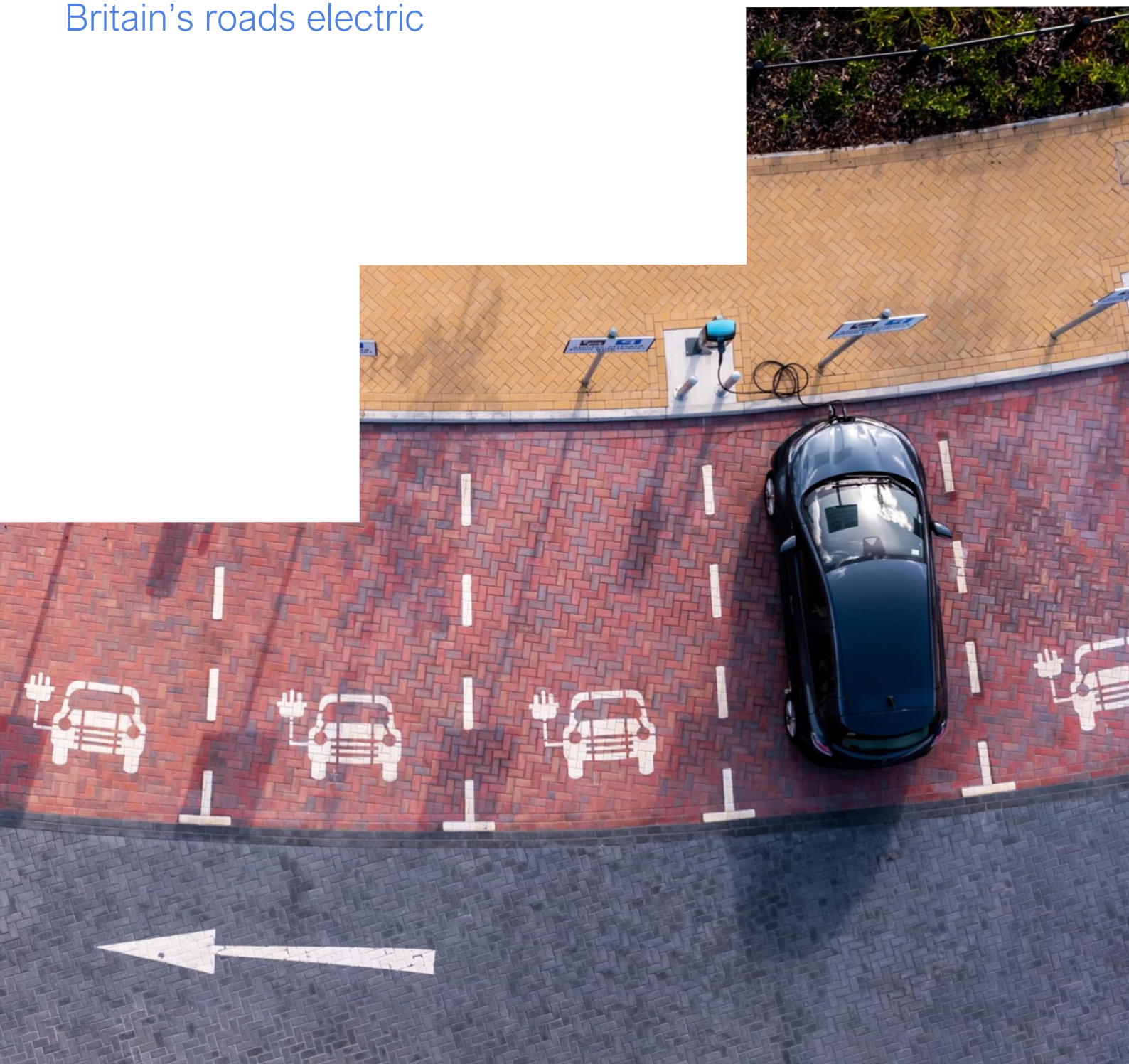
STONEHAVEN

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2025

LOOSE CONNECTIONS

The real challenge of making Britain's roads electric



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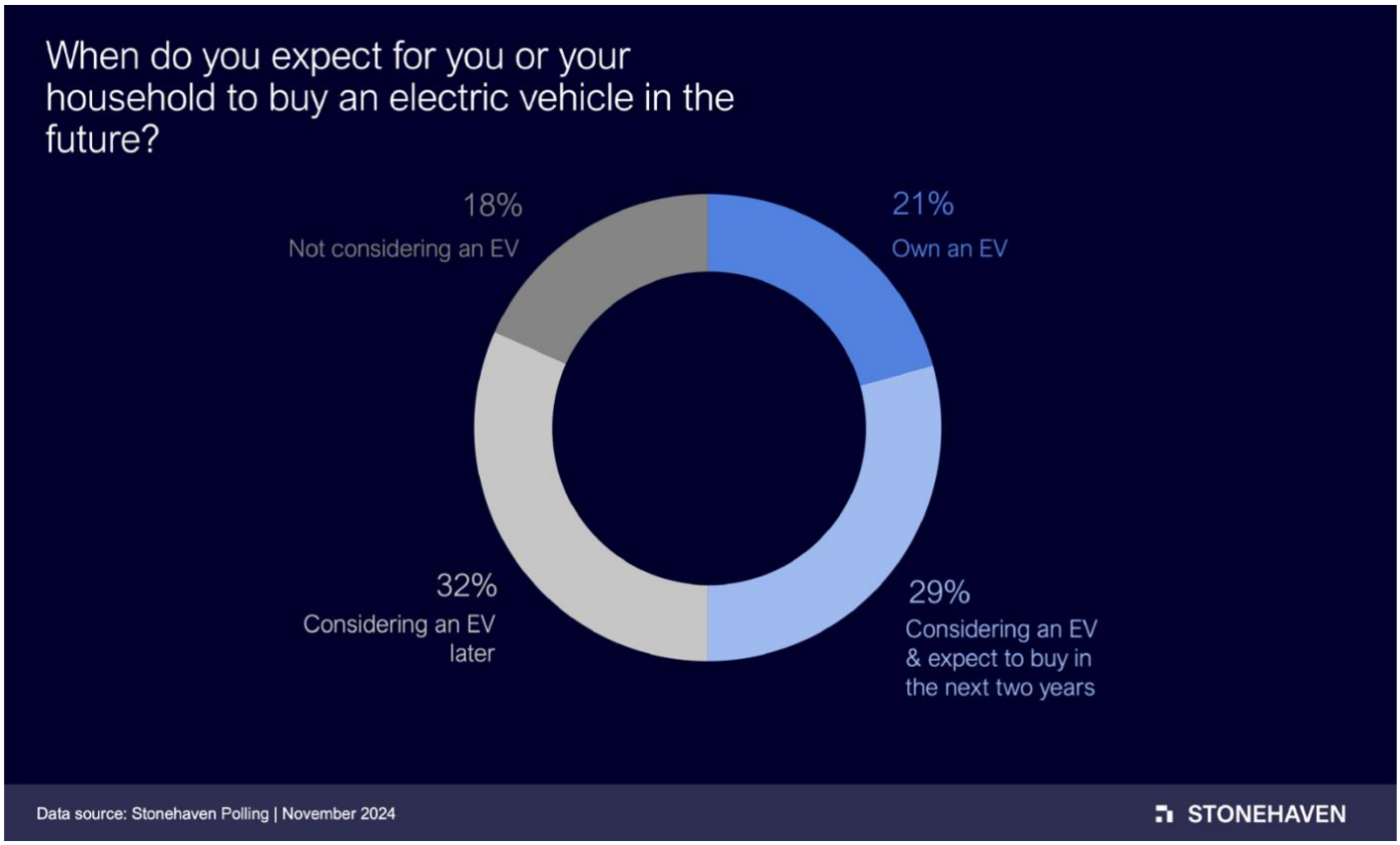
Introduction

For the past ten years, the rise of battery powered vehicles has outpaced all expectations. But now, industry is worrying about demand stalling; Vauxhall attributed the closure of its Luton plant to lower-than-expected sales of electric vehicles, and the SMMT is warning that even as sales grow, demand is now lower than anticipated.

This is not a mystery. Ten years ago, the question was whether electric vehicles would be viable. Governments around the world adopted policies that helped show they are, and turned a promising technology into a transport revolution. But now that viability is proven, the nature of the challenge has shifted. It is no longer a 'first car' problem, but one of how electric vehicles become the average car, workable for every household and every home. Without this, the electric vehicle transition will power down, and will feel to many people like an imposition rather than an improvement to their lives.

In 2025, we will see this challenge play out, especially in London. This is the place in the UK where electric vehicle uptake is most advanced, and popular enthusiasm for going electric is at its highest, but where the hidden barriers to change are starkest. With a policy that supports people at a street level, half of London's cars could be electric within two years. But without action, London will begin underperforming on its EV potential; and London's air quality and carbon footprint will bear the costs. What is true for London today will be true for the rest of the UK within a few years.

It is time for a new generation of electric vehicle policy: one that is focused on the barriers for typical drivers making the switch. Londoners could be the first in the world to reap a bonanza in cleaner air, lower carbon emissions and better quality of life. Or they could be the first to realise that the electric future is much further away than they had been led to believe.



01

Policy Generation 1

Electric vehicles spent more than a century stuck on the drawing board. While the idea of a vehicle with no exhaust and no need for oil-derived products in order to drive was appealing, it failed to reach the real world in a form that could meet the demands of the driving public.

The first generation of electric vehicle policy reflected this unpromising start. Although we now recognise that the advent of lithium-ion batteries and improved electric motors would power a fundamental shift in the technical performance and cost of an electric vehicle, in the mid-2010s this was unproven. The crucial goal of the very earliest electric vehicle policy was to prove that electric vehicles could work in the real world.

Policy therefore revolved around efforts to manage the most basic elements of viability: the ability to bring the new technology within reach of a sufficient number of motorists, and the basic logistics required to make recharging an electric vehicle viable. There was a consensus, based on consumer research, that the greatest barrier to EV uptake was range anxiety, and efforts to improve infrastructure focused on addressing this.

Generation 1' Measures

Subsidies and tax-exemptions for the purchase of (all) EVs
Tax exemptions for electric company cars
Subsidised installation of charge points in owners' homes
Central funding to support the roll out of charge-points to make national travel viable

This policy was successful – so successful that the Office for Budget Responsibilty (OBR) raised its forecasts three times in 2019-21 and by 2023 uptake was still 50% higher than they expected. Without success here, the overall shift to electric vehicles would never have been plausible.

However, the effort made here was to show electric vehicles could work, in the most favourable circumstances. Electric vehicles would be owned primarily by those that could afford the high purchase price, and charging apparatus would be located where there was the greatest demand. The question of how to turn electric driving into an option for all was reserved for a future date

SOME DRIVERS
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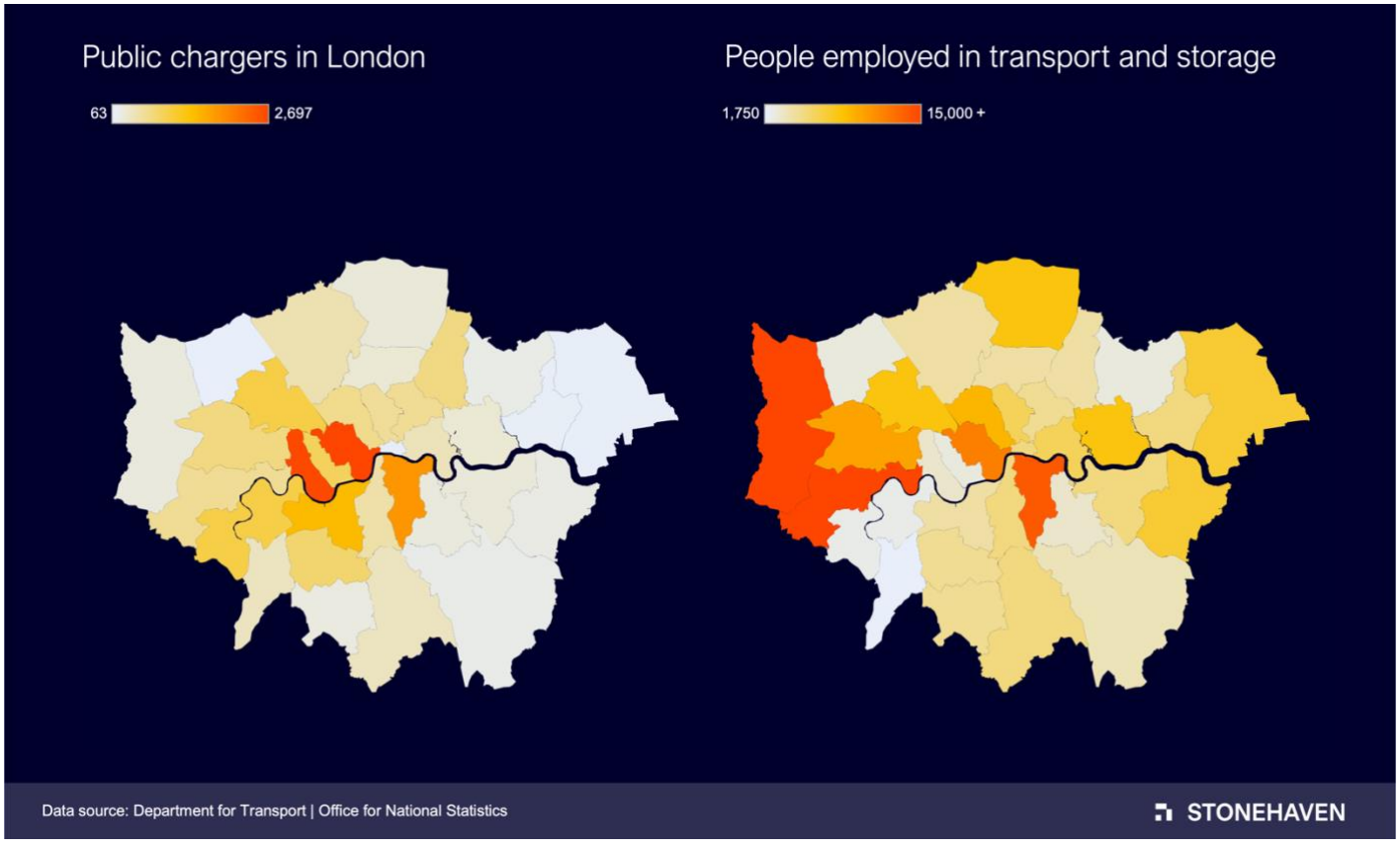
02

Intergenerational Conflict

In 2023, OBR's forecasts began moving the other way. Now, electric vehicle uptake began underperforming forecasts, with 2026-7 sales dropping from 67% of the market to 37%. Equally concerningly, OBR's projection of a move back to a rapid uptake was based on the mandatory sales targets in the zero-emission vehicle mandate, rather than consumer enthusiasm. This is not the same kind of change that was seen in the early 2020s.

The OBR attributed this to a slower drop in electric vehicle prices, higher costs of charging (especially following the start of the war in Ukraine), and the difficulties of accessing chargers. But it is also worth looking below national-level trends and examining how electric vehicles and their infrastructure are becoming a reality on the street – and how this creates further barriers.

One illustration of this is the distribution of London's public chargers. City Hall has mostly left the provision of chargers to the boroughs as highway authorities. This means that the number of public chargers ranges from 63 in Harrow to over 2,697 in Westminster.[1] The lack of coherence to this plan can be seen by comparing the spread of chargers to the distribution of people working in transport and storage (whose use of electric vehicles has a disproportionate benefit for the city's environment). The boroughs of Bexley and Havering have 14,000 people employed in these areas, but only 260 public chargers between them.[2] Meanwhile Hammersmith and Fulham has over 2600, but only 3,000 transport workers.



While Generation 1 of EV policy was very effective at proving electric vehicles could work, it made no systematic effort to deal with the situations where take-up was harder. This has inadvertently led to an uneven playing field for drivers, where some groups have a much easier journey to electrification than others.

[1] Department for Transport, Electric Vehicle Public Charing infrastructure statistics: July 2024
[2] ONS, Annual Population Survey, all employed – employment rates by industry

Easier	Harder
Those charging at home can recharge on purpose-built EV tariffs such as Octopus Go – costing as little as 7p/kwh.	Drivers without a driveway cannot obstruct the pavement with a cable to recharge. Public chargers currently cost 40-75p/kWh – a higher cost-per-mile than petrol.
Home charging pays VAT at the domestic rate of 5%.	Other charging pays VAT at the standard 20% rate. Campaigners have nicknamed this the 'pavement tax'
More affluent drivers are better-able to afford the up-front costs of driving, and have access to the credit that underpins leasing arrangements	Less affluent drivers cannot pay the same up-front costs, and may have less access to the credit required for a leasing arrangement
Richer drivers are more likely to afford a new car. Salary sacrifice schemes allow them to offset up to 63% of the cost of electric vehicles against higher-rate tax.	Poorer drivers rely more on the second-hand car market, where the EV share necessarily lags behind the share for new cars. Salary sacrifice schemes are less helpful as there is less/no tax to forgive.
Drivers who use their car to commute to a defined workplace can build charging into their plans	People who visit a wide range of locations for their jobs (e.g. tradespeople, caseworkers) cannot charge as they go. Drivers who deliver people or goods can only recharge by stopping work.

These problems are not an absolute barrier to electrification – savvy drivers at all levels of society have made the switch to an electric vehicle and navigate these obstacles. But, unaddressed, they mean that typical drivers can be paying up to twice as much to drive an electric vehicle and 6-10x as much for fuel based on their income level and access to a driveway. High-income owner occupiers working in geographically stable jobs can get to the benefits of electric vehicles more easily, whilst people living in inner city areas, earning lower wages or without access to a driveway are all at a disadvantage. This creates challenges both for the speed of electric take-up, and wider social fairness.

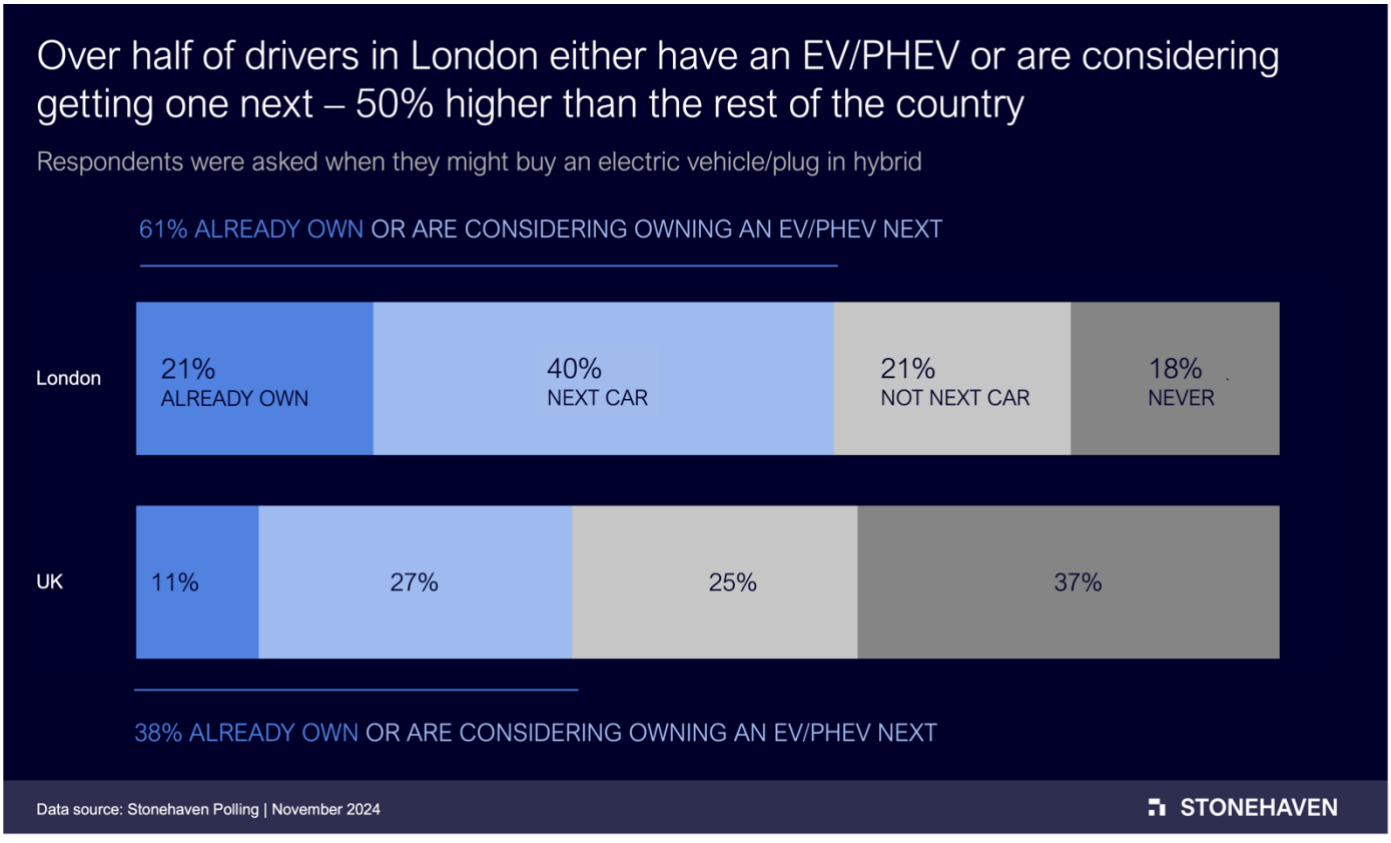
This means the challenge for policymakers has changed. It is no longer a matter of making the first electric cars succeed. Instead, it is about making the *average* car electric, in a way that is simple and persuasive to average households. Over time, there will also be a growing emphasis on retiring the last non-electric cars in a way that supports their owners and imposes no unwanted costs. Crucially, this is not a problem of technology, but of urban management and social equity.

From 2030, the sale of new conventionally-fuelled cars and vans will cease in the UK. This means that the country is on a one-way path towards electrification. Unless policy steps forward to meet this new challenge, there will be a growing tension between the interests of some people and the pathway we have mandated.

03 London's Challenge

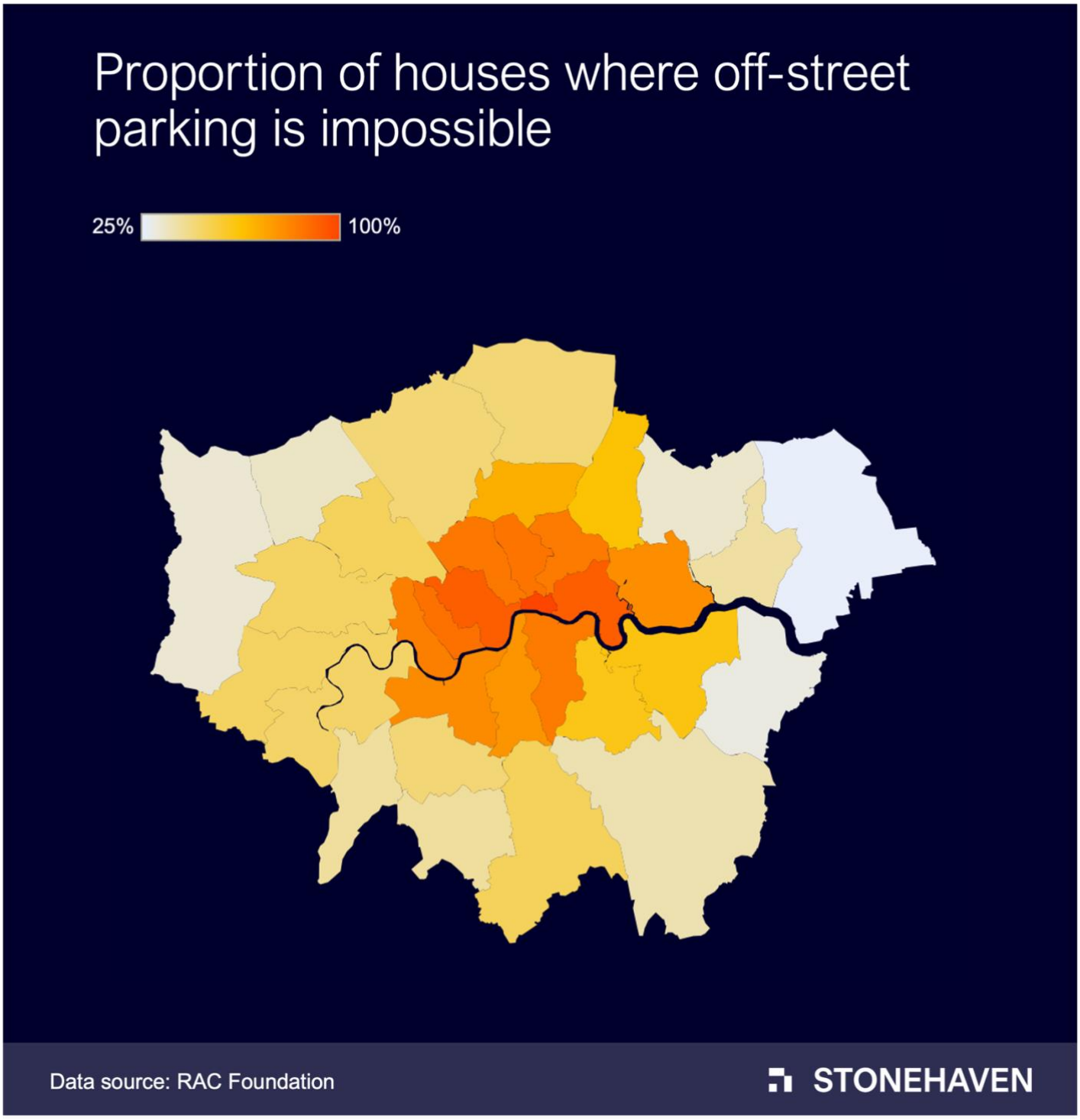
The challenge is clearest in London for five reasons:

- LEADERSHIP: London is already famous for its transport network. TfL is one of the most capable transport authorities in the land, and the current mayor has made tackling air pollution one of his signature policies. The number of sites breaching nitrogen oxides limits have fallen 90% since 2016, and the city has a target of fully-decarbonised roads by 2050. With the take-off of electric vehicles, London is one of the places in the world where there is both the will and the capacity to deliver a full shift away from conventional fuels towards zero-emission vehicles. Defining Generation 2 would cement London's position as the city the world seeks to emulate as well as provide a better quality of life for its residents.
- POLICY VACUUM: While London could be a world-leader in electrification, recent efforts have been unremarkable. In particular, London's plans to introduce a central Zero Emission Zone in 2025 have been quietly dropped. Given that existing congestion charge exemptions were designed to phase out when the ZEZ went live, and are still scheduled to happen on the original schedule, 2025 may be the year that London makes electrification harder.
- NEED: Population size means that it continues to have air quality problems despite the extensive policy efforts to improve the air. According to a 2019 study, air pollution hastened the deaths of 4,100 people across the whole city every year. Just as London in the 1950s switched from coal to electricity to move the generators of pollution outside of the city itself, electrifying vehicles means that tailpipe emissions inside the city can be eliminated entirely.



— OPPORTUNITY: In Stonehaven's November Compass survey, 61% of Londoners surveyed either owned or were considering buying an electric vehicle or plug-in hybrid. The figure across the UK as a whole is 38%. Of those Londoners considering their first electric vehicle, 48% were expecting to get a new car within the next two years. If the full potential of this was realised, by the 2028 mayoral election half of all the driving households in London would have an electric car. To put this figure in context, decarbonising just 5% of London's road miles would have the same effect as electrifying its entire bus fleet.

— JUSTICE: London's public transport is open to all, but travel by car remains the dominant mode even after decades of efforts at modal shift. However, the challenge of charging at home is at its most acute in inner London, where the proportion of homes able to deliver off-street parking/charging is lower than any other part of the country. Without action, London's journey to decarbonisation will be noticeably less fair than the rest of the country, turning it from a leader to a laggard.



04

Inventing Generation 2

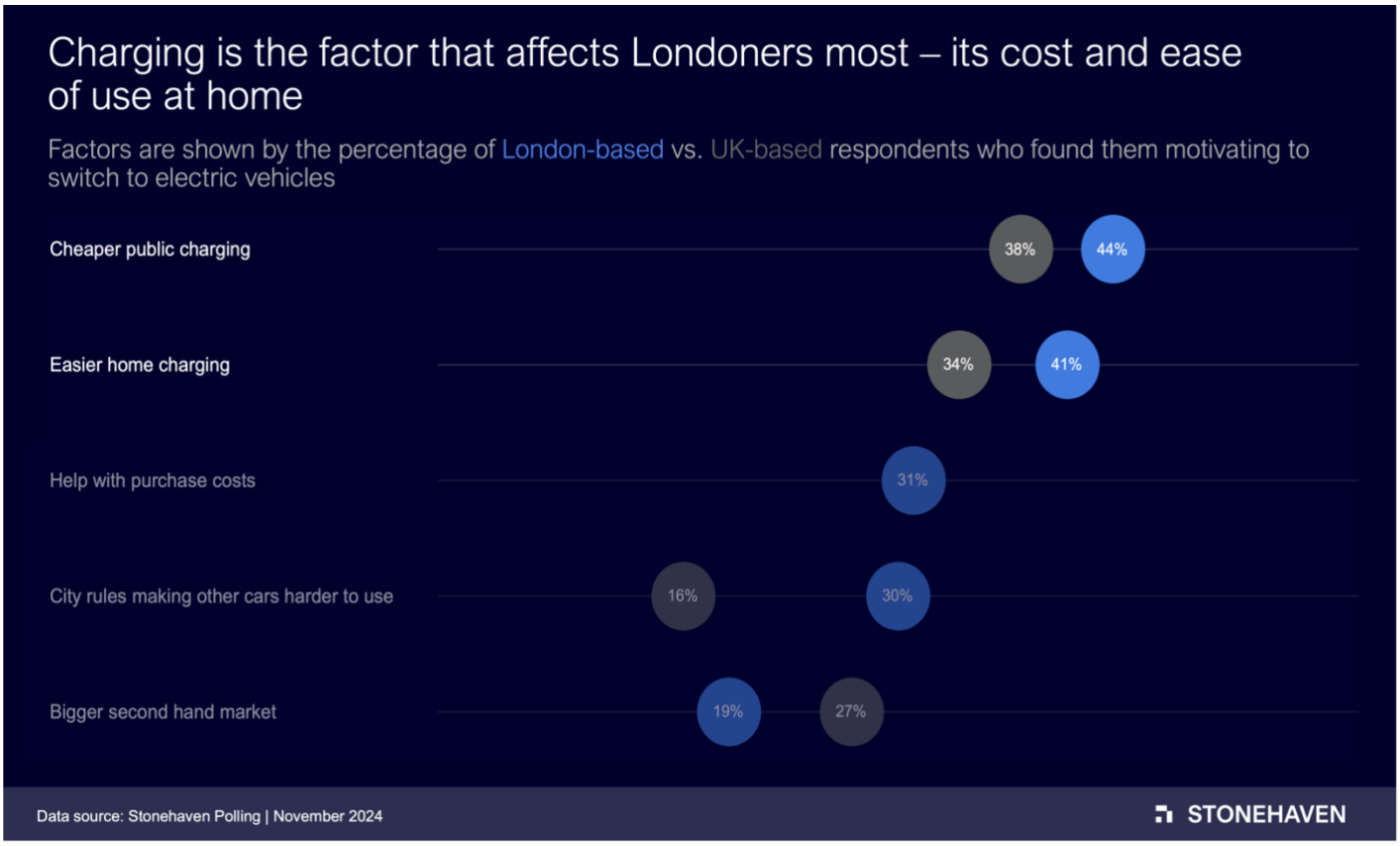
The challenge for policymakers is to find the tools that address these problems. However, support for electric vehicles has been a low priority in policymaking, with more attention given to reducing car use and promoting alternatives to the car. While these are understandable goals, the Climate Change Committee expects more than 80% of the work of achieving net zero in road transport to come from the shift to electric vehicles; and the gap between the experience of different motorists is very real. Creating policies that make it meaningfully easier for citizens to switch to electric vehicles is an important responsibility, particularly in large cities like London.

This paper does not pretend to offer a fully developed set of policies to make 'Generation 2' begin now: more research is needed to understand what people think in different places, in inner cities as opposed to suburbs, in different sectors, and amongst different social groups. However, using Stonehaven's Compass survey and MRP model, we can identify some early insights, especially relating to London as the place where interest in electrification is highest:

- The big issue is charging. Generation 1 electric vehicle policy looked at prices and range anxiety, but the top issue for 57 out of the 58 sub-groups we looked at was either the price of public charging, or the ease of charging at home.
- Charging is politically relevant. The group with the highest concern (48%) about the price of public charging were the 'hero voters' that won Labour its majority in the 2024 election. A minimum of 1.8 million London householders will be subject to the 'pavement tax' unless the rules change.[3]
- These issues are felt most in London and Scotland. These areas are most concerned about the price of public charging (44% and 45% respectively). They also saw home charging as a major issue (41% and 39%) – in both cases reflecting the dense nature of cities. Londoners were also most sensitive to the potential impact of city rules making other cars harder to use – reflecting their first-hand experience of the congestion charge and ULEZ.
- Self-employed people are more sceptical. If this can be taken as a proxy for small businesses, they are much less likely to be interested in switching to an electric vehicle (34% not interested as opposed to 25% for employed people), and they are the only sub-group for whom purchase costs are more significant than charging issues.
- These issues are currently most salient with high-income voters. Across the UK, 35% of high-income voters are considering an electric vehicle next – roughly twice the level of middle-income voters and three times that of low-income voters. High-income voters therefore pay most attention to these issues at present.
- Low-income voters have different interests, but have yet to find their voice. Half of low-income voters who drive are not interested in getting an electric vehicle, and 39% say they only change their car when there is no other option. We know from wider focus group work that electric vehicles are perceived by many low-income voters as 'not for us'. Established regulations mean this indifference will not last – these groups will soon be getting first-hand experience of the challenges of electrification. From what we already see, we can speculate that the availability of a good supply of cheap second-hand electric vehicles and cheaper charging will be key concerns.

Based on what we know at this stage, an early attempt to define a Generation 2 policy for electric vehicles would therefore be focusing on making charging as easy as possible, and levelling out the cost to the public as much as possible. To maximise the environmental benefits of the switch and minimise social costs, it would also consider which users should be a priority to electrify.

[3] Stonehaven analysis of data from RAC Foundation, Standing Still, 2021



Priority areas for Generation 2 policy

FAIR CHARGE	Equalising costs between home charging and on-street charging.
CHARGING FOR ALL	Enabling 100% of vehicles, and 100% of drivers, to charge.
RETHINKING THE KERB	Making parking work for an electric-first world.
HELPING HEAVY USERS	Making EVs make sense for those that drive the most.
MANAGING INCENTIVES	Making sure that city policy keeps pushing for electrification.
WIDENING ACCESS	Unlocking leasing to support EV uptake for more people.
SUPPORTING INNOVATION	Helping private innovators and other outsiders solve problems.
CONTINUING MODAL SHIFT	Electrifying while still shifting Londoners onto bus, foot and bike.
AVOIDING SURPRISES	Helping people plan to adapt well in advance of any new regulation.

Generation 2 policy is likely to be a mix of quick and long-term actions. Decisions on issues like parking or road charges can be implemented quickly. Physical adaptation of the kerbside will likely take more than a decade. But in both cases, these measures do not need to be ones that come with a large cost to London's authorities.
What matters most is that there is a consistent push towards more electrification, on an equitable basis, that assures people across the city that a fair path to the future is being charted.

GENERATION 3 – THE END OF INTERNAL COMBUSTION?

The Mayor's Transport Strategy for London sets a target for zero-carbon roads by 2050. This would be a highly symbolic achievement – banishing tailpipe emissions in time for the 100th anniversary of London's Great Smog of 1952 as well as meeting the statutory deadline for net zero. But a goal like this is much easier to assert than deliver.

The ability to shift London to a fully electric vehicle fleet relies on making its streets work for a new kind of vehicle. It means that refuelling capacity for 3 million vehicles must be installed; that a tenfold difference in fuel prices must be addressed; that fair treatment for drivers (and non-drivers) must be established. It means learning how to make electric vehicles the compelling choice for millions of individual drivers without resorting to compulsion. And, alongside this, the effort to move Londoners onto bus, train, bike and foot must continue. This is not simple. If London wants to have this 'generation 3' switchoff, it must begin work now on the generation 2 work of converting a city to its electric future. While the choice to go electric is a matter for vehicle owners, the streets and the policies that can convince them belong to London's authorities. 25 years is a short time in which to make a shift of this scale.



05

2025 The year that matters

UK policymakers had assumed that the 2020s would see electric vehicles rise inevitably. The first half of the decade gave real hope this was true; but the middle years are showing that rise slowing, and the mechanics of the supporting mandate becoming increasingly contentious. This is a real reason for concern.

The UK's pioneering efforts in the 2010s, particularly as the first large economy to consciously propose the end of conventional vehicle sales, placed it in the front rank of electrifying nations. But that policy only addressed parts of the challenge of electrification the ones most susceptible to top-level tax and subsidy decisions.

There is now an urgent need for street-level policies that match this ambition. Providing electricity on the street at a fair price, with the infrastructure necessary, is essential if electric driving is to be the UK default. There are now fewer than 2,100 days left until 2030, when the zero-emission mandate becomes total.

Delivery is becoming an increasingly important theme of politics, as politicians try to show how their actions improve everyday life. The electrification mandate means electric vehicles are going to become a greater part of peoples' worlds – regardless of whether or not the necessary arrangements have been put in place to support the switch. A failure to prepare will embolden those who wish to reverse electrification.

It is time to chart a new policy, there is no better place in the UK to do so than in London, where public enthusiasm for a shift is at its greatest. Nor, given its lack of off-street parking and its high disparity in prices for users, is there any place where an effective policy will be required more. What works in London today can steer the rest of the UK and can inspire other cities around the world.

2025 is the year when London's politicians, business community and residents can all come together to restart the electric shift; and when industry, environmental organisations, energy companies and more can work together to drive that process harder.

06 About the author



Michael Dnes

Head of Policy, Transport

Michael Dnes is head of transport policy at Stonehaven. He spent 18 years at the Department of Transport, leading the creation of the Road Investment Strategy, created the independent regulator for highways, restarted government efforts at rail reform and oversaw the design of the HS2 train service. His last job was as head of future roads technology, and he led a 19-nation study with the OECD/ITF into adapting roads for automated vehicles. In his spare time, he writes about transport history.