

# How electric vehicles will put energy companies behind the wheel

Blog post by Practice Lead Matthew Duhan, 26 July 2017

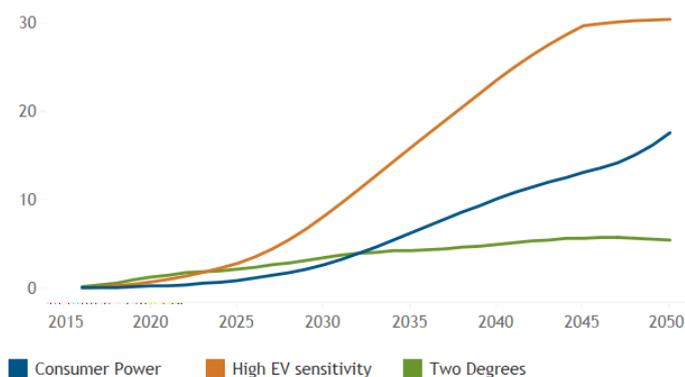
As part of its long-awaited clean air plan, the UK government today announced its intention to ban conventional petrol and diesel engines in new cars and vans by 2040. Arguably, they need not have bothered. Many analysts now predict that, in terms of total cost of ownership, electric vehicles (EVs) will be the most affordable on the market by the early to mid-2020s. In that sense, the announcement fits with the UK government's commitment to exit coal-fired power generation by 2025; while neither is as important as they first appear, both are undoubtedly landmark decisions.

On the energy front, what is expected to be a widespread move to electric cars will have big ramifications for incumbent utilities, insurgent suppliers, digital newcomers and operators of distribution and transmission grid infrastructure. In its annual 'Future Energy Scenarios' projections, released earlier this month, the UK's National Grid highlights three main challenges.

First, an increasingly large component of electricity demand will be from electric vehicles. The FES 'Two Degree' scenario - which models the UK meeting its legally-binding emissions reduction targets - includes EVs accounting for 10% of annual residential demand (12TWh) by 2030. Its 'Consumer Power' scenario - primarily driven by consumer demand for technological innovation - ultimately has that figure rising to 16% (29TWh) by 2050. This means new infrastructure, power supply, and customer challenges such as charging your car become more like charging your phone.

Second, electric vehicles will have a significant impact on peak electricity demand. This is particularly important as it is the 'peakiness' of demand which dictates how much generation capacity - how many power plants, wind farms and solar panels - the UK needs to be able to serve this moment of maximum demand. Against a total UK peak demand of 61GW in 2016, by 2050 peak demand for EVs alone rises from nothing to 5.5GW (9% of today's peak) in the Two Degrees scenario and up to 17.7GW (29%) in the Consumer Power scenario.

Electric vehicles, additional peak demand (GW)



Source: Future Energy Scenarios 2017, National Grid

Third, the FES highlights just how high the degree of uncertainty is. The FES also runs a 'High EVs' sensitivity in which additional EV demand raises to 90TWh by 2050, and peak demand reaches 30.6GW (50% of today's peak). And while these are scenarios, not predictions, they demonstrate the difficulty of strategic decision-making over decades long timeframes. The numerical differences in the scenarios belie vast differences in what the future market may look like; not all companies will make the right bets. More radically, the future of the car could yet lie in hydrogen or natural gas; although BMW's plan to build the new electric Mini in Oxford suggests the market thinks otherwise.

But for policy, regulatory and political teams working inside energy companies, the growing overlap of formerly distinct sectors presents a fourth challenge. As the twin trends of electrification and digitalisation unfold, energy companies will increasingly be dragged into policy areas distinctly outside their comfort zone. The sector has already been through this once before over climate change, but before long energy companies will be fielding questions about mobility, public transport, and urban planning. Already arriving, is the digital corollary as the growing penetration of smart meters opens up swathes of contentious policy across data protection, cybersecurity and connectivity. The energy sector is barely short of political and policy risk. As the pace of technological change quickens, more is surely on its way.