



# Call for evidence on Government measures to support uptake of ultra low emission vehicles from 2015-2020

The Government has announced that it will provide £500 million to support the uptake of ultra low emission vehicles (ULEVs) between 2015 and 2020. This call for evidence will inform the development of this package of support. This will need to consider the balance of support between different activities (for example, consumer incentives, infrastructure and R&D) and plot the path to Government's exit from subsidy.

*Please fill in the form below with your responses to the questions asked, and send to [callforevidence @olev.gsi.gov.uk](mailto:callforevidence@olev.gsi.gov.uk) by 10 January 2014.*

*Please provide evidence to support your comments, including estimates of the impacts and costs / benefits wherever possible.*

*Please indicate clearly if this evidence is provided in confidence.*

Name:	Rebecca Fuller
Organisation details:	<b>pteg</b> (Passenger Transport Executive Group)
Email:	<a href="mailto:rebecca.fuller@pteg.net">rebecca.fuller@pteg.net</a>

**Overall Position:**

Please give a brief summary of your organisation's interest in ultra low emission vehicles, as well as any overarching points you would like to make.

**pteg** represents the Passenger Transport Executives - strategic transport bodies which between them serve more than eleven million people in Greater Manchester (Transport for Greater Manchester), Merseyside (Merseytravel), South Yorkshire (SYPT), Tyne and Wear (Nexus), the West Midlands (Centro) and West Yorkshire (Metro). We are also a wider professional network for Britain's largest urban transport authorities.

The **pteg** network has a long track record of investment in ULEVs, including the trialling of alternative fuels, involvement in Plugged-In Places schemes and the procurement of green buses. **pteg** has commissioned and published a number of studies to help PTEs and other transport authorities make the best choices when it comes to low carbon vehicles, including an analysis of carbon pathways for transport in the city regions and a forthcoming report on the contribution of urban transport to air quality. **pteg** is a member of LowCVP.

The transport sector continues to depend strongly on fossil fuel energy sources. Decarbonisation of transport and of energy sources must be addressed as two complementary strategic lines. With the movement of people, goods and services, the reliance on road-based transport will continue. We must therefore look for ways to make road transport as green and as efficient as possible. However, a green traffic jam is still a traffic jam and strategies for supporting ULEVs must go hand-in-hand with those for restraining traffic growth and encouraging a shift to the most sustainable modes, such as walking, cycling and public transport.

We would like to see a significant portion of the £500m targeted towards the largest city regions where congestion, CO2 emissions and air quality issues are most acute and where the most significant impacts could be achieved if a coordinated package of measures were to be implemented.

Cities have a key role in supporting the uptake of ULEVs and, given the complexities and challenges involved, we would like to stress the importance of OLEV maintaining an ongoing dialogue with the city region transport authorities. As a network of urban transport authorities, **pteg** can provide a point of contact and a gateway to those authorities, including through organising teleconferences, webinars and face-to-face meetings.

It is important that OLEV work closely with other Government departments to distribute the available funding in a coordinated manner. Through careful planning with Defra and the DfT, this £500m could see a reduction in CO2, NOx and PM10 and assist the UK in avoiding significant financial penalties from the EU. DECC should also be consulted, for example, regarding the ability of the regional power network to cope with an increase in electricity consumption as a result of greater ULEV uptake.

OLEV should develop a long-term framework for the funding of ULEVs to inject certainty and build consumer and investor confidence. A predictable funding framework would enable local authorities, transport operators, manufacturers and other stakeholders to work together and make long-term plans to support the mainstreaming of ULEVs.

Questions	Comments
<b>Section 1. Core elements of the current support package</b>	
<b>Consumer grants for cars and vans</b>	
	<p>Government currently offers plug-in grants to eligible ULEVs at a flat rate of 25% per car (capped at £5000) and 20% per van (capped at £8000). There remains a cost gap between ULEVs and traditionally-fuelled vehicles and we are exploring the options for continuing some form of vehicle-based subsidy beyond 2015. We are expecting uptake of ULEVs to reach about 5% of new car sales by 2020. We therefore need to consider a grant model that promotes increased market penetration and effectively incentivises purchase as ULEVs become more mainstream. If current grant levels were maintained, there would be minimal incentive to reduce prices. Grants beyond 2015 need to be affordable, as targeted as possible to incentivise manufacturers to invest in the UK, and incentivise early adoption whilst also including an exit strategy from Government support as the market matures. We also recognise the importance of introducing ULEVs into other high emitting segments such as HGVs. This is considered further from line 44.</p>
1. Should we continue to provide upfront consumer grants for cars and vans? Should this continue to be on a national basis?	<p>Even with grants at their current levels, ULEVs are prohibitively expensive for many low and middle income households and small businesses. Some national level incentive is still needed, therefore, to encourage take-up. This should be combined with incentives and opportunities for consumers to experience ULEVs in other, more affordable ways, for example by travelling on a green bus or via a car club.</p> <p>ULEV cars and vans come with many of the same problems as their conventional counterparts - roads will still be congested, streets filled with parked cars and sedentary lifestyles will be encouraged. Indeed, as vehicles become more efficient, their running costs will reduce (unless new taxes are introduced) and vehicle kilometres could increase as a result. Incentives for ULEV cars and vans must therefore go hand-in-hand with strategies for restraining traffic growth. Without this, there is a risk of encouraging a shift away from under-resourced public transport networks to the detriment of the environment, social inclusion and the effective functioning of our towns and cities.</p> <p>There are questions as to whether consumer grants are the most effective way to target limited funds - consumer incentives for vehicle purchasing could be considered a 'scattergun' approach, whereas more targeted, concentrated action could deliver greater impacts (e.g. focusing on fleets, buses and cities).</p>
2. Should we continue to incentivise vehicles with less than 75g CO <sub>2</sub> /km emissions, or focus our subsidy support on vehicles below a different threshold, and if so what should the threshold be? Are there additional or more appropriate ways of distinguishing between which vehicles to support?	<p>The less than 75g CO<sub>2</sub>/km threshold should be retained, however, levels of support for vehicles falling under the threshold could vary according to their CO<sub>2</sub> emissions. The 'greenest' vehicles would attract the highest subsidy support. Support could then reduce on a sliding scale, with the 'lightest green' (e.g. 75-50g CO<sub>2</sub>/km emissions) vehicles attracting the lowest level of support. Gradually, support at the bottom end of the scale could be removed as each level of vehicle enters the mainstream.</p> <p>The definition of an ULEV should be based on a well-to-wheel measurement for CO<sub>2</sub> and should additionally take account of air quality emissions, specifically NOx and PM10. Such a definition would help to join up the low carbon and clean air agendas.</p>

3. Vehicle manufacturers are targeting 2015 for commercial deployment of hydrogen fuel cell electric vehicles in the UK. Should the incentive offered to consumers continue to be technology neutral and therefore the same amount regardless of whether the vehicle is a battery or fuel cell electric vehicle or is there evidence that a dedicated grant regime to support the roll out of hydrogen fuel cell electric vehicles is required?

Any incentive offered to consumers should continue to be technology neutral. Relying heavily on one new technology is not practical, particularly as not all types of technology are suitable for all types of vehicle or purpose. Factors such as distance to travel, weight to carry and size of vehicle will all have a bearing on the type of solution chosen.

It might be appropriate to vary levels and types of support according to the stage of development a particular technology has reached - emerging technologies may require a higher value 'kick-start' grant, possibly targeting a specific sector to demonstrate potential. A kick-start demonstrator for hydrogen fuel cells could focus on taxis, for example.

<p><b>4.</b> Two possible exit strategies from on-going consumer incentives as the market nears maturity would be to reduce the value of the grant for each vehicle year on year, or limit the number of vehicles to which the grant could be awarded. Which of these strategies would best facilitate the development of ULEV sales models without the need for grant support, or can you suggest an alternative?</p>	<p>Reducing the value of the grant for each vehicle year on year would be preferable to capping the number of vehicles supported. If current grant levels are maintained, there will be little incentive for car manufacturers to drop prices. Changes to subsidy levels should be announced as early as possible and be graduated to allow markets to respond effectively. As set out in our response to Q2, subsidy could reduce on a sliding scale with the 'lightest green' vehicles the first to lose funding. Any such framework should be transparent, making it clear to manufacturers that those vehicles offering the greatest emission reductions will receive the greatest support for the longest period of time.</p> <p>'Feebates' might offer an alternative exit strategy. Here, one-time fees could be levied on relatively high emitting vehicles when they are sold as new. The funding generated could be used to provide rebates to those purchasing new lower emitting vehicles. Such a scheme would be self-financing.</p>
<p><b>5.</b> Should Government be doing more to support the second hand market for ULEVs for example through incentivising second owners of the cars, or guaranteeing residual values? What form could this support take?</p>	<p>This should be left to market forces.</p>

## Infrastructure

**Electric:** Between 2010-2013 we funded charging infrastructure installation through eight pilot projects in the UK - the Plugged-in Places.

These projects gave us insight into the charging behaviour of ULEV drivers and the different business models for managing infrastructure schemes.

In 2013 we launched a series of infrastructure grants to reflect these charging preferences in the form of a nationwide domestic chargepoint grant; a grant to install chargepoints in train stations; a grant to local authorities to install rapid chargepoints and chargepoints on residential streets; and a grant to public sector bodies to install workplace chargepoints. Lack of sufficient charging infrastructure is still one of the most cited reasons for not purchasing battery powered vehicles, so we are exploring options for continuing to direct funding support to infrastructure installation in the period 2015-2020. The Government wants to enable a sustainable market to emerge and to scale back its provision of direct funding support by 2020.

**Hydrogen:** Vehicle manufacturers are targeting 2015 for commercial introduction of hydrogen fuel cell electric vehicles into the UK. A joint industry-Government project - UKH2Mobility - was launched in January 2012 to evaluate the potential and develop a roadmap for the roll-out of hydrogen fuel cell electric vehicles and the associated hydrogen refuelling infrastructure. We are exploring options for Government funding to encourage private investment in the initial network of refuelling stations required in the period 2015-2020.

**Gas:** There are several hundred gas HGVs already in use in the UK. Some operators have undertaken their own trials and are using the vehicles. The DfT/TSB/OLEV low carbon truck trial is supporting around 300 more vehicles (of which over 100 are now on the road) and providing 11 open-access gas refuelling points, which will be open to other operators, as part of the trial. A barrier to the wider use of gas vehicles is the availability of refuelling infrastructure. Better public refuelling infrastructure would provide confidence to the market and allow operators who generally refuel at base to increase payloads or cover longer distances.

6. What should be the focus of future charging infrastructure funding support? It would be helpful to consider both state of the market and driver requirements (i.e. chargepoint type, location, payment mechanisms) in your answer.

*Chargepoint type*

Rapid charging should be a priority to reduce range anxiety among users.

*Chargepoint location*

The location of charging infrastructure should go hand-in-hand with strategies for restraining traffic growth. A key focus for funding support should therefore be the installation of highly visible charging points at transport interchanges (such as railway stations and park and ride sites) to allow people to continue their journey using alternative modes. These charge points could also be used by car club vehicles and taxis. Charging points could also be supported at workplaces, including for company vehicles in high use. Safe, high-capacity domestic charging points could also be encouraged, not only through possible subsidy but also by encouraging new-build properties to include them as standard via the relevant building codes.

*Payment mechanisms*

Payment mechanisms for public charging points should be pay-as-you-go and should consider integration with other transport smart ticketing. A single smartcard could be used to access vehicle charge points, car club vehicles, bike hire, buses, trains, trams and taxis, forming a combined mobility package and enabling the individual to decide the best mode for the journeys they are making that day.

<p><b>7.</b> Two possible exit strategies for charging infrastructure funding would be to decline grants year on year, or cap the number of chargepoints to which the grant could be awarded. Which of these strategies would best facilitate the emergence of a sustainable market, or can you suggest an alternative?</p>	<p><b>Grants should be reduced year on year. To maintain market confidence, the intended profile of these reductions should be published at the earliest opportunity. Emphasis should be placed on local providers to build/provide infrastructure as integral elements of other schemes, for example, highway improvements, car parks and other new developments. The planning process could potentially be used to help deliver these through Section 106 and Section 278 agreements.</b></p>
<p><b>8.</b> What are the emerging technologies and should we incentivise uptake (wireless, dynamic wireless, battery swap, flash charging, etc)? Please provide projected costs and differentials to plug-in infrastructure where possible.</p>	<p><b>Wireless charging is an interesting development, particularly for buses which can charge both en-route and at depots. A trial in Milton Keynes will see new buses that are able to recharge their batteries wirelessly throughout the day. It means that for the first time, electric buses will be capable of the equivalent load of a diesel bus. The buses will charge when power transmitted from a primary coil buried in the road is picked up by a secondary coil on the bus. Ten minutes parked over a coil will replenish two thirds of the energy consumed by the bus's route. The primary coils will be placed at three points on the bus route, and the buses will charge in the time scheduled for driver breaks at the end of the route. The project partners estimate that using the technology on the route will remove approximately 500 tonnes of CO2 emissions each year, as well as 45 tonnes of other tailpipe emissions. The initiative could also reduce bus running costs by £12.15k per annum.</b></p>
<p><b>9.</b> What support do you think is appropriate for Government to take to encourage the development of a national network of hydrogen refuelling stations?</p>	<p><b>The Government should support the provision of a low-cost hydrogen supply (waste from industrial purposes) and fuelling infrastructure. This could be focused on a trial area that could readily be expanded into neighbouring areas. For example, the Liverpool City Region chemical industry in Halton could supply 'cheap' fuel and infrastructure which could then expand into Liverpool and Manchester.</b></p>
<p><b>10.</b> What support do you think is appropriate for Government to take to encourage the development of a national network of gas refuelling points for commercial vehicles?</p>	<p><b>HGVs account for 21% of CO2 emissions from road transport, despite only making up 5% of vehicle traffic according to DfT statistics. The European Commission has argued that the best immediate solution for reducing emissions from HGVs is the use of gas propulsion. It is appropriate that the Government should encourage the development of a national network of gas refuelling points, including through identification of suitable strategic sites nationally and the allocation of financial resources. The existence (or reliable prospect) of such a network would give commercial vehicle operators the confidence to invest in gas-powered vehicles.</b>   <b>It should be noted that gas refuelling is also a viable option for buses. Sheffield City Council's Low Emission Zone report recommended a widespread upgrade of the area's bus fleet, supported by the introduction of gas refuelling infrastructure. South Yorkshire PTE report that local bus operators are supportive and some are already in the process of converting a handful of vehicles to gas using funding secured through the Clean Bus Technology Fund.</b></p>

**R&D**

£82m of funding is being provided to support R&D between 2010-2015. The majority of the funding is directed through the Technology Strategy Board - the UK's innovation agency - on an industry match funded basis, and focused on tackling three of the five strategic technology themes identified by the Automotive Council. The three themes were electric machines and power electronics; energy storage and energy management; and lightweight vehicle and powertrain structures. We have also recently announced a £1bn Advanced Propulsion Centre as the cornerstone of our R&D investment into the automotive sector.

<p><b>11.</b> To date we have channelled much of our funding through the Technology Strategy Board. Are there complementary channels to consider for funding? What improvements could be made to the process? Is there a need to target particular vehicle categories or is a 'open to all on-road vehicle categories' approach appropriate?</p>	<p>The Technology Strategy Board would seem to be the correct channel for R&amp;D funding. Another route to explore might be alignment with the European Commission's 'Horizon 2020' agenda. An 'open to all on-road vehicle categories' approach is appropriate.</p>
<p><b>12.</b> What support, if any, in addition to the Advanced Propulsion Centre, would make your firm more likely to increase investment in the UK over the next five years?</p>	<p>N/A</p>
<p><b>13.</b> Does our support for collaborative R&amp;D support UK industry as well as it could? Are there other approaches that could deliver greater value for UK?</p>	<p>Not able to comment.</p>
<p><b>14.</b> Is there a need for further demonstrations or trials of ULEVs or technologies? If so what would be most effective?</p>	<p>Yes - further trials of wireless charging for buses and taxis (see answers to Q8 and Q15) and of hydrogen propulsion systems for buses could be two options from an R&amp;D perspective.</p>

## Section 2. What other initiatives could we support to expand the ULEV market in the UK?

### Taxis, private hire vehicles and car clubs

Taxis, private hire vehicles and car clubs provide a particularly good opportunity for ULEV take up as they are often city based, expose the benefits of ULEVs to a wide range of consumers who might not otherwise have the opportunity to experience them, and have relatively short average daily runs (ie making electric vehicles an option).

**15.** How could the Government best support roll out of ULEV taxis, private hire schemes and / or car clubs between 2015-2020 (e.g. through subsidy support or infrastructure support)?

#### *Taxis/private hire*

Financial support for private hire drivers to purchase a ULEV would be beneficial as the high upfront costs are likely to present a significant barrier to uptake for this group. Given the high utilisation rate for taxis, this would need to be supported by appropriate rapid charging infrastructure or trialling of emerging technologies (such as wireless charging on the taxi rank).

#### *Car clubs*

Subsidy support to incentivise car club fleet buyers to choose ULEVs would be an effective means of expanding the market and would contribute towards generating a critical mass of ULEVs. It would also broaden access to ULEVs, meaning more people get to experience using them, helping to build acceptance. Investing in car clubs could also assist with strategies for restraining traffic growth. City Car Club report that their members drive fewer miles each year than an average motorist because they think more carefully about each trip they make in a car and make greater use of alternative travel options.

### Public sector procurement

There are a number of examples internationally of supporting purchase of ULEVs in public sector fleets to ensure that governments lead by example, and to demonstrate that the technology is fit for purpose for, and benefits some of the biggest fleets in the country. In the UK all central government vehicle purchasing goes through the Government Procurement Service (GPS). We are keen to explore directing support to public sector fleets via GPS led vehicle auctions or alternative means.

<p><b>16.</b> Do you think the Government should place greater emphasis on public sector procurement to ensure we lead by example in ULEV uptake? If so what form should this take?</p>	<p>The Government at central and local level should use its considerable purchasing power to lead by example on ULEVs, building critical mass and boosting infrastructure development. A careful approach would be needed, examining which vehicles and technologies would work best for which sectors and in what circumstances.</p> <p>Through public sector procurement, there is an opportunity to work with ULEV and infrastructure suppliers at a national level to negotiate attractive rates. A framework contract could then be put in place where appropriate, for example, to assist local authorities to efficiently and cost effectively procure chargepoint infrastructure. Such a framework could save money through setting out pre-agreed terms and conditions and securing competitive rates as well as avoiding the time consuming task of conducting competitions every time ULEV vehicles or infrastructure is procured.</p> <p>A public sector commitment to purchase ULEVs would give confidence to the industry and ensure that more people get to experience what it is like to use ULEVs, making it more likely they will consider them for their own personal use. The public sector could also be a good testbed for emerging technologies, preproduction ULEVs and new ownership models. Car club initiatives, for example, could be stimulated through trials with government employees.</p>
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#### UK automotive sector

To date, OLEV have not specifically allocated any funding to supply chain initiatives, recognising that companies involved in ultra-low emission vehicle technologies have access to funding from broader programmes, including the Regional Growth Fund and the Advanced Manufacturing Supply Chain Initiative. We believe that this remains the appropriate approach to supporting the UK automotive industry and associated supply chain but would be interested to receive any evidence supporting specific or targeted programmes for ULEV companies.

<p><b>17.</b> Do you believe that specific or targeted programmes are required to support the development and strengthening of the UK-based supply chain for ULEVs. What should the objectives of any such programmes be and how best could they be delivered?</p>	<p>Not able to comment.</p>
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## Regional / city schemes

With the right package of support, a particular city or region could achieve a step change in ULEV uptake faster than might happen nationally. City regions could benefit from such a package of support given the likely daily mileages of intra-city traffic and enhanced need to tackle local air quality.

<p><b>18.</b> Would you support a scheme of targeted grant funding on a regional basis e.g. create "model cities" by allocating funding to specific projects that will increase uptake of ULEVs ?</p>	<p><b>Yes.</b> It makes sense to target ring-fenced grant funding to support ULEV uptake at our cities where congestion, CO2 emissions and air quality issues are most acute. In contrast to piecemeal, small scale funding streams which tend to represent somewhat of a shotgun approach, a city level focus could build critical mass and deliver concentrated and lasting impacts. The model cities would act as demonstrators for other areas.</p> <p>Larger funding grants could enable the implementation of more ambitious, high impact packages of interventions, combining multimodal infrastructure investment (e.g. electric bus networks, car club charging points) with revenue spend to raise awareness and promote lasting behaviour change. Such grants could also help to unlock complementary match funding from schemes such as the European Commission's Horizon 2020 programme.</p> <p>The implementation of schemes funded under such a programme should be led by transport authorities in partnership with bus and other transport operators.</p>
<p><b>19.</b> Would you support OLEV funding a competition, whereby regions could bid for additional funding to support ULEV rollout (e.g. by supporting both infrastructure and vehicles?)</p>	<p>A scheme to support rollout of ULEVs at regional level might result in the implementation of measures that are too dispersed to have any significant impact on air quality or CO2 emissions. A focus on cities would be preferable, for the reasons set out in our response to Q18.</p> <p>Given diminished staffing resources in many local authorities, it would be important to ensure that if a competition approach were to be implemented, the process is not too onerous as funding competitions tend to be very resource intensive.</p>
<p><b>20.</b> Would you support topping up of existing local funding streams such as the Regional Growth Fund to incentivise ULEV rollout?</p>	<p>Yes, but the top-up would need to be ringfenced for ULEV rollout. We would suggest that the Local Growth Fund might be a better candidate than the Regional Growth Fund as it offers greater potential for targeted activity at city region level.</p>

## Other vehicle segments

To date OLEV's focus has been on the highest emitting segments of road traffic - cars and vans. We are now interested in exploring how best to support other segments in particular commercial vehicles (which make up about 20% of road transport emissions), but also buses/coaches, electric powered two wheelers and other small ULEVs.

<p><b>21.</b> There are a number of low emission HGVs and technologies currently available or entering the market. These include pure electric, hybrid and gas powered trucks. How could Government best support the decarbonisation of HGVs and improve uptake of these vehicles with commercial operators?</p>	<p>As noted in Q10, HGVs contribute a disproportionate amount to CO2 emissions. Some 70% of those emissions are generated by long-haul and regional deliveries according to research by Ricardo-AEA. Based on a review of the evidence, the same report suggests that for these types of journey, a shift to gas (particularly bio-LNG) could have the biggest impact on reducing emissions from HGVs and improving air quality. The European Commission is also supporting gas as the best immediate solution for tackling HGV emissions.</p> <p>The Ricardo-AEA report found that the biggest barrier to the uptake of gas vehicles is the lack of refuelling infrastructure and the costs of installing it. The European Commission is proposing that LNG refuelling stations should be developed every 400km on the Transport Trans-European Network (TENT-T). In support of this goal, the European Union is backing a study to further investigate the potential of bio-LNG as a fuel for HGVs. It will test the use of the fuel in a full live trial with fleet operators in the UK and will deploy and test five open access bio-LNG refuelling stations as well as two mobile refuelling stations for use elsewhere in Europe. The study is set to conclude by the end of 2015. Pending the results of the trial, the Government should initiate a rapid roll-out of a coherent network of infrastructure for bio-LNG powered HGVs.</p> <p>HGV fleets are replaced infrequently so consideration should also be given to decarbonising the existing fleet through retrofitting, for example, through aerodynamic technologies, rolling resistant tyres and conversion to alternative fuels.</p>
<p><b>22.</b> Should the Government have a role in incentivising uptake of smaller ultra-low emission vehicles (such as L category vehicles) in order to broaden the appeal of the technology? If so, what?</p>	<p>Motorcycles and mopeds make up around half a per cent of total CO2 emissions from road transport. It would seem wiser to target activity on those modes that have the biggest impact on emissions.</p>

**23.** ULEV buses already receive support through the Green Bus Fund. Should OLEV have a further role in supporting low emission buses, for example through subsidising recharging or hydrogen refuelling infrastructure?

OLEV should play a key role in supporting low emission buses, particularly given that it looks unlikely that there will be a fifth round of the Green Bus Fund (GBF). The GBF has been very effective at getting low emission buses onto our roads, particularly in the city regions. However, there is a concern that once funding support is removed, bus operators will lack the incentive to invest in hybrid/electric/hydrogen/gas buses given that they are substantially more expensive than conventional vehicles. We understand that the GBF was intended as a kick-start for the rollout of green buses, but some level of support should be maintained, perhaps using a similar sliding scale model as outlined for cars and vans in Q2. The GBF could usefully be pooled with the Clean Bus Technology Fund given that each has similar objectives.

Support for bus charging infrastructure should be included in any funding package, as is already done for cars. Indeed, investment in bus charging infrastructure could deliver far greater returns. Car charging stations represent a scattergun approach, and usage is often very low. In contrast, installing charging stations along a particular bus route would give regular, guaranteed, predictable usage levels. Utilisation of charging points could reach 100% as soon as the points are deployed as it would be possible to predict and plan how much energy would be used, at what times and by how many vehicles. Such interventions would need to be delivered by bus operators and transport authorities in partnership.

A focus on cities would offer the greatest return on investment in green buses and infrastructure, given the volumes involved. More than one billion bus trips are made each year in the PTE areas. Research for pteg by Atkins found that improvements to bus fleet efficiency is one of the strongest measures for CO<sub>2</sub> reduction in the metropolitan areas (<http://pteg.net/resources/types/reports/carbon-pathways-transport-city-regions>).

The long-term profile of funding for any new support for green buses should be made clear from the start. There has been no certainty regarding the availability of the GBF from year to year. This negatively impacts on the confidence of manufacturers to invest in the technology and undermines potential for delivering economies of scale (as manufacturers are forced to cost each round of orders on a batch basis). For operators, fleet investment is a long-term planning process. Therefore, offering a level of certainty regarding the availability of funds will encourage the adoption of new low carbon/low emission technologies. It will also allow PTEs and other transport authorities to plan to align investments by commercial operators with complementary measures.

## Energy

In the longer term, large scale uptake of ULEVs will have an impact on the UK's grid - both positive and negative. The production of hydrogen for fuel cell electric vehicles can also provide benefits to the wider energy system, for example through energy storage.

The Department of Energy and Climate Change is already taking measures to address this through rolling out smart meters, and tests on the impact of clustering of ULEVs in certain areas on the grid are ongoing.

We are looking at whether any additional support should be offered at this stage.

**24.** Is there a need for further demonstrations or trials into the impact of ultra low emission vehicles in the wider energy system, supplementing current Government funded work, or any other intervention that Government should make in this area? If so, what?

The Government could look to cities like Berlin where smart grids combined with smart transport will ultimately see individual buildings and vehicles become batteries which will use, generate, store and sell back energy to the grid based on sophisticated IT that can factor in generation levels, electricity prices and weather forecasts.

<p><b>25.</b> How can we best ensure that appropriate information about the impact of plug-in technologies on particular networks is visible both to Distribution Network Operators and other relevant parties?</p>	<p><b>Not able to comment.</b></p>
<p><b>26.</b> Should the Government provide support to ensuring that the hydrogen used in fuel cell electric vehicles in the UK results in decreasing CO<sub>2</sub> emissions per km for these vehicles on a "well to wheel" equivalent basis?</p>	<p><b>Yes. The Government should provide support to ensure robust well-to-wheel assessment of energy efficiency and carbon together with air quality.</b></p>
<b>Communications</b>	
<p>We are currently working with several major motor manufacturers to explore options for communications activities to increase awareness and understanding of the benefits of ULEVs. There may be a need to continue communications activities beyond 2015.</p>	
<p><b>27.</b> What support do you think Government should offer in helping to raise awareness and communicate the benefits of ULEVs?</p>	<p><b>Vehicles (both conventional and low emission) should be labelled with Total Cost of Ownership figures to highlight the longer-term costs and benefits of different vehicle choices. For ULEVs, this information could help offset the high upfront costs in the minds of consumers.</b></p> <p><b>Seeing is believing, and the more opportunities people have to experience ULEVs the better. For example, according to Cenex, after a six month period of trying out plug-in vehicles, 72% of drivers would switch their full-time car to an electric vehicle, compared to 47% before the trial. Greater exposure could be achieved by encouraging the use of ULEVs in company and public sector fleets as well as via car clubs. Green buses are also an opportunity for more people to experience ULEVs.</b></p> <p><b>Highly visible infrastructure at destinations (like railway stations, workplaces and supermarkets) and en-route for longer distance journeys may also be helpful in raising awareness. However, provision of the infrastructure alone is unlikely to be enough. Infrastructure investment is most effective when combined with softer measures to promote its use and encourage behaviour change. Funding packages should, therefore, allow for both capital and revenue spend.</b></p>

**28.** Thinking beyond the scope of the £500m, in your view what measures would be required to make the UK the clear global leader both for inward investment across the ULEV sector, and ULEV uptake? Please feel free to consider radical options and 'think outside the box':

**29. Any other comments:**

Cities have a key role in supporting the uptake of ULEVs and, given the complexities and challenges involved, we would like to stress the importance of OLEV maintaining an ongoing dialogue with the city region transport authorities. As a network of urban transport authorities, **pteg** can provide a point of contact and a gateway to those authorities, including through organising teleconferences, webinars and face-to-face meetings.

**THANK YOU FOR PROVIDING YOUR VIEWS AND YOUR SUPPORTING EVIDENCE**