

High level trends in the UK EV Market

Battery Technology Show / Future of Hybrid & Electric Vehicles

Excel London, October 23-24 2018



LowCVP
Low Carbon Vehicle Partnership

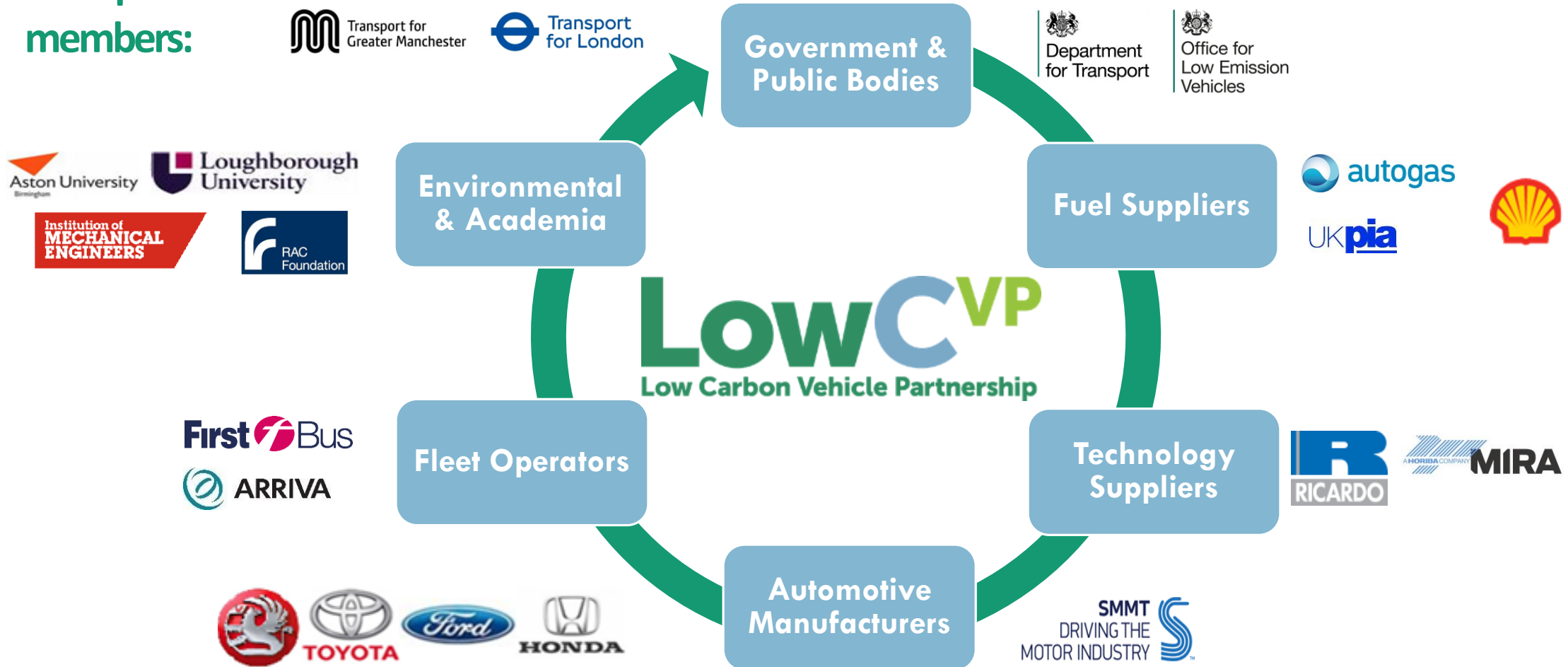
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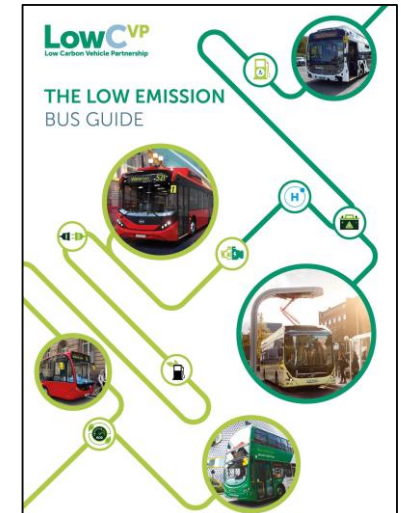
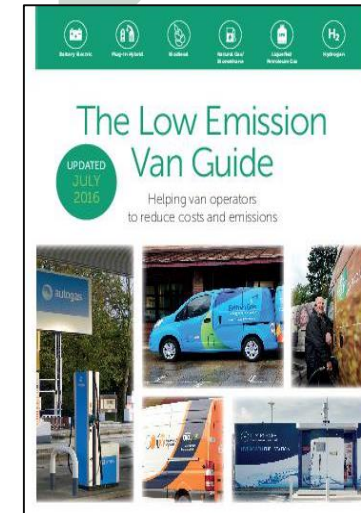
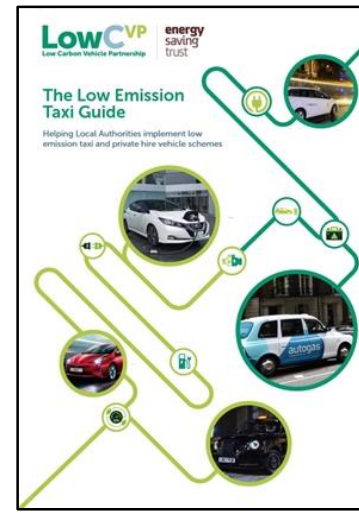
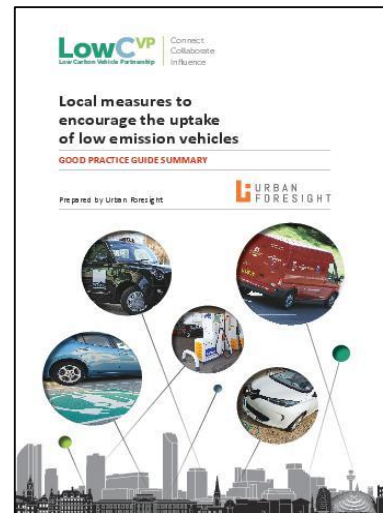
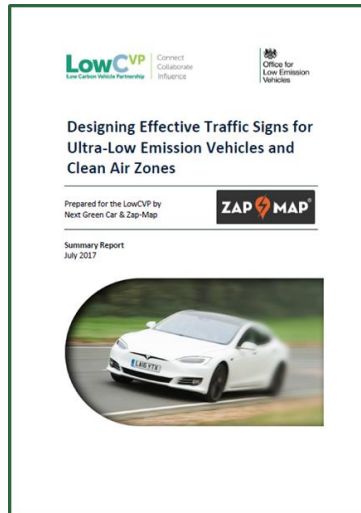
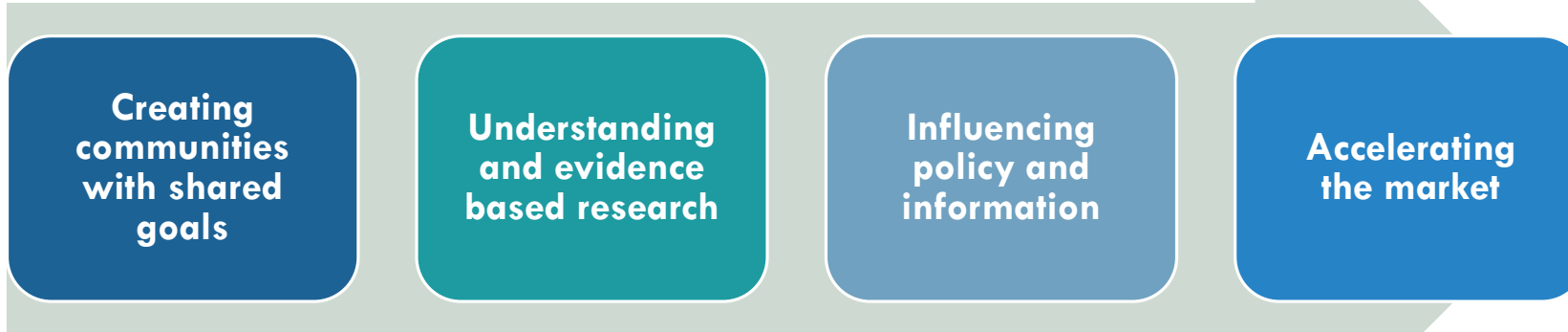
Darran Messem
LowCVP Chair

LowCVP: a unique public-private membership organisation accelerating the shift to low carbon vehicles and fuels

Example members:

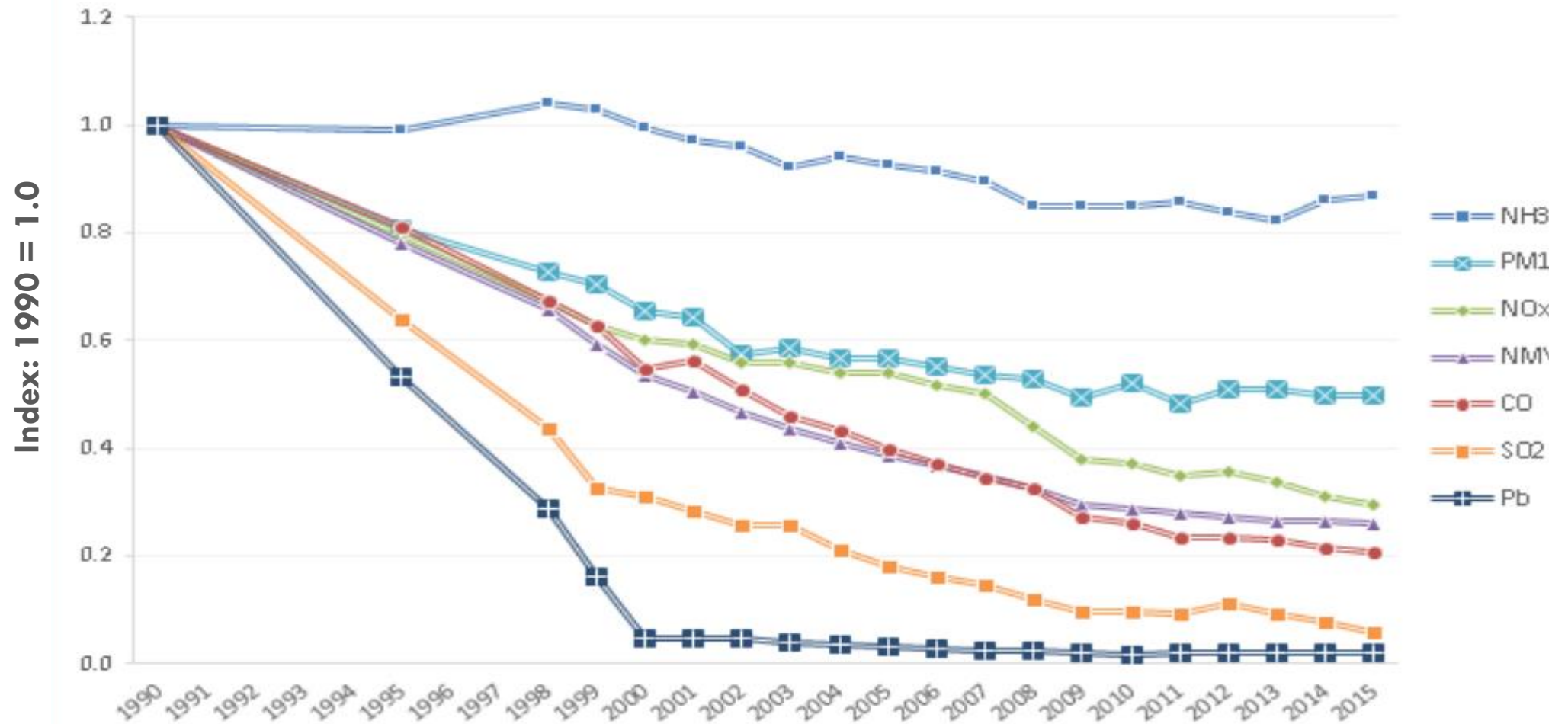


Building evidence, creating robust policies and innovation



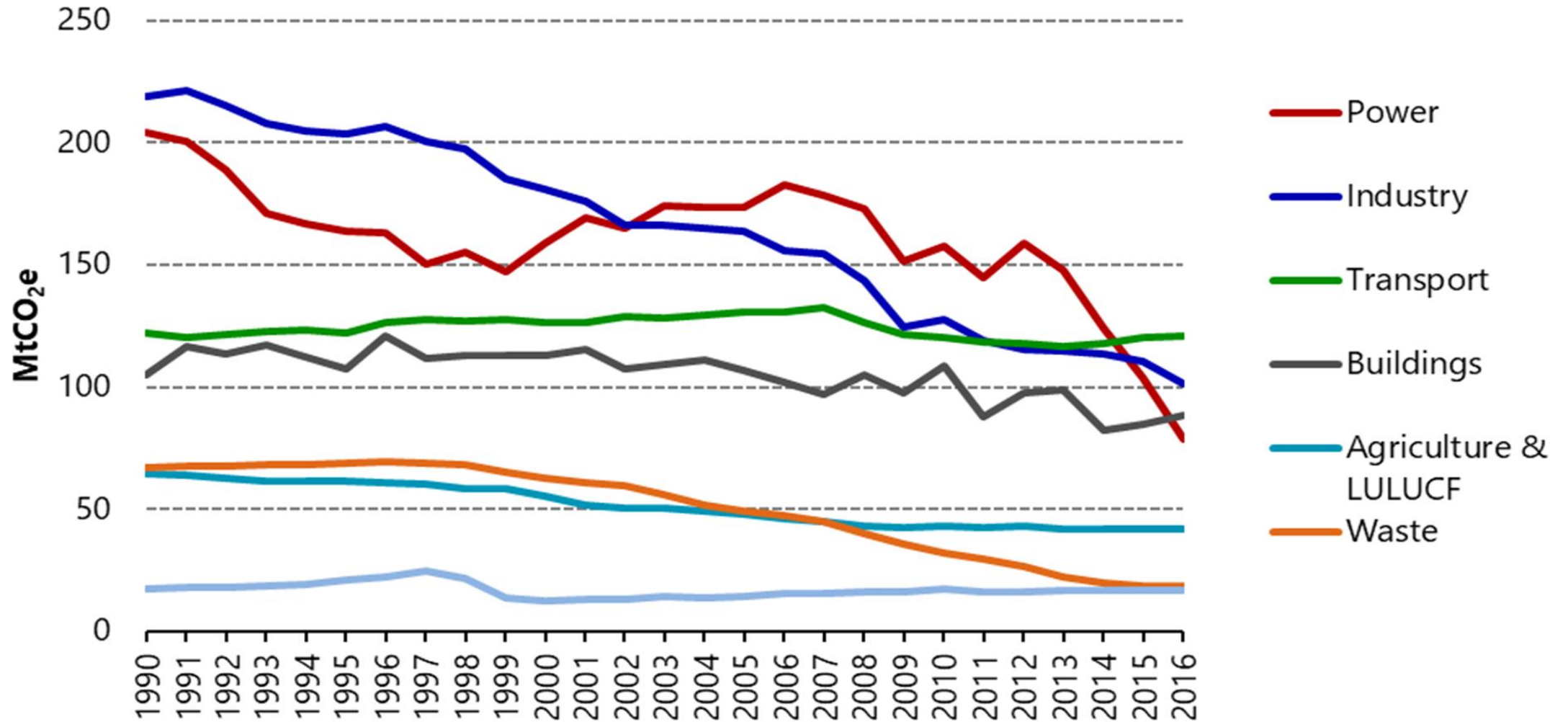
Air quality emissions: substantial decadal reductions

UK air quality emissions 1990 - 2015



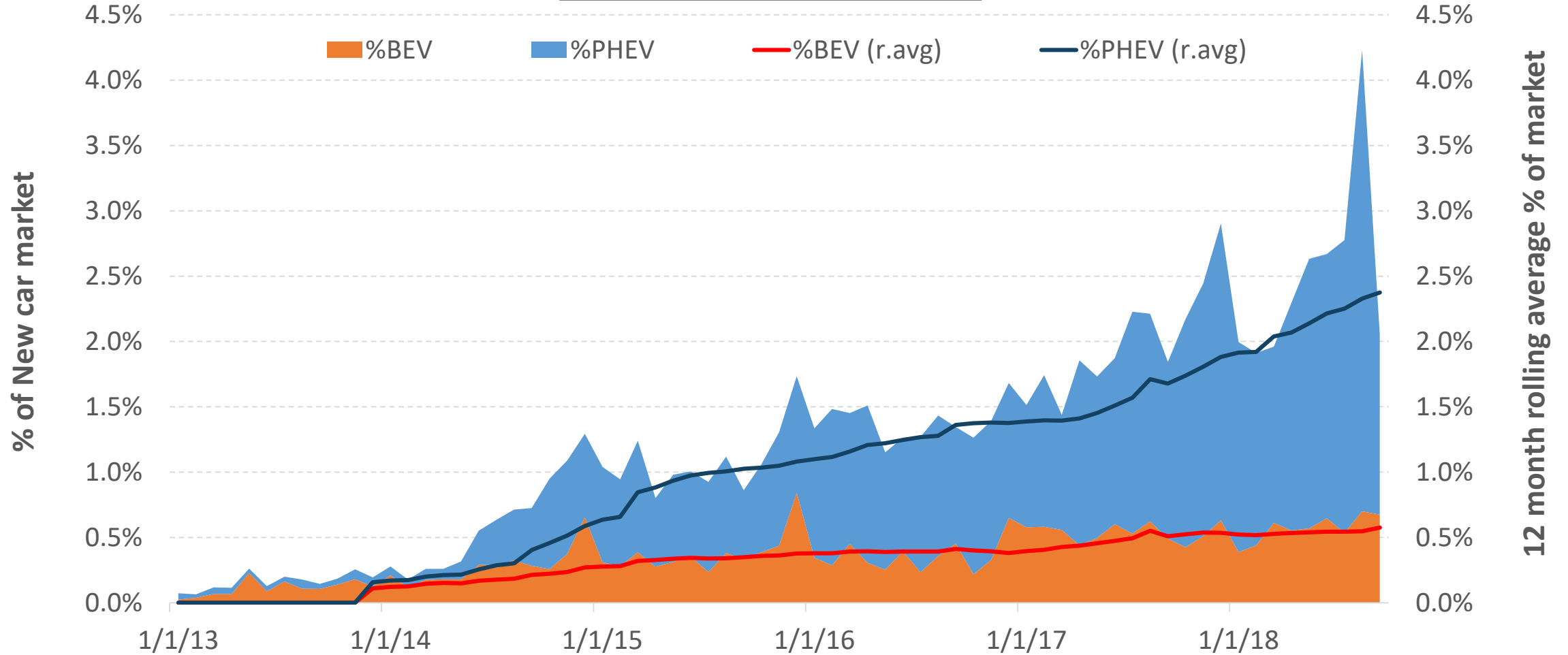
UK GHG emissions: transport emerging as an outlier

UK GHG emissions 1990 - 2016



EVs: increasing new vehicle market share

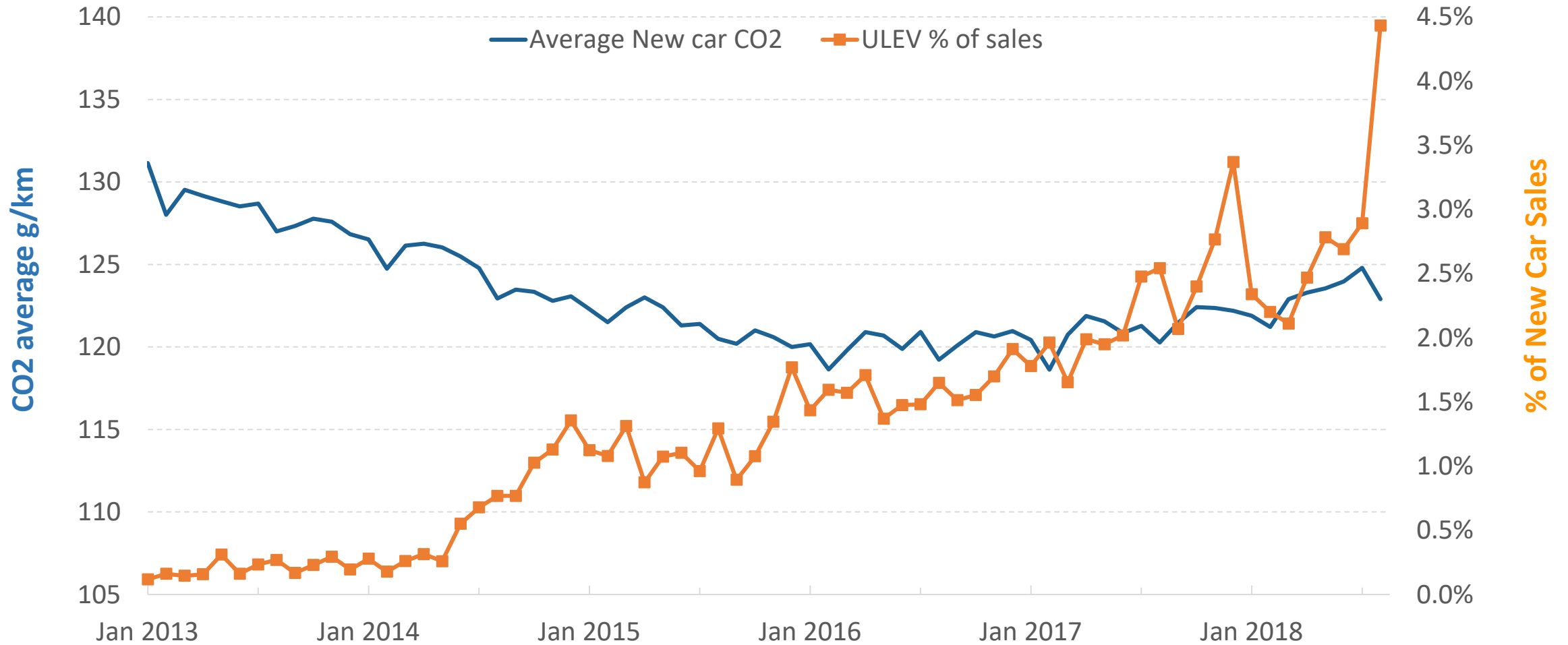
UK EV car market share



Source: SMMT data, LowCVP analysis

ULEVs: increasing new car share, offset by switch from diesel

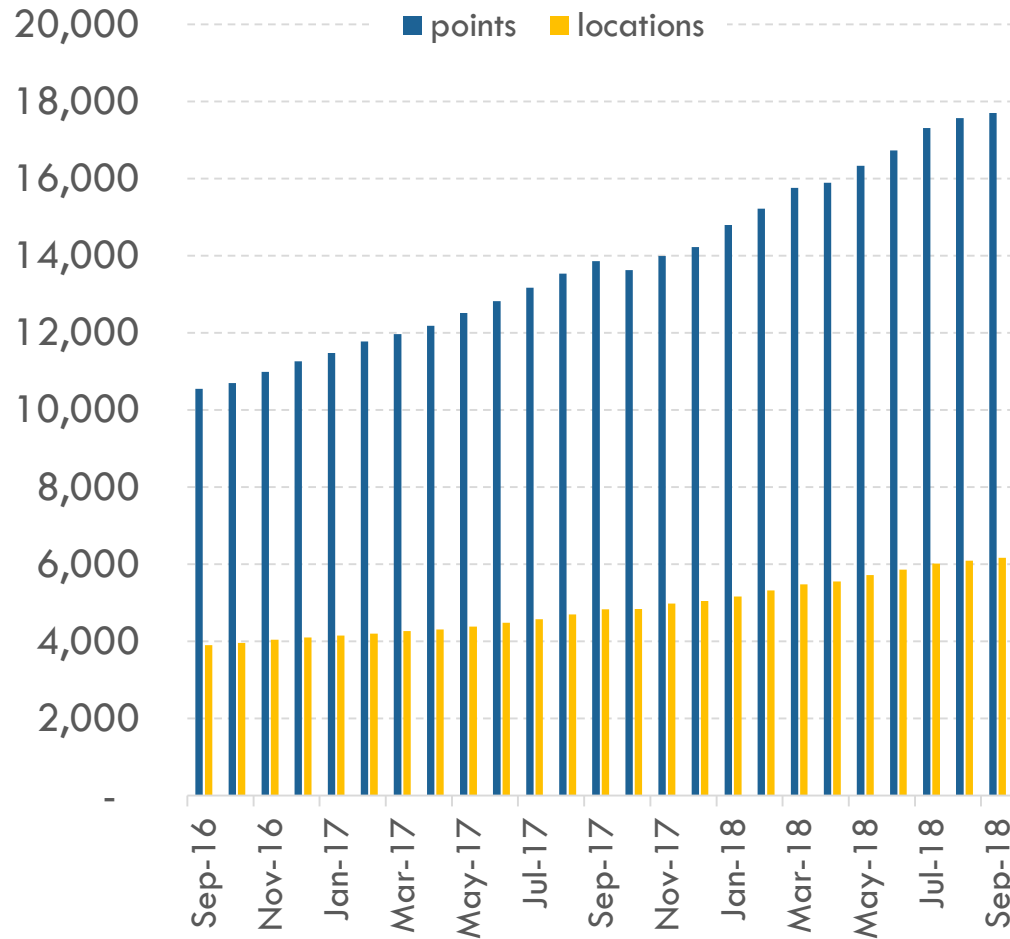
New car CO2 and ULEV sales



Source: DfT VEH0150

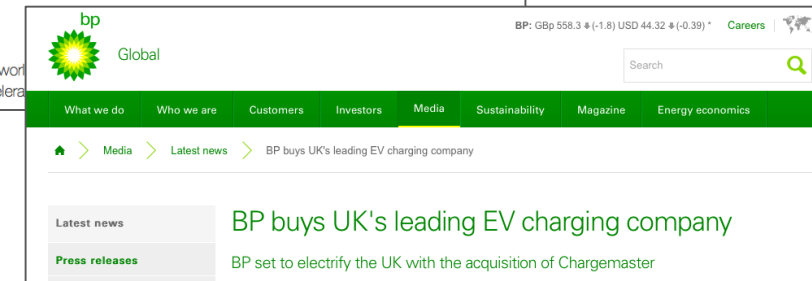
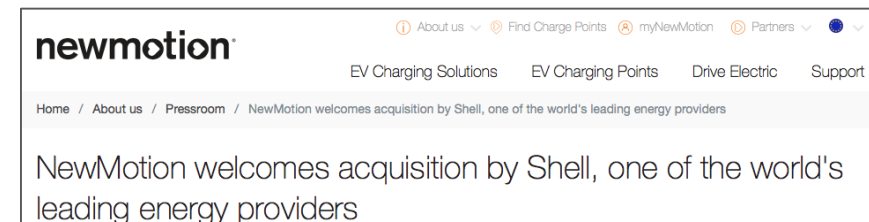
UK EV charging network: growing fast

Charger points and locations



Increase, September 2017 - 2018

	Locations	Points
Sep-17	4,860	13,909
Sep-18	6,168	17,701
Increase	1,308	3,793
% increase	27%	27%



Source: Zap Map

Consumer views: quite entrenched

To what extent would you say that each of the following factors/issues would act as a barrier to you purchasing an EV? (% concerned)

	JAN 2016	JUL 2017	JUN 2018
High purchase price	82%	83%	83%
Availability of public charging point	81%	84%	80%
Lack of rapid charge on motorways	—	—	79%
Time to offset higher purchase price vs lower running costs	68%	66%	69%
Concerns re: battery durability	65%	69%	68%

Source: AA research. Updated July 2018

UK policy: ambitious targets

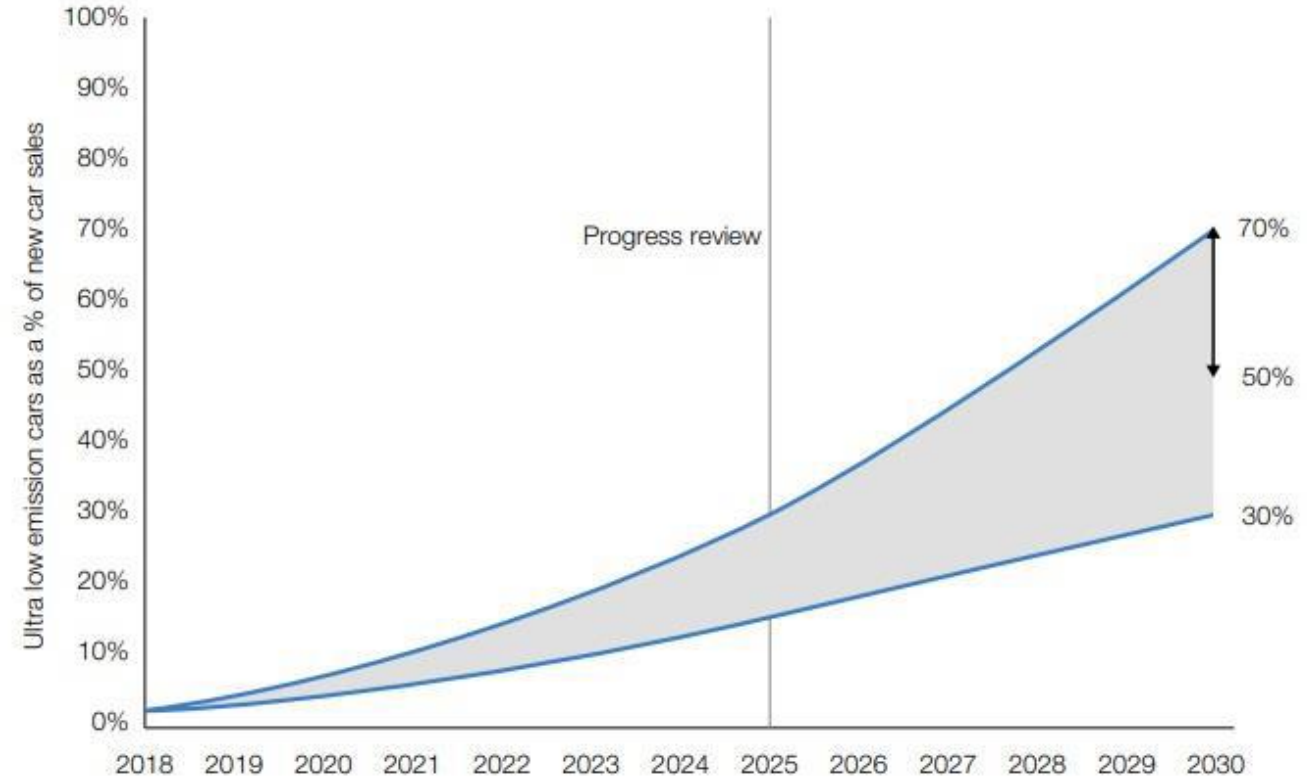
Climate Change Act

- Legal obligation for the UK to reduce GHGs by 80% in 2050 compared to 1990.

Road to Zero

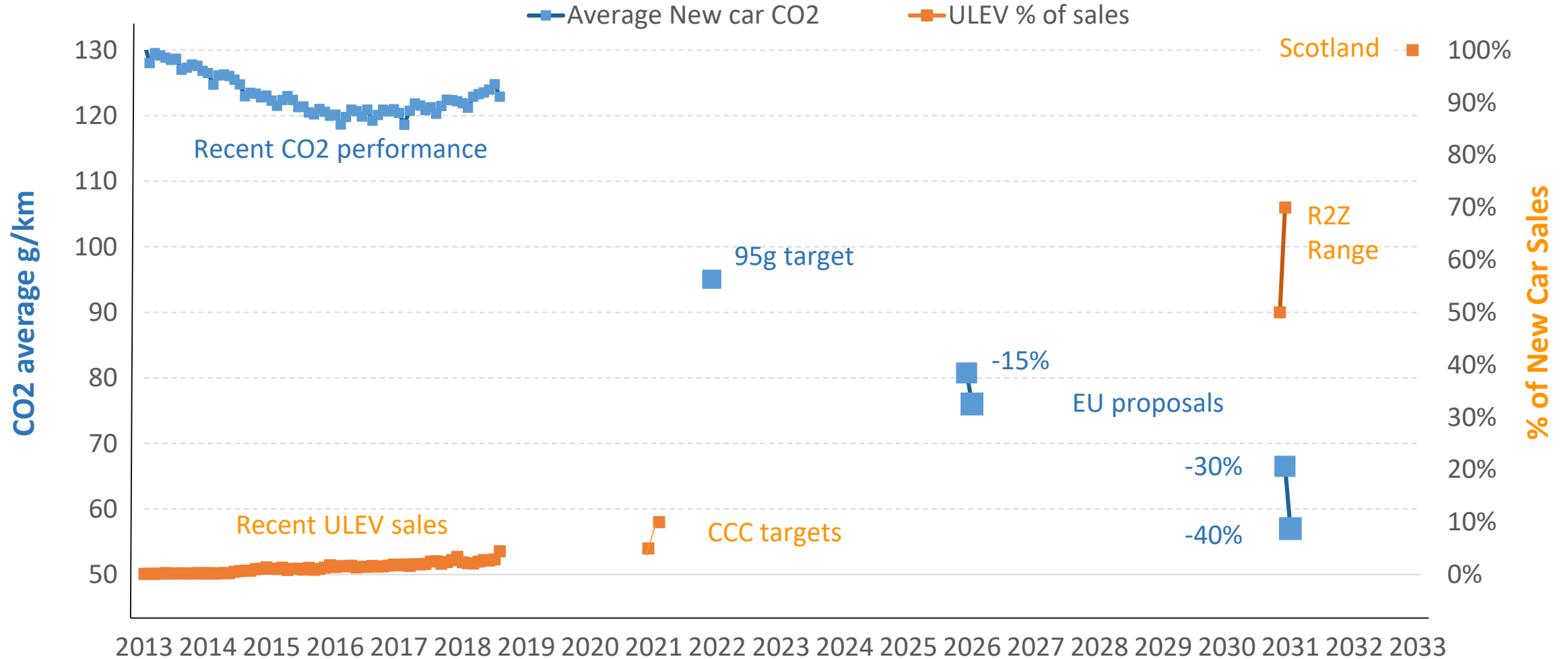
- All new cars and vans to be effectively zero emission by 2040
- At least 50%, and as many as 70%, of new car sales and up to 40% of new van sales to be ultra low emission by 2030
- Transition to be industry and consumer led. Review of progress by 2025

Road to Zero ULEV sales target



ULEV targets: the step-change required

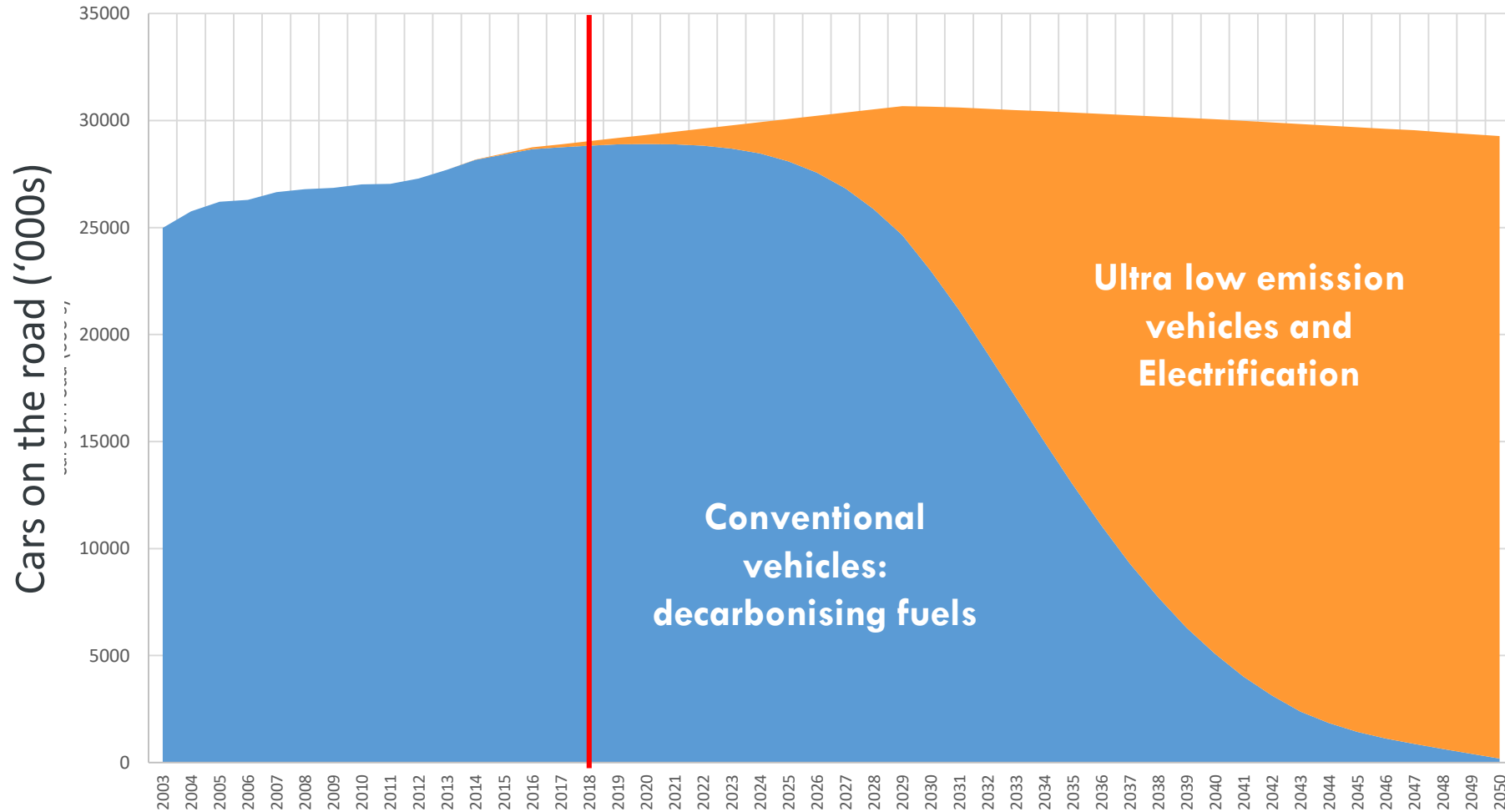
New Car CO2 and ULEV targets



Source: DfT VEH0150

Decarbonising transport energy in parallel

ULEV and conventional vehicle transition – indicative trend



Five key trends helping shape future direction

Regulation

Tailpipe & renewable content, potentially moving to full life cycle.



Connected & autonomous

Potential transformative technologies. Significant potential impact on carbon emissions.



Energy system

Increased renewable energy, system efficiency, new markets & services.



Air quality control

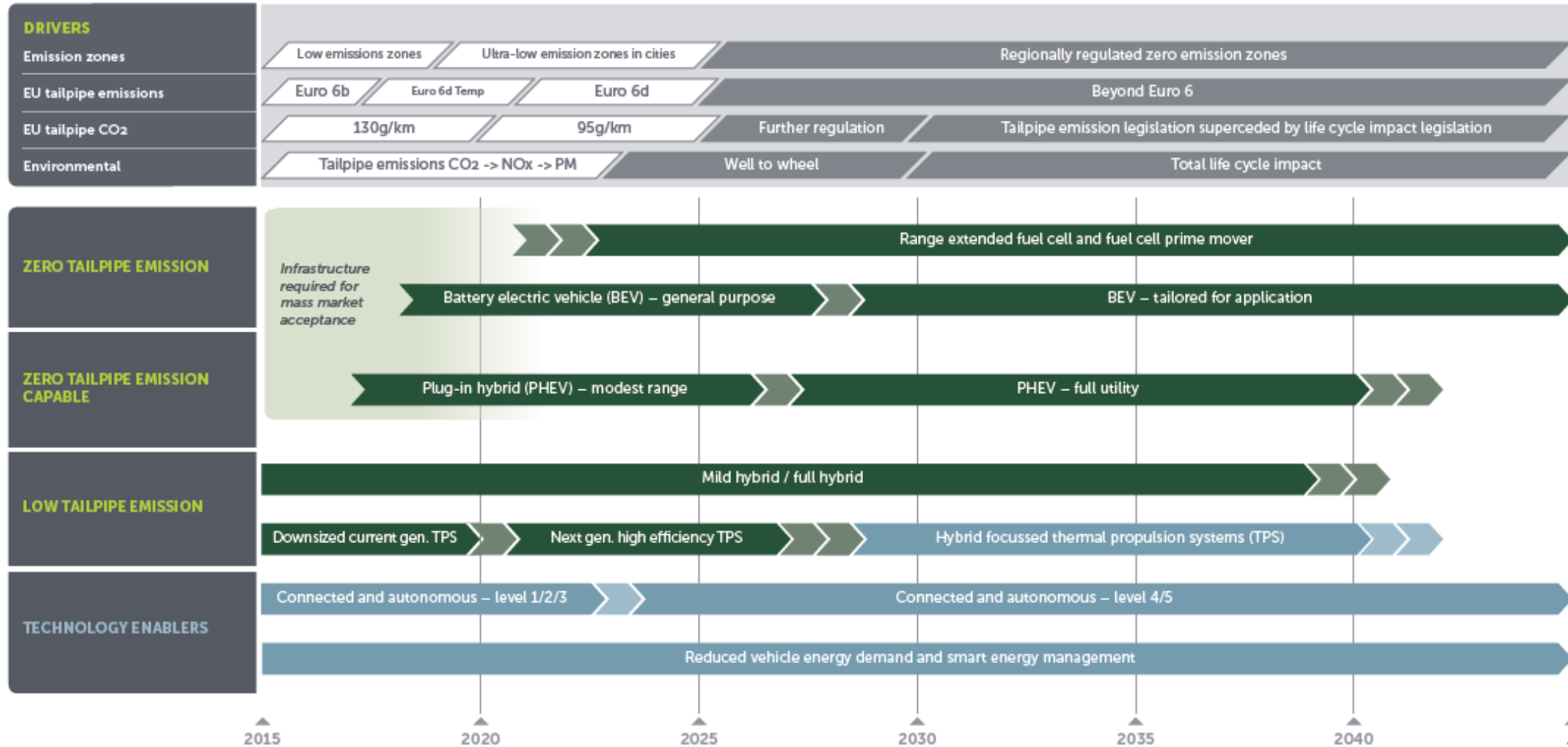
Increase in local regulation via city access.

Mobility as a service

Transport system efficiency. Move from ownership to user.

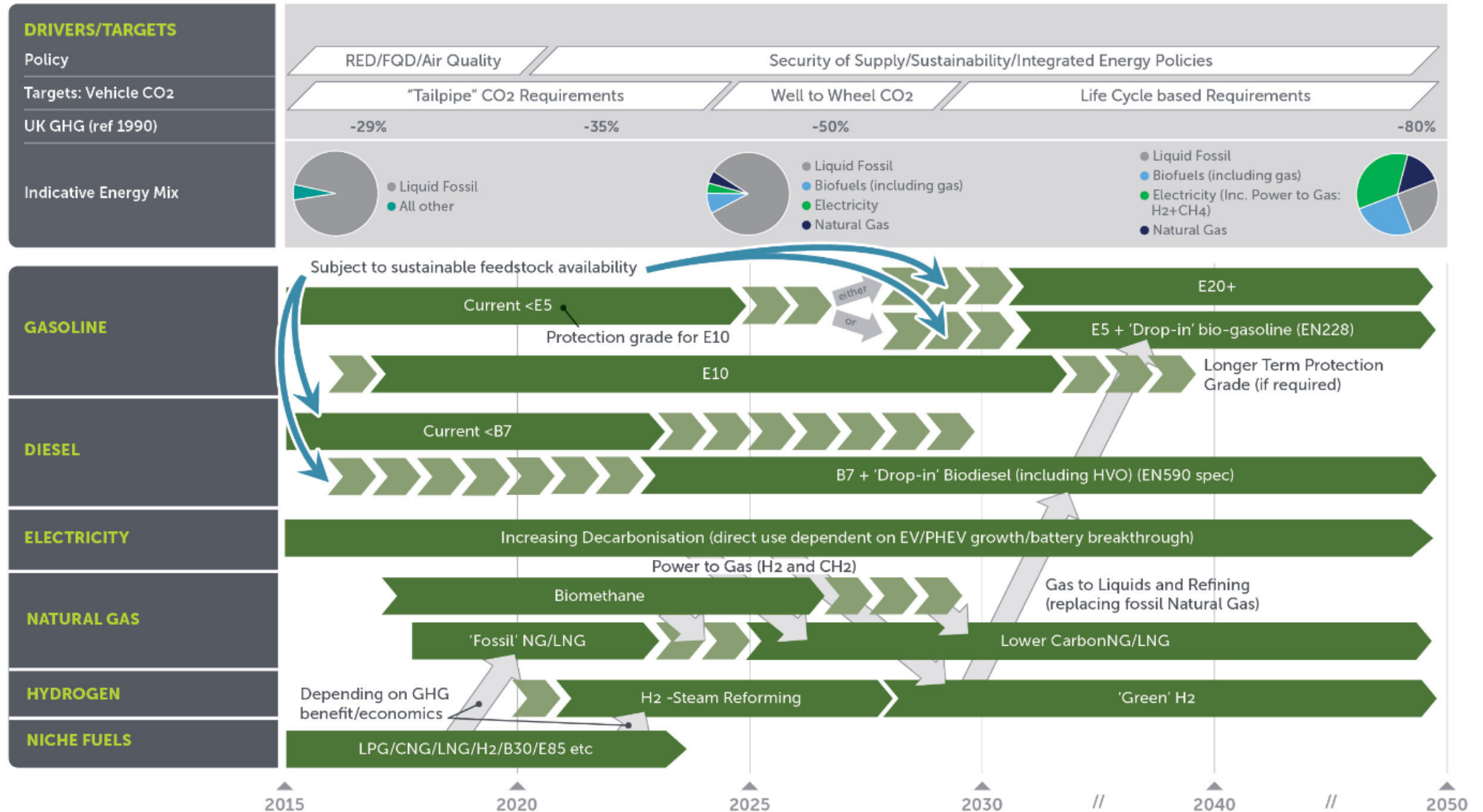
The strategy to deliver zero emission vehicles

- Low emission zones
- Tighter new vehicle emission targets
- More electric drivetrains
- Connected and autonomous vehicles



The strategy to deliver lower carbon transport energy

- Increased blending of renewables fuels
- Introduction of drop-in fuels
- Lower carbon fuels for HDVs
- Increased electrification



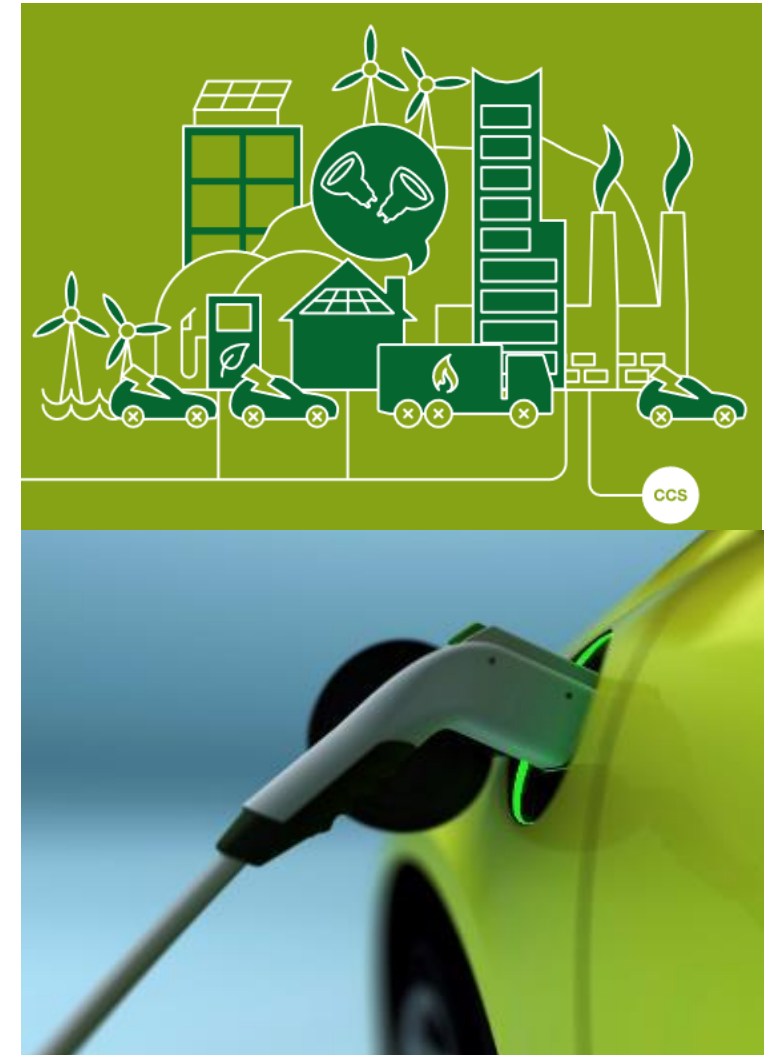
The need to improve transport system integration

National Grid's 'Future Energy Scenarios' (FES) estimate that:

- EVs could increase annual electricity demand by around 10% in 2050.
- Additional demand peak from EVs of 18GW in 2050
- Could be reduced to 6GW with the use of smart charging.

My Electric Avenue concluded that:

- Local electricity grids would struggle when clusters of homes have EVs (40%-70%) charging at 3.5kW.
- Reinforcing the local grid estimated to cost £2.2bn
- Introduction of innovative technology could avoid need for grid reinforcement.



Conclusions & summary

- EV sales are increasing; the increase is mostly hybrids and not pure EV's, and EVs remain less than 1% of the UK fleet
- Automotive policy frameworks are working - to an extent
- Low emission and low carbon must remain vital areas of focus
- ULEV, EV and low-carbon fuel sales will need to increase dramatically to meet targets
- The automotive, fuels, energy and infrastructure sectors need to be better aligned to deliver targets



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