

Appendix: UKPN RIIO-ED2 OPEN LETTER RESPONSE

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Proposed objectives for RIIO-ED2

1. Do you have any views on the proposed objective for RIIO-ED2?

We agree with Ofgem's proposed objectives for RIIO-ED2. As a licenced network operator everything we do must be linked to positive customer outcomes that demonstrably provide value for money. Therefore, there is no doubt that RIIO-ED2 will continue to have a sharp focus on delivering world class levels of network reliability, whilst achieving excellent customer service and keeping bills affordable. In addition to this, we believe there is scope for DNOs to have an expanded role in helping to better protect customers who are in vulnerable circumstances, whilst tackling environmental issues and enhancing resilience in the face of new challenges.

In 2019 the UK became the first major economy in the world to pass net zero emissions into law and not a day goes by without climate change receiving attention in the media. This is reflected in what we hear from our stakeholders who regularly want to hear what we are doing to tackle climate change. Our view is that if the UK is to meet the government's net zero target by 2050, then this target must be reflected in RIIO-ED2, as DNOs will be central to facilitating this transition. Embedding this objective would ensure that our industry is seen as a leader on decarbonisation, whereas without this there is a risk that we are seen as blockers to progress. Nevertheless, we recognise that Government and Ofgem have a sharp focus on costs and ensuring fairness in RIIO-ED2. Successfully meeting these different objectives will be challenging, but is possible if we work together to define a RIIO-ED2 framework that is: sufficiently flexible; ambitious; and recognises the socio-economic benefits DNOs' actions will bring. Given the importance of getting the RIIO-ED2 framework right, we stand ready to work with Ofgem to develop this further as soon as possible.

How to set price controls that support decarbonisation goals

2. To what extent should we take into account outcomes linked to decarbonisation targets, and what outcomes might this involve?

Outcomes linked to decarbonisation targets should form part of the RIIO-ED2 framework, where they can be reasonably influenced by DNOs. Crucially this should translate into a price control that facilitates the UK meeting its legally binding target of net zero emissions by 2050. As such network companies' business plans should be aligned to the government's carbon budgets and this will facilitate ensuring that networks enable the levels of decarbonisation required.

Firstly, this could involve setting targets for how DNOs tackle their own carbon footprint. Secondly, it could involve developing outputs linked to how DNOs support wider decarbonisation efforts e.g. recognising the value that low carbon flexibility provides in helping us to maximise the utilisation of our existing network¹. We provide more detail on both of these in our response to Q28. Thirdly, it could involve outcomes linked to strategic investment. By this we mean investment that helps address a known market failure, which is preventing LCT from being deployed. For example, by investing in DSO capabilities and increased monitoring of potential hot spots of our networks we have the opportunity to connect and manage new LCT without the cost and delay associated with LV reinforcement. Furthermore, this increased monitoring and control would enable us to justify times when reinforcement is required earlier, which would also prevent networks from being a barrier to LCT deployment.

We do not think doing nothing is an option, as to ignore the carbon impact of the DNO's actions in RIIO-ED2 would significantly risk undermining the UK's overall progress to net zero emissions.

3. Are there activities that DNOs are best placed to carry out in order to achieve these outcomes? What are the alternatives? Why would it be appropriate for energy consumers to fund these activities?

DNOs will have a key role in ensuring that a range of low carbon technologies (including EVs, heat pumps and electricity storage) can connect to the system cost efficiently and with as little disruption as possible. Consequently, there are a number of activities DNOs could carry out to deliver environmental outcomes. If these activities are appropriately defined for RIIO-ED2 they could offer benefits to DNO customers, as well as being in the wider public interest. For example, in our response to question 2 we outlined the expanded role DNOs could have in facilitating decarbonisation and therefore the transition to net zero emissions by 2050.

We believe there is strong merit in considering requiring DNOs to undertake the following activities in RIIO-ED2:

- strategically investing to resolve market failures that are preventing the take up of low carbon technology – an example of how this is relevant to EVs is discussed in detail in a sub-section below;
- increasing the utilisation of network capacity² to enable low carbon technology to connect and access the wider market and to keep bills down by minimising any risk of asset stranding – this is covered further in our response to question 22;
- presenting network related data and forecasts that enable market players to make informed decisions that will aid system management – we are already doing this as part of our DSO

¹ A report commissioned by the CCC published in 2019 estimated that flexibility can save £1.8bn per annum by avoiding additional distribution network capex. We believe this is a conservative estimate, which underestimates the cost (and therefore benefit) of using flexibility to optimise network capacity.

² We recognise that there is a trade-off between increasing network utilisation and reducing the costs associated with losses, however, we believe with greater visibility and control of networks these can be managed and optimised together efficiently.

transition e.g. through publishing maps of how much spare capacity there is across our network, but there will be opportunities to go further in RIIO-ED2;

- providing use of system price signals to network users to alleviate network constraints and reduce curtailment of low carbon DER; this includes temporal and locational elements (for both for demand and generation) – this builds on the previous point and is linked to the outcomes of the Significant Code Review into network charges;
- reduce their own business carbon footprint, thereby leading by example on transitioning to net zero and demonstrating to other organisations how this can be done successfully;
- reducing the negative impact of losses in the distribution system, which typically represent c.7% of total electricity consumption e.g. through using new data to better reflect the carbon emissions associated with losses – this could lead to an improved investment appraisal methodology and would act as a counter-balance to over utilisation of existing assets; and
- accounting for social and environmental impacts as part of the DSO's investment options analysis; both at the planning and operational phases – this builds on the above point on losses but is broader and would include factors such as the impact of street works.

Ofgem can ensure through licence obligations, price control deliverables and incentives that DNOs deliver the above activities in a way that best meets current and future customers' needs. Alongside the list above there are many further interrelated activities, which will most likely be fulfilled by third parties. As covered in Ofgem's RIIO-ED2 Open Letter there are important questions about whether certain functions or responsibilities sit best with the DNO or a different party. Our position is that new activities embedded in RIIO-ED2 should aim to increase competition e.g. by opening up new markets. For example, there could be a perception that funding and/or incentivising DNOs to use data to increase network utilisation would be unjustified, as networks already have a responsibility to manage network capacity. However, our view is that if done appropriately this could increase revenue opportunities to providers of flexibility at the local level, where utilisation often has the greatest whole system benefit, but where network visibility is lowest. As well as encouraging local innovation and flexibility, this would help DNOs to better manage significant take up of domestic LCTs e.g. by avoiding, where possible, the need for replacement and/or upgrading of local network infrastructure as well as street works and possible planned outages.

The role DNOs can play in facilitating EV charge point infrastructure and addressing market failures

About 30% of EV charge points in the UK are installed on our networks and between 2018 and 2019 we saw a 22% increase in EVs being registered within our distribution area. Nevertheless, we know that much more can be done to accelerate the transition to EVs in a way that meets the net zero emissions target. For example, the UK is currently behind many European countries such as the Netherlands and Austria, in terms of charge points per EVs in use. The fact that many of our customers in the East Anglia region currently have to drive over 10 miles to get to their nearest public EV charge point, demonstrates the challenge our customers are facing. Even in inner London there are accessibility issues, as over 80% of residents do not have access to off-street parking. Through our work with Local Authorities we are aware that they are progressing at different speeds and the connection cost issue is a common theme. Lamppost charging is becoming a more popular option due to its lower connection costs; however, due to their slower charging rate and distribution, they will need to be accompanied with other forms of public charging to provide a complete solution for the mass adoption of EVs.

All of the above points to a market failure and through our stakeholder engagement we are acutely aware that the capital hurdle facing installers of EV charge points in many locations across our network is preventing investment. The resulting gaps in EV charging infrastructure are likely to have knock on impacts on consumer confidence, particularly for those that rely on public charge points. Recognising this, notable organisations including the CCC³ and the NIC⁴ have called on DNOs to

³ <https://www.theccc.org.uk/wp-content/uploads/2019/05/Net-Zero-The-UKs-contribution-to-stopping-global-warming.pdf>

⁴ <https://www.nic.org.uk/britain-can-become-an-electric-vehicle-country-by-2030/>

strategically invest to help remove this barrier. However, we think greater clarity is required on the DNOs' role and remit in this area. Evidently, we want to avoid creating market distortions, or the perception of picking winners, by establishing a framework that is fair and transparent. This could involve input and close collaboration with local, regional and central government to evaluate locations where strategic investment has the greatest benefit e.g. poor air quality areas with a high density of people that do not have access to off-street parking. We are concerned that failure to address this will result in reputational damage, as DNOs and Ofgem could be seen as blocking the energy transition.

We note that Ofgem has already set out Business Plan Guidance that includes licensees co-developing Local Area Energy Plans with stakeholders and we believe this would be a key way of defining such outcomes and how licensees can best support meeting these.

Regarding the funding of network access to support charge point infrastructure, and whether this should be through electricity bills or through another means such as general taxation, this is ultimately a decision for government and Ofgem. A key advantage of funding activities through price controls is that it helps fairly distribute costs between future and current customers. To give an example, if we were to fund through the price control £100m to support the connection of rapid charging hubs, this would translate into a cost of about 60p per annum for a typical domestic customer.

Furthermore, our view is that costs should be borne in such a way that gives the opportunity for price signals to be sent to the market to drive behaviour that helps result in a fair distribution of costs, as well as efficient behaviour. For example, through the current RIIO-ED1 framework, DNOs are incentivised to deliver network access at lowest cost, using both network and market based options. This will include smart connections, flexibility procurement and encouraging smart EV charging through tariff design. However, if network capacity for EV charge points is delivered through subsidies, it is difficult to see how smart and flexible options will be assessed on a level playing field. We recognise that an argument for choosing to fund network access requirements through taxation is that it would be less financially regressive than electricity bills, which would disproportionately increase costs for those less able to pay. We recognise this is an important issue to consider, and would therefore welcome further consultation on options that could shield customers in fuel poverty from excessive cost increases associated with this.

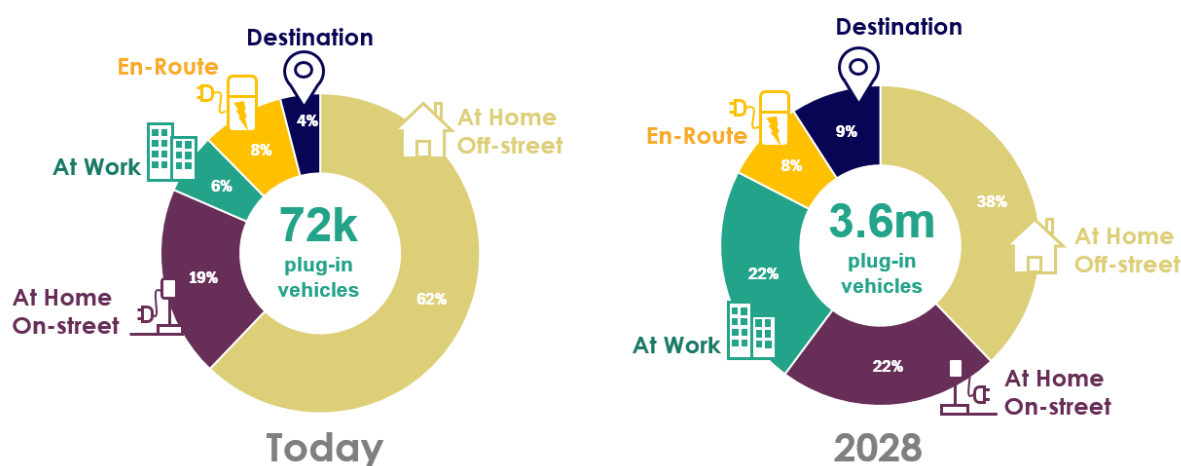


Figure 1 Distribution of EV charging segments in 2019 vs a forecast of EV charging segments in 2028

Whilst we recognise the appeal of using public funds to directly resolve this in certain EV charging segments where there is a perceived barrier e.g. at motorway service areas, we believe this would set a precedent that could have significant unintended consequences e.g. by diluting the value that smart EV charging can have. Further to this, our forecast as shown in Figure 1 is that en-route charging will be a relatively small segment compared to other segments such as on-street, which is also facing a potential capital hurdle in terms of network access. By having some selected infrastructure funded through tax, whereas elsewhere it is funded through DUoS, there would be a distortion between

users' charges at different locations, which may then create inefficient behaviour e.g. some charge points appearing cheaper to use than others.

We have set out below three case studies of where network companies are taking a key strategic role in enabling charge point infrastructure; whilst we recognise that market structures are different in California and Oregon compared to the UK, their objectives and associated challenges are similar to those in the UK:

California⁵

Network company Southern California Edison (SCE) has developed a Charge Ready Transport Program that was approved by its regulator in early 2019. The program provides an opportunity for electrical infrastructure to be installed to support charge points for non-residential EV fleets with no costs to applicants. SCE also offers rebates to certain applicants e.g. school bus operators to discount the cost of the charge points. With a budget of c.£290m SCE will fund 870 commercial sites over five-years that will support at least 8,400 EVs. To ensure this SCE stipulates that applicants must provide evidence that at least two EVs are purchased.

Oregon⁶

Network company Portland General Electric (PGE) developed an electrification plan in 2017 with two key objectives:

1. Increase customer acquisition of EVs and other electric transportation options in their service area; and
2. To begin efficiently integrating EVs into the electricity system.

This included the development of a standard model to market test solutions to ensure maximum customer value is realised through fostering competition. Notably PGE defined a tool to assess the social and environmental outcomes of the decision making process. For example, their selection criteria included geographic diversity, proximity to existing chargers, PGE capacity headroom and the availability of land amongst other factors. As part of their CBA methodology, PGE looked at a variety of metrics including CO₂ emissions from both a customer, network and societal perspective.

As demonstrated in this example we believe it is crucial that network capacity is considered alongside other factors to ensure optimal decision-making.

Scotland⁷

We are aware that here in the UK there is an example of Scottish Government working closely with DNOs to ensure their network is EV-ready. Recently the Strategic EV partnership between SPEN, SSEN and the Scottish Government has announced that additional funds will be given to help deliver more cost efficient charge point infrastructure. By channelling this through the DNOs, the Scottish Government expects investment decisions to be streamlined as DNOs have greater visibility of network constraints and have the expertise to support Local Authorities achieve their targets.

We recommend Ofgem explores this example in more detail with the aim of assessing its merits compared to other funding routes. It is also important that Government and Ofgem clarify what will be inside and outside of the control as well as the associated targets and deliverables.

⁵ <https://www.sce.com/business/electric-cars/charge-ready-transport>

⁶ <https://www.portlandgeneral.com/corporate-responsibility/environmental-stewardship/air-quality-emissions/oregon-clean-electricity-plan>

⁷ <https://www.gov.scot/news/more-electric-vehicle-charging-points/>

4. How should we assess DNO funding requirements and measure DNO performance in these areas?

How DNO funding requirements should be assessed

Ultimately, if funding through the RIIO-ED2 price control results in a more cost efficient transition to net zero emissions then this should be considered. Nevertheless, we recognise that DNOs cannot be given blank cheques and therefore Ofgem should develop a sufficiently robust way of evaluating DNOs' funding requirements in this area, as well as clear outputs and/or price control deliverables to ensure customers are protected from any material changes in requirements or a failure to deliver.

We believe there is merit in the RIIO-ED2 framework having the following features as part of the assessment into funding requests:

- Business Plan guidance that details the expectations on DNOs and what criteria they will be assessed against;
- Recognition of the DNO's stakeholder engagement e.g. via the CEG and evidence of how strongly the proposals are supported;
- External benchmarking of the carbon costs and benefits e.g. how the proposed measure compares to HMT's carbon price used for other parts of the energy sector;
- Detail around the level of confidence there is that the carbon savings will be delivered and why; and
- Detail around how any uncertainty will be managed through appropriate measures such as volume drivers and the use of options analysis, thereby ensuring a least regrets approach. This is because we recognise that metrics will need to be in place to ensure that DNOs deliver what they committed to in their business plans e.g. through a well-defined price control deliverable.

Whilst willingness to pay research will be an informative guide on how much DNOs could be funded for particular outputs, there are potential limitations for how this could be applied for decarbonisation. For example, it is possible that DNO costs increase relative to today, however, the outcome from a wider system perspective is net positive, in terms of delivering carbon reductions at lowest cost.

Further to this, when evaluating allowances and associated outputs, there could be benefit in having clear environmental assessment criteria, which DNOs and their stakeholders can test their Business Plans against. However, this should not unduly restrict DNOs listening and responding to their stakeholders, who may raise legitimate environmental issues that are region-specific and therefore outside of the set national criteria.

How should performance around these outputs be measured

We see a combination of the Business Plan Incentive, ex-ante allowances with the totex incentive and uncertainty mechanisms as being key to measuring performance in this area.

As described above, if DNOs commit to delivering a certain volume of carbon emissions with agreed funding, then the totex incentive is the best way of driving performance and aligning customers' interests with the DNOs. To achieve this will require a level of disaggregation of outputs and evidence will be required that the carbon emissions have been delivered. As covered in our response to Q28, we believe there is merit in Ofgem considering the value of an independent and standardised way of measuring and reporting carbon savings e.g. through a trusted party such as the Carbon Trust.

We also see merit in Ofgem exploring how the CBA used in RIIO-ED2 could help better capture carbon emissions and therefore provide data that can be used to assess DNOs' performance. For example, as part of our flexibility procurement we have an opportunity to measure the carbon emissions associated with different market options. This could then translate into a fair and transparent menu that market players know they are being assessed against. There are precedents for this, for example, the Energy Company Obligation (ECO) has a methodology that Ofgem uses to validate carbon reductions from supplier-led interventions e.g. solid wall insulation. Whilst this

methodology may not be directly applicable to DNOs, there will be useful learnings of how the mechanics could work in RIIO-ED2.

By focussing on metrics such as CO₂ (£/tonne) Ofgem could assess the merit of different actions on a level playing field. This is important for comparing different interventions across licence areas as well as characterising the counterfactual 'do nothing' approach. For example, a DNO could put forward projects in their business plan that include a carbon cost benefit analysis. This would be on the basis that any additional costs to reduce carbon are NPV positive relative to a reference carbon price. In such circumstances we would expect these additional activities to be funded through totex where justified.

Over time, this would have the benefit of driving frontier performance through benchmarking DNOs' performance. It also would enable Ofgem to drive DNOs to be innovative at finding solutions whilst holding them to account concerning forecast savings versus actual delivered. Nevertheless, we recognise the challenges associated with progressing this in time for the start of RIIO-ED2 and we therefore recommend Ofgem explore options and consider undertaking an impact assessment.

We note that Ofgem has signalled its intent to work with DNOs to evolve the CBA methodology in RIIO-ED2, which already includes some measurement of carbon emissions. This is a positive step and we recommend that Ofgem focus on aligning the incentives between DNOs and what they are trying to achieve in RIIO-ED2 e.g. of delivering positive environmental and social outcomes for customers and wider society.

In terms of measuring performance, we recommend that Ofgem consider building on the existing regulatory instructions and guidance, with publication of individual DNOs' performance against any committed targets, as well as rankings with respect to efficiency of delivery. This would enable customers to have transparency over how DNOs are delivering relative to each other and initial targets.

5. How should we incentivise DNO performance when the achievement of outcomes could be dependent on the actions of others?

As stated in our response to Q3 we believe it is possible for Ofgem to focus on developing mechanisms in RIIO-ED2 that exploit factors in the DNOs' control. When setting new outputs and incentives, there should be confidence that the interventions DNOs are taking to deliver desired customer outcomes can be independently validated. For example, we believe there is scope to develop new reporting requirements that ensure a consistent approach is taken to monitoring and validating DNO's actions that have led to carbon emission reductions. Our response to Q4 describes a list of features that could be embedded into RIIO-ED2 to help ensure this, both during the Business Plan phase and during the price control. We would welcome the opportunity to discuss these further with Ofgem.

Whilst at this stage our focus is on activities within the control of the DNO we note the following for consideration. Where Ofgem deems it appropriate to incentivise DNO performance when the achievement of outcomes could be dependent on the actions of others then any such incentive mechanism will need careful calibration. This should ensure that customers are not exposed to unduly rewarding DNOs for actions they have had limited involvement in and in a similar vein DNOs should not be unduly exposed to penalties due to the actions of others for which the DNO is unable to control.

How to set price controls that support strategic investment

6. How do we ensure that network companies are best placed to undertake strategic investment and manage the associated risk? How should the risks of these investments be managed?

The RIIO framework is already designed in a way that enables network companies to invest efficiently to meet current and future customers' requirements. Nonetheless, in order to ensure distribution networks are not a barrier to economic growth and can facilitate the transition to net zero emissions, we believe RIIO-ED2 presents an opportunity to set out a new, fair and transparent framework for strategic investment.

In our response to question 3 we discussed the issue of whether strategic investment to enable EV charge point infrastructure to connect should be funded in price controls, or whether this is better off being carried out directly through other means such as taxation. We also explained why we believe there is already evidence of market failure, which means that the public, and many of our customers, do not have sufficient access to charge point infrastructure. If there is agreement that action is required to address the barriers associated with deploying EV charge points and other low carbon technologies, then the key question is what rules should be in place so that RIIO-ED2 can help address this cost efficiently and in a way that is fair.

As a matter of principle, our preference is to keep all DNO related investment within totex, as avoiding distortions between types of expenditure is a key advantage of the RIIO framework. Our view is that defining separate arrangements for strategic investment could risk undermining the benefit of the totex mechanism and the Business Plan Incentive. To retain the totex model, we believe Ofgem could develop and consult on criteria that it will assess DNOs against to guide decisions on strategic investment. This could include whether the investment is in the public interest e.g. willingness to pay research, CBA and whether the market would deliver the same investment without intervention (i.e. evidence of market failure), as well as the implications of this. We provide a worked example of this below.

A framework for addressing market failures

In Figure 2, we present a method by which DNOs could decide, on a case-by-case basis, to what extent they need to reduce the initial connection costs associated with EV charge point deployment. This would involve defining a threshold around what is deemed in the 'free market' i.e. does not require any additional support. As part of this, an assumed amount of utilisation could be factored in based on locational data and an acceptable charging cost. The result would be a sliding scale showing by how much the capital hurdle would need to be reduced to make installing the charge point equivalent to areas defined as being in the 'free market'. If this methodology was agreed and transparent it would then enable third parties to apply for support if required – the DNO could then assess whether this meets set criteria and if so would make an intervention to ensure the proposed location is ready for the charge point to be connected. By applying to all EV charge segments, the DNO would be in a position to focus support on where it sees maximum benefit i.e. high utilisation, but without any discrimination. This type of approach would also give the DNO an opportunity to encourage applicants to embed flexibility, where it results in the same outcome as a network upgrade but with less cost.

Many installed and forthcoming EV charge points are publically funded and in some cases, this includes covering network related costs. We believe more thought is required around getting an appropriate mix of funding, which distributes the costs and benefits between network users, EV users and taxpayers fairly. For example, by DNOs working closely with government and Ofgem we think there is a significant opportunity to maximise the benefit of smart solutions alongside existing network capacity, whilst investing in network solutions where they provide the highest societal benefit. Our preferred route for enabling this is through progressing reform through forward-looking network charges, as we believe cost reflective price signals closer to real-time could maximise the potential of flexible technologies. However, if this is not progressed in time for RIIO-ED2 Ofgem could explore

alternative options to ensure that EV charge point users pay their fair share. For example, when the market failure is no longer evident arrangements could be in place for EV charge point operators to buy back regulatory assets that provide them their network access.

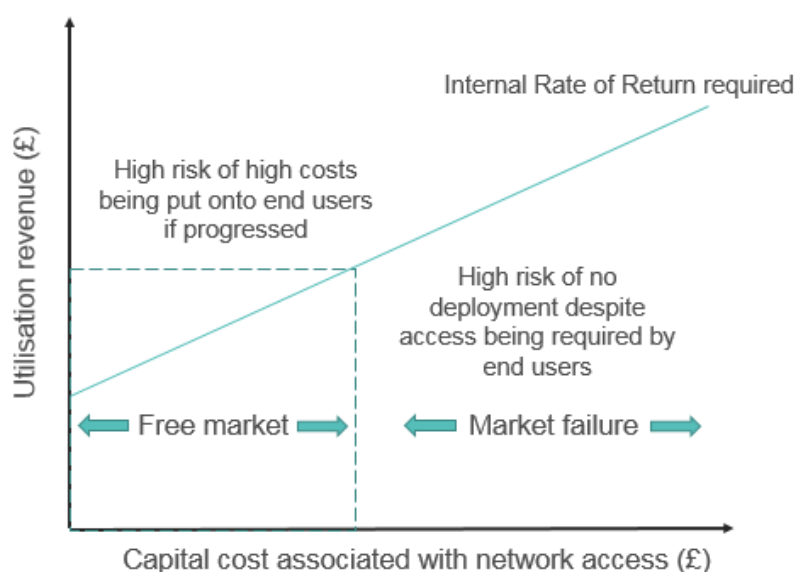


Figure 2: High-level methodology for addressing the capital hurdle for charge point deployment associated with network connection, where it is in customers' interests

However, we caution against RIIO-ED2 assigning ex-post (i.e. after delivery) utilisation risk to the DNOs for EV charge point infrastructure, as this would blur the lines between market-led investment and the DNO's role as a neutral facilitator. Instead, we believe the development of fair and transparent criteria can facilitate fair competition, drive efficient behaviour and address market failures. DNOs must ultimately provide a highly reliable system 24/7 whilst facilitating the use of new technology and services. Therefore, DNOs should not be incentivised or penalised to take risks in the same way that commercial players would e.g. on how utilised a charge point is. However, we do recognise the importance of incentivising forecasting accuracy and option value as part of the DSO transition. In our response to question 42 we discuss ways that uncertainty could be managed in RIIO-ED2 to both encourage DNOs to react to local needs, whilst ensuring they are not given a blank cheque. For example, whilst we do not believe we should be taking on utilisation risk in the same way as the market, we recognise that through monitoring utilisation volume drivers could appropriately scale up and down our future allowances in a fair way.

The importance of co-developing plans in RIIO-ED2 and embedding flexibility

As part of our RIIO-ED2 engagement process, we will be testing our current thinking with stakeholders to help challenge, inform and shape our final Business Plan. For example, local government is increasingly playing a role in defining the need for additional energy infrastructure e.g. EV charge points, renewables, heat pumps. Consequently, we have been ramping up our engagement with Local and Regional Authorities to assist them in meeting their local objectives. As the largest of these organisations, the GLA has developed highly ambitious targets and we are working closely with them to ensure we can meet their needs. We expect that this will provide a blueprint for partnering with other public bodies as they start to go through similar issues. From an Ofgem perspective, the alignment of plans from elected representatives with a mandate from local communities, should have a bearing when it comes to assessing the merits of DNOs' plans.

With regards to the risks associated with the investment planned by network companies, we believe Ofgem can do the following to ensure effective mitigation of the risk of customers funding stranded assets:

- define evaluation criteria so that investment has a clear and targeted purpose and there is not a perception of DNOs being handed a blank cheque;
- assess the confidence associated with the network need and where necessary ensure a financial commitment from connectees to protect wider customers' interests;
- utilise the Business Plan guidance and assessment, to ensure that DNOs provide sufficient evidence e.g. on how their the Customer Engagement Groups have improved the decisions of the DNO through their challenge; and
- develop volume drivers to flex allowances up and down as more information becomes available in RIIO-ED2.

7. What, if any, changes to the framework are required to support strategic investment?

Overall, we believe the current RIIO-ED1 framework is functioning successfully and has helped significantly increase the reliability of electricity networks whilst keeping costs down. However, in the context of transitioning to net zero emissions there is merit in Ofgem evaluating options to reform funding routes and cost recovery mechanisms.

Electricity transmission provides an important case study of where strategic investment has led to significant customer benefits, as well as enabling the UK to become a global leader in wind power. According to Ofgem's own analysis⁸ by September 2015 Connect and Manage had helped reduce 5.9 million tonnes of CO₂ emissions by reducing the costs associated with connecting renewables at the transmission level. We believe there is merit in Ofgem considering how arrangements such as a shallow connection boundary alongside Strategic Wider Works, could be applied at distribution level to enable greater volumes of LCT to connect. In contrast to electricity transmission (where constraint costs have typically led to revenue for large, carbon-based generation) at a distribution level this could provide an important price signal to customer-led flexibility. Currently this potential reform is being discussed as part of Ofgem's Significant Code Review on network access and forward looking charging arrangements, and will have very important implications for RIIO-ED2.

If for example, Ofgem change the distribution arrangements from the current shallowish connection boundary to a shallow connection boundary, this would provide a stronger signal for DNOs to strategically invest and recover costs through network charges. Nevertheless, we recognise there are hurdles that need to be overcome prior to implementing this, such as avoiding the creation of an administrative burden and how to set locational signals within DUoS.

There is currently an unprecedented amount of policy and regulatory reform being discussed and there are increasingly complex interdependencies between different work areas, many of which have overlapping aims. This is particularly the case in electricity distribution, where existing arrangements were not designed to meet the requirements of the emerging decarbonised, decentralised and digitised energy system. We therefore believe there needs to be a clearer view of different material dependencies and how to address these. For example, the Significant Code Review into Network Access and Forward Looking charge arrangements could have a very significant impact on funding arrangements e.g. if the connection boundary is changed to reduce upfront customer costs. Finally, we also recommend the RIIO-ED2 framework be aligned to forthcoming significant changes in legislation such as the Future Homes Standard, which will have an impact on DNOs during the price control, as well as including enough flexibility to respond to any other new policy mechanisms.

⁸https://www.ofgem.gov.uk/sites/default/files/docs/monitoring_the_connect_and_manage_electricity_grid_access_regime_sixth_report_from_ofgem_0.pdf

8. How should we hold the companies to account for the delivery of strategic investment, and the outcomes that they are expected to deliver?

We believe that there are key things that Ofgem may wish to consider, these include:

- the strength of case for strategic investment – as covered in our response to Q6 this could include evaluation criteria, user commitments and a robust framework that identifies the market failure;
- clarifying the outputs that will be measured and the reporting process – for example we see potential value in capturing the MVA of capacity released by DNOs through their actions;
- continuing to use ex-ante allowances where there is strong evidence that investment will be required;
- building on the existing HVP mechanism, which offers a framework for holding DNOs to account for significant projects; with clearly defined outputs and arrangements in place to track delivery;
- the use of uncertainty mechanisms such as volume drivers to flex up and down allowances where there is less certainty - the smart meter volume driver in RIIO-ED1 is an example of where Ofgem has balanced the need to provide ex-ante funding with the uncertainty associated with externalities. However, we would caution against an overreliance of uncertainty mechanisms to deal with strategic investment instead of setting DNOs with sufficient ex-ante allowances in RIIO-ED2, as this could significantly undermine DNOs' ability to facilitate decarbonisation by placing all of the capital risk on DNOs without any assurance of a financial return; and
- strong incentives to innovate to deliver capacity at lowest cost with companies and customers both benefiting from this.

How to set price controls for DSO functions

9. Is there a need to separate out the revenues and outputs for ‘traditional’ DNO functions from DSO functions? How could this be achieved?

We believe there is currently insufficient evidence to justify separating out DNO and DSO functions. Below we have set out our reasoning for this and how RIIO-ED1 is helping us to demonstrate DSO capabilities that will inform a review into whether reforms to regulations are required.

Assessment of the need to separate DNO and DSO functions

Thanks to progressive and strong regulation, the UK is one of the most attractive places in the world to invest in energy, whether this is in generation, networks or supply. We recognise that at transmission level there has been a perceived conflict of interest, which has led to greater separation of the Electricity System Operator (ESO) from the Transmission Operator (TO). Due to the progress we and other DNOs are making on DSO, it is natural that similar questions are being raised about whether this is leading to fair competition and the best outcome for customers. Therefore we understand the importance of this debate.

We see our current transition from DNO to DSO as a necessary evolution to meet the challenges we face today. For example, if we had not rolled out ANM and provided greater visibility of our network constraints, we would not have been able to connect 6.2GW of renewable generation without us, and our customers, incurring extra costs. We are also acutely aware that maintaining network reliability is becoming more complex in the emerging system, and therefore we need to expand our toolkit to use smart and flexible services to help us best manage this.

We agree with Ofgem that it is too early to formally separate DNO and DSO functions through institutional reform. Without understanding the full-range of consequences, DNO and DSO separation would risk removing accountability for security of supply and would make co-optimising network based and market based options more difficult and costly than otherwise. However, as a DSO that facilitates competition and network access, we recognise that we have a responsibility to provide assurances over our procurement processes, and to remove any perception that we are not neutral.

In contrast to electricity transmission, flexibility markets in electricity distribution are nascent and as a result they are not as liquid or deep. We believe that there is a lot of learning to be had before any large-scale change is implemented. Therefore, we do not currently believe there is currently enough evidence to justify separating out the revenues and outputs for ‘traditional’ DNO functions from DSO functions for the RIIO-ED2 price control, however we are open to considering whether RIIO-ED2 could better demarcate DNO and DSO activities. This could start with developing proposals of how reporting in RIIO-ED2 could cover new DSO related cost categories. We also recognise that during RIIO-ED2 there will be value in reviewing how far flexibility markets have progressed and whether different institutional requirements are needed in RIIO-ED3.

In the meantime, we are committed to addressing any perceived conflicts of interests and we are open to suggestions on what actions we could take to address this. For example, we are currently working with stakeholders to provide full transparency of our decision-making and we are opening up our network data to support market participants with their own decision-making. The ENA’s Open Networks Project will also continue to be a platform for DNOs to work with industry to ensure that the DSO transition remains on track to meet expectations. This includes providing consistency in the way market participants access DSO-led markets. The ENA’s recent publication⁹ on ‘six steps for delivering flexibility services’ demonstrates progress towards this, nevertheless we recognise that there is much more work to do.

⁹<http://www.energynetworks.org/assets/files/ENA%20Flexibility%20Commitment%20Our%20Six%20Steps%20for%20Delivering%20Flexibility%20Services.pdf>

How the RIIO framework is supporting new flexibility markets

In RIIO-ED1 the totex mechanism has demonstrably proved a powerful way of encouraging network companies to deliver their outputs at lowest cost. The removal of any capex bias through totex has enabled UK Power Networks to develop one of the first DSO-led flexibility markets in the world and we are not aware of any evidence of a distortion between network and non-network solutions in RIIO-ED1.

We are currently incentivised to procure any non-network solution that helps us meet our outputs as long as it is more cost efficient than the traditional solution which we use as a benchmark. This means that if network reinforcement is the only benchmark, we are incentivised to utilise flexibility that is cheaper on a Net Present Value (NPV) basis. As we, for example, start to procure greater volumes of flexibility instead of reinforcing, our costs may decrease as local markets mature; this would then lead to a lower unit cost that is subsequently factored into future benchmarking processes delivering further benefits for all 29 million customers on the GB electricity network.

Auctions have demonstrably provided value to customers in the electricity sector by encouraging competition. For example, since auctions started via Contracts for Difference the average strike price per MWh for offshore wind has come down by over 70%. Similarly, Capacity Market auctions that are open to a wide range of technologies have seen prices outturn significantly lower, with new DSR and storage units replacing coal power and at the same time reducing the cost of security of supply. We are therefore convinced that our auctions for flexibility resources are the best approach to opening up competition – in Table 1 we compare how our auctions are run compared to those in the Capacity Market.

Table 1: How key parameters of UK Power Networks' flexibility tenders compare to those in the Capacity Market

Parameter	Capacity Market	UK Power Networks' Tender	Justification
Contract Length	1-year for DSR or 15-years for new build generation	Up to 4 years	Less liquidity at local level; dealing with network adequacy not generation
Technology de-ratings	Specific to technologies and subject to change	Technology agnostic	Level playing field
Testing requirements	Successful tests required ahead of delivery year	Proving test required a month ahead of delivery	Consistent practice
Credit Cover	In many cases credit cover is required e.g. bid bonds for Unproven DSR	None	Could be seen as a barrier in a nascent local flexibility market
Payments	Availability based; monthly, during delivery years	Availability and utilisation; monthly, during delivery windows	
Penalties	Failure to deliver during stress event at a £/MWh rate up to cap of revenue	Scaled adjustment for non-delivery	Yet to go into delivery phase, therefore do not want to create any perceived barriers
Exclusivity	Long term STOR contracted units exempt from participating	Non-exclusive service, unless with directly conflicting service (opposite action, same window)	Could be seen as a barrier in a nascent local flexibility market
Auction Type	Sealed bids and pay as clear	Sealed, pay as bid	Costs are highly locational

We recognise the importance of setting contract duration lengths appropriately in our flexibility tenders. If these are too short then market players may not be able to justify participation, however, if they are too long then there is a risk of locking in high prices and distorting competition in future years. By engaging with stakeholders and responding to their feedback in this area we currently offer up to four-year contracts. At our Summer 2019 Flexibility Forum, market participants focussed on participating with assets such as new gas engines said they would like to see longer contract lengths. In contrast, DSR aggregators often working at the domestic scale said that they would prefer a maximum contract length of less than four-years as they prefer price signals that are closer to real-

time. We therefore believe we have struck a balance to meet different stakeholders' needs and we will continue to review this.

A key advantage of the RIIO framework looking over the long-term is that it enables us to manage the uncertainty of future developments outside of our control (e.g. on supply and demand by making use of option value), which encourages a least regrets approach to investment. This is shown in Figure 3, by making decisions on an NPV basis over the lifetime of new assets that typically last 45-years, flexibility can be viewed as an option that has value when compared to reinforcement. We want to work with Ofgem and other stakeholders to ensure that the CBA methodology used by DNOs reflects this option value, particularly in light of greater volumes of low carbon technology connecting to networks.

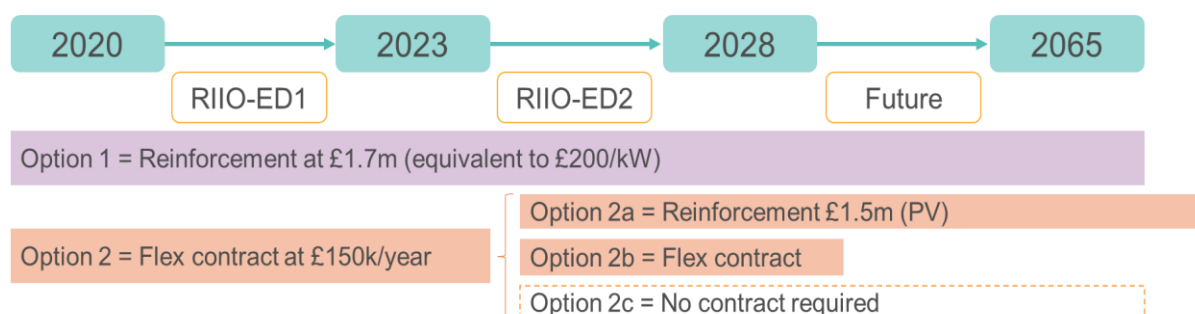


Figure 3: Example based on what we are doing today i.e. we would invite flexibility bids for a 1MW scheme (against a cut-off price of £200/kW) for up to 4-years

10. In the event of the DSO function being delivered by a separate party, how might we determine the revenues for DSO activities? What type of funding model would be appropriate to set DSO revenues? In this event, would changes also be required to DNO revenues and outputs?

If Ofgem were to mandate a separation of the DNO and DSO by giving certain functions to a third party, this may have a significant impact on the delivery of current DNO outputs. Therefore, we would welcome further detail and consultation on what this could look like as well as a clear articulation of the pros and cons of such an approach. Below we have set out our rationale for why we believe it is premature to be contemplating full separation of DSO outputs from the DNO, primarily on the basis that learnings need to be gained through letting DNOs continue to make progress in this area.

Our research and interaction with other internationally based network companies has led us to believe that the UK is world-leading in terms of the progress made on transitioning to a DSO. Ofgem's RIIO framework has been instrumental in encouraging DNOs to go beyond their traditional ways of working and instead move towards grid modernisation and the deployment of innovative network and market based flexibility solutions.

Based on our interpretation of Ofgem's DSO functions, our current view is that aside from the supply of grid services by DER and the commercial aggregation of DER, all of listed functions will need to be regulated activities over the RIIO-ED2 period. We believe there is a separate question of which regulated party should lead on each of these activities, which requires further consideration. Furthermore, if these are deemed to be best led by DNOs there is then the question of whether it would be possible to demarcate these in RIIO-ED2 i.e. through cost activities separate to the DNOs. This again requires a more detailed assessment of the practicalities involved and a better understanding of the pros and cons.

We believe Ofgem's characterisation of DSO functions listed in the consultation document requires some further work. For example, we do not believe that the commercial aggregation of DER will be led by the DNO or a DSO, as we see this as being market-led. Whereas a DSO function being led by the DNO could cover being a technical gatekeeper, which provides an interface to the transmission

network and ESO based markets. As more parties engage in this area we recognise the importance of consistent language, particularly with regards to roles and responsibilities and we are working hard to remove any perception that we have a conflict of interest. Whilst we acknowledge that there is an important debate around who undertakes which activities, we think care is required around labelling these as DSO.

How to ensure that DNOs can best deliver relevant DSO activities

Through the deployment of technology and market-based solutions our DSO transition aims to offer choice and excellent service to our customers, drive competition and enable whole system coordination whilst keeping the lights on. To achieve these objectives in RIIO-ED2, further investment will be required both in technology and systems but also in organisational capabilities including establishment of new processes, skills and ways of working. In its clean growth publication¹⁰ government stated that it expected jobs in the clean energy sector to grow four times quicker than the national average out to 2030. In line with this we believe that as part of the DSO transition we will need significant investment in training our staff and to attract new talent. As an indicator to this there is merit to looking at the makeup of the ESO's workforce to fulfil different activities. We also recognise the efficiencies that can be gained by working jointly with DNOs and the ESO, therefore this is likely to be a key area for collaboration.

As part of our DSO transition, we have already committed to a significant programme of increasing our low voltage network visibility in RIIO-ED1, alongside implementing the recommendations of the Energy Data Task Force (EDTF)¹¹. We are also committed to ensuring that the ENA's forthcoming Digitalisation Strategy drives DNOs to modernise together to meet the ambitions of the EDTF, in both a consistent way, and without duplication of effort. In order to open up markets at a granular scale and manage the complexities associated with real-time system operation at the local level, investment will be needed in new ICT systems. We recognise that this will present a challenge as there is a lack of data to benchmark allowances for these costs, therefore we welcome further discussion around how this is best enabled in RIIO-ED2.

11. Where a DNO is undertaking a DSO function, what type of outputs or outcomes are necessary to measure how efficiently they are performing this function? Over what time period could these be measured?

The feedback we have received from our stakeholders is that we should be continuing our transition to become a DSO. It is now over two years ago since UK Power Networks introduced the FutureSmart programme and it was a year ago that our Flexibility Roadmap was published¹², which committed us to market testing load related requirements. We continue to listen and respond to our stakeholders to ensure that we are on the right path. At our flexibility forum during the summer of 2019 we asked attendees whether we were heading in the right direction and all respondents indicated that this was the case.

As stated in our response to question 10, separation of the DNO and DSO risks undoing the work Ofgem has done in implementing the totex regime, which is widely regarded as one of the most progressive ways of regulating energy networks in the world. Nevertheless, we recognise that real time system operation and market facilitation will become far bigger activities over the RIIO-ED2 period. We therefore believe Ofgem's focus should be on re-defining existing outputs and incentives to encompass outcomes on issues such as decarbonisation and stronger protections for those in vulnerable circumstances. This will then enable us to use the full-range of available options available to achieve these outcomes cost efficiently.

¹⁰https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/700496/clean-growth-strategy-correction-april-2018.pdf

¹¹ <https://es.catapult.org.uk/wp-content/uploads/2019/06/Catapult-Energy-Data-Taskforce-Report-A4-v4AW-Digital.pdf>

¹² <https://innovation.ukpowernetworks.co.uk/wp-content/uploads/2019/07/futuresmart-flexibility-roadmap.pdf>

Many of the DSO functions/activities listed by Ofgem remain at the early stages of development and are not yet business-as-usual. Developing these in a way that meets expectations will require significant work, which should be prioritised so that any necessary changes can be implemented to coincide with the start of RIIO-ED2. In the remainder of RIIO-ED1 we see merit in exploring whether certain outputs in RIIO-ED2 could be separately defined as DSO with separate cost categories. However, in terms of the time-period, our view is that all outputs should be defined over the five-year RIIO-ED2 price control, with performance being measured in a similar approach to RIIO-ED1.

We believe the RIIO-ED2 framework should drive DNOs to adopt best practice on data transparency in a way that accelerates the DSO transition and the customer benefits this brings e.g. by enabling all customers to participate in new flexibility markets; and this could be done through encouraging a bottom-up approach to system planning and operation.




As the DSO transition progresses we recognise the merit in reviewing the pros and cons of separating the DNO and DSO to understand if current arrangements remain fit for purpose. We also believe that the lessons can be learned from the ESO's new regulatory framework and how coordination could be strengthened between the ESO and DSOs.

The progress we are making on DSO

Since being the first DNO in the UK to market test our reinforcement requirements we have now gone on to tender for over 300MW of requirements across our network. Due to the highly locational nature of our tenders we are working with highly innovative businesses that often involve technology at the domestic scale. Whilst this is requiring a learning by doing approach we are confident that significant progress can be made in RIIO-ED2 without major reform to regulatory arrangements. Nevertheless, we recognise that it is pragmatic for both policy makers and DNOs to keep under review whether greater separation is required between DNO and DSO.

We believe going forward the DSO transition provides an opportunity to remedy this as Ofgem can look to benchmark the ESO against DSOs. As a first step, Ofgem could look at current metrics/KPIs such as BMoCS to understand how this could be made common across DSOs and the ESO who are all engaging market players.

Through extensive stakeholder engagement we have developed KPIs relating to our DSO transition, which help us to track the progress we are making – our headline KPIs are summarised in Figure 4.

	What we measure	Why we need it	2019/20*	2020/21*
 Financial benefits	Financial savings across network areas	To track the value delivered through our smart grid actions	£126m	£164m
 Environmental benefits	Avoided CO₂ emissions through employing smart solutions	To monitor our contribution to transitioning to a low carbon future	224 MtCO_{2e}	281 MtCO_{2e}
 Customer satisfaction	Flexibility provider and flexible connections satisfaction	To ensure we are managing the service we provide to emerging customer groups	Baseline	Baseline + 10% improv.

*Cumulative targets, including historic ED1 savings

Figure 4: The headline KPIs UK Power Networks is using as part of its DSO transition

Incentivising DSO behaviour

Whilst a margin or fee approach to running competitions may work in a mature market, we think this approach is unsuited to developing new markets where there is uncertainty about deliverability and costs. A key benefit of the DNO to DSO transition is that it ensures that network reliability will not be compromised at the same time as facilitating the energy transition as there is clear accountability when contracting and deploying non-network solutions. In contrast, it is unclear how non-network

options could be adequately benchmarked to conventional options by moving to a cost plus margin approach. As a result we believe that the RIIO-ED2 framework should retain a suitable totex incentive that continues to keep the focus on delivering outputs at lowest cost, which includes DSO related activity.

In electricity distribution, customers benefit from performance based regulation that uses standardised metrics across fourteen DNOs. Through the benchmarking process, Ofgem has been able to drive network companies to deliver frontier performance at the lowest cost for their customers. In contrast, Ofgem has acknowledged that measuring and incentivising the ESO's performance has been challenging due to the lack of comparators.

How to set price controls that drive innovation and competition

12. In what ways could the existing arrangements drive more innovation and competition?

With unprecedented changes happening on our networks as part of facilitating the transition to net zero emissions, it is crucial that arrangements encourage innovation and competition. Utility regulation in the UK has been world leading in terms of its ability to stimulate innovation in the energy industry. This has led to new technologies and systems being deployed through partnerships that have helped DNOs overcome many challenges associated with the energy transition. The overall incentive package in RIIO-ED2 should build on this to meet Ofgem's objectives. As highlighted in our response to question 2 there are a number of activities DNOs could be incentivised to undertake that lead to customer benefits.

In RIIO-ED1 there are specific innovation mechanisms such as the NIA and NIC that serve to assist projects where the benefits are potentially harder to define, or where a need for additional funding has emerged, which could not be envisaged at the start of the control. We welcome the continuation of these mechanisms, however, we believe that there could be greater consistency in how DNOs report benefits and we see value in streamlining the application process for NIC projects, which is currently unnecessarily burdensome. We also see scope for innovation funding to be more focussed on supporting wider industry projects that meet the outcomes RIIO-ED2 is delivering against.

Fundamentally, in RIIO-ED1 the Totex Incentive Mechanism (TIM) is the principle vehicle for driving companies to search out for cost efficiencies. This totex model enables companies to be empowered to take their own business decisions, allowing them to decide where best to innovate, outsource or indeed develop new markets such as flexibility. In RIIO-1 to date, UK Power Networks' innovation alone has led to £183 million customer savings¹³. However, the success of the TIM is driven by the level of sharing factor and how other price control mechanisms such as re-openers operate.

Ofgem's intention to use a blended sharing factor approach coupled with the use of a Return Adjustment Mechanism (RAM) risks significantly blunting this incentive and will place downward pressure on companies searching for cost efficiencies as the rewards may not outweigh the risks. Whilst we do not advocate windfall winners or losers in a price control settlement, there is real value from incentivising companies to search out new, cost efficient methods to deliver outputs. Furthermore, there needs to remain the ability for companies to have the autonomy to deploy all the options they see fit, as opposed to having set rules/funding methodologies for different investment activities.

For example, in RIIO-ED1 the TIM has demonstrably proved a powerful way of encouraging network companies to deliver their outputs at lowest cost. The removal of any capex bias through totex enabled UK Power Networks to develop one of the first DSO-led flexibility markets in the world and we are not aware of any evidence of a distortion between network and non-network solutions. This framework incentivises us to procure any non-network solution that helps meet our outputs as long as it is more cost efficient than the benchmarked traditional solution. This means that if network reinforcement is the only benchmark, we are incentivised to utilise flexibility that is cheaper on a NPV basis. As we, for example, start to procure greater volumes of flexibility instead of reinforcing, our costs may decrease as local markets mature; this would then lead to a lower unit cost that can be subsequently factored into future benchmarking processes – delivering further benefits for all 29 million GB customers.

The removal of a strong sharing factor will lead companies to play it safe and the RIIO model will run the risk of not driving enough ambition and failing to keep the UK at the forefront of the energy transition. Therefore, whilst we support a continuation of innovation funding through specific measures such as the NIC, we believe the primary tool Ofgem should use is the totex incentive alongside well-defined outputs.

¹³ 2018-19 RIIO-ED1 Regulatory Reporting Pack Submission – E6 Innovative Solutions Tab

The key, and proven, requirement to drive more innovation and competition is a strong efficiency signal through a suitable sharing factor (range 40-60%) and a totex allowance that is linked to outputs alongside appropriate uncertainty mechanisms. This will protect customers and companies from windfall gains and losses, whilst driving ambition and thus lower bills for customers. Nevertheless, we recognise that Ofgem has prioritised the issue of fair returns in RIIO-ED2 and wants to ensure extras controls are in place. In addition to more robust benchmarking that makes use of a bigger dataset to set efficient expenditure in RIIO-ED2, we believe if Ofgem is to introduce a RAM then this should act as the primary lever to limit outperformance. Our view is that the sculpted sharing factor will ultimately give Ofgem the outcome it seeks and should therefore negate the need to dilute the totex incentive from the outset.

13. To what extent should we set (and incentivise performance against) baseline totex allowances for activities where flexible solutions could be provided?

Setting totex allowances based on available unit cost data and the DNOs' forthcoming requirements to deliver defined outputs is a fundamental part of the RIIO framework. Through the Business Plan Incentive and the totex mechanism DNOs have the opportunity to be rewarded for being ambitious and then delivering their plans at lowest cost. If Ofgem is proposing to move away from this we would require detail, which is not in the consultation document, around what alternative model could similarly drive this behaviour.

This question implies that 'flexible' solutions are in some way unique compared to other DNO activities that fall under totex. However, network companies depend on solutions from third parties across the whole business, from ICT to the supply of transformer equipment. Whilst we fully recognise that flexible resources have significant potential to reduce the costs and disruption associated with the transition to net zero emissions, from a DNOs' perspective they must be assessed in terms of cost and performance alongside other options that provide the same outputs. For example, a DNO can benchmark market based flexibility against both network based flexibility and network reinforcement. Ultimately, through the totex mechanism and performance metrics such as IIS and BMoCS, the DNO will choose the option that results in the best performance and the lowest cost. This revealed cost will then inform future cost allowances and should result in customer savings as Ofgem utilises the data it is collecting.

As covered in our response to Q8, we believe the RIIO-ED2 framework should use a combination of ex-ante funding and uncertainty mechanisms, on the basis that DNOs will need to invest to maintain a highly reliable network at the same time as meeting new social and environmental objectives, but recognising the exact scale of this is uncertain. We acknowledge that DNOs should only be rewarded for actions in their control and hence we expect a greater use of uncertainty mechanisms in RIIO-ED2. As detailed in our response to question 42 we believe there is merit in Ofgem exploring how volume drivers could be used to protect both customers and DNOs i.e. allowances that flex up and down. As well as High Value Project reopeners could be enhanced in RIIO-ED2, to reflect the impact of changes that are outside of a DNO's control. Recognising the challenges associated with giving allowances that were as a result of deferred spend in RIIO-ED1 through flexibility tenders, we believe consideration should be given to the aforementioned blended unit cost approach alongside new volume drivers. This would help ensure that DNOs are proportionately rewarded for the actions they can demonstrate and would mean there is no risk of double funding between price controls.

14. Should we instead set allowances based on the costs revealed through the flexibility tendering process? How might this work?

We do not think allowances should be based through this type of ex-post assessment as it is not in line with how totex works, and it would undermine the ability of DNOs to maintain world-class levels of reliability whilst opening up new flexibility markets. As reflected in our response to question 13, non-network based flexibility should not be thought of as being different to other types of expenditure. This

is on the basis that DNOs have committed to market test their requirements and are developing a common CBA methodology that treats all different solutions on a level playing field.

As described in our Flexibility Roadmap published¹⁴ in 2018 we are committed to opening up a number of flexibility products that could potentially help us operate our networks more cost efficiently, whilst providing an important revenue stream to emerging market participants.

In contrast to electricity transmission, flexibility markets in electricity distribution are nascent and as a result they are not as liquid or deep. We believe our stakeholders agree with us on the fact that there is a lot of learning to be had before any large-scale change is implemented. For example, earlier this year we tendered for 95MW, yet secured contracts for around 18MW of this. This means that despite the progress we are making there is significant work to be done to scale this markets up. We have also not yet entered the delivery phase associated with these tenders, so we are also waiting to reflect on these learnings. All of this points to the need for a pragmatic approach that focuses on learning by doing as well as continuing to market test wherever possible.

The biggest driver for UK Power Networks on these flexibility products is the totex incentive, which is the fundamental pillar of RIIO that incentivises cost efficiency. Therefore, we strongly believe that the totex incentive should be retained for our load related requirements in RIIO-ED2. As part of this, if there sufficient data available then consideration should be given to the use of a 'blended' unit cost. This would bring together cost data on market based flexibility alongside cost data from other solutions such as network reinforcement. Importantly this would ensure that there is funding available for further procurement of flexibility, whilst avoiding any potential distortion between different options. Assessment of cost data would be possible across all fourteen licensees, which would enable performance benchmarking. Further to this, through the Business Plan Incentive ambition could be measured through DNOs' target volume of flexibility to be procured versus reinforcement, although this would have to account for regional differences.

¹⁴ <https://innovation.ukpowernetworks.co.uk/wp-content/uploads/2019/07/futuresmart-flexibility-roadmap.pdf>

How to set price controls in a big data environment

15. To what degree should DNOs modernise their handling practices to adhere to data best practice, and therefore (among other things) provide available, transparent, and interoperable data about their networks? What measures will be needed to ensure data remains secure?

Modernising data

UK Power Networks invested £50m of its own funds as part of a Business Transformation Programme to modernise data handling at the start of RIIO-ED1. As a result, we have developed sector-leading systems and processes. Nevertheless, with unprecedented levels of change being experienced in the industry, we recognise that we must work hard to keep evolving in a way that meets customers' needs. For example, by going further on data handling we can support innovation and facilitate competition that improves the performance of our networks for our customers.

To meet the challenges associated with the decarbonisation, decentralisation and digitalisation of the energy sector, UK Power Networks is committed to adopting data best practice. By being proactive on the development of new ICT and demonstrating data transparency, we have already helped stimulate new flexibility markets and have enhanced the way we operate our networks e.g. through our Distributed Energy Resource Management System (DERMS) in collaboration with the ESO. Another example of how data transparency has led to customer benefits is the development of our G81 portal¹⁵ that went live in June 2019 and enables third parties to view capacity across our network. Early feedback from ICPs and IDNOs is that the G81 new tool is helping them when they are assessing potential new projects. This development of a new data repository follows stakeholder engagement (e.g. connection forums) and has been delivered because there was a clear needs case.

To facilitate the energy transition whilst continuing to operate a secure network, we will continue to upgrade our ICT architecture and we are committed to publishing network related data that is meaningful, accessible and secure. More details of this will be set out in our forthcoming Data Strategy that will be published later in 2019.

We are supportive of the recommendations made as part of the Energy Data Task Force led by the Energy Systems Catapult. In order to meet expectations in this area Ofgem could set out how it will provide sufficient funding for DNOs as part of RIIO-ED2. Unlike other activities this is a challenging area to benchmark and measure performance and we believe there is merit in network companies working together to avoid duplicating efforts. We are particularly wary of Ofgem benchmarking the costs of what they deem as the least efficient DNO and then expecting quality standards to meet the best performing DNO.

Data security

A key benefit of the ENA's Open Networks Project is the collaborative approach it has fostered between DNOs, IDNOs and wider industry. This has enabled licensees to test and compare the merit of using different methods whilst understanding what processes are important to standardise. UK Power Networks believes that building on this progress will be crucial to realising the benefits of data as part of the DSO transition. For example, through the ENA it should be possible to share best practice and, if necessary, develop industry codes to help ensure data handling is secure.

As we become increasingly reliant on ICT to run our networks as part of a more interconnected system, we must treat data as an asset akin to our physical infrastructure. This means that whilst we have the aspiration of attaining data openness and transparency this must never lead to compromising security standards. The safety and reliability of our customers' electricity supply is our top priority; therefore, we are adopting the highest standards with regards to data security. For example, we currently benchmark ourselves against ISO 27001, which is an internationally recognised standard for data security.

¹⁵ <https://g81.ukpowernetworks.co.uk/>

With cyber security being an issue experienced by network companies all over the world, we recommend Ofgem examines how other jurisdictions have tackled these issues as we plan ahead for RIIO-ED2. For example, we are aware that recently in the United States a Senate Bill¹⁶ is under consideration that will enable network operators to invest in new cyber security measures that will be paid for by customers. This therefore recognises that future requirements in this area are very different from the past. With the increased interconnection of devices on our network and the greater reliance on communication systems to meet our customers' needs, we believe it will be crucial to enhance our defences against virtual threats in RIIO-ED2.

16. How should we structure RIIO-ED2 to encourage metadata to be made available, and for data to be presumed open? How should we measure DNO performance in this area, and on what basis should funding be set to deliver relevant outcomes?

The availability of data

DNOs will be required to invest in the development and enhancement of their existing data management capabilities to create effective Master Data Management, Meta Data Management, Data Quality Management and Data Governance practices, similar to the transition undertaken within the banking sector over the past decade. In our response to Ofgem's DSO position paper, we set out below the process by which we think this should be achieved.

Given the scale and complexity of this challenge, we believe it will be necessary to advance the application of contemporary digital capabilities such as cloud computing, data streaming, big data management and advanced analytics. In summary, it will involve significant resourcing and business change. To facilitate this Ofgem should consider how data requirements are best built into Business Plan data templates and associated incentive mechanism designs.

Metadata identification could potentially be reverse engineered based on the services, performance measures and reporting that DNOs' are currently required to undertake and an industry metadata catalogue could be defined on that basis to drive consistency and conformity.

The subsequent provision of those data fields will naturally vary across DNOs dependent on the measurement points that they have on their network, the internal processes which generate data and the legacy datasets that have been captured. A baseline should, however, be established ahead of RIIO-ED2, if performance against it is to be measured and a DNO is required to progressively align to that standard over time. The common classification of the data sensitivity and associated security requirements will help to determine what can be treated as open and the degree of its openness without endless debate and differing views between the respective data owners.

In some cases we believe that data access rights will need to be clearly defined to ensure that end-users are traceable and to enable their access to be changed remotely if required. This will require data classification, combined with encryption of data at source and during transit to ensure security. Whilst in most cases this will not be necessary, due to our networks being critical national infrastructure, this will provide an extra level of security if required.

Investment in each organisation's capabilities will be required in RIIO-ED2, both in terms of physical hardware to collect and transmit data, and the systems and processes through which insight is transferred to the user. Significant investment in hardware and software is likely to be required, although this alone will not address the metadata and data openness challenge.

In terms of measuring DNO performance in this area, we believe this could potentially be measured in a number of ways. Examples include:

- Comparative assessment of DNO data strategies and initiatives, executed by Ofgem in a similar manner to the Stakeholder Engagement & Consumer Vulnerability incentive;

¹⁶<http://www.mondaq.com/unitedstates/x/852636/Utilities/Senate+Considers+Bill+to+Protect+Electric+Grid+from+Cyber+Attack>
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- Degree of openness and availability of data (i.e. the extent to which data is shared – what, how and to who);
- Quality and completeness of data (i.e. extent to which the DNO is able to fulfil the full requirements of a standardised metadata catalogue, and/or fulfilment of an agreed plan to move to fulfilling this requirement);
- Speed of data provision (e.g. fulfilment of data provision SLAs for response to ad hoc requests or fulfilment of periodic refresh standards);
- Organisational response and innovation in order to fulfil specific stakeholder requirements with respect to the provision and openness of data; and
- Development of a customer survey that assesses the data service provided in a similar way to BMoCS.

Whilst many stakeholders will simply require raw data to input into their own systems, others may require insight (Information vs. Data). The insight that a DNO can gain and the resultant value achieved, will be impacted by the depth and quality of data that they hold, as well as the capabilities that they develop to leverage insight and intelligence. It may therefore be appropriate to measure DNOs' performance based on the information services that they are able to offer. Given exposure to the same datasets, efficient DNOs will be able to offer enhanced levels of insight relative to their less effective peers.

How funding should be allocated in RIIO-ED2

As covered in our response to question 15 there is merit in assessing how data related activities by utilities in other jurisdictions are being funded. There is a clear need for DNOs in RIIO-ED2 to digitise and provide data to become a more open and transparent business, whilst balancing the need to harden defences against the rising threat of hostile actors and cyber-attacks. As a consequence the RIIO-ED2 framework will need to sufficiently fund DNOs to deliver levels of resilience that meet the changing environment and expectations. In areas such as cyber security, historic expenditure does not provide a good indicator of the scale of investment required going forward. Therefore, other options will need to be explored to drive the ambition and assess DNOs business plans, which could include a role for the NIS Competent Authority, as well as a DNO's CEG.

17. Do you agree with the themes we plan to include in our guidance on data best practice?

We broadly agree with the statements Ofgem has put forward around best practice. We would benefit from having clarification on what "common assets" are defined as. It would also be helpful if Ofgem clarifies who they believe the data controller is i.e. whether this is the licensee, as this will avoid any misinterpretation.

Length of the price control

18. We welcome views on our proposed position of a five-year price control for RIIO-ED2.

We remain strong advocates of a return to five-year price controls. We believe the increased uncertainty that industry is facing at this time warrants a shorter price control. Such an arrangement presents a better opportunity to set ex-ante allowances alongside appropriate uncertainty mechanisms with improved information for all participants and hence reduce the scope for forecasting errors. We recognise that there are some disadvantages of a shorter price control period, which include:

- Potentially reducing the scope to innovate and deliver greater benefits to customers;
- Potentially reducing the strength on incentives, as investments will pay back over a shorter time frame, resulting in smaller performance improvements; and
- Potential additional costs, as running price controls more frequently will increase the administrative costs that Ofgem sought to reduce when it moved to an eight-year control.

However, in a rapidly evolving landscape, affording stakeholders more regular opportunity to express what they want and how much they value it, aligns well with delivering a price control that delivers the best outcome for customers.

19. Are there any elements of RIIO-ED2 price control that we should consider setting over a longer or shorter period? Please give reasons.

We struggle to see how the practicalities would work for elements of a price control set for a longer period, away from the core set in five years. Allowing certain allowances to run over a longer period would go against Ofgem's desire to construct a simpler price control. Whilst solutions could be adopted to make this achievable, there are many perverse outcomes that could materialise and the administrative load on Ofgem would undoubtedly increase.

As such, we do not support variable length controls for elements of the RIIO-ED2 price control. If Ofgem were to include such an option, then clear guidance would need to be in place ahead of business plan submission so that all DNOs are treated equally.

Giving consumers a stronger voice

20. We welcome views on whether these enhanced engagement arrangements are appropriate for RIIO-ED2

We welcome Ofgem's proposals to enhance stakeholder engagement through the establishment of independently chaired Customer Engagement Groups (CEGs). We agree that this new approach will provide greater uniformity across DNOs and enable Ofgem and its Challenge Group to better assess the quality of stakeholder engagement that informs DNOs' business plans. The use of CEGs should also provide increased assurance not only to Ofgem, but also to the DNO, that its business plan reflects the expectations and needs of its customers and local communities. We note from the gas and transmission RIIO-2 process that there has been some confusion regarding the roles and terms of reference for the different bodies, i.e. CEGs and the RIIO-2 Challenge Group. It would therefore be useful for Ofgem, in time, to share with DNOs any learnings from the other sector price control to reflect the learning into RIIO-ED2.

Whilst we believe Open Hearings could be a useful addition, providing benefits such as increased transparency, greater scrutiny on contentious areas and provide a useful forum to share best practice, there are benefits from understanding how these would:

- Avoid the risk that that RIIO-2 Challenge Group and/or Open Hearings could re-cover ground that has already been debated within the CEGs, customer research or other stakeholder discussions;
- It is unclear on the positions of each of these groups in the overall hierarchy (i.e. whether one group's opinion hold more weight than others); and
- Risk that over-representation of invited stakeholders could result in bias of opinions, and again disregard the results from the CEGs and other stakeholder discussions.

In relation to the above, we would welcome more detail and examples of how this approach is going to work in practice. We would also look for any learning from the operation of this process during the gas and transmission companies' price control process to be reflected in RIIO-ED2.

We would also welcome the introduction of a framework that allows us to use additional contact channels for gathering feedback from customers. Recent data from the Institute of Customer Service, an organisation which measure customer satisfaction across GB through its UKCSI metric, shows customers are choosing to use a variety of channels, both in terms of contact they have with organisations before/during/after service delivery, and in providing feedback. In line with this trend, we would expect customers to also be given choice as to how they provide feedback on their satisfaction with services provided. This would mean expanding the feedback channels for gathering customer satisfaction, beyond the current RIIO-ED1 telephony channel.

Meeting the needs of consumers and network users

21. We welcome views on whether the proposed output categories and incentive arrangements are appropriate for RIIO-ED2.

Output Categories

We accept the new output categories and believe that they are sufficiently broad enough to capture all required outcomes albeit there remains a danger that the new groupings are not as clear as existing ones to stakeholders and industry participants.

Licence Obligations, Price Control Deliverables and Output Delivery Incentives

In principle we agree with Ofgem's intentions for the use of licence obligations, price control deliverables and output delivery incentives. A clearly defined licence obligation should set any minimum standard at a level deemed acceptable by customers and that is deliverable by companies. Ex-ante allowances should fund the efficient delivery of these minimum standards. A tougher target could be set for higher levels of performance, with a symmetrical reward and penalty mechanism.

We understand Ofgem's intent to further raise the bar in RIIO-2. Underpinning the RIIO-2 framework should be the overarching principle that companies are rewarded to innovate and targets are set appropriately using the wealth of data that Ofgem now has from licensees. With this in mind we are happy to work with Ofgem on this to address any concerns that licence conditions fail to deliver the right outcomes.

Licence obligations, as defined, currently set an effective 'minimum standard' that must be met by licensees. Failure to do so would result in a licence breach and a possible penalty. However, it is unclear for what elements of the price control new minimum standards will apply, and where this level of 'minimum standard' will be set, let alone how it interacts with other parts of the price control. For example, an interpretation of the current definition could suggest that a reward could be applied to any service beyond that minimum standard and that any service below would result in an incentive penalty and a licence breach simultaneously, as depicted in Figure 5 below.

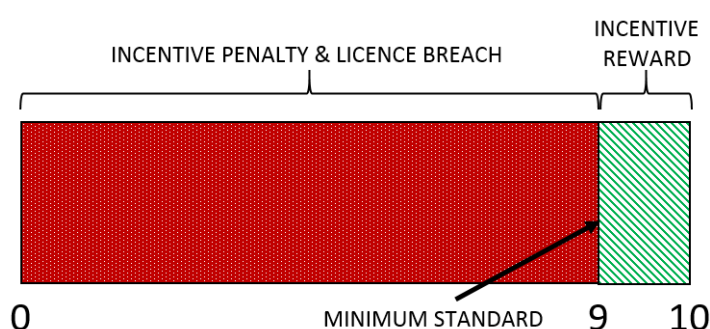


Figure 5 – Interpretation of RIIO-2 interaction of Licence Obligation and Output Delivery Incentive, which we do not believe is appropriate

If we have shown the correct interpretation, this scenario is a significant departure from what licence conditions are today. With RIIO-2 promising to deliver 'tougher' targets, there is a real risk that licensees could find themselves in a licence breach scenario. A licence breach is a serious label to apply to not hitting a target that is not a minimum standard, and would undoubtedly bring with it severe ramifications, both financial and reputational.

We do not believe Figure 5 is representative of Ofgem's position. Instead, we consider Figure 6 to be a more appropriate interpretation of what is intended and as we work with Ofgem and stakeholders in the forthcoming RIIO-ED2 working groups, it will be essential to formalise what is truly intended. That is, where deemed necessary to introduce a minimum standard it should be set at a level deemed

acceptable, and a tougher target set at a higher level of performance with a reward and penalty mechanism symmetrically applied around this target. Any performance difference between the maximum penalty and the defined minimum standard would sit in a dead band area, as depicted below in Figure 6.

This will guard against inappropriate licence breaches and ensure targets can be set at suitably challenging levels.

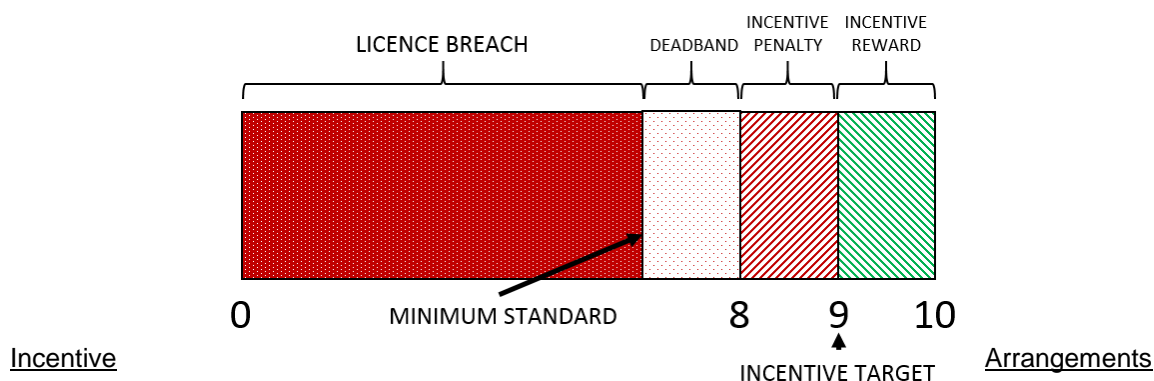


Figure 6 – UK Power Networks' view of how the interaction of Licence Obligation and Output Delivery Incentive should work in RIIO-2

We are supportive of introducing dynamic incentive targets, where appropriate, as this ensures that good performance is appropriately rewarded. However, there are two points to note with regard to dynamic targets:

- The dynamic target resetting methodology should be clearly set out and defined upfront and enshrined in the licence for RIIO-2. This will ensure there is visibility of how the targets may update across the period. It will also allow companies to take appropriate business decisions ahead of time, thereby promoting efficiency and ensuring companies deliver improved performance where required for their customers.
- At this point in time we envisage that the methodology will need to cater for targets to move both up and down based on revealed performance. In a fast-changing energy sector with increasing challenges and pressures such as the continued rise of distributed generation and the electrification of transport and heat, it is not appropriate for targets to only get tighter in a one-way ratchet. This will need to be clearly articulated to stakeholders in advance to ensure there is transparency over the range of potential outcomes. If Ofgem intends dynamic targets to operate as a one way ratchet, this could be clearly articulated so that licensees can factor in the implications of this and reflect it in their business plans and totex forecasts.

Implementing these two points will ensure dynamic targets are both stretching and realistic, reflecting the circumstances network operators are operating in Figure 7 below provides an illustration on how dynamic targets could work in practice.

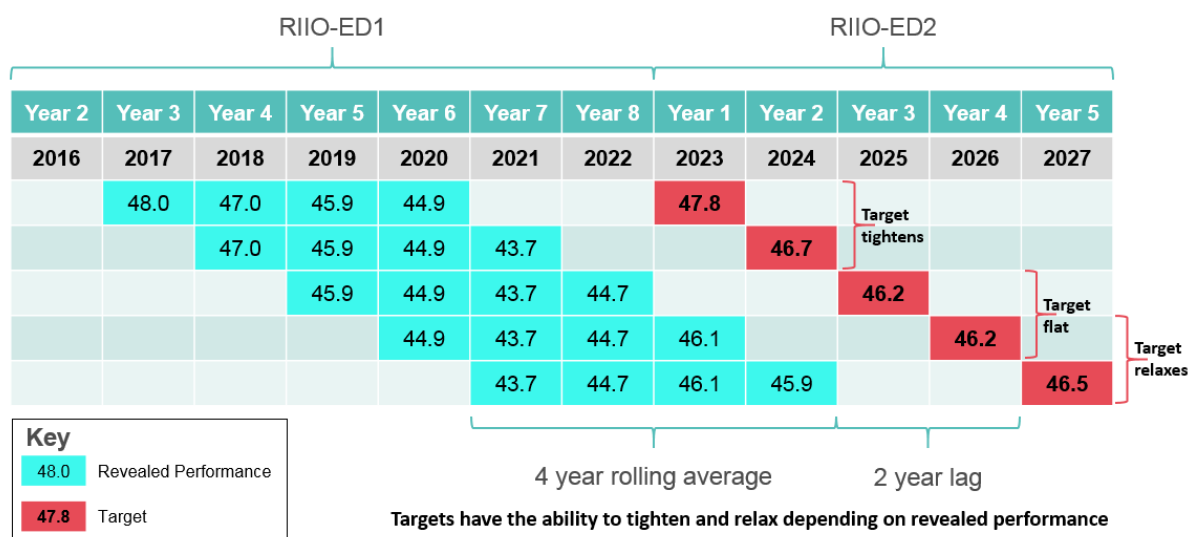


Figure 7 – Example of dynamic targets

We understand that Ofgem is aiming to improve companies' performance whilst mitigating sector-wide outperformance through new relative targets and a competed pot. However, there are drawbacks around this and evidence that these types of incentives do not deliver outcomes in the interests of customers. Introducing a competed pot around incentives would also significantly weaken any need for a new RAM and vice versa. Furthermore, if both these mechanisms were to operate together in RIIO-2 they are likely to cancel each other out in terms of their outcomes. As an alternative solution we believe that tighter targets should be set following engagement with companies' stakeholders.

Furthermore, network companies have a strong track record of collaborating together. For example, the co-development of the benchmarking system now allows company performance to be compared, which has led to customer benefits by driving competition. We have concern that the use of relative incentives will reduce this appetite to collaborate, as companies are likely to work more independently to try and maintain an advantage over others and therefore reduce the benefits to customers.

In addition, how the relative incentive reward mechanism works is also cause for concern, Ofgem have continued to suggest the use of either a 'zero sum' or 'fixed' pot. We believe both have issues that would not encourage behaviours in the interests of customers:

- **Zero Sum Incentive Pot:** This would be a fundamental departure from how Ofgem have traditionally employed incentive regulation. In this scenario, poor performing companies' customers would effectively pay strong performing companies, breaking the direct and fundamental linkage between a network operator and its own customers. If the sector is poorly performing, the "least bad" companies may still earn rewards, which may question the appropriateness of such mechanisms. Conversely, in a strong performing sector, this could penalise a company even though it is delivering a good service to its customers.
- **Fixed Incentive Pot:** This will distort the underlying incentive rate as companies will not have sight of what the incentive is as it is based on peers' performance. Again, a poor performing companies' customers would effectively pay strong performing companies, breaking the direct and fundamental linkage between a network operator and its own customers.

22. We are interested to hear if there are new elements of the services DNOs will need to deliver that should be included in the current output categories. Alternatively, we welcome views on whether these should be captured by a new output category. For these new elements, we are interested to hear how delivery of these services should be valued and measured.

In our responses to questions 1 through 3 we made the case that RIIO-ED2 should have new output categories associated with facilitating the transition to net zero emissions, as well as the need for enhanced resilience. We believe there are opportunities for Ofgem and DNOs to lead by example when it comes to environmental action, particularly as our networks will be central facilitator to the decarbonisation of heat and transport. Further to this, our response to question 11 recommended further investigation on whether RIIO-ED2 could feature separate output categories for DSO activities.

As reflected in our response to question 2 we would caution against Ofgem purely focussing on carbon emissions, as there could be scope for DNOs to help also tackle other environmental issues such as clean air, if stakeholders indicate that this is what we should be doing.

Set out below we have listed two output categories could cover a range of environmental issues within our control. These will be tested with stakeholders and our CEG, ensuring they are built using appropriate qualitative and quantitative research.

- **Environmental Performance Incentive (EPI)** – A new incentive based on quantitative targets and achievement on a company's own performance on areas such as Business Carbon Footprint, Nitrous Oxide emissions, fluid filled cables and SF₆.
- **Environmental Qualitative Assessment Measure (EQAM)** – A new incentive to capture those environmental improvements that are harder to measure. It would be run in a similar manner to the current Stakeholder Engagement and Consumer Vulnerability incentive, where network operators produce a report and are assessed on the quality of their actions tackling environmental issues such as pollution i.e. air quality, land and noise, along with efforts to improve biodiversity.

There is also be merit in exploring the below incentives on the basis that sufficient and reliable data will be available prior to RIIO-ED2:

- **Losses Incentive** – Incentivising the reduction of losses in the distribution system, which typically represents c.7% of total electricity consumption through increased understanding of the impact interventions are having and factoring these as part of cost benefit analysis.
- **Network Utilisation Incentive** – Incentivising the utilisation of existing network capacity by enabling low carbon technology to connect without necessitating the need for reinforcement. This would involve capturing load index and generation index data to provide price signals for market players to co-optimize available capacity, and would have greatest value in areas where high volumes of LCT are forecast alongside constraints.
- **DG Curtailment Index** – As we experience more export constraints due to the increased connection of Distributed Generation (DG) it is important to ensure new generators are not curtailed excessively beyond limits agreed when they connected. Incentivising this behaviour ensures DNOs can connect new DG, but continue to provide the conditions for them to access markets appropriately.

Wherever feasible, incentives should be developed to benefit all customers and provide simple comparators of performance across different companies. However, where local needs indicate a requirement for a differentiated service offering, we agree that companies should have the freedom to develop bespoke outputs and incentives. However, there are two important aspects that need to be considered in the creation and implementation of bespoke outputs:

1. Should a network company and its CEG agree a bespoke output, Ofgem's RIIO-2 Challenge Group and Open Hearings need to be mindful of not undoing or changing the bespoke output so much so that it no longer reflects those views that the original output and stakeholder's

willingness to pay was based upon. We are concerned that this could serve to undermine the stakeholder engagement process and risk damaging the reputation between a network company and its stakeholders. Therefore, there needs to be clear rules and guidance upfront as to the grounds on which the RIIO-2 Challenge Group and/or Open Hearings could challenge or amend bespoke output proposals.

2. Our observation of Ofwat's PR19 assessment of business plans is that, in numerous cases, enhancement projects or bespoke outputs co-developed by stakeholders and their water company were ultimately rejected as part of Ofwat's assessment phase. Whilst there may be valid reasons for this, from a stakeholder perspective there is a risk that this undermines the engagement process. To avoid this happening in RIIO-2, we request that Ofgem clearly defines upfront and communicates to network companies and their stakeholders, the criteria and weightings it will use as part of its assessment process of whether to allow or disallow bespoke outputs.

23. We welcome thoughts on how to ensure that we continue to protect the interests of vulnerable consumers, particularly in light of the energy system transition.

There is little doubt that a smarter and more connected electricity distribution network presents significant opportunities for customers. The actions DNOs take can lead to tangible improvements in many people's lives – whether this is assisting neighbours to match their solar generation and EV use, or driving the deployment of batteries in social housing, which provides extra resilience for both the resident and the wider distribution network.

Nevertheless, whilst facilitating access to new services and revenue streams through our flexibility markets has the ability to lower the electricity costs of early adopters, there is a real risk that this opportunity is not uniformly accessible across our customer base. There is the potential that those in vulnerable or fuel poor circumstances and, by association, those most likely to benefit from reduced bills, are unable to partake in these new markets.

Our view is that RIIO-ED2 should be seen as a great opportunity to ensure no customer is left behind, particularly in the context of the transformation the energy sector is undergoing. For example, DNOs should be expected to deliver an enhanced service to customers in vulnerable circumstances when their power is cut off, and much stronger partnerships should be fostered between utilities to provide tailored support for these customers.

One of the best ways we can help support customers in vulnerable circumstances is by maintaining a highly reliable network while keeping the network cost of their electricity bill as low as possible. A key contributor to us being able to achieve this is through our ability to innovate. Whilst innovation within UK Power Networks has increasingly moved to a business as usual activity, it is underpinned by the necessity for a strong incentive to do so. The proposed move to a blended sharing factor with the likelihood of a reduced incentive rate could significantly reduce companies' appetites to innovate and search out new cost efficient solutions. For companies to strive to be at the forefront of innovation, it is imperative to have a suitable totex incentive that means both customers and DNOs equitably share the risks and rewards of performance against expectations.

Our view is that RIIO-ED2 should be seen as an important opportunity to ensure no customer is left behind, particularly in the context of the transformation the energy sector is undergoing. For example, DNOs should be expected to deliver an enhanced service to customers in vulnerable circumstances when their power is cut off, and much stronger partnerships should be fostered between utilities to provide tailored support for these customers. It may be that bespoke incentives are appropriate, thereby capturing the differing needs of vulnerability across a licensee's region. For example, if through a DNO can see that network constraints are going to be caused by increased heat pump use in a particular area, it could provide a price signal and therefore revenue opportunity for energy efficiency measures to be deployed at the same time (proportionate to the avoided reinforcement cost). If targeted at fuel poor households this would result in supporting cost efficient decarbonisation at the same time as helping to tackle fuel poverty. Furthermore, an incentive similar to the Broad

Measure of Customer Satisfaction (BMOCS) set purely on Priority Service Register customers could also be considered.

In addition to the above we feel there is merit in exploring the repurposing of the Network Innovation Allowance (NIA) to focus specifically on consumer vulnerability. This way network operators could apply for dedicated funds to address vulnerability through clearly articulating the benefits associated with proposed schemes. Funding could also be made available to tackle cross-sector issues in a whole-system way such that customers can receive joined up services as opposed to duplicated initiatives.

Maintaining a safe and resilient network

24. We welcome views on how DNOs should continue to ensure their networks are resilient, particularly in the context of the new or changing way assets are used.

The trend towards decarbonisation, decentralisation and digitalisation is resulting in significant increases of distributed generation, EVs and other new technologies connecting to our networks, all of which is requiring us to get better visibility and control of assets on our system. For example, we can no longer operate under a fit and forget approach in a system with high penetration of DER. To maintain a safe and resilient network we need to proactively work with market players to adapt their equipment so that it can respond to changes in the wider system. The work we have done on vector shift is an example of this. We are also aware of regulatory changes relating to smart meter programme and the Automated and Electric Vehicles Act, which means that loads on our network will be less predictable and therefore more difficult to manage. Related to this is the challenge of defending against virtual threats as more devices become interconnected and remotely accessible. All of which means that we will need to put forward a Business Plan that recognises these new challenges and explains why investment is justified to protect customers' interests.

The electricity distribution sector has used a relative measure of risk or 'delta' target throughout both DPCR5 and RIIO-ED1 and this has worked well. A delta based target ensures that irrespective of changes up or down in the wider system risk, the licensee is always required to deliver the output it was funded to deliver at the start of the price control. A fixed point target risks windfall gains or losses to licensees and we question the benefits it would bring to customers compared with the delta-based target.

We recognise Ofgem's desire to drive greater efficiency across the reporting of asset risk as noted from Ofgem's Engineering Hub's recent site visits and data requests. We are also aware of Ofgem's desire to enhance the current Network Output Measures (NOMs) methodology of assessing network risk to reflect the life-time benefit of interventions through the development of a new Network Asset Risk Metric (NARM).

Whilst we remain committed to assisting Ofgem in achieving its desired aims, the amount of time and resource it is likely to take to make changes to this policy area and for the development of any long-term risk measure, should not be underestimated.

We stand ready to assist in making any improvements to network risk measures but we would welcome Ofgem clearly stating its 'must haves' and 'desirables' for RIIO-ED2 with a clear timetable to set out the work programme that aims to deliver in good time before initial business plan submission.

Furthermore, we note Ofgem's intention to stipulate independent asset inspection audits through RIIO-ED1 to inform the development of a new asset data incentive in RIIO-ED2. Whilst we are supportive of measures to confirm the accuracy of inspection processes and the data we hold – the size and scope of works needs to be proportional to the associated benefits. Therefore we would welcome Ofgem first undertaking, and publishing, a consumer impact assessment of how material any differences they have found between their assessment and company's assessments to allow the development of a robust and appropriate auditing methodology. This requirement can then be built in to the Regulatory Instructions and Guidance along with the licence in a similar vein to how Ofgem in the past built in a requirement to audit company's Interruptions Incentive Scheme reporting.

Finally, having clarity around the scope and frequency of audits in this areas is required so that companies can build into their RIIO-ED2 business plans.

25. We are interested to hear stakeholder views on how DNOs should ensure their networks are resilient to physical and/or virtual threats, as well as being able to withstand the effects of adverse weather and the impacts of climate change.

As Dieter Helm recently stated "All our main infrastructures now depend upon a reliable supply of electricity. They all depend upon the communications networks, and they need electricity." We agree

this statement, and we believe this highlights how the conversation around resilience should change to capture the full-range of interdependencies our networks have with people's lives.

Many essential services, such as water and network rail, are already reliant on a secure electricity supply. As we transition to a decarbonised future through the growth of electric vehicles and electrification of heat, the public's reliance and value of electricity is only going to increase. This puts an even greater focus on the importance of providing a reliable and resilient distribution network. Similarly, in areas of significant UK economic activity such as London and Cambridge, these public expectations could be felt even more acutely.

Whilst clearly being resilient to physical and virtual threats is fundamental to providing a safe, secure and reliable network, it is important to recognise that resilience is not just a function of direct network investment but also of organisational resilience and preparedness to respond to adverse events, for example:

- Ensuring network operators have access to adequately prepared and trained resources (staff, contractors, material and tools/plant including strategic spares) to adequately respond to adverse or impactful events; and
- Continuing to develop, test and benchmark network operators' incident management and emergency planning procedures and plans.

Therefore companies' business plan submissions and respective allowances must be cognisant of resilience measures beyond just the traditional physical and virtual measures.

Additionally, we have set out below further points on those specific areas highlighted in the question.

Physical Threats

To ensure that networks are protected from physical threats, either through hardening of Critical National Infrastructure (CNI), installation of new flood mitigation or general civil improvement, these types of works should be funded through appropriate ex-ante allowances where requirements are known and clear at the time of setting the control. These allowances coupled with a strong sharing factor will incentivise companies to search out new and innovative approaches to lower costs and drive long-term efficiencies across licences.

It is worth noting that for UK Power Networks, the current Physical Security Upgrade Programme (PSUP) programme will be finished before RIIO-ED2 starts, however a zero limit reopener, as in RIIO-ED1, should be maintained should government policy or requirements change.

Virtual Threats

As we move to a more decentralised and digital energy system, most industry observers expect the number of connected smart devices to rise exponentially. Whilst providing huge opportunities for new services for customers, they also represent new attack surfaces that could be used to disrupt electricity supplies. As a result, companies resilience investment is likely to increase significantly to meet the changing environment and expectations – for example in areas such as cyber security historic expenditure does not provide a good indicator of the scale of investment required going forward. Thus, companies should continue to be appropriately funded to combat fast evolving threats through ex-ante allowances, ensuring security is delivered whilst costs are kept down for customers.

As with physical threats, a suitable re-opener mechanism should be designed to allow the price control to flex should there be a change in threat level and or policy requirement. We also believe it is worth exploring whether all DNOs should benchmark their capabilities to a certain standard such as that defined by the Cabinet Office.

26. We would also like to hear how stakeholders believe climate change mitigation and adaptation may affect network maintenance and development in the short, medium, and long term.

According to research London faces a 20% increase in the risk of draught and a 17% increase in the risk of flooding by 2050¹⁷. This serves to highlight some of the challenges we and others face in terms of climate change adaption.

As a result of climate change, tree growth is likely to increase, resulting in higher tree cutting requirements specifically to ensure compliance with the engineering standard ETR132. Furthermore, with more inclement weather expected, tree issues at the low voltage level will require even greater focus, and strategic investment such as greater usage of aerial bundle cables to help protect against faults in stormy weather may be appropriate.

Furthermore, climate change could see increased lightening storms along with more intense rainfall that naturally puts greater strain on network performance. Increases in these areas may necessitate greater focus to address higher volumes in faults and additionally any subsequent changes to Environment Agency flooding maps would have knock on implications to flood protection measures at impacted sites in accordance with ETR138.

Looking further ahead, there may be the need to consider that these climate variations may reduce asset life, increase inspection and maintenance requirements of new or existing assets including civil assets or indeed require the higher specification of new assets to deal with the more demanding environment they have to operate within.

Throughout business plan development, the impacts of climate change on our network will be communicated with stakeholders and members of our CEG ensuring they have the opportunity to shape mitigation measures and provide the required support/buy-in where additional expenditure may be required.

27. We would like to hear views on how we ensure DNOs remain resilient to the challenges presented by an ageing and changing workforce.

We support the development of a workforce that has the skills to deliver the energy transition, reflecting the communities they serve. Many utilities are facing significant challenges, both in replacing and recruiting a workforce fit for the future. This is particularly apparent in electricity as the way we manage and operate our networks is evolving. Companies should therefore be supported through their allowances to ensure they have a credible path in place to ensure they have a workforce with the right skills and that they reflect the communities they serve.

The amount of time and resource which the DNO invests in training its workforce is a key indicator of its ability to improve the efficiency of the distribution network and ensure that its workforce have the capability to apply their skills and knowledge to work with new technologies. In the past twelve months, UK Power Networks delivered 41,000 days of technical, craft and safety training to ensure our workforce are able to deliver the best service to our customers.

In addition to training existing staff, the amount of resource which the DNO invests in recruiting and training new staff to work on maintaining and improving the resilience of the network is a leading indicator of future performance. In the period between September 2017 and September 2019 UK Power Networks recruited 96 apprentices and trainees helping to ensure there is new talent coming into the business whilst providing job opportunities for younger generations.

¹⁷ <https://www.londonfirst.co.uk/sites/default/files/documents/2019-05/The%20future%20of%20regulation%20study-%20call%20for%20evidence.pdf>

Delivering an environmentally sustainable network

28. We welcome views on how DNOs should work to minimise the impact of what they do on the environment and facilitate the transition to a low carbon energy system. We are particularly interested in the implications of the government's updated target of net-zero emissions by 2050.

UK Power Networks recognises it has to lead by example when it comes to environmental action, particularly as we increasingly become a key facilitator to the decarbonisation of heat and transport, which will be critical for the UK to meet its decarbonisation targets.

The Committee on Climate Change has warned that the UK is not on track to meet its legally binding targets for 2023 to 2032 (4th Carbon Budget), let alone the 2050 target of net zero. In summer 2019 The Science and Technology Committee published a report¹⁸ that highlighted ten key areas of shortfall, whereby policy action was required to get the UK back on track. It is noteworthy that of the ten priority areas identified, DNOs are likely to play a significant role in eight.

As recognised by Ofgem's Chairman Martin Cave in October 2019, the Business Plans submitted for RIIO-ED2 should be fully compliant with the UK government's target of achieving net zero emissions by 2050¹⁹. Therefore, we agree with the recommendation that Ofgem's principle objective should be amended to explicitly include meeting emissions reduction targets set out in the Climate Change Act 2008.

Understanding how DNO-led action can lead to environmental benefits

As a business, we have delivered over a 20% reduction in GHG emissions since the start of RIIO-ED1 and in 2018 we launched our first Green Action Plan to ensure that we are being transparent and ambitious around the actions we are taking. For RIIO-ED2 we want to go much further. For example, we think there is merit in bringing together all of our activities in this arena and further challenging ourselves on ambition as well as ensuring complete transparency on what we are achieving. This is covered in more detail in our response to question 22.

In addition to directly reducing the environmental footprint of the business, DNOs can enable wider environmental benefits, which have the potential to be many orders of magnitude larger than the former. To date Ofgem has understandably focussed on measuring the performance of a DNO's direct emissions e.g. through the BCF. In RIIO-ED2 we think this needs to become a financial incentive. To do this greater standardisation of measurement and reporting will be required, but in our view this is achievable. For example, Ofgem could look at tools such as the one developed by the Carbon Trust as a starting point. Adopting a trusted third party tool could carry the benefit of bringing independent verification and therefore greater measurement consistency.

We also believe a greater emphasis is required on the actions DNOs can take to impact the environment indirectly i.e. through an enhanced CBA. This will ensure that our decision making encompasses the whole system impact and includes social and environmental factors. Whilst we recognise the challenge of benchmarking and acquiring consistent data, we believe Ofgem can work towards developing a new financial incentive that drives DNOs to realising positive environmental outcomes. Such an incentive should reward decisions that go beyond business as usual and deliver measurable benefits e.g. procuring flexibility with a lower environmental impact than a traditional network asset. This could be embedded as part of the RIIO-ED2 CBA that considers real options analysis.

The options we take when planning and running our networks could have a significant impact on UK carbon emissions. The co-optimisation of network-based and market-based flexibility, alongside timely reinforcement, will accelerate the take up of low carbon technology and will avoid

¹⁸ <https://www.parliament.uk/business/committees/committees-a-z/commons-select/science-and-technology-committee/news-parliament-2017/clean-growth-report-published-17-19/>

¹⁹ <https://www.ofgem.gov.uk/publications-and-updates/martin-caves-speech-state-market-event-2019>

overinvestment in generation and networks over the long-term. By making investment decisions more reflective of wider impacts we can help to stimulate low carbon flexibility. Enabling this value to be passed on will require DNOs to be sufficiently funded; in our response to Q9 we highlight the role that option value could play in RIIO-ED2 as part of this. We believe there is merit in exploring how option value, alongside load related allowances, could encourage bottom-up planning in RIIO-ED2 that recognises the value local and customer-centric flexibility provides.

As Figure 8 demonstrates the flexibility services we are procuring will often have the impact of lowering system demand at peak times, which typically has the highest marginal carbon intensity²⁰. There are also the avoided carbon emissions associated with street works and upgrading the network, which could provide a sharper price signal for flexibility. When exploring this Ofgem could look at the Interruptions Incentive Scheme (IIS) and the Broad Measure of Customer Service (BMoCS), which included different weighting factors to account for different situations.

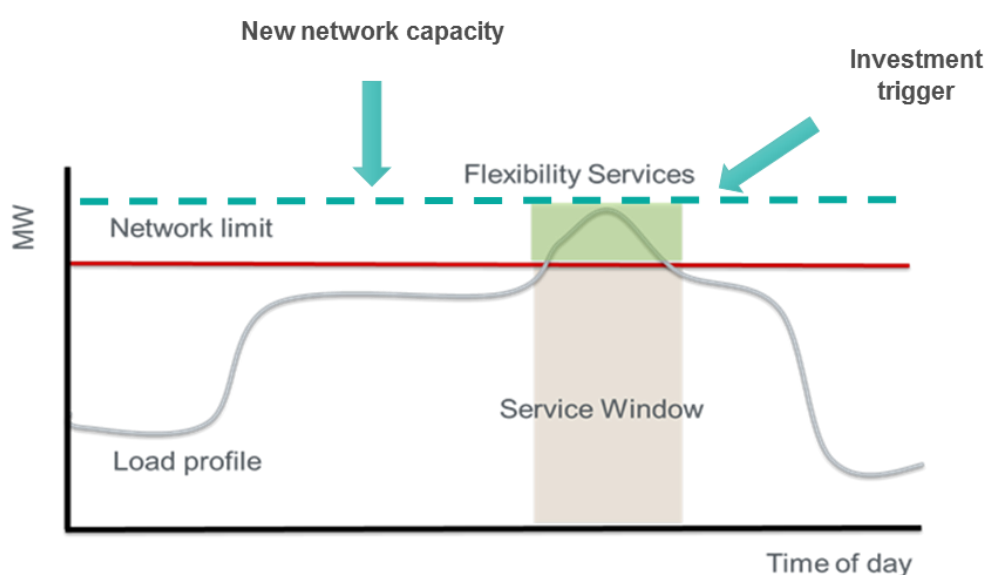


Figure 8: The release of capacity through flexibility services could offer significant carbon reduction when compared to traditional network upgrades

If a DNO has an incentive linked to CO₂ emissions as part of running its networks it would be able to pass this price signal on to the market when procuring services. In the case of active network management this would translate into reducing the curtailment of renewable generation, which is a requirement of the European Commission's new Electricity Directive²¹, which is due to be transposed into UK regulations. It could also provide a stronger signal for measures such as energy efficiency, which reduce losses and therefore the need for carbon intensive generation to dispatch²².

²⁰ The average carbon intensity of electricity supply has significantly reduced over the last several years, however, the UK system still relies on carbon intensive generation to meet peaks in demand

²¹ https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2019.158.01.0125.01.ENG&toc=OJ:L:2019:158:TOC

²² current regulations such as Standard Licence Condition 4 state that DNOs should not distort competitive markets by discriminating against different classes of generator.

Partnerships with the Greater London Authority (GLA) to unlock flexibility

UK Power Networks is currently working with the GLA and other partners as part of the Flex London and Home Response projects.

The Flex London project aims to help commercial users in London to use their electricity more flexibly, for example at off peak times, as well as using energy more efficiently. To help meet the ambition of unlocking at least 1GW of demand side flexibility in London by 2050, UK Power Networks is working with the GLA and other stakeholders to stimulate a market for using flexibility by matching large energy users with flexibility providers.

The Home Response project is exploring the role that demand side flexibility from electric-based heating can play at the domestic scale. In particular, it is focussed on assessing the benefits of deploying new smart electric heating in social housing, which is an example of how the energy transition can ensure no customer is left behind.

By unlocking flexibility at lowest cost, the ultimate aim is to reduce bills for customers while helping to deliver a pathway to net zero emissions. These projects are also helping to inform with UK Power Networks' DSO transition and their findings will help define how DNOs can best stimulate flexibility markets across the wider electricity system.

We have been a strong supporter of increased stakeholder engagement as part of both RIIO and how we operate our business. For example, our Critical Friends Panel had a key role in challenging us to develop a Green Action Plan and our new CEG will also help us go further. To ensure we are working towards the same objectives it is vital that Ofgem clarifies as soon as possible what it expects DNOs' responsibilities to include in RIIO-ED2. Our stakeholders are already driving us towards taking on a leading role on environmental issues but this is yet to be fully recognised by Ofgem's regulatory framework. If our preferred option of developing in tandem both a new quantitative (EPI) and new qualitative financial incentive (EQAM) is not feasible for RIIO-ED2, at the very least Ofgem should look to develop the qualitative metric based on environmental issues similar to how the current Stakeholder Engagement and Consumer Vulnerability incentive operates.

As well as facilitating carbon emission reductions, there are situations in which our stakeholders are telling us we can help on tackling clean air and biodiversity. For example, a recent study²³ found that eight of the ten worst roads across the UK for air quality were found in London and all of these roads in London were at least twice the level of NOx level required by the Air Quality Objective, which is aimed at protecting health. This demonstrates the value in understanding local and regional issues to assess where the greatest environmental benefits are to be gained through DNO-led action.

Set out below we have given more specific views around the possible implications on UK Power Networks as a result of the CCC's Net Zero report:

Facilitating Electric Transport

- The Net Zero target will necessitate a step change from our current forecast of the number of EVs connecting to our networks by 2030.
- To support a national rollout of rapid and ultra-fast chargers near major roads by 2030 we are actively looking at how we can support this as part of a least regrets approach; our tool for TfL²⁴ that shows how much headroom there is across strategic sites is an example of this.

²³ <https://friendsoftheearth.uk/clean-air/nearly-two-thousand-locations-across-england-wales-and-northern-ireland-breaching-air>

²⁴ <https://innovation.ukpowernetworks.co.uk/2019/06/10/ev-network-impact/>

- There is an expectation by the CCC that HGVs will be electrified in RIIO-ED2 timescales, with 90,000 depot-based chargers by 2050 across the UK. As a result we are now modelling the implications of this uptake on our networks.
- In addition to analysing the impact on our wider network, we are also investigating how we can transition our own fleet to EVs cost efficiently, particularly as many of our vehicles operate within a ULEZ.

Facilitating Electric Heat

- We expect a greater deployment of new electric storage heating²⁵ and heat pumps to meet the CCC's recommendation, particularly if new homes are not connected to the gas grid from 2025. This will require us to consider the After Diversity Maximum Demand (ADMD) of these new connections so that we can cost efficiently release network capacity.
- We are studying the integration of electric heat and transport to ensure least regrets and to be future ready we will review design standards and build any necessary changes in to our RIIO-ED2 plan. Embedding flexibility at the time of connection of new electric heat appliances will be even more critical to reducing network related costs than electric transport as the peak load and duration of the former is significantly greater.

Connecting Distributed Generation

- The CCC is targeting 95% of electricity generation to be low carbon and a four-fold increase in renewable energy capacity by 2050. As a result we are investigating the extent that flexibility and energy efficiency helps to avoid additional generation capacity i.e. reducing network demand peaks.
- We believe to enable continued uptake of low carbon technology, cost efficient network access and revenue for flexibility will be key given the recent removal of government support (e.g. FiTs).

Impact on Electricity costs

- The CCC estimate the average domestic energy bill will increase by between £85 to £120 by 2030 to keep the UK on track to meet the net zero target by 2050. It is recognised by organisations such as the NIC that a large proportion of this cost increase will be borne from electricity distribution, where there is an expectation that additional assets and systems will be needed to manage the changes.
- As shown in Figure 9, we believe that smarter and more flexible use of electricity will help significantly reduce the costs associated with the energy transition. However, as recognised by research from Imperial College²⁶ as well as others, if we collectively fail to make efficient investment decisions the additional costs will be tens of billions of pounds. Ultimately, UK Power Networks is in a position to help users to sell their flexibility to avoid, as much as possible, price increases e.g. from connecting new LCTs, particularly for those in fuel poverty who are less able to pay the difference.

²⁵ Imperial College published research in early 2019 that demonstrated the value that modern electric storage heating can provide to the electricity system in terms of being flexible and integrating low carbon generation.

²⁶https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/568982/An_analysis_of_electricity_flexibility_for_Great_Britain.pdf

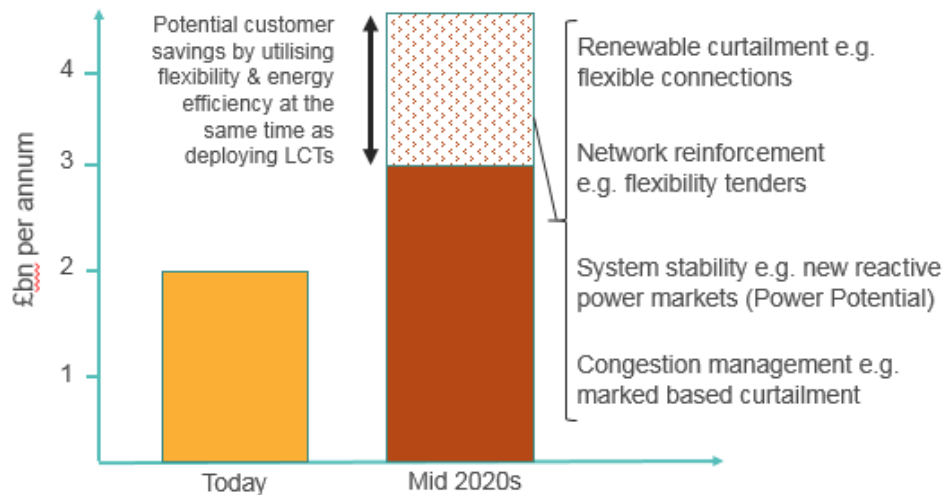


Figure 9: UKPN forecast of the customer value associated with defining the right incentive arrangements for DNOs who are uniquely placed to significantly reduce the costs associated with the energy transition

29. We also welcome views on what this may mean for the type of activities networks undertake, how these may be funded, as well as the outputs and/or incentives they should be exposed to.

A DNO's approach to tackling environmental issues should be divided into two areas:

1. A DNO's own environmental footprint
2. The planning and operational decisions DNOs are making that will indirectly impact the environment

On the first area some progress has been made via Ofgem's Stakeholder Engagement and Consumer Vulnerability, Business Carbon Footprint and SF6 obligations. However, this could have greater focus in RIIO-ED2 if DNOs are to lead the way. We believe this means transitioning away from reputational-type mechanisms to strong financial incentives as well as allowing DNOs to justify allowances on the basis of environmental impact, where this is in customers' interests.

We believe the second area is best achieved by Ofgem defining an enhanced CBA that recognises environmental factors. For example, by including a shadow price of CO₂ in the CBA methodology used for RIIO-ED2 more efficient equipment (e.g. that reduces losses), which is otherwise marginally more expensive will become NPV positive once the wider environmental impacts are included. If designed appropriately these wider impacts could be factored in both at the business-planning phase and within the price control.

30. Finally, we are keen to understand how DNOs' performance should be measured, and how we should assess the value that consumers place on the provision of these services and activities.

We believe that Ofgem could primarily seek to define measurable and meaningful environmental outputs, which can then be benchmarked to drive frontier performance in the sector. Where outputs are too difficult to quantify for benchmarking purposes we recognise that there could be value in using other approaches such as assessment panels.

Recognising the different regional requirements we have supported Ofgem's development of bespoke incentives as we believe it gives DNOs the opportunity to work closely with their stakeholders to address more local needs. Nevertheless at this stage in the process, we believe the main goal for

Ofgem should be to develop common outputs and objectives across all DNOs to deliver benefits for all customers throughout the country. Therefore, bespoke incentives should only be used where there is strong evidence that a licensee has identified a unique challenge across their area and where possible willingness to pay research should form a key part of the decision process.

Set out below we have included an example of how DNOs could be better incentivised and measured with regards to their business carbon footprint in RIIO-ED2.

Introducing carbon pricing

DNOs could calculate their annual internal carbon footprint using a tool with third party verification for consistency. This could be initially simple, covering the areas currently reported on within the E3 annual regulatory return with increased complexity over time depending on the sophistication of the tool.

Example

A new tool could cover areas such as downstream carbon embedded in DNOs' purchasing decisions or upstream carbon from waste disposal and an agreed measure, such as the Government's Carbon Price Floor could be used to set a price on CO₂.

UK Power Networks' carbon footprint, as reported in the E3 for 2018/19, was 61,454 tCO_{2e}. At a carbon floor price of £30/tonne this would equate to a sum of £1,843,620. The more we manage to reduce this carbon footprint the lower this sum would be.

Enabling whole system solutions

31. We welcome views on how RIIO-ED2 can best capture the benefit of whole systems solutions. We are also interested in views on how these benefits should be measured.

RIIO-2 represents a great opportunity to enhance the way network companies work together to deliver real value to customers. For example, resilience and vulnerability issues cut across different sectors and collectively licensees can be more impactful by working collaboratively to identify and realise best practice in these areas e.g. sharing best practice on using data to identify new Priority Service Register customers. We also recognise the significant socio-economic value that can be unlocked by working jointly with other utilities when it comes to the planning and delivery of works. The Local Government Authority (LGA)²⁷ has estimated that the social costs associated with utility related street works is £5.5 billion annually, which suggests that much more can be done to collectively reduce the impact we are having.

As a principle, if licensees can help offset costs elsewhere across the wider energy network e.g. a DNO mitigating high voltage issues on the transmission network, then the licensee taking the action should be appropriately funded. To achieve this will require new mechanisms to be introduced that encourage and enable outputs and allowances to be transferred between licensees and we are committed to working with Ofgem to achieve this. We believe it is crucial for the RIIO-ED2 framework to account for system wide costs and benefits to encourage efficient whole system investment. Importantly, this should enable DNOs to take actions that will reduce the total energy bill, as well as recognising any wider benefits such as helping to reduce transport costs.

As more low carbon technology connects to our electricity distribution network, there is a greater need for coordination across system boundaries. Crucially, this should aim to measure cross system flows and impacts and therefore the changing cost drivers. Failure to do this will lead to sub-optimal decision-making and risks creating delays or additional costs to decarbonise the energy system. For example, Imperial College's analysis identified that an additional spend of up to £40bn will be required if we fail to co-optimize assets and connected resources across the system. As we highlighted in our response to question 28 DNO and DSO activities not only reduce potential capital expenditure in electricity distribution but they also defer and avoid the need for expenditure across transmission and for generation capacity.

Regarding the measurement of benefit, we believe this is achieved through defining common outputs alongside the totex incentive; however, we believe Ofgem will need to give consideration to how different incentive rates (sharing factors) will be reconciled between different licensees.

In terms of enabling the transfer of funds to achieve the best whole system outcome we recognise the role that Ofgem's Coordinated Adjustment Mechanism could play, as well as Directly Remunerated Services (DRS). However, we think more work is required around understanding the mechanics of these and how they will work in practice. One of the key current limitations of DRS is that the allowed margin for the party delivering a solution can be substantially lower compared to the incentive on output delivery. Therefore, DRS routes should be revised to ensure companies have a risk and reward profile commensurate with the benefit they are providing to customers.

32. We further welcome stakeholders' opinions on whether the electricity distribution sector's approach to whole systems should be different from the other sectors and, if so, why.

As early as possible outputs should be given to the party best able to deliver them, and the Totex Incentive Mechanism should be seen as the primary financial driver for delivering whole system benefits.

²⁷ https://www.local.gov.uk/sites/default/files/documents/5.16%20Congestion_report_v03.pdf

If designed correctly we think there are significant opportunities for defining outputs that recognise the ability for DNOs to resolve wider system issues cost efficiently.

For example, we believe a network utilisation metric would have the significant benefit of reducing demand peaks further up the network. Therefore, a successful utilisation factor for distribution networks could resolve reinforcement cost drivers for both DNOs and transmission networks. This demonstrates the value in incentivising greater utilisation at lower voltages where new generation and load is connecting, which can help offset the need for reinforcement at higher voltages. To the contrary, increasing network utilisation at transmission will not lead to any obvious benefit at lower voltages in distribution.

Managing uncertainty

33. We welcome views on how we should manage the uncertainty associated with forecasting allowances, and whether there are any mechanisms we could or should consider in helping to manage this uncertainty.

We remain convinced that setting ex-ante allowances with an appropriate totex incentive remains the best way of enabling DNOs to facilitate the energy transition, whilst keeping the network safe and reliable. However, we acknowledge that there is a significant amount of uncertainty in how quickly, where, and which technologies will be connected to our networks. This was the primary reason we were the first DNO to advocate a move to either a five or a three year price control in RIIO-ED2.

We believe that it is therefore right to try to increase the accuracy and reduce the risk of forecasting error within the control with clearly defined upfront and transparent uncertainty mechanisms. We recommend these uncertainty mechanisms are used in RIIO-ED2 to protect both customers and investors from unexpected events that were not possible to forecast at the business plan phase. However, an overreliance on uncertainty mechanisms without sufficient ex-ante funding in RIIO-ED2 would represent a step away from the RIIO model and in the context of facilitating net zero emissions this would place a disproportionate level of risk on DNOs.

Furthermore, we envisage that volume drivers will have an important role in RIIO-ED2 by ensuring that allowances and outputs flex in line with the actual number of units e.g. as per the smart meter volume driver in RIIO-ED1. Nevertheless, as previously stated the actual utilisation of meter points such as charge points should not have a bearing on a DNO's allowance. There also needs to be careful thought around how to link any volume driver with LCTs such as EVs, as this could create a disincentive for DNOs to strategically invest, because of the uncertainty in volumes and any timing inconsistency. For example, a volume driver by itself would not address the capital hurdle facing installers of charge points. If as a result DNOs do not sufficiently invest and/or intervene and more EVs connect, there is a risk that there is insufficient time to respond to their requirements. We believe much of this issue can be resolved by Ofgem instead focussing on the MVA headroom released by DNOs to facilitate EVs i.e. a volume driver linked to the actions DNOs have taken, which could be defined at certain uptake thresholds. Importantly, this would be a blend of both ex-ante allowances and a volume driver.

34. We seek views on the use of indexation, particularly on any adjustments for labour and construction cost inflation.

We fully support the indexation of RPEs as it will help to mitigate forecasting errors, in line with what we advocated prior to the start of RIIO-ED1. Developing a robust and transparent methodology as early as possible should be a priority, so that this area can be locked down.

However, as DNOs are in the process of changing their business models to become DSOs they will be procuring services that they have not historically procured e.g. flexibility services. Dependent on how the latter develops, over the short term it may be necessary to review the list of indices included in RPE indexation.

35. We welcome views on our approach to highly anticipatory investment projects. We are interested to hear whether stakeholders would suggest additional processes or regimes for facilitating such investments that support the energy system transition whilst protecting consumers from potentially inefficient investments.

Please refer to our response to Q6 and Q7.

36. We welcome views on the type of issues that should be considered through an inter-institutional group.

We understand the thinking behind Ofgem's proposal to create an inter-institutional group to encourage a joined up approach towards anticipatory investment from a whole systems perspective, and would welcome the opportunity to further discuss how this could operate. We are mindful that there is now a wide range of engagement groups being created and there is a risk of duplication, increased costs and confusion over decision-making. Therefore, we encourage Ofgem to consider and clarify to stakeholders how these groups fit together as part of the overall governance structure in RIIO-2.

37. We invite stakeholders to advise what type of expenditure they believe should be subject to alternative arrangements for sharing risk, and what these arrangements may look like.

We believe that the RIIO-ED2 framework should start by treating all expenditure equally when assessing a company's business plan. Consequently, the onus should be on network companies to work with their stakeholders to justify that their plans are in the best interests of customers. Common assessment tools, such as CBAs, that help ensure that customers are protected from speculative investments that ultimately may become stranded, will help back this up. At the same time, it should enable companies to propose investments for which they have a strong degree of confidence will yield significant benefits to customers if acted on early.

We are concerned that treating strategic investment differently from other spend will drive unintended consequences by creating a grey area between what is deemed to be in this category versus business as usual spend. As an alternative, we would support a well-defined output and volume driver as described in question 33, as well as the possibility of a high value project re-opener to deal with more material changes in need. We are concerned that customers' interests risk being harmed by arrangements that promote a classification of assets in a particular way to attract more favourable risk sharing, or returns which Ofgem may find difficult to assess.

Driving efficiency through innovation and competition

38. We welcome views on the proposed innovation stimulus. We are interested to hear views on the types of projects that should be funded through either the NIA funding or a new funding pot.

We agree with Ofgem that innovation should continue to be deployed as part of network companies' business practices and as mentioned previously we think the Totex Incentive Mechanism, coupled with a suitable sharing factor (range 40-60%), is the best way of achieving this.

However, in recognition of Ofgem's desire to maintain a dedicated innovation stimulus, below we provide a view on each of the current mechanisms employed in RIIO-ED1.

NIA (Network Innovation Allowance)

Whilst the NIA has provided an important stimulus for smaller companies to develop innovative products and services in RIIO-1, as the market is now more mature there is merit in considering whether NIA could become business-as-usual. This mature market has been driven by the value of the TIM sharing factor through RIIO-ED1. As stated previously, we believe this should be retained, across a range of 40–60%, and if done so, we recommend that Ofgem could simplify RIIO-2 by removing the NIA and the reporting burden associated with it.

We note, that it is Ofgem's intention to maintain the NIA for long-term energy system transition and consumer vulnerability challenges. With the former, we believe that this overlaps with the Ofgem's intention for the repurposed Network Innovation Competition (NIC) which is to be focussed on areas such as the future of heat and transport. If Ofgem want to pursue both innovation stimuli to tackle the same issue it would be beneficial to define what the criteria is for applying to each, in order to stop one project being applied for twice and to remove the potential for duplicated projects.

As stated earlier, to remove this risk we believe the NIA should be removed, or at most could be used as a fund to target consumer vulnerability specifically – please see our response to question 23.

NIC (Network Innovation Competition)

Networks have made marked progress to align strategic priorities through the sector specific innovation strategies. We agree that it is important to focus funding on the most important and transformational challenges the industry faces.

Whilst we identify with the need to utilise the funding to channel strategic energy initiatives, it is important that the funding available can be applied flexibly, so that the sector can respond appropriately to a fast-changing energy landscape and does not ignore upcoming challenge areas and result in the unintentional loss of associated opportunities. We recommend that to support this Ofgem does not make using any innovation funding pot in RIIO-2 unduly onerous in terms of the regulatory and governance requirements.

In the past, NIC funding has enabled simultaneous projects looking at different and equally important challenges. For RIIO-ED2, we believe problem definitions and call for ideas events would be good way to drive increased value from the NIC and we would welcome engagement with Ofgem on how often this process could take place in RIIO-ED2.

We agree that it is important to continue to demonstrate collaboration between network companies; therefore, we want to build on our partnerships in RIIO-2. In RIIO-1, we have made great strides in network innovation by working with other licensees such as National Grid ESO, for the Power Potential project, SSEN with our Optimise Prime project and across sectors (WWU) and also third parties (Progressive Energy) on our Green City project. Collaboration also continues outside of the regulated stimulus package as evidenced in our various partnerships with NPG and SSEN on the Innovate UK V2G portfolio.

IRM

As RIIO-ED2 will be five years instead of eight, we do not see the requirement of having a mechanism for securing additional funds for rolling out innovation solutions. In addition, we see the uptake, award of this mechanism has been limited in part due to the management and criteria of the initiative, and thus we support simplification of RIIO-ED2 by removing the IRM.

39. How can the benefits of the innovation stimulus be maximised by supporting schemes proposed by non-network parties?

We are strong advocates of third party involvement in our innovation programmes and have worked extensively with many industry players across our innovation portfolio. Fundamentally, the way to ensure proposed schemes are supported by non-network parties is to ensure there is a strong incentive to innovate. Through totex and a strong sharing factor, network operators are incentivised to search out new lower cost solutions, and in doing so, this will include looking at third parties to deliver services cheaper than the incumbent. Reducing this incentive, i.e. though Ofgem's proposed blended sharing factor, will force companies to play it safe, as the lower savings will not be commensurate with the higher risk caused by third party involvement.

We are keen to continue to set bold and ambitious targets in our innovation strategy to deliver benefits to our customers. However, to do this it is important for the strong incentive to do so to remain and for us to understand how Ofgem will assess rewarding or penalising the 'ambition' of our innovation strategy using feedback from engagement groups.

We believe there are different approaches to collecting feedback from stakeholders and Ofgem could benefit from further consulting with industry to identify and adopt the best approach. For example, it may be appropriate to use established local stakeholder groups rather than an independent group looking across the whole sector, which will find it more difficult to assess and compare local challenges. This point is particularly applicable at the business plan submission process with RIIO-2 Challenge Groups, Ofgem and Open Hearings all potentially casting differing views on what is important – but disregarding/not being aware of the local wants and needs that formed the initial submission.

40. We also welcome views on our proposals for the different competition models in RIIO-ED2, and what, if any, criteria should be set out for the use of early or late stage competition models.

As a principle, we support Ofgem's use of competition to drive cost efficiencies wherever it can demonstrably benefit customers. Since the start of RIIO-ED1 there has been a significant increase in competition for new connections. For single, high value projects, Ofgem has understandably been looking at the role of what it defines as 'early' competition as a way of ensuring price discovery; however, until this has been shown to consistently work well we do not see a case for exploring its use for highly integrated, high volume, low cost works where the majority of the work on our networks lie. The Department of Transport's 'Strategic Vision for Rail'²⁸ recognises the difficulty in contracting high-volumes of work and that it can result in poor performance for the customer when "*things go wrong, energy and time which could be spent on solving the problem can be lost in contractual debate and industry dispute processes.*". We therefore recommend that this is considered as part of any impact assessment exploring reforms to arrangements.

Whilst we recognise that competition models are of interest, it is noteworthy that there is significant competition already happening in new connections at electricity distribution and the barrier to entry for new ICPs and IDNOs is low. In contrast, there has been comparatively less competition in the transmission sector despite this being consulted on for some time.

²⁸ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/663124/rail-vision-web.pdf

We embed procurement exercises across a wide range of activities and the market is highly involved in sourcing, projects, work and equipment. Importantly, the TIM already drives network companies towards this type of 'native' competition that delivers cost savings, which are then shared with customers via the sharing factor. Therefore the totex model enables companies to be empowered to take their own business decisions, allowing them to decide where best to innovate, outsource or indeed develop new markets such as flexibility. We strongly believe that totex incentives provide the right risk and reward balance by encouraging network companies to deliver their outputs at lowest cost.

41. We also seek input from stakeholders on how native competition obligations and best practices can be used to ensure the best outcomes for consumers and to drive changes in the role of the networks in a transforming energy system.

As previously mentioned, a strong sharing factor will drive native competition where it is most appropriate to do so rather than force more qualitative assessments of 'best practice' by mandating competition models in particular areas. For example, our flexibility tenders offer technology neutral opportunities for the market to deliver the best cost solution to the priorities we see on our network. We already manage over 1,000 contracts (covering everything from investment in our electricity network to facilities) to drive costs down as low as possible and Ofgem market tests these services with assessment, scrutiny and benchmarking to ensure good value for the consumer.

With regard to best practice, in 2017 we gained the platinum Chartered Institute of Procurement and Supply (CIPS) Corporate Certification Award. This is the highest level of award available, given to organisations that put procurement at the heart of their strategy and which only 15 other companies across the world have. This demonstrates that not only are we looking to the market to deliver solutions, we are already strong performers in how we do this.

Forecasting and scenarios

42. We welcome views on our approach to planning, forecasting and scenarios for RIIO-ED2. In particular, do stakeholders have other suggestions as to how we can best manage forecasting risk for consumers?

DNOs have a fundamental role in realising the transition to a net zero economy in the UK. Whilst other technologies that do not use electricity may play a major role in a future low carbon system, over the RIIO-ED2 period, all credible decarbonisation pathways include very significant volumes of new low carbon technology connecting to electricity distribution networks. Therefore, it is imperative that Ofgem creates a RIIO-ED2 framework that gives DNOs the necessary toolkit and flexibility to accommodate this uptake efficiently.

Following the change in law to make the UK's carbon emissions target net zero by 2050 and the growing public concern to tackle climate change and air pollution, we strongly recommend that Ofgem does not take measures that could constrain DNOs' Business Plans in RIIO-ED2. Whilst we understand the rationale of a common energy scenario, if this is not compliant with net zero it raises serious questions as to how serious Ofgem and DNOs are about facilitating the transition to a net zero economy by 2050.

In our view it is unlikely that the transition will be defined by 'common' elements and we see local factors having an increasing role. Nevertheless, we recognise that there is a balance to be had in terms of developing an overall framework whilst embedding local factors and flexibility. Getting this balance right is crucial as otherwise there is a risk that both Ofgem and DNOs will be seen as inhibitors to progress. To achieve this Ofgem could consider the confidence they have around regional scenarios materialising and then fund these accordingly. For example, based on current trends and local developments such as ULEZ there is relatively strong evidence that EV take up will significantly increase on our networks between 2023-2028. This should translate into a higher confidence that ex-ante funding is required to manage this. In contrast, there is much less certainty currently around the take up of heat pumps over the same period. This therefore points to a greater use of volume drivers to manage this uncertainty effectively.

Whilst we believe volume drivers could play an important role in managing uncertainty in RIIO-ED2, having sufficient data is a pre-requisite to developing these. This data will need to include where new connections are happening at a granular level, and this information will have to be fed through to DNOs and Ofgem in a timely manner.

We have proactively worked with Ofgem as part of their ambition to define a core energy scenario across energy networks ahead of RIIO-2. For example, UK Power Networks has led work via the ENA to deliver a report on this that was submitted to Ofgem and their Challenge Group in 2019. Through this core energy scenario that uses common building blocks, Ofgem and government can track how policy decisions could impact regional energy networks. This has put Ofgem in a stronger position to understand the background to company forecasts and have a consistent reference point to gauge individual company plans against.

Furthermore, UK Power Networks is currently developing its first distribution based Future Energy Scenario (D-FES) of which more information will be published on later in 2019. This will detail the range of changes we expect to occur on our networks. Through close engagement with our stakeholders, we aim to ensure that the D-FES is tailored to their needs.

Ultimately, the DNO's business plan should be able to facilitate the transition to a net zero target by 2050. This does not mean giving DNOs a blank cheque, but does mean planning for regional scenarios that meet the ambition cost efficiently and ensuring that "least regrets" investments are not stymied.

Whilst the energy sector has made relatively strong progress on decarbonisation, the UK has

Case study: Facilitating Ultra Low Emission Zones

UK Power Networks is excited to be serving customers situated in the world's first Ultra Low Emission Zone that was introduced in London in April 2019. To support this transition cost efficiently, UK Power Networks has worked closely with industry, which has included being part of the Mayor of London's EV Taskforce. For example, following the GLA's ambition to deploy rapid charge point hubs in London we produced a capacity constraint map that shows how much headroom there is in 200 town centres across the Greater London area. As a result, the GLA has a greater understanding of where rapid hubs can be deployed without the cost and disruption associated with network upgrades.

comparatively struggled to tackle air pollution and the impacts it has on health, and many people in the UK die prematurely each year due to pollution related illnesses¹. Our stakeholders have told us that air quality is an important issue that they believe we can help tackle. For example, our work with Transport for London has enabled them to electrify bus garages without significant connection costs. To understand how far our responsibilities should go in this area and what cost to the overall energy bill we will need to engage with our customers and their representatives, as well as Ofgem.

Business plan and totex incentives

43. We welcome views on our proposal to remove the early settlement process for RIIO-ED2, instead focusing on alternative mechanisms to receive high-quality and ambitious business plans.

We agree with Ofgem's view that there is benefit in incentivising companies to produce high quality business plans, but that the benefit provided by fast-tracking did not deliver the optimum result. Therefore, we do not believe early settlement is necessary, nor, from a pragmatic point of view, do we feel the timescales allow for fast-tracking to remain.

However, we remain of the opinion that the quality of a business plan should be rewarded, most likely through a distinguishable sharing factor, ex-ante reward or a combination of both. This should take into account not only a company's level of ambition, but also reflect upon its past performance over prior controls and how DNOs have helped drive frontier performance across the sector. Similarly views from the CEGs should also form part of this assessment on business plan quality. That is, the incentive and reward on business plan quality is undertaken on both a quantitative and qualitative level, with the rules around how this will be achieved being clear and transparent to all parties upfront. This is something that is not currently being achieved with the suggested Business Plan Incentive, and Ofgem could reflect on whether its design has been successful in driving the right behaviours in the gas and transmission price controls (please also see our response for Question 44).

It is our belief that there would be merit in Ofgem stating what good performance looks like and develop an electricity distribution specific scoring mechanism in a way that aligns with regulatory best practice. Performance against this can be measured, and then rewarded through a distinguishable sharing factor, ex-ante reward or a combination of both.

44. We also welcome views on our proposals to use the Business Plan Incentive and the confidence-dependent incentive rate arrangements for RIIO-ED2. In line with this, we are interested to hear stakeholder views on the range that should be used for both of these.

Business Plan Incentive

We welcome Ofgem's desire to reward ambitious plans through the use of a single Business Plan Incentive however, we believe each of the four stages needs clearer guidance to avoid ambiguity

- **Stage 1** – Whilst the business plan guidance does detail what is required to meet the minimum requirements, it is at a very high-level i.e. “*follow the guidance in this document on presentation and structure*”. It would be helpful if this were set out more clearly i.e. through the use of a simple, more defined checklist. This will help to avoid unnecessary penalties/confusion or indeed argument as to whether a licensee has hit the minimum requirement.
- **Stage 2** – The reward based on the quality of a company's Consumer Value Proposition (CVP) is very vague in its description. There is no guidance on how a company should demonstrate or calculate the additional value, nor is there any indication how Ofgem intends to translate the additional value into a reward. This runs the risk of Ofgem having the ability to control the overall size of the reward and penalty completely within its discretion due to the ambiguity around this stage. If Ofgem are serious about encouraging ambitious plans that go above and beyond – this stage requires significantly more thought and clarity.
- **Stage 3** – The latest Business Plan Guidance does not provide any detail on how Stage 3 will work, for example how will Ofgem determine what is a 'lower confidence' cost and what is determined to be 'poorly justified'. More guidance is required to avoid companies being unjustly subject to this penalty. Furthermore, it is also unclear how different business models and expenditure positions will be addressed and evaluated.

- **Stage 4** – The latest Business Plan Guidance does not provide any detail on how Stage 4 will work, for example how will the size of reward be determined from the high-confidence baseline costs?

Overall if this incentive is to deliver Ofgem's desired outcome, the whole incentive needs to be much more tightly defined to avoid ambiguity and unlimited discretion in its application. As stated above, Ofgem should reflect on whether its design has been successful in driving the right behaviours in the gas and transmission price controls and consider whether this mechanism should be carried forward into RIIO-ED1. We are willing to work with Ofgem to design an appropriate incentive – please see our response for question 43 for our suggested approach).

Confidence-dependent incentive rate

We do not see compelling evidence to support the introduction of a blended sharing factor. In contrast, we think this proposal adds complexity against one of Ofgem's stated desires for RIIO-ED2 without providing clear benefits. A key success of RIIO is its focus on totex, which does not create a bias towards capex and opex solutions. However, we are concerned that Ofgem's suite of proposals moves away from this approach. For Ofgem to meet its stated objectives we believe it is important that it assess costs and incentives in a holistic way in RIIO-2. A particular risk with the blended sharing factor is that it creates an inconsistent approach to incentivising network companies, which may dampen benefits to customers.

The onus appears to be on companies' to justify their proposals e.g. on how they will manage uncertainty in order to receive a higher sharing factor. However, if Ofgem propose to reward a higher sharing factor based on qualitative elements, such as a commitment in the business plan to include new uncertainty mechanisms, then this will lead to distortions that will make it difficult to compare different companies' performance and efficiency. For example, it is unclear how Ofgem would compare the effectiveness, and therefore appropriately reward or penalise, individual company's uncertainty mechanisms.

The proposed blended sharing factor has the following issues:

- It is poor at helping to deal with uncertainty i.e. increases customers' exposure to risk for low confidence cost items. This represents a step backwards when compared to RIIO-1. Due to the increased focus on facilitating the energy transition in RIIO-ED2 this is concerning;
- Rather than aiding transparency and accountability, it serves only to add significant complexity and make the ability for stakeholders to understand performance more challenging; and
- It introduces a barrier for DNOs looking to procure greater volumes of non-network solutions such as flexibility. Rather than enabling DNOs to benchmark conventional network solutions and use the Totex Incentive Mechanism to market test requirements, Ofgem's suggestion of not defining a sharing factor until competition has delivered would completely undermine the use of totex.

Instead, to drive cost efficiencies and manage uncertainty, we recommend Ofgem build on RIIO-ED1 by continuing with a strong sharing factor and the appropriate use of uncertainty mechanisms. This would include the use of volume drivers, as well as separate reopeners for load related expenditure and high value projects, which protect both network companies and customers from the level of required investment being materially different from the original forecast.

Fair returns and financeability

45. We welcome stakeholder views on our proposals to introduce measures to enable network companies to finance their activities whilst ensuring they receive a fair return.

Please see our responses to questions 46 and 47 below on our assessment on Ofgem's financing proposals.

46. We are interested to hear from stakeholders on how they believe we should set allowances for the cost of debt, particularly around the method of recalibrating the index.

We agree that the use of full debt indexation has many positive features particularly its simplicity and transparency. However, an issue that remains unresolved is the treatment of companies who have debt that was issued before the index start date. If the index does not sufficiently remunerate these costs, and the debt was efficiently incurred, then their disallowance would imply that Ofgem has deemed them inefficient. It is important that in calibrating the cost of debt index, Ofgem does not underfund a company's debt costs without specific evidence that such costs are inefficient.

In its sector specific methodology for gas distribution and transmission operators, Ofgem has estimated the halo effect associated with network bonds, at 10bps. The ENA asked NERA²⁹ to review Ofgem's analysis. NERA concluded that Ofgem's approach does not accurately control for differences in network bond and iBoxx tenor. Once this has been adjusted for then NERA calculates that there is a negative halo effect, for regulated companies, of 13bps which can be explained by the impact of new issue premiums. Based on this analysis we believe there is no halo effect.

In addition to analysing the halo effect, NERA have also examined the additional borrowing costs that all regulated companies face. These costs include transaction costs, liquidity costs and costs of carry. Historically, Ofgem has not explicitly allowed for these costs. NERA's estimate of these costs is 28 to 57 bps and we believe that Ofgem should explicitly and transparently allow such costs as part of the price control settlement.

47. We also welcome views on our proposed approach to setting allowances for the cost of equity, as well as our proposal to move away from RPI.

As we stated in our response to the sector specific consultation on gas distribution and transmission operators, we have fundamental concerns with Ofgem's approach to setting the cost of equity components, particularly the equity beta and the Total Market Return. In developing its cost of equity proposals Ofgem has moved away from regulatory precedent in a number of areas including the calculation and re-gearing of the equity beta and the determination of the debt beta. Additionally, there remain alternative points of view on key issues such as the appropriate inflation index to deflate historic total market return values and the use of arithmetic or geometric averages to also determine the total market return. We will be undertaking further work in these areas in advance of the sector specific consultation.

In particular, we remain unconvinced that it is appropriate for Ofgem to differentiate between expected and allowed returns by determining an outperformance wedge. We continue to believe that Ofgem should focus its efforts on setting appropriate cost allowances and targets rather than attempting to second-guess how companies might outperform in the future. We would expect Ofgem to set out its sector specific consultation the detailed process of how it would calculate such an adjustment.

It is widely recognised that the roles and responsibilities of electricity distribution companies will change over RIIO-ED2, not least in their transition to DSOs. Achieving net zero will require the electrification of both heat and transport coupled with further increases in the deployment of both renewable generation and storage. We believe the biggest impact of this change will be experienced on the distribution networks and will require investment not only in physical network assets, but in

²⁹ Halo effect and additional costs of borrowing at RIIO-2: A report for the ENA, NERA, 26 September 2019

people, processes and systems. Consequently, the operating model of DNOs will change and so will the risks that they are exposed to. It will be important that Ofgem's cost of equity methodology for RIIO-ED2 recognises this changing risk profile and we believe that the sector specific methodology should set out Ofgem's position on how it will factor it into its assessment of the equity beta.

We remain of the opinion that, from a customer perspective, CPI or CPIH may be a more legitimate inflation metric than RPI. As we have highlighted previously the switch to CPI (or CPIH) may cut regulated companies off from new RPI-linked debt when there is no significant market for CPI (or CPIH) linked debt. If companies cannot realistically issue new index-linked debt, and if RPI-linked debt (or a mix of index-linked and nominal issuance) is cheaper than issuing only nominal debt, a change in indexation method may increase industry financing costs. Furthermore, if companies cannot realistically issue index linked debt, then Ofgem may need to revisit the amount of index-linked debt it assumes in its financeability modelling.

Another impact from the change in inflation index is the mismatch that it could lead to between a RAV that indexes in full or in part with CPI (or CPIH) and a regulated companies' long-term RPI-denominated index-linked debt. Differences in the rate of growth in a company's asset and liabilities could have adverse consequences over both short and long horizons. For example, in the longer term, one of the rationales for borrowing on an index-linked basis has, until now, been that the principal owed to lenders would grow at the same rate as the regulated asset base. If debt grows more quickly than RAV, companies' index-linked borrowing may look less sustainable, in particular when the expected differential compounds over the 30 or 40-year tenor that is left on some companies' RPI-linked bonds. CPI (or CPIH) indexation may also negatively affect companies' financeability. A solution may be to swap the RPI debt into CPI (or CPIH) linked debt. However, this will also increase financing costs. As part of its work on the cost of debt NERA has estimated that addressing these issues would add 13bps to the cost of debt.

48. Finally, we would like to hear stakeholders' views on our proposed introduction of a 'sculpted sharing factor' in instances of high out- or under-performance, or whether an alternative mechanism could be more effective.

We believe that Ofgem can ensure fair returns by setting appropriate targets (i.e. ones that dynamically adjust based on revealed benchmarked performance) and allowances (i.e. set using volume drivers and uncertainty mechanisms).

However, if a RAM is to be introduced, it should be designed with the characteristics defined below and should only operate in extreme scenarios to avoid blunting the incentives in RIIO-2.

Ofgem should design any RAM with the aim of:

- Being simple to implement;
- Being transparent to stakeholders;
- Avoiding a situation whereby poor performers dilute the returns of better performing companies; and
- Mimicking a competitive market by retaining an incentive to deliver frontier performance.

We note in the gas distribution and transmission operators' sector specific consultations, Ofgem was of the opinion that for transmission the sculpted RAM was most appropriate and for distribution anchoring was the most appropriate. At the time we agreed with that assessment. However, we note that Ofgem's position has now changed with regard to both gas and electricity distribution sectors, stating that the large market share of one gas distribution company had the ability to skew the anchoring mechanism unduly in comparison to the other networks within that sector.

Given the recent sale of one GB DNO, it is not inconceivable that this could happen again and allow one of the incumbents to acquire a greater share of the distribution market. This could make anchoring inappropriate for the electricity distribution sectors for the same reasons as for gas distribution. Therefore on reflection, of the options presented by Ofgem, our current view is now that

the 'sculptured sharing factor RAM' is the better of the options presented for the electricity distribution sector which best meets Ofgem's desired outcomes, has the least distortionary impact and avoids any future ownership changes forcing the RAM to longer being appropriate.

Of the other previously discounted RAMs, we agree with Ofgem's proposal not to further consider using discretionary adjustments in RIIO-2. Discretionary adjustments would entail considerable regulatory burden to define appropriately, and failing to do this would only serve to provide greater uncertainty to companies and stakeholders about their potential operation. Ofgem is rightly proud of the stable predictable regulatory framework that has evolved over successive price controls. Discretionary adjustments are the anti-thesis of this.

Scope

We believe that RoRE provides a comprehensive metric that puts cost performance and incentive performance on the same footing in order to compare network companies. Therefore, we see merit in Ofgem keeping a consistent approach by using RoRE, if they decide to introduce a RAM. We were previously of the opinion that any Business Plan Incentive award should also be captured within the RAM to insure any upfront award was also attached to the delivery. However, we note that within Ofgem's current Business Plan Incentive guidance that failure to deliver performance that is awarded upfront in the Business Plan Incentive process could be clawed back. Thus, we no longer believe the Business Plan Incentive needs to be included within the RAMs operation, particularly if the sculpting option is chosen.

Furthermore, we believe that financial performance should be out of scope of any RAM introduced as it should only operate on parameters that are controllable by a company's management team, which should include the level of totex spend and performance against incentives. Financial out- or under-performance should not be within scope, for example the ability for a company to materially affect its performance against its historical debt portfolio is limited and risks arbitrarily creating winners and losers.

Threshold

With the importance of the decarbonisation agenda and the desire to encourage real ambition within business plan then it is important the threshold around the cost of equity is not set too early, such that it curtails genuine and fair performance. Companies should be rewarded for good service levels, and setting the threshold at the correct level is important such that the threshold is proportional to the potential customer benefits that a sector can deliver by innovating and delivering excellent performance. Given the key role DNOs can play in the decarbonisation agenda, it is imperative that companies have the ability to earn fair rewards for the wider social benefit they can facilitate.

Furthermore, any thresholds should be cognisant of the value of the cost of equity and, whilst we do not agree with its introduction, any outperformance wedge.

Application

If a RAM is to be introduced the full scale of performance will only be available at the end of the price control during close-out. However, we see merit in an annual iteration process being adopted to avoid any significant cash flow shocks at the close-out. As network companies already submit forecast data to Ofgem an annual iteration process for adjusting returns would be feasible. Our current thinking is that this annual iteration process would operate in conjunction with a final true-up at the end of the period, to account for final outturns as delivered through the close-out process.