

## **Written evidence submitted by Mr Richard Kay (EVP0011)**

### **1. Introduction and reason for submitting evidence.**

I am a recently retired university lecturer in software systems and cyber security, previously an infrastructure engineering professional, with a history of involvement in community economic development and environmental campaigning as a founder and officer of Coventry LETS and a trustee of the LETSsystem Trust. In 2020 I disposed of an internal combustion engine (ICE) car and have replaced this with a battery electric vehicle (BEV) in order to enjoy emissions free motoring. As an active and engaged citizen, I'm responding to this call for evidence with a motivation to help the UK transition to zero carbon energy with my knowledge and experience.

### **2. Accelerating the shift to zero emission vehicles**

BEV drivers are concerned about the usability of public charging infrastructure for rapid charging, as required at intermediate stops for longer journeys. Similar concerns affect BEV drivers who are not able routinely to charge using domestic mains or at workplaces for local journeys.

Many BEV drivers experience the issues I describe, as evidenced through many public BEV online forum conversations. One of these concerns the probability of finding chargers already occupied, with a queue or unusable e.g. at a meal stop on a long journey. Another issue concerns poor usability, inaccessibility, or non-working condition of a rapid charger once a vacant one is found. Given that use of a rapid charger may be required for up to an hour, at typical charging speeds, the consequences of a queue at a rapid charger could result in multiple hour delays. Arriving at a charger which has broken down or can't be used, if insufficient remaining charge is available to find another charger, can result in a BEV requiring recovery, or a delay of several hours if slow charging is the only available option. During the pandemic some rapid chargers have been closed, due to the car park location being closed.

Until recently most investment in rapid chargers has placed these in locations with single chargers or small groups of 2 or 3. The requirement has been to reduce distances between these so that drivers of BEVs of low range can confidently reach a charger before running out. While some parts of the UK still require smaller distances between rapid chargers, many parts of the UK now have sufficient rapid charging locations. However, with the increase in use of BEVs, the probability of encountering a multi-hour queue at a single isolated rapid charger is increasing.

Rapid chargers are provided by many companies and networks. The author's experience of using these has been poor. This includes unclear displays, with no standardisation of user interface, unclear instructions for use or payment options supported. The operators typically offer discount schemes for customers who pay for a regular subscription and are issued a smart card, but this only gives access to a single network, likely to be restricted to one part of the UK. Many have an alternative payment scheme e.g. involving a web application or smartphone app, requiring account setup and payment details to be input to the company offering the charge. Many BEV drivers report having to keep many such apps and accounts on their phones for different charger companies and networks. Arriving at a charger where a new app needs to be installed, in bad weather and with no shelter, requiring bank payment

details to be input, at a remote location with poor mobile signal can be a difficult and uncomfortable experience. A BEV driver is also likely to be confused, inconvenienced and delayed, and may risk being fined, when 2 different payment methods are required both for the BEV charger and for the private car park where the charger is located, in respect of 2 different operators.

I propose that public investment is used to resolve these issues based on the following principles:

2.1. Rapid charger providers are required to agree, publish and adhere to an industry wide standard describing a common user interface describing the sequence of actions, informational helps, application programming interfaces (APIs) and payment procedure which must be supported for a charge point provision to receive public subsidy. The payment procedure must include contactless payment and must be usability tested, e.g. involving BEV inexperienced drivers who have just hired BEVs and speak languages other than English.

2.2. Charging prices in respect of contactless payment must be displayed at the entrance to a rapid charging site in a similar way as is required at petrol filling stations. Maximum charging durations should be enforced through payments charged for overstay, with substantial fines and prompt towing away of ICE or any other vehicles treating rapid charge locations as parking spaces.

2.3. Public subsidy should be increasingly directed towards development of sites with multiple rapid chargers at a single site, especially in regions/main routes with high traffic and population density, with a preference for sites where 24 hour onsite catering and toilet facilities are provided. Such sites must offer an internet feed to a common API describing real time occupancy and queue sizes enabling development of 3rd party navigation applications. This will reduce the need for queuing allowing navigation applications to route BEV drivers to available and unused chargers.

2.4. Public subsidy is partitioned between charge point development and longer term operations, with operational subsidies being paid based on quality of user reported experience of successful charging. Installation subsidies should be less than cost, to ensure private investment links to operators which must then compete for operational income. Public money should not be spent on a rapid charger which can't be used or is not being used. Some of this data is already being collected, e.g. through user reports and automated API interfacing data visible to the Zap Map application.

2.5. Where a BEV charger is installed within a paid for car park, the use of the charger and payment for such must include payment for use of the car park as a single payment, in order to attract public subsidy. BEV drivers report confusion about this, with different car park operators having unclear signage and different policies. Having to pay for both facilities separately to 2 different operators using 2 different payment systems is time consuming and results in a substandard user experience.

### **3. Road Pricing**

Traditionally fuel duties have raised revenue which more than pays for the cost of development and maintenance of road infrastructure. The transition over the next 3 decades to a zero carbon vehicle fleet removes this source of public revenue. Electricity has many

other uses, and given that much BEV charging will occur using domestic and workplace mains, the fuelling of the vehicle fleet ceases to be a source of public revenue, other than through VAT already charged on residential and business electricity supply.

Data is already collected on vehicles registered in the UK concerning carbon emissions, vehicle weights, types and purchase prices. Vehicles are routinely monitored using ANPR and payment systems already exist on this basis, e.g. for the London congestion charge and may be used for road tolls e.g. the Dartford Crossing. Annual mileage data is collected on vehicles once these are 3 years old through the MOT test, sufficiently securely to deter 2nd hand car dealership fraud involving misrepresentation of car mileage.

3.1 It is proposed that fuel tax revenues, as these decline, are replaced by road usage charges for UK registered vehicles more than 3 years old, and through new vehicle sales taxes, for vehicles less than 3 years old, at point of new vehicle registration.

3.2 Not every vehicle should be taxed the same price per mile. A polluting diesel vehicle of greater weight, causing more road damage, should pay more than a lightweight zero emissions BEV.

3.3 Not every mile or time of day when a journey occurs should be taxed the same. Diesel and other emissions cause more harm to health in built up highly populated areas close to main roads. Charging vehicles based on the traffic delays in congested urban areas incentivises deliveries when the roads are more quiet, and journeys to be made off peak. Road usage taxes should affect rural drivers less than urban drivers in respect of the same road distance, also due to fewer cycling or public transport options being available to rural users on less congested roads.

3.4 It is proposed that proportionate charges should be made for foreign vehicles present temporarily or longer term within the UK. These can be logged at point and date of entry to UK, journeys captured using ANPR and a single charge made at exit from the UK if within a limited time period, perhaps 90 days. Those bringing vehicles into the UK for less than 90 days could be required to pay an upfront deposit, the residue of which is paid back on exit from the UK after road taxes are deducted. Foreign vehicles arriving in the UK and staying for longer than 90 days should be required temporarily to register vehicles and pay road use charges at the end of each 3 month period or on exit.

3.5 Deterrence of false number plate fraud, if found to be a problem, may require a challenge response security chip containing a key unique to the vehicle, to be embedded within the car or number plate itself. This chip could also usefully communicate bi-directionally with fixed road tax use/ANPR infrastructure, enabling a vehicle driver or owner to know what their incremental road use tax, payable periodically or via a pre-paid DVLA account, should be.

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