

TO WHOM IT MAY CONCERN.

Dear Parliamentary Committee,

Had I known about your process and where to write to earlier I would have been one of the first to approach your committee on these issues.

I may not have paper qualifications on these matters but what I do have is both well over 12 years of intensive research, idea brain-storming, technical knowledge and social & political policy thinking including producing a documentary on the topic. Driven by a passionate motivation and concern. To see our society and the world render the pollution pumping, oil-wars provoking internal combustion engine into the dustbin of history.

However those issues need not in any way be seen or thought as a rationale to convince people to settle for less. The most positive aspect of a well design electric car such as a TESLA is that the quality of the driving and riding experience is far superior not only to the average ICE vehicle but in particular to the luxury petrol fuelled peers in the same price and class bracket as the Tesla Model S and X. Electric vehicles at every price level have the potential (only limited by the sincerity of the manufacture) to offer a better ride and a better quality of life experience. Going electric does not equal settling for less it in fact offers endless benefits to both the user and society as a whole.

I did view the recent on-line video of one of your sessions but I was a little disappointed with both some of the testimony and some of the intellectual perceptions of those asking the questions. All done with the best intentions but with some failings that I wish to help improve upon in this document.

I think it best that I share my ideas, external links and my overall analysis in a series of bullet points. Some brief some a little longer.



#### Point 1.

The UK government needs to partner with major international companies to build battery manufacturing Gigafactories. A serious minded gigafactory costs between \$2B and \$3B Billion US dollars. This is essential for both transportation and energy storage. I believe that the cost of two gigafactories is equal to the estimated margin of error in the annual UK Government Budget. The two gigafactories would not only supply the UK's needs but enable quantity for export thus paying for itself in a few short years. Enabling a massive reduction in the need for outgoing billions of Pounds Sterling for importing oil and then the added cost of refining that oil into drivable petroleum. A process that uses a significant amount of electricity. Electricity that is far better used directly to charge electric cars. It is estimated that each US gallon of oil to gasoline contains 20 miles worth of electric drive of electricity as spent by the refinery plant.

#### Point 2 Part A.

We need included in the legislation a legally enforced mandatory minimum battery size placed on the manufacturers of electric vehicles. This is also tied to Point 1 and the need for the UK government to play an active and forward thinking role in enabling a massive increase in the supply of battery packs for vehicles. The traditional auto manufacturers have created for themselves their own excuse. By both failing and refusing to take the necessary measures from the year 2010 onward they now face both the problem and the convenient excuse that there are simply not enough batteries currently made to either increase battery capacity in their existing EV models or increase the scale of the production of existing and new models of electric vehicles. The corporate agenda as taught by all major business schools of doing business on a risk-aversion world view is nothing less than a massive obstacle against innovation. That is also not how our economic system is meant to be run. Risk based innovation is essential for progress.

## Point 2 Part B.

EV enthusiasts are very good at knowing their car's technology and managing their battery pack usage in a very responsible way. However it is not realistic to expect the mass market consumer to be as product aware and user sensitive as early adopters.

If a 62kWh battery pack was to be put say into the RENAULT ZOE that currently only has a 40 plus kWh battery pack it would best work as follows. Limit the range to 54kWh which is perfect for a typical small to medium size Euro-Japanese car. However the driver's right foot would still have access to the torque of the 62kWh battery pack. By limiting the range by 12% the less aware first-timer EV owner will not be able to over-charge the pack. Due to 100% on their battery instrument dial being in actuality 88% .

Please note that the first car TESLA ever made was the 2-seater, tarmac hugging TESLA ROADSTER sports car in the year 2007 which was finally perfected in its 2.5 version by around 2010. That vehicle with less volume than most small family cars had a 53kWh battery pack in the year 2007.



Category 1. Below average size cars such as the Mini-Cooper or the smallest Fiat etc.

Total power 54kWh (actual battery pack size)

Range limit 48kWh (11% reserve)

Category 2. The typical size Euro-Japanese vehicle.

Total power 62kWh (actual battery pack size)

Range limit 54kWh (12% reserve)

Category 3. Entry level luxury sedan such as the smallest Jaguar, BMW, Audi, etc.

Total power 74kWh (actual battery pack size)

Range limit 66kWh (10% reserve)

Anything above Category 3 should be called Category Plus and not subjected to any mandate as once you enter the higher end market competition determines the spec.

## Point 3.

When it comes to EV charging infrastructure there is one country the entire world needs to emulate and that country is NORWAY.



EV charging in Norway Part 1 <https://www.youtube.com/watch?v=k73-rYe82II>

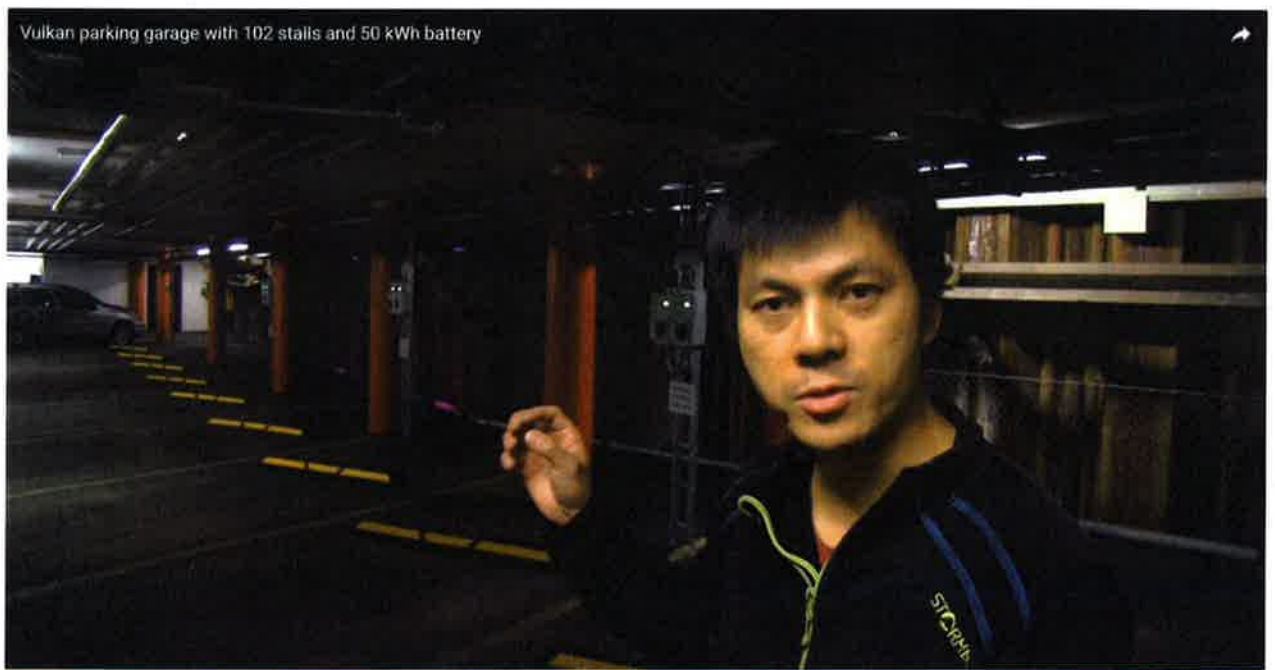




A most deceptive ambience. You would not realise Europe's biggest indoor EV parking garage is located within this scene. Our PM adamantly boasted in Parliament that a post Brexit Britain will not emulate Norway. Committee, in the name of the British people not party affiliation we need you to tell her otherwise.



EV charging in Norway Part 2 <https://www.youtube.com/watch?v=ktNKWLwjQJM>



EV charging in Norway Part 3 [https://www.youtube.com/watch?v=3s2\\_2g9NeZk&t=283s](https://www.youtube.com/watch?v=3s2_2g9NeZk&t=283s)



Fast forward to 0:56. During the charge session you will notice an RFID token on Bjørn Nyland's key ring that he presses against a sensor to activate the charge.

Those RFID tokens can be used on most charging stations run by multiple companies in multiple Nordic countries. Unlike a debit card or credit card they cannot be blocked by over-zealous bank security systems.

Do you really want to be stuck at 3AM on the last leg home from a road trip in the oh-so Sod's Law pouring rain trying to charge only to find that your bank has engaged some random security block of your debit card ?

In the UK we should introduce a version of the RFID tokens available to purchase and or top-up at Newsagents & the kiosks usually found just inside the entrance of most large supermarkets. Convenience stores and petrol station shops should also sell them.

Point 4.

The sale of any form of diesel vehicle including diesel hybrids needs a total ban. If manufacturers want to produce hybrids they need to be petrol hybrids not diesel hybrids. The diesel lobby loves to make lower pollution claims for diesel. This is a deceit. Yes it is true that in terms of MPG petrol produces more CO<sub>2</sub> but diesel emits nitrogen based pollutants than unlike CO<sub>2</sub> cannot be offset by forests or urban greenery. In terms of hybrid electric range all new hybrids should have a mandatory 64 miles real world electric mode capability. The NEDC range measuring system would rate it as 80 miles.

Point 5.

One more Bjørn Nyland video as he shows us Norway's 100% electric ferry.

<https://www.youtube.com/watch?v=hT3QpkrHFf4>



The official SIEMENS Norled electric ferry promo video from 2015.

<https://www.youtube.com/watch?v=a6Lp-qV9ZJU> . Heaven forbid we should emulate this kind of Norwegian-German innovation. It would deeply disturb our PM's vision of a Brexit she did not even believe in two months before the vote. The clear irony being if there was ever a model for a Brexit Britain it should have been Norway. Alas clean energy powered Norway is not to Nigel "Give me coal or give me death" Farage's taste.



## Point 6.

Personally I would most appreciate it if the committee called in ECOTRICITY boss Mr Dale Vince. There was a time when driver's using his DC Charging stations could simply swipe an RFID card over the sensor. This now only works the AC charging stations as ECOTRICITY has made all of their DC charging stations Smart Phone APP operated ONLY !!

As someone who is 54 years old and rapidly pushing 55 years I simply cannot express strongly enough that this current regime for ECOTRICITY's DC charging is both wrong and repugnant.

If someone wishes to use the APP that is fine. It however must not be allowed to be the only option for operating the charging station. RFID cards or tokens, debit cards, credit cards and phone APPS should be optional choices. Requiring people to have a present and functioning Smart Phone is a very bad idea. That demands another piece of battery powered technology to be working when required. Those Norwegian RFID tokens are so much easier especially for older and elderly users.

There is no way you are ever going to make a Smart Phone do the same function as easily as an RFID token. Plus Smart phones are much more awkward to hold and if you drop your phone on concrete that could easily be another costly Smart Phone wrecked. If you have a walking cane or an umbrella in your other hand such mishaps are bound to occur. While an RFID token avoids all of that.

If Dale Vince is not willing to reverse his decision then Parliament should enforce the reversal for him. Failure to conform must be met with a financial penalty that is more than the cost of the refit. One presumes in such a situation Ecotricity would choose the refit over the penalty.

## Point 7.

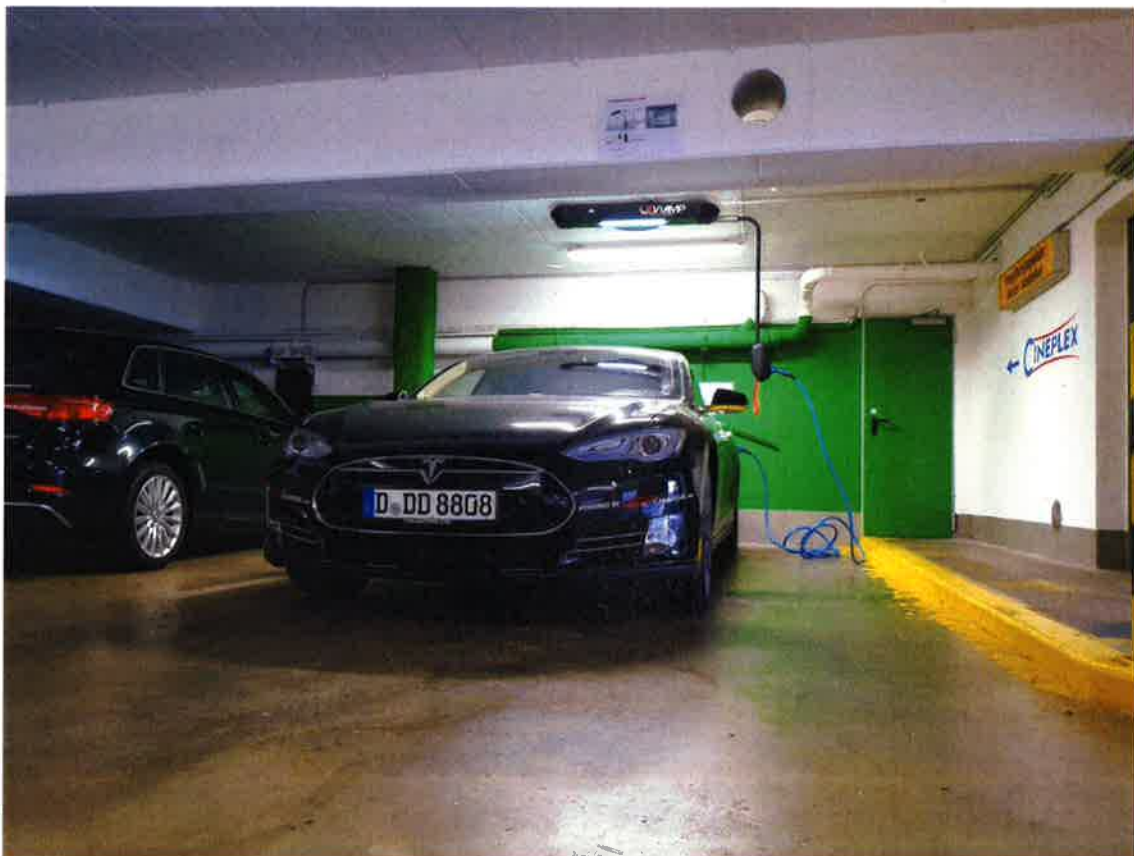
There is a lot of talk about DC charging but there is far too little discussion and far too little awareness of the virtue and blessing that is 3 PHASE AC charging in three key variations 43kW, 22kW and 11kW. In North America all the AC EV charging is a very basic Single Phase. Across Eurasia from Glasgow to Shanghai we have the far better 3 Phase AC option. It is also a far less costly option than DC infrastructure and is perfect for opportunity charging at Supermarkets and big box store car parks. As well as an easier and cheaper option than DC stations for rural locales along the scenic route. In Scotland the Charge Your Car service has many 22kW AC charging stations in such locales. However many current EV models are restricted by their internal charger in terms of how high an AC charge they can handle. Parliament needs to encourage 43kW and make all new cars conform to a mandatory 3 Phase 33kW AC minimum capability.



## Point 8.

Speaking of 3 Phase 22kW AC charging the brilliant Düsseldorf based start-up company Easycharge.me.GmbH offers a brilliant solution for indoor parking at hotels, condos, office skyscrapers and multi-storey car parks. They call it LEVIAMP a combination EV charging station, LED ceiling light and informational video projector. That also includes video security and monitoring camera. The official website page for this product is <http://leviamp.easycharge.me/> while this episode of FULLY CHARGED showed the prototype in action <https://www.youtube.com/watch?v=KT86ICX6Vsl> . Since then the company has been receiving a positive stream of orders and has completed a growing number of successful installations.

Please note the blue cable is a standard type 2 Mennekes and will always be supplied by and belong to the driver. Bring your own cable for AC charging makes the world a much neater place. This is again something North Americans have failed to grasp so a series of AC charging stations in an outdoor car park in the USA or Canada will always have a mess of cables when not in use.



EASYCHARGE.ME also has a streetlight charging station model that they offer and are installing around Germany.

<http://streetlight.easycharge.me/> .

## Point 9.

During the recent three to four year period TESLA has built out more SUPERCHARGER stations than Big Oil built gas stations across the USA between 1910 and 1935. There now exists for Tesla owners a massive and still expanding map of SUPERCHARGERS, Urban Chargers & Destination Chargers across North America, Europe, China etc. Tesla SC maps <https://www.tesla.com/supercharger?redirect=no> The red markers are SC bays active today. The grey markers are SCs coming soon.

A mere few days after this American couple bought their TESLA MODEL S 75D they embarked on a road trip from Atlanta to Houston. To use a Supercharger...just plug in. This is the TESLA way. <https://www.youtube.com/watch?v=u2EmK8fZBGc>



Then there is the quality of life issues. In this video the same couple decided to have a challenge with a friend driving an ICE vehicle in a road-trip race against their TESLA. What you learn from this video is that combustion cars may sometimes have more range but the gasoline vehicle driver enjoyed absolutely no quality of life during his trip. <https://www.youtube.com/watch?v=XJHqFpNuawg>



## Point 10.

Sometimes a picture is worth a thousand words. French EV sea & river taxi.

<https://www.weforum.org/agenda/2017/08/what-french-flying-water-taxis-can-teach-us-about-startups>



The vehicle also has a huge potential as a river taxi for cities to relieve road congestion in the big metropolises. Yes on their website <http://seabubbles.com/> you will find the more Thames and British weather covered-roof appropriate version.



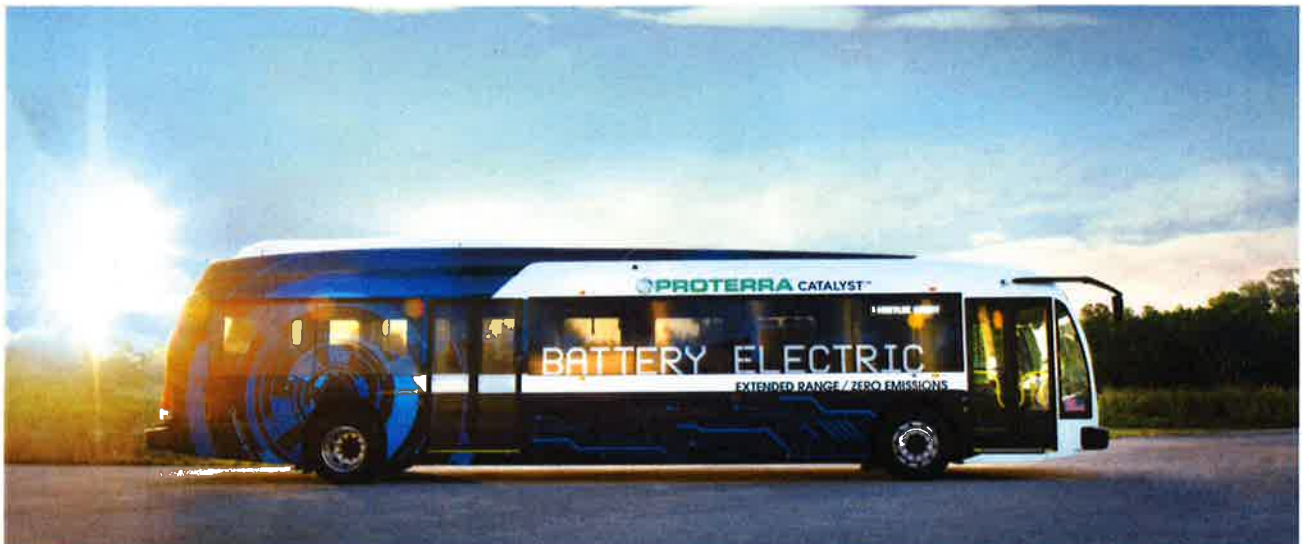


## Point 11.

While I am glad to know electric buses are slowly being introduced into British mass transportation, I am concerned that neither the best electric bus and in some cases not even real electric buses are being purchased with tax-payers money. Hybrid-electric buses for example are nothing but dirty polluting diesel vehicles wrapped in the con of a greenwash deceit.

The world's greatest electric bus company making the world's greatest electric buses is the California based PROTERRA. They are the TESLA of public transportation. Their line-up of bus models offer ranges from 60 miles to 300 miles on a single charge.

[https://twitter.com/Proterra\\_Inc](https://twitter.com/Proterra_Inc)



Charging technology <https://www.proterra.com/technology/chargers/>





## Point 12.

The European electricity utility "e-on" has recently announced a grand plan for EV charging stations across Europe including the UK. They intend on installing what they claim will be 10,000 charging stations by the year 2020. It is quite obvious that these charging stations will be CCS. That last part concerns me and thus I again ask your committee to request executives to present themselves for questioning. I urge you to discuss with other Parliaments across Europe as well as the EU the necessity of a mandate for the "e-on" CCS stations to also provide a Mennekes AC socket. So that non CCS cars could at least use their own cable to plug into the standard type 2 socket for a minimum 3 Phase 22kW AC charge. Bypassing and without having to go through any kind of CCS protocol. This feature needs to be mandated for the "e-on" network.

The folks at "e-on" have commissioned this stunning promo video featuring all DIY grass roots retro-built EV conversion vehicles.

<https://www.youtube.com/watch?v=ZbmdhHaNLhQ>



The issue of vehicle conversion is something that I would like to explore with you further at a later date. OKAY that is all for now. Thank you for reading this presentation.

Sincerely  
H.S.Marks.  
Manchester

started on 06/11/2017 completed on 07/11/2017.