

Zero Carbon Transport, Industry and Electricity

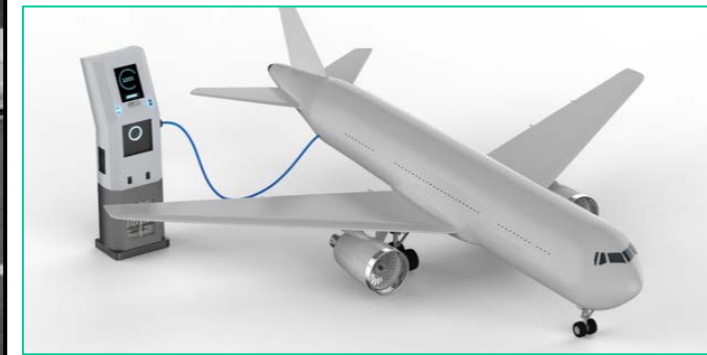
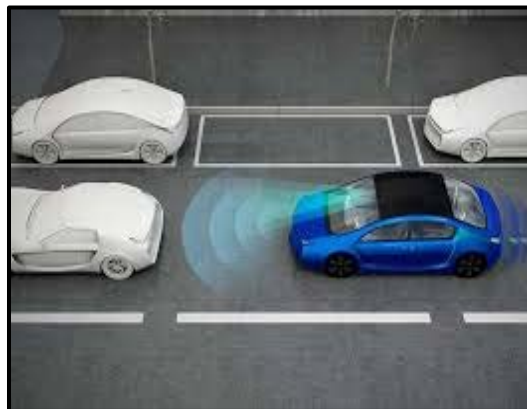
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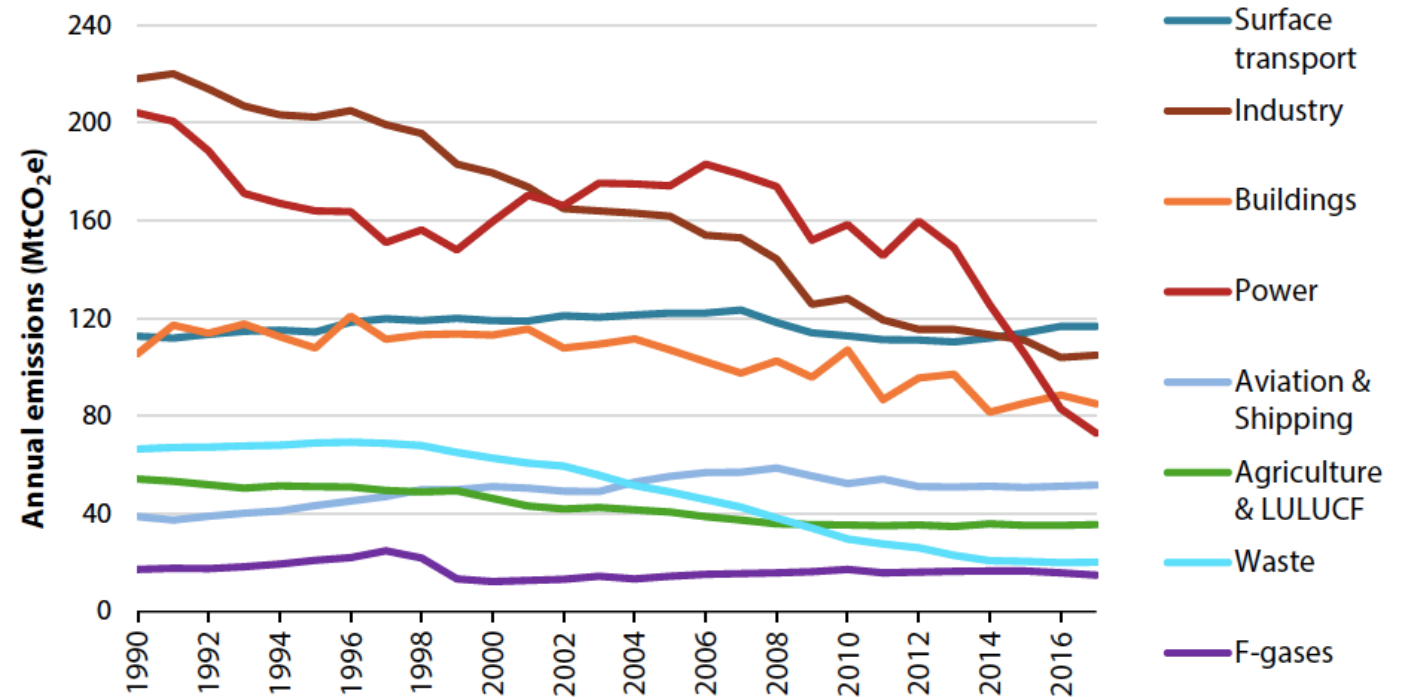
Surface Transport

Domestic road transport is by far the biggest emitter at around **92%**

Household transport emissions need to be close to zero in 2050

Councils will be allowed to impose tough restrictions on the most polluting diesel vehicles as soon as 2020.

Figure 1.4. Progress reducing emissions in the UK has been imbalanced



Source: BEIS (2019) *Final UK greenhouse gas emissions national statistics 1990-2017*; CCC analysis. LULUCF = land use, land use change and forestry.

More than **2,000 schools** around England and Wales are located near roads with illegal and dangerous levels of emissions

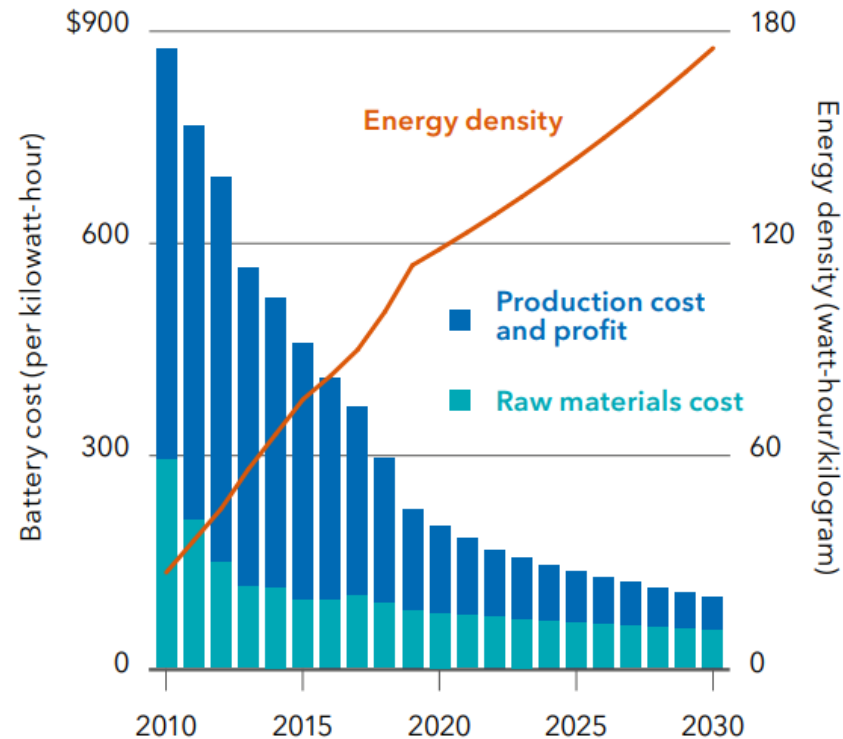


Electric Vehicles

11 million by 2030

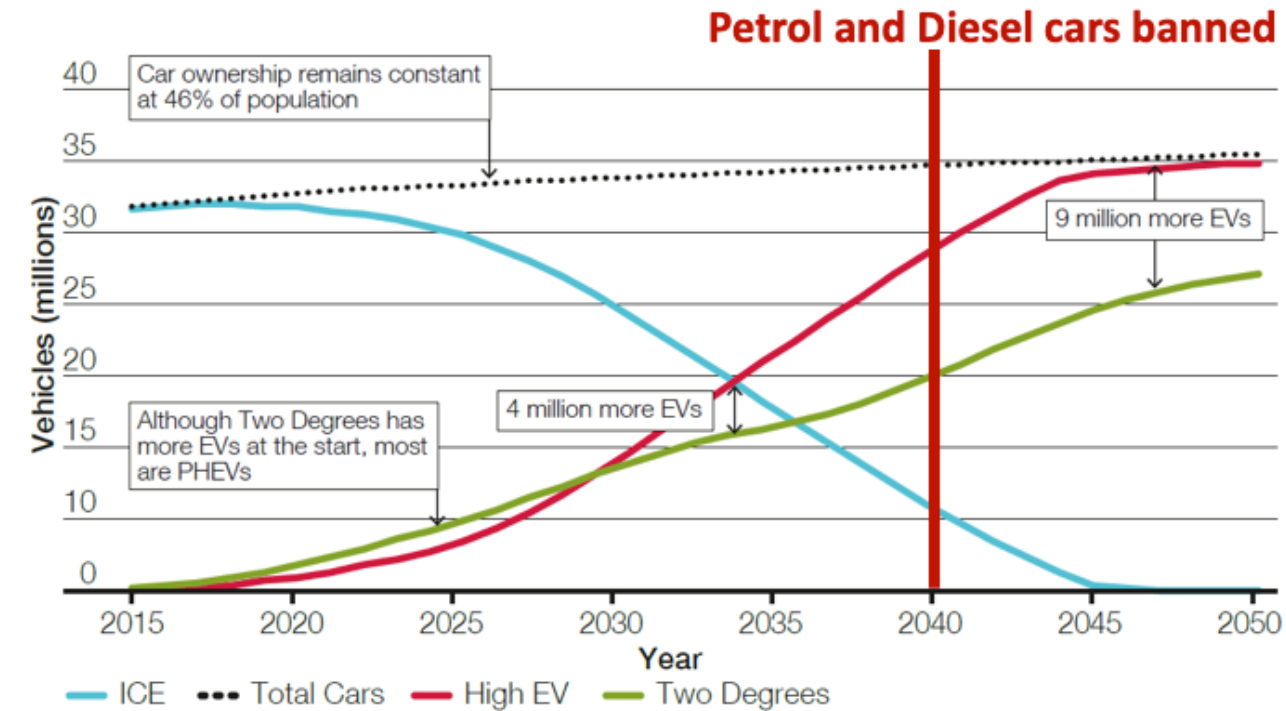
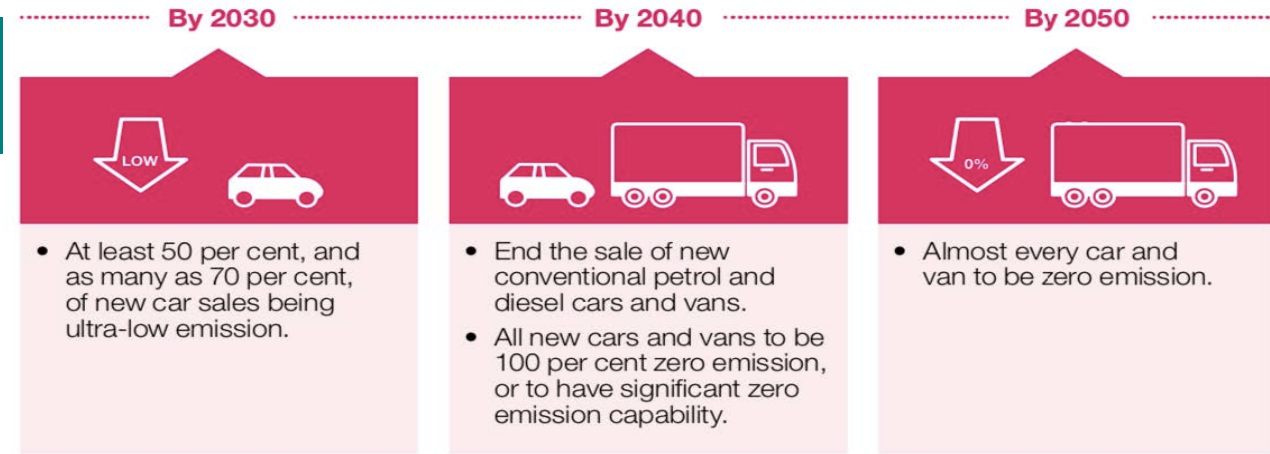
36 million by 2040

Cost and energy density of vehicle batteries, 2010-2030

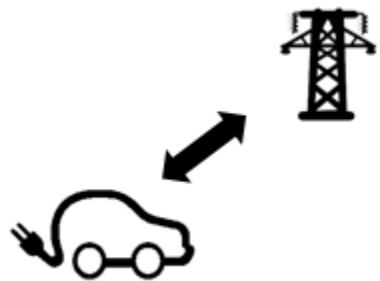


Sources: BlackRock Investment Institute and Exane BNP Paribas, April 2017.
Notes: battery cost is shown in US dollars per kilowatt-hour. Energy density refers to the amount of energy that can be stored for a given weight or volume and is shown in watt-hour per kilogram. Values before 2016 are based on Exane BNP Paribas data, and values from 2016 are its estimates.

Key milestones from the Government's Road to **Zero strategy**¹⁶

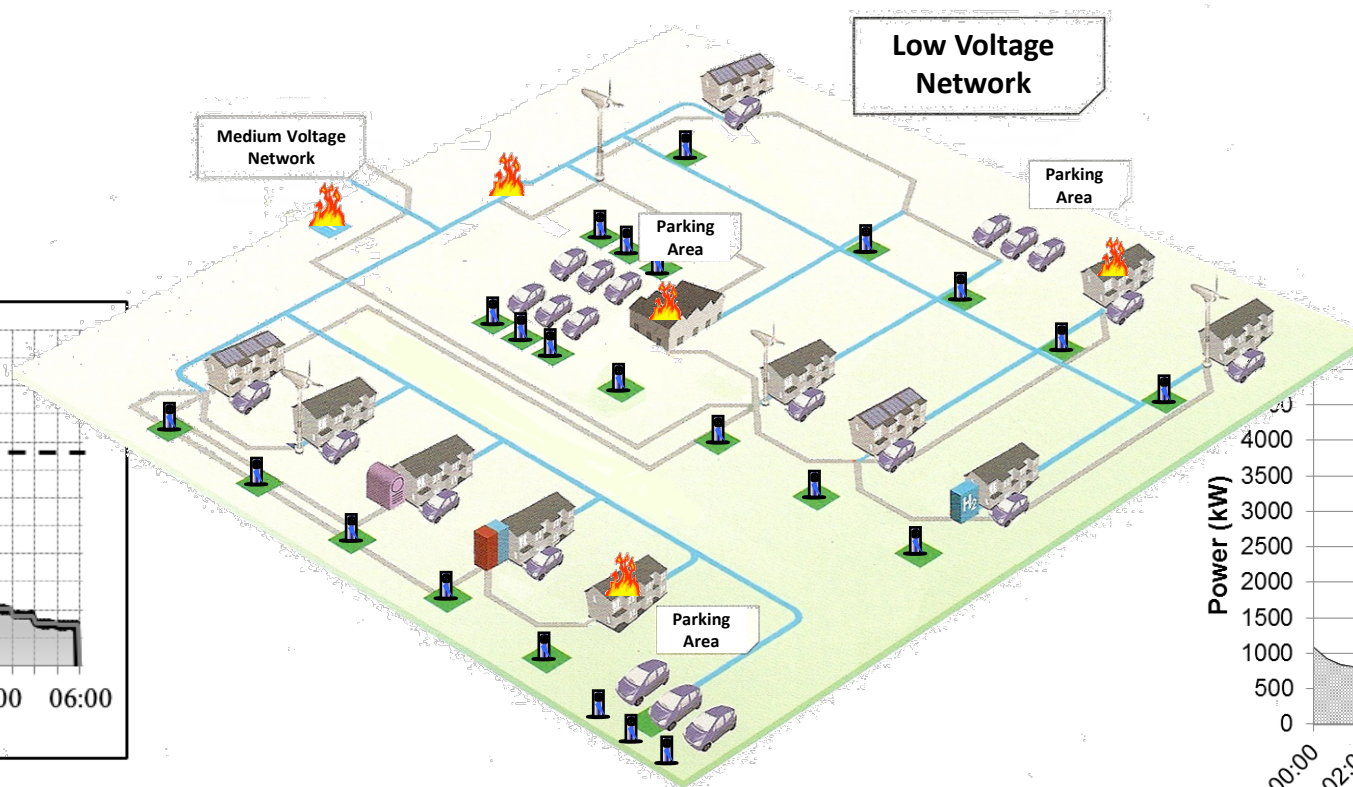
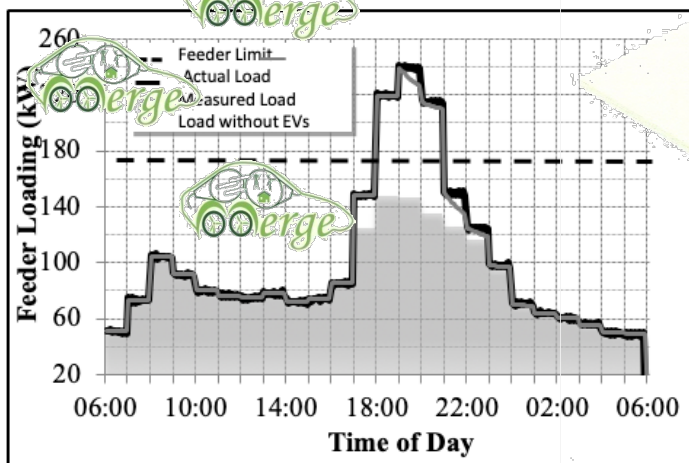


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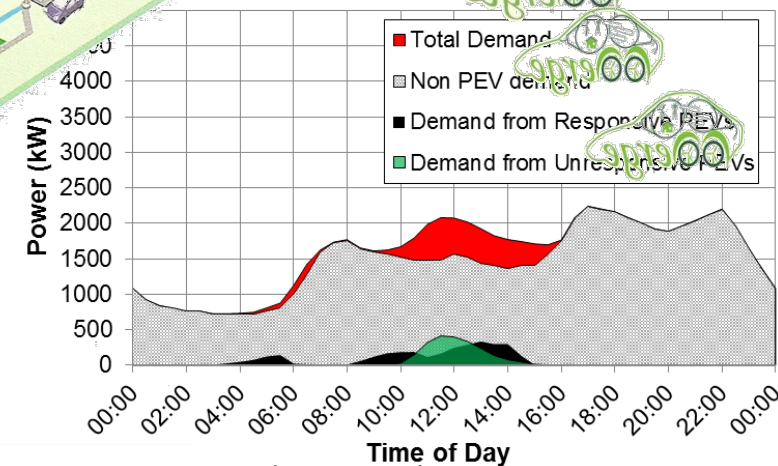


Electricity as a Transport Fuel

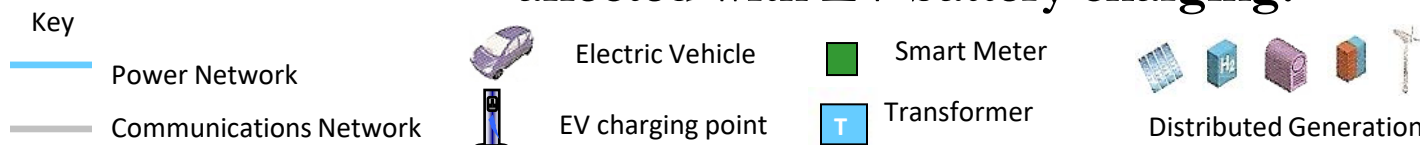
Residential Demand

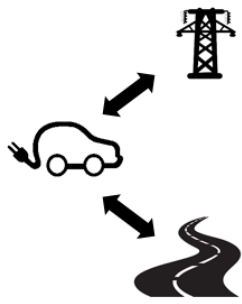


Commercial Demand



How are the distribution network equipment and operating parameters going to be affected with EV battery charging?





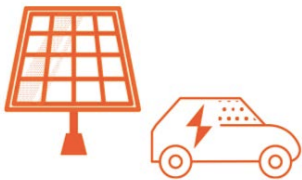
Flexibility from EVs Charging and V2G

- Smart flexible system will need **new business models and services** to match system needs with vehicle charging requirements and consumer preferences

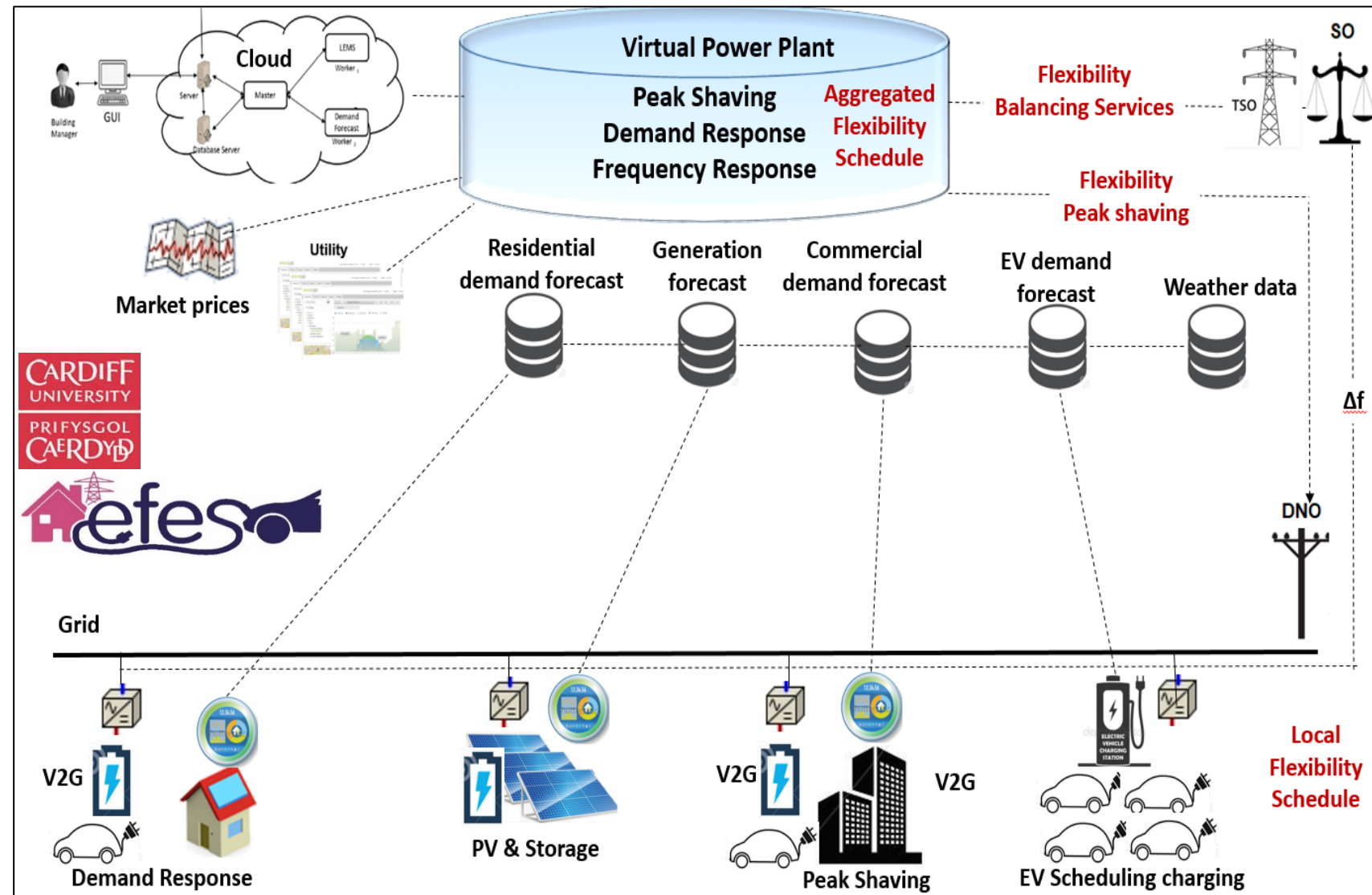


Over 75% of EVs could be using smart charging by 2050.

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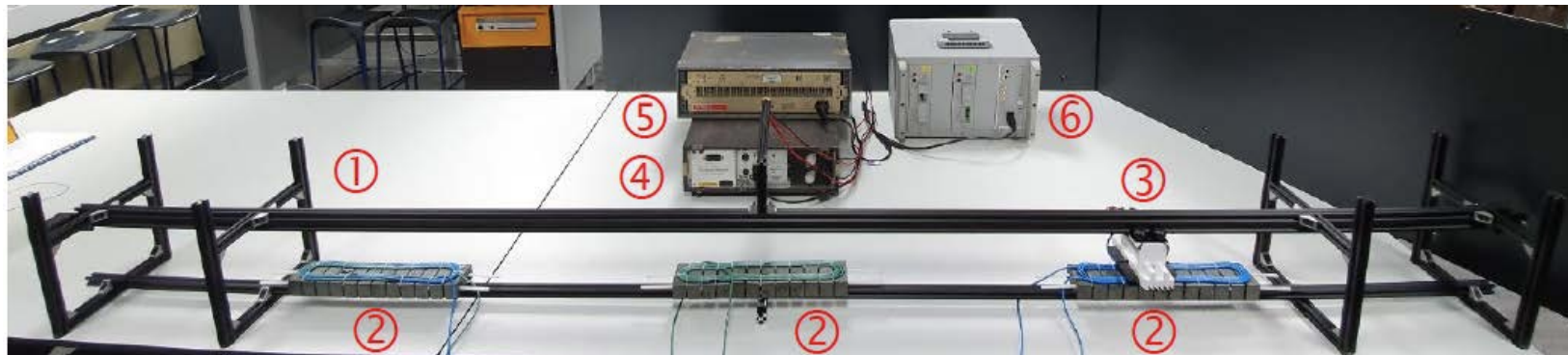
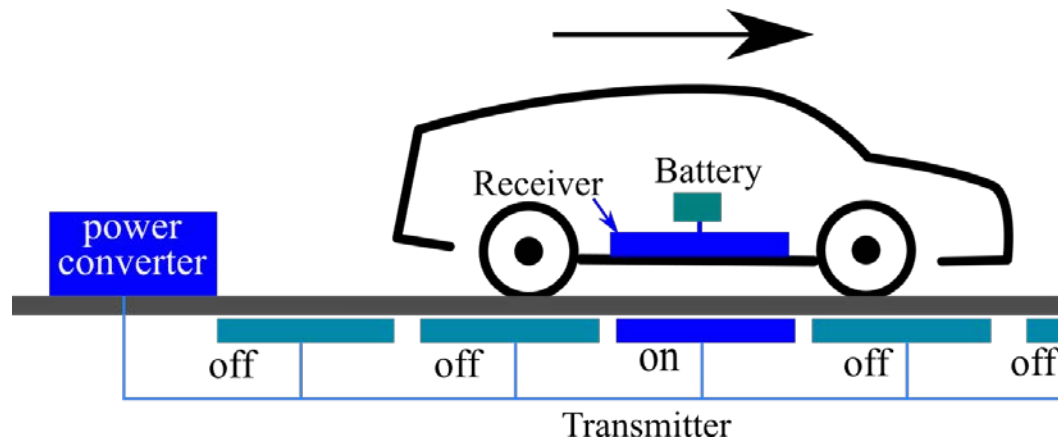


Smart charging vehicles could enable the storage of roughly one fifth of GB's solar generation for when this energy is needed.



Importance of innovation - Diversification of Charging Infrastructure

Dynamic wireless charging system

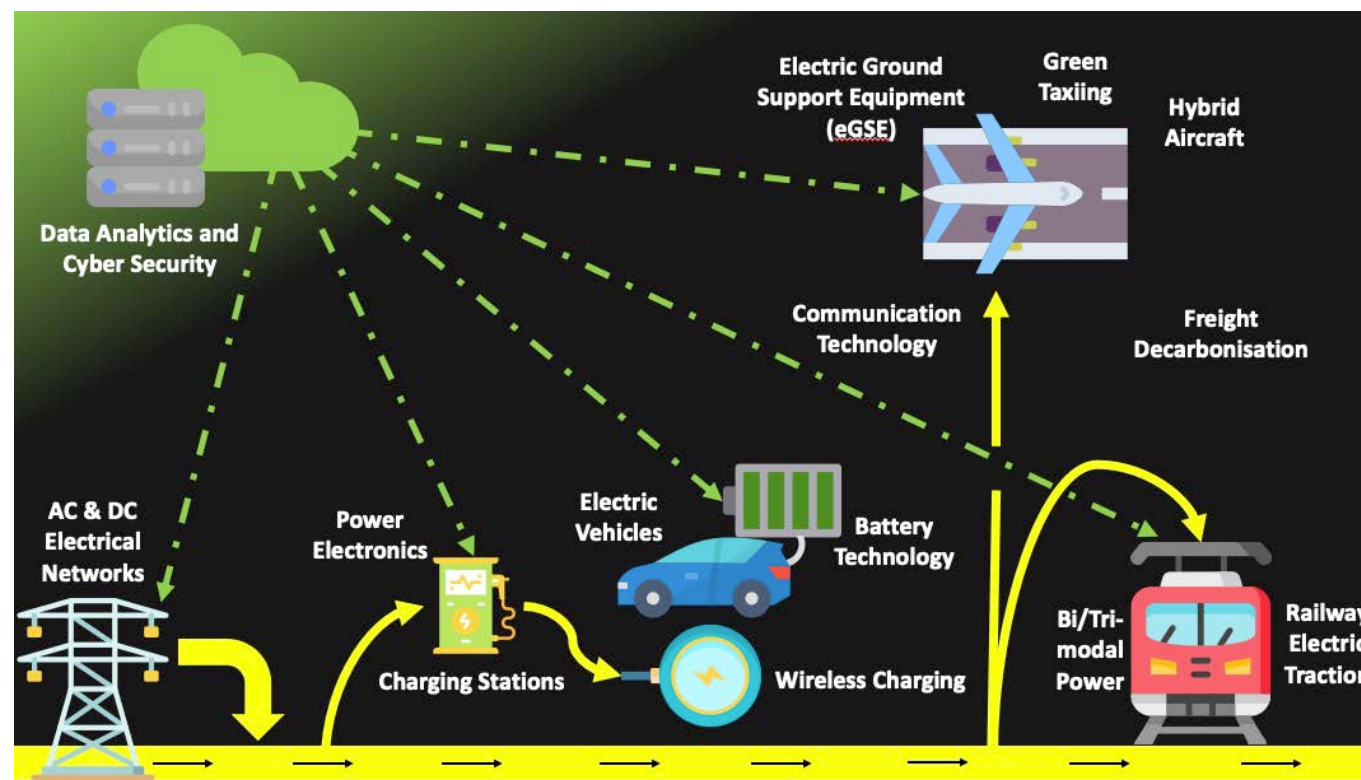


Project: Electric Road System for Dynamic Charging of Electric Vehicles

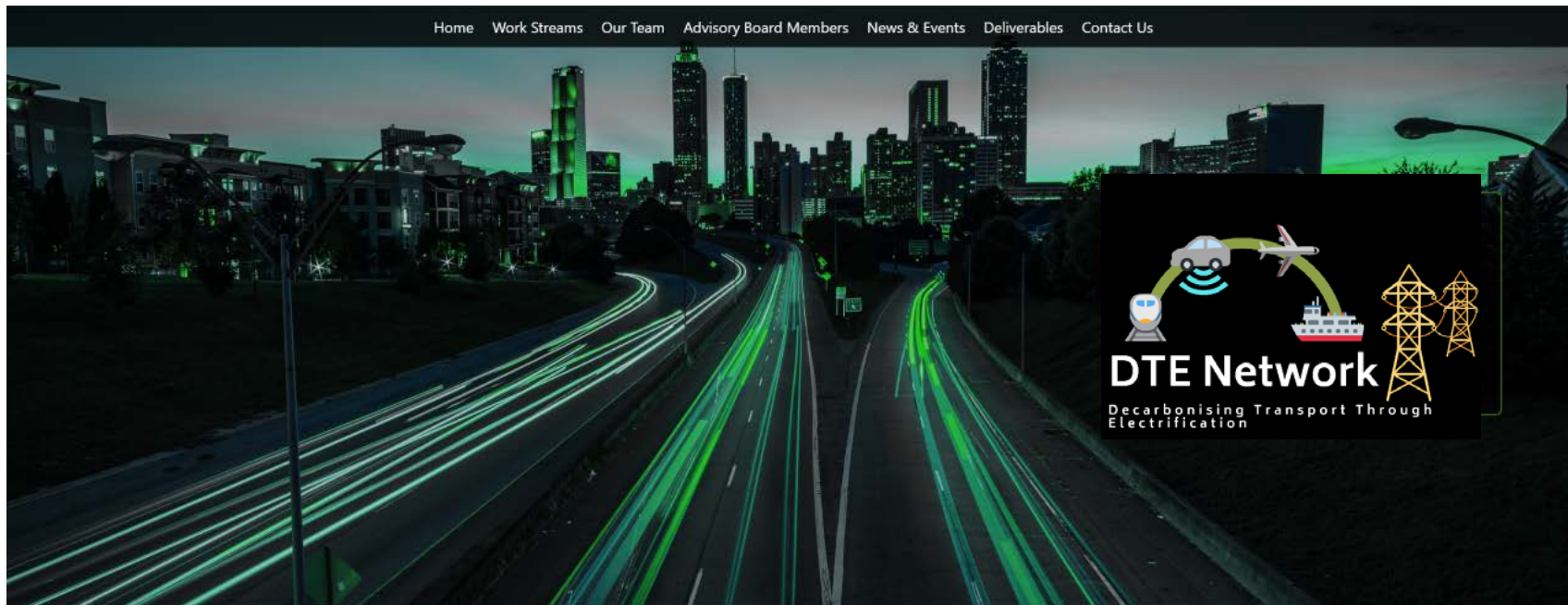
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£1M EPSRC Decarbonising Transport through Electrification, A Whole System Approach (DTE)

DTE addresses a range of **low-carbon transport modes** (road, rail, aerospace and maritime) alongside associated infrastructures to support existing and deliver future mobility needs, treating these as an **integrated system embedded within the electricity energy vector** with the goal of decarbonising the transport sector.



The official launch of the DTE network will be in 26th of February



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