Making a positive difference
for energy consumers

National Infrastructure Assessment consultation
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Dear Sir / Madam,

Ofgem Response to Consultation on National Infrastructure Assessment

Introduction

Ofgem is the GB energy regulator and a non-ministerial government department. Our principal aim is to protect the interests of current and future energy consumers. We are pleased to submit our views on the National Infrastructure Assessment. Our response focuses on some of the specific questions we feel are particularly relevant to energy consumers, plus some general messages that cut across several areas.

Cross-cutting messages

The energy market currently faces transformative, even revolutionary change, which has already started to happen. The boundaries between different aspects of energy infrastructure, and the wider energy market are blurring. Future challenges for the sector such as decarbonisation of heat and transport, delivering improved energy efficiency and providing a well-designed integrated energy system do not fit neatly into our traditional divisions of the market. We believe that a well-designed integrated energy system will be the most efficient approach and deliver the most benefit for consumers.

Innovative technology and business models drive many of the changes. There is huge potential for innovation to bring benefits to consumers, albeit with major challenges. Current industry rules and structures were designed with the old model in mind and there is a risk that vested interests can frustrate change or create barriers for new entrants.

These innovative solutions need to compete on a level playing field with more established technologies and business models. Ofgem will work to make sure that market structures and mechanisms don't inadvertently distort markets and unduly disadvantage these new ideas.

In particular, flexibility will become increasingly important as we try to deliver the future energy system while avoiding costly network reinforcement. Technologies such as

electricity storage and smart meters provide new opportunities to achieve this, with knock-on effects throughout the system.

There is no one solution to reinvent and revitalise energy infrastructure. Each aspect needs to work together to incentivise the behaviour and outcomes that take into account benefits to the system as a whole. In the rest of this document, we discuss our views in response to specific questions in the consultation document, but they should be taken as an interlinked whole rather than separately.

Question 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?

The future of heat

The future of gas distribution networks is heavily dependent on the government's future policy on heat, currently at an early stage of policy development[1]. Over 65% of the heat consumed in the UK currently comes from burning natural gas[2]. There are several possible routes to decarbonisation of heat, including blending lower carbon gas into natural gas networks, electrification and conversion of the existing network to hydrogen, combined with development of heat networks. Each of these potential options have challenges, risks and cost implications.

- Blending lower carbon gas, such as biomethane, hydrogen or power-to-gas, into the existing network is relatively simple. However, challenges such as processing to meet technical quality requirements may add cost, and competition from other uses of gas or land could limit scalability.
- Electrification of heat using heat pumps is one of the most efficient options to decarbonise heat, although high upfront costs, compounded by the need to modify existing heating systems, are potential barriers to greater uptake. This may also increase peak loads on the electricity system, particularly if certain locations feature higher uptake.
- Heat networks supply heat to multiple consumers from a centralised plant. This presents an opportunity for decarbonisation and increased efficiency if lower carbon sources of fuel or waste heats are used. The majority of heat networks currently use gas as their fuel, but could be converted to other fuels in the future. The high capital costs of retrofitting heat networks remain a barrier, although new developments offer a lower cost opportunity.
- Repurposing the distribution network to carry hydrogen rather than natural gas is another option. However, the technical challenges and costs involved are significant, for example replacing existing iron mains and replacing most household appliances. Questions also remain on safety, customer acceptance and the best way to produce hydrogen. Lastly, demand variations may be more difficult to deal with since existing flexibility markets (eg LNG, interconnectors) connect to the transmission network.

Each of these options requires a different approach for the gas grid. Most of the policy questions are a matter for government to set out vision and direction. Given the importance of public support for key options such as heat networks, the consumer's voice and interests need to be fully represented in the decision-making process to avoid consumers overpaying for decarbonisation.

Thought should be given now to the appropriate regulatory framework. The Clean Growth Strategy is a step towards resolving this. We expect these questions to crystallise as

[1] For a fuller discussion, see Ofgem Future Insights paper on the Future of Heat

[2] BEIS Energy consumption in the UK, 2016 figures

decisions are taken into the 2020s. Ofgem will work with Government to deliver good outcomes for consumers.

Network companies also have a central role to play. We would expect the network companies to consider and develop their own views of how to manage the long-run future of their assets and play a key role in engaging with this decision making process. As regulator, we will continue to ensure network companies are incentivised to manage the gas grids to ensure best outcomes for current and future consumers, which are economic, efficient and coordinated.

Efficient Investment

Policy changes have the potential to affect demand across the gas grid significantly, increasing the risk that some decisions could lead to stranded assets (meaning consumers are asked to pay more for the gas grid than the benefits they receive from it). Policy development must take this into account to avoid situations that do not provide consumer benefits in the long term.

However, planning for a radically different future shouldn't mean that we lose sight of consumers today. Options for the future are still being developed and are dependent on both technological innovations and reductions in costs. There is still a need for more traditional investment in existing technologies to ensure we maintain supply for heat, electricity generation and industrial processes until alternatives are both available and proven. The needs of vulnerable, disadvantaged and rural customers must also be maintained throughout any transition.

In the next price control, we expect to set out clear obligations and incentives on the companies to plan and maintain their networks efficiently for both current and future consumers. As part of the setting of the RIIO-2 price control process, we will expect companies to set out clear narratives for their long-term planning and business management, taking account of what the future might look like, to inform their detailed investment plans.

Any decisions should involve discussions with as many relevant parties as possible, including companies and consumers, and should draw upon a range of evidence including academic research. We will continue to work closely with BEIS to monitor developments in heat policy and gas grids more generally.

Question 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?

Achievements to date

The cheapest unit of energy is the one you don't use. None of the other ideas talked about for the future of the energy system should be used as an excuse not to continue improving the efficiency of our building stock.

Greater energy efficiency for buildings reduces the scale of the challenges associated with delivering the future energy system. Energy efficiency helps us avoid additional network enhancement and reinforcement, aids each possible route to decarbonising heat, and reduces energy costs for consumers.

The energy efficiency of our homes and appliances has increased markedly over the past decade, reducing consumption while enabling stable or increasing comfort levels. Between 2005 and 2015, the average Standard Assessment Procedure (SAP) rating – which indicates household energy and environmental performance – improved from 49 to 62 in England[3].

[3] BEIS Energy Consumption in the UK, as analysed in Ofgem's State of the Market Report

So far, reducing emissions from buildings has relied on energy efficiency improvements. ECO, administered by Ofgem E-Serve, has contributed significantly towards progress to the UK's carbon budgets as well as reducing fuel poverty directly in line with the Government's Clean Growth Strategy. Overall, Ofgem's administration of the scheme accounts for less than 0.5% of its overall cost. The first obligation period for ECO (January 2013 – March 2015) saved consumers £5.16bn and 26.01Mt CO_2 overall, and the second obligation period for ECO (April 2015 – March 2017) saved £4.65bn and 20.42Mt CO_2 overall. In 2016, heating buildings emitted 89 megatonnes of greenhouse gas, 15% less than in 1990, despite the UK population growing by 8.4 million people (15%) over the same period[4].

However, more recently, progress in improving efficiency has slowed. Emissions from heating buildings were higher in 2016 than in 2014, even after adjusting for mild winters. Fewer homes are having insulation installed. Between 2013 and July 2017, government's main energy efficiency programme, the Energy Company Obligation (ECO), installed 1.4 million insulation measures to improve energy efficiency (0.3 million a year). The previous programme, CERT, installed 8.6 million insulation measures between 2008 and 2012 (1.8 million a year).[5]

We need to maintain momentum increasing the energy efficiency of our buildings, particularly if easier to treat buildings (eg those with cavity walls) now have insulation. Working to improve the efficiency of new buildings is clearly important. But given the age of most of the building stock, this needs to complement rather than replace improvement of existing buildings.

Role of suppliers and consumers

Until now, energy efficiency obligations have been placed on suppliers. Specifically relating to energy efficiency, we should consider whether suppliers face a conflict of interest between installing energy efficiency and selling more energy to consumers and whether installation on a property-by-property basis by each supplier is the most efficient way to roll out measures. The traditional role of licensed energy suppliers managing most interactions with consumers and the wider market, may break down in the future, which further weakens the case for delivering efficiency primarily through them.

Suppliers' role may also lead to a less cost effective or efficient implementation of decarbonisation. For example, energy efficiency measures under schemes such as ECO are deployed on a property-by-property basis, as each individual consumer has an account with a different supplier. Savings might be achieved if an entire street or neighbourhood had efficiency measures installed at the same time. Suppliers in a competitive market are not well placed to deliver this, but other parties such as Local Authorities or development banks might be able to play a greater role[6].

One idea that may increase the uptake of energy efficiency in the future is a move toward 'energy as a service' rather than a commodity. Currently, consumers pay for energy on a per kWh basis. Consumers who install energy efficiency measures (either themselves or paid for by a scheme such as ECO) reduce the number of kWh they use. In the future, energy companies may well offer to keep a home above a given temperature year round for a set fee. They could then choose the lowest cost set of measures, including efficiency, heat storage and other products to deliver this.

An additional question is who pays for efficiency improvements compared to who benefits from them. One example is the role of renters and landlords. Tenants can request consent from their landlords to install energy efficiency measures, provided they arrange funding for the measures themselves. Tenants should benefit from efficiency since they pay the reduced energy bills for the property. However, much of the benefit from efficiency actually

[4] Office of National Statistics, United Kingdom population mid-year estimates, as analysed in Ofgem's State of the Market Report

[5] Ofgem analysis of BEIS, Household Energy Efficiency National Statistics, headline release September 2017 and Ofgem, Carbon Emissions Reduction Target update 19 - May 2013

[6] Germany's KfW development bank has been a key player in increasing energy efficiency there.

accrues to the landlord, for example the value of the property could increase, future tenants might be willing to pay higher rent now that the property faces lower bills. These factors support the idea of moving away from a property-by-property approach to installing efficiency measures.

Question 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?**

We need to achieve decarbonisation at least cost to consumers. This must be the priority when designing market mechanisms. Innovative solutions need to compete on a level playing field with more established technologies and business models. Market structures and mechanisms shouldn't inadvertently distort markets and unduly disadvantage new ideas.

We see four specific areas to take into account when designing mechanisms for low carbon energy. The first is competition.

Competition

Competition is the best available tool we have to ensure a lower cost for consumers. The government's Contracts for Difference (CfD) auctions illustrate this. Initially, strike prices for technologies were set administratively, but competitive auctions for CfDs began in 2015. This reduced the costs for consumers compared with administratively set prices. The first set of Contract for Difference auctions saw average prices 15% lower than average administrative prices. The second auction, held in 2017, resulted in average prices 41% below the average administrative threshold, as shown in the table below.[7]

	Allocation round 1			**Allocation round 2**		
£/MWh	Weighted admin price	Weighted clearing price	Reduction	Weighted admin price	Weighted clearing price	Reduction
Advanced conversion technologies	140.00	117.58	-16%	123.76	70.43	-43%
Dedicated biomass with CHP				115.0	74.75	-35%
Offshore wind	140.00	117.77	-16%	105.00	62.14	-41%
Energy from waste with CHP	80.00	80.00	0%			
Onshore wind	90.30	82.04	-9%			
Solar PV	117.30	65.80	-44%			
Weighted total	**119.19**	**101.85**	**-15%**	**105.62**	**62.62**	**-41%**

[7] Ofgem analysis of BEIS data

The Competition and Markets Authority estimated that, for 15 years, consumers are paying about £250-310 million per year (equivalent to 1% of their bill) more than necessary because the first Contracts for Difference offered administrative prices that were between 30% and 60% higher than the auction prices bid by similar wind farms a few months later[8].

Less-established technologies have sometimes been prioritised. In the first Contracts for Difference auction, established generators were, on average, 32% cheaper than less established generators[9]. Energy consumers ultimately pay for this increased cost through their bills.

As requirements for low-carbon electricity increase, it becomes even more important for consumers that it is funded cost-effectively. The market may soon be able to provide generation at zero subsidy without a government framework. However, given the high fixed costs and low marginal costs of most low-carbon generators, a scheme that provides certainty of revenues to investors, such as Contracts for Difference, could still be beneficial, and whenever possible these should be assigned through a competitive, technology neutral process.

We should also make sure that different market mechanisms do not inadvertently advantage or disadvantage particular technologies or unduly work against one another. One recent example of this is the benefit that embedded generators could previously receive by stacking revenue from sources such as avoidance of network charges, balancing services, giving them an advantage in capacity market auctions. This led to a high proportion of capacity market payments being assigned to high-emission embedded diesel generators, working against the broader objective of decarbonisation. Our embedded benefits review addressing this issue concluded this year.

Role of suppliers

A second area to take into account is the role of suppliers in low carbon mechanisms. Suppliers play a major role in several decarbonisation schemes. For example, they are responsible for installing energy efficiency measures under the Energy Company Obligation, and are obliged to obtain a proportion of their electricity from renewable sources under the Renewables Obligation (albeit this scheme has now closed to new applicants, to be replaced with CfDs).

This role in market mechanisms creates burden on small suppliers, which could deter new entry. To the extent that new entrants are exempt, it creates an undue benefit, which distorts supply competition.

Suppliers' role may also lead to a less cost effective or efficient implementation of decarbonisation. Their role in energy efficiency schemes given in our response to question 14 is one example.

Suppliers can also face conflicting pressures as a result of their role in market mechanisms. The roll out of smart meters is one area where this could arise. Suppliers are responsible for offering and installing smart meters to their customers, with targets set for the number they install. However, suppliers also want to sell electricity and gas to their consumers, meaning that installing a smart meter to help reduce consumption creates a potentially conflicting set of incentives.

The recovery of the cost of government schemes via suppliers' levies on consumer bills is a separate but related issue. As well as adding to the distortion caused by exempt suppliers, these charges increase incentives on consumers to avoid these costs through onsite generation and 'private wire' investments. This risks worsening the 'two-tier' market for energy, as a smaller and smaller pool of consumers who are unable to invest to avoid the levies bear their cost.

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[8] Competition and Markets Authority, Energy market investigation: Final report, June 2016.

[9] Ofgem State of the Market report, based on BEIS data

Currently, consumers must access the system through a licensed supplier. New parties wishing to enter the market must become a licensed supplier or contract with one in order to settle energy purchase and sale transactions in the centralised system. As a result, the supplier is the primary 'hub' or intermediary between consumers and the energy system, with suppliers competing for consumers' energy demand.

This model may change in the future, as other parties manage consumers' interaction with the market. Future consumer interactions could include system operators, aggregators, technology companies, peer-to-peer platforms, and other intermediaries that provide energy services to consumers. We believe consumers should be able to access the system and settle their costs directly, if they choose. All intermediaries, including suppliers, aggregators and energy service providers should be able to compete on a level playing field. Barriers for entry should be low, and consumers should be able to control access to their data, which should also be accessible by third parties. Ofgem is in the process of gathering views and evidence on future changes to supply market arrangements.

This potential breakdown of traditional model means that using suppliers as the focal point for delivery or cost recovery will become even less of a practical option in the future.

Role of DNOs

Similar to changes in the supply market, the role of the parties involved in operating the system are changing and may well continue to evolve in the future. At present, National Grid, as System Operator is responsible for balancing supply and demand of electricity and gas systems in real time. National Grid generally performs this at a national rather than local level, albeit still managing local constraints on the transmission system.

However, the system is increasingly moving away from a traditional model of large, centralised transmission connected generation, to one incorporating a greater proportion of smaller scale embedded generation connected to the distribution network. This is driven not only by the growth of wind and solar, but also by development of new technologies and new business models, such as new forms of electricity storage and demand side response. This is changing the way the systems is used, and means that the role of the distribution networks needs to evolve.

These changes can create challenges for distribution networks. However, the same new technologies can be a valuable source of flexibility for system and network operation, offering an alternative solution to avoid or defer the need for traditional reinforcement or to support cheaper and faster network connections. To unlock these opportunities Distribution Network Operators (DNOs) need to make maximum use of available flexibility. This means they need to become more proactive in their management of the network and have an important role to play in facilitating markets. This will see them evolving to take on an enhanced distribution system operator role. As this happens, we need to make sure they have the right regulatory framework.

The Totex approach to setting allowed revenues under the RIIO framework already seeks to incentivise the networks to consider build and non-build solutions. We have seen the first signs of the DNOs seeking to procure flexibility through competitive and technology neutral tenders. Projects funded under the Network Innovation Competition will see the DNOs carry out further trials to support the development of future markets for flexibility.

Whole system approach

Lastly, different market mechanisms need to work together in alignment across the system to achieve consumer benefits in terms of cost, decarbonisation and security of supply. Arrangements need to incentivise users in line with the costs or benefits they drive, and enable parties to identify efficient actions and investment.

In our joint Smart Systems and Flexibility Plan with BEIS, we highlighted the need for mechanisms for transmission and distribution coordination, which enable whole system network requirements to be identified and acted upon efficiently, in the best interests of consumers. We are considering where further clarity may be needed to support whole

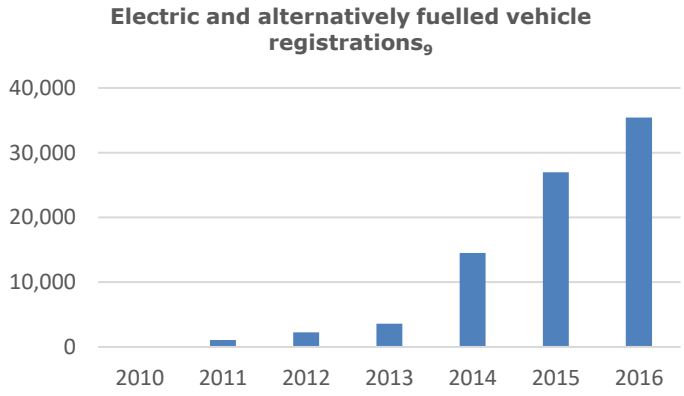
system outcomes, and how arrangements may further evolve in the longer term. The Energy Networks association's Open Networks project recently published a report on its first year of work, with a focus on opening up the delivery of network requirements to the market and whole system coordination and will shortly consult on its workplan for the coming year.

Ofgem is currently reviewing network charges across both the electricity and gas networks, with the goal of better aligning charges with the cost that participants impose on the system. For electricity, this includes the Targeted Charging Review, access arrangements and forward looking charges. When coupled with half hourly settlement (HHS), provided through smart meters, there will be an increasing opportunity to reward those who help keep system cost down (ie using cheap power when renewables are available, avoiding additional loads when not or when the network is near capacity / constrained).

Question 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?

Charging

The take up of electric vehicles is accelerating, as shown in the graph on the right. However, they still represent only a small proportion of vehicles on our roads. For context, a little under 2% of the vehicles registered in 2017 were electric or alternatively fuelled[10]. However, the past trend shows they have the potential to increase rapidly, and take up may not be even geographically, leading to some areas with a high proportion of electric vehicles.



The crucial factor for the electricity distribution network is that charging arrangements are correctly designed and smart.

If loads on the network from electric vehicles avoid peak times, where the network is near to capacity, then the need for network reinforcement can be significantly reduced.

However, most domestic consumers currently have little incentive to shift their electricity consumption away from peak times since they face the same tariff per kilowatt hour regardless of time of use. Smart meters, combined with time of use tariffs, are a 'complementary' and 'enabling' technology for electric vehicles, as they will allow tariffs that reflect and reward the network costs avoided by charging away from peak times. An increase in electric vehicles will test new more flexible network arrangements and half-hourly settlement.

The location of charging points is also crucial. Home charging is likely to require greater local reinforcement, especially if clusters develop in certain locations, such as major cities where electric vehicles are a more practical option leading to higher uptake, or in rural locations where the network is less able to accommodate large increases in demand without compromising reliability and stability. Public transport infrastructure (such as taxi and bus depots) and commercial fleets may also increasingly rely on price signals for the cost of network connection to determine where they can connect and charge an electric vehicle fleet.

[10] Ofgem analysis of SMMT data

Centralised charging, for example at workplaces or service station may have less impact on networks. These could be located at connection points that have more capacity, or could be located near to renewable generation or electricity storage, to allow smart business models to take advantage of cheaper electricity away from peak times.

Batteries in electric vehicles offer an opportunity for flexibility, which acts in the opposite direction for peak loads on networks. If consumers with electric vehicles can be incentivised to make the batteries in their vehicles available to help balance the system, they would provide substantial storage capacity.

Overall, in line with our cross cutting messages, regulatory and legislative arrangements need to encourage markets to develop where participants (including consumers) are charged and rewarded in line with the costs they impose on the system as a whole. This applies to electric vehicles and their potential impact on electricity networks as much as any other technology.

Usage

Any future policy relating to electric vehicles shouldn't assume that the pattern of vehicle usage today will carry on into the future. In the short term, the declining marginal cost of travel associated with electric vehicles could lead to an increase in transport demand, and potentially increase congestion. However, wider changes such as a growth in the sharing economy for cars and self-driving cars would mean a very different market for electric vehicles in the future, compared with current car ownership arrangements and usage.

Regulatory and legislative arrangements

The regulatory arrangements that exist today may not be best suited to changes that are likely to arise with the arrival of electric vehicle products and other services, and will need to adapt.

The legislative framework was designed on the basis that gas and electricity are supplied to 'premises'. In the supply licence framework, we set out specific obligations that all licenced suppliers must comply with. Innovators seeking to offer niche products and services to electric vehicle owners may be unable to do so without either becoming a licensed supplier or contracting with an existing supplier, either of which could increase costs and reduce the viability of their proposal. While these specific obligations are there to protect consumers, in some cases they may restrict innovation and therefore may not be in their best interests.

In order for the benefits associated with these products and services to be realised, a clear and coherent regulatory framework must exist. Clarity over the legislative and regulatory arrangements for products and services provided to electric vehicle owners is needed to avoid constraining innovators. A clear framework should stimulate investment, promote competition between charging, supply and flexibility services, and ensure that an appropriate level of protection is in place for electric vehicle owners and consumers in general. Our work on Future Supply Market Arrangements considers enabling innovation more generally, and we will continue to work with Government to develop new arrangements.

Question 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?

Conditions for private finance

The UK has been a pioneer in introducing private capital into the delivery of infrastructure, first through privatisation of the main utilities and then through the development of the Public Private Partnership programme for social infrastructure. More recently, the introduction of Contracts for Difference for low carbon generation assets, and the Cap and Floor regime for interconnection have supported private investment to help us achieve the goals of decarbonisation and security of supply.

However, private capital is not the best solution in all circumstances. In general, private capital is most likely to be beneficial for consumers when three conditions are met.

First, outputs can be clearly specified. Private investors need to understand what they are signing up for and will need to deliver. This also allows comparisons between different solutions to a particular issue where competitive tenders are used to allocate infrastructure projects. Clearly defined outputs should also prevent compromising non-financial objectives such as security of supply when cost cutting to deliver infrastructure at lowest cost.

Second, risks of delivery can be clearly identified and allocated to parties best able to manage them. Private developers can't effectively control all of the risks associated with a large infrastructure project. Pushing all risks onto private investors can result in them requiring a higher rate of return in order to invest, ultimately increasing the cost of the project for consumers.

Third, there is effective competition and sufficient liquidity in the markets for finance between banking and capital markets. This supports an overall reduction in the cost for consumers of infrastructure provided privately, as investors do not exert market power to raise the return they receive to deliver projects.

OFTOs

The Offshore Transmission Operator (OFTO) regime is one example of a programme where competitive tenders and private capital have been used to reduce the cost of infrastructure.

Generators build both an offshore wind farm and a link to the transmission system. Ofgem then run a competitive process to transfer the transmission link to an offshore transmission operator (an OFTO). With private financing driving down the cost of transmission links, the overall cost to the consumer of the wind farm is reduced, allowing a lower CfD price.

The OFTO regime has three objectives:

1. To attract new funding to invest in offshore wind energy production.
2. To ensure electricity links delivering power to shore are fit for purpose and provide value for money.
3. To provide a new regime for competitive tendering to:
    - Lower the cost of building and operating assets.
    - Enable new players to bring innovative technical, operational and financial solutions to the connection of offshore wind farms.
    - Provide a lighter touch regulatory approach through long-term arrangements.

Four 'tender rounds' have already been completed, with the fifth starting in 2016 and still ongoing. The first four rounds included 16 projects totalling 4.6 GW of capacity and £3.1bn of investment. An independent evaluation of the first three tender rounds conducted in 2016 estimated that the savings delivered for consumers were between £680m - £1,092m when compared to the traditional way of delivering offshore transmission connections[11].

The OFTO regime meets the three conditions identified above for beneficial private investment. Outputs in terms of availability are clearly specified, risks are efficiently allocated with license protections for unforeseeable or uninsurable risks, and the markets for finance are liquid and extremely competitive, with both bank and bond solutions competing to win.

Ofgem intends to extend the benefits of competition into the onshore sector. We have developed the Competitive Appointed Transmission Operator (CATO) regime, which currently awaits enabling legislation. In the meantime, Ofgem has proposed two alternative models for extending the benefits of competition. The first is a special purpose vehicle (SPV) model, under which incumbent transmission operators compete out all the work on large, new assets, including the cost of financing them. The second is a competition proxy

[11] Net Present Value in 2014/15 prices for the 15 projects in Tender Rounds 1-3, from Evaluation of OFTO tender round 2 and 3 benefits prepared by CEPA.

model, under which incumbent transmission operators deliver projects using conventional methods, but the cost of delivery is set based on benchmarks from Ofgem's competitive networks regimes such as the OFTO programme.

Yours sincerely,

Joe Perkins

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