Energy UK response to Congestion, Capacity, Carbon: Priorities For National Infrastructure - Consultation on a National Infrastructure Assessment

11th January 2018

About Energy UK

Energy UK is the trade association for the GB energy industry with a membership of over 90 suppliers, generators, and stakeholders with a business interest in the production and supply of electricity and gas for domestic and business consumers. Our membership encompasses the truly diverse nature of the UK's energy industry – from established FTSE 100 companies right through to new, growing suppliers and generators, which now make up over half of our membership.

Our members turn renewable energy sources as well as nuclear, gas and coal into electricity for over 26 million homes and every business in Britain. Over 619,000 people in every corner of the country rely on the sector for their jobs with many of our members providing lifelong employment as well as quality apprenticeships and training for those starting their careers. The energy industry adds £83bn to the British economy, equivalent to 5% of GDP, and pays over £6bn in tax annually to HMT.

Executive Summary

This National Infrastructure Assessment comes at a transformative time for the energy sector. 2017 was a year of landmark milestones; our first coal-free day since the Industrial Revolution, technical strides being made in the electrification of transport and the dramatic cost reduction of renewable energy sources.

Such change is set against the backdrop of Brexit, following the seminal decision of the British public in 2016 for the UK to leave the European Union. Brexit has created an additional level of uncertainty for the energy sector at a time of significant change; the links through our network interconnection, EU ETS and a range of Standards and Directives need clear direction as to their continuation within or replication outside of the European Union. Energy UK and our members believe that many of the tools for managing energy infrastructure remain within the control of the UK Government but clear prioritisation is required in a number of areas including, the movement of skilled labour, liquidity of electricity/gas markets and maintaining access to supply chain products free of any tariffs and non-tariff barriers.

Energy efficiency and the future of gas in the UK are the stand-out areas where government decisions are required. Clear, early direction is required as both electric heat pump retro-fitting and the conversion of existing assets to low-carbon gases will take considerable time and funds. The effective decarbonisation of heating is necessary for the UK to fulfil its national and international climate change mitigation obligations. Likewise, Energy UK and our members consider that energy efficiency is an enduring solution to help consumers reduce their energy consumption, improve the comfort of their homes, and is central to achieving the Government’s 2030 fuel poverty and 2050 carbon reduction targets. Within our response to Congestion, Capacity, Carbon we outline a series of options for the cost-effective delivery of energy efficiency measures. These include changes to Stamp Duty, new-build and private rented regulation and subsidy on a similar model to the Feed in Tariff or Renewable Heat Incentive.

Energy UK and our members have long advocated for a technology neutral market stabilisation CfD, a contract free of Government subsidy which would facilitate de-risked investments and enable the least...
cost forms of electricity generation to participate fully in the UK market. Such a measure would expedite the delivery of additional low carbon generation whilst, at the same time, maintaining the current capacity by supporting a repowering programme for those sites coming to the end of their current support period. Similarly, the Capacity Market should be fully technologically neutral, enabling all plant to participate on a level playing field and allowing them to secondary trade their obligations out, as and when required. Likewise, the UK’s electricity charging regimes were designed around a generating model which is rapidly changing; as we move towards a smart, flexible system with high volumes of low carbon and embedded generation, a holistic review of charging is required to ensure that these regimes are fit-for-purpose and treat plant of differing sizes and types equally.

Electrification of transport is set to be the next step in the decarbonisation transformation; a market-led, customer-focussed and Government supported approach is essential. It is essential that regulations keep pace with technical progress; that they facilitate the widespread take-up of electric vehicles and that charging infrastructure is standardised and accessible to the owners of different electric-vehicle models. In order to create consumer confidence, charge points need to be easily accessible, widely trusted, and interoperable.

For more detail about the questions posed within the consultation document please refer to the responses submitted on behalf of our members.

Should you have any questions regarding this consultation response then please do not hesitate to get in touch via the details below.

I can confirm that this response may be published on the National Infrastructure Commission’ website.

Yours sincerely,

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Response to Questions

1) How does the UK maximise the opportunities for its infrastructure, and mitigate the risks, from Brexit?

The energy sector is undergoing a period of significant change as some large thermal plants retire and are replaced with both decarbonised and flexible generation. New development comes in the form of renewables, new nuclear, and more efficient and flexible thermal generation, storage technologies as well as more local and embedded sources of power. The required level of investment is substantial; the UK Government expects that over £140bn needs to be invested in new generation capacity by 2030, whilst other sources have put this figure even higher. It is important that, whatever the outcome from the Brexit negotiations, the UK must remain an attractive location for investment in order to keep the lights on and continue the UK’s cost effective transition to a low carbon economy.

We consider that the UK Government has the appropriate domestic policy tools in place, principally through the Capacity Market (CM), Carbon Price Floor (CPF), and Contract for Difference (CfD) auctions that provide industry with the right framework to deliver this investment, in a post-Brexit environment. It is imperative that the government continues with the implementation of the Electricity Market Reform (EMR) package and in doing so provides the long term stability that investors require to take important investment decisions in the UK’s energy infrastructure.

In order to deliver the best outcome for UK energy customers from the Brexit negotiations, Energy UK and our members would encourage governmental prioritisation of the following areas during the negotiations:

- Minimising domestic policy uncertainty in order to encourage continued investment.
- Efficient and fair trading of power and gas over the interconnectors to enhance security of supply, promote competition and reduce costs by sharing available resources and capacities.
- Access to supply chain products free of tariffs and non-tariff barriers.
- Maintaining liquidity in both electricity and gas markets.
- Ensuring access to a skilled and mobile labour force.

Energy UK members support several aspects of the Internal Energy Market (IEM) and highlight the potential benefits that access to European markets enable. However, the energy industry has concerns regarding future membership of the IEM if following Brexit it meant the need to accept the rules as set out by the EU without UK participation in its governance arrangements, or final say over its implementation in GB. As part of any discussion, the impact on the Single Energy Market (SEM) in Northern Ireland and Republic of Ireland should be given special consideration.

We consider that Brexit also offers opportunities to review existing European legislation to ensure that objectives, such as environmental and financial, are met in the most efficient way for UK industry. For example, many generators argue that Brexit offers the opportunity to potentially level the playing field with respect to GB generation and electricity traded over the interconnectors. It is important that any review should be well managed to ensure a stable and predictable framework to support investment.

2) How might an expert national infrastructure design panel best add value and support good design in UK infrastructure? What other measures could support these aims?

3) How can the set of proposed metrics for infrastructure performance (set out in Annex A) be improved?

4) Cost-benefit analysis too often focuses on producing too much detail about too few alternatives. What sort of tools would best ensure the full range of options are identified to inform the selection of future projects?

5) What changes are needed to the regulatory framework or role of Government to ensure the UK invests for the long-term in globally competitive digital infrastructure?
6) What are the implications for digital infrastructure of increasing fixed and mobile convergence? What are the relative merits of adding more fibre incrementally over time compared to pursuing a comprehensive fibre to the premises strategy?

7) What are the key factors including planning, coordination and funding, which would encourage the commercial deployment of ubiquitous connectivity (including, but not only, in rural areas)? How can Government, Ofcom and the industry ensure this keeps pace with an increasingly digital society?

8) How can the risks of ‘system accidents’ be mitigated when deploying smart infrastructure?

9) What strategic plans for transport, housing and the urban environment are needed? How can they be developed to reflect the specific needs of different city regions?

10) What sort of funding arrangements are needed for city transport and how far should they be focused on the areas with the greatest pressures from growth?

11) How can the Section 106 and Community Infrastructure Levy regimes be improved to capture land and property value uplift efficiently and help fund infrastructure? Under what conditions are new mechanisms needed?

12) What mechanisms are needed to deliver infrastructure on time to facilitate the provision of good quality new housing?

13) What will the critical decision factors be for determining the future of the gas grid? What should the process for deciding its future role be and when do decisions need to be made?

In order to achieve our carbon targets there are critical decisions to be made about the future of heating and natural gas usage in the UK. Since the end of the 18th Century the UK’s gas grid has been in use; town gas was used initially to light streets and heat homes with this subsequently replaced by natural gas which is now used to heat houses and generate electricity. There are two clear pathways to decarbonise heating; mass electrification or the repurposing of networks to low-carbon gases.

The future of heating is likely to be dependent on Government policy; clear, early direction is required as both electric heat pump retro-fitting and the conversion of existing assets to low-carbon gases will take considerable time and funds. For example, should the latter be supported in some areas or applications, more maintenance will be required for the gas network in order to ensure it is fit for purpose for future usage; this would include the continuation of the iron-mains replacement programme which should be completed by 2030. This is costing £1billion per year and would align with a broader deployment of hydrogen or other decarbonised gases which would take place post-2030. It is possible to phase the deployment of hydrogen across urban areas and conurbations, mimicking any successes from the Leeds H21 project.

Additionally, the Government has suggested that carbon capture usage and sequestration (CCUS) is to be deployed at scale during the 2030s. Energy UK and our members are broadly supportive of measures being implemented to bring CCUS into price-competitive, commercial usage in the UK. The deployment of CCUS in the UK is predicated on the transportation of carbon dioxide to depleted gas fields. This transportation would necessitate aspects of the onshore gas grid (transporting carbon dioxide from the facilities which use it), requiring its ongoing maintenance as well as the ongoing maintenance of offshore assets, some of which are expected to be closed or decommissioned in the 2020s.

14) What should be the ambition and timeline for greater energy efficiency in buildings? What combination of funding, incentives and regulation will be most effective for delivering this ambition?

Energy UK and our members considers that energy efficiency is an enduring solution to help consumers reduce their energy consumption, improve the comfort of their homes and is central to achieving the Government’s 2030 fuel poverty and 2050 carbon reduction targets. The energy industry
has been actively supporting energy efficiency for over two decades and real progress has been achieved.

Energy suppliers have, however, long been concerned that households and the energy efficiency sector are overly reliant on subsidies including the Energy Companies Obligation (ECO) – which the Government has confirmed is set to continue until 2028. Energy UK strongly believes that the fairest and most progressive method of funding energy efficiency programmes is through general taxation. Supplier obligations (such as ECO) are financially regressive as the costs are distributed among energy consumers regardless of their ability to pay.

Furthermore, the top-down approach through obligations on suppliers has, in our view, led to an expectation that energy efficiency measures should be provided free of charge, undermining the value of energy efficiency to the public and hindering the development of a fully functioning market for energy efficiency products and services.

We welcome the National Infrastructure Commission’s focus on energy efficiency in its Congestion, Capacity and Carbon consultation. We consider that this consultation alongside the publication of the Government’s Clean Growth Strategy is a real opportunity for positive change by refocusing on a long-term strategy around transitioning towards a competitive energy services market that is self-sufficient, demand-driven and not dependent on subsidy raised through energy bills.

Energy UK believes that there is a need to kick-start a sustainable able-to-pay energy efficiency market via a combination of incentives and funding mechanisms to engage with different consumer groups. These incentives should be supported appropriately by regulation to trigger demand in the market, and be underpinned by a long-term holistic Government strategy and consumer education campaign to promote demand. Such a strategy is outlined in the Frontier Economics report commissioned by the Energy Efficiency Infrastructure Group (EEIG): “Affordable Warmth, Clean Growth”. The report, is an action plan for a comprehensive building energy infrastructure programme that takes a holistic view at what steps Government should take to fill the energy efficiency policy gap in the United Kingdom. We would therefore, strongly encourage the National Infrastructure Commission to consider the report and its recommendations.

The National Infrastructure Commission should also look at the Scottish Government’s commitment to putting in place Scotland’s Energy Efficiency Programme (SEEP). The Scottish Government intends for SEEP to be a 15-20 year programme that will be rolled out in phases and where a series of pilot projects will be carried out with local authorities in the early stages of the roll-out. Energy UK strongly support the Scottish Government’s approach to and focus on energy efficiency, particularly its action to designate energy efficiency as a national priority. We would encourage the UK Government to learn any lessons to come out of the way Scotland has designed its energy efficiency programme including looking at the role for Government funding. We also note that both the EEIG report and the Scottish Government’s SEEP programme take a long-term look at developing a market for energy efficiency. Ensuring the widespread uptake of energy efficiency is not something that will happen overnight.

In addition to what is outlined in the two programmes referenced above, we believe the following fiscal levers and regulation should also be considered to incentivise the widespread uptake of energy efficiency

**Possible fiscal incentive options:**

**Stamp Duty:**
Varying Stamp Duty, provided it is revenue neutral, could trigger both sellers and buyers to take action and install energy efficiency measures. For example, a buyer could claim a rebate for a percentage of the stamp duty based on EPC improvements installed within one year of purchasing the property. Stamp Duty is paid by the property buyer, but its impact on the total cost of purchasing the property makes it of significant interest to the seller. Alternatively, to encourage sellers to take action, the stamp duty charge could vary depending on the building’s EPC. The merit of adjusting stamp duty in relation to energy efficiency is that it would incentivise demand for energy efficiency amongst home-owners and make its value pronounced and recognisable in the housing market.

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1 EEIG and Frontier Economics report: “Affordable Warmth, Clean Growth”
Changes to the tax system:
A number of changes could be made to the tax system to encourage energy efficiency. For example, reduced/zero rates of VAT, Mortgage Interest Tax Relief, Capital Gains Tax, changes to the personal tax allowance, and Council Tax rebates. These initiatives could be used as appropriate to incentivise different audiences. Such proposals are, however, likely to be politically challenging and require significant alterations to UK and European (in the case of VAT) tax law and systems. There may be more targeted or straightforward changes to the tax system worth consideration. For example, the reintroduction of the Landlord’s Energy Saving Allowance (LESA) could help drive demand for energy efficiency measures in the Private Rented Sector (PRS).

Salary Sacrifice:
Energy efficiency measures could be paid for through instalments taken directly from a person’s gross salary (salary before tax deductions), this is similar to the Bike to Work scheme which has proven a popular way of purchasing a new bike. This option would remove the barrier of upfront costs for energy efficiency measures and present a tax benefit to incentivise customers. A salary sacrifice could also provide a finance route to measures for those not eligible for other forms of credit.

Consideration is required on whether to cap the salary sacrifice loan and how a loan currently being repaid is transferred between employers. The Bike to Work scheme is capped at £1000 and under the scheme any outstanding amount is taken from a customer’s final net pay as it then becomes a taxable benefit. Energy UK believes that a £1,500 cap may be appropriate for an energy efficiency salary sacrifice scheme. A £1,500 the cap would help ensure that the loan reimbursement remains manageable even in cases where employees change jobs. A £1,500 cap would also suit measures such as loft and cavity insulation, LED lighting and boilers.

Regulatory levers:

Private Rented Sector Regulation:
Energy UK believes that the Private Rented Sector (PRS) has an important role to play in helping to upgrade the UK housing stock. This will however, only happen through a significant tightening of existing regulations. BEIS’s (formerly DECC) own impact assessment of the existing regulations notes that the current standards are unlikely to result in significant improvements in the PRS as landlords are able to avoid taking action (44% of all F & G rated properties will not make any improvements). Ensuring a joined-up approach with the relevant enforcement agencies (likely to be Trading Standards officers) will also be crucial.

New-build Regulation:
While we recognise the importance of focusing on upgrading the existing housing stock through retrofits, we consider tightening building regulations for new-builds to be of equal importance. Through a holistic approach that focuses on the owner-occupier, private rented as well as new-build sectors, Government would send a strong signal that energy efficiency is a national priority and would go a long way in creating the demand required to build a market for energy efficiency in the UK.

Subsidy:
Government has previously provided subsidies to drive the uptake of different technologies in the case of the Feed-in Tariff (FiT) and the Renewable Heat Incentive (RHI). In the case of FIT, Government subsidies contributed to the price of the technology dramatically being reduced due to the increase in demand and technological advances. This enabled Government to reduce the level of direct subsidy over time but has meant that a market has been established for the longer term.

We would like to re-assert the importance of developing a sustainable able-to-pay market and that a diverse, complementing suite of initiatives is required to ensure different sections of the able-to-pay market are supported to maximise consumer engagement and uptake. The Committee on Climate Change’s cost-effective path to the 2050 target involves direct emission reductions in buildings of 53% by 2030 from 2007 levels. Energy UK believes energy efficiency policy should utilise a combination of incentives and funding mechanisms to engage with different consumer groups. These incentives should be supported appropriately by regulation to trigger demand in the market, underpinned by a long-term holistic government strategy and consumer education campaign.
Furthermore, while Energy UK and our members broadly welcome both the National Infrastructure Commission and the Government’s focus on energy efficiency, Government also needs to ensure that the right quality and standards framework is in place that can underpin the widespread uptake of energy efficiency measures. We, therefore, strongly encourage Government to actively work with industry to ensure that the recommendations made in the Each Home Counts review are delivered in full. So far Government has taken the view that delivering the implementation of the recommendations is strictly up to the retrofit energy efficiency industry. However, without a stringent framework in place, consumer confidence in energy efficiency could be undermined before a market even gets off the ground.

15) How could existing mechanisms to ensure low carbon electricity is delivered at the lowest cost be improved through:

- Being technology neutral as far as possible
- Avoiding the costs of being locked in to excessively long contracts
- Treating smaller and larger generators equally
- Participants paying the costs they impose on the system
- Bringing forward the highest value smart grid solutions

Energy UK and our members believe that the Government cannot achieve decarbonisation of the power sector at the least cost to consumers without a robust, mature renewables industry and pipeline. Equally, the cost to consumers cannot be fully evaluated without taking into account the system integration costs associated with all technologies. Future investment should take a technology neutral, whole system costs approach by which we mean that energy should not be treated in isolation, instead it should be considered along with its interactions between other sectors such as heat, power and transport. We want to see the Government creating a holistic approach to decarbonisation while creating a flexible energy system. This means integrating heat, power and transport policy driving investment and growth whilst decarbonising our economy.

As recognised in Amber Rudd’s 'reset speech', the wholesale electricity market does not provide the investment signal for any generation technology without some form of policy intervention. Even as the cost of technologies comes down, there is a mismatch between a wholesale market based on short run marginal pricing and the capital investment required to deliver low carbon technologies.

A market stabilisation CfD could provide a route to market for mature technologies, providing a stable revenue stream to de-risk the upfront capital intensive investment necessary for many low-carbon generation sources. As is the case for all new-build plant, mature renewables requires a contract to de-risk the investment but cost reductions mean that a subsidy may no longer be needed for deployment. The process for allocating market stabilisation CfDs should be technology neutral, avoiding eligibility criteria that excludes any particular technology or geographical location.

Maintaining existing volumes of low carbon generation is another challenge facing the sector. For example, without a clear strategy for repowering there is a risk that projects including the 9.11GW\(^2\) of onshore wind which was built under the Renewables Obligation and Feed in Tariff may close. The repowering of earlier-developed onshore wind sites is already underway and will continue to ramp-up throughout the 2020s. To maintain our momentum in deploying renewables, the planning regime in both England and Scotland needs to facilitate this repowering, allowing sites to continue their productivity and avoiding stranding assets, abandoning otherwise productive sites. Given the significant opportunities presented by repowering, it is essential that a supportive planning and policy framework is developed to ensure projects can progress efficiently. As repowering will result in a continuation of the same kind of project on the same site, we suggest that any application is considered as one which proposes an ‘existing use’ and therefore has a presumption in favour of consent. We would suggest that consideration is given to how to streamline the process for repowering, to allow a timely and efficient transition between the old and new project, ensuring the opportunity for reusing any existing infrastructure is maximised and the cost of the planning process is minimised, where possible.

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In light of the Helm Review, renewable repowering and the opportunity for revenue stacking to fund onshore wind, many members are looking at opportunities for renewables to participate in the Capacity Market. Find Energy UK’s full response to the Helm Review here.

Energy UK and our members view the existing charging arrangements as a significant barrier to treating generating plant of different sizes and types equally. We are currently operating under a charging model designed for a Transmission and Distribution system that is far from what we expect to be required in the future. Indeed the model is already undergoing significant change, particularly in relation to embedded benefits, triad avoidance, connections and ancillary services. With the increase of distributed generation we are seeing behavioural change including the phenomena of exporting Grid Supply Points. Energy UK members are supportive of an economic and efficient electricity network charging regime with a level playing field for transmission and distribution connected generation as well as demand.

Network charging methodologies vary considerably across Europe with volumetric, capacity and locational charges all used to calculate tariffs. Comparing these charges on a like for like basis would be extremely challenging with differences in methodologies not always comparable with other Member States. Addressing the issue of different tariffs/policy costs across Europe must take account of the whole system and market arrangements to ensure these are cost reflective.

Ofgem should assess options for introducing cost reflective network charging (balancing and transmission) so levels are harmonised for GB generators vis-a-vis the rest of the EU, as far as possible within EU rules and ACER’s work on tariffs. Ofgem should also lead the debate in Europe advocating cost reflective transmission charging within the internal electricity market, based on the GB model, to minimise any distortions of cross-border trade. Whilst Energy UK and our members are supportive of interconnectors and the services they provide in enabling cross-border trade, we believe that the charging regime applied to them must (as if the case for all generators) be cost reflective.

Regarding the promotion and successful integration of smart grid solutions, some monitoring and maintenance equipment would be included in existing mechanisms set out for funding network improvements and is supplemented by targeted innovation funding. Those which are not covered by existing mechanisms should be procured by network or system operators in a transparent market which is coordinated at a national level to ensure interoperability across the energy system.

For full detail on Energy UK’s position on charging reform please consider our Electricity Charging Arrangements Report.

Fundamentally, the amount we spend on low carbon generation must reflect our ambition to decarbonise. We need the new mechanisms which will replace the LCF to give the industry the tools that supports decarbonisation of power on a trajectory which allows us to achieve our carbon targets. Furthermore, allowing all technologies to compete for what will most likely be subsidy-free contracts will allow us to decarbonise at least cost for the betterment of the consumer and the environment.

16) What are the critical decision factors for determining the role of new nuclear plants in the UK in scenarios where electricity either does, or does not, play a major role in the decarbonisation of heat? What would be the most cost-effective way to bring forward new generation capacity? How important would it be for cost-effectiveness to have a fleet of nuclear plants?

17) What are the critical decision factors for determining the role of carbon capture and storage in the UK in scenarios where electricity either does, or does not, play a major role in the decarbonisation of heat? What would be the most cost-effective way to bring it forward?

18) How should the residual waste stream be separated and sorted amongst anaerobic digestion, energy from waste facilities and alternatives to maximise the benefits to society and minimise the environmental costs?

19) Could the packaging regulations be reformed to sharpen the incentives on producers to reduce packaging, without placing disproportionate costs on businesses or creating significant market distortions?
20) What changes to the design and use of the road would be needed to maximise the opportunities from connected and autonomous vehicles on:

- Motorways and ‘A’ roads outside of cities?
- Roads in the urban environment?

How should it be established which changes are socially acceptable and how could they be brought about?

As noted in the NIC report, the right changes to the road and road use will take detailed investigation. The rise of connected and autonomous vehicles cannot be examined in isolation given the undeniable shift towards low-carbon transport. Furthermore, the infrastructure ramifications of a switch to electric autonomous vehicles for the majority of the UK population are broad and must be examined now.

For some models being examined, for example Mobility-as-a-Service (MaaS), it is important that charging infrastructure enables consumers or their autonomous vehicles to charge at convenient locations at convenient times throughout the day and night. This infrastructure needs to be introduced now in order to encourage uptake of electric vehicles and ensure the smooth integration of these assets into the energy system. Whilst parking may become less of a concern for consumers in inner city locations, there will still need to be easily accessible charging locations to ensure the right level of capability across the UK.

Given the future transport fuel demands of consumers, it is increasingly important that road planning take into account access to energy networks. The potential applications for low carbon natural gas and hydrogen in HGVs, alongside the applications of rapid chargers for electric vehicles performing long journeys, means that integration of energy networks and transport will be vital to the successful decarbonisation of transport.

21) What Government policies are needed to support the take-up of electric vehicles? What is the role of Government in ensuring a rapid rollout of charging infrastructure? What is the most cost-effective way of ensuring the electricity distribution network can cope?

Government involvement in the uptake of electric vehicles will continue to be difficult to manage given the fast-paced growth of the industry. Government has taken steps to encourage uptake through the range of incentives and tax exemptions affecting those purchasing an electric vehicle, but should set out as timeframe for when and how these subsidies will be reduced or removed. Whilst the 2040 target set out by government, to mark the end of sale of traditional petrol and diesel cars, is useful in indicating intent and encouraging consumer action, more can be done. A series of targets and supporting policy milestones should be used to set out a clear and ambitious strategy for decarbonisation. Government’s role here is in reflecting the gravity of air quality and emissions concerns to the general public encouraging consumer confidence.

One area in which steps can be taken is in defining standards for cyber security, data handling, and smart capabilities. Agreements are unlikely to be reached on specific technical specifications, but minimum standards of what ‘smart’ and ‘connected’ include should be considered throughout the development of integrated platforms for transport. Government can provide support in the rollout of charging infrastructure in the creation of standards for charge points. In order to create confidence from consumers, charge points need to be easily accessible, widely trusted, and interoperable. This does not mean that Government should become entangled in technical specifications, but rather means that Government should encourage innovation by setting out high-level requirements for what a charge point should be able to do. This will allow for market innovation and aid in changing consumer attitudes and behaviours. Energy UK is working with members and a range of external stakeholders to set out what the industry sees as the defining requirements of a ‘Smart’ charger.

Consumers must be enabled to make the right choice, and there is work to be done in learning how electric vehicle users choose to charge, in order to create a charging infrastructure which is reflective of this choice. High-level standards for smart chargers and electric vehicle technology will encourage the development of an interoperable charging network across domestic and public charge points. This will allow for the integration of electric vehicles into the energy system at a lower cost for consumers, through the broad adoption of smart standards to enable time of use tariffs and reflective pricing. These standards will help to align low carbon electricity generation with EV charging, and reduce the
potential demand shift caused by electric vehicle charging. It is important that charging controls are only adopted where consumers give an educated consent to the process. Time of Use tariffs and smart controls are expected to reduce the cost of network upgrades as are other sophisticated charging solutions and integrated storage.

It is important to recognise that physical reinforcement and expansion of networks should not be avoided in pursuit of an alternative innovative approach without evidence of need and a cost/benefit analysis with a consumer focus. Where network upgrades are needed in specific areas with existing constraints, these should not be avoided to the detriment of the consumer. In order to ensure the successful deployment of a range of solutions for the network, constraints should be clearly identified and defined across the UK, including estimated reinforcement costs, in order to encourage market based solutions to cost effective reinforcement.

22) How can the Government best replace fuel duty? How can any new system be designed in a way that is fair?

The question of replacing revenue lost due to tax exemptions and the further incentives for the uptake of low carbon transport is one which will continue to increase in importance. The existing framework would cause over £10bn in lost revenue for treasury by 2030 if 30% market penetration is achieved. This will be a gradual change, but should be examined closely as the market share of electric vehicles continues to grow. It is vital that the transition from fuel duty to an alternative is performed in a way that is not only ‘fair’ in terms of distributing the cost, but which protects the most vulnerable in terms of socioeconomic class and those with low access to mobility. It important that any changes to taxation patterns maintain incentives for, and progress towards, the decarbonisation of transport. We would ask that incentives and taxation be maintained at current rates until EVs approach cost parity with traditionally fuelled vehicles, at which point a full consultation process should be undertaken to identify how incentives can be reduced in a sustainable and fair way.

One great advantage of the ongoing transformation of the transport industry in the move to low carbon and automated vehicles, is that of the blank page offered by such a change. Government should not feel constrained to previous methods of financing in terms of forward facing taxation, and should rather explore a range of options. Trials across the UK’s cities will help to identify which methods recover this revenue whilst actively helping to achieve local authority and national government objectives.

23) What should be done to reduce the demand for water and how quickly can this have effect?

We have already seen a significant reduction in the volume of water abstraction for use by the energy sector. Between 2010 and 2015 net water use by the energy sector has decreased from 0.19billion cubic meters to 0.11billion cubic meters and this could fall even further as coal comes off the grid ahead of the 2025 deadline. However, there will continue to be significant use of thermal plant even in a renewable-heavy generation mix, necessitating continued reliable water supply to those plants and plant which may be developed on brownfield sites in the future, maintaining the value of existing locations for further development. Furthermore, the deployment of CCUS as outlined within the Government’s Industrial Strategy is unlikely to enable further water demand reduction.

Power plant are major ‘point’ users of river water, for example, a 2000MWe high load Combined Cycle Gas Turbine might typically have gross abstraction of 70Ml/d (0.8m3/s) of which 33%-50% is ‘consumed’, the remainder being returned close to the point of abstraction. The dominant use of water at thermal plant is for cooling within the main steam cycle which is normally enabled by direct abstraction of river water. A smaller additional volume of water for steam cycle make-up is vital and can come from river, groundwater or public supply and is treated on site to produce the ultra-high quality demineralised water required for steam production.

Use of water for cooling provides important societal and commercial benefits including improved thermal efficiency compared with air cooling, reduced emissions to air per unit of energy supplied and greater affordability of energy (reduced fuel per unit of energy supplied). Power plant operators seek reliable access to a sufficient quantity of water and water rights through a plant’s lifetime to meet reasonable future need. This will fulfil the role of plant in contributing to security and affordability of
electricity supply and underpin market driven operation (existing plant) and confidence to invest (upgrades and new plant) whilst mitigating the risk of evolving stranded assets.

24) What are the key factors that should be considered in taking decisions on new water supply infrastructure?

25) How can long-term plans for drainage and sewerage be put in place and what other priorities should be considered?

26) What investment is needed to manage flood risk effectively over the next 10 to 30 years?

27) What would be the most effective institutional means to fulfil the different functions currently undertaken by the European Investment Bank if the UK loses access? Is a new institution needed? Or could an expansion of existing programmes achieve the same objectives?

UK energy infrastructure has benefitted from access to a number of European financing schemes and bodies, including the European Investment Bank (EIB), the European Fund for Strategic Investments, the Connecting European Facility, the EU Horizon 2020 programme and the European Energy Programme for Recovery. Withdrawal from the EU may mean the UK loses access to some of these schemes, and, in the case of the EIB, unless a specific agreement is reached, the UK would cease to be a shareholder once it is no longer an EU member state. In the last five years, the EIB has delivered loans to UK energy infrastructure projects at a total value of approximately €10bn. In doing so it has acted as a catalyst for the deployment of private finance and underwriter to many projects, playing a similar role to the UK’s Green Investment Bank (GIB) under public ownership.

Energy UK believes – following privatisation of the GIB - that the Government should examine the potential to remain a shareholder of the EIB. If this is not possible, the Government should aim to replace the EIB in a way that delivers equivalent support for UK energy infrastructure development. The UK energy system will require major investment both in power generation and networks over the next twenty years as the UK seeks to meet its climate change targets and ensure sustainable energy provision. Cost-effective finance, such as that currently provided by the EIB, will be essential to delivering the Government’s industrial strategy. It plays a key role, especially in relation to early stage technologies, where interest from commercial lenders is usually costlier than for more established technologies.

Energy UK therefore supports the National Infrastructure Commission’s recommendation that – should the UK lose access to the EIB – it should establish a UK based institution of a similar nature. This institution should act as a catalyst for the deployment of private capital – particularly from pension funds – that offer abundant and comparatively cheap levels of long term finance. This will help to ensure that major infrastructure projects are undertaken at the lowest cost to UK energy consumers as well as safeguarding UK competitiveness. It should also retain a similar level of financial expertise and project appraisal skills to that of the EIB, which would provide a useful resource for project developers.

The governance for this new institution would need to be independent of Government so that political decisions do not affect its investment decisions, and to help mitigate perceived political risks across the private finance and energy markets.

28) How could a comprehensive analysis of the costs and benefits of private and public financing models for publicly funded infrastructure be undertaken? Where might there be new opportunities for privately financed models to improve delivery?