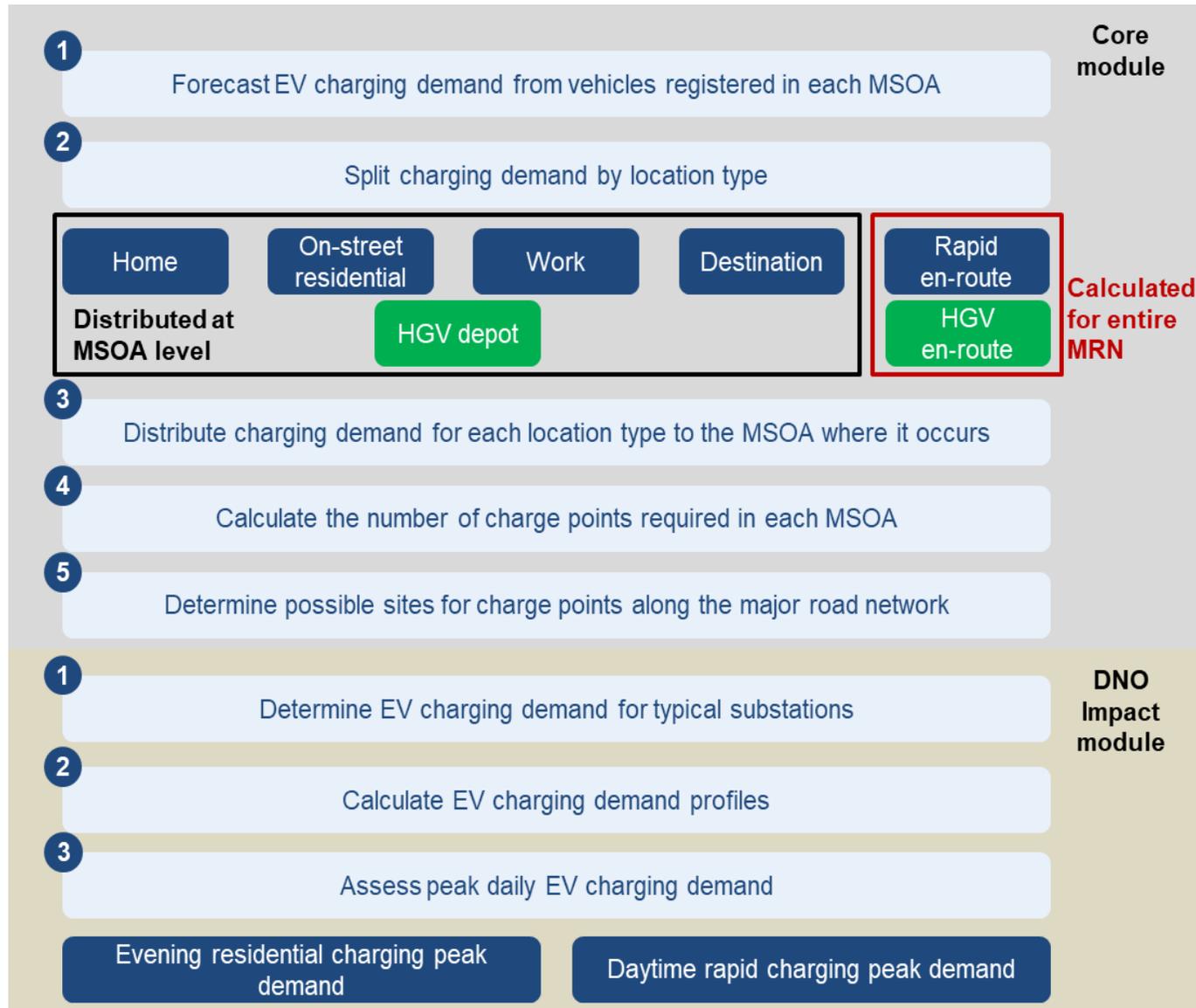
- Transport for the North
- TfNs member organisations (Northern Local Transport Authorities or LEP representatives).
- National Highways
- Network Rail
- Department for Transport / OZEV
- Scottish Power Energy Networks
- Electricity North West
- Northern Powergrid
- National Grid UK Electricity Transmission
- Energy Saving Trust



TfN's data capabilities which enable our enhanced EVCI requirement evidence

Data	Segmentation (every year to 2050, and at MSOA geography)
Population and households	Socio-economic group; Occupation and traveller type; Car availability; Household size
Housing	Flat, Terraced, Semi-Detached, Detached
Employment and jobs	Skill level; Employment status; Income segmentation
Regional travel demand	<ul style="list-style-type: none"> • Origin and Destination of user movements; • mode (car, rail, bus, walk, cycle); • user class (i.e. commute, business, non-work); • purpose (user class + detail in other e.g. education, shopping, leisure etc); • time period (AM, inter-peak, PM). • seasonal variation
Whole network view of vehicle flows on roads; and electric vehicle uptake	<ul style="list-style-type: none"> • Regional highways model providing a whole network view. • For Car, Van, HGV movements. • EV uptake across the fleet for different decarbonisation pathways.
TfN Future Travel Scenarios	The travel matrices for the four TfN travel scenarios cover the agreed set of forecast years, time periods, fleet make-up and emissions

Developing our regional evidence base



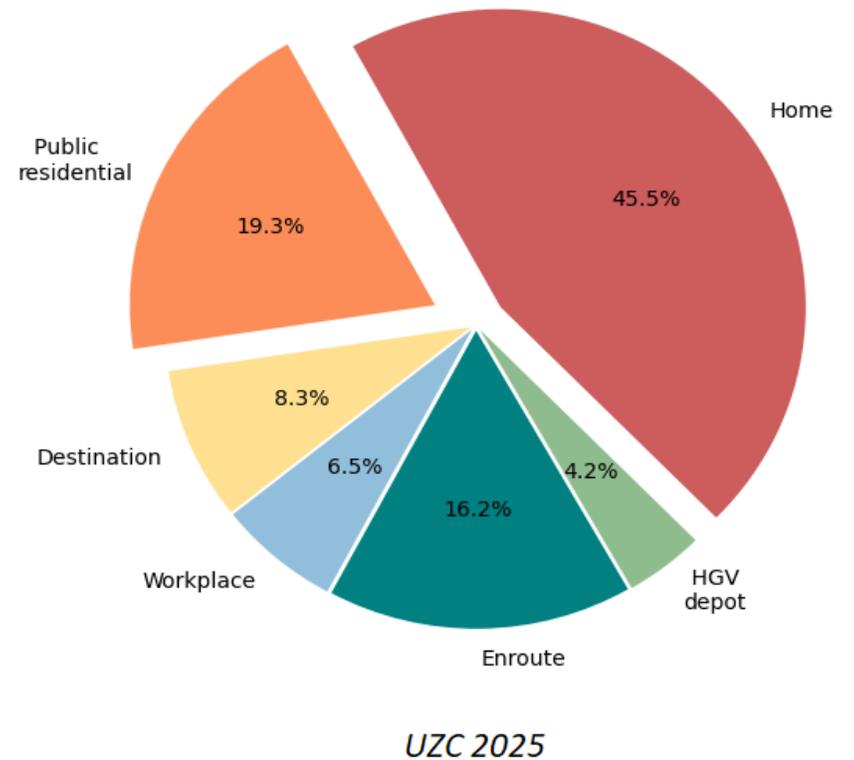
With the user able to explore how these are impacted by:

- **Different projections of future travel attributes** (e.g. EV stock, vehicle kilometres travelled, proportion of trips on the road network, where people live and work etc).
- **Different charging behaviours and charging location preference** (on trend; home ‘on/off street’ focused; public ‘rapid’ focused; local hub focused).

Applying regional transport modelling capabilities to identify the amount and type of charging needed to support anticipated travel movements.

- Our regional evidence suggests the majority of publicly available EVCPs will be required in public residential areas (e.g. on-street, in public car parks, local charging hubs) to supplement at home charging.
- Compared to lower needs of destination (e.g. supermarkets, gyms, etc.) and en-route rapid charging.
- En-route rapid is likely to be regularly used by high mileage drivers, and only occasionally by majority of other drivers. However, all drivers will want confidence that rapid chargers will be accessible when needed.

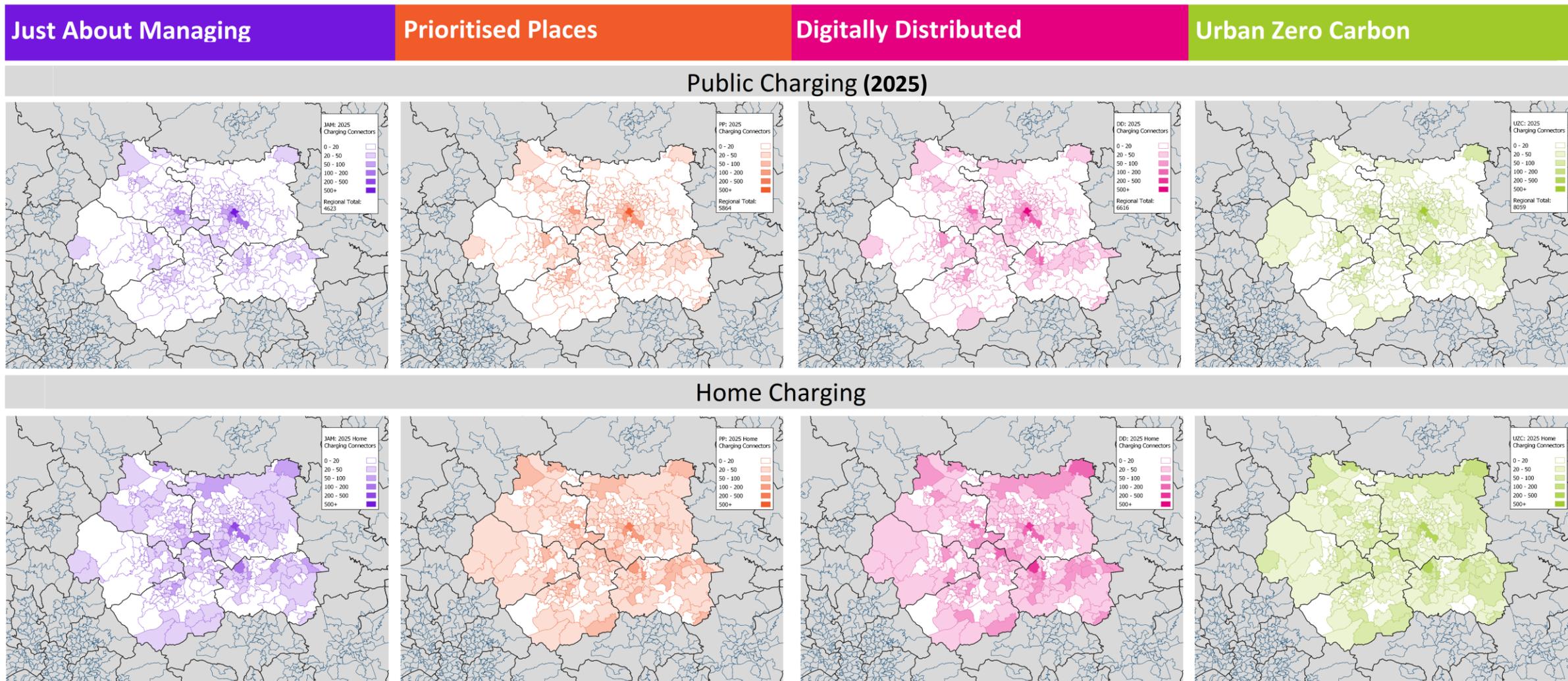
2025 charger demand by charging type, under our Urban Zero Carbon scenario



TfN's EVCI Framework evidence – what, where and when

- Ability to filter by: coverage of EVs (car, van, HGV) we need to support; charging category or total requirements (by home, on-street, work, destination, HGV depot; then en-route rapid for the region); varying uptake scenarios; different user charging behavioural scenarios; and at 5 year increments through to 2050.

West Yorkshire Combined Authority Public and Home Charging:

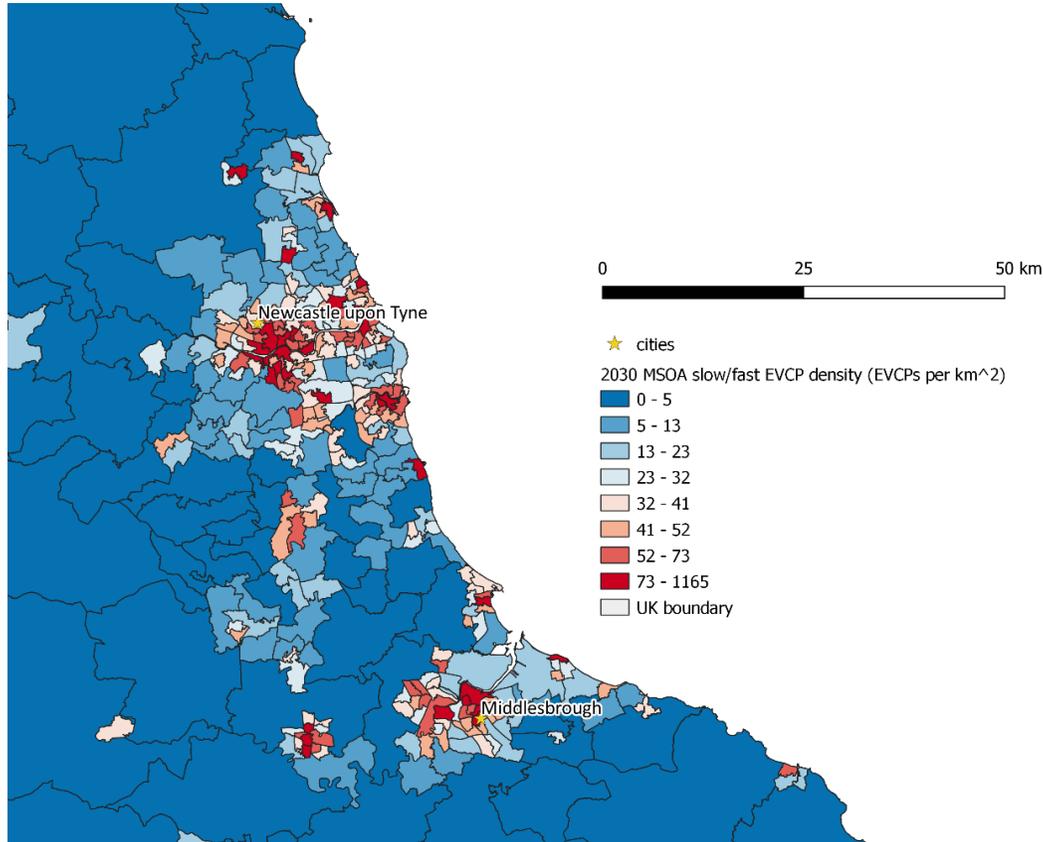


Identifying requirements across all place types – ensuring no one is left behind by understanding whole network distribution

Total non-rapid* EVCP density: 2030, Digitally Distributed scenario

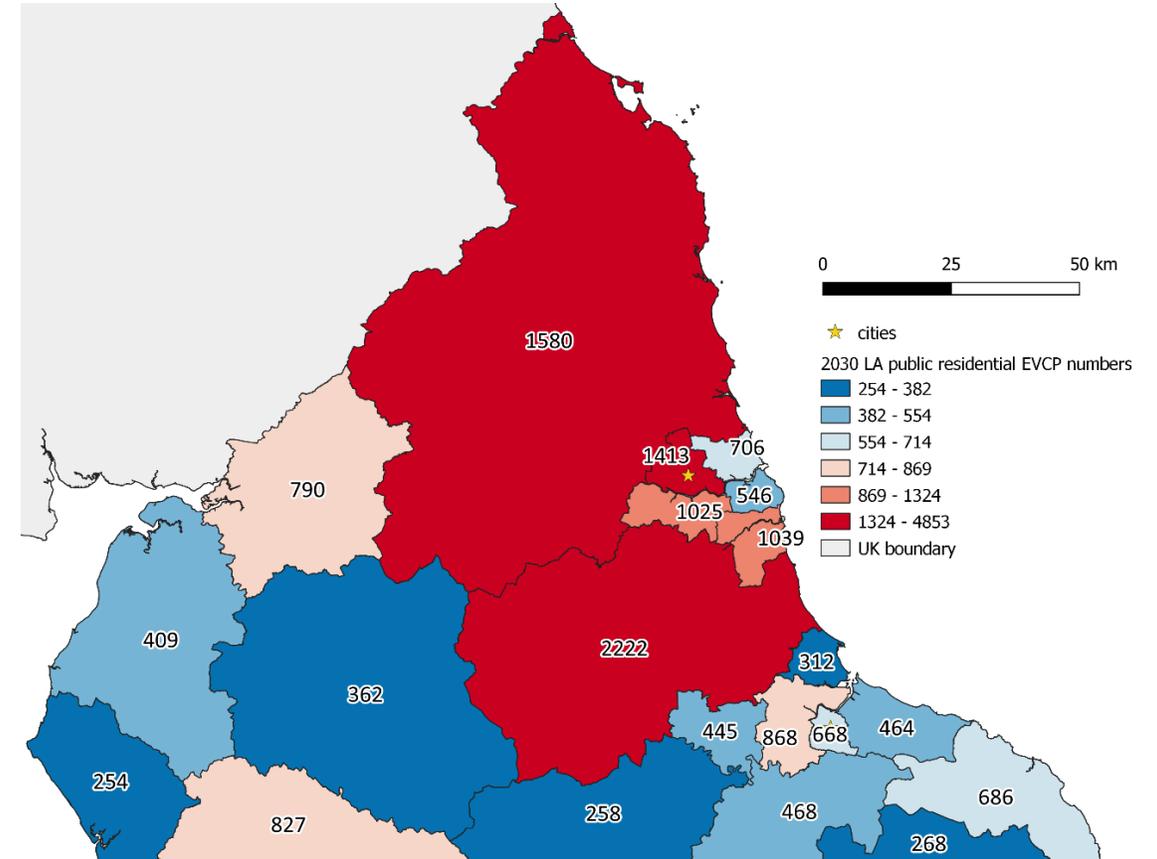
Cut by density we see a higher need in mainly urban areas:

- high density of people and housing
- higher new car ownership
- key destinations for shopping and entertainment and higher levels of destination charging



Public residential EVCP numbers: 2030, Digitally Distributed scenario

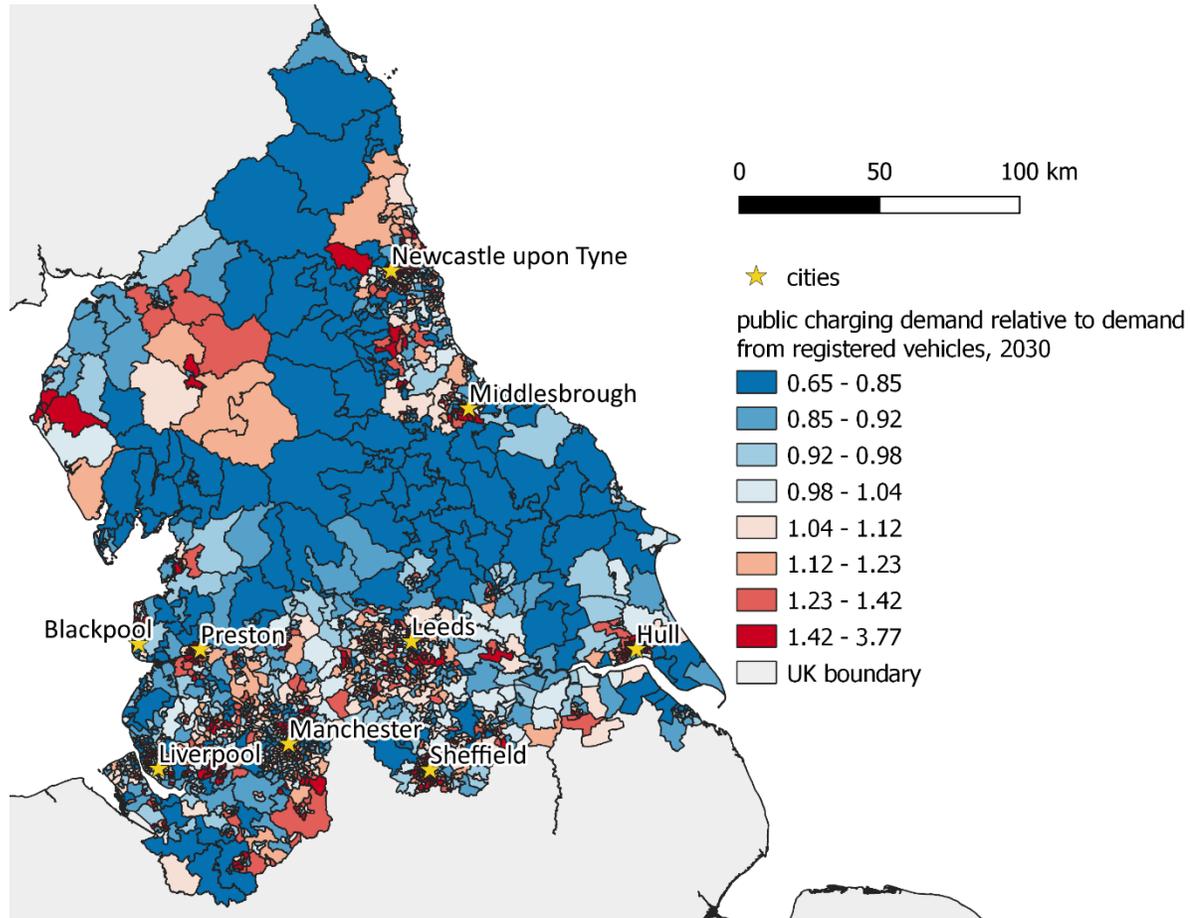
- A large area with a low EVCP density can still require the same number of EVCP as a smaller area with a higher density.
- It will be EVCP number not density which will define LA funding needs



* EVCP types shown on this map are: public residential, destination, workplace, and HGV depot. Public residential and destination are expected to be mostly publicly available EVCPs, while workplace and HGV depot are expected to be useable only by employees or HGV drivers

Understanding charging and travel demand to shape successful business models for delivery

Ratio of public charging demand to demand from vehicles registered in each MSOA

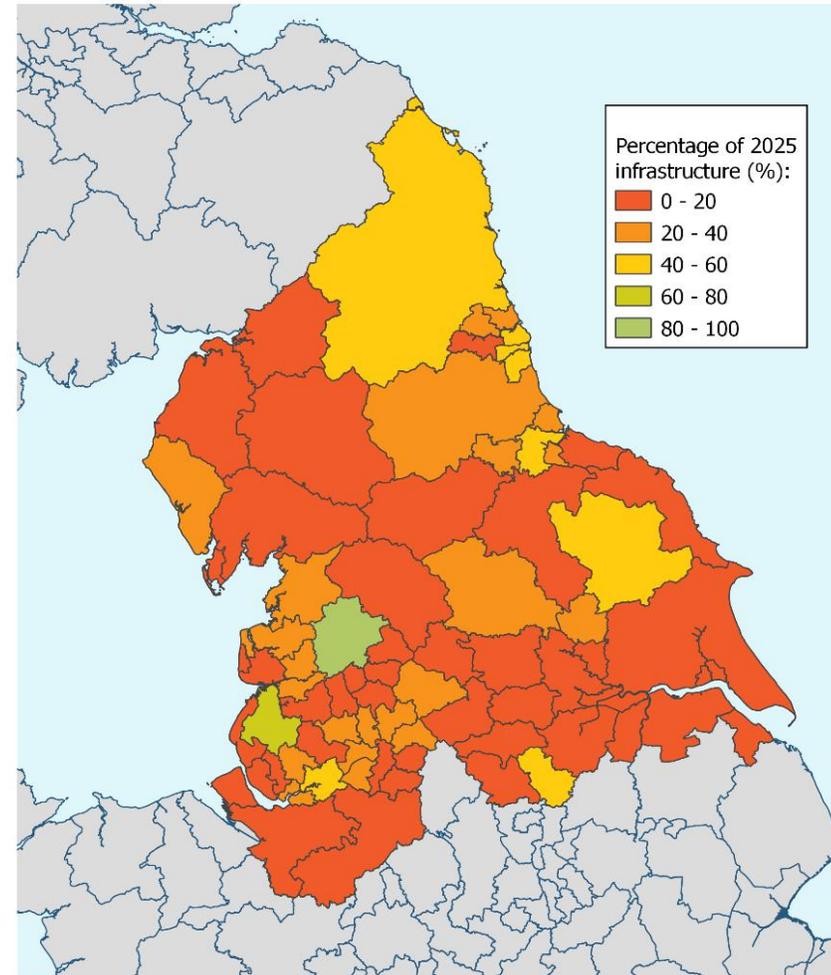


- Areas in red on this map attract more public charging demand than is created by vehicles registered in the same area – these are likely to be areas which draw visitors to them.
- TfN's visitor economy data used to identify average day and peak day comparisons (for all charging categories).
- Provides valuable insight towards different business models suitable for different places, i.e:
 - Some urban areas provide more consistent demand throughout the year – can be installed with confidence of use and return
 - Rural areas are likely to see more variance in utilisation - requiring decisions as to whether infrastructure is deployed to meet a peak / and not always use it; or meet an average day / and accept some queuing on busy days.

Monitoring progress of publicly available charging against where we need to be

- Between 27,600 and 48,000 non-rapid* EV charge points; and between 12,000 and 26,000 rapid** charge points will be required across the North by 2025. With similar rapid rises in charging requirements noted towards 2030.
- Comparison against the National Charge point Registry indicates that, in 2022, the North's supporting infrastructure provides for between **10-17% of that non-rapid demand**, and between **5-11% of the rapid charging demand**.
- Our evidence can be cut in several different ways. The figure shows what this looks like across the North for non-rapid charging.

% of public non-rapid charging required by 2025 (to support the regional decarbonisation trajectory) that is available in 2022 (comparison with National Charge point Registry).



* On-street, work, destination, HGV depot (slow to fast charging between 7kw and 22kw; averaging 1 – 8 hours charging currently)

** Rapid on the move charging (50kw and above, averaging 1 hour or less charging currently)

Determining possible sites for rapid charge points along the SRN / MRN / MRN

Derived from processing the following datasets:

- DfT Road Traffic statistics
- Distance from the SRN / MRN & Motorway Junctions
- Land Use (AddressBasePlus) and proximity to traffic volumes
- Existing Rapid Charging Hubs
- Forecast average traffic flows and trip length (TfN NoHAM model and scenarios)
- Projected EV uptake (TfN EVCI model - on-street, en-route and destination charging demand at MSOA level)
- Green Belt, Special Scientific interest area, AONB, Flood zone constraints



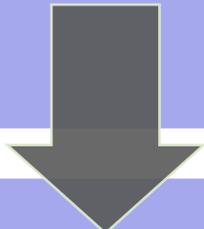
TfN - EV Charging Infrastructure Framework

- *Turning Decarbonisation Strategy into action*

Phase 1 (Completed): Build robust evidence and intelligence capability – to identify future trajectory and geographical location of regional EV charging requirements.



Phase 2 (Early 2022):

- Publication and communication of forecasted requirements for the region.
 - Inform National policy, delivery and funding decisions.
 - Support LA delivery plans and strategies for delivery.
- 

Phase 3 (2022/23):

- Apply evidence and enhance capabilities to target further challenges / opportunities faced by TfN and partners. Social, Spatial and Sustainable considerations.
- Support TfN partners in sharing successes / tackling common barriers to delivery.
- Encourage private sector engagements and commercial opportunities.
- Further consolidate and align our systems thinking with energy network and regulatory partners