



## *Northern Powergrid's response to HM Government's consultation on Building our Industrial Strategy*

### Key Points

- We welcome The Green Paper which enables current decisions on industrial strategy to be set in the context of the required long-term direction for the country. A strategy that sets a direction for the economy will allow us to better plan and manage our network and support growth.
- We consider the **key pillars of the Industrial Strategy to be innovation, infrastructure and skills.**
- Robust energy infrastructure is a key enabler for an effective national and regional economy. It can also be a driver for innovation and growth.
  - **There is a key role for energy networks, supported by Government, to maintain safe and secure energy supplies** while at the same time making the changes to connect more generation and develop system flexibility to facilitate society's decarbonisation.
  - The legacy investment in electricity networks for coal-fired generation in the North could be better utilised if unconstrained generation and new energy storage assets were incentivised.
  - Partnerships between business, academia, the third sector and Local and National Government are important to ensure coherent and efficient of delivery.
- **Equipping the workforce with the necessary skills is absolutely vital for the economy.** We are operating an ambitious workforce renewal programme to maintain a talented core of staff with the skills necessary to lead the transition to a more flexible energy system.
  - Targeted investment in science, technology, engineering and mathematics (STEM) skills is needed in all educational levels.
  - Partnerships between industry and the education sector have an important role to play.
- **Electricity distribution network operators (DNOs) are already investing heavily in the energy system and could be an effective and efficient delivery route for many of the proposals in the Industrial Strategy** such as electric vehicle (EV) charging infrastructure and heat networks.
  - Should Government deem it appropriate, **DNOs could roll-out a backbone of additional EV charging infrastructure**, efficiently financed through the regulatory asset base, and installed as smart technology in locations to minimise system reinforcement and whole system costs.
  - Integrated planning of any such roll-out is paramount – partnerships with local authorities could optimise installations for both planning and **electricity connection considerations.**
  - Similarly, Government could look again at how electricity connections are secured and paid for with a view to driving inward investment.
- Regionally, **the Northern Powerhouse ambition is being held back by delays in devolution deals** that we encourage Government to promote and support – without them, there are institutional gaps that will slow implementation of the industrial strategy.
  - Further, **regional differences on transport connectivity and education need addressing** in order to balance our economy and deliver growth throughout the UK.
- With the right encouragement and incentives, the energy sector has the capacity to bring growth to the North of England, and to assist the UK in developing a world-leading economy.

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## Overview

1. We welcome the Government's green paper on the Industrial strategy. The work is relevant to the recent call for evidence that we provided to the Department of Business, Energy and Industrial Strategy (BEIS) and Ofgem on a smart, flexible energy system, and to the National Infrastructure Commission's Call for Evidence on a national infrastructure assessment. Many of the themes we raise here are explored in more detail in our responses to these consultations<sup>1</sup>.
2. Our submission is to be read in a wider context than simply Northern Powergrid as an electricity distribution network operator (DNO). We are a major employer in our region, a stable business, and a keen advocate for devolution. In addition, our parent group has an appetite for further investment in energy infrastructure if the investment conditions are right.

### **Northern Powergrid**

3. Northern Powergrid is a wholly-owned subsidiary of Berkshire Hathaway Energy (BHE), one of the world's largest energy companies. BHE is an international group made up of integrated power companies; electricity transmission and distribution network companies and gas pipeline operators.
4. In the UK, Northern Powergrid runs the electricity distribution network that provides power to customers in the Northeast, Yorkshire and northern Lincolnshire. We are responsible for the safe, secure and cost-effective delivery of electricity to around eight million people in 3.9 million homes and businesses.
5. In practice we operate as one company, but we are regulated by the energy regulator, Ofgem, as two licensed businesses: Northern Powergrid (Northeast) Ltd. and Northern Powergrid (Yorkshire) plc.
6. We are one of the largest businesses in our region, directly employing over 2,400 people and a similar number of contractors. The majority of our annual investment in the UK is in regulated electricity networks - we typically invest £340m per annum.
7. Our network underpins the economy in Yorkshire, the Northeast and North Lincolnshire, connecting homes and businesses to the powergrid and linking generators with consumers of power. We are directly important to our local economies through our commitment to on-going investment in our network and see our role as facilitating the effective and efficient operation of the overall energy system and thereby supporting growth in our region.

### **Berkshire Hathaway Energy**

8. Although it is a separate regulated business, Northern Powergrid benefits from being part of the BHE group. BHE is a multinational energy company active across the entire energy supply chain through its various subsidiaries, most of which are in North America. BHE employs 21,000 employees worldwide, owns £53bn worth of assets, and invests more than £3bn per

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<sup>1</sup> Our responses to public consultations are available from: [www.northernpowergrid.com/document-library/policies-reports-regulation/Consultation-responses](http://www.northernpowergrid.com/document-library/policies-reports-regulation/Consultation-responses)

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annum. BHE has 11.6 million customers and runs 34GW of generating assets. It operates 233 thousand miles of power transmission and distribution lines and 43 thousand miles of gas pipelines<sup>2</sup>. In addition to developing transmission and distribution networks we are also responsible for developing some of the largest wind and solar projects in North America; as of early 2017 we own 7% of US wind generation and 6% of US solar generation.

9. BHE believes that the best way to protect and build the value of the business is to:
  - provide excellent customer service at competitive prices, with a commitment to continuous improvement;
  - strive to meet the highest standards of safety and security (both physical and cyber); and
  - strategically invest for the long term.
10. Being part of Berkshire Hathaway Inc. means we focus on building value rather than paying dividends. We believe that this long-term approach to investing and relatively conservative approach to running businesses is a powerful strategic fit with energy systems which require significant capital investment in assets that will last a long time.

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<sup>2</sup> For more information about BHE, refer to: [www.berkshirehathawayenergyco.com/news/berkshire-hathaway-energy-fact-sheets](http://www.berkshirehathawayenergyco.com/news/berkshire-hathaway-energy-fact-sheets)

## Responses to the Government's questions

### **1. Does this document identify the right areas of focus: extending our strengths; closing the gaps; and making the UK one of the most competitive places to start or grow a business?**

11. We agree that the three areas of focus that are mentioned are key to developing the right context for a strong economy now and in the long term.
12. As a major business in Yorkshire, the Humber and the Northeast, and a key infrastructure provider, we are committed to working with government both nationally and locally to develop the regions' contribution to this approach.
13. As a member of the CBI, and of Business North, we advocate a greater emphasis on regional growth through more active business leadership coupled with effective devolution. We support the work done by the CBI on 'Unlocking Regional Growth'<sup>3</sup> and are sponsoring a piece of research to highlight the potential of the energy sector in the North<sup>4</sup>.
14. Closing the gaps across the country and rebalancing the economy is vital for a strong coherent economy and society. As a business with a strong regional footprint, we are positive about the potential of devolution but are concerned that, with powers being devolved in different ways around the country, the risk of fragmentation is substantial. Settling devolution deals is a pressing issue that should not be overlooked. Devolution deals create the structures that become focal points for the funding and activity that is the essence of the Industrial Strategy.

### **2. Are the ten pillars suggested the right ones to tackle low productivity and unbalanced growth? If not, which areas are missing?**

15. The aforementioned work led by the CBI has identified four main drivers of regional productivity differences which are, in various degrees, addressed by the 10 pillars of the Industrial Strategy. The drivers of differences are in order of impact:
  - educational attainment of young people at 16 and skills;
  - transport links that widen access to labour;
  - better management practices; and
  - a higher proportion of firms who export and innovate.

### **3. Are the right central government and local institutions in place to deliver an effective industrial strategy? If not, how should they be reformed? Are the types of measures to strengthen local institutions set out here and below the right ones?**

16. In our experience, and generally speaking, the right central government and local institutions seem to exist, but there appears to be a deficiency of power in local government compared to what stakeholders are asking for (as put forward for instance by the RSA report on inclusive growth<sup>5</sup>). Devolution offers the right context to be debating those questions with

<sup>3</sup> For more information, visit: [www.cbi.org.uk/insight-and-analysis/unlocking-regional-growth/](http://www.cbi.org.uk/insight-and-analysis/unlocking-regional-growth/)

<sup>4</sup> For more information, visit: [www.ippr.org/publications/northern-energy-taskforce-a-call-for-evidence](http://www.ippr.org/publications/northern-energy-taskforce-a-call-for-evidence)

<sup>5</sup> RSA & Inclusive Growth Commission, 'Inclusive growth commission, emerging findings', September 2016. The report is available from [www.keycities.co.uk/sites/default/files/news/attachments/\\_Sept16\\_RSA\\_InclusiveGrowthCommission\\_Report%2021.09.2016\\_FINAL.pdf](http://www.keycities.co.uk/sites/default/files/news/attachments/_Sept16_RSA_InclusiveGrowthCommission_Report%2021.09.2016_FINAL.pdf)

the stakeholders of the civil society, the business community and government. It also creates a governance structure that can engage in pan-regional discussions, and create a strategy for the region at a scale that has higher relevance at an international level, in comparison to investment hot spots in other regions of the world such as Chinese cities.

17. The CBI has put forward<sup>6</sup> three principles of devolution for central and local governments to consider that we support:

- **Policymaking aligned to economic geographies, not political boundaries:** Decisions are most effective when they are grounded in economics, inclusion and the needs of businesses rather than on short-term political strategies. Authorities need to work in unity with one another, especially in areas where there are shared administrative boundaries such as through Local Enterprise Partnerships (LEPs), to ensure that policy is harmonious, not conflicting.
- **Powers devolved to the right level of authority:** If there are inconsistencies of regulations between localities, it creates a burden for business, making it crucial that a balance is struck between decentralisation and specialisation. To address productivity in underperforming regions, it is imperative that local areas have the power to transform education in schools, target and prioritise infrastructure investment as well as the ability to provide active business support as is the case in the devolved nations.
- **Policymakers held to account:** Leadership at the local level requires individuals with the vision, direction and ambition to make a difference to the area they are responsible for. Businesses must be a part of the process of shaping policy through public-private collaboration initiatives and LEPs in England. Accountability is also necessary; local leaders should be evaluated as to their effectiveness in executing policy and this should be tied to future powers and funding.

18. **Business can also play a leadership role here**, we have recently signed a **Memorandum of Understanding with Nissan** with the aim of developing projects to demonstrate and pilot how electric vehicle, battery and other technologies can support the energy system (taken here to include power, heat and transport), and how electric vehicle charging can be rolled out in such a way that driver confidence in electric vehicles is raised and range anxiety is minimised.

#### ***4. Are there important lessons we can learn from the industrial policies of other countries which are not reflected in these ten pillars?***

19. Being part of an American group gives us some perspective on the UK energy policy and regulation in terms of the read across to the method of governance in US jurisdictions. The clearest aspect of this is the opportunity for UK companies to have dealt, until now, with a consistent and coherent energy policy across the country (in the different regions and devolved administrations) – in particular the single economic regulator for all GB (Ofgem) helps to provide a stable environment for investment decisions. The benefit from such unity and clarity is best understood when contrasted with the issues sometimes experienced in the USA, which have to negotiate the complexity of the overlap of federal legislation, with state

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<sup>6</sup> CBI , 'Unlocking Regional Growth', December 2016. As above.

legislation, and state regulators. We offer this as a cautionary tale in the context of the devolution agenda in the UK.

## Investing in science, research and innovation

### 5. What should be the priority areas for science, research and innovation investment?

21. We welcome the increased focus and spending on innovation. There is a growing consensus that investment in research and development should reach 3% of the UK's gross domestic product to have a significant impact on long-term economic growth and employment<sup>7</sup>, and the country still has some way to go to match this.
22. Specifically, the energy sector should be an innovation priority because it is key infrastructure to support local economic growth, and because the UK has existing strengths as a world-class sector that can attract international investors. Our response addresses the energy sector and specifically low emission vehicles and smart technologies.
23. The recent BEIS/Ofgem consultation on a smart, flexible energy system has identified areas of focus that offer an opportunity to boost competitiveness in the areas of smart technologies for electricity generation, heat and transport. They also have the potential to provide useful value to the country's energy system, and transport strategies. They are:
  - Commercialisation and residential automated DSR trials;
  - Flexibility trading/optimisation platforms;
  - Storage costs; and
  - Vehicle-to-grid demonstration.
24. In parallel, we note the continued investment of Government in accelerating the transition to low-emissions vehicles and would like to propose two guiding principles. The first one is to seek maximum cost-effectiveness for the roll out of the charging infrastructure. The electronic systems designed for application in the electric vehicle (EV) charging process are likely to reach obsolescence much sooner than a simple electricity charging point reaches full depreciation. As such, it makes sense to explore to what extent it is possible to migrate some, or all, functionalities of EV charging onto that part of the system which has a faster depreciation and commercial turnover rate: i.e. the car.
25. The second guiding principle that we would like to propose for public investment in low-emissions vehicles is to increase the link between the car manufacturing and the energy sector. Any national strategy to improve the uptake of low-emissions vehicles should be done in consultation with the full supply chain, which extends to energy companies, and includes network companies.
  - This is because if we let the deployment of charging infrastructure proceed unmanaged, electricity network costs will be a barrier to the deployment of charging infrastructure. It is therefore key for government to facilitate an approach that manages it instead, with a view to make the most out of current network capacity both in space and in time. **We**

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<sup>7</sup> CBI, 'Now is the time to innovate', March 2017

**invite the work led by Professor Richard Parry-Jones, with the Automotive Council to take this into consideration and we offer our contribution to this work.**

- For instance, we are aware that driverless cars feature on the longer term agenda. Understanding charging patterns of such vehicles, and the potential to influence those patterns, is an important aspect of preparing the electricity networks adequately. Further research is required to consider the impact of these technology advances on the energy practices of car users.
- Recognising that government also supports hydrogen-powered vehicles<sup>8</sup>, the low-emission vehicle deployment is not only about EVs but includes fuel cell technologies. We are collaborating with the gas distribution network in our regions (Northern Gas Networks) to explore better integration between gas and electricity systems to the customer's benefit (this includes vehicles as well as fixed installations of energy assets).

26. As an electricity network company, we are a key part of the transition to low-emission vehicles and we are implementing a comprehensive innovation strategy on the topic:

- We seek to understand the impact of the network of EV battery charging by studying the charging behaviours of households with an EV, and influencing factors to such behaviours. To that purpose, we have carried out trials in the UK's largest smart grid innovation trial, the Customer-Led-Network Revolution (CLNR), and we learn from the results of other trials such as the My Electric Avenue project<sup>9</sup> that has involved trials with clusters of users in our region. Such trials have provided evidence to suggest that on the one hand, a widespread charging of EVs could have a significant impact on the distribution network with potentially high costs to absorb the new load (this is because charging of EVs unless managed is typically concentrated in the evening, coinciding with the household peak demand); but on the other hand, smart technology solutions can reduce the costs significantly.
- We also seek to understand the potential benefits from EV batteries discharging onto the network. We are exploring so-called vehicle-to-grid and are investigating other uses that relate to improving our services in a power cut scenario.
- We are actively engaging with car manufacturers: **we are already collaborating punctually with Nissan Europe based in Sunderland on two innovation projects, and are now taking steps to formalise and expand our collaboration since we recognise an opportunity for more collaborative activities, the specification and delivery of projects involving grid connection as well as services associated with vehicles, mobile storage and /or fixed storage.**

## ***6. Which challenge areas should the Industrial Challenge Strategy Fund focus on to drive maximum economic impact?***

27. The Industrial Challenge Strategy Fund represents a significant increase in public spending, so it is important that it is invested soundly, and as such, we welcome government's consultative approach.

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<sup>8</sup> As confirmed in the announcement by Department for Transport dating 18 March 2017, and retrieved from: [www.gov.uk/government/news/23-million-boost-for-hydrogen-powered-vehicles-and-infrastructure](http://www.gov.uk/government/news/23-million-boost-for-hydrogen-powered-vehicles-and-infrastructure)

<sup>9</sup> <http://myelectricavenue.info/> - trial operated by Scottish & Southern Electricity Networks with Northern Powergrid as a project partner and some of the customers clusters based in Northeast England

28. We agree that battery technology, energy storage and grid technology are worth mobilising research and development (R&D) resources of the type mentioned in the paper: joint research project between business and academic institutions, placing academic students into companies, and setting up demonstrators. **We are interested in contributing to the work led by Sir Mark Walport on the case for a new research institution to act as a focal point for these technologies.** Based on our interaction with stakeholders, the opportunities for energy storage in the UK go beyond lithium ion batteries to other technology options that include flow cell batteries and mechanical forms.
29. In addition, and still on the topic of energy, more support is required for whole-system energy demonstrator trials and this may be achieved either by Ofgem changing the criteria for the networks innovation funding mechanisms or BEIS making available new sources of funding. Ofgem/BEIS should also remain alert to commercial or regulatory barriers restricting the deployment of proven technologies (as is being done for storage).
30. The Low Carbon Networks Fund (LCNF), Network Innovation Allowance (NIA) and Network Innovation Competition (NIC) framework have been relatively successful in supporting the development of new technologies, but have not yet fully addressed the regulatory barriers or the commercial tipping points. The latter of these last two points is generally driven by customer demand and is perhaps not an area for specific support. However in the area of energy systems, where exploration of the effective and combined use of, for instance, gas and electricity assets is needed there are significant regulatory barriers to funding of innovation.
31. Currently, sufficient economic and regulatory support is not there to allow this important, and higher risk, commercial and technical systems demonstration to take place. Energy systems trials are taking place through European funding mechanisms and modelling work is taking place through academic routes<sup>10</sup>. However, there is a need to make more funding available for energy systems demonstrator projects either through Ofgem making changes to the NIA and NIC funding arrangements or BEIS making available more direct funding for projects.
32. Vehicle-to-grid is a technology and approach that exposes some of the failings of the current funding mechanisms. It is a highly promising commercial proposition, backed by considerable technology investment. Its use needs to be further considered alongside work proposed on reducing battery costs.
33. Finally, it is essential to understand how all of the parts of future energy systems function together to optimise value for customers. Evidence pointing at the need for a greater focus on energy system approaches is provided by the example of making optimal use of wind generation resources. Moving away from a specific technology the general change in technologies available will have an impact. As energy generation and use patterns change, generation peaks may not coincide with times of network spare capacity and system peaks may not coincide with local network peaks, and frequency events might coincide with none of these. Consideration must be given therefore to competition between different techniques. Over-capacity of wind generation coinciding with the distribution network peak

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<sup>10</sup> For example, the Centre for Energy Systems Integration (CESI) funded by the Engineering and Physical Sciences Research Council (EPSRC) or the Local Energy Market project, funded by the European Regional Development Fund.

would mean that customers could not take advantage of low cost energy at a time when many of them would in fact like to use it. For this reason the sector must remain aware of the overall value to the system of various techniques, now and into the future, and value judgements must be made when supporting innovation and research.

### **7. What else can the UK do to create an environment that supports the commercialisation of ideas?**

34. R&D in electricity networks offers several examples of good practice on the topic of commercialisation:

- The network innovation funding mechanisms have a track record of helping companies develop and commercialise their product offering, to the benefit of the UK economy. This outcome comes on top of the main intended outcome, which is to help energy network companies trial technologies and ideas to the benefit of their customer. We have seen companies, particularly small and medium enterprises (SMEs), improve a product and develop it towards commercialisation through the LCNF process. As an example part of Nortech's current monitoring equipment product range<sup>11</sup> has been developed in response to our large demonstration trial CLNR project.
- Our standard route for interaction with innovative SMEs is through the Energy Innovation Centre (EIC)<sup>12</sup>, a brokerage system entirely led by industry with up to 2,000 international companies in its database, and a good track record: in 2016-17 it initiated 32 innovation projects, launched 24 calls for innovation and presented 70 new innovations to industry. **We note the independent research on approaches to commercialisation, and suggest the EIC will have a wealth of experience to share.**

35. There are however situations where the requirements, in the NIA, relating to intellectual property (IP), make DNO participation, and thereby funding, incompatible with the business objectives for innovative SMEs. This is because the requirement to share foreground IP developed in collaborative projects may not suit manufacturers with the expertise to engage in trials. This provides limitations to what NIA can achieve in terms of being a route to commercialisation for new products. In contrast, Innovate UK funding is designed to protect a company's IP to aid the development of its business. We have found some success previously by twinning the two funding streams to deliver outcomes that work for both SMEs and our customers while respecting the different IP requirements of the different funding mechanisms.

36. Making sure regulation evolves quickly enough to allow for new markets to prosper in the UK will also create the right conditions for start-ups and other innovators to go from trial to finding a route-to-market. That is why we think that the original case for Ofgem's Innovation link<sup>13</sup> is valid, as it carries the potential to help Ofgem understand emerging trends in the sector and identify areas in which regulation may need to adapt to sustain innovation.

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<sup>11</sup> <http://nortechonline.co.uk/>

<sup>12</sup> The EIC was created by energy networks in 2008 as a platform to accelerate the discovery, development and deployment of innovation by connecting innovators with transmission and distribution network operators. More on <http://energyinnovationcentre.com/>

<sup>13</sup> [www.ofgem.gov.uk/about-us/how-we-engage/innovation-link](http://www.ofgem.gov.uk/about-us/how-we-engage/innovation-link)

### **8. How can we best support the next generation of research leaders and entrepreneurs?**

37. We rely on collaboration with universities, research institutions, our peers, and with companies active throughout the energy supply chain, to extend the capabilities and expertise available to us. We believe that this should be available to all businesses, and that Government has a role in fostering such varied innovation landscape, and collaboration initiatives.
38. As a business committed to excellence, we support this pursuit and are linking up with the educational system from primary school to universities. The North has very good universities, and specifically in our region, with five of the Russell Group universities and five of the N8 Research Partnership<sup>14</sup>. One of their main asks for now is to retain the link with European universities post Brexit<sup>15</sup>; leaving the European Union (EU) has elsewhere been identified as introducing the challenge to the UK's science and innovation ecosystem, of retaining access to collaborative networks, and to the EU funding<sup>16</sup>.
39. As highlighted by a recent report on drivers for inter-regional differences in productivity<sup>17</sup>, and in the Industrial Strategy, better management practice is a key driver in increasing productivity, and we fully support the Industrial Strategy's commitments on that point.

### **9. How can we best support research and innovation strengths in local areas?**

40. At a local level, we believe that a diverse ecosystem of research and innovation works best and that this is what central and/or local government should seek to foster. At the scale of our company, the Northeast, Yorkshire and the Humber offer examples of industry-led partnerships which can generate cross-sector ideas, and which complemented by the strength of government-backed centres of excellences offer the right conditions for high-quality research.
- Infrastructure North is a coalition of utility companies that operates in the North of England of which Northern Powergrid is part. It was originally created to carry out research into the positive effect of our investment on people and places in the north of England, and has now extended its activities to help solve a range of social issues that are having a growing impact on the lives of our more vulnerable customers throughout the region.
  - The Future Energy Systems Hub is a multi-party initiative between Newcastle University, Newcastle City Council, Siemens, Northern Powergrid, Northern Gas Networks, National Energy Action and the City Council's proposed public/private energy services company, Re-Generate Newcastle. From 2017 Regenerate Newcastle will be delivering a Low Carbon Energy Centre to supply the energy needs for the Science Central site and ultimately the central business district of Newcastle upon Tyne. The above partners have

<sup>14</sup> The N8 Research Partnership is a collaboration of the eight most research intensive Universities in the North of England: Durham, Lancaster, Leeds, Liverpool, Manchester, Newcastle, Sheffield and York. More on: [www.n8research.org.uk/](http://www.n8research.org.uk/)

<sup>15</sup> 'Russell Group response to House of Commons Education Committee inquiry', November 2016. Accessed from: [www.russellgroup.ac.uk/media/5448/russell-group-response-to-hoc-education-committee-inquiry-the-impact-of-exiting-the-european-union-on-higher-education-november-2016.pdf](http://www.russellgroup.ac.uk/media/5448/russell-group-response-to-hoc-education-committee-inquiry-the-impact-of-exiting-the-european-union-on-higher-education-november-2016.pdf)

<sup>16</sup> CBI, 'Now is the time to innovate', March 2017.

<sup>17</sup> CBI, 'Unlocking Regional Growth', December 2016.

come together to tackle the significant challenges that the city region, as part of a Local Energy System and the UK nationally, faces in the move to a low-carbon economy.

- The Centre for Energy System Integration is funded by the Engineering and Physical Sciences Research Council and is a collaborative academic/industry project centred at Newcastle University.

41. We also agree that a guiding principle should be to capitalise on local strengths. As we demonstrate later in answer to question 29, the North of England has a range of geographical, geological and historical advantages that make it well positioned to reassert its leading role in the energy sector and in the country. More specifically, we think that locating the potential new research institution on battery technology, energy storage and grid technology in proximity to CESI would increase the value for money of both investments.

## Developing skills

43. Northern Powergrid is a large employer in the Northeast and Yorkshire regions, employing 2,400 people and planning to recruit up to 1,000 in between 2015 and 2023. As part of our workforce renewal programme we have good experience of hiring at the apprentice level. In the last 10 years we've recruited nearly 300 apprentices and this year for the first time, in partnership with the Department for Culture, Media and Sport, we are recruiting two Cyber Security Apprentices.
44. We are a founding member of the Energy and Utilities Skills Partnership (EUSP), an initiative owned and led by 28 employers across the energy and utilities sector who recognise that investment in infrastructure and core utility services is a vital part of improving UK productivity and growth<sup>18</sup>. We recognise that a skilled workforce is key to the sustainability of our business, we accept our co-responsibility in delivering these skills, and we understand the value of doing it as an industry.

### ***10. What more can we do to improve basic skills? How can we make a success of the new transition year? Should we change the way that those resitting basic qualifications study, to focus more on basic skills excellence?***

45. For our training programmes (Craft apprenticeship - linesman, jointers and fitters- and Trainee Engineer programme<sup>19</sup>) every year, for the last eight years, we hire around 60 new starters of an average age of 26 years old, at the end of a recruitment process which attracts about 1,500 applications.
46. Through this, we have built an understanding that targeted investment by government in STEM skills is needed at all educational level. Studies by the Department for Education, quoted in the Industrial Strategy, highlight the regional disparity in that area, and the comparative deficiencies of local authorities in our licence areas. Five out of the eight local authorities with the lowest proportion of those who achieve A-C at age 15 studying level 3 maths at 16 are in the Northeast and Yorkshire.
47. Narrowing it down to our own experience, we do not struggle to meet our recruitment targets, finding enough candidates with the level of numeracy and literacy which our training programmes require. However, we do note that for some candidates, the barriers to employment reside elsewhere - that is in life skills and practical skills. This may be something that the transition year may want to consider in order to support the objectives of inclusive growth, which works for the unemployed and non-economically active individuals.

### ***11. Do you agree with the different elements of the vision for the new technical education system set out here? Are there further lessons from other countries' systems?***

48. Overall, we agree with the vision for a new technical education system. We agree with the underlying issues that it is trying to address and, more or less, we have developed our own ways to address it with colleges with which we hold a strong relationship. But creating that

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<sup>18</sup> For more information, refer to the dedicated website: [www.euskills.co.uk/energy-utilities-skills-partnership](http://www.euskills.co.uk/energy-utilities-skills-partnership)

<sup>19</sup> More information on both programmes is available from: [www.northernpowergrid.com/asset/0/document/1955.pdf](http://www.northernpowergrid.com/asset/0/document/1955.pdf)

type of partnership takes a long time, and extending it to other colleges requires resources, so we welcome Government's initiative.

49. Engagement between business and school is a crucial pillar to our workforce renewal programme. To deliver it, we work mainly with three colleges: Gateshead College, Tynemet College in North Tyneside and Bradford College, which offer an example of fruitful collaboration between colleges and employers, resulting in courses that employers want. Through collaboration with us, the colleges deliver maths and electrical engineering courses which are directly applicable to the positions for which we will be recruiting in relatively large numbers until 2023. This means that the training time that we spend in the new recruits once there are on-board can be reduced.
50. We agree that school students would benefit from career advice of better quality, delivered earlier in their education. This, combined with tailoring of teaching, would result in students facing a clearer career path, and allow them to make improved time and financial investment choices with regards to their education. A successful example of this is done with the Discovery School in Newcastle, where the curriculum is tailored around STEM subjects.

***12. How can we make the application process for further education colleges and apprenticeships clearer and simpler, drawing lessons from the higher education sector?***

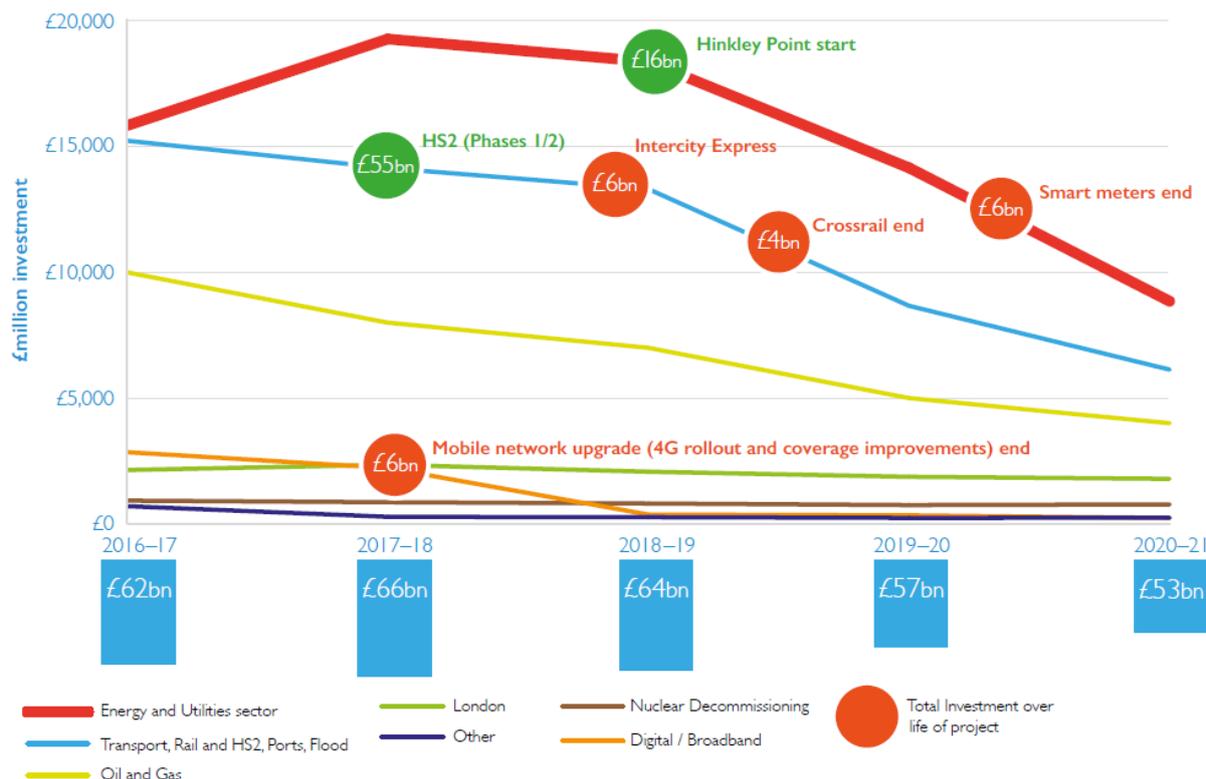
51. Experience gave us insight to improve our own application process for apprenticeship in the follow manner: we have placed a greater emphasis on the need for practical skills rather than educational qualification or work experience. Candidates are invited to take part in practical activities for which they are given a set of instructions and assessed on their abilities to follow these. Less emphasis is placed on the actual interview. In addition candidates are supported in their responses to competency-based questions in drawing from experiences from school or interest groups rather than from work experience.
52. We provided examples of working successfully with local institutions in question 11. At present, we find it difficult to scale and replicate this close relationship with the 60 or so colleges across our regions. **We would encourage government to look into the possibility to facilitate the creation of a single point of contact for local education institutions** (schools, Further Education colleges, etc.) where as an employer we could focus our attention and explain our skills needs, our recruitment plans and timetable, thereby giving the same access to information to all institutions and students, and the same chances to hear about our training programmes. As an example, there is currently no coordination on career fairs in our regions, which has an effect on our ability to promote ourselves as an employer because we do not have the resources to attend career fairs at every high school.

***13. What skills shortages do we have or expect to have, in particular sectors or local areas, and how can we link the skills needs of industry to skills provision by educational institutions in local areas?***

53. We believe that the gender agenda deserves to be one of the initiatives undertaken as part of the drive to address STEM shortage. Only about 1% of applications to our training programme are from female applicants. As part of our corporate social responsibility

programme, we seek to inspire young woman to take up careers related to STEM topics, but our experience shows that a much wider, government-led initiative is needed.

54. Lack of diversity and skill shortage are not the only challenge for the utilities sector, which also faces a high level of retirement in the next decade, and a relatively low level of attractiveness for job seekers. To addresses these challenges, while delivering on the largest pipeline of investment per sector identified in the National Infrastructure Delivery Plan<sup>20</sup> (see Figure 1), **the sector has taken a leadership role by coming together and creating an Energy and Utilities Workforce Renewal and skills strategy 2020**<sup>21</sup>.



**Figure 1: National Infrastructure Pipeline investment for selected sectors / projects (2016–17 to 2020–21)<sup>22</sup>.**

55. One initiative to come out of the strategy is a pilot programme called Talentsource Network. This is a web portal which is aimed at attracting and retaining people to the utility sector. A key objective of this programme is to encourage interest from all minority groups and encourage greater interest from females.

<sup>20</sup> Published in March 2016, the document sets out how the government will support the delivery of key infrastructure projects and programmes from 2016 to 2021. It is available from: [www.gov.uk/government/publications/national-infrastructure-delivery-plan-2016-to-2021](http://www.gov.uk/government/publications/national-infrastructure-delivery-plan-2016-to-2021)

<sup>21</sup> The strategy was launched in February 2017, and is available from: [www.euskills.co.uk/energy-utilities-skills-partnership](http://www.euskills.co.uk/energy-utilities-skills-partnership)

<sup>22</sup> Data sourced from: National Infrastructure Pipeline, Infrastructure and Projects Authority, Autumn 2016, Chart sourced from: Energy and Utilities Workforce Renewal and skills strategy 2020

56. The benefits of this strategy will only be achieved with the support of UK Government, policy makers, regulators and key stakeholders; we can't do it on our own. Through the process of building the strategy, extensive interviews and discussions have taken place with utilities employers across the four nations to better understand what an optimum operating environment could look like for them, and how government in Northern Ireland, Scotland, Wales and England can best respond. The top 12 recommendations were:

- Collective partnership across the UK, to focus on building the optimum workforce to deliver the National Infrastructure Delivery Plan and the embedded elements for Wales, Scotland, England and Northern Ireland;
- Connection between emerging strategies and policies for education and skills, and the delivery of the long term plans, duties and goals of UK-wide sponsoring government departments and utilities regulators;
- Support for the National Audit Office conclusion that 'In order to derive the maximum benefit for the country as a whole, there should be a clear rationale for how apprenticeships fit into the wider plan for productivity and growth, including improving capital investment';
- Explicit recognition of the importance of strategic workforce renewal within the future visions, strategies and policies of the key utilities sponsoring government departments and regulators;
- A predictable skills and employment policy and regulatory environment, with clear goals, to help bring certainty and stability to workforce and skills investment;
- Resilience duties of regulators to include ensuring a sustainable and competent sector-wide workforce, including recognising the workforce within the vital policy making and regulatory bodies;
- Regulatory impact assessments consistently deployed to help policy makers and those required to act to better understand the objectives, options and trade-off between the costs and benefits;
- Consistent application of skills policy across the four nations to avoid employers having to incur increased costs and red tape through multiple rules and regimes. Utilities businesses and their delivery partners increasingly operate for domestic and retail customers across the UK;
- Move towards simple, clear, practical and understandable regulation and policy to reduce employers' costs and red tape;
- Review skills and employment policy and legislation on a regular basis to ensure that they are necessary and relevant to the current operating environment. Support of sunset clauses to help this occur;
- Select a small number of agreed policy objectives and pursue them together to completion, in full and transparent collaboration; and
- Sector attraction and inclusion is incumbent on all key players in the utilities sector, e.g. policy makers, regulators, regulated businesses and delivery partners. We collectively perform a critical service for society and can offer amazing careers to a diverse workforce.

**14. How can we enable and encourage people to retrain and upskill throughout their working lives, particularly in places where industries are changing or declining? Are there particular sectors where this could be appropriate?**

57. We fully support such commitment as it has been beneficial to our company: since 2009 our recruitment process for all trainees has selected in excess of 60% individuals from a background other than school. This includes a number of ex-military who have up-skilled, and tend to display good engineering and technical skills– as well as management and leadership.
58. We are exploring this further as another objective of the Talentsource Network outlined above is to work in partnership with agencies such as DWP (Department of Works and Pensions) and CTP (Career Transition Partnership) which is the Ministry of Defence’s official provider of armed forces resettlement.

## Upgrading infrastructure

**15. Are there further actions we could take to support private investment in infrastructure?**

59. Generally, the UK has been a relatively good place to invest because the government and the regulators have recognised that the stability of the regime is key to maintaining investor confidence. Although new policies have been enacted and there have been changes in direction over the last decade, policy makers in the UK have generally recognised that policies should not be amended with retrospective effect.
60. Specifically on EV charging infrastructure, it is worth reassessing if a market-based approach is likely to deliver on the objectives of the national policy. The deployment of charging infrastructure is currently mainly driven by the end-user and by service providers, which means that the unit cost of an individual charging point is an important consideration. **This financial valuation methodology is limited when it comes to assessing a national infrastructure that serves wider social purposes. In contrast, DNOs could be an effective and efficient delivery route for a number of the proposals set out in the Industrial Strategy to promote the uptake of electric vehicles.**
61. Should Government deem it appropriate, DNOs could roll-out a backbone of additional EV charging infrastructure, efficiently financed through the regulatory asset base, and installed as smart technology in locations to minimise system reinforcement and whole system costs. In answer to question 5, we discuss the potential benefits of migrating some, or all, functionalities of EV charging onto the car, and this would support the proposed change in the investment model. Integrated planning of any such roll-out is paramount – partnerships with local authorities could optimise installations for both planning and electricity connection considerations.

## **16. How can local infrastructure needs be incorporated within national UK infrastructure policy most effectively?**

62. It is important for national policy to be aware of the diversity of local needs and take them into account. Devolution offers an opportunity to debate if this is best done by devolving some infrastructure powers to regions.
63. Our licence area extends across an area covered by 40 local authorities and seven LEPs. As a key infrastructure provider, we seek to engage with each to consider strategic investments, on top of engaging with individual customers. This creates complex information flows. But there are examples of ways to address this, thanks to local government taking leadership. The Humber LEP has led for a few years the Single Conversation platform<sup>23</sup>. This platform was initiated to help the region meet its full growth potential, as a meeting place for projects and individuals that make the 'Energy Estuary'<sup>24</sup>. The forum has helped us gain visibility on future developments put forth by a variety of stakeholders, share the impact of the latter on our network, and create the right contacts to talk these through. This is beneficial for us and for our stakeholders. Key success factors were how open to discussion the contributors are, and the fact that it operates beyond the local authority borders, at a scale that makes sense from a wider economy perspective instead. Such a pan-regional mindset is what successfully mobilised the Transport for the North strategy, bringing 11 LEPs to support strategic projects in other areas if they will deliver significant wider benefits, even if it means a short-term loss of funding to other projects in a particular LEP.
64. **We think that the Housing Infrastructure Fund will be welcomed by some of our stakeholders and would like to stress the importance for local authorities to engage with the utilities prior to bidding, so that their infrastructure needs can be assessed and a complete quote provided.**
65. Lastly, we recognise the objectives of the decentralisation trend experienced by the energy sector, and embrace our role in facilitating such transition. District heat is clearly an attractive solution for energy dense areas such as city centres and is being supported through the BEIS Heat Network Development Unit. **However there are unintended consequences from these developments by local authorities that are leading in some instances to the inefficient development of energy systems, and avoidance of social and environmental taxes.**
66. As they seek to maximise the revenue stream from the CHP system installed, local authorities in the Northern Powergrid region are implementing or considering the option to act as unlicensed energy suppliers over private wires.
- This option is currently the easiest in the current licensing framework and the most appealing because it deducts from the electricity price the cost of the regulatory overhead and policy costs that would otherwise be levied (i.e. avoiding a 'tax').
  - It means that development of the heating and electrical infrastructure takes place 'behind the meter'. As such, an inefficient system is created with duplication of networks in the same streets and the cost recovery for assets then being avoided by those customers leaving the regulated network and placed on other consumers.

<sup>23</sup> [www.humberlep.org/board-page/single-conversation/](http://www.humberlep.org/board-page/single-conversation/)

<sup>24</sup> The Humber region is widely recognised at the UK's Energy Estuary. More information on the topic, refer to: [www.humberlep.org/humber-lep-host-parliamentary-reception-at-westminster-on-31st-january/](http://www.humberlep.org/humber-lep-host-parliamentary-reception-at-westminster-on-31st-january/)

- Building a private wire to maximise income, and to bypass the current unsatisfactory supply licence framework, is an infrastructure solution to a commercial and regulatory issue. We believe that our stakeholders deserve a commercial solution to a commercial issue.

67. We are discussing with local authorities in our region whether there is a virtual private wire solution that is possible as part of combined heat and power deployment. The aim is to remove the need to duplicate physical assets to deliver the power to customers of the schemes.

**17. What further actions can we take to improve the performance of infrastructure towards international benchmarks? How can government work with industry to ensure we have the skills and supply chain needed to deliver strategic infrastructure in the UK?**

68. International benchmarking plays an important part in building a critical appraisal of the economy's performance and the opportunities to fill the gaps. In addition, we should be addressing those benchmarks that point to significant differences between the regions within the UK. In particular, spending on transport connectivity and educational standards are both areas which will help balance the economy and increase spend in the North of England. This plays to two of the most important pillars in the strategy – infrastructure and skills.

## Supporting businesses to start and grow

**18. What are the most important causes of lower rates of fixed capital investment in the UK compared to other countries, and how can they be addressed?**

**19. What are the most important factors which constrain quoted companies and fund managers from making longer term investment decisions, and how can we best address these factors?**

**20. Given public sector investment already accounts for a large share of equity deals in some regions, how can we best catalyse uptake of equity capital outside the South East?**

**21. How can we drive the adoption of new funding opportunities like crowdfunding across the country?**

**22. What are the barriers faced by those businesses that have the potential to scale-up and achieve greater growth, and how can we address these barriers? Where are the outstanding examples of business networks for fast growing firms which we could learn from or spread?**

69. Answering this section as a whole, we think that relying on existing institutions within government to boost the help available to business seeking to grow is reasonable if the extra work is funded accordingly. We have seen success stories emerging from the LEPs in our region. This is an indicator of the capability of these teams, and their established networks across the public and private sector.

## Improving procurement

**23. Are there further steps that the Government can take to support innovation through public procurement?**

**24. What further steps can be taken to use public procurement to drive the industrial strategy in areas where government is the main client, such as healthcare and defence? Do we have the right institutions and policies in place in these sectors to exploit government's purchasing power to drive economic growth?**

70. Again, answering this section as a whole, the benefits to the economy of government procurement can only be felt if it can also provide the long-term certainty required for industry to invest in response to the public investment programme, towards innovation, increasing productivity and developing a supply chain. This is the case for large projects which receive direct or indirect government support (such as new nuclear plants, new airport runways, or new high speed rail lines). It is also the case for government-led projects delivered by industry such as the national smart meter roll-out.

## Encouraging trade and inward investment

**25. What can the Government do to improve our support for firms wanting to start exporting? What can the Government do to improve support for firms in increasing their exports?**

71. Recent research carried out by the CBI points out factors which influences a business's propensity to export (as shown in Table 1), and the Industrial Strategy green paper appears to recognise and sets out proposals to strengthen each of the points.

Factor	Impact on likelihood of a firm to export
Being foreign-owned	+20%
If firm does R&D	+18%
If firm has graduates*	+17%
If firm is over 20 years old	+10%
If firm is in region with greater concentration of firms in same sector**	+4%
If firm is in an industry with more competition***	+2%

\*Firms who have up to 5% of staff that are university graduates, compared to companies who have none at all.

\*\* Effect of 10% increase in agglomeration index value.

\*\*\* Effect of 10% increase in the Herfindahl Index; a measure of firm size in relation to the industry which provides an indication of the level of competition between them.

**Table 1:** Factors which influence a business's propensity to export<sup>25</sup>.

<sup>25</sup> Source: CBI, 'Unlocking Regional Growth', December 2016.

72. With regards to the most influencing factors, being foreign-owned, is of course a key part of attracting investment in the UK, and in our experience interacting with the Department for International Trade, there is a valuable role for it to play, by linking together people and projects that benefits both inward investment and exports. This is particularly true for innovation in the energy sector, and to stimulate the market in EVs. **Transparency of negotiations with sectors and companies should be upheld by government as a core principle.**
73. Also, we understand the government plans to consult on the reform of existing powers with regards to foreign investment and takeovers, and is considering issuing rules about foreign investment in key national infrastructure. We understand the political intent and urge for clarity and consistency of rules, and will welcome a public debate on the topic.

***26. What can we learn from other countries to improve our support for inward investment and how we measure its success? Should we put more emphasis on measuring the impact of Foreign Direct Investment (FDI) on growth?***

74. Specifically about energy, it is important that investor confidence is monitored and taken into consideration in future policy-making. The Ernst and Young Renewable Energy Country Attractiveness Index<sup>26</sup> shows that the UK's ranking has fallen to 14<sup>th</sup> in October 2016 from 8<sup>th</sup> in 2014, which creates challenges when the country's generation capacity is declining at an unprecedented rate, and the sector is undergoing transformational technological changes.
75. **Government agreements with individual private firms, and backing of large-scale individual projects should not distract from creating a clear and consistently implemented energy policy strategy.** Decisions to close subsidies with little lead time or consultation, and delays in taking decisions, are counter-productive in that regard. Also important, in our view, is the extent to which an investor believes that a commitment, once made, will be honoured.
76. Investors are likely to be British or international companies which consider British investment opportunities against opportunities in other countries. Our own experience is based largely on investment in regulated assets. As such, we recognise the regulatory regime as arguably the most important building block for the investment environment.
77. Although our primary focus has been in regulated assets, the principles pertinent to investment in this part of the energy sector are equally valid for investment in other areas, such as generation. When evaluating a potential investment, investors will assess the behaviour of regulators and governments and will apply a higher risk premium where they think that there is a higher likelihood of regulatory or governmental intervention that would have a negative impact on the returns from any prospective investment. Investment in regulated assets is all about deploying significant amounts of capital in return for an expectation of relatively predictable future cashflows at relatively low rates of return. It is the regulatory framework and the behaviour of the regulatory bodies within that framework that gives us confidence as an investor in these future cashflows. Customers who rely on regulated assets benefit from the lower cost of capital that applies to those assets. As such, it is vital for customers that the regulatory regime remains predictable and stable.

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<sup>26</sup> For more information, visit: [www.ey.com/gl/en/industries/power---utilities/renewable-energy-country-attractiveness-index](http://www.ey.com/gl/en/industries/power---utilities/renewable-energy-country-attractiveness-index)

## Delivering affordable energy and clean growth

### **27. What are the most important steps the Government should take to limit energy costs over the long-term?**

78. We acknowledge government's willingness to support energy intensive industries and note the new suggestion to add the levy that funds the Contract for Difference scheme to the list of exemptions that benefit heavy electricity users<sup>27</sup>. **We think network charging requires a different perspective, where cost-reflectivity should prevail and transparency be a core principle.** As this introduces new levels of complexity, we welcome the work recently undertaken by Ofgem to ensure that appropriate charging structures are in place, which send efficient and effective cost signals to customers as we transition to a smarter, flexible energy system<sup>28</sup>.
79. Secondly, government and the regulator should work together to make local supply of electricity accessible to all stakeholders.
- **Local supply is pertinent to the government's objectives**, as it supports the financial viability of heat district networks, it optimises the efficiency of the 'whole system' (when done right), and it introduces real competition in energy supply (i.e. a business model and customer proposition that is truly different). It also distributes the economic value of energy generation to local places, adds to a city's attractiveness to businesses, and allows local government to supply fuel poor with energy at a price that they control.
  - **But local supply is still out of reach to our stakeholders**, which the Ofgem Future Insights paper on the topic fails to recognise. Options do exist today, but they are not uniformly accessible (either because they are a market trial, or because they are complex and expensive) which means that the majority of customers are left out.
  - **Unlocking local supply should be considered a priority.**
    - The emerging solution to local supply is 'private wire', which is neither ideal nor without issues, as laid out in answer to question 16;
    - The alternative is likely to require changes to supply licences, as well as the deployment of solutions currently explored by trials or proposed for trial, by stakeholders, such as virtual private networks. **We are keen to take this conversation forward with our regulator and with BEIS.**
80. Finally, the current regulation of electricity networks successfully keeps the costs down in this part of the supply chain. As an example, our business plan set challenging targets for the 2015-23 period. The overall aim is to deliver more and all our customers, including non-domestic customers, are benefiting from a reduction in their electricity bills following a price cut over previous years in 2015/16. We recognise that energy costs for industries is important for our industrial customers, and that is why we work with energy procurement

<sup>27</sup> As announced by BEIS in March 2017. More from: [www.gov.uk/government/news/100-million-a-year-boost-for-energy-intensive-industries](http://www.gov.uk/government/news/100-million-a-year-boost-for-energy-intensive-industries)

<sup>28</sup> Ofgem, 'Targeted Charging review: a consultation', March 2017. More on: <https://www.ofgem.gov.uk/publications-and-updates/targeted-charging-review-consultation>

agencies and major energy users, to share information and key messages on our charging methodology.

81. We note that the green paper quotes a study that compares network costs across European countries. We would caution against drawing too many conclusions from it as accurate international benchmarking is not possible due to differences in legal and regulatory variances. It is best used to provide high level assurance or to probe areas of best practice. Since privatisation, energy networks have provided good value for money as substantiated by the fact that prices have reduced by over 30% (in real terms), customer interruptions since 1991/92 by 27%, and customer minutes lost since 1991/92 by 16%. In the first year of the new price control, DNOs were found, by the regulator, to perform well against all of the six output categories: reliability and availability, environment, connections, customer satisfaction, social obligations and safety (as shown in Figure 3)<sup>29</sup>.

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<sup>29</sup> Ofgem, '*RIIO-ED1 annual report 2015-16*', February 2017. More on: [www.ofgem.gov.uk/publications-and-updates/riio-electricity-distribution-annual-report-2015-16](http://www.ofgem.gov.uk/publications-and-updates/riio-electricity-distribution-annual-report-2015-16)

### Customer 2015-16 Performance



**Key**

- green ✓ All DNOs have met target/performed well in year 1 of RIIO-ED1
- One to three DNOs did not meet target/performed well in year 1 of RIIO-ED1
- red ✗ More than three DNOs did not meet target/performed well in year 1 of RIIO-ED1

**Figure 3:** Summary of Electricity Distribution Network Operator’s performance against target<sup>30</sup>

<sup>30</sup> Ofgem, ‘RIIO-ED1 Annual Report 2015-16 Supplement’, February 2017.

82. Looking to the future, energy networks costs need to be considered as part of the energy system, and we believe that the recent call for evidence ‘A Smart flexible energy system’<sup>31</sup> is asking the right sort of questions for stakeholder consultation. It reports savings between £17bn to £40bn by 2050. Our response to the call for evidence<sup>32</sup> addressed the steps Government should take to limit network costs over the long term, and we summarise here our view:

- The changes to be expected in the UK energy system are indeed particularly acute but the broad structure of roles and responsibilities in the UK system works well (we see regulators in other jurisdictions moving towards the UK model). The challenge is to manage the system to allow for innovation and flexibility of outcomes without introducing unnecessary risks and undermining investment in the sector.
- Government and regulatory policy needs to recognise this and facilitate innovation, diversity and experimentation while also maintaining the coherence and stability of the system overall. This is an obvious pillar of any Industrial Strategy. In terms of policy development for BEIS and Ofgem, we believe that particular weight should be given to innovations in the system that create flexibility, or those that provide option value – prioritising decisions (to either act or defer) that have low- or no-regrets associated with them.
- We believe that more customer engagement and regulatory innovation will be needed to unlock the potential of smart appliances and demand side response – the Smart call for evidence puts forward some interesting ideas that allow Government to drive this.
- On the specific topic of distribution charges the strategic priorities need much clearer focus:
  - Ofgem should address the barriers and distortions that competition in distribution has introduced to ensure the appropriate socialisation of certain costs.
  - Network charging needs to be reformed to eliminate the scope that exists now for ‘free riders’ between customer groups and the perverse incentives that undermine fair cost recovery.
  - We see a future in which DNOs charge more active customers through bilateral contracts or market platforms, with traditional charging structures remaining for passive customers.
- Also relevant to the long term thinking, the transition to more active Distribution System Operators (DSOs) merits careful consideration. At a high level we believe that the owner of a network is best placed to operate it, but there are clearly certain functions which sit between different players in the market. Both third party and network companies should be allowed to deploy and operate distributed energy resources (like storage) - these types of asset could be vital tools in managing networks and network companies should be given some space to innovate.
  - The de-minimis thresholds in the distribution licences could be calibrated to permit DNOs to take controlled but valuable steps towards becoming DSOs, ‘priming the pump’ for more widespread competitive market-based mechanisms to emerge over the medium- and long-term.

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<sup>31</sup> Available from: [www.gov.uk/government/consultations/call-for-evidence-a-smart-flexible-energy-system](http://www.gov.uk/government/consultations/call-for-evidence-a-smart-flexible-energy-system)

<sup>32</sup> Our responses to public consultations are available from: [www.northernpowergrid.com/document-library/policies-reports-regulation/Consultation-responses](http://www.northernpowergrid.com/document-library/policies-reports-regulation/Consultation-responses)

- Finally, innovation is the key way to find lower cost and better value solutions. Our view on the topic, already made in answer to question 6, is that there is a need for funding available to support a ‘whole energy system’ approach for innovation projects that target the delivery of customer benefits from greater overall efficiency, widening the focus from the current ‘network only’ innovation.

***28. How can we move towards a position in which energy is supplied by competitive markets without the requirement for on-going subsidy?***

83. In our view it is possible to separate the issues of incentivising the development of renewable generation and ensuring that generation is fully accountable for the costs and benefits which it imposes on the energy system.
84. In a recent publication<sup>33</sup>, Frontier Economics sets out a taxonomy of the potential whole system impacts of different types of generation. They argue that it is important that the broader impacts of generation sources are taken into account in order to ensure that the right investments are made by market mechanisms (including auctions for technology neutral renewables support). We would generally agree with this as a principle – it is important that investors take all costs and benefits into account when making their investment decisions, in order that costs to customers overall are minimised.
85. Frontier indicates that there are two alternative approaches to taking into account such wider costs and benefits. The first involves adjusting renewables support for specific technologies to take them into account. The second involves establishing technology neutral competition for support, but ensuring that the wider energy market regime ensures investors face the costs and benefits of their decisions (e.g. through network charging).
86. We believe that the second approach is the most appropriate. The calculation of the whole system impacts of different renewable generation technologies (or, for that matter, storage or demand response) is too complex to be undertaken centrally and used to adjust support levels. It is preferable that the broader energy market design (comprising network charges, imbalance charges, the capacity auction etc.) make sure that investors face the full system impacts (either costs or benefits) from their decisions. If all investors are on a level playing field in this regard, the market can then freely determine the most efficient technologies to meet demand and to meet climate change commitments.

***29. How can the Government, business and researchers work together to develop the competitive opportunities from innovation in energy and our existing industrial strengths?***

87. We have provided some elements of answers in response to question 9.
88. In addition, we back the Northern Powerhouse as a powerful idea to realise the region’s potential and distribute growth evenly. As a large business in the region, and as an infrastructure provider, we contribute to progressing the agenda and are sponsoring the

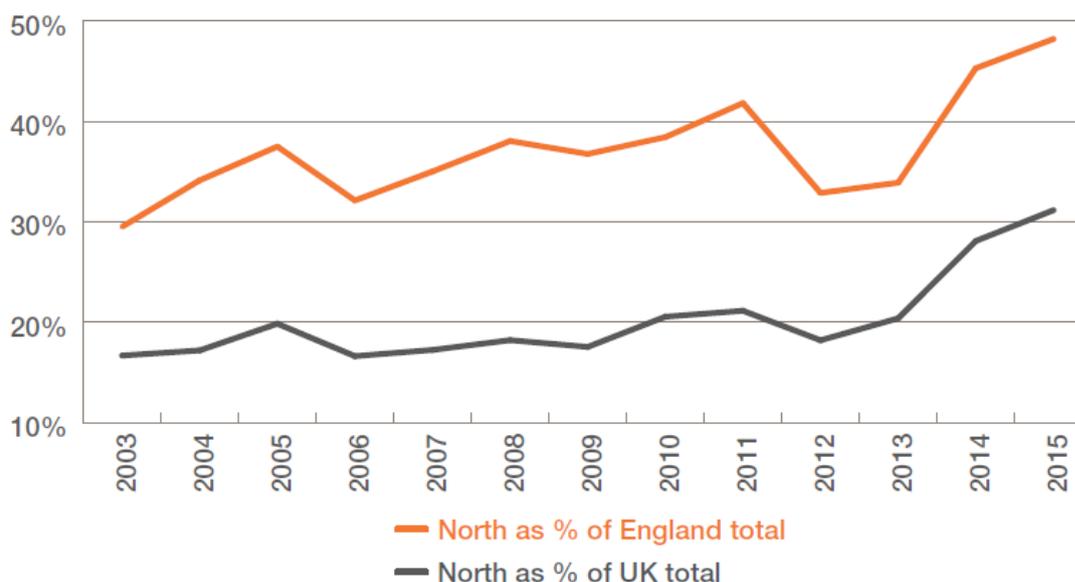
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<sup>33</sup> Frontier Economics, ‘Energy Briefing’, November 2016. Available from: [www.frontier-economics.com/documents/2016/11/whole-in-one.pdf](http://www.frontier-economics.com/documents/2016/11/whole-in-one.pdf)

Northern Energy Taskforce work led by IPPR North that is focussing on the energy assets and capabilities in the North of England<sup>34</sup>.

89. Initial findings makes it clear that the North has very strong assets to turn challenges into opportunities in the energy sector.

- Challenges include:
  - *'A decline in the traditional energy economy: In economic terms, the North's share of energy GVA has fallen from a third to less than a quarter since 1997';*
  - *'High energy demand: Energy demand is disproportionately high in the North due to the presence of energy-intensive industry. This means that energy supply is critical to the wider health of the economy';*
  - *'A reliance on national policy: The North's ability to exploit the potential sites for power generation is potentially vulnerable given its reliance on a national energy policy and direction of travel, which may obscure regional opportunities and key strengths'*<sup>35</sup>.
- **But opportunities to reassert the North of England role as the powerhouse of the nation are strong :**
  - *'The North has the geological, geographic and historical assets to power and heat the nation'*. As shown in Figure 2, around half of all the renewable energy generated in England is produced in the North, driven by offshore wind, tidal and biomass. Nuclear and heat, including hydrogen, also feature strongly as future-looking energy sources.



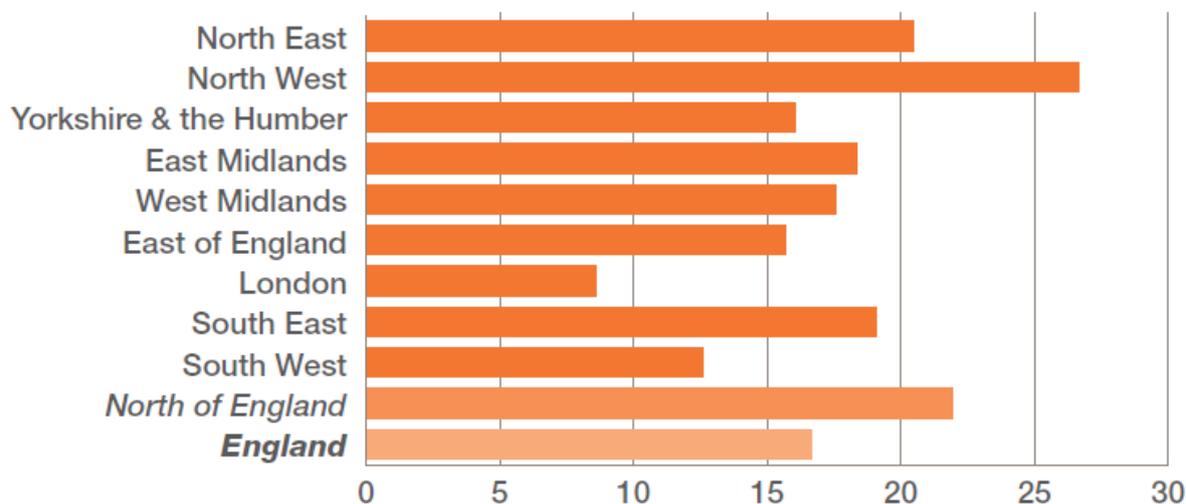
**Figure 2:** Total electricity generated from renewable sources in the North as a proportion of total generation (%) in England and the UK, 2003–2015<sup>36</sup>

<sup>34</sup> The Northern Energy Taskforce has produced an initial report (see footnote 35), will produce an interim report in Spring 2017 and its final output in Autumn 2017. It is exploring the way in which strategic planning across a large-scale geography could bring opportunities for energy generation and supply in the North of England together, in relation to a place-based industrial strategy.

<sup>35</sup> IPPR North, *'Who will power the powerhouse? The energy sector's challenges and opportunities in the North'*, February 2017. Available from: [www.ippr.org/publications/who-will-power-the-powerhouse](http://www.ippr.org/publications/who-will-power-the-powerhouse)

<sup>36</sup> Data source: Department for Business, Energy and Industrial Strategy, *'Regional Renewable Statistics'* (BEIS 2016d). Chart source: IPPR North.

- 'The North has the low-carbon economy and assets needed to deliver new sources of generation'<sup>37</sup>. The Northwest and Northeast have particularly high rates of low-carbon goods and services employment (as shown by Figure 3), driven by a number of sites of major assets and businesses within the northern energy sector, distributed across the region, with key specialisms in certain areas.



**Figure 3:** Employment in low-carbon goods and services (per 1,000) by English region, 2013<sup>38</sup>

### **30. How can the Government support businesses in realising cost savings through greater resource and energy efficiency?**

90. The North East England Chamber of Commerce ran a survey on the topic which revealed that the most important action the Government could do for businesses is to provide grants towards the cost of installing energy efficient measures<sup>39</sup>.
91. From an electricity network's perspective, large non-domestic customers may be interested in offering Demand Side Response (DSR) services to the network or to their supplier. Here again, the smart, flexible energy system call for evidence is helping identify and address the various barriers to doing so, and we have provided our views on such cultural, regulatory, commercial and structural barriers.
92. DSR is a developing market in the UK and the most efficient route-to-market for DNOs has not yet been identified. A number of options are available to engage with this market, which include working with industrial and commercial customers, aggregators, energy suppliers and network companies. We are also contributing to the Power Responsive campaign, led by National Grid, to work with customers to increase participation in DSR programmes. We

<sup>37</sup> All quotes from: IPPR North, 'Who will power the powerhouse? The energy sector's challenges and opportunities in the North', February 2017. Available from: [www.ippr.org/publications/who-will-power-the-powerhouse](http://www.ippr.org/publications/who-will-power-the-powerhouse)

<sup>38</sup> Data source: Department for Business, Innovation and Skills, 'The size and performance of the UK low carbon economy' (BIS 2015). Chart source: IPPR North.

<sup>39</sup> Survey results published in May 2016. More about the survey on: [www.neechamber.co.uk/news/chamber/north-east-chamber-energy-results-revealed](http://www.neechamber.co.uk/news/chamber/north-east-chamber-energy-results-revealed)

propose that government's role is in allowing for routes-to-market to be tested, and ensuring that DNOs have access to relevant data.

## Cultivating world leading sectors

***31. How can the Government and industry help sectors come together to identify the opportunities for a 'sector deal' to address – especially where industries are fragmented or not well defined?***

***32. How can the Government ensure that 'sector deals' promote competition and incorporate the interests of new entrants?***

93. We respond to these two questions together.

94. **Although a sector is typically built around a core of activities and companies, sector deals should be made with the wider supply chain and route-to-market in mind.** This will serve the purpose of an Industrial Strategy; distributing growth across the economy and the country more evenly.

95. Specifically for the 'Ultra-low emission vehicles', we would like to propose for public investment to create and maintain the link between the car manufacturing and the energy sector: any national strategy to improve the uptake of low-emissions vehicles should be done in consultation with the full supply chain, which extends to energy companies, and includes network companies. We invite the work led by Professor Richard Parry-Jones, with the Automotive Council to take this into consideration and we offer our contribution. We are actively engaging with car manufacturers in that direction: **we are already collaborating punctually with Nissan Europe based in Sunderland on two innovation projects, and are now taking steps to formalise and expand our collaboration since we recognise an opportunity for more collaborative activities, the specification and delivery of projects involving grid connection as well as services associated with vehicles, mobile storage and /or fixed storage.**

***33. How can the Government and industry collaborate to enable growth in new sectors of the future that emerge around new technologies and new business models?***

96. Energy is a regulated sector where the main risk to sector growth and innovation is regulation and policy making lagging behind the market ideas. As such, we think that the focus of Ofgem and BEIS should be to maintain a focus on productive engagement with industry, customer representation organisations, and other special interests groups, with the types of initiatives that we have seen lately: Ofgem's Innovation Link, and BEIS's Local Energy team. The engagement should be aimed at monitoring carefully market developments, assessing the public interest that they support, and driving customer-centric thinking. The outcome should be changes in regulation and policy that are designed to advance the public interest and take into consideration changes to roles and responsibilities spanning all industry parties.

## Driving growth across the whole country

### **34. Do you agree the principles set out above are the right ones? If not what is missing?**

97. **Rebalancing the economy requires more than reinforcing established excellence and will involve granular work to identify local opportunities and then assist them in realising their full potential.** LEPs will typically have built a readily available strategic economic plan that can help with the first part of this task. Drilling into the likes of the CBI's Regional scorecard<sup>40</sup>, will help all stakeholders involved target their efforts and maximise the outcome from the investment. The RSA's inclusive growth report mentioned earlier in our response offers principles of a policy framework to promote inclusive growth and calculates that the lowest growth areas in the UK are £190bn behind the national average. The CBI assesses that rebalancing the economy could add £208bn to the UK economy over the next decade.
98. We agree with the intention to improve coordination of local economic plans and infrastructure spent, and we maintain close relationship with developers, planners and local authorities to inform our investment planning. In general, we work to address stakeholders' needs through the Incentive on Connections Engagement (ICE), where they signal their priorities.
99. One of the consistent issues that we face is securing land access and agreements to put in grid connections as quickly as our customers would like. There are examples of industrial customers who have not been able to connect quickly because of this. With appropriate constraints, government could strengthen our 'statutory undertaker' powers to allow us to make connections faster while paying landowners a reasonable amount.
100. We know that the cost of connections is a major issue for many of our customers. Connections are often inherently expensive, and because they are paid for upfront, the cost of a connection can deter investment. Government may want to look at different models (such as repayment over time or socialisation of costs) of paying for particular classes of connections to support investment in certain circumstances.

### **35. What are the most important new approaches to raising skill levels in areas where they are lower? Where could investments in connectivity or innovation do most to help encourage growth across the country?**

101. The dialogue between government, schools and business is likely to be more powerful when involving a sector rather than an individual company. We believe that a skilled workforce is key to the sustainability of our business, accept our co-responsibility in delivering these skills, and understand the value of doing it as an industry, which is why we joined the Energy & Utilities Skills Partnership. Investing in skills throughout the supply chain means new hires are more productive more quickly. Specifically on maximising the investment in skills, the Energy & Utilities Skills Partnership Strategy to 2020 makes the following commitments:

- Accessible and effective entry routes including traineeships and apprenticeships;

<sup>40</sup> CBI, 'Unlocking regional growth – Regional scorecards', December 2016. Available from: [www.cbi.org.uk/insight-and-analysis/unlocking-regional-growth/](http://www.cbi.org.uk/insight-and-analysis/unlocking-regional-growth/)

- High-quality apprenticeships supporting all occupations and providing progression to higher-level skills;
- Maximisation of the value from the levy to support investment in the key skills required by the sector;
- Continued investment in retraining, up-skilling and retaining a professionalised workforce; and
- Encouragement of investment throughout the supply chain.

## Creating the right institutions to bring together sectors and places

### ***36. Recognising the need for local initiative and leadership, how should we best work with local areas to create and strengthen key local institutions?***

102. In general, we would press for better integration of existing institutions integrated over the creation of new institutions. This applies to pan-regional collaboration such as Northern Powerhouse. In practice, this means working with established local institutions to understand what they require to achieve better collaboration and integration of decisions. With that in mind, we believe that Transport for the North has convincingly made the case for the need to acquire statutory status<sup>41</sup>.

### ***37. What are the most important institutions which we need to upgrade or support to back growth in particular areas?***

103. The Secretary of State for Exiting the European Union has signalled that Elected Mayors will be consulted during the Brexit negotiations which gives Elected Mayors a significant role representing not just their constituencies but the North as a whole. To that end, the North East England Chamber of Commerce has invited<sup>42</sup> Mayors to seek an early dialogue with other Mayors across the Northern Powerhouse to ensure there is co-ordinated and strong representation from the North of England on issues such as investment, trade and a replacement for the European Structural and Investment Funds Growth programme. The fund is supporting local growth and jobs through investment in innovation, businesses, skills and employment in the Northeast, Yorkshire and the Humber to the extent of £404 million, including £275 million on projects with an end date past April 2019<sup>43</sup>, and the risk of losing such funds calls for a clear exit strategy.

### ***38. Are there institutions missing in certain areas which we could help create or strengthen to support local growth?***

104. We are supportive of regional devolution to drive regeneration. We have seen occurrences of initiatives in our licence areas that support this objective. As an example, following agreement with Government, the Tees Valley Combined Authority has taken the lead to

<sup>41</sup> <http://www.transportforthenorth.com/about-transport-for-the-north/sub-national-transport-body/>

<sup>42</sup> The Northeast England Chamber of Commerce, 'Chamber sets out agenda for Tees Valley Mayor', March 2017, [www.neechamber.co.uk/news/chamber/chamber-sets-out-agenda-for-tees-valley-mayor](http://www.neechamber.co.uk/news/chamber/chamber-sets-out-agenda-for-tees-valley-mayor)

<sup>43</sup> [www.gov.uk/government/publications/european-structural-and-investment-funds-useful-resources](http://www.gov.uk/government/publications/european-structural-and-investment-funds-useful-resources)

create locally-accountable Mayoral Development Corporations to support jobs and growth<sup>44</sup>, given powers relating to infrastructure, attracting new businesses, and coordinating land ownership (including through compulsory purchase powers). **The Tees Valley Combined Authority is moving to make use of the new powers in South Tees, through the South Tees Development Corporation, to drive forward the opportunities arising from of a 4,300 acres area, which includes the site of the former SSI steelworks in Redcar.**

105. We are encouraged that the proposed Mayoral Development Corporation is embedded within the Tees Valley Combined Authority and the wider Tees Valley Devolution Deal. It is important that local regeneration within the Mayoral Development Corporation attracts inward investment in conjunction with, and not at the expense of, the wider Tees Valley region. The powers to acquire and develop land and to make planning decisions strike us as the most valuable for the new Corporation. Furthermore, the general powers to do business and to provide infrastructure also appear reasonable. We have expressed interest to value an early discussion with the Corporation to understand what value we could bring in terms of electrical infrastructure as our assets already border the area and we favour efficient development of the electricity system to benefit both the new customers attracted to the area and the other residents that are serviced on the periphery.

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<sup>44</sup> For more information, visit: <https://teesvalley-ca.gov.uk/media/tees-valley-combined-authority-granted-new-powers-accelerate-development/>