

Electric Vehicles: Preparing the energy networks for net zero

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November 2021

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As the GB regulator for Gas and Electricity markets, Ofgem has two equally important challenges: to protect the interests of consumers today by making sure they get a fair deal from their energy, and protecting consumers in the future by tackling climate change.

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We do not set the policy for electric vehicles. This is Government's role along with setting any targets for EV adoption, offering subsidies on take up, public charge point installation where market failures exist, and setting some of the legislation which can determine some of the behaviours on the consumer side, for example around flexible and smart charging.

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Our main focus is on ensuring any deep penetration of EVs is not held up by a lack of network capacity. A higher number of EVs means a higher demand for electricity and that higher demand means that we need to have a grid that can cope.

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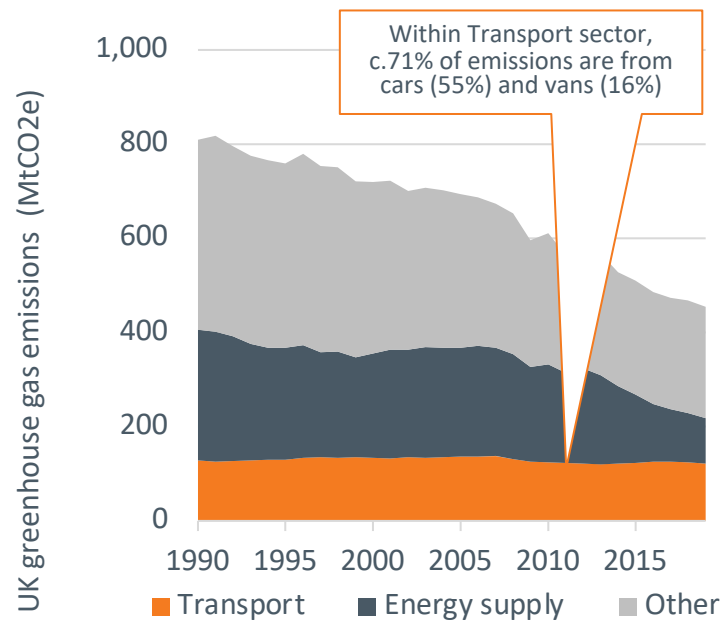
This challenge is not unique to GB and COP26 is obviously a huge opportunity to advance that agenda, learning from others.

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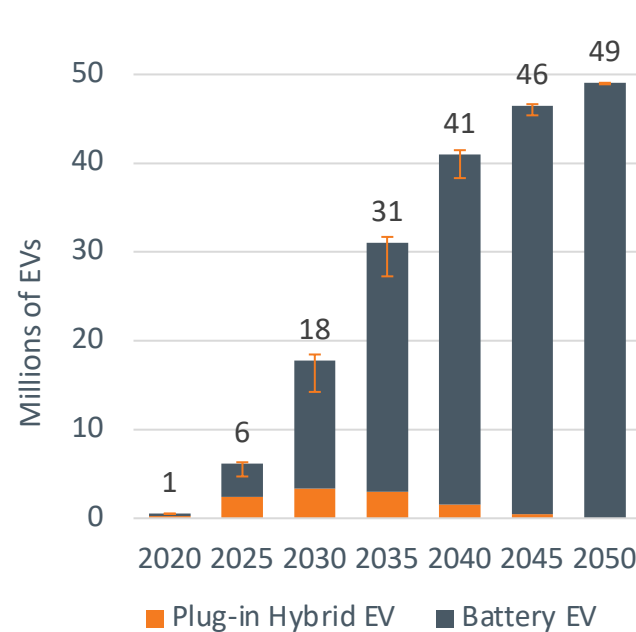
Three areas to cover: ensuring the networks are ready, managing the impact of EVs on the energy system, and ensuring consumer participation and protection.

EVs are critical to decarbonise the transport sector. Their rapid, widespread adoption is now inevitable, meaning that we need to have bold objectives for EVs

UK transport sector emissions¹ have not declined materially since 1990, and are now more than one quarter of all emissions



In part driven by HMG policies to meet carbon budgets, numbers of EVs are expected³ grow rapidly from c.500k today to 14-18m by 2030



Bars show CCC Balanced Pathway² for CB6; Uncertainty ranges depict range of total EV numbers across CCC pathways for CB6.

Priority activity for Ofgem:

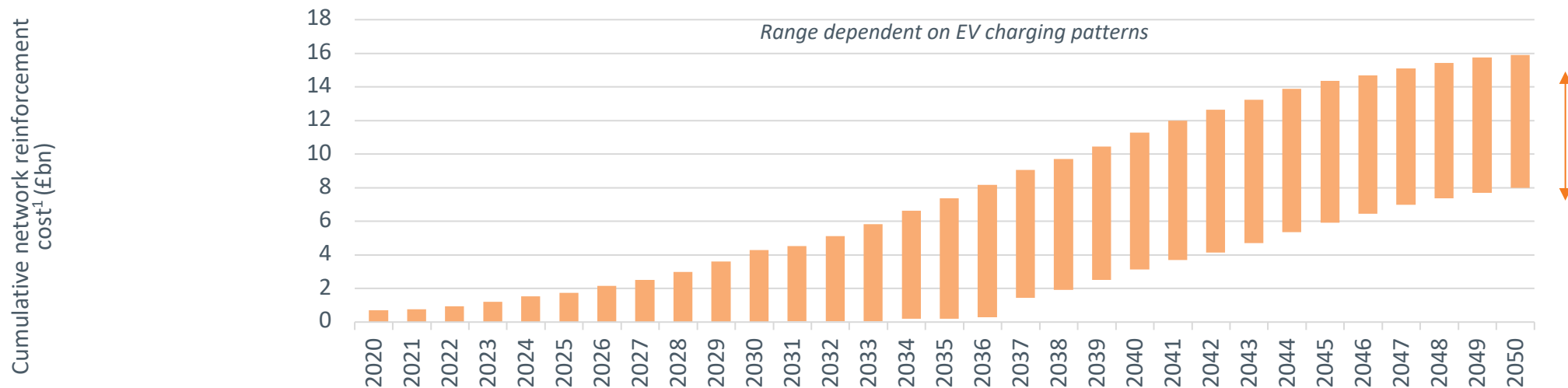
- 1. Ensure the network is prepared for EV adoption**
- 2. Reducing barriers to network connections by ensuring efficient and timely process and proposals to reduce EV connection charges**
- 3. Enable rapid development and uptake of smart charging and V2X technology**
- 4. Support consumer participation and ensure consumer protections keep up with technological and business model change.**

Note: 1) UK territorial emissions, excl. international aviation/shipping; 2) CCC CB6 Balanced Pathway based on 2032 ban on sale of new ICEs, since brought forward to 2030; 3) Additional downside risk to numbers could come from failure to deliver expected cost reductions or overall declining sales of new cars. There is also uncertainty especially in 2020s on how plug-in hybrid EVs will be used (i.e., extent to which users charge from electricity system).

Sources: BEIS UK Greenhouse Gas Emissions (Final 2019); CCC CB6



As the number of EVs on our roads increases we need an electricity network that can support them. Our approach to network investment seeks to support EVs whilst minimising costs

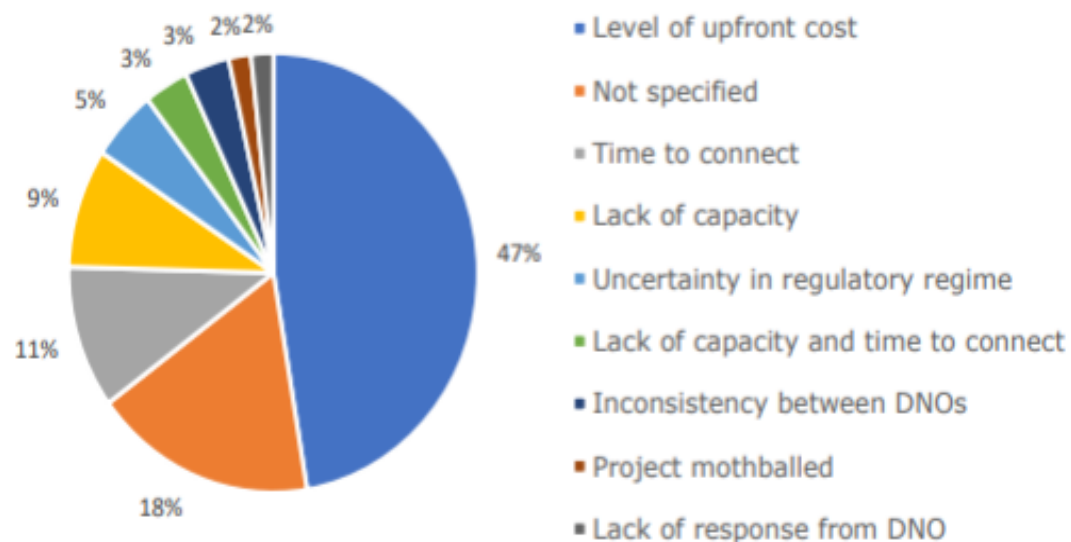


Priority area 1: Ensure the network is prepared for EV adoption

- **Supporting well justified investment:** £300m Green recovery programme announced in May provided a down payment on network investment for EV charging. This is part of a broader programme of investment through our RIIO price controls.
- **Monitoring and planning:** We will require the electricity networks to put in place better forecasting and improved network monitoring capabilities, use uncertainty mechanisms and require DNOs to publish digitalisation strategies



The costs of connecting to the network; and the pace and difficulty of the process of connection are two significant barriers that we are addressing



Stakeholder feedback from larger connection customers on issues experienced with new connections to distribution networks

Priority area 2: Reducing barriers to network connections by ensuring efficient and timely process and proposals to reduce EV connection charges

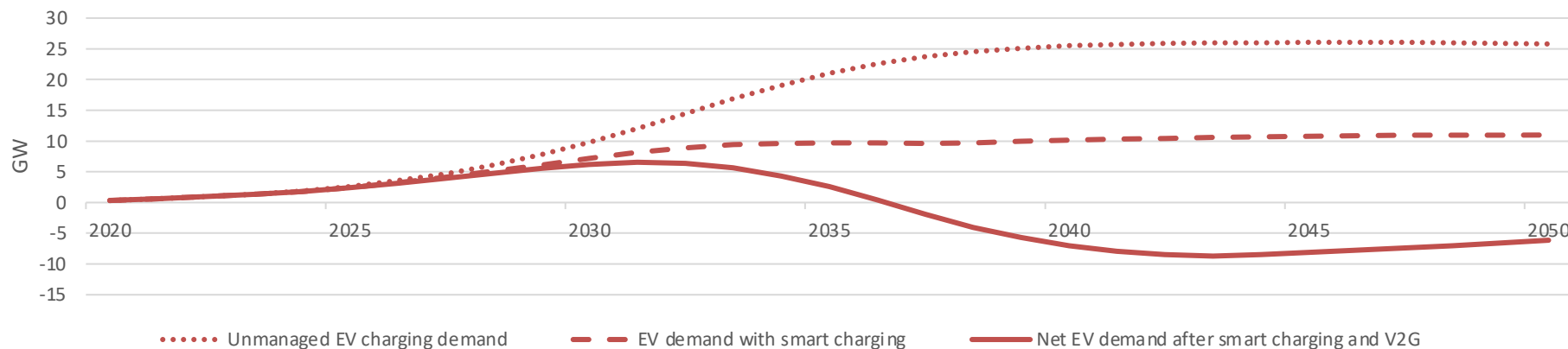
- **Connection costs:** Final Access SCR decision due by next spring and changes expected to be implemented from 2023.
- **RIIO-ED2 connections incentives:** Time to Connect Incentive for minor connection customers and improving service incentive for major connection customers
- **High quality services:** DNOs expected to measure reported improved customer service by 2023



EVs offer a massive opportunity to support a smarter, more flexible energy system but most EV owners currently lack the capability or incentive to smart charge

V2X technology could be a key component in enabling an energy system to maximise use of high levels of renewable supply and contribute to managing periods of lower supply/higher demand.

Electric vehicle charging behaviour at ACS winter peak system demand - FES2021 Consumer Transformation

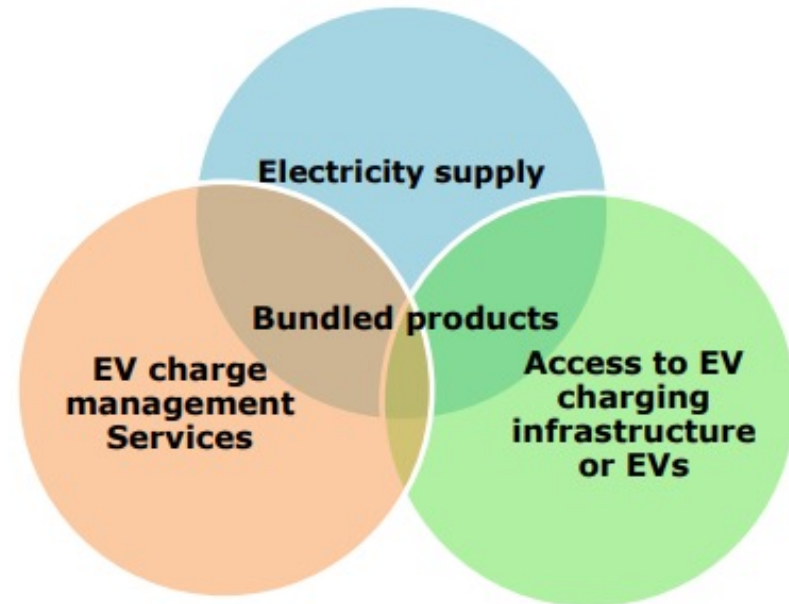


Priority area: Enable rapid development and uptake of smart charging and V2X technology

- **Price signals:** We will improve price signals for flexible network usage through network charging reform, ensuring timely implementation of market-wide half-hourly settlement, and developing further measures to strengthen incentives for flexibility through our Full Chain Flexibility programme
- **Maximise Flexibility:** We will publish a joint BEIS/Ofgem EV flexibility Action Plan in 2022
- **Smart technical guidance:** We will work with BEIS on clear technical guidance outlining how industry should comply with upcoming regulations on smart charging.
- **V2X:** We will identify barrier to development of V2G, working with Government



Energy supply is increasingly bundled with other EV services, blurring the lines of protections



Priority area: Support consumer participation and protection

- Major area of focus at the moment given unprecedented rise in gas prices and impact on retail sector.
- Short term focus remains on managing the impacts of these changes and the impact on bills.
- But equal need to take steps to make market more resilient and fit to face the needs of the energy system of the future, including EVs
- We will publish a retail strategy that will consider how best to support consumer participation and ensure consumer protection
- Work with BEIS to identify gaps in the current framework of consumer protections for EV owners, and potential solutions, and to ensure fair pricing.

Questions?

Further details on our approach available at www.ofgem.gov.uk