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Consultation

RIIO-ED2 Sector Methodology Consultation: Annex 1 - Delivering value for money services for consumers

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The next electricity distribution price control (RIIO-ED2) will start in April 2023. We are consulting on the methodology we will use to set this price control.

This document sets out our proposals for the outputs we expect companies to deliver in RIIO-ED2. This document is an Annex to the RIIO-ED2 Sector Methodology Consultation Overview document and should be read alongside it.

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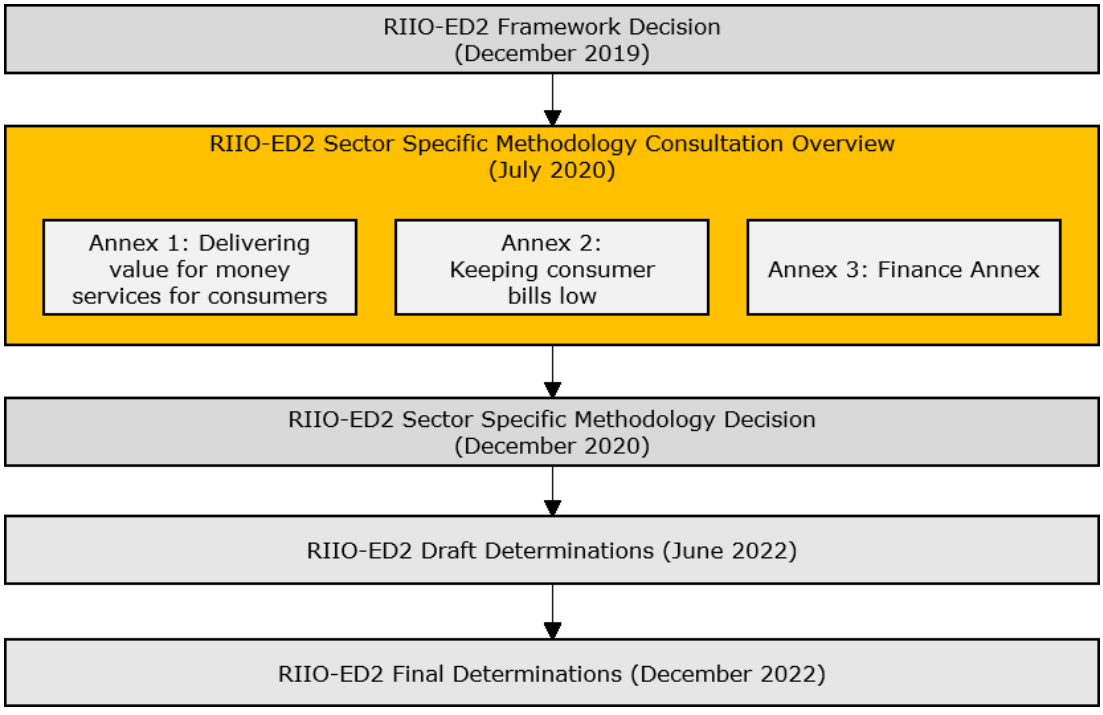
1. Introduction

1.1 In December 2019, we published our Framework Decision which set out our proposed approach to the RIIO-ED2 price control, and highlighted the main areas of change from the current RIIO-ED1 price control.

1.2 This document forms part of our consultation on the sector methodology that we intend to apply to the RIIO-ED2 price control. The focus is on the application of the RIIO-2 Framework with a specific focus on the outputs we expect the Distribution Network Operators (DNOs) to deliver. Taken together, each of these will be critical to delivering value for money services for consumers.

1.3 Figure 1 below sets out how this document fits in with the wider RIIO-ED2 Sector Methodology Consultation (SSMC).

Figure 1: RIIO-ED2 Sector Methodology document map



2. Approach to setting outputs and incentives

Introduction

2.1 In our RIIO-ED2 Framework Decision, we stated that we would continue to use outputs and incentives to drive improvements that are valued by consumers. We also signalled that we would distinguish between different types of outputs and incentives to ensure we can hold licensees to account.

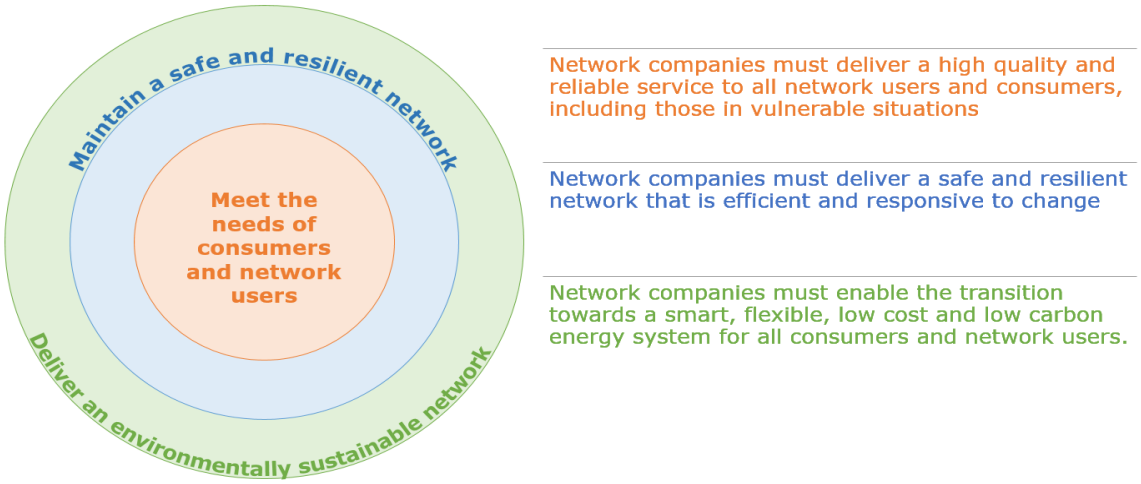
2.2 In this Chapter, we provide detail on our overarching approach to setting outputs and incentives in RIIO-ED2. We set out how we will use licence obligations and price control deliverables to ensure delivery of projects and services that companies are funded for. We describe how we will use incentives to encourage performance improvements, including the consideration of more dynamic, relative targets. We also explain how we expect companies to approach the design of bespoke outputs identified through their engagement activities. Finally, we set out some learnings from RIIO-ED1 and how this has informed our approach to RIIO-ED2.

Overarching outputs framework design

2.3 In our RIIO-ED2 Framework Decision, published in December 2019[1], we stated that we would consolidate the six RIIO-ED1 output categories into three consumer-facing output categories. These are illustrated in Figure 2.

[1] In January 2020 we issued an update to the document, to correct a reference in paragraph 1.16. Both versions are available on our website: https://www.ofgem.gov.uk/publications-and-updates/riio-ed2-framework-decision

Figure 2: Consumer facing output categories



2.1 We want DNOs to focus on delivering positive outcomes in respect of these three areas during the 2023-2028 period and beyond. To achieve this, we propose to use Licence Obligations (LOs), Output Delivery Incentives (ODIs) and Price Control Deliverables (PCDs)[2]. These regulatory mechanisms, and how and when we intend to apply them in RIIO-ED2, are set out below.

Licence Obligations

2.2 We will set minimum standards of performance which we will impose through the introduction of Licence Obligations. Failure to meet these minimum standards could lead to enforcement action and/or penalties. For RIIO-ED2, we will consider where it is appropriate to set new minimum standards or update minimum standards. In doing so, we will consider the extent to which proposing stricter minimum standards would deliver benefits to consumers and the extent to which they would require an increase in related cost allowances.

Price Control Deliverables (PCDs)

2.3 PCDs will capture those outputs that are directly funded through the price control settlement. The funding provided will not be transferrable to a different output or project. For example, this could include:

[2] Depending on their design a PCD can also be an LO

- Large one-off capital projects – to be delivered to a stated specification, budget or timing

- Commitments or assumptions associated with a baseline level of funding – eg megawatts (MW) of connected generation

- Other input activities to be delivered to a stated standard – eg activities related to changes in government policy. These will be determined on a case-by-case basis and will require policy and legal consideration.

2.4 Some PCDs may be funded up-front, with uncertainty mechanisms in place to return funding to consumers where work does not materialise. We will apply this approach where we have confidence that the work is likely to be required. In other circumstances, where the requirement for the investment is less certain, we may set the baseline level of funding at zero, and introduce mechanisms to enable funding if the investment requirement does materialise. We expect network operators to identify potential PCDs as part of their Business Plans. We will consider our treatment of any proposed PCDs during our assessment of company Business Plans.

2.5 PCDs are by their nature relatively bespoke and the ways in which they are set and assessed will vary accordingly. Generally, the outputs, allowances and delivery dates will be set up-front. In some cases, allowances will be recovered automatically through a formula defined in the licence. For others, depending on the complexity of PCDs and their underlying projects, we will undertake ex post reviews to determine the delivery status and extent of associated claw back (if any).

2.6 As a core principle, we propose that companies should not benefit from delay in delivery or failure to deliver PCDs, including delivery which does not meet a specified standard. As part of their Business Plans, network companies should identify the potential consequences of any delay or failure to deliver PCDs. This should include consideration of any potential detriment to consumers. As part of our ex post reviews, we may consider whether PCD outputs have been fully delivered, partially delivered, delivered late, or delivered to an equivalent specification.

2.7 The aim of PCDs is to ensure clarity around what is being funded through the price control settlement where required. We will apply PCDs where there are

clear deliverables funded directly through the settlement, rather than to all cost categories.

Service level improvements incentivised through output delivery incentives (ODIs)

2.8 We will incentivise service level improvements through ODIs. ODIs may be financially incentivised, or be reputational only in nature – this will depend on a number of factors, such as the robustness of available evidence. We propose to mainly apply:

- Reputational incentives in areas that are of stakeholder interest but where robust baseline information is unavailable, and/or where the level of consumer benefit (or willingness to pay) is difficult to specify;
- Financial rewards where the overall cost of the incentive does not exceed the value of improvements to consumers, and where performance improvements are not already funded through the baseline; and
- Financial penalties where we consider that a minimum standard of performance is expected (and non-delivery does not amount to a breach of a licence condition but does lead to consumer detriment) and/or where a financial incentive may support requirements included within licence conditions.

2.9 As is the case with RIIO-1, we may introduce incentives that include both a financial reward and penalty, and/or a combination of financial and reputational incentives.

Bespoke outputs

2.10 There will be opportunities for DNOs to propose bespoke outputs. We will assess these as part of our review of company Business Plans. We expect these to be underpinned by robust analysis (eg cost benefit analysis (CBAs)) demonstrating value for money for consumers. DNOs should also provide evidence on the extent to which proposals have been scrutinised by stakeholders (eg through the enhanced engagement process).

2.11 We propose setting upper and lower limits on the value of bespoke ODIs of 0.25% up to 1% of base revenue (ie the maximum reward or penalty available

under a bespoke ODI should be at least 0.25% but not more than 1% of base revenue). In our view, the upper value should help to ensure focus on core, common output areas and recognise that these bespoke outputs are likely to be newer or more novel output areas with no significant track record (and may therefore potentially carry more risk). The lower value should help to ensure that only sufficiently material proposals are brought forward.

2.12 We propose a minimum value for bespoke PCDs of £15m. This should help to promote a consistent approach between DNOs and ensure proposals are sufficiently material.

2.13 Some bespoke proposals may only be appropriate in the specific circumstances of the DNO making the proposal. However, where proposals may have wider applicability - such as across the whole electricity distribution sector - we encourage DNOs to collaborate on proposals. Indeed, we may be more likely to accept proposals that we expect to drive performance for all, or wider groups of, consumers.

Consultation Questions

OUTQ1. Do you agree with our proposal for setting upper and lower limits on the value of bespoke ODIs?

OUTQ2. Do you agree with our proposal for a minimum value for bespoke PCDs?

Lessons learned from the use of financial ODIs in RIIO-ED1

The use of financial ODIs in RIIO-ED1 to meet customers' needs

2.14 In RIIO-ED1, we used financial ODIs to drive service improvements for customers where we were able to monitor DNO performance through quantifiable metrics, and reward and penalise the companies accordingly. This approach helps to improve service provided to the majority of consumers.

2.15 Some consumers however have additional or more complex requirements and the service they receive may not be easily captured quantifiably. This is because:

- these consumer groups either constitute a small proportion of the overall customer base, making it hard to distinguish the quality of service they receive from that provided to most other customers; or

- their requirements could not be neatly captured by a single metric. For instance, we encouraged DNOs to engage with other organisations to broaden the range of support that could be provided to vulnerable customers; a measure of customer satisfaction or a count of the number of partner organisations doesn't necessarily indicate the level of additional consumer benefit the DNO's actions have led to.

2.16 We considered these groups to include large connection customers as well as consumers in vulnerable situations. Our view was that it was important for DNOs to tailor and improve their services provided to these customers and that financial ODIs would be an effective means of achieving this. Reflecting the above characteristics however, we decided to apply a more qualitative assessment of DNO performance to determine rewards and penalties.

2.17 However, through this approach it has proved difficult to quantify the benefits generated by DNO actions. This is largely due to a lack of consistent performance metrics that would allow a measure of improvement over time, or comparison between DNOs. We expect DNOs to innovate and develop different tools and initiatives to meet the needs of their customers; however, we also consider that a common adoption of best practice should take place to ensure all consumers receive a high quality of service, irrespective of which DNO serves them.

2.18 In RIIO-ED2, customers' needs will continue to evolve, and we expect DNOs to respond accordingly. We think that the progress that companies have made and have been rewarded for in RIIO-ED1 should now serve as the new baseline standard of performance all DNOs are expected to provide in RIIO-ED2. To ensure DNOs deliver in line with this new standard, we intend to apply a two-stage approach: (i) driving quality plans through the business planning process; and (ii) evaluating performance through an ex post assessment.

2.19 For RIIO-ED2, we are also proposing to move away from the use of incentives which rely on a purely qualitative assessment of performance and that where incentives are applied, assessment should be based on a more quantitative measure of the impact the DNOs actions have had.

Proposed approach for RIIO-ED2: Driving quality plans

2.20 Although in some areas, licence obligations set out the minimum standards DNOs must comply with to protect customers against unacceptable levels of service, the licence generally does not specify the activities that the DNO should undertake. We believe that there are certain DNO functions where further guidance on our expectations of the services DNOs should provide would be beneficial.

2.21 These baseline standards of performance for certain DNO functions are set out in the appendices to this annex, and describe in the type of activities and services we consider all DNOs should be carrying out in RIIO-ED2. We consider that doing so helps provide clarity on what we expect DNOs to deliver as part of their core role. By setting these baseline standards of performance we intend to drive consistency in DNO approaches where this is appropriate and likely to benefit consumers.

2.22 As a minimum requirement of their business plan, DNOs should give a detailed plan of how they will achieve the standards of performance we have provided in these areas. Plans that do not demonstrate how they will meet these baseline standards could receive a penalty through the Business Plan Incentive (BPI). Plans that allow us to enhance our baseline standards, not just for that company but for the sector as a whole, may receive a reward under the Consumer Value Proposition (CVP) under Stage 2 of the BPI.

2.23 Where appropriate, companies should set out targets for the level of service they expect to deliver. These targets should reflect the outcome to the consumer that has resulted from the delivery of the DNO's plan.

Proposed approach for RIIO-ED2: Evaluating performance

2.24 We intend to assess how effectively companies deliver their plans and whether in doing so they have met our baseline standards. Where targets are appropriate, we will use performance against these to assess whether the baseline standard have been met.

2.25 These targets should be measureable. Where it is appropriate to do so, a financial incentive could be applied to reward DNOs who exceed targets and penalise those who fall below the target level. The use of targets and incentives

is more effective where they can be applied across all companies in the sector so that we can clearly distinguish performance levels. We encourage DNOs to work collaboratively on measures of performance.

2.26 Finally, incentives will only apply for activities where the DNO is not operating in a competitive or potentially competitive market.

2.27 We provide clarity on the approach we intend to take in the relevant chapters in this document to ensure DNOs deliver value for money services that consumers' value in RIIO-ED2.

3. Summary of proposed outputs and incentives for RIIO-ED2

Table 1: Summary of proposed outputs and incentives

Output name	Output type	Location in document
Meeting the needs of network users and consumers		
Customer Satisfaction Survey	ODI-F	Chapter 4
Complaints Metric	ODI-F	Chapter 4
Time to Connect	ODI-F	Chapter 5
Improving Service Standards for Major Connection Customers	ODI-F	Chapter 5
Connections Guaranteed Standards of Performance	LO	Chapter 5
Obligation to treat customers fairly, including those in vulnerable situations	LO	Chapter 6
Improving Service Standards for Vulnerable Customers	ODI-F	Chapter 6
Maintaining a safe and resilient network		
Interruptions Incentive Scheme	ODI-F	Chapter 7
Guaranteed Standards of Performance	LO	Chapter 7
Worst Served Customers	PCD	Chapter 7
Network Asset Risk Metric	PCD, ODI-F	Chapter 8
Workforce Resilience	LO	Chapter 8
Cyber Resilience	LO	Chapter 8
Environmental Resilience	LO	Chapter 8
Delivering an environmentally sustainable network		
Environmental framework: Annual Environmental Plans Environmental Impact Report	LO, ODI-R and PCD	Chapter 9

4. Meet the needs of consumers and network users: Customer satisfaction

Chapter summary

This chapter outlines the measures we are proposing to improve how DNOs respond to the needs of their customers. This includes customers who experience a supply interruption, have a general enquiry or are seeking a new connection to the distribution network. We also set out proposals to ensure DNOs manage customer complaints effectively. More detail on proposals that are specific to ensuring connection customers receive a quality service can be found in Chapter 5.

Introduction

4.1 We expect DNOs to deliver high quality services that meet customers' needs. While anyone connected to the distribution network is a customer, we have focused our proposals on those that have a meaningful interaction with their DNO. This includes customers who experience a supply interruption, have a general enquiry or are seeking a new connection to the distribution network. We also set out proposals to ensure DNOs manage customer complaints effectively.

4.2 In RIIO-ED1, DNOs have made progress in improving their service, however we think they could be doing more. In light of the energy system transition, and with recent government targets placing an increased focus on the delivery of Net Zero, customers' needs are evolving and DNOs should tailor their services accordingly.

4.3 The proposals in this Chapter aim to capture new key interactions with customers to drive the DNO to meet their needs in RIIO-ED2. Our proposals also aim to embed the significant gains the DNOs have made and ensure targets reflect improvements in service provided in RIIO-ED1.

Customer Satisfaction Survey

Table 2: Customer satisfaction survey

Purpose	The customer satisfaction survey helps to drive improvements in the quality of service DNOs provide to their customers.
Proposed approach	Retain the customer satisfaction survey as a reward and penalty financial ODI. We are consulting on the scope and design of the incentive to ensure it captures key customer interactions and drives further performance improvements in RIIO-ED2.

Background

4.4 The RIIO-ED1 customer satisfaction survey incentivises DNOs to improve the service they provide to customers, rewarding those that perform well and penalising those that perform badly. The survey captures customer satisfaction for three categories of customer:

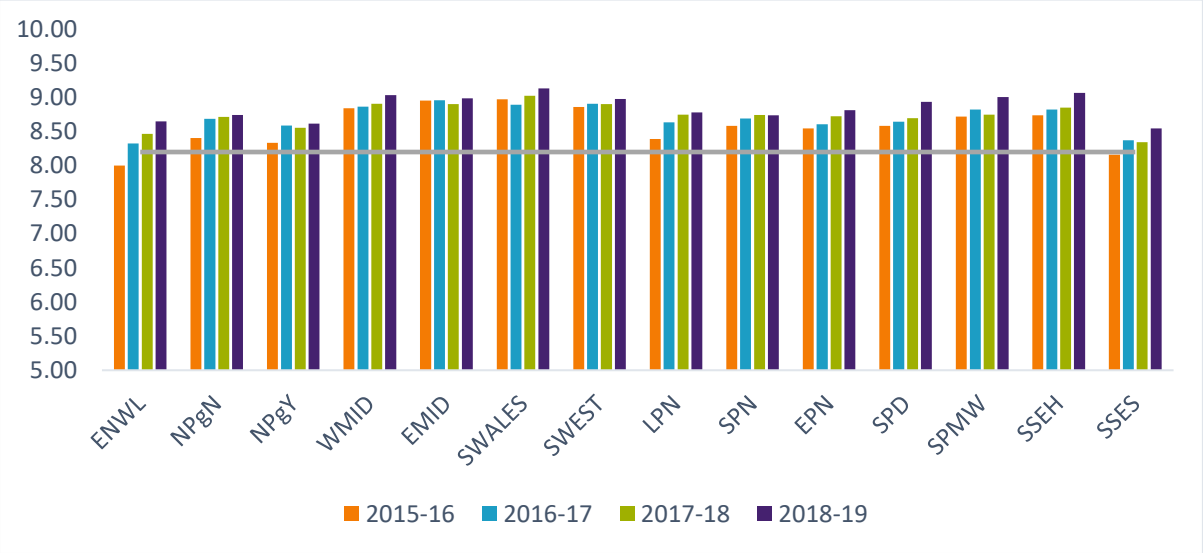
- Connections: customers that have received a connection quotation or a completed connection.
- Interruptions: customers that have experienced a planned or unplanned supply interruption.
- General enquiries: customers that have raised a general enquiry with the DNO.

4.5 The survey asks customers in each of the above categories to rate the service they received from their DNO using a 10-point scale (where 10 is excellent) which is then used to calculate an average score. The reward or penalty associated with the survey is capped at +/- 1% of the DNO's annual base revenue and the size of the reward or penalty under the survey is determined by the performance of the DNO relative to a target score.

4.6 The DNOs have made significant performance improvements over the course of RIIO-ED1 so far, moving from an industry average of 8.4/10 at the beginning of the price control to an average of 8.9/10 in 2018-19. The majority of DNOs are consistently meeting their target scores, through which they have earned £131 million in rewards (2018-19 prices). A small number of DNOs missed individual survey target scores in the first half of the price control, and one DNO was

penalised £0.6 million in the first year of RIIO-ED1 for missing their overall survey target score of 8.2.[3]

Figure 3: DNO performance in RIIO-ED1 under the customer satisfaction survey



Proposed outputs

4.7 We think the customer satisfaction survey has driven meaningful improvements in RIIO-ED1 and are therefore proposing to retain the output as a reward and penalty financial ODI in RIIO-ED2. We want to ensure that high levels of customer satisfaction are maintained and that targets continue to encourage a high level of performance. Meanwhile, we think companies that are failing to meet targets should be penalised appropriately. We also want the survey to capture key services and customer groups to ensure it is driving meaningful performance improvements in RIIO-ED2. We have reviewed the existing arrangements and are proposing to make amendments to the incentive for RIIO-ED2.

4.8 To ensure the survey captures key services and customer groups we are:

- Proposing to require DNOs to separately report on the satisfaction scores awarded by PSR customers who experience a supply interruption as well as

[3] While the majority of DNOs have missed individual survey target scores over the course of RIIO-ED1 to date (eg four of six DNOs missed their connections survey targets in 2015-16), all but one of these DNOs received rewards overall due to outperforming the other two survey target scores (ie interruptions and general enquiries target scores).

satisfaction scores awarded by customers who are installing or operating low carbon technologies (LCTs) connected to the distribution network.

- Consulting on whether to extend the existing connections survey to include certain small to medium connection customers that are not currently captured. Proposals specifically in relation to the connections element of the satisfaction survey are outlined briefly in this Chapter and discussed in more detail in Chapter 5.

4.9 To ensure that poor performance is penalised in RIIO-ED2 and that excellent performance is rewarded, we are:

- Proposing to set initial targets using industry average performance data from RIIO-ED1, and are consulting on whether static or dynamic targets should be used for RIIO-ED2.
- Consulting on options for how rewards and penalties should be calculated; our preferred approach being that rewards and penalties should be available based on performance against a target score and that rewards should apply to scores in the upper quartile, while penalties should apply to scores below the average.

Capturing key services and customers: PSR customers who experience an interruption

4.10 For RIIO-ED2, we are proposing to require DNOs to separately report on the satisfaction scores of customers on the Priority Services Register (PSR) who experience a supply interruption. Customers on the PSR may have increased dependency on electricity and may therefore be more likely to suffer detriment from a loss of supply, or that detriment could be more substantial. For this reason, DNOs have a licence obligation (SLC10) to support PSR customers in the event of a supply interruption. During a power outage, for example, DNOs must promptly notify and keep PSR customers informed of the time at which their supply is likely to be restored and informed of any help that may be available.

4.11 PSR customers who experience a supply interruption are already included in the sample base for the interruptions element of the satisfaction survey. However, PSR customers form a comparatively low proportion of the survey base. Even if they were to be generally more satisfied/dissatisfied than other interruptions customers, this may not have a material impact on the DNO's overall satisfaction score.

4.12 We think that introducing additional requirements on DNOs to report PSR customer survey scores will not only allow for enhanced visibility of the satisfaction levels experienced by these customers, but will also allow us to use the reporting of this information as part of monitoring performance against this particular aspect of the DNOs' licence obligation. Additional proposals on how we plan to monitor and drive DNOs' performance in relation to PSR customers and wider vulnerability issues can be found in Chapter 6.

4.13 As PSR customer volumes are low and are not likely to form a statistically significant sample, we are not proposing to apply a separate financial incentive on DNO performance in this area.

Capturing key services and customers: LCTs and connections customers

4.14 We are proposing to require DNOs to separately report on the levels of satisfaction of customers who invest in low carbon technologies (LCTs)[4] in RIIO-ED2. This would include separate reporting under all three surveys: connections, general enquiries and interruptions. The uptake of LCTs is expected to increase in the next price control period, in line with the electrification of heat and transport and we want to ensure there is sufficient visibility of the customer experience when the DNO is delivering services associated with new LCTs.

4.15 Customers seeking to connect an LCT such as an electric vehicle or a heat pump, to the distribution network may require a new connection, or they may have an existing connection. Where they have an existing connection, they may only need to notify their DNO that they are connecting to its network, rather than apply for permission. These customers are still likely to have an interaction with their DNO, for example they may contact the DNO to find out the supply capacity of their existing connection to know if, and what type of, LCT could be accommodated.

4.16 These customers would be captured by the general enquiries survey, however as they are not separately reported, it would not be clear what level of service they are receiving. As customers investing in LCTs are likely to rely on the provision of information and services from their DNO, we think DNOs should separately report

[4] Low carbon technology (LCT) is the term given to technologies that emit low levels of CO2 emissions, or no net CO2 emissions. Examples of LCTs include electric vehicles and heat pumps.

on the service associated with the update of LCTs, whether this is in the form of a new connection or a general enquiry.

4.17 Supply interruptions are inconvenient to all customers, however we think the impact of interruptions, even short interruptions, to LCT customers could be more severe. Some LCT customers may be more inconvenienced by short interruptions if and when they occur. For example, this could be because a charging electric vehicle requires intervention from its owner for it to continue charging, even after supply has been restored. We think by separating out the levels of satisfaction recorded by these customers, DNOs will be better able to understand their needs and develop services accordingly.

4.18 At this time, we are not proposing a separate incentive specifically for LCT customers. While we expect the volume of customers installing LCTs to increase over the course of RIIO-ED2, existing volumes are low and may not, at least in the first few years, form a statistically significant sample that would allow for a separate incentive. DNOs are currently undertaking a joint piece of research into potential changes to the survey, which, amongst other topics, will explore how volumes of LCT customers may change as well as what additional or different services LCT customers may require. We will consider this evidence in making our final decision.

4.19 With regards to the existing connections customer survey, we are considering whether to extend the scope to include additional customers not currently captured by RIIO-ED1 arrangements. Further detail on options can be found in Chapter 5 on connections.

Capturing key services and customers: Associated weightings

4.20 We have reviewed the weightings attributed to the customer categories under the surveys to ensure they appropriately reflect the service priorities the incentive is trying to drive. The existing weightings have driven performance improvements in RIIO-ED1 and we consider that they continue to be appropriate for RIIO-ED2.

4.21 While DNOs are meeting their survey target scores, DNO performance under the connections survey is consistently poorer than under the other two surveys. In 2018-19, for example, average performance under the interruptions, connections and general enquiries surveys were 8.95, 8.65 and 9.14 respectively. We

therefore consider it appropriate that the connections survey continues to be weighted at 50% to encourage further improvements in this area.

4.22 Additionally, we consider the financial exposure of +/-0.5% (50% of 1%) of base revenue for the connections element of the survey to be appropriate for RIIO-ED2 as we are proposing to retain the time to connect (TTC) incentive, which has a financial exposure of +0.4%. The TTC incentive drives DNOs to shorten end to end timescales for connection customers and while we want to drive DNOs to deliver timely connections, we do not want DNOs to prioritise speed at the expense of quality.

Table 3: Proposed customer categories and associated weightings

Proposed customer category	Proposed weighting
Interruptions (including separate reporting of PSR and LCT customers)	30%
Connections (including separate reporting of customers connecting LCTs)	50%
General enquiries (including separate reporting of customers with general enquiries about LCTs)	20%

Target setting and calculating rewards and penalties

4.23 In RIIO-ED1 we set the same targets for all DNOs across all customer categories to ensure that customers received a similar quality of service, regardless of their location or the type of service provided. Due to limited historical data of DNO performance, targets were set in part using UK service industry customer satisfaction levels achieved across a range of different industries, including retail, banking and other utility services.[5] This approach was also to ensure DNOs delivered good levels of customer service, comparable with what is considered 'good' in other sectors nationally. Table 4 sets out the target and maximum penalty and reward scores for all DNOs in RIIO-ED1.

Table 4: RIIO-ED1 customer satisfaction survey target and maximum reward/penalty scores

Maximum penalty score	Target	Maximum reward score
6.8	8.2	8.9

[5] We set the target with reference to the upper quartile level of performance in the UK Customer Satisfaction Index (UKCSI) to inform our approach. This means we only reward companies that are considered good when their customer service is compared with service provided in more competitive industries.

4.24 In RIIO-ED1, some DNOs are reaching scores of 8.9/10 and are therefore receiving the maximum reward possible under the customer satisfaction survey. For RIIO-ED2, we want to ensure that the high levels of customer satisfaction from RIIO-ED1 are maintained and that targets for rewards continue to encourage excellent performance. We also want to penalise DNOs for falling below what is now considered business-as-usual performance. We have identified two options for setting targets that are both ambitious while also reflecting actual industry performance. These are set out in Table 5.

Table 5: Options for setting the target level associated with the customer satisfaction survey

Option	Description	Pros	Cons
Option 1: (current) Static relative approach	Targets are set at the beginning of the price control period with reference to RIIO-ED1 scores, and remain constant and consistent across all companies.	*Simple mechanism to understand and administer. *Fixed targets provide incentive to achieve above defined level.	*If target is easily outperformed, no mechanism for amending target in line with actual performance. The same is true if target has been set too high. *Fixed target arguably provides weaker incentive to improve performance once achieved.
Option 2: Dynamic relative approach	Targets would evolve throughout the price control and would be adjusted annually to reflect the industry average for that year, added to a cumulative score based on previous years' scores (eg from the previous 4years) as a rolling average.	*Targets would reflect actual industry performance and adapt to improvements across the industry average. *Would provide a degree of automatic recalibration. *Would incentivise improvements and would ensure targets continue to be ambitious.	*Performance improvements in RIIO-ED1 have been (and in RIIO-ED2 are likely to continue to be) incremental, meaning that any recalibration may result in little to no changes to targets. *Changing targets would provide less certainty for DNOs and may make planning harder.

4.25 In the RIIO-ED2 framework decision, we outlined that we would consider the use of a dynamic relative approach to target setting on a case by case basis[6]. We are

[6] A dynamic relative approach refers to targets set at the start of the price control either based on company's own performance and/or frontier company, which evolve during the period to take account of improvements in performance across the sector. For further detail see Chapter 4, RIIO-2 Sector Specific Methodology Decision.

consulting here on the use of static and dynamic targets for the survey in RIIO-ED2, although our current preferred option is Option 1.

4.26 A dynamic approach to setting targets would allow us to capture improvements across the sector and ensure that targets remain ambitious. On the other hand, as significant gains have already been made in RIIO-ED1, improvements in RIIO-ED2 may be incremental, meaning that any recalibration within period may result in little to no changes to targets.

4.27 As RIIO-ED1 targets were benchmarked against customer service levels achieved in other, competitive, industries in the UK, we think a static target which embeds the performance improvements we have seen in RIIO-ED1 should continue to drive performance to a standard considered to be 'good' on a national level. Additionally, we consider there to be a degree of dynamism in static targets because scores are awarded based on the level of service provided to customers relative to their expectations, and customers' expectations evolve over time.

4.28 To ensure we are using the most up to date data when setting targets, we are also considering whether to set targets at either Draft or Final Determinations. We think this would further ensure targets reflect improvements in service in RIIO-ED1, and strengthens the rationale to set targets using Option 1. We are not currently considering a company specific approach with different targets for each company as we think comparability between companies can act as a reputational incentive on poor performers to improve.

4.29 To ensure that poor performance is penalised in RIIO-ED2 and that only significant performance improvements are rewarded, we are also proposing amendments to our approach to calculating rewards and penalties. We propose to achieve this by setting targets based on mean performance in RIIO-ED1, with rewards applying to scores above the level of the RIIO-ED1 upper quartile, and penalties applying to scores below the average. We would introduce a dead band between the RIIO-ED1 average score and the upper quartile score where no financial incentive applies. This would allow us to bank RIIO-ED1 performance and only reward the top performers in RIIO-ED2.

4.30 In calculating performance under the customer satisfaction survey in RIIO-ED1, we factor in the number of unsuccessful calls from customers experiencing a

supply interruption.[7] To ensure that DNOs are driven to answer customer calls quickly and minimise the number of calls that are 'unsuccessful' we are proposing to continue to factor in the number of unsuccessful calls when calculating DNO performance under the interruptions satisfaction survey in RIIO-ED2. This means that for the interruption category of the survey a DNO's overall performance score will deteriorate the more calls it fails to answer.[8]

Incentive rate applied to DNOs' scores

4.31 In RIIO-ED1, the reward or penalty associated with the survey is capped at +/-1% allowed revenue, weighted at 50% for connections, 30% for interruptions and 20% for general enquiries.

4.32 We think the incentive rate of +/-1% is appropriate for RIIO-ED2 and are proposing to retain the current incentive strength in RIIO-ED2. The current incentive rate has been sufficiently strong to drive companies to make significant performance improvements in RIIO-ED1. A rate of +/-1% base revenue should ensure that DNOs improve their services where this is valued by customers and is cost effective to do so.

4.33 We recognise that, in some areas, making further improvements in RIIO-ED2 could require significant expenditure that may not be commensurate with payments under the existing incentive rate. However, given that generally current satisfaction levels are high, we don't consider consumers would value further improvements at a higher cost and therefore do not think we should increase the incentive rate beyond +/-1% base revenue for RIIO-ED2. We think this incentive rate will also be sufficiently strong in RIIO-ED2 to prevent any deterioration in DNO performance.

Next steps

4.34 The DNOs are working collaboratively to research potential changes to the methodology and content of the survey, focusing primarily on:

[7] During supply interruptions, DNOs receive calls from customers asking when their supply will be restored and during large outages customers may be unable to reach the DNO because the number of calls significantly increases. Customers that are unable to reach the DNO during these periods are not interviewed as part of the customer satisfaction survey because they have not engaged with the DNO. However we think it is important that DNOs answer customer calls quickly and minimise the number of calls that are 'unsuccessful'.

[8] For the interruption element of the customer satisfaction survey, DNOs are penalised 0.02% of annual base revenue for each 1% of calls to the DNO that are unsuccessful.

a) Survey channels (the different methods DNOs could use to conduct the survey, such as through online forms or via text message)
b) Survey questions (including the types of questions asked, how many and the approach to generating a survey score)
c) LCT Customers (how volumes may change and what additional or different services they may require)

4.35 We have discussed potential options at the RIIO-ED2 working group[9] and the DNOs are due in October 2020 to submit to us for evaluation a complete proposal for how they think the survey could evolve for RIIO-ED2.

4.36 If we decide to implement methodological changes in RIIO-ED2, we will need to have data demonstrating the impact of changes to the methodology on performance so that any improvements or deteriorations in RIIO-ED2 scores reflect changes in actual performance and not just a change in the methodology. We will therefore consider running two methodologies (existing and new) in parallel in RIIO-ED1 to ensure we can set appropriate targets for RIIO-ED2.

Options considered but not proposed

Options for calculating rewards and penalties

4.37 We considered alternative approaches for calculating rewards and penalties in RIIO-ED2. These are summarised in Table 6. We think however that the incentive has worked well over RIIO-ED1 and that is why we are proposing to continue with it, subject to the changes discussed above, in RIIO-ED2.

Table 6: Options for applying penalties and/or rewards under the survey

Option	Description	Pros	Cons
Option 1: retain current financial incentive	Rewards and penalties available depending on performance against target score.	*Equal exposure to rewards and penalties. *Simple mechanism already understood by DNOs. *Actively drives further improvements in customer service beyond target.	*Given the high level of customer satisfaction scores following RIIO-1, it may not be appropriate/necessary to reward further improvements at the rate we are currently.

[9] See paragraphs 3.12-3.13 of the Overview document for more information on how we operate the RIIO-ED2 working groups.

Option	Description	Pros	Cons
Option 2: Zero-sum approach	Rewards and penalties depend on where companies rank in their performance. For example, the four highest scoring companies would receive rewards where the four lowest scoring companies would receive penalties.	*Acknowledges high standard being achieved by companies and only rewards exceptional performance within the industry. *Encourages competition between the DNOs.	* Not an absolute measure of performance. Could reward poor service, if there are worse performers in the sector. Could penalise good performers if other DNOs achieve excellence *Reduces incentive to share best practice.
Option 3: Penalty-only approach	Penalties apply depending on performance against a target score.	*Would establish a minimum level of performance. *Would prevent deterioration of high performance by establishing a penalty beyond a minimum. *Acknowledges that since a high standard has been achieved by many, it may better reflect consumer preferences to penalise companies that perform worse than the industry average.	DNOs would not be driven to improve their services, even where customers value this and would be willing to pay for it.
Option 4: Defined penalty and reward pot approach	Targets would be set at start of price control with reference to average performance across RIIO-ED1. Below this point, a penalty would be incurred; above this point there is a 'dead band'. If a company was to achieve above a particular score, it would be rewarded by a 'pot' that would be divided among any successful DNOs.	*Would minimise deterioration of good performance. *Would incentivise competition and improvement among DNOs. *Would only reward outstanding performances as opposed to business as usual activity, which may better reflect consumer preferences.	Potentially providing a reward for something that consumers do not necessarily value - eg exceptional service rather than just very good service.

Balanced Scorecard

4.38 In our RIIO-ED2 working group, a DNO suggested using a balanced scorecard approach, such as the one developed by the UK Customer Satisfaction Index

developed by the Institute of Customer Service (IoCS) to measure satisfaction in RIIO-ED2 incentive.[10] A balanced scorecard approach would have a wider focus than the RIIO-ED1 customer satisfaction surveys, and could measure factors such as customer trust levels, complaints handling and ethics, including the extent to which the customers feel the company 'does the right thing'. The scorecard would also allow for comparison with sectors beyond energy network companies, including those operating in competitive markets.

4.39 A balanced scorecard approach would incentivise DNOs to improve their performance in areas such as customer trust and transparency. While this would provide more information to the DNO on its performance in these areas, we do not have evidence to suggest that customers would value improvements in these areas and would be willing to pay for them. Moreover, the scorecard captures areas that are already incentivised in the RIIO framework such as complaints handling. We therefore do not think we should introduce the balanced scorecard as a common financial incentive for RIIO-ED2. However, DNOs may want to consider working with their stakeholders to explore the appropriateness of a balanced scorecard as a bespoke output or as a useful internal management tool.

Consultation Questions

OUTQ3. Do you agree with the proposed scope and associated customer category weightings for the satisfaction survey?

OUTQ4. Do you agree with our proposed approach to target setting and calculating rewards and penalties in RIIO-ED2?

Complaints metric

Table 7: Complaints metric

Purpose	To incentivise DNOs to improve their handling of customer complaints.
Proposed approach	Retain complaints metric as a penalty only financial ODI with a common static target.

[10] Institute of Customer Service's Customer Satisfaction Index: https://www.instituteofcustomerservice.com/research-insight/ukcsi/

Background

4.40 In RIIO-ED1, the complaints metric is designed to encourage DNOs to manage customer complaints efficiently and resolve them satisfactorily. DNOs can be penalised up to 0.5% of base revenue for not meeting the target score for customer complaints under RIIO-ED1. Complaints performance is measured against four weighted indicators, based on the percentages of:

- Complaints unresolved after one day (10%)
- Complaints unresolved in 31 days (30%)
- Repeat complaints[11] (50%)
- The number of Energy Ombudsman decisions that go against the DNO (as a percentage of total complaints) (10%).

4.41 Performance against each indicator is combined to derive an overall score; the lower the score, the better the DNO is at resolving complaints. Table 8 sets out the target and maximum penalty score for DNOs in RIIO-ED1.

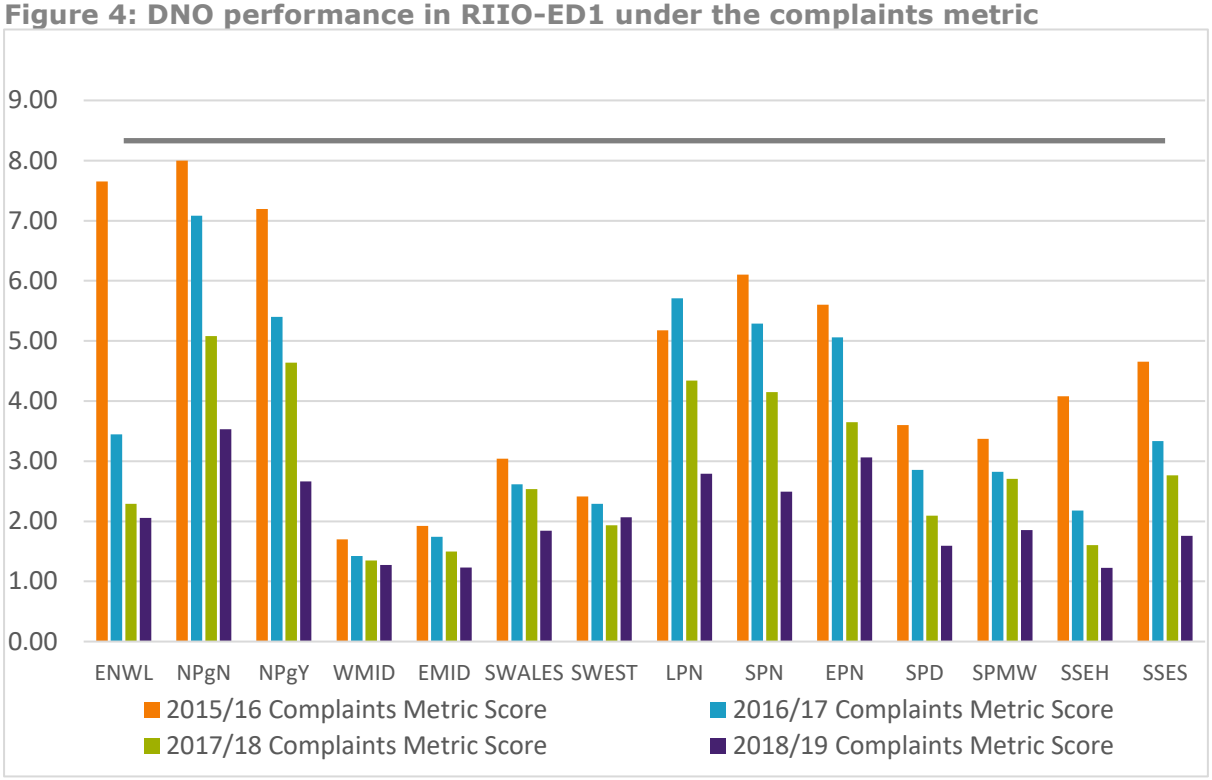
Table 8: Complaints metric target and maximum penalty score

Target	Maximum penalty score
8.33	14.84

4.42 In the RIIO-ED1 to date, all DNOs have performed better than their target of 8.33 and no financial penalties have been incurred. Since the start of the price control in 2015, resolution timescales have fallen, Energy Ombudsman findings against DNOs stand at zero, and repeat complaints are at almost zero. We think the complaints metric has been successful as an incentive, with the majority of DNOs demonstrating year on year improvements in handling complaints over the price control period to date.

[11] A repeat complaint is where the customer makes contact to express dissatisfaction with the same or substantially the same matter that was the subject of a previously resolved complaint within a 12 month period.

Figure 4: DNO performance in RIIO-ED1 under the complaints metric



Proposed outputs

4.43 We propose to retain the output in RIIO-ED2 in order to maintain, and improve, performance in RIIO-ED1. We think the complaints metric should remain a penalty only incentive because we consider it inappropriate for a company to earn additional revenue for performance in relation to their complaint handling service. In a competitive environment, organisations may lose customers as a result of poor levels of complaints handling, but are unlikely to gain new customers as a result of good complaints handling. We consider the incentive strength (up to -0.5% of base revenue) to have been sufficient to drive performance improvements in RIIO-ED1 and are therefore proposing to keep the incentive rate the same for RIIO-ED2.

4.44 For RIIO-ED2, we are proposing to retain the existing indicators but are consulting on options for setting targets for RIIO-ED2.

Target setting

4.45 In RIIO-ED1 to date, DNO performance under the complaints metric has improved from an average of 4.61 in 2015-16 to 2.10 in 2018-19. As a result of the improvements made over RIIO-ED1, we believe the current target score of

8.33 should be updated to better reflect the current standard of complaints resolution.

4.46 In RIIO-ED1, the target was set using the average performing DNO during 2012-13 and the maximum penalty score was based on the worst performing DNO during 2012-13. The same target score applied to all DNOs because we considered all consumers should be able to expect the same standards of service.

4.47 For RIIO-ED2, we are also proposing to set common target using historical RIIO-ED1 performance. For RIIO-ED2, we are also proposing to set a common target using historical RIIO-ED1 performance. We think this will ensure that DNOs performing below average (at the time the target is set) have a strong incentive to improve. We have reviewed scores achieved in RIIO-ED1, a summary of which is set out in Table 9(a). We have provided a comparison with RIIO-GD1 performance as the complaints metric also applies to the GDNs. Table 9(b) sets out the targets and maximum penalty scores for RIIO-ED1 and proposed scores for RIIO-GD2, which can be found in our Draft Determinations.[12]

Table 9(a): Comparison of performance in RIIO-ED1 and RIIO-GD1

	RIIO-ED1: 2015/16 - 2018/19	RIIO-GD1: 2013/14 – 2018/19
Industry average	3.32	6.58
Worst score recorded	8.00	11.45
Best score recorded	1.23	2.06

Table 9(b): Targets and maximum penalty scores for RIIO-ED1 and proposed for RIIO-GD2

	RIIO-ED1	Proposed for RIIO-GD2
Target	8.33	5.00
Maximum penalty score	14.84	10.00

4.48 We intend for targets to be more challenging in RIIO-ED2. For RIIO-GD2, we have proposed to set a target of 5.00 as this is in the range of scores achieved in RIIO-GD1. We have proposed to set a maximum penalty score of 10.00, which we consider to be appropriate because no GDN has scored above this since 2016-17. While Table 9(a) provides a useful high-level summary of performance to

[12] RIIO-2 Draft Determinations – Gas Distribution Annex, https://www.ofgem.gov.uk/system/files/docs/2020/07/draft_determinations_-_gd_sector.pdf

date in RIIO-ED1, we propose to use the most up to date information available to us when setting targets for the next price control period. We propose to consult on RIIO-ED2 targets at either the Draft or Final Determinations stage.

4.49 To update the complaints metric target, we also considered static and dynamic approaches to target setting:

- Option 1: Set a relative static target using the average industry performance across RIIO-ED1, above which a penalty would be incurred (increasing with worse performance to a cap of 0.5% of base revenue, as in RIIO-ED1). The static target would be based on an average of RIIO-ED1 and remain the same throughout RIIO-ED2.
- Option 2: Set a relative dynamic target using the average industry performance across RIIO-ED1, above which a penalty would be incurred (increasing with worse performance to a cap of 0.5% of base revenue). The dynamic target would initially be based on an average of RIIO-ED1 but would be adjusted annually to include the previous years' score giving a rolling average of industry performance.

4.50 Our preferred approach is option 1. A dynamic approach would require intervention during the price control and would result in adjusted targets on a two-year time lag. This means that in a five-year price control, targets would be reset using limited data and would only apply for a short period of time before they would have to be reset again.

4.51 As this is a penalty-only incentive, it is targeting improvements in poor performance rather than driving excellence. As performance is already strong across the board, we see limited benefit for the potential cost of the intervention. For this reason, we are proposing to apply static targets in RIIO-ED2.

Options considered but not proposed

4.52 In our RIIO-ED2 working groups, stakeholders put forward proposals for new indicators and amendments to existing indicators to ensure DNOs maintain, and continue to improve, complaints handling performance in RIIO-ED2. Suggestions included replacing the indicator measuring ‘complaints unresolved in 31 days’ to one measuring 'complaints unresolved in 15 days'. This would recognise the improvements in DNO performance in RIIO-ED1 and drive further reductions in

resolution timescales in RIIO-ED2.[13] Alternatively, recognising that some complaints take longer to resolve, and that a 31 days indicator could still be valuable, a shorter 15-day timescale could be included in addition to the 31-day timescale.

4.53 We think it is important to have arrangements in place which ensure DNOs' performance does not deteriorate, and which also drive DNOs to continue to improve their performance in RIIO-ED2. However, we believe that the four measures used to assess performance in RIIO-ED1 are appropriate indicators of the quality of complaints handling and think the same outcome (ie faster complaints resolution) could be achieved by amending the target scores associated with the existing indicators, rather than introducing new ones.

4.54 A further suggestion was to introduce a 12-hour complaints resolution indicator specifically for PSR customers, which would measure the number of PSR customer complaints resolved within a 12-hour period from the first point of contact with the DNO. The rationale for this indicator is that the severity levels experienced by PSR customers, for example during a power cut, could be greater and that the indicator would place enhanced focus on resolving complaints for PSR customers quickly.

4.55 We agree that DNOs should work to resolve customer complaints, including from PSR customers, efficiently. However, supply interruptions are likely to impact a large number of customers. We have concerns that an incentive on 12 hour resolution for PSR customers could lead to a DNO prioritising restoration of supply or the provision of additional services to an individual complainant, rather than consider the most appropriate means of restoring services to all customers affected, including those PSR customers who have not complained.

4.56 Another stakeholder proposed an indicator measuring the number of complaints per 10,000 customers. This would drive DNOs to improve the services they provide to customers in order to reduce the number of complaints they receive.

4.57 The main purpose of the complaints metric is to drive DNOs to improve their handling of complaints, and we think an indicator measuring the number of complaints per 10,000 customers is more about a DNO improving the services

[13] In the first year of RIIO-ED1, the percentage of total complaints outstanding after 1 day was 32%, which fell to 15% in 2018-19. Similarly, the percentage of total complaints outstanding after 31 days fell from 5% in 2015-16 to 2% in 2018-19.

they provide to customers in order to reduce the number of complaints they receive rather than driving the effective handling of complaints.

4.58 As DNOs are already incentivised through the customer satisfaction survey to improve the quality of service they provide to customers, and the survey is a penalty and reward mechanism, we think an additional indicator in the complaints metric may not be needed.

Consultation Question

OUTQ5. Do you agree with our proposed approach to setting complaints metric targets in RIIO-ED2?

Proposed removal of Stakeholder Engagement and Consumer Vulnerability Incentive

Name	RIIO-ED1 licence condition
Stakeholder Engagement and Consumer Vulnerability Incentive	CRC 2C

4.59 The Stakeholder Engagement and Consumer Vulnerability (SECV) incentive was introduced in RIIO-ED1 to encourage the DNOs to engage proactively with a wide range of stakeholders to anticipate their needs and deliver a consumer-focused, socially responsible and sustainable energy service.

4.60 The SECV incentive financially rewards network companies for undertaking high quality engagement activities and using that engagement to inform their business activities. Additionally, it drives DNOs to maximise their role in addressing consumer vulnerability by rewarding them for developing and implementing initiatives which both identify and assist consumers in vulnerable situations. It is a reward only incentive, worth up to 0.5% of annual allowed revenues. We use a panel of independent experts to help determine each company's annual reward.

4.61 As the scores in Table 10 show, company performance under the SECV has been positive overall.[14] So far in RIIO-ED1, stakeholder engagement has become increasingly embedded in DNOs' businesses, and the independent panel has

[14] The SECV operates on a continual improvement basis, meaning that companies must demonstrate they have improved from one year to the next to obtain the same score from the previous year.

determined that the majority of network companies are committed to engagement. With regard to consumer vulnerability, specifically, helping vulnerable consumers has consistently been included in the companies' strategic priorities, which are informed by stakeholder engagement. DNOs have demonstrated a deeper understanding of how varied vulnerability can be, with companies expanding their priority services registers (PSR) as well as regularly updating their vulnerable customer data.

Table 10: DNO performance in RIIO-ED1 under the SECV incentive

	2015-16		2016-17		2017-18		2018-19	
	Score	Reward (£m)	Score	Reward (£m)	Score	Reward (£m)	Score	Reward (£m)
WPD	8.75	£6.35	8.53	£6.17	8.75	£6.72	8.35	£6.34
UKPN	7.53	£4.04	7.53	£4.12	7.25	£3.94	7.95	£4.94
ENWL	6.90	£0.98	6.38	£0.82	5.75	£0.63	4.54	£0.19
SPEN	6.78	£1.94	6.28	£1.63	6.35	£1.74	6.71	£2.07
NPg	6.50	£1.43	6.50	£1.46	7.50	£2.12	7.01	£1.88
SSEN	5.73	£1.13	5.23	£0.82	5.50	£1.04	3.95	£0

Reasons for proposing removal

4.62 While we consider stakeholder engagement to be critical to effective network operation in RIIO-ED2, we now consider high quality stakeholder engagement to be a business as usual activity for which DNOs are funded through baseline allowances. It is not clear that a within-period output is needed or that DNOs should receive additional reward payments for this.

4.63 Stakeholder engagement is a central part of the RIIO-ED2 framework. It will be critical to developing a good business plan, and as part of the BPI we plan to take account of the quality of engagement carried out by DNOs in developing their plans. We expect companies to submit a clear strategy for stakeholder engagement during the price control period. This strategy for ongoing engagement should be informed by the DNO's CEG and should describe how DNOs will incorporate best practice from RIIO-ED1 into their activities. More information on our enhanced stakeholder engagement framework can be found in Chapter 3 of the Overview document. Our enhanced engagement guidance for RIIO-ED2 is being published alongside this consultation.

4.64 Similarly, we think addressing consumer vulnerability issues should be a business as usual activity in RIIO-ED2. With regards to consumer vulnerability, we are

proposing a package of measures to ensure DNOs embed the progress they have made in the current price control in RIIO-ED2. This includes separate identification of PSR customers in the customer satisfaction surveys and a new and broader licence condition setting out that DNOs must treat all domestic customers, including those in vulnerable situations, fairly. We are also proposing a new mechanism to ensure DNOs are driven to address emerging vulnerability challenges. These proposals can be found in Chapter 6.

Consultation Question

OUTQ6. Do you agree with our proposal to remove the Stakeholder Engagement and Consumer Vulnerability Incentive in RIIO-ED2?

5. Meet the needs of consumers and network users: Connections

Chapter summary

This Chapter outlines the measures we are proposing to improve the connections service DNOs provide to customers in RIIO-ED2. Additional information on our proposals for the Customer Satisfaction Survey, which applies to some, smaller, connection customers, can be found in Chapter 4.

Introduction

5.1 Under the Electricity Act 1989, DNOs are obliged to offer a connection to any customer that wishes to connect to the network. Customers seeking a new connection rely upon the DNO to provide them with an efficient, high quality service and we expect DNOs to meet the requirements for all connection customers. However, the type of services a customer requires may depend on the size or type of connection they seek and this in turn may impact upon how performance should be measured and incentivised.

5.2 For connections at the lower voltages, or 'minor connections', the connections process can be reasonably straightforward. In RIIO-ED1, we introduced the Time to Connect (TTC) incentive to shorten end to end timescales for minor connection customers and these customers were also captured by the RIIO-ED1 Customer Satisfaction Survey to drive DNOs to develop service offerings to meet their needs.

5.3 We decided that the TTC incentive and connections element of the satisfaction survey would apply only to those who requested a minor connection because these customers were high in volume, considered to have similar requirements in terms of their connection requests, and because they may not receive a good service from the DNO due to the absence of competition in this part of the

market. For RIIO-ED1, these customers were defined as those requiring LVSSA and LVSSB connections.[15]

5.4 For connections at higher voltages and generation and other unmetered connections, also known as 'major connections', customers' requirements can be more complex. We considered that DNO performance in relation to these connections should be subject to a different set of arrangements. This was because customers whose requests fell into these market segments (ie those that are not LVSSA or LVSSB) were more likely to have bespoke requirements, were fewer in number (although the value of their connections work was higher) and were operating in parts of the market where there was either active competition, or the potential for it to develop. For customers in these market segments we introduced the Incentive on Connections Engagement (ICE) to drive DNOs to engage with their connection customers, to understand their needs and to tailor their connection services accordingly.

5.5 We have seen improvements in DNOs' performance over RIIO-ED1; most DNOs are meeting their connection timescale targets and are connecting smaller customers more quickly than they were at the beginning of the price control. For major connections, DNOs have enhanced the provision of information to customers through the introduction of alternative engagement methods and improving the accessibility of their connection work plans. While we have seen improvements in RIIO-ED1, we think DNOs could be doing more to satisfy the needs of their connection customers. The proposals set out in this Chapter aim to embed the gains the DNOs have made in RIIO-ED1 and drive DNOs to continue to deliver service improvements through ambitious targets and commitments.

Connection types and sizes

5.6 As set out above, we applied different regulatory approaches for customers seeking small, or minor, connections and those seeking large, or major, connections in RIIO-ED1.

5.7 We consider that some connection customers who are currently defined as 'large', and are subject to the ICE arrangements, may have more in common

[15] The connections market segments describe the nature and volume of the work required to complete a customer connection. LVSSA means a small low voltage demand connection to single premises, involving a single-phase connection and no significant other work. LVSSB means a low voltage demand connection, where the scheme requires i) more than one but less than five single-phase connections at domestic premises ii) fewer than five single-phase connections at domestic premises and an extension of the existing network, or iii) single premises requiring a two-phase or three-phase connection.

with those requiring LVSSA or LVSSB connections (minor connection customers). This could include customers who have the same or similar requirements to LVSSA and LVSSB customers, are high in volumes, and either form part of a market segment where there is no competition, or if the market segment in which they sit does attract competition, these customers constitute a subset where no competition occurs or is likely to occur.

5.8 The connections market segments, and the types of services and customers, we are considering for inclusion are set out in Table 11.

Table 11: Market segments under consideration for inclusion in CSS

Market segment	Types of services and customers
LVAL	Description: Low voltage connection activities involving only low voltage work, other than in respect of Excluded Market Segments.[16] Example: Additional load typically small to medium sized commercial or industrial customers requiring additional power capacity or extension assets. May include schools, colleges or other educational establishments.
LVHV	Description: Low voltage connection activities involving high voltage work. Example: Larger domestic housing developments commercial dispersed loads such as retail parks or industrial units. Farms and other rural businesses are a good example of this as often rural overhead line systems cannot provide the same capacity as urban cable networks, therefore rural customers require a greater incidence of HV work.
DGLV	Description: Distributed generation connection activities involving only the low voltage network. Example: Small distributed generators such as those in use in farms, factories, smaller office premises, schools, hotels, combined heat and power (CHP) plants and domestic scale premises.

5.9 Proposals in this Chapter set how we could incorporate these connection customers into more mechanistic arrangements including the TTC incentive and Customer Satisfaction Survey. Chapter 4 provides more detail on our proposals in relation to customer satisfaction, however a summary of proposals that relate to the satisfaction of connection customers are set out below.

[16] Excluded Market Segments are segments of the connections market specified in CRC 2K (Margins on licensee's Connection Activities) of the electricity distribution licence where it is not possible to charge a Regulated or Unregulated Margin.

Connections element of the customer satisfaction survey

Table 12: Connections element of the customer satisfaction survey

Purpose	The connections element of the customer satisfaction survey helps to drive improvements in the quality of service DNOs provide to small, or minor, connection customers.
Proposed approach	Retain the connections element of the survey as a reward and penalty financial ODI, using common static targets. We are consulting on the scope and design of the incentive to ensure it captures key customers interactions and drives further performance improvements in RIIO-ED2.

Background

5.10 The customer satisfaction survey encourages DNOs to deliver quality services to customers and the connections element of the survey specifically drives DNOs to satisfy the needs of small, or minor, connection customers. Further information on the satisfaction survey and our proposals for RIIO-ED2 can be found in Chapter 4.

Proposed outputs

5.11 We propose to retain the customer satisfaction survey with connection customers in RIIO-ED2. We are proposing to require DNOs to separately report on the satisfaction levels of consumers who interact with the DNO regarding a low carbon technology (LCT), such as a heat pump or an electric vehicle charging point. This is to ensure there is sufficient focus on the customer experience when the DNO is delivering services associated with LCTs. This would include customers seeking to connect an LCT, those who contact the DNO with a general enquiry about their LCT as well as those with an LCT who experience a supply interruption. As set out in more detail in paragraphs 4.14-4.19 we are not proposing a separate incentive specifically for LCT customers because volumes may not form a statistically significant sample.

5.12 We are also proposing to extend the existing connections satisfaction survey to include certain connection customers that are not currently captured, where they fulfil specific conditions. This includes smaller customers who have the same, or similar, characteristics as LVSSA and LVSSB customers and may either form part

of a market segment where there is no competition, or if the market segment in which they sit does attract competition, these customers constitute a subset where no competition occurs or is likely to occur.

5.13 In our RIIO-ED2 working groups, stakeholders have suggested that certain market segments in particular should be considered for inclusion in the RIIO-ED2 satisfaction survey, due to the higher volumes of customers requesting these services and the similarity in the requirements of customers. These are set out in Table 11 above.

5.14 If we can be satisfied that these customers are not currently being served by competitive alternatives to the DNO, then we propose to include them in the scope of the survey.

Consultation Questions

OUTQ7. Do you agree with our proposal to expand the connections element of the customer satisfaction survey?

OUTQ8. Do you consider that we have identified the relevant considerations to determine which customers should be captured in its scope?

Time to Connect Incentive

Table 13: Time to connect (TTC) incentive

Purpose	To incentivise DNOs to reduce connection times for customers seeking small, less complex connections to the distribution network.
Proposed approach	We are proposing to retain the time to connect incentive as a financial ODI in RIIO-ED2. We are also proposing to introduce a reopener to review performance and to apply penalties if service levels deteriorate within the period.

Background

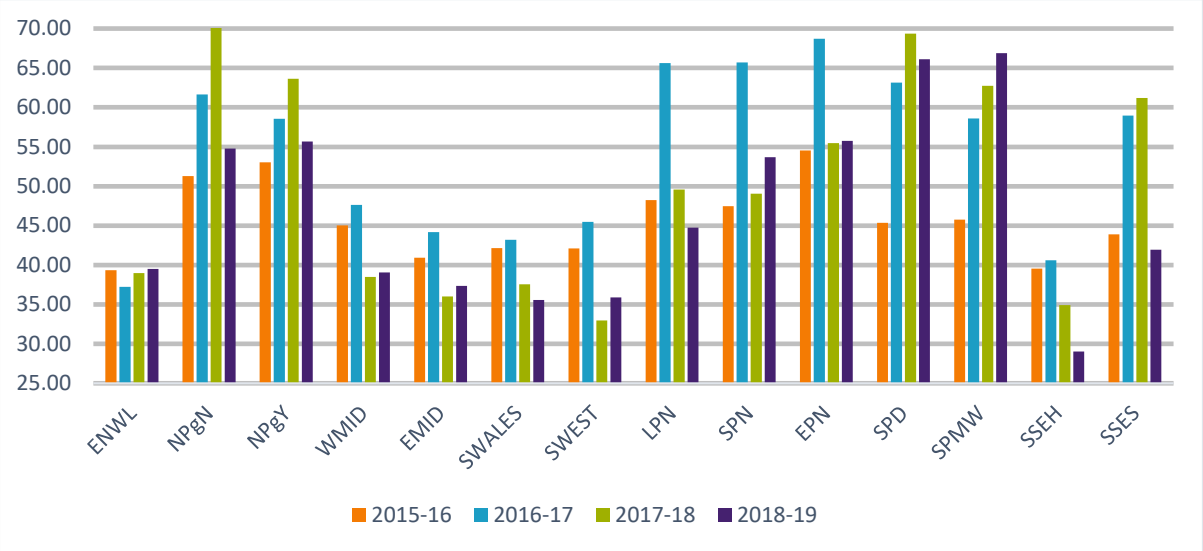
5.15 In RIIO-ED1, we introduced the time to connect incentive to drive DNOs to shorten the end-to-end process of connecting smaller, or minor, customers (connections at the lower voltages) to the network.

5.16 Under the incentive, connection time is measured in two ways. The 'time to quote' is the time from the DNO receiving the initial application to issuing a

quotation. The 'time to connect' is the time from the customer accepting the quotation to the connection being completed. The incentive applies on a reward only basis, with a maximum reward of 0.4% of base revenue per annum.

5.17 Performance in RIIO-ED1 to date suggests that the incentive has driven improvements in the timeliness and efficiency of DNOs connecting smaller customers. DNOs have earned £55 million (2018-19 prices) in rewards under the incentive in RIIO-ED1 to date and in most cases, DNOs are meeting their time to quote and connect targets, although there are pockets of poorer performance. See Figure 5 for DNO performance to date under the time to connect incentive.

Figure 5: Average time to connect under the TTC incentive in RIIO-ED1 (days)



Proposed outputs

5.18 We are proposing to retain the TTC as a financial ODI in RIIO-ED2. DNOs have improved their performance under the incentive in RIIO-ED1, however there is room for improvement and we think that DNOs should be rewarded if they are able to connect customers in timescales that on average are shorter than they are now. Additionally, we think penalties should apply to companies whose performance deteriorates in RIIO-ED2. We are therefore also proposing to introduce a reopener to review performance and apply penalties if service levels deteriorate within the period.

5.19 The delivery of timely connections will be of continued importance in the next price control, in particular due to an anticipated increase in electrical connection requests driven by decarbonisation. One of the ways in which DNOs can facilitate

the transition to net zero carbon emissions is through the delivery of efficient connections. In light of the anticipated increase in connection requests in RIIO-ED2, we think retaining the TTC incentive should ensure DNOs continue to focus on reviewing their end to end processes to identify opportunities for efficiencies and reduce connection timescales.

5.20 A further relevant factor is Ofgem's forthcoming decision on the Access Significant Code Review (SCR), and in particular on the decision of any changes to the distribution connection charging boundary.

5.21 Our decision on the distribution connection boundary is currently outstanding[17] but our shortlisted options include moving to a shallower or fully shallow connection boundary. Either of these options will mean, to differing extents, that more of the cost of connection will be funded through Distribution Use of System (DUoS) charges, rather than by the customer requesting the connection.[18]

5.22 While we are continuing to build our evidence base on the likely impacts of these changes, we think one of the impacts of such a change could be an increase in connection requests, at least in the short-term. This reinforces our view that retaining the TTC incentive will ensure DNOs continue to focus on driving efficiency gains through improving the connections process in RIIO-ED2.

5.23 We think penalties should apply to companies whose performance deteriorates in RIIO-ED2. Performance improvements under the TTC in RIIO-ED1 have resulted in DNOs earning financial rewards. As consumers have funded those rewards through their bills, we do not think customers should experience a decline in service without there being any consequence for the DNO. We considered introducing a symmetric incentive for the start of RIIO-ED2, however we recognise that the upcoming decision on Access SCR could have an impact on DNO performance in RIIO-ED2. We are therefore proposing to defer the introduction of penalties until we have more clarity on the impact of the Access SCR decision. We are proposing to introduce a reopener through which we could apply penalties for service deteriorations. Under this approach, targets would be set at the beginning of the price control period with reference to RIIO-ED1

[17] We plan to consult on our draft decision on access and forward looking charges later this year with a final decision in Spring 2021.
[18] DNOs recover their allowed revenue from customer's bills through Distribution Use of System (DUoS) charges.

performance and a reopener would enable the resetting of targets within the period.

5.24 Targets set using RIIO-ED1 performance would embed gains and only reward improvements above specified level. The option to reset targets in the period would enable us to tighten targets if they are easily outperformed. This would ensure targets remain challenging and that DNOs sustain their focus on process improvements. The reopener would also enable us to recalibrate targets if it becomes obvious that, as a result of the Access SCR decision, the volume and type of connections work being requested is having a material impact on timescales.

5.25 In RIIO-ED1, we set the value of this incentive at +0.4% base revenue, a lower level than the incentive applied to the customer satisfaction survey (+/-0.5% base revenue), to ensure that a DNO's main priority is satisfying customers. As we are proposing to retain the connections element of the survey at +/-0.5%, we are proposing to retain the value of this incentive at +0.4% of base revenue for RIIO-ED2.

5.26 For the TTC incentive in RIIO-ED2, we are proposing amendments to the following:

- The scope of the incentive
- Our approach to target setting

<u>The scope of the incentive</u>

5.27 As with the connections element of the customer satisfaction survey, we are considering whether to include additional market segments (beyond LVSSA and LVSSB) in the scope of a RIIO-ED2 TTC incentive. This would include smaller customers who have the same, or similar, characteristics as LVSSA and LVSSB customers and may either form part of a market segment where there is no competition, or if the market segment in which they sit does attract competition, these customers may constitute a subset where no competition occurs or is likely to occur. We welcome views on whether certain additional customers should be captured in the scope of the TTC incentive in RIIO-ED2.

5.28 In our RIIO-ED2 working group, some stakeholders have proposed that, if retained, the TTC incentive should include exemptions. This is because some

customers do not always wish for their connection to be delivered as quickly as the DNO can offer it. For example, where the connection is part of a larger project, the energisation must fit the project timeline. Where DNOs work to meet these customer-defined timescales, it affects their TTC performance despite the DNO being responsive to the customer's requirements.

5.29 In RIIO-ED1, we decided that no exemptions would be applied to the TTC incentive. We recognised that there would be a proportion of customers that require particularly long timescales for connections; however, we believed that these are likely to be equally present in the base data used to set targets. We still consider this to be an appropriate rationale for not including exemptions and are therefore proposing not to include exemptions in a RIIO-ED2 TTC incentive.

Approach to target setting

5.30 Under the RIIO-ED1 TTC incentive, all DNOs are measured against common targets. Time to connect targets were based on performance data captured in Distribution Price Control Review 5 (DPCR5).[19] We set the target values in advance of RIIO-ED1 and decided that they would be reset mid-period (so that quotes would be issued and connections would be completed in increasingly shorter timescales for DNOs to be eligible for a reward).[20]

5.31 For the first four years of RIIO-ED1, the minimum reward score level was based on the upper quartile performance across the DNOs, at the time the target was set. The maximum reward score was set at performance 30% below the average at the time the target was set. The reward scores for the first half of RIIO-ED1 are set out in Table 14.

Table 14: TTC minimum score and maximum score rewards for the first half of RIIO-ED1

Connection process	Connection size	Minimum reward score (working days)	Maximum reward score (working days)
Time to Quote	LVSSA	8.21	6.4
	LVSSB	11.73	10.12
Time to Connect	LVSSA	42.08	32.47
	LVSSB	52.70	39.91

[19] The DPCR5 price control ran between 2010 and 2015
[20] Time to Connect Incentive Consultation: https://www.ofgem.gov.uk/ofgem-publications/148829
Time to Connect Decision and Direction:https://www.ofgem.gov.uk/publications-and-updates/electricity-time-connect-incentive-decision-and-direction

5.32 For the final four years, the minimum reward score level was based on average DNO performance in RIIO-ED1 and the methodology for setting the maximum reward score was kept to the same, at 30% below the average level. The reward scores for the second half of RIIO-ED1 are set out in Table 15.

Table 15: TTC minimum score and maximum score rewards for the second half of RIIO-ED1

Connection process	Connection size	Minimum reward score (working days)	Maximum reward score (working days)
Time to Quote	LVSSA	4.84	3.39
	LVSSB	7.84	5.49
Time to Connect	LVSSA	39.28	27.50
	LVSSB	47.94	33.56

5.33 In setting new targets for RIIO-ED2, we are minded to use average DNO performance data to set the minimum reward score and to keep the method of setting the maximum reward score at 30% below the average level.

5.34 We want RIIO-ED2 targets to reflect performance improvements in RIIO-ED1 and therefore will ensure, when setting targets, that the minimum reward score is set at or below the level applied for the final four years of RIIO-ED1. This approach ensures that frontier performers will be driven to continue to improve which will drive up the industry average and lead to better performance through baseline funding over time. This approach also ensures that performance targets are within the reach of all DNOs and that poorer performers can earn rewards if they make performance improvements. We believe that setting the targets in this way strikes the right balance between making the incentive tougher and maintaining a good incentive for all DNOs.

5.35 We are also considering whether the incentive scale for the TTC in RIIO-ED2 should be linear between the minimum and maximum reward scores, or on a 'hockey stick', so that rewards start small and get bigger as you move from the third quartile to the upper quartile. This would provide an additional incentive for poorer performing DNOs to improve their performance.

5.36 If the scope of the TTC incentive is broadened to include additional market segments, we will make sure, where data exists, to take account of connection timescales for these customers in the setting of RIIO-ED2 targets. We anticipate that we will set targets for the TTC incentive at either Draft or Final Determinations. Whichever point in the process we set the targets, we will use the latest data that we have available to us to do so.

Consultation Questions

OUTQ9. Do you agree with our proposal to retain the TTC incentive as a financial ODI in RIIO-ED2?

OUTQ10. Do you agree with our proposal to include a reopener which allows us to revisit targets, and potentially introduce penalties, in the period?

OUTQ11. Do you agree with the methodology we propose to use to set the new TTC targets?

Improving Service Standards for Major Connections Customers

Table 16: Improving Service Standards for Major Connections Customers

Purpose	To ensure DNOs deliver quality services to customers seeking major connections in RIIO-ED2.
Proposed approach	Introduce an incentive framework to drive up standards for major connections customers. This includes (i) encouraging quality business plans through the BPI and (ii) holding companies to account through a financial ODI.

Background

5.37 Customers seeking a new connection rely upon the DNO to provide them with an efficient service. While the process for connecting customers at the lower voltages can be reasonably straightforward, for connections at higher voltages as well as for generation and other unmetered connections, customers' requirements can be more complex. Major connection customers, such as housing developers or distributed generators may require additional information or services from their DNO such as more information on their connection options, the associated costs or timescales for completion. Without this information, the

availability to the market of new housing or low carbon generation could be delayed.

5.38 The experience of these connection customers cannot be easily measured through mechanistic incentives because they are comparatively low in volumes and a poor score on satisfaction or timeliness of connection would be unlikely to significantly impact a DNO's overall performance as recorded by the Customer Satisfaction Survey.

5.39 For RIIO-ED1, we introduced the Incentive on Connections Engagement (ICE) to drive DNOs to deliver quality services to customers seeking larger, or major, connections. The scope of the RIIO-ED1 ICE is set out in Table 17.

Table 17: Relevant market segments captured under the RIIO-ED1 ICE

Market segment area	Customers captured
Metered demand connections	Low Voltage (LV) Work: LV connection activities involving only LV work, other than in respect of the Excluded Market Segment
	High Voltage (HV) Work: LV or HV connection activities involving HV work (including where that work is required in respect of connection activities within an Excluded Market Segment).
	HV and Extra High Voltage (EHV) Work: LV or HV connection activities involving EHV work.
	EHV work and above: extra high voltage and 132kV connection activities.
Metered DG connections	LV work: low voltage connection activities involving only low voltage work.
	HV and EHV work: any connection activities involving work at HV or above.
Unmetered connections	Local Authority (LA) work: new connection activities in respect of LA premises.
	Private finance initiatives (PFI) Work: new connection activities under PFIs.
	Other work: all other non-LA and non-PFI unmetered connections work.

5.40 The ICE requires DNOs to submit evidence to us on an annual basis demonstrating that they have engaged effectively with connection customers to develop and deliver plans that improve their service. Overall, we think the ICE has delivered benefits for connection customers in RIIO-ED1. However, a lack of consistent metrics has made it difficult to quantify these benefits over time and to compare DNO performance on a like for like basis.

5.41 Moreover, although we have seen evidence of good practice from some DNOs in terms of how they meet larger connection customers' needs, we think companies should be doing more in RIIO-ED2. For example, stakeholders have raised concerns around the continued lack of transparency of the connections process and that poor communication on the part of the DNO means customers do not feel they have sufficient information to make an investment decision.

5.42 To ensure major connection customers receive a good service, we think it is important to retain an output in RIIO-ED2. We think the output should ensure a degree of standardisation in DNOs' approaches to meeting customers' needs and we think that the progress that some companies have made in RIIO-ED1 should now serve as the baseline expected levels of service all DNOs provide in RIIO-ED2. For the reasons summarised above, and set out in more detail in paragraphs 5.72-5.79, we are proposing to remove the ICE and replace it with a new mechanism for RIIO-ED2.

Proposed outputs

5.43 In RIIO-ED2, we are proposing to introduce an incentive framework to improve service standards for major connections customers. With the exception of market segments that passed the Competition Test[21], the framework proposes to capture customers in market segments that would not be captured by our proposed RIIO-ED2 TTC incentive or Customer Satisfaction Survey.

5.44 We aim to improve service standards for major connections customers in two ways:

- Encourage consistent and high-quality connections strategies by setting out high-level principles and associated baseline standards of performance we expect from DNOs. Strategies that do not demonstrate how they will meet our baseline standard could be penalised through the BPI. Strategies that enable us to raise expectations could receive a reward under the BPI.
- Hold companies to account by carrying out an ex post assessment of performance. Companies that do not demonstrate they have met our

[21] In DPCR5, we ran a Competition Test to understand the extent to which effective competition existed in the market for new connections. Unlike the majority of the DNOs' work, the installation of new connection assets is not a natural monopoly. Independent Connections Providers (ICPs) and licensed Independent Distribution Network Operators (IDNOs) can compete with DNOs to complete some connection activities. Further background can be found in Appendix 3.

expectations could face penalties, while companies who outperform could receive a reward.

Driving high quality connections strategies

5.45 As part of the RIIO-ED2 business plan, DNOs will need to put forward a connections strategy setting out how they will deliver quality services for major connections customers in RIIO-ED2. Each strategy should have a clearly articulated vision for meeting major connection customers' needs, with tangible links between the proposed deliverables, the outcomes or the benefits it hopes to deliver and how this compares to its existing service provision.

5.46 DNOs' strategies should also be aligned with three high level principles we have developed, which are set out in Table 18, and associated baseline standards of performance, which are set out in detail in Appendix 4. The purpose of these principles and baseline expectations is to drive quality and consistency in DNOs' strategies by outlining the content we require in companies' business plans. They will also act as a framework for an ex post assessment of DNOs' performance.

5.47 The three proposed RIIO-ED2 connection principles, and the associated standards, have been developed based on a review of DNOs' performance in RIIO-ED1 as well as discussions in the RIIO-ED2 working group, and additional information provided, on the ongoing issues faced by major connections customers in regards to the services provided by their DNO.

Table 18: Proposed RIIO-ED2 Connection Principles

Connection Principles	
Connection Principle 1	Support connection stakeholders to make informed decisions by providing accurate, comprehensive and user-friendly information
Connection Principle 2	Deliver value for customers by ensuring simplicity and transparency at all stages of the connections process
Connection Principle 3	Facilitate the delivery of timely and economical connections that meet customers' needs

5.48 In Appendix 4, we describe the baseline standard of performance we expect under each of these principles. Where we consider good practice to have been established in RIIO-ED1, we have been prescriptive about the specific actions and outputs that form this baseline. In others, the principles and associated baselines serve to outline behavioural standards and outcomes we expect from

DNOs. DNOs must in all cases set out the specific actions they are planning to take in their connections strategy (as part of their business plan), and include the date (and frequency) of delivery.

5.49 We propose to assess the connections strategy as part of the BPI minimum requirements check. If companies fail to include a complete strategy, demonstrating how it will deliver in line with our baseline expectations, they could be subject to a penalty. The baseline standards proposed are to embed an appropriate minimum level of service, and we would expect companies to seek to exceed these standards within their strategies.

5.50 If, in their Draft or Final Business Plans, DNOs reveal information that allow us to improve the baseline standards of performance, we may reward companies through the CVP element of the BPI. Higher standards of performance should be supported by stakeholder engagement to demonstrate the planned behaviour better meets customers' needs. Where appropriate, we would seek to apply these improved baseline standards to all companies, and to hold them to account for delivery in our ex post assessment.

5.51 For all of the above, we invite companies to identify metrics and ambitious targets that could be used to assess performance. To support the comparability of performance, we encourage the use of common metrics where possible and invite companies to work together in developing these measures. We intend to work with the DNOs and wider stakeholders to develop potential common metrics in the RIIO-ED2 working group.

5.52 Where common metrics are not appropriate, DNOs can also put forward bespoke measures of performance that are specific, measurable and have a clear justification of why they are challenging. Where these are considered robust and reflective of what consumers' value, they will be taken into account in the framework.

5.53 DNOs will be funded through baseline allowances to deliver their connection strategies. Companies will be required to report on the delivery of their strategy on an annual basis, including performance against any metrics.

Holding companies to account through a financial ODI

5.54 We propose to hold DNOs to account for delivery of their strategies through an ex post evaluation, underpinned by a financial ODI. This would consider the extent to which DNOs have delivered against their strategies, and met their performance targets. Our assessment would seek to penalise companies that don't meet baseline standards and performance targets. There will also be an opportunity for rewards if a company can demonstrate it has exceeded baseline standards and delivered additional value for customers.

5.55 We consider that assessing performance once within the price control, as well as at the end, would ensure this remains a proportionate approach and will reduce the burden of annual performance assessments. We also recognise that development and implementation of service improvements for connections customers may take years before an impact can be demonstrated. An annual assessment may give only a partial insight to its effectiveness. This may drive companies to favour activities with more immediate impact as opposed to those that may yield greater benefits over time.

Incentive rate

5.56 We are considering what the strength of this ODI should be, in terms of the value that should be applied as a reward or penalty.

5.57 We think it could be appropriate to apply an incentive rate of 0.1% of base revenue for each of the market segments in scope of the incentive. For example, if four of a DNO's market segments passed the Competition Test, but five did not, the financial exposure of this mechanism would be 0.5% base revenue. This approach ensures that the financial exposure for each DNO is proportionate to the number of market segments in scope. We think this level of financial exposure has been sufficiently strong to drive performance improvements in RIIO-ED1 and therefore think this approach could be appropriate for RIIO-ED2. We think that this logic should apply for the penalty element of the incentive because we are setting out our baseline expectations of DNOs. We think the incentive rate could be applied symmetrically. However, the opportunity for rewards within and at the end of the period will depend, in part, on our ability to assess DNO performance in a consistent and where possible, comparable, way. To achieve this, we will require robust metrics and targets through which to evaluate DNOs' progress. We therefore propose to determine the incentive rate

for the reward element of the incentive at Draft or Final determinations, once we have reviewed DNOs' proposals in their business plans.

5.58 We also note that the incentive rate would need to be calibrated to reflect that companies' performance is being evaluated across multiple years.

Reasons for proposed approach

5.59 All customers deserve a quality service from their DNO. We think that setting out our expectations of DNOs will ensure a degree of standardisation in DNOs' approaches to meeting connections customers' needs in RIIO-ED2.

5.60 The expectations set out in Appendix 4 draw on progress that some companies have made in RIIO-ED1 which we now think should serve as the minimum expected levels of service all DNOs provide in RIIO-ED2. Customers' needs evolve over time and we think this is a way of embedding gains made in RIIO-ED1 and creating a new baseline expectation of business as usual performance.

5.61 We also think that standardisation driven through baseline expectations, as well as metrics that can be applied across all DNOs and monitor performance, will allow for a more robust and comparative ex post assessment. This will ensure that DNOs who fall below our baseline are penalised appropriately and that those who exceed their performance targets and deliver additional value for customers will be rewarded.

Consultation Questions

OUTQ12. Do you have views on our proposed Connection Principles and associated standards (in Appendix 4) for RIIO-ED2? Do you disagree with any of the standards we have proposed? If so, why?

OUTQ13. Do you have views on our proposal to use the Business Plan Incentive to encourage companies to reveal higher baseline standards of performance and to apply this, where appropriate, to all DNOs?

OUTQ14. Do you agree with our proposal to use an ex post assessment to penalise/reward companies who fail to deliver their strategies in line with our guidance/exceed performance targets?

OUTQ15. Do you consider that an assessment of performance in the middle and at the end of the price control is a proportionate approach?

Connections Guaranteed Standards of Performance

Table 19: Connections Guaranteed Standards of Performance (GSoPs)

Purpose	The Connections GSoPs help protect customers against unacceptable levels of connections service.
Proposed approach	We propose to retain the existing guaranteed standards for all connection customers, updating payments for inflation (CPIH).

Background

5.62 The Connections Guaranteed Standards of Performance (GSoPs) help protect customers against unacceptable levels of connections service by setting out minimum timescales for the delivery of specified connections services. These services reflect a range of activities, from the issuing of a budget estimate through to the energisation of a connection. If a DNO fails to meet the minimum service levels that are set out in the GSoPs, they are required to make a payment to the affected customers.

5.63 The minimum service levels are set out in a Statutory Instrument[22] due to the requirement for network companies to make direct payments to their customers. Some Connections GSoPs[23] also have accompanying target pass rates (% of times the standard has to be met). These are set out in the licence to provide additional protection to customers. A summary of the Connections GSOPs and their payment levels can be found in Appendix 2. Separate GSoPs cover the levels of service DNOs should provide in relation to interruptions, voltage quality and customer interactions, which are also set out in Appendix 2.

5.64 We expect DNOs to make payments to customers where they have failed a guaranteed standard without the customer having to make a claim, where possible. Payments made under the GSoPs are not funded through customers' bills but rather come directly from DNOs' shareholders. In RIIO-ED1 to date,

[22] A Statutory Instrument (SI) is a form of secondary legislation made under powers set out in an Act of Parliament. An SI making power is conferred onto the Authority and allows the Authority to make laws relating to the matters identified in the Act. This process is necessary for GSOPs due to the requirement for firms to make direct payments to their customers. The Electricity (Connection Standards of Performance) Regulations 2015 Statutory Instrument (SI) No. 698
http://www.legislation.gov.uk/en/uksi/2015/698/contents/made

[23] When we refer to the Connections GSOPs we also include DG connection customers that are not within the scope of SI 698, but are within the scope of our DG Standards Direction
https://www.ofgem.gov.uk/publications-and-updates/distributed-generation-standards-directionguidance-document

DNOs have paid out around £1.5 million (2018-19 prices) under the Connections GSoPs.

5.65 In setting the RIIO-ED1 price control, we reviewed the Connections GSOPs to ensure they were fit for purpose. On review of the RIIO-ED1 arrangements, we decided to update the payment values to reflect inflation. We also decided to round payments to the nearest £5 as we considered this to be simpler to understand for both customers and DNOs. As DNOs are the connection provider of last resort for all customers, we also decided that the Connections GSoPs would continue to apply to all customers in all market segments (including voluntary payments for DG customers not covered by regulatory framework).[24]

Proposed outputs

5.66 We propose to retain the existing Connections GSoPs for all connection customers in RIIO-ED2. Based on evidence we have seen in RIIO-ED1 to date, we do not consider that the existing standards need to be changed, or that new standards should be introduced. We believe they cover the appropriate scenarios and provide suitable expectations of minimum service levels that DNOs should deliver. We do, however, remain open to views on whether any amendments need to be made to some elements of the standards.

5.67 We propose to adjust the payment levels to account for inflation (using CPIH) at the start of RIIO-ED2. We propose to index payments (and the associated caps) to inflation (CPIH) against a baseline of February 2023.[25] Once the index has moved sufficiently, DNOs should round the payment amounts to the nearest multiple of £5, and adjust the associated caps at a commensurate rate.

5.68 The effect of this is that a revision to the payment levels will continue to take place once there has been sufficient inflation, and that the caps will be increased in line with this. Current inflation forecasts suggest that these changes should not occur so frequently as to become burdensome, but by indexing payments and caps we will ensure that they remain up to date and reflective of consumer

[24] In 2013, we ran a Competition Test; an assessment of whether effective competition existed in the market for new connections. Through the process, DNOs were able to apply to us to have price regulation lifted if they could demonstrate that competition was successfully effective to constrain prices in its absence. For the purpose of the competition test, we defined the contestable connections market into nine 'relevant market segments' (RMSs). We decided that even for RMSs that passed the Competition Test, the Connection GSOPs could still apply to ensure all customers are protected from unacceptably poor levels of service.
[25] This will refer to a monthly index published by the Office for National Statistics, and allow for changes (if required) to be implemented for the new financial year. The February 2023 CPIH monthly index would be used as this will be the latest available index before the 2023-24 financial year.

expectations, and remove the need to regularly update the relevant Statutory Instrument (the SI).

Reasons for proposed approach

5.69 We are not aware of a need to change the existing GSoPs, or to introduce new standards. If stakeholders have evidence of a need to change existing standards or introduce new standards then we would like to see this presented and justified in response to this consultation.

5.70 We believe that the payment levels are appropriate and do not need updating beyond an adjustment to account for inflation as payment levels were last reviewed as part of setting RIIO-ED1. The payment amounts are intended to acknowledge the inconvenience customers have experienced as a result of the standard not being met, rather than reflect the value customers may place on that inconvenience. On this basis, we consider the payment levels to be appropriate once amended to account for inflation.

5.71 Finally, we think that indexing payment levels to inflation and round to the nearest £5 will ensure payment levels are simple for customers and stakeholders to understand.

Consultation Questions

OUTQ16. Do you agree with our proposal to retain the Connections GSoPs for all connection customers in RIIO-ED2?

OUTQ17. Do you agree with our proposed approach to uplifting the Connections GSoP payment values in line with inflation, indexing payment levels to inflation, and rounding to the nearest £5?

RIIO-ED1 outputs proposed for removal

Name	RIIO-ED1 licence condition
Incentive on Connections Engagement	CRC 2E

Incentive on Connections Engagement

5.72 The Incentive on Connections Engagement (ICE) was introduced in RIIO-ED1 to drive DNOs to meet the needs of larger, or major, connections customers (unmetered, generation and higher-voltage connection customers). The aim of the ICE is to replicate the type of activities we expect DNOs to undertake in market segments that are subject to effective competition.

5.73 The ICE requires DNOs to submit evidence to us demonstrating that they have engaged effectively with connection customers to develop and deliver plans that improve their service. At the end of the regulatory year we assess how well each DNO has performed, with penalties applying to DNOs who do not meet our minimum requirements.[26] The ICE is a penalty only incentive, worth up to 0.9% of base revenue per annum per licensee. This reflects the fact that in a competitive environment companies would lose customers if they are unable to meet their needs.

5.74 Overall, we think the ICE has delivered benefits for connection customers in RIIO-ED1. Under the incentive, engagement with larger connection customers has been embedded as a business as usual activity. DNOs have established new and tailored methods for engaging with their customers for example through steering groups as well as online channels such as webinars and social media. DNOs have also developed initiatives ranging from the provision of enhanced guidance on the connections process, to more support for individual customers to ensure a smooth process from application to connection.

5.75 While the ICE has been a successful mechanism to ensure DNOs have processes in place to identify connections customers' priorities and concerns, we have noted ongoing concerns around the extent to which some DNOs have addressed these priorities and concerns effectively. For example, stakeholders have raised concerns around the continued lack of transparency of the connections process and that poor communication on the part of the DNO means customers do not feel well informed about their options. Moreover, stakeholders have raised concerns that some DNOs' work plans remain vague and inaccessible, and that

[26] The minimum requirements stipulate that a DNO must have implemented its engagement strategy, have delivered a comprehensive work plan to meet stakeholders' requirements and have met key performance outputs.

an absence of outputs and metrics makes it difficult to measure benefits to customers.

5.76 To ensure larger connection customers are well-served in RIIO-ED2, we think it is appropriate to retain a mechanism covering areas of the connections market where competition is not mature. However, we think the current ICE arrangements are no longer fit for purpose and are proposing to remove the incentive for RIIO-ED2.

Reasons for proposing removal

5.77 All customers deserve a quality service from their DNO and therefore connection customers with similar requirements should not be receiving differing levels of service because of where they live. The ICE proved to be an effective mechanism for ensuring DNOs identify connection customers' concerns and priorities, however we are not convinced that all DNOs have sought to address these effectively.

5.78 We think that RIIO-ED2 arrangements should ensure a degree of standardisation in DNO approaches. We think the progress companies have made in RIIO-ED1 should now serve as the minimum expected levels of service DNOs provide in the next price control. Additionally, for RIIO-ED2, we are proposing to move away from the use of incentives which rely on a purely qualitative assessment of performance and that where incentives are applied, assessment should be based on a more quantitative measure of the impact the company's actions have had.

5.79 For RIIO-ED2, therefore, we are proposing a new mechanism which aims to ensure DNOs deliver quality services to major connections customers in RIIO-ED2. More information on this proposal can be found in paragraphs 5.43-5.61.

Consultation Question

OUTQ18. Do you agree with our proposal to remove the Incentive on Connections Engagement for RIIO-ED2?

6. Meet the needs of consumers and network users: Consumer Vulnerability

Chapter summary

DNOs must deliver a high quality and reliable service to all network users and consumers, including those in vulnerable situations. This Chapter outlines our proposed approach to ensuring DNOs provide the appropriate support and services to consumers in vulnerable situations in RIIO-ED2.

Table 20: Vulnerable consumers

Purpose	Ensure DNOs provide appropriate support and services to consumers in vulnerable situations in RIIO-ED2.
Proposed approach	We intend to apply a two-stage approach to improving service standards for customers in vulnerable situations: (i) driving quality vulnerability strategies through the business planning process; and (ii) holding companies to account through a financial ODI. We propose to introduce a new overarching principles-based LO to treat customers, including those in vulnerable situations, fairly.

Introduction

6.1 This Chapter outlines our approach to ensuring DNOs provide appropriate support and services to consumers in vulnerable situations in RIIO-ED2. We are proposing to tighten the baseline standards that will apply to DNOs in relation to addressing vulnerability issues and are proposing to hold them to account for their performance through a financial ODI. This approach follows our proposed regulatory framework, outlined in Chapter 2, which we consider to be appropriate where customers' and stakeholders' needs are complex but are not easily incentivised and measured through quantitative metrics.

6.2 Ensuring energy companies support and protect consumers in vulnerable situations is a priority for Ofgem.[27,28] Traditionally, the key vulnerability priorities associated with the DNOs' activities have been to protect those whose wellbeing is most at risk to a loss of supply and to help those in, or at risk of, fuel poverty;

[27] Ofgem's Consumer Vulnerability Strategy 2025
[28] We define vulnerability as when a consumer's personal circumstances and characteristics combine with aspects of the market to create situations where he or she is: significantly less able than a typical domestic consumer to protect or represent his or her interests; and/or significantly more likely than a typical domestic consumer to suffer detriment or that detriment is likely to be more substantial.

these services will remain central to DNOs' activities in RIIO-ED2. We believe that DNOs will also need to consider how their role in protecting the interests of vulnerable consumers may change as the energy system becomes smarter, cleaner and more flexible.

6.3 While the changes in the energy system are expected to bring a range of benefits overall, some consumers, especially those in vulnerable situations, may be at risk of being excluded from accessing the benefits and therefore suffer new forms of detriment. For instance, paying for some of the costs associated with the benefits they either are unlikely to be able to, or cannot, access. DNOs are already considering these issues and what it may mean for their role, such as when, where, and how they interact with customers. We expect DNOs to build on this work in RIIO-ED2.

6.4 We also consider the DNO to have a role in developing innovative solutions to address emerging vulnerability issues. As stated in the RIIO-ED2 Framework Decision, we are retaining the opportunity for DNOs to receive individual Network Innovation Allowance (NIA) funding in RIIO-ED2.[29] This additional funding will enable network companies to undertake projects they would not otherwise undertake within the price control; namely, energy system transition, whole system, or vulnerability-related innovation, which deliver net benefits to network customers in the longer-term. Further information on our proposals for the scope of eligible projects and funding arrangements can be found in Chapter 4 of the Overview document.

Background

6.5 In RIIO-ED1 we encouraged DNOs to maximise their role in understanding, identifying and addressing the needs of consumers in vulnerable situations. The overall aim of this was to drive DNOs to achieve the potential that is afforded by their function; specifically, their ability to interact with consumers, their role in a community, the information they have access to and their scope to form partnerships with others.

6.6 The following measures underpinned and incentivised this role:

- A licence obligation to maintain a Priority Services Register and put practices and procedures in place to provide specified services to these customers

[29] RIIO-ED2 Framework Decision, paragraph 2.81

- The Stakeholder Engagement and Consumer Vulnerability (SECV) incentive to drive DNOs to undertake high quality activities that go beyond business as usual, to deliver positive outcomes for consumers.

6.7 These measures have driven improvements in DNOs' approaches to addressing vulnerability issues. However, despite the progress, there is less obvious convergence in performance than in some other output areas. All companies now have dedicated vulnerability strategies; the number of registered PSR customers has risen and the use of data to support this has improved. Each year there are examples of best practice initiatives in providing support to vulnerable customers, but it is not evident that these are then rolled out into business as usual by the individual company, or that the initiatives or key learnings are adopted by other DNOs. As such, there remain diverging approaches across GB, and we are concerned that not all customers receive an equivalent level of service. Further improvement is also required in demonstrating the measurable benefits of these activities and that these represent value for money services.

6.8 We consider a DNO's role should be to support vulnerable consumers where the DNO's competence and opportunity for consumer interaction puts them in the best-placed position to deliver that support. For RIIO-ED2, we want to embed RIIO-ED1 improvements in how DNOs perform this role and ensure all consumers in vulnerable situations receive an appropriate level of service, regardless of which DNO they are served by. It is envisaged that our proposed approach would ensure DNOs continue to develop and improve the services they provide to customers in vulnerable situations whilst simultaneously driving greater consistency in the DNOs' approaches.

Proposed Approach

6.9 We propose to introduce an overarching principles-based licence obligation on DNOs to treat their customers fairly, including those in vulnerable situations, throughout their operations. This LO would be comparable to Condition 0 of the Gas and Electricity Supply Licences and the LO being introduced in RIIO-GD2[30]. We also propose to retain the existing licence condition requiring DNOs to maintain a PSR and provide support in a supply interruption.

[30] See Chapter 2, Outputs: Meet the needs of customers and network users in the RIIO-GD2 SSMD

6.10 In addition to this, we propose to introduce a framework, in the form of a financial ODI, requiring companies to have a vulnerability strategy that sets out the activities they will undertake to deliver positive outcomes for consumers in vulnerable situations. We will then assess the delivery of this through an ex post evaluation and companies could be subject to a penalty or reward depending on this. We outline the main elements of this framework below.

Driving high-quality vulnerability strategies

6.11 We propose that the three primary areas of focus for RIIO-ED2 which companies should address within their strategies are:

- Vulnerability to a loss of supply;
- Being in, or at risk of, fuel poverty; and
- Risk of being left behind by the energy system transition towards Net Zero.

6.12 Each strategy should have a clearly articulated vision for fulfilling its role in supporting consumers in vulnerable situations, with tangible links between the proposed deliverables, the outcomes or the benefits it hopes to deliver and how this compares to its existing service provision. In order to drive quality and consistency, we consider it is imperative to be clear in our expectations for the baseline standard of service that strategies must deliver. Our baseline expectations reflect good practice that has been established in RIIO-ED1 and have been refined through the RIIO-ED2 working group's consideration of appropriate business as usual processes. We outline four principles and associated baseline standards in Appendix 5. Where we consider best practice is well established, we have taken a more prescriptive approach to these standards. In developing their strategies, companies should ensure they are aligned, at minimum, to this standard. The baseline standards proposed are to embed an appropriate minimum level of service, and we would expect companies to seek to exceed these standards within their strategies.

6.13 We propose to assess the vulnerability strategy as part of the BPI minimum requirements check. If companies fail to include a complete vulnerability strategy, demonstrating how it will deliver in line with our baseline expectations, they could be subject to a penalty. See the Business Plan Guidance for our guidance of what constitutes a complete strategy.

6.14 If, in their Draft or Final Business Plans, DNOs reveal information that allow us to improve the baseline standards of performance, they may be rewarded through the CVP element of the BPI. Where appropriate we may apply these improved baseline standards to all companies.

6.15 We propose to fund companies to deliver their strategy through baseline allowances.

Ensuring accountability and ambition through a financial ODI

6.16 We propose to hold DNOs to account for the delivery of their strategies through an ex post evaluation, underpinned by a financial ODI. We propose to evaluate the DNOs' performance within and at the end of the price control period. Where companies do not meet baseline standards, they will be penalised. Where a company can robustly demonstrate they have exceeded baseline standards and delivered additional value for consumers, there will be the opportunity for reward.

6.17 To support the comparability of performance we encourage the use of common metrics where possible. Through the RIIO-ED2 working group, the DNOs have begun the development of a common approach to measuring social return on investment and we consider this could be a potential common metric. We will continue to work with the DNOs and wider stakeholders to develop further common metrics within the RIIO-ED2 working group.

6.18 In addition to the common metrics, within their strategies, DNOs should put forward measures of performance that are specific, measurable and have a clear justification of why they are challenging. Where these are considered robust and reflective of what consumers' value, they will be taken into account in the framework.

6.19 We consider that the financial exposure to the companies should remain similar to the SECV within RIIO-ED1. This approach would see penalties, and potentially rewards, of up to +/- 0.5% of base revenue. While we think the incentive rate could be applied symmetrically, the opportunity for rewards within and at the end of the period will depend, in part, on our ability to assess DNO performance in a consistent and where possible, comparable, way. To achieve this, we will require robust metrics and targets through which to evaluate DNOs' progress. We therefore propose to determine the incentive rate for the reward element of the

incentive at Draft or Final determinations, once we have reviewed DNOs' proposals in their business plans.

6.20 Companies will be required to report annually on the delivery of their strategy, including performance against any metrics.

Reasons for proposed approach

6.21 We consider this approach would drive ambition, accountability and standardisation in the level of support and services consumers in vulnerable situations receive.

6.22 The proposed principles-based LO would underpin the approach and make the network companies more accountable for the minimum level of service they provide to consumers in vulnerable situations. This, combined with funding provided through baseline allowances, would enable companies to fulfil their role in supporting consumers in vulnerable situations. We believe this would drive the delivery of high-quality services as business as usual and embed best practice revealed through RIIO-ED1.

6.23 We do not want the primary areas of focus outlined to limit the companies' ability to develop services that target other issues that are prevalent in their own customer base. However, we consider these three areas to be of greatest priority in RIIO-ED2, within the scope of the DNOs role and in alignment with the CVS 2025 priorities.[31] The scope of the DNOs' role is in line with our regulatory stances and should not entail significant redistribution of costs.

6.24 We consider that assessing performance once within the price control, as well as at the end, would ensure this remains a proportionate approach and will reduce the burden of annual performance assessments. We also recognise that development and implementation of initiatives for vulnerable customers may take years before an impact can be demonstrated. An annual assessment may give only a partial insight to its effectiveness. This may drive companies to favouring those activities with more immediate impact, discouraging the pursuit

[31] The five priority areas are: Improving identification of vulnerability and smart use of data; supporting those struggling with their bills; driving significant improvements in customer service for vulnerable groups; encouraging positive and inclusive innovation and working with partners to tackle issues that cut across multiple sectors.

of more 'slow-burning' schemes even where these may yield greater benefits over time.

6.25 By maintaining the possibility of a reward, where appropriate metrics and targets are available, we can continue to drive the development of ambitious and best practice initiatives, especially in areas that are more novel.

6.26 Although we do not intend to apply penalties or rewards on an annual basis, we consider that annual reporting will add to the strength of the incentive framework. We want to drive greater transparency for stakeholders, and therefore consider that a common reporting framework would be beneficial. We propose to use the policy working group to develop this reporting framework.

Options considered but not proposed

6.27 Within the RIIO-ED2 working group, one DNO proposed a financial incentive split into two elements. One element comprised two metrics (for PSR reach and the economic value delivered) and the second element comprised a qualitative assessment of how DNOs support vulnerable customers through the low carbon transition.

6.28 We consider that our proposed framework aligns with the rationale for this incentive, but differs in application. We do not consider the form of the incentive sufficiently addresses the concerns we have regarding convergence in best practice and robustly measuring benefits. However, we do think these proposed metrics are a useful starting point in developing measures of success in this area, and we will continue to work with the policy working group to develop these metrics further.

6.29 We also considered the vulnerability arrangements applied in RIIO-GD2[32] and whether they are appropriate for RIIO-ED2. In particular, the use of a UIOLI and ODI-R to drive flexible service provision and the development of best practice initiatives.

6.30 Whilst these components of the RIIO-GD2 package could be suitable for driving the outcomes we wish to see in RIIO-ED2, we consider that our proposed approach is more appropriate for electricity distribution. In particular, to embed the performance improvements driven through the SECV into BAU whilst

[32] See Chapter 2, Outputs: Meet the needs of customers and network users in the RIIO-GD2 SSMD

tightening up accountability and assessment. It is also reflective of the different touchpoints DNOs have with customers in vulnerable situations.

Consultation Questions

OUTQ19. Do you agree with our proposed approach to ensuring consumers in vulnerable situations receive an appropriate range and level of support in RIIO-ED2? If not, what alternative approach should we consider?

OUTQ20. Do you have views on our proposed Vulnerability Principles and associated standards (in Appendix 5) for RIIO-ED2? Do you disagree with any of the standards we have proposed? If so, why?

OUTQ21. Do you agree with our proposal to use an ex post assessment to penalise/reward companies who fail to deliver their strategies in line with our guidance/exceed performance targets?

OUTQ22. Do you consider that an assessment of performance in the middle and at the end of the price control is a proportionate approach?

7. Maintain a reliable network

Chapter summary

This Chapter sets out our proposals to ensure the DNOs continue to drive improvements in network reliability.

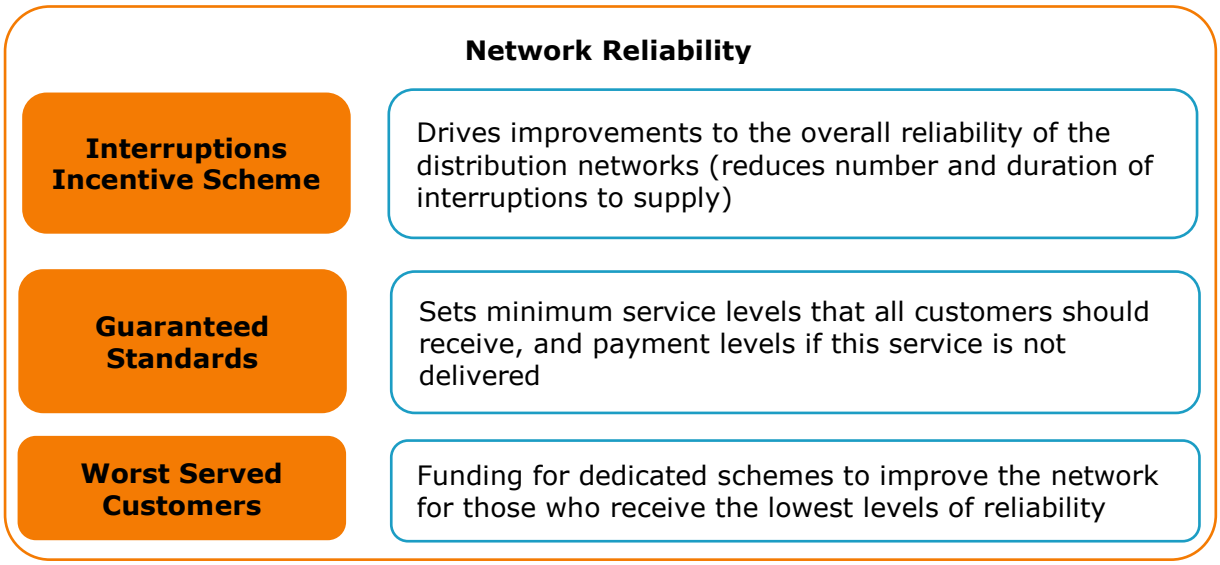
Introduction

7.1 The actions that network companies take in efficiently managing their networks in RIIO-ED2 should deliver reliable network services for existing consumers, as well as safeguarding the reliability of the network for the future.

7.2 The most valuable service a DNO provides to consumers is an uninterrupted supply of electricity. Reliability has therefore been a key focus for Ofgem and recent price controls included a range of measures to ensure DNOs improve their performance. We are seeking views on our proposed arrangements and outputs for RIIO-ED2, which build on the approach taken in RIIO-ED1.

7.3 There are three key components of our approach to ensuring high levels of network reliability: the Interruptions Incentive Scheme (IIS); the Guaranteed Standards of Performance (Guaranteed Standards); and how DNOs improve the service provided to their 'worst served customers'. In this Chapter, we discuss our proposals for each of these areas in turn, including their component parts (where appropriate).

Figure 6: Measures in place to ensure high levels of network reliability



7.4 So far in RIIO-ED1, DNOs have made good progress in delivering safe and resilient networks, reducing the number of customers interrupted by 14% and the duration of interruptions by 10%. In the first four years of RIIO-ED1, DNOs have spent around £6.7m (18/19 prices) on improving the service provided to those customers classed as 'worst-served'.

7.5 As highlighted by the National Audit Office,[33] the increased reliability of the networks has benefitted consumers, who now enjoy levels of reliability higher than many other countries. They did, however, also acknowledge that targets for the scheme have not kept pace with improvements in performance during RIIO-ED1. The DNOs have earned around £550 million under the IIS in the first four years of RIIO-ED1. Rewards earned under the IIS have been the greatest driver of outperformance in RIIO-ED1 to date for four of the six DNO groups.[34]

7.6 We want to see these improvements built on over the course of RIIO-ED2, and we expect DNOs to continue to meet their customers' expectations in relation to network reliability. Where appropriate, this may mean DNOs have to meet more ambitious targets or make strong commitments for what they will deliver in the price control.

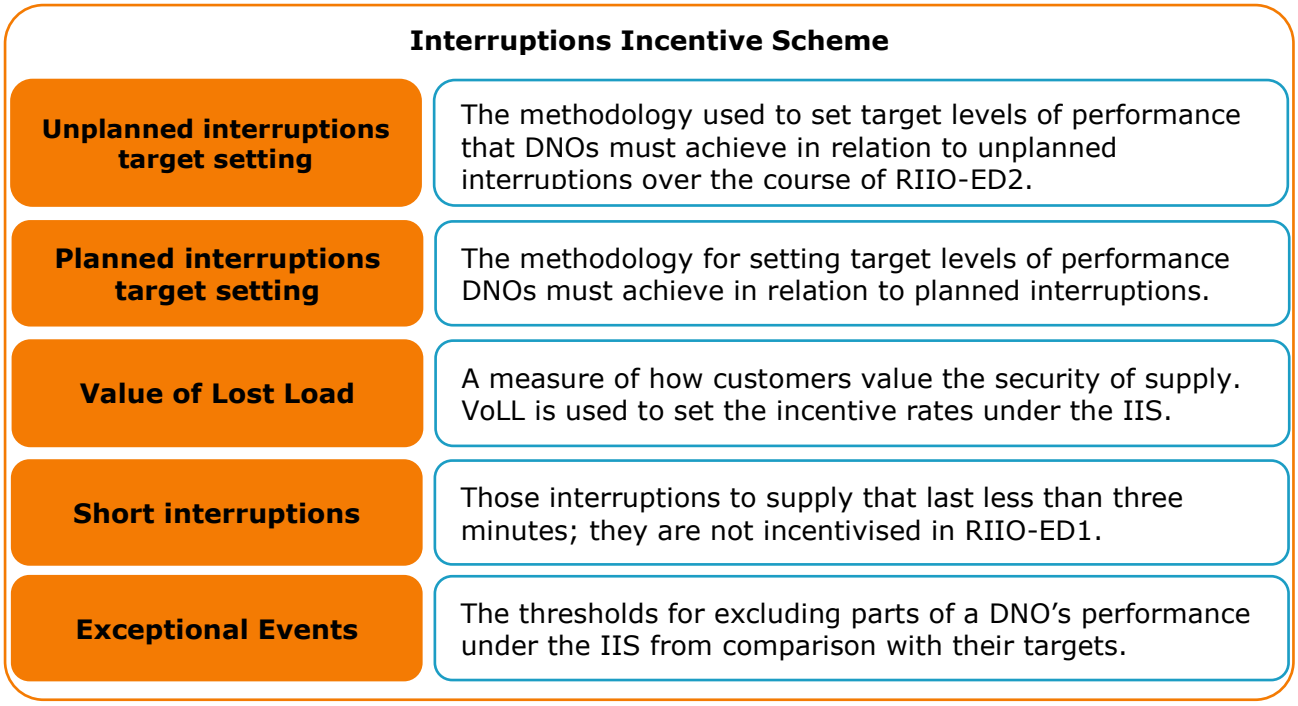
[33] https://www.nao.org.uk/wp-content/uploads/2020/01/Electricity-networks.pdf
[34] For the two remaining DNO groups, IIS rewards have been the second largest contributor to outperformance, after totex outperformance. These values are available in the Regulatory Finance performance annex to the RIIO-1 Annual Reports for 2018-19: https://www.ofgem.gov.uk/publications-and-updates/regulatory-financial-performance-annex-riio-1-annual-reports-2018-19

Interruptions Incentive Scheme

7.7 The IIS drives DNOs to improve the overall reliability of their networks by setting target levels of performance for the price control. It covers all interruptions that are three minutes or longer in duration,[35] including any planned interruptions to supply.[36]

7.8 We have considered the different elements of the IIS and the options for reform for each of these ahead of RIIO-ED2. Figure 7 illustrates the different elements, which are discussed below.

Figure 7: Key elements of the Interruptions Incentive Scheme



[35] Interruptions of less than three minutes are known as Short Interruptions, and are not incentivised through the IIS.
[36] In RIIO-ED1, planned interruptions are weighted at 50% of the value of unplanned interruptions, recognising that customers are forewarned of the loss of supply.

Unplanned interruptions target setting

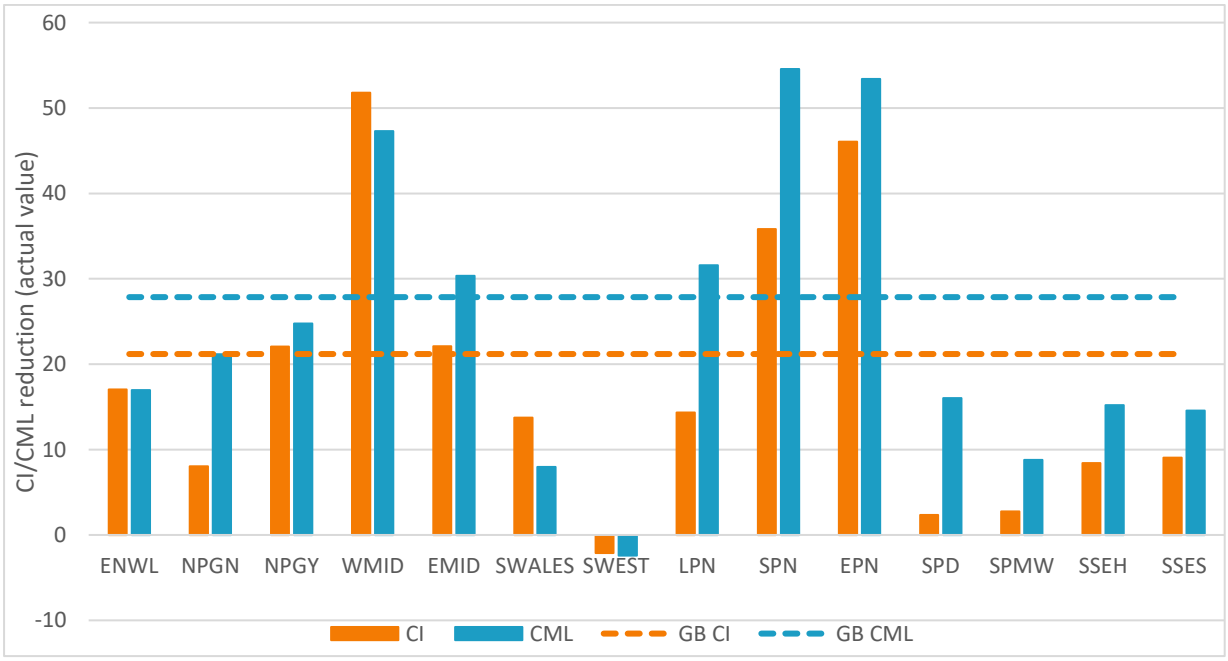
Table 21: Unplanned interruptions target setting

Purpose	To set challenging targets that drive improved reliability across all DNOs for both Customer Interruptions and Customer Minutes Lost
Proposed approach	Retain a financial Output Delivery Incentive (ODI) for unplanned interruptions, using the RIIO-ED1 methodology for setting targets. We are seeking views on whether performance across the country should converge over time.

Background

7.9 The IIS, and its component parts, is designed to drive overall reductions in the frequency and duration of power cuts across the distribution networks each year. Since its introduction in 2002, the average number and duration of power cuts (measured in Customer Interruptions (CIs) and Customer Minutes Lost (CMLs)) across GB have reduced by 49% and 57% respectively. However, Figure 8 below illustrates the different reductions in CIs and CMLs since 2010 achieved across the industry, and showcases that some DNOs have achieved greater reductions than others.

Figure 8: Actual reduction in CIs and CMLs since 2010



7.10 The IIS works by providing a financial incentive for DNOs to beat target levels of performance that we set at the start of the price control. If a DNO allows the reliability of its network to worsen such that it misses its IIS targets, it receives a financial penalty. This not only penalises the DNO for letting the reliability of its network worsen, but reduces the amount that can be recovered from customers in recognition of the poorer service they have received. The opposite is true for any rewards earned under the IIS: these are recovered from customers, recognising that they have received a higher level of service than the DNO was funded to deliver.[37] This means that customers are only paying more where the service they receive is better than the target level that we set.

7.11 Therefore, it is crucial that targets are set at a level that is suitably challenging for DNOs to achieve without being too costly or too easy to reach that position. Setting suitably challenging targets leads to customers benefitting from a highly reliable electricity network for an efficient cost. We recognise that this was an ambition for RIIO-ED1, and that the DNOs have earned higher rewards in the price control to date than we anticipated when setting the targets. We want to reduce the risk of setting a target for RIIO-ED2 early in the process and then have DNOs achieve and maintain continually higher levels of performance against this target before the start of the RIIO-ED2. This would lead to customers in RIIO-ED2 paying extra (in the form of IIS rewards) for a level of service that they are already receiving and have previously paid for through IIS rewards in previous price controls.

7.12 We also recognise that the RIIO-ED1 approach to setting targets for unplanned interruptions carries a risk that a minority of DNOs start the price control ahead of their target. This is because the benchmark levels of performance are set at an industry average or upper quartile level and, therefore, there will be frontier performers that perform better than this this benchmark. With this in mind, we have considered alternative options to the RIIO-ED1 approach, as set out in the next section.

7.13 A DNO's target is set at a level that is intended to reflect a reasonable level of reliability that can be delivered for the allowances provided through the price control. The incentive rate (i.e. the reward or penalty a DNO received for each CI

[37] The allowances provided through the price control only cover the cost of maintaining network reliability at a target level. These allowances are not designed to cover the cost of improvements to network reliability (either through changes in operational practices or investment in new assets). The IIS is designed to cover the cost of any improvements to reliability, so that DNOs are encouraged to make investments where it is efficient to do so.

or CML over or under their target they deliver) is set at a level that represents customers' willingness to pay for reliability improvements (based on the Value of Lost Load, or VoLL). This means that the reward a DNO earns for beating their target (or penalty incurred for missing their targets) is reflective of the value customers place on that improved level of service. Rewards (and penalties) under the IIS are capped at a level that protects customers from paying for any excess reward a DNO may earn under the incentive.

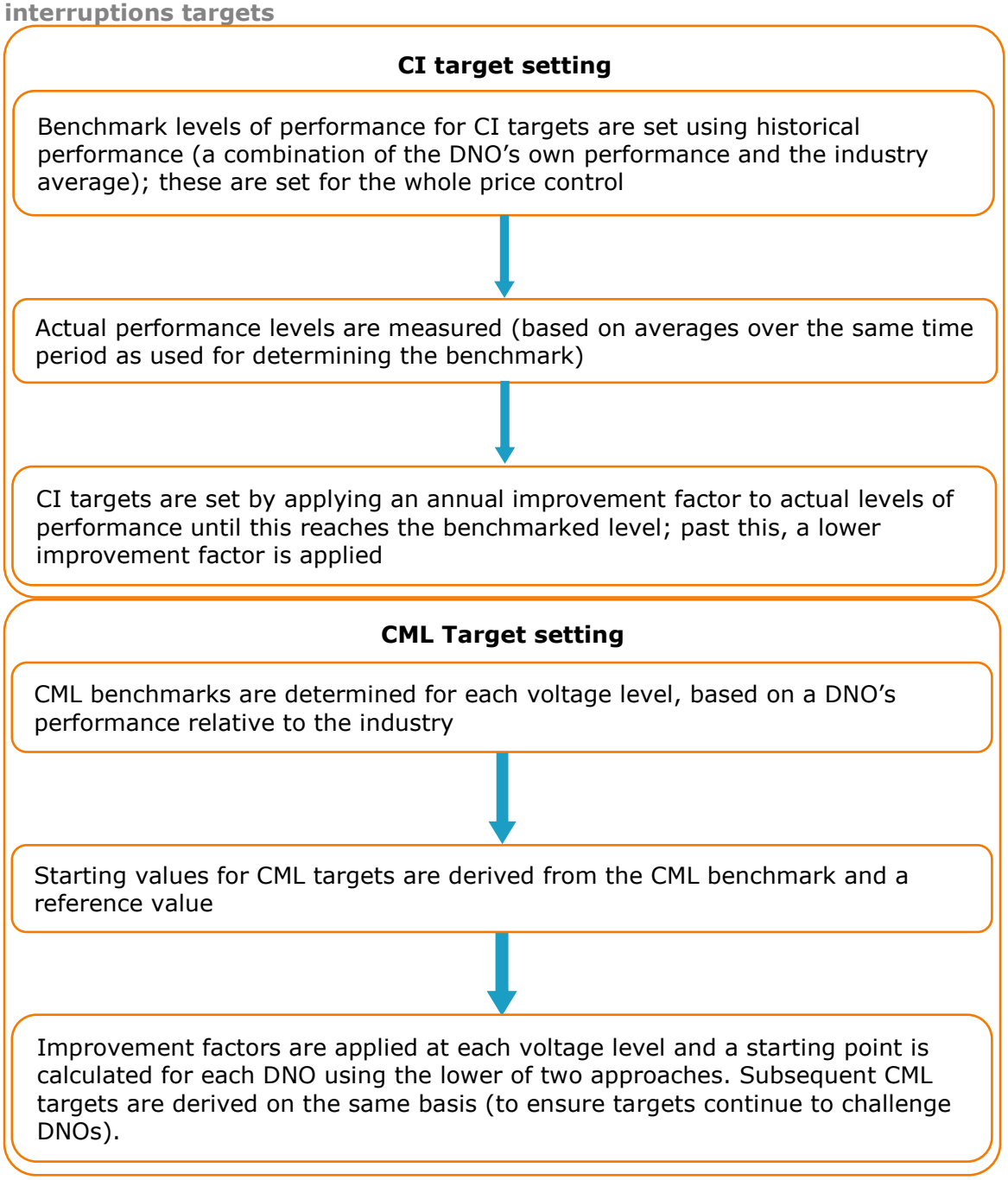
Approach to setting targets in RIIO-ED1

7.14 We use DNOs' historical performance on unplanned interruptions to set an overall target level of performance for each DNO at an aggregate level for interruptions across all voltage levels. This gives a view of how each DNO has performed over time, and means we can set benchmarked levels of performance across the industry. It also means that good historical performance feeds through into benchmarks for future targets, pushing further improvements in overall reliability.

Static vs dynamic targets

7.15 The benchmark levels of performance are factored into the targets for each DNO, meaning DNOs that are behind the benchmark are driven to catch the frontier performers. A more detailed description of how unplanned targets are set is provided in Appendix 6, and the key themes of the approach are set out in Figure 9 below.

Figure 9: High level summary of the RIIO-ED1 approach to setting unplanned interruptions targets



7.16 For both CI and CML targets, the improvement factors that determine the rate at which a DNO's target gets more challenging are fixed at the beginning of the price control. Similarly, the benchmark levels of performance for both CIs and CMLs account for the network characteristics, and these benchmarks are fixed for the price control. A DNO's position relative to the benchmark determines its target, resulting in each DNO having unique targets for the price control; this means target (and observed) levels of reliability vary across different regions of GB. Although targets are fixed, or static, for the duration of the price control (i.e.

they do not change once they are set), they are tailored to each individual DNO and change over the course of the price control by a predetermined rate.

7.17 We have reviewed the existing methodology to explore the scope for changing or improving particular elements, or whether an alternative approach to setting targets would be more appropriate. Alternative approaches to setting targets include using a rolling average (akin to the approach for planned interruptions), setting CML targets with no adjustments for network factors, or setting CML benchmarks at voltage levels only (without the disaggregation of performance at High Voltage).[38]

Proposed outputs

7.18 We propose to retain the existing methodology for setting unplanned interruptions targets for RIIO-ED2, correcting minor errors in the methodology that have been identified.[39] We also propose to fix the targets for the whole of RIIO-ED2, rather than updating them as the price control progresses. We do not propose to revisit the targets within the price control. We do, however, propose that each DNO's target will be set at the lower of its current performance (at the time of setting targets) and the target produced by the methodology.[40]

7.19 We will publish a view of the targets in the process of setting the price control. At this stage, we anticipate that we will set targets at either Draft or Final Determinations (expected to be in quarter two or quarter four of 2022 respectively). Whichever point in the process we set the targets, we will use the latest data that we have available to us to do so.

7.20 We do not propose to add an element of convergence to a single position for DNO targets for RIIO-ED2.

[38] https://www.ofgem.gov.uk/publications-and-updates/riio-ed2-working-groups
[39] These included errors such as incorrect reference years for historic values (i.e. formulae referring to the wrong four- or ten-year period for averages that are not used in setting the target) and the use of simple- rather than weighted-averages. Correcting these errors does not result in a change to the view of targets that is produced, but they should be corrected for completeness.
[40] If a DNO's performance at the time of setting targets (i.e. the latest finalised performance value) is lower than the target produced by the methodology, that current performance will be taken as the target for the first year of RIIO-ED1, and the 0.5% annual improvement factor will be applied to that value.

Reasons for proposed approach

7.21 We believe that retaining the existing methodology for setting unplanned interruptions targets will produce challenging targets that drive DNOs to continually improve the reliability of their networks. We consider the existing methodology has led to network companies building on previous improvements to their networks, as evidenced by the reductions in CIs and CMLs delivered since the beginning of RIIO-ED1.[41] We believe that, by using the strong performance seen in RIIO-ED1 to date as well as in the latter half of the previous price control (DPCR5), the existing methodology will produce target levels of reliability that are more challenging than the current targets.

7.22 We recognise that there is a risk of frontier performers being rewarded for targets that are set at a level which is the same as, or higher (i.e. easier) than, their existing level of performance. This would risk DNOs being rewarded again for a level of performance for which they have already received a reward, meaning customers pay twice for the same level of service. To counter this risk, and to protect against DNO performance reducing over time without being penalised, we believe it is appropriate to set a DNO's target at the lower end of its existing performance and the target produced by the methodology.

Static vs dynamic targets

7.23 We recognise that there are potential benefits in dynamic targets, such as having the potential opportunity to update and/or correct any targets that were originally set. However, we consider that revisiting unplanned interruptions targets within the price control would not be worth the resources required. The existing methodology uses DNOs' historical performance over four- or ten-year periods.[42] Averages over these historical periods generates a view of performance that smooths out annual variations and produces figures that can be more rigorously compared across the industry than if shorter time periods are used. In using these historical averages as a static target, it would still require significant and sustained outperformance from several DNOs to produce notably different targets for the remainder of the price control

[41] The latest performance data is available in the 2018-19 Annual Report: https://www.ofgem.gov.uk/publications-and-updates/riio-1-electricity-distribution-annual-report-2018-19

[42] Four year averages are used for LV and HV as there are sufficient fault volumes to generate a view of performance that is not unduly affected by volatility in one year's performance. Fault volumes at EHV and 132kV are much lower, so a longer average is needed to counter the potential volatility of the data.

7.24 The process of producing a view of targets (using the existing methodology) is complex and resource intensive to run, for Ofgem and for the companies themselves, and it takes a significant amount of time. Considering that RIIO-ED2 will be five years in length, and that the current methodology produces targets that start two years after the latest available year's data, the scope for material changes within the price control is significantly restricted when compared with an eight-year price control.[43] We consider that, if there was sustained outperformance in RIIO-ED2, the benefit this may achieve would not outweigh the cost of re-running the target setting process to produce updated targets. Additionally, the Return Adjustment Mechanisms provide an overall level of protection against material deviations from the expectations set at the start of the price control.

7.25 In relation to when in the price control process we will publish a view of targets, we are mindful of the recommendations from the NAO report into how effectively price controls have been used to protect the interests of consumers and achieve the government's environmental goals. The NAO noted that, for RIIO-ED1, DNOs were given advance notice of the targets in the Strategy Decision which allowed them to prepare for the targets ahead of time. Based on this learning, we anticipate that we will set targets for RIIO-ED2 at either Draft or Final Determinations, which is later in the process than the Strategy Decision was for RIIO-ED1.

Target convergence

7.26 In reviewing the existing methodology, we considered whether DNO targets should converge towards a single position over time, with the effect that customers across GB can expect to receive comparable levels of network reliability. We recognise that network characteristics, customer types, and environmental conditions all vary across DNO regions, meaning two parts of the network cannot always be fully compared. However, we also recognise that performance improvements achieved by some DNOs are markedly greater than others, and that a methodology that means targets converge towards a single position could help ensure those DNOs lagging behind work to catch the frontier performers.

[43] For instance, if we set targets for 2023 at the determinations stage in 2022, we will be using data from 2021. If performance in the first two years of the price control (2023 and 2024) is sufficient to warrant resetting targets, the new targets (set in 2025) would only come into effect for the final two years of the price control (2026 and 2027).

7.27 Introducing an element of convergence of DNO targets would, in essence, speed up the process of DNOs being driven to achieve comparable levels of reliability and override some of the network characteristics that cannot be compared. It would therefore result in different costs for each DNO to achieve the same level of network reliability, in part depending on the gap between their current targets and the desired goal. This could mean that customers in some parts of the country face disproportionately higher costs to achieve a given level of reliability than they are willing to pay.

7.28 We believe the existing methodology for setting unplanned interruptions targets does, over time, drive DNOs to achieve a level of reliability that is comparable when accounting for the network characteristics, customer densities, and environmental conditions of each DNO region. We believe the targets that are set for different regions represent an appropriate level of reliability that can be achieved at an efficient cost to consumers.

Options considered but not proposed

7.29 We considered several alternative approaches to setting unplanned interruptions targets, including setting them on a rolling-average basis, disaggregating DNOs' performance on Low Voltage (LV) circuits,[44] and setting CML targets in a way that means they are not a secondary function of the CI target.

7.30 We also considered options for driving DNO performance improvements for those customers who do not experience the 'average' (or close to the average) reliability as measured by the CI and CML metrics. This included incorporating elements of the Worst Served Customer mechanism into the IIS.

Reasons for not proposing options

7.31 We recognise that there is potential for improvement in the existing, complex methodology, and will take steps to improve the approach (by correcting minor errors) for RIIO-ED2. However, we do not consider there is a clear case for an entirely new or different approach to setting targets that would better achieve the same outcome as the existing methodology.

[44] This would use a similar approach to the method used to assess DNOs' performance at High Voltage (HV) circuits.

7.32 The potential alternative approaches available for setting unplanned targets present their own challenges. Using a rolling-average approach to setting targets or setting CML benchmarks at voltage levels (with no disaggregation) or with no adjustments for network factors would be simpler overall, and could still utilise a benchmark level of performance if taken at the industry level. However, these approaches do not account for differences in the network characteristics meaning targets for some DNOs could be unrealistic, or that the cost of meeting a target level of performance is not reflective of what customers are willing to pay for.

7.33 We consider the challenges associated with alternative methodologies to be no less significant than those of the existing methodology. At the same time, we have run the existing methodology with the latest performance data available and these initial results suggest that unplanned interruptions targets for RIIO-ED2 will be sufficiently challenging for DNOs both at the start and throughout the price control, especially when set at the right stage of the price control process (around Draft or Final Determinations).

7.34 We also believe that the uncertainties associated with a new methodology would introduce a greater risk of unplanned interruptions targets being set too high or too low than with the existing methodology, leading to systematic out- or under-performance. Targets that are set too high (i.e. that are close to the current levels of reliability) could lead to customers over-paying for a given level of reliability, which may already have been achieved ahead of RIIO-ED2. Targets that are set too low could mean DNOs face significantly increased costs to achieve given levels of reliability, costs which would ultimately be borne by customers.

7.35 A further point to consider when assessing alternative approaches to setting unplanned targets is that any change to the existing approach would result in a loss of consistency with historical performance and targets. We believe that future targets and performance should be comparable with historical targets and/or performance, for consistency and transparency of what DNOs are delivering for their allowances. Targets produced from a new or altered methodology are likely to not be comparable with historical targets or performance, which would reduce our ability to assess the effectiveness of new targets over time. This additional complication to an already complex process would make it harder for both Ofgem and stakeholders to understand how DNOs perform over time, and we therefore do not think it would be suitable to us an alternative approach.

7.36 We are confident that the existing methodology is robust and provides the transparency (and consistency) of approach needed to track how the DNOs performance changes over time.

Consultation Questions

OUTQ23. Do you agree with our proposed approach to retain the RIIO-ED1 methodology for setting unplanned interruptions targets?

OUTQ24. Do you have views on the alternative approaches to setting unplanned interruptions targets set out? Are there any other approaches that we have not considered?

OUTQ25. What are your views on revisiting unplanned interruptions targets within the price control period?

OUTQ26. Do you agree with our proposed position not to introduce further convergence of DNOs' targets over time?

Planned Interruptions

Table 22: Planned Interruptions

Purpose	The IIS drives DNOs to reduce the number and duration of interruptions to supply. Targets are set to ensure planned interruptions to supply are kept to a minimum.
Proposed approach	Retain an ODI for planned interruptions, with dynamic targets. We are seeking views on the options for how targets are set and the weighting that should be applied to planned interruptions.

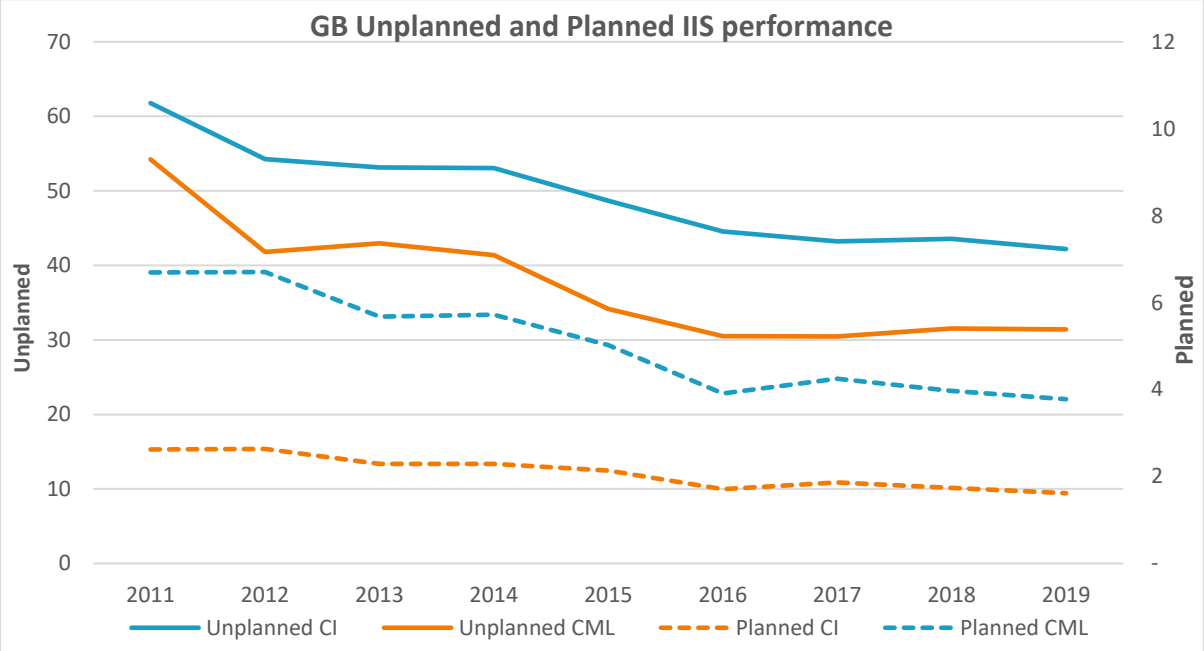
Background

7.37 The IIS is designed to drive DNOs to reduce the number and duration of any interruptions to supply, whether they are planned or unplanned. In some circumstances, DNOs need to plan interruptions so that they can carry out essential maintenance or upgrades to the network.

7.38 To ensure planned interruptions to supply are kept to a minimum, in RIIO-ED1 we set separate targets for the number and duration of planned interruptions for each DNO. These targets were unique to each DNO, and were based on an

average of their performance over three years, with a two year lag.[45] Since the beginning of RIIO-ED1, the number and duration of planned interruptions has reduced by 24% and 25% respectively. Figure 10 shows the planned and unplanned CI and CML performance since 2010.

Figure 10: GB Unplanned and Planned IIS performance



Proposed outputs

7.39 We propose to retain a financial Output Delivery Incentive (ODI) on planned interruptions. We propose to continue with the RIIO-ED1 approach to setting targets for planned interruptions.

Reasons for proposed approach

7.40 We consider that the existing approach remains appropriate for RIIO-ED2. As set out at Figure 10, the existing arrangements have delivered notable improvements in planned interruptions performance, and we believe these will be continued in RIIO-ED2.

7.41 We are aware that under the existing approach, DNOs may intentionally generate reduced expectations in future years by consistently underperforming against

[45] A DNO's target for the 2019-20 reporting year would be the average of their performance in the 2015-16, 2016-17, and 2017-18 reporting years. There is a two year lag because the final performance figures for each year need to be finalised before they can be used. This happens by the end of October, meaning that the first time this finalised performance can be used is two reporting years later.

current targets.[46] Doing so would mean the DNO incurs a penalty in the short term, with no guarantee of a reward in the future, and it would also impact a DNO's performance elsewhere in the price control (such as in their customer satisfaction scores). We have not observed such a sustained underperformance to date, and believe that the overall package of measures protects against the risk of this happening in the future. However, we will continue to monitor DNOs' performance in this area and expect DNOs to justify any sustained worsening of performance.

7.42 There are two key elements of the planned interruptions targets that could address any risk of gaming: the process of setting targets, and the incentive that applies to DNOs' performance. Setting targets independently of a DNO's own performance would reduce the scope for that DNO's future targets to be influenced only by its own historic performance. Similarly, increasing the weighting assigned to planned interruptions performance would mean there is a greater incentive for DNOs to beat their targets, and a corresponding greater penalty for failing to achieve their targets.

7.43 We consider the risk of gaming to be low, and that the existing approach mitigates this through the application of penalties for DNOs who fail to achieve their targets for planned interruptions. We consider the existing approach will push DNOs to continue delivering high levels of network reliability.

Options considered but not proposed

7.44 Some suggestions have been made for changed to the weightings and/or the targets for planned interruptions that would ensure targets remain appropriate for each DNO throughout the price control. These are outlined in Tables 23 and 24.

[46] Since future targets are based on historic performance, missing historic targets generates easier targets in the future than they would have been if historic targets had been met. There is a risk that DNOs could intentionally underperform in order to generate reduced expectations in future years.

Table 23: Options for planned interruptions weightings in RIIO-ED2

Option	Pros	Cons
1) Retain existing approach (weighted at 50% of unplanned)	Simple, known, and drives a reduction in planned interruptions to an efficient level.	Not clear if this is reflective of the impact on customers
2) Reduce the weighting (<50% of unplanned interruptions)	Recognises that customers can mitigate the impact of planned interruptions	Not necessarily reflective of the impact on customers and the cost of mitigation
3) Increase the weighting (>50% of unplanned interruptions)	Could further drive DNOs to avoid planned interruptions and gives a greater incentive to avoid disrupting customers If increased to 100% (i.e. equal with unplanned interruptions) it would simplify the overall mechanism as all interruptions would be valued the same.	Could be over-valuing the impact on customers of a planned interruption
4) Company specific weighting based on customer research	More reflective of local customers' value of the impact. Enables the incentive to be increased where appropriate, to reflect the mitigation cost	More complex to develop and assess across the industry

Table 24: Options for planned interruptions targets in RIIO-ED2

Option	Pros	Cons
1) Retain existing approach	Simple, known, and has driven a reduction in the number/duration of planned interruptions. Averaging performance gives some protection from single year fluctuations	No/limited benefit for comparative performance.
2) Fixed targets based on company own performance	Simple, similar to unplanned targets. Targets do not need to be manually updated each year as they are fixed for the price control.	No/limited benefit for comparative performance. No flexibility for annual variation.
3) Benchmarked targets	Allows for comparative performance across DNOs Starts to align the approach with unplanned targets	More complex.
4) DNO-proposed based on stakeholder engagement	Closely linked to customer expectations	More complex to implement, and could result in large regional variations. More difficult to compare costs of actions across DNOs.

7.45 The existing approach to setting targets for planned interruptions does not include a form of benchmarked performance for DNOs to achieve, nor are the targets reflective of customer expectations. The changes outlined in the tables offer opportunities to tailor DNOs' targets for planned interruptions so they more accurately reflect either a benchmarked view of performance, or expectations of that DNO's customers.

Reasons for not proposing options

7.46 We recognise the alternative options for the weightings and target-setting methodology for planned interruptions bring a number of potential benefits, such as greater comparability across the industry and the potential for closer alignment with customer expectations.

7.47 However, as outlined in Tables 23 and 24, we consider the disadvantages associated with these alternative options to be significant. One of the benefits of the existing approach to planned interruptions is its simplicity and clarity for all parties. The methodology for setting unplanned interruptions targets is highly complex, making it less accessible for stakeholders and more susceptible to errors.

7.48 Similarly, the clear link between planned and unplanned interruptions, in terms of their impact on consumers and the relative weight placed on each type, helps customers understand the different arrangements. Varying the weighting of planned interruptions across GB would make this link less clear and risk over- or under-valuing planned interruptions in different geographical locations.

7.49 We consider that these disadvantages, combined with the performance improvements that the existing approach has driven, do not warrant a move away from the existing approach.

Consultation Questions

OUTQ27. What are your views on retaining an incentive for planned interruptions performance, and the associated targets?

OUTQ28. What are your views on the potential amendments that could be made to the mechanism, including (but not limited to) the options presented in Tables 23 and 24?

Value of Lost Load

Table 25: Value of Lost Load (VoLL)

Purpose	VoLL is a representation of the value that customers place on security of supply. It feeds into many areas of the price control, including the IIS, Cost-Benefit Analysis and the Network Asset Risk Metric.
Proposed approach	We propose to update RIIO-ED1 figure for inflation as a minimum. We are consulting on other options to update the RIIO-ED1 figure.

Background

7.50 The Value of Lost Load (VoLL) is a representation of the view that domestic and Small and Medium-sized Enterprises (SMEs) customers place on the security of supply. It is used in setting incentive rates for the IIS in Electricity Distribution (and therefore impacts the amount of revenue DNOs can earn under the scheme), and elsewhere in the RIIO price controls.[47]

[47] VoLL is used in the Energy Not Supplied (ENS) incentive in Electricity Transmission, as well as in calibrating Cost-Benefit Analysis (CBA) models and the network performance factor in the Network Asset Risk Metric (NARM) used in all RIIO sectors.

7.51 In RIIO-1, VoLL was set at £16,000/Megawatt-hour (MWh), in 2009-10 prices, for the whole of Great Britain (GB). This was based on research originally carried out in 2008,[48] and ahead of RIIO-ED1 a desktop review confirmed that the figure, and the methodology used to produce it, was still appropriate.[49]

7.52 Different VoLL figures are used elsewhere in the energy sector, outside of the RIIO price controls. For example, a VoLL figure was used in informing Ofgem's Electricity Balancing Significant Code Review (EBSCR), though this figure is notably lower than the figure used in the RIIO-1 price controls.[50] This figure was based on a 2013 study commissioned by Ofgem and the Department for Energy and Climate Change,[51] which produced a weighted-average VoLL of £17,000/MWh for domestic and SME customers.

7.53 More recently, Electricity North West (ENWL) have worked to produce an updated figure by focusing on disaggregating the model that is used to establish VoLL.[52] Such an approach could ultimately lead to VoLL figures being set on a regional, rather than national, basis so that the IIS incentive for each DNO would more accurately reflect the value their customers place on reliability.

7.54 This revised model produces an updated figure for VoLL of around £25,000/MWh for GB. The model uses the same ratio of domestic: SME customers as was used in the 2008 study, of 74:26. However, data from the Office for National Statistics suggests that this ratio has since changed (to 83:17 in 2019); using this updated ratio brings the VoLL figure down to around £23,500/MWh.[53]

7.55 By way of comparison, using inflation (RPI) to uplift the RIIO-1 value (£16,000/MWh) to 2019 prices gives a new figure of around £21,000/MWh. The table below provides a comparison of the different figures, and all are based on a single view of GB customers. It also translates this figure into a total reward earned under the IIS to date, assuming each VoLL figure had been used.

[48] https://www.ofgem.gov.uk/ofgem-publications/47387/1704rep04final-pdf
[49] https://www.ofgem.gov.uk/ofgem-publications/47154/riioed1conresvoll.pdf
[50] https://www.ofgem.gov.uk/sites/default/files/docs/2013/07/ebscr_draft_decision_0.pdf
[51] https://www.ofgem.gov.uk/ofgem-publications/82293/london-economics-value-lost-load-electricity-gbpdf
[52] ENWL's VoLL page provides all the reports associated with the project: https://www.enwl.co.uk/zero-carbon/innovation/smaller-projects/network-innovation-allowance/enwl010---value-of-lost-load-to-customers/
[53] It is important to recognise that there are significant variations from this value with different customer types, particularly the fuel poor. In the 2008 study, fuel poor customers had a VoLL of around £15k/MWh higher than the average; the latest indications suggest fuel poor households' VoLL is around 24% above average, or 89% above the average when adjusting for income.

Table 26: Summary of VoLL figures and impact on RIIO-ED1 rewards

Study (used in)	Accent/Reckon (RIIO-1)	London Economics (EBSCR)	RIIO-1 value uplifted into 2019 prices	ENWL – full disaggregation	
				updated ratio	original ratio
Year	2008/2012	2013	2020	2019/20	2019/20
Value (£/MWh)	£17,600[54]	£17,000	£21,000	£23,500	£25,000
Total RIIO-ED1 IIS reward (£m)	£548m	£529m	£588m	£613m	£625m

7.56 The work by ENWL shows that there is no single figure for VoLL that can be easily calculated and compared, and there are some key drawbacks to the approach. For example, the customer database that was used in the model only applies to England and Wales, and there is no equivalent database for Scotland. All studies to date have sought to establish a single figure for VoLL that can be used over long time periods. However, VoLL is a reflection of the value that customers place on the security of their supply at a given point in time, and this value can change with their circumstances.

7.57 In the context of RIIO, any updates to VoLL that are considered will only apply to the network price controls; it will not be used to determine a new VoLL that should be used in the EBSCR or other purposes. For RIIO-T2 it is being proposed at Draft Determinations that VoLL will be updated on an agreed basis and the final position will be reached through the Final Determinations.

7.58 While there are a number of options for updating VoLL, we believe the value used in RIIO-ED1 needs to be updated for the next price control to better reflect customers' expectations.

Impact on incentive rates and revenue caps

7.59 As outlined earlier, VoLL is used in setting the incentive rates for the IIS. Incentive rates are determined using four parameters;[55] of these, VoLL is the only parameter that can be set by Ofgem, since the others are based on observed characteristics or are fixed. The nature of the calculation means that

[54] For RIIO-ED1, the £16,000/MWh VoLL figure was uplifted into 2011-12 prices when setting the IIS incentive rates. This produced a new figure of £17,600/MWh.
[55] These are the latest GB average CML, the average consumption per customer, the number of minutes in a year, and VoLL.

increases (or decreases) in VoLL would, assuming all other parameters remain the same, lead to increases (or decreases) in the incentive rate for the IIS. Appendix 6 sets out the steps that are undertaken to produce an incentive rate from VoLL and average demand; the formula below provides a high level summary of the calculation.

$$Implied\ VoLL\ per\ interrupted\ customer = Latest\ GB\ average\ CML \times \left(\frac{Average\ consumption\ per\ customer \times VoLL}{Minutes\ in\ a\ year}\right)$$

7.60 Another key parameter in determining the incentive rates for the IIS is the average demand per customer; as with VoLL, an increase (or decrease) in average demand would lead to an increase (or decrease) in the incentive rate. It is, therefore, important to consider the impact of both VoLL and average demand on incentive rates for RIIO-ED2, as an increase in one could be offset by a decrease in the other. Over the course of RIIO-ED1 to date, average demand has fallen by around five percent and by around 12 percent compared with the value used in setting RIIO-ED1 incentive rates. Therefore, an increase in VoLL will only lead to an increase in the IIS incentive rate if it is large enough to offset the reduction in average demand.

7.61 Under the IIS, the maximum revenue DNOs can earn is capped; in RIIO-ED1, this cap was symmetrical, and was set at 250 Return on Regulatory Equity basis points per year.[56] The combination of the revenue cap and the incentive rate determine the reliability improvements (in CIs and CMLs) that DNOs need to achieve to maximise their rewards under the IIS. The stronger the incentive rate, the smaller the CI and/or CML improvement a DNO needs to make to reach the cap. Therefore, the revenue cap, the incentive rate, and IIS targets all need to be considered together when setting the IIS so that DNOs are not required to deliver unachievable levels of reliability in order to meet or exceed their targets.[57]

Proposed outputs

7.62 In relation to the methodology used to update VoLL, we propose that, as a minimum, the RIIO-ED1 VoLL figure should be updated in line with inflation (RPI)

[56] The Return on Regulatory Equity (RoRE) is the financial return achieved by shareholders in a licensee during a price control period, based on its actual performance under the price control. One RoRE basis point is 0.01% (or one hundredth of 1%) of the DNO's financial return.
[57] Similarly, these elements need to be considered together to ensure DNOs are not at risk of reaching the revenue (or penalty) cap with only a small performance improvement (or worsening).

for the start of the RIIO-ED2 price control. In addition, we are consulting on the following options available for updating VoLL:

- Full disaggregation of the methodology used to determine VoLL, along with an uplift to account for inflation. This would indicate a figure around £25,000/MWh.
- Full disaggregation of the methodology used to determine VoLL, as well as an update to the ratio of domestic: SME customers, and inflation uplift. This would indicate a figure around £23,500/MWh.

7.63 We are also proposing to set a single VoLL figure for the IIS for the whole of GB. The alternative would be to produce VoLL figures on a regional or licensee-specific basis, to reflect customer preferences in that area. We are also consulting on whether granular VoLL figures could or should be used by DNOs as part of CBA models and/or NARM where appropriate.

7.64 We intend to use the RIIO-ED1 calculation to determine incentive rates in RIIO-ED2, and we propose to maintain the RIIO-ED1 revenue cap at 250 RoRE basis points per year for RIIO-ED2.

Reasons for proposed approach

7.65 Producing a robust figure for VoLL is challenging, and any value that is determined is only reflective of customers' value on security of supply at a particular point in time, and this can change over the course of a price control. Therefore, any updated VoLL may become as unreflective of customers' value of security of supply as the current RIIO-ED1 value. Despite this, we consider that an updated value will be closer to current customers' expectations than the existing RIIO-ED1 value and, therefore, more appropriate than using the RIIO-ED1 value.

7.66 We recognise that there are several options for how to update VoLL for RIIO-ED2; each has its own advantages and disadvantages. Given the areas of the price control that utilise VoLL and would be affected by any changes to the value, we are keen to make sure we understand stakeholder preferences and views for each option. This will help us to make a fully informed decision on how to progress.

7.67 We also want to understand stakeholders' preferences around having a single figure of VoLL for the whole of GB, or having more tailored values for each DNO. We believe having a single value for GB will keep the process clear, both for ourselves and other stakeholders. Having more tailored values for regions of GB could more accurately reflect customer preferences in a particular region, which would help DNOs' determine the appropriate investments to make in managing their networks. However, at this stage we are conscious of the additional complexity that regional VoLL figures would bring to the IIS, both in terms of establishing accurate incentive rates and managing the ongoing operation of the incentive. We have not yet seen evidence to suggest regional VoLL figures would materially change DNOs' investments in reliability, compared with a single value for GB.

7.68 Linked to this, we are keen to understand the implications of multiple values: a single VoLL figure for GB for the IIS, and a more tailored figure for each DNO that would be used in the CBA or NARM methodologies, for example. We understand that there is scope for two VoLL figures to be used within the price control, so long as they are clearly separated and used appropriately.

7.69 We also believe that retaining the revenue cap for the IIS at 250 RoRE basis points per year helps ensure the incentive has the right value within the overall package of incentives in RIIO-ED2.

Options considered but not proposed

7.70 It could be argued that the figure for VoLL that is used in RIIO-ED1 would still be fit for purpose in RIIO-ED2, since it aligns with values that have been produced from other, more recent studies.[58]

Reasons for not proposing options

7.71 We believe that the figure used in RIIO-ED1 needs to be revisited and updated, not least because it was based on research that was carried out over a decade ago. We believe that retaining this value for RIIO-ED2 would mean the IIS incentive rates do not reflect the value current consumers place on reliability

[58] Such studies include work carried out by CEPA on behalf of ACER (the Agency for the Cooperation of Energy Regulators) in 2018. This research produced a figure of €15.90/kWh for GB. The report is available here: https://www.acer.europa.eu/en/Electricity/Infrastructure_and_network%20development/Infrastructure/Documents/CEPA%20study%20on%20the%20Value%20of%20Lost%20Load%20in%20the%20electricity%20supply.pdf

improvements, meaning DNOs cannot accurately assess the benefits when considering options to improve the reliability of their network.

Consultation Questions

OUTQ29. What are your views on how VoLL should be updated for RIIO-ED2?

OUTQ30. What are your views on the different methodologies for updating VoLL?

OUTQ31. Do you have a view on retaining alignment with VoLL figures used in other RIIO price controls and/or parts of the energy sector?

OUTQ32. Do you agree with our proposed approach to retain the RIIO-ED1 revenue cap for the IIS at 250 RoRE basis points?

Short Interruptions

Table 27: Short Interruptions

Purpose	DNOs are not currently incentivised for any interruptions that last three minutes or less. Over time there has been significant investment in equipment to restore supplies within this time.
Proposed approach	We propose to improve the quality of data collection in relation to short interruptions over the remainder of RIIO-ED1 and through RIIO-ED2. Based on this data, we will review whether an incentive should be introduced in this space ahead of RIIO-ED3.

Background

7.72 Customers have, in the past, wanted DNOs to focus on restoring supplies as quickly as possible, and to make sure long duration interruptions (in particular) are minimised as these often cause the greatest disruption. The IIS drives DNOs to reduce the number and duration of power cuts that last longer than three minutes; a loss of supply for less than three minutes is referred to as a short interruption.

7.73 Investments in the network and the introduction of new technologies have led to an overall improvement in the reliability of the networks, as quantified through the CI and CML measures. As we move towards a smarter, more flexible energy

system, long duration interruptions continue to cause a significant amount disruption to customers.

7.74 Any loss of supply is inconvenient to customers, and interruptions, regardless of their duration, impact reliability. Even a short interruption can have a notable impact on customers: for example, some medical equipment or technology depend on a constant supply of electricity. In addition, a loss of supply for even one second would mean a Wi-Fi router needs to restart. As dependency on the electricity networks increases with changes in customer behaviours, short interruptions (whether a one-off or repeat occurrence) could pose greater inconvenience.

7.75 The data collected on the number of short interruptions by DNOs is less well developed than the equivalent for interruptions lasting longer than three minutes. This means it is difficult to establish if DNOs have improved overall IIS performance at the expense of short interruptions performance. The data quality on short interruptions means that, at this stage, we do not have the full picture of the scale or impacts of short interruptions performance on customers.

Proposed outputs

7.76 We are interested in introducing an incentive on short interruptions, but at this stage we lack robust data on both current performance levels and the value customers place on short interruptions.

7.77 We are, therefore, not proposing to introduce an incentive on short interruptions for the start of RIIO-ED2. Instead, we propose to use the remainder of RIIO-ED1 and the duration of RIIO-ED2 to explore how an incentive could be structured and introduced ready for RIIO-ED3. We anticipate that an incentive could produce a CI-equivalent metric for short interruptions, or be a measure of customers affected by multiple short interruptions.

7.78 We are consulting on establishing a minimum standard of performance for short interruptions, akin to the multiple interruptions guaranteed standard.[59] We believe a minimum standard would reduce the requirement to set detailed targets, whilst ensuring customers across GB can expect to receive the same minimum levels of service in relation to short interruptions. We are consulting on

[59] Under this standard, customers are eligible for a payment if they experience a given number of interruptions in a set time period. A minimum standard for short interruptions could follow a similar approach.

whether a minimum standard could be viable for short interruptions in RIIO-ED2, and what form this could take.

7.79 As a minimum, we propose to improve the quality of the data that is collected on short interruptions over the remainder of RIIO-ED1 and into RIIO-ED2. Through ongoing RIIO-ED1 working groups we will develop improved reporting templates so that we can capture more granular information on short interruptions performance. Once we have this in place, we will continue to refine the requirements as necessary to ensure we have robust information on the DNOs' performance. We also expect to get a better understanding of the value customers place on short interruptions through the price control process.

Reasons for proposed approach

7.80 We do not believe it would be right to set specific target levels of performance, or associated incentives, for short interruptions until we have a robust evidence base for such an approach. We want to ensure there is clear, consistent reporting of information so that we can fully understand how DNOs are performing and what improvements, if any, should be sought.

7.81 We believe that better quality and detailed data, collected on a consistent basis, will help us understand how DNOs are performing in this space, both across DNOs and over time. Having robust data, along with a strong understanding of customers' expectations, is critical to setting any form of incentive in relation to short interruptions.

7.82 Ahead of having better quality data on short interruptions, introducing a minimum standard could help keep DNOs focused on all types of interruptions, rather than only those that contribute to their IIS performance. While a measure similar to the multiple interruptions guaranteed standard might put the onus on the customer to make a claim and keep a record of the interruptions they experience, it would ensure that all types of service quality remain a focus for DNOs.

7.83 Widespread rollout of smart meters and the use of the data they generate may help reduce the burden on both customers and DNOs to track short interruptions performance, and help drive overall improvements.

Consultation Questions

OUTQ33. Do you agree with our proposal not to introduce an incentive on short interruptions in RIIO-ED2? If not, how should such an incentive be structured and developed?

OUTQ34. What are your views on a minimum standard for short interruptions for RIIO-ED2?

OUTQ35. What information should we be capturing in RIIO-ED1 and RIIO-ED2 to better understand short interruptions and how DNOs are performing?

Exceptional Events

Table 28: Exceptional Events

Purpose	Some circumstances that are beyond a DNO's control can have significant impacts on the networks. Performance under the Interruptions Incentive Scheme in these circumstances is discounted to recognise the impact of these events.
Proposed approach	Retain the existing Severe Weather Exceptional Events mechanism, with updated thresholds to reflect recent performance. We are consulting on whether the Other Exceptional Events mechanism should be retained and, if so, what form it should take.

Background

7.84 There is scope for DNOs to request that aspects of their performance under the IIS are excluded, where this is due to exceptional circumstances. These 'exceptional events' fall into two broad categories: severe weather exceptional events (SWEE); and other exceptional events (OEE).

7.85 Both types of exceptional event recognise that external factors have impacted the DNOs' performance under the IIS, and that it would not be economic for DNOs to invest in measures that would prevent these events from affecting the network and interrupting supplies to customers.

7.86 SWEEs are when the network is affected by a significantly higher than average number of weather-related faults, known as the threshold criteria;[60] and the full

[60] In RIIO-ED1, the threshold for a Category 1 SWEE is set at eight times the daily average number of faults at HV and above. A Category 2 SWEE occurs where more than 13 times the daily average number of faults at HV and above occurs. A Category 3 event occurs where a threshold number of customers are affected.

impact of the event is excluded from the DNO's performance. OEEs are when other circumstances (such as vandalism, third party action, or wildlife) impact the network;[61] only the impact beyond the threshold level is excluded from the DNO's performance. The OEE mechanism is intended to protect DNOs from (potentially significant) IIS impacts that arise from circumstances or incidents that are beyond a DNO's control to prevent and/or mitigate.

7.87 For any exceptional event, DNOs must provide sufficient evidence to Ofgem that they have exceeded the threshold criteria; we then assess each claim and determine the value of any adjustment. Since 2010, there have been an average of 20 SWEE claims and five OEE claims each year across the industry.

7.88 Even where a DNO is affected by an exceptional event, other measures remain in place (such as the Guaranteed Standards of Performance) to ensure DNOs restore supplies as quickly and safely as possible. The definitions of a SWEE and/or an OEE also apply to the Guaranteed Standards of Performance.

Proposed outputs

7.89 Our proposal for RIIO-ED2 is to retain the existing mechanism for Severe Weather Exceptional Events.

7.90 Given the relatively small number of Other Exceptional Events that occur each year across the industry, we propose to remove the OEE mechanism. In the alternative, if it were to be retained, we are seeking views on improvements that could be made to the existing mechanism that would ensure that only those relevant events that are not otherwise captured by the SWEE mechanism are captured by the OEE mechanism.

Reasons for proposed approach

7.91 We recognise that adverse weather can have material impacts on the networks themselves and the conditions in which DNOs must operate to restore supplies. We do not believe it would be economic to fund measures that mean the networks are fully resilient in all weather conditions.

[61] As with SWEEs, in RIIO-ED1 OEEs have a threshold number of customers interrupted (25,000) and/or number of customer minutes lost (two million) that must be passed to be eligible to exclusion.

7.92 In discussions with stakeholders about the SWEE mechanism, it was noted that the use of a threshold number of faults can lead to a binary consideration by Ofgem of whether a period of severe weather is exceptional or not. We note comments that the threshold could be seen as an arbitrary determination of when DNOs receive regulatory relief. However, we consider that having a pre-determined threshold provides a level of clarity to DNOs, to their customers, and to Ofgem that would not necessarily be provided under a different approach; this clarity is especially important during severe weather.[62]

7.93 We are aware that the current approach to exceptional events means it is not always possible for some DNOs to pass the threshold, particularly in the case of the OEE mechanism. The threshold levels for both the OEE and SWEE mechanisms provide a clear signal for all stakeholders of when it could be considered that circumstances have gone beyond business as usual. We propose to update the thresholds for the SWEE mechanism to reflect the performance of the last ten years, and publish these later in the process of setting the price control, when more up to date information is available.[63]

7.94 Despite this, we are aware that the type of events that have been considered under this mechanism in recent years has started to change. Claims under the OEE mechanism are increasingly covering scenarios where a fault occurs on a part of the network that is undergoing maintenance, meaning large numbers of customers are interrupted that (had the maintenance work not been taking place) would not otherwise have been affected. We are also witnessing increasing volumes of 'weather-related' claims submitted under the OEE mechanism that did not meet the requirements of the SWEE mechanism. While both circumstances are technically permitted under the RIIO-ED1 licence, we do not consider that this is what the mechanism was originally intended to cover. We therefore believe it is appropriate to remove the OEE mechanism, unless there is evidence that changes could be made to ensure there is no scope for the mechanism to be abused.

7.95 We recognise that removing the OEE mechanism would, potentially, expose DNOs to a greater level of risk than if the mechanism was in place. However,

[62] Under 'severe' weather conditions, DNOs have a longer time to restore supplies to customers (24 hours) before failing the relevant Guaranteed Standard than under 'normal' weather conditions (12 hours). This difference recognises that the volume and nature of faults on the network is likely to be different under severe weather conditions.
[63] We expect this will be published around the time of Draft or Final determinations, at the same time as the unplanned interruptions targets.

based on the claims seen in RIIO-ED1 so far, we consider that risk is small when compared to the scope for additional revenues to be earned under the IIS as a whole.[64] If the OEE mechanism is retained, we want to ensure it is covering appropriate circumstances, rather than serving as a back-up or catch-all provision for the DNOs. The administrative burden associated with each claim (both for the DNO and Ofgem) needs to be justified in the form of truly exceptional circumstances being covered by the mechanism.

Options considered but not proposed

7.96 Through discussions with stakeholders, it was suggested that the threshold values used in both SWEEs and OEEs could be applied in different ways, to avoid the binary nature of a single threshold level.

7.97 For SWEEs, having tiers of 'exceptionality' (where a DNO gets, for example, 50% relief on a lower tier of exceptionality) might allow resilience investment to take place, which would reduce or remove the risk of smaller exceptional events (that do not meet the original threshold) countering the benefits of larger scale investment.

7.98 For OEEs, the threshold could be based on the size of an event, rather than the size of a DNO. For example, an event would qualify as exceptional if one percent of a DNO's customers were interrupted.

7.99 As an alternative to the existing arrangements for the performance of DNOs during exceptional events, we could consider replacing the DNO's actual performance with some form of 'average' performance. This would mean DNOs are not exposed to the full impact of the event, but still have a strong incentive to reduce the overall number and duration of power cuts.

<u>Reasons for not proposing options</u>

7.100 We recognise the benefits brought by each of the options outlined above. Having a tiered approach to the exceptionality threshold(s) would smooth the boundary between 'normal' and 'exceptional' conditions. Replacing the event-related performance with some view of average performance would keep DNOs focused

[64] The 22 OEE claims submitted in the first four years of RIIO-ED1 come to a total value of £10 million in IIS rewards, set against a total overall reward under the incentive of £550 million. The final value of the allowed OEE claims is around £8.3 million.

on improving their overall reliability and investing in measures to reduce the impact of exceptional events.

7.101 However, we believe that all these options bring an additional level of complexity to the exceptional events process that is not necessary. We are also not certain that the benefits of these alternative approaches would outweigh the (relatively minor) challenges of the current mechanisms.

7.102 We also recognise the impact that these options would have on other elements of reliability. Having a tiered approach to thresholds for exceptional events would add a further layer of complexity to the Guaranteed Standards, as well as how a DNO's overall performance compared to their IIS target is assessed.

7.103 Replacing a DNO's performance during an exceptional event with a view of 'average' performance would present similar challenges, not least in determining what that 'average' performance should be. This would also have implications for how targets are set under the IIS, since they are based on historical performance (excluding exceptional events). Performance under this new approach would, therefore, not be comparable with the targets that are set for RIIO-ED1, and it would mean future performance could not be robustly compared with historical performance under the IIS. We therefore do not believe we should take these options forward.

Consultation Questions

OUTQ36. Do you agree with our proposal to retain the RIIO-ED1 SWEE mechanism?

OUTQ37. Do you agree with our proposal to remove the OEE mechanism? If not, what evidence is there to support its retention, and what changes should be made to the existing approach to improve it?

OUTQ38. What are your views on the threshold that should apply to either exceptional event mechanism?

OUTQ39. What performance do you think should be excluded under each mechanism?

Guaranteed Standards of Performance

Table 29: Guaranteed Standards of Performance (GSoPs)

Purpose	To ensure a set of common, minimum standards apply to DNOs with respect to interruptions, voltage quality, and customer interactions.
Proposed approach	We propose to retain the existing licence obligation on DNOs to comply with the guaranteed standards, updating payments for inflation (CPIH - in line with the approach in GD). We also propose to round payments to the nearest £5 for clarity for stakeholders.

Background

7.104 The Guaranteed Standards of Performance (GSoPs) set out the minimum levels of service DNOs should deliver for their customers.[65] They cover a range of scenarios relating to supply interruptions, the quality of supply provided to customers (i.e. the voltage quality), and DNO and customer interactions. Separate GSoPs cover the levels of service DNOs should provide in relation to connections, which are covered in Chapter 5. A summary of the existing GSoPs and their payment levels is provided in Appendix 2.

7.105 If a DNO fails to meet the service levels set out in the GSoPs, they are required to make a payment to the affected customer(s).[66] DNOs have paid out around £8.2 million (2018-19 prices) under the GSoPs in RIIO-ED1 to date; of this, around £3.9 million has been paid voluntarily (often referred to as ex gratia).[67]

7.106 We review the GSoPs ahead of each price control to ensure they remain fit for purpose in obliging DNOs to deliver the minimum service levels that we, and customers, expect. Reviewing the standards ahead of each price control also allows us to consider any changes to the payment amounts that may be required.

[65] GSoPs is the price control term used to reference the requirements set out in the Electricity (Standards of Performance) Regulations 2015 (*SI 2015/699*). These Regulations are made by Ofgem with consent of the Secretary of State.
[66] Payments under the GSoPs are not designed to compensate customers for any loss of supply, since DNOs cannot guarantee a continuous supply of electricity. The payments are instead designed to recognise the inconvenience that is caused by a standard not being met.
[67] Ex gratia payments are made either where an exemption is applied (meaning the DNO does not have to make a payment) but the DNO makes a payment anyway, or where a DNO makes a larger payment than required by the standard (i.e. they pay £100 where the standard requires them to pay £75; the extra £25 would count as ex gratia).

7.107 For RIIO-ED1, payment levels for each GSoP are fixed for the duration of the price control for all customer types. The payment levels were inflated to the mid-point of the price control, and rounded to the nearest £5 to make it simple and easy for all stakeholders to understand. Following the storms of December 2013, we also increased the payment amounts relating to severe weather.[68]

7.108 In addition to changes to the payment levels, we also made three key changes to the service levels that should be delivered: first, the normal weather standard was reduced from 18 to 12 hours; second, exemptions relating to customers in the Highlands and Islands of Scotland were removed; and third, we introduced a penalty rate for DNOs that did not make the required payments under certain standards.

7.109 For RIIO-ED1, we expect DNOs to make payments to customers where they have failed a guaranteed standard without the customer having to make a claim, where possible.[69] This applies to all but two of the GSoPs; the remaining two standards (notice of planned interruptions, and multiple interruptions) cannot be paid automatically to customers as DNOs do not have the necessary information to make the payments.

7.110 Similar standards exist for Gas Distribution Networks (GDNs), and a number of notable changes are being consulted on in the draft determinations for RIIO-GD2.[70] These changes are in part due to the fact that the standards in gas distribution have not been reviewed for over ten years, and that some GDNs voluntarily double the payments they are required to make under the existing standards. Several of the proposed changes for RIIO-GD2 are being considered for RIIO-ED2, such as updating payment levels at the start of the price control to account for inflation. Other changes, such as annual indexation of payments to CPIH then rounding those values to the nearest £5 and the requirement for all payments to be made automatically, may also be appropriate for RIIO-ED2.[71]

Proposed outputs

7.111 Based on the evidence we have seen through RIIO-ED1 to date, we consider that the existing obligations under the GSOPs broadly remain fit for purpose. We

[68] https://www.ofgem.gov.uk/publications-and-updates/minded-decision-changes-severe-weather-related-guaranteed-standards-performance-gsop-following-december-2013-storms
[69] Previously, customers had to claim a payment from the DNO. A lack of awareness of the DNOs themselves and the GSoPs risked customers missing payments they were due.
[70] Draft Determinations for RIIO-GD2
[71] Chapter 2 of the Draft Determinations for RIIO-GD2

therefore propose to retain the existing GSoPs for RIIO-ED2 with adjustments to the payment levels, and additional minor amendments where necessary. We believe the current obligations cover the appropriate scenarios and provide suitable expectations of minimum service levels that DNOs should deliver.

7.112 We propose to account for inflation (using CPIH) by adjusting the payment amounts to the start of RIIO-ED2. We will then index payments (and the associated caps) to inflation (CPIH) against a baseline level of February 2023;[72] once the index has moved sufficiently, DNOs should round the payment amounts (up or down) to the next multiple of £5, and adjust the associated caps at a commensurate rate.[73,]

7.113 Notwithstanding our proposal to retain the existing obligations, we remain open to views on whether any amendments need to be made to some elements of the standards. For example, this could include a change to the notice period DNOs are required to give customers ahead of a planned interruption (currently set at two days),[74] or a change to the criteria for a customer to meet the multiple interruptions standard. We will explore options for how the two remaining standards could be paid automatically, without the need for customers to make a claim.

7.114 The above details the changes we are proposing for RIIO-ED2. Alongside these, we also propose to review and update the drafting of GSoP Regulations, as we consider that there are aspects that could be laid out more clearly. For the avoidance of doubt, we do not propose to change the substance of the GSoP Regulations or the requirements on DNOs for RIIO-ED2; instead we will review the drafting to improve clarity and transparency for all stakeholders. This review of the drafting will take place ahead of RIIO-ED2, but the changes will come into force for the start of the RIIO-ED2 price control. We will work with DNOs and other interested stakeholders on this, and conduct further consultations as necessary.

[72] This will refer to a monthly index published by the Office for National Statistics, and allow for changes (if required) to be implemented for the new financial year. The February 2023 CPIH monthly index would be used as this will be the latest available index before the 2023-24 financial year.
[73] For example, if a standard has a payment level of £30, with a cap of £300, an inflation of 2% per year would lead to that standard to move to a payment level of £35 in year 5, by which point the indexed payment would have increased to £33.12 and would therefore require rounding to the new nearest multiple of £5. At this point, we would expect the cap to also be increased to £350. We would not expect to see the next increase until the indexed payment level reached more than £37.50 (in this example, year 12).
[74] For comparison, the proposed notice for a planned interruption to a customer's gas supply is seven working days.

Reasons for proposed approach

7.115 DNOs and Ofgem have worked to increase customers' awareness of their rights and the DNOs' requirements in relation to the GSoPs. DNOs have achieved good levels of performance under the standards over time, making the required payments in the vast majority of cases.

7.116 We are not aware of a need to change the existing GSoPs, or to introduce new standards. If stakeholders have evidence of a need to change existing standards or introduce new standards then we would like to see this presented and justified in response to this consultation.

7.117 We believe that the GSoP payment levels are appropriate and do not need updating beyond an adjustment to account for inflation, as payment levels were last reviewed relatively recently as part of RIIO-ED1 and the Christmas 2013 storms review. The payment amounts are intended to acknowledge the inconvenience customers have experienced as a result of the standard not being met, rather than reflect the value customers may place on that inconvenience. On this basis, we consider the payment levels are, after adjusting for inflation, appropriate and should be considered alongside the average amount customers pay for network charges in a year.[75]

7.118 We also consider the rules and expectations that are in place for DNOs are proportionate. Broadly speaking, the regulations are an effective means of setting the levels of service that DNOs must provide, though we recognise that it would be prudent to review them as part of the price control process. We therefore believe that, working with the DNOs and other stakeholders, we should review the drafting of the GSoP Regulations ahead of RIIO-ED2 to ensure they are clear and transparent for all stakeholders. We will carry out this review through the RIIO-ED1 Quality of Supply working group.

Consultation Questions

OUTQ40. Do you agree with our proposal to retain the existing GSoPs? If not, what changes do you think are necessary and what are the reasons for them?

[75] If payment levels under the GSoPs increase to a level that is notably higher than the amount DNOs recover from customers through bills for the cost of maintaining the networks, there is a risk that DNOs become exposed to an undue level of financial risk. This could lead to higher network charges overall in the future.

OUTQ41. Do you agree with our proposal to uplift payment values in line with inflation, indexing payment levels to inflation, and rounding to the nearest £5 for clarity for stakeholders?

Worst Served Customers

Table 30: Worst served customers

Purpose	Reduce the number of interruptions experienced by those customers who experience an unusually poor service from their DNO.
Proposed approach	We propose to include a Worst Served Customers mechanism in RIIO-ED2, providing DNOs with 'use-it-or-lose-it' funding for schemes that deliver specified performance improvements.

Background

7.119 The IIS drives DNOs to make improvements to the reliability of their networks that result in a high return (measured in reduced CIs and/or CMLs) per pound invested. The Worst Served Customer (WSC) mechanism is designed to address the experience of customers who may not be adequately catered for by the IIS, particularly those who experience an unusually high number of interruptions. It allows DNOs to log-up the costs they incur (up to a spending cap) in delivering specified performance improvements for customers that meet the definition of a WSC.[76] Table 31 sets out the key elements of the WSC mechanism in RIIO-ED1.

Table 31: Key elements of the WSC mechanism in RIIO-ED1

Element	RIIO-ED1
WSC Definition	Customer experiencing on average at least four higher voltage interruptions per year, over a three year period (i.e. 12 or more over three years, with a minimum of three interruptions per year).
Performance improvement required	DNO-proposed percent reduction in the average number of interruptions for WSC measured over three full reporting years post-commissioning. Scope for DNO to provide evidence of the expected long-term benefit of the scheme if this is not achieved.
Total allowance pot	£76.5m
Distribution of allowance pot	Number of WSC in each eligible DNO.

[76] DNOs were allowed to propose alternative spending caps per WSC, as well as alternative percent reductions in the average number of higher voltage interruptions experienced by WSCs.

Element	RIIO-ED1
Cap per WSC	DNO proposed spending cap (based on fully evidenced/supported stakeholder engagement)
Funding arrangements	Logged up and funded ex post on a net present value neutral basis (provided performance and eligibility criteria are met).

7.120 In RIIO-ED1, all DNOs have a 'use-it-or-lose-it' allowance for WSCs based on the details set out in Table 31. The exception was Scottish and Southern Energy's licensee in the north of Scotland (referred to as SSE Hydro, or SSEH), who proposed several schemes that related to WSC performance and were funded as part of its ex ante allowances.

7.121 While the WSC mechanism is well intentioned in trying to drive DNOs to improve the reliability for their customers that experience the poorest service, it has a number of practical limitations that restrict its effectiveness. These include the prescriptive and narrow definitions that are used to define a WSC, and the performance improvements that are required. This often means that customers do not technically qualify as worst served (despite receiving poor levels of service), and/or the solutions that are available do not meet the funding requirements. The mechanism's restrictions are evident through the total spend on schemes to date, compared with eligible funding Table 32.

Table 32: DNO spend on WSC schemes in RIIO-ED1 to date

DNO group	RIIO-ED1 Allowance (£m 12-13 prices)	Total spent to date (£m 12-13 prices)	Proportion of allowances spent
ENWL	£3.40	£1.30	38%
NPG	£6.90	£0.00	0%
WPD	£27.30	£2.42	9%
UKPN	£18.30	£0.99	5%
SPEN	£7.20	£0.04	1%
SSEN	£7.50	£1.07	14%
GB	£70.60	£5.81	8%

7.122 We consider that some form of mechanism is required to protect those customers who repeatedly experience low levels of reliability, and that the existing arrangements need to be reviewed. We want to make sure DNOs continue to address the quality of supply provided to those who are worst served, rather than just focusing on an average level of performance across their region. Options for updating the mechanism cover different scenarios, from keeping the

mechanism in its current form, amending some of the parameters, to incorporating the mechanism into the IIS.

Proposed outputs

7.123 We propose to retain some form of mechanism in relation to WSC. Table 33 sets out the range of options for a WSC mechanism in RIIO-ED2.

Table 33: Options for the WSC mechanism in RIIO-ED2

Option	Pros	Cons
1) Keep existing mechanism as it is	Familiar and established mechanism.	Has struggled to drive DNOs to make use of the scheme and improve service to WSCs.
2) Amend parameters of existing mechanism, such as: a) reducing the threshold number of faults from 12 to 9 or 6; b) change the length of the qualifying or monitoring period(s); c) change the required level of performance improvement; d) revise the allowance per customer; e) Include LV interruptions.	Improve the established mechanism to encourage or enable a greater uptake of schemes. Some benefits may include: a) more customers may be eligible under the scheme; b) DNOs could recover costs of schemes in a shorter timeframe and there is less scope for other factors to affect schemes put in place; c) WSCs could performance improvements compared to the existing levels of reliability; d) other options may be available to DNOs to improve reliability.	Does not reduce the administrative burden associated with the mechanism. Not clear that these changes would lead to greater uptake of the scheme and improvements for customers.
3) Fund WSC schemes through ex ante allowances	More flexibility for DNOs to propose schemes that are tailored to the approach needed for their customers. Gives more certainty to DNOs about funding for projects.	May lead to inconsistent approaches across GB, meaning some WSCs see different performance improvements. No less administratively burdensome.
4) Fold into the IIS	Would have one overall incentive for interruptions. Weightings could be applied to interruptions so that subsequent interruptions have a greater impact on the DNO's performance.	Very complex to assess performance. No clear way of tracking the reliability received by WSCs and performance improvements. Introduces another layer of complexity into the IIS.

		Reduces comparability with historic performance.
5) Remove the WSC mechanism	Allows DNOs to focus on achieving the best return for investment in improving overall reliability.	No dedicated mechanism or funding route to improve the reliability for WSCs.

Reasons for proposed approach

7.124 Customers across GB are entitled to a reliable supply of electricity, and we want to ensure DNOs do not solely focus on improving the average performance under the IIS. While there are factors that mean some customers may naturally receive a better level of service than others, it is important that DNOs take steps to improve the quality of supply for all customers.

7.125 This is especially true when looking ahead to the next price control, and beyond. We want to ensure that no customer is left behind as we move towards Net Zero, and expect DNOs to be doing all they can to bring all customers along on the journey. That means making sure all customers have access to a safe and reliable network, so that they can connect to low carbon technologies and continue to use the network as behaviours change.

Next steps

7.126 We will continue to explore the options for taking the WSC mechanism forward. We do not expect to decide this by the Sector Specific Methodology Decision.

Consultation Questions

OUTQ42. Do you agree with our proposal to retain some form of mechanism for WSC in RIIO-ED2?

OUTQ43. What are your views on the options presented for WSC? Are there other options that we should consider?

8. Maintain a safe and resilient network

Chapter summary

This Chapter sets out our proposals to ensure the DNOs continue to maintain asset resilience, support workforce planning and ensure the networks can improve their cyber resilience and the physical security of key sites.

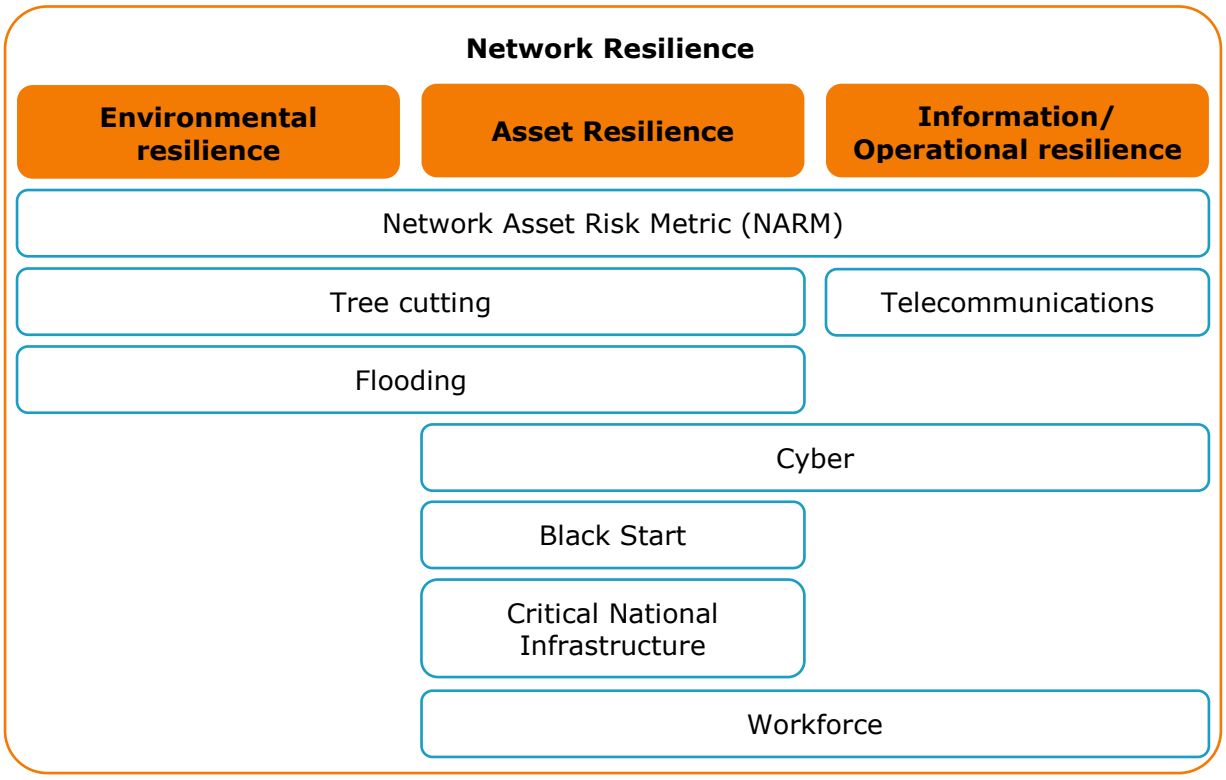
Introduction

8.1 The actions network companies take in managing their networks must ultimately deliver safe and resilient network services to ensure the distribution networks can meet the needs of consumers, both now and in the future.

8.2 The networks need to remain resilient to a range of existing and emerging threats. This covers elements such as the overall resilience of network assets and how this changes over time, as well as threats external to the networks such as flooding of key sites or cyber-attack. We have a range of measures in place in the current price control that ensure DNOs manage and mitigate the risks to their networks, and our proposed arrangements for RIIO-ED2 build on these measures as well as learn from progress in other RIIO sectors. Each element is discussed in detail in this Chapter.

8.3 There are three main components of our approach to ensuring DNOs deliver safe and resilient networks: asset resilience (as measured through the Network Asset Risk Metric); workforce and cyber resilience; and, environmental and other resilience. In this Chapter, we discuss our proposals for each of these areas in turn, including their component parts (where appropriate).

Figure 11: Key elements of network resilience in RIIO-ED2



8.4 So far in RIIO-ED1:

- Over 60% of the Network Asset Indices Secondary Deliverables have been delivered in the first four years of the price control, reducing the overall risk on the networks;
- Flood protection schemes have been carried out at over 350 substations across GB;
- DNOs have spent around £570 million (2018/19 prices) on resilience activities including flood mitigation, tree cutting, and ensuring the physical security of substations.

8.5 As with network reliability, we want to see DNOs build on these achievements to date as they make sure their networks are resilient both now and in the future.

Network Asset Risk Metric

Table 34: Resilience

Purpose	If a network company does not appropriately manage their assets, the risk of those assets failing will generally increase over time. To keep the network asset risk, i.e. the consequence of asset failure and the likelihood of a failure occurring, within reasonable bounds, network companies are funded to carry out asset management activities such as replacement and refurbishment.
Proposed approach	To build on developments in RIIO-ED1, set outputs that reflect the long-term benefit of the work the licensees are funded to deliver and that improve coverage and alignment of the NARM methodology across the sector.

Introduction

8.6 Network asset risk refers to the probability and impact of an asset failing. Through their asset management activities such as replacement and refurbishment, DNOs should ensure that the risk to consumers of asset failure is maintained within reasonable bounds.

8.7 This is an important part of the price control, because we use it as the output to hold companies accountable for their investment decisions. It contributes to a significant proportion of the DNOs' totex allowances (approximately 20 per cent of RIIO-ED1 allowances) and consumers could suffer significant detriment if the pursuit of short-term profits leads to degradation of the quality of network assets.

8.8 The consequences of such degradation may only become apparent over much longer timeframes through interruptions to service, wider damages to public safety or environmental impacts.

8.9 Due to the long operating life of network assets (greater than 40 years in many cases), the impact of any shortfall in asset management activities may not be directly observable during a price control. So, in addition to performance indicators such as the Interruptions Incentive Scheme (IIS), which is a lagging indicator of asset management over a lengthy period, we need measures that tell us on a forward-looking basis how prone network assets are to failure and the potential consequences to consumers of any such failure.

8.10 Allowances are set at sufficient levels and outputs maintained within reasonable bounds to avoid, at one extreme, DNOs 'gold-plating' their networks by over-

investing in the pursuit of excessively high resilience and reliability targets at significant cost to existing consumers, and at the other extreme, neglect of asset management practices in pursuit of cost savings for current consumers but to the detriment of future consumers in terms of network resilience and reliability.

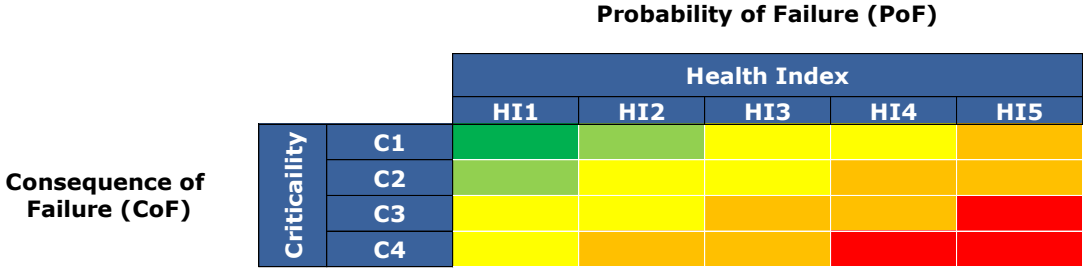
8.11 As noted in the RIIO-2 Sector Specific Methodology Decision[77] for the other three sectors (electricity and gas transmission, and gas distribution), managing network asset risk is a cross-sector issue, but some elements of the application and approach to implementing a network asset risk framework may vary across the sectors.

Background

8.12 We provide companies with sufficient funding to manage their assets and to maintain a reliable and resilient network. We measure their performance against a number of metrics and/or outputs. These measures are intended to drive the DNOs to deliver an overall level of risk during the price control and to consider reliability and resilience improvements over both the short-term (within the price control) and long-term (beyond the current price-control).

8.13 DNOs report Network Asset Indices, which comprise information relating to asset health (Health Index) and criticality (Criticality Index), which when combined, is known as a Risk Index. This quantified measure provides an indication of the risk of condition-based failure of network assets. The Network Asset Indices are reported using a 5x4 (Health v Criticality) Risk Matrix for each asset type, as set out below.

Figure 12: Risk Matrix



8.14 As part of the RIIO-ED1 price control review, each DNO provided forecasts of their Network Asset Indices 'with intervention' and 'without intervention'. We

[77] https://www.ofgem.gov.uk/system/files/docs/2019/05/riio-2_sector_specific_methodology_decision_-_core_30.5.19.pdf

used these to set out the improvements in network risk required of each DNO's asset base during the price control. This was referred to as the Network Asset Secondary Deliverables (NASD) Target Risk Delta. Interventions, such as asset replacement, as well as some refurbishment activities, are carried out by DNOs to deliver their NASD Target Risk Delta.

8.15 While each DNO's forecast was initially based on their own specific assessment methodology, it was recognised that it would be beneficial for the DNOs to report performance using a common framework to enable us to monitor companies' performances on a consistent basis and to ensure long-term delivery and value for money for consumers. Therefore, the price control settlement included a licence condition[78] which mandated the development of a common methodology for asset health, criticality and monetised risk. The DNOs worked together to develop the Common Network Asset Indices Methodology (CNAIM)[79], which was first approved on 1 February 2016.[80]

8.16 As well as requiring the DNOs to align their current processes and practices to this new standard, our approval letter also directed the licensees to rebase their NASD targets[81], which are contained within their Network Assets Workbooks, for the RIIO-ED1 period.

8.17 DNOs report annually against their NASD targets using the CNAIM to calculate the changes in network risk achieved. This information is reported using risk matrices, formed by the asset health and criticality indices. These reporting requirements are set out in Annex D to the RIIO-ED1 Regulatory Instructions and Guidance (RIGs).

Proposed approach for RIIO-ED2

Overview

8.18 For RIIO-ED2, we want the outputs that licensees are set to better reflect the long-term benefit of the work they are doing, and we want the CNAIM to have greater coverage and alignment across the sector. Significant progress has been

[78] Standard Licence Condition 51 of the electricity distribution licence
[79] https://www.ofgem.gov.uk/system/files/docs/2017/05/dno_common_network_asset_indices_methodology_v1.1.pdf
[80] https://www.ofgem.gov.uk/publications-and-updates/decision-dno-common-network-asset-indices-methodology
[81] Ofgem required DNOs to rebase their NASD targets in order to align with the newly developed CNAIM. This involved DNOs resubmitting their Network Asset Workbooks and Secondary Deliverables Monetised risk files, setting out updated asset health and criticality and recalculated NASD target risk deltas.

made in the development of NASDs in RIIO-ED1, and we want to build on this work for RIIO-ED2 and beyond.

8.19 In line with the other sectors, we will term this the Network Asset Risk Metric (NARM) and similar to NASDs, the NARM will use monetised risk as the primary measure for defining the outputs.

8.20 NARM will be used as part of a toolbox approach to justifying and assessing network companies' (proposed) investments and preferences for their chosen strategies associated with asset resilience. We expect companies to provide us with good quality information in their Business Plans to support this. We also propose to apply penalties to companies if they fail to deliver against their targets.

8.21 In RIIO-ED1, asset categories covered by NASDs varied across the licensees within the sector. We want to achieve greater alignment across the sector ahead of RIIO-ED2 in terms of the network assets that DNOs are reporting against, and we want to explore the possibility of extending the scope of NARM to a wider asset base.

8.22 We have identified several priority areas on which to focus the development of NARM for RIIO-ED2. In the following sections, we discuss our proposals in each of these areas. The priority areas are as follows:

- Adoption of long-term risk
- Commonality of reporting
- Production of guidance document
- Revision of methodology
- Expansion of methodology

8.23 These proposals are intended to build upon the existing arrangements in order to ensure that the outputs we set are more reflective of the work that is delivered, to increase coverage of the framework, to improve consistency of application across the sector, and to enhance regulatory reporting.

8.24 We will also consider as part of developing NARM for RIIO-ED2:

- Incentives associated with NARM
- Use of NARM in cost benefit analysis (CBAs) and Engineering Justification Papers (EJPs)

Adoption of long-term risk

8.25 As previously described, the Risk Index is a monetised risk measure that is calculated from the reported Health Index and Criticality Index information. Each reported asset is allocated a Risk Matrix, and each individual asset can be assigned a position within the Risk Matrix for that asset type, allowing the level of risk to be quantified consistently across asset categories and across DNOs in accordance with the requirements of the CNAIM.

8.26 In RIIO-ED1, while licensees are expected to take into account longer-term risks when carrying out trade-offs between different asset categories or justifying over- or under-delivery, the outputs, i.e. the network risk targets that licensees are set, do not necessarily capture the longer-term benefits of the work that they are being funded to carry out, as they are based on a one-year snapshot view of the benefits delivered during the price control period.

8.27 In setting outputs, we want the full value to consumers of a company's work to be captured. For RIIO-ED2, we therefore propose that the NARM output measure should take account of the long-term benefit of the work that the companies are funded to do during RIIO-ED2 through the estimated present value of future benefits. This will be a development on the RIIO-ED1 measure, which as described only considers the benefits delivered during the price control period.

8.28 Our proposed methodology for the estimation and reporting of long-term risk for RIIO-ED2 is to assign a typical 'cumulative discounted future Probability of Failure (PoF)' weighting to each Health Index Band. Core assumptions that underpin this approach include:

- all assets (within a given asset category) within the same Health Index Band can be regarded as having the same typical value of Health Score (and PoF) in the current year. This is an assumption already used in the current RIIO-ED1 reporting framework.
- all assets (within a given asset category) with the same Current Health Score, will follow a standard deterioration curve and therefore have the same value of Health Score (and PoF) in each future year. Typical 'time-based' Health Score curves can be generated based on the principles used for the underlying age-based curves within the CNAIM. These can then be used to create typical time-based PoF curves using the relationship defined in the CNAIM.

- Consequence of Failure (CoF) can be considered to be a constant.
- This approach proposes that 'future risk' can be considered using the existing 5x4 (Health v Criticality) reporting risk matrices by:
- retaining the existing approach to assigning a Health Index and Criticality Index to each asset;
- retaining the existing methodology for assigning a typical value of CoF to each Criticality Band; and
- applying new weightings to each Health Index Band that reflect the 'cumulative discounted future PoF' for a typical asset within each Health Index Band.

8.29 We will develop suitable Matrix Weighting Factors that can provide a reasonable reflection of future risk, suitable for a regulatory measure, whilst retaining the principles of the RIIO-ED1 Network Asset Indices reporting and processes.

8.30 Our view is that this proposal represents a logical and robust approach to taking into account the long-term benefits of asset interventions in RIIO-ED2. We consider that this development, which take account of the longer-term impact on asset degradation of the various intervention options, is likely to lead to planning and implementation decisions that better reflect value for money for consumers.

8.31 We will continue to work on the development of some of the specific technical elements of this approach through the SRRWG on the run up to our Sector Methodology Decision, including but not limited to the determination of appropriate values for the Matrix Weighting Factors and typical health score for health bands, and a review of any underlying assumptions and the continued testing of fitness for purpose of the models.

Commonality of reporting

8.32 Effective asset management involves renewal and maintenance of all network assets. However, monetisation of asset risk depends on the collection and verification of relevant data through time and NASDs at present only covers most of the primary assets on electricity distribution networks.

8.33 In RIIO-ED1, DNOs were only required to report Network Asset Indices for Heath Index Asset Categories where they had agreed NASDs. While the CNAIM covered 25 different Health Index Asset Categories, DNOs were only required to implement the methodology for those Health Index Asset Categories where they

were to report Network Asset Indices. This resulted in a varied approach across the sector, with some DNOs reporting on 22 Health Index Asset Categories as per the CNAIM, and other DNOs reporting on as few as 14.

8.34 A Health Index Asset Category can include several Asset Registry Category Models. For example:

Health Index Asset Category	Asset Register Category	
Low Voltage (LV) Switchgear and Other	LV Board (WM)	LV Pillar (ID)
	LV Board (X-type Network) (WM)	LV Pillar (OD at Substation)
	LV Circuit Breaker	LV Pillar (OD not at Substation)

8.35 For RIIO-ED2, under NARM, we want to ensure consistency of approach across the electricity distribution sector, in terms of the reporting of assets covered by the CNAIM. We want to give DNOs the opportunity to increase assets within the scope of their CNAIM-reported assets, and we want all DNOs to report on the same types of assets.

8.36 To improve the commonality of reporting across DNOs, we intend to build upon the existing scope of the CNAIM, as Asset Register Category models have already been developed and asset inspection and data gathering practices have already been put in place. This should improve simplicity and provide additional clarity.

8.37 For RIIO-ED2, we propose that the concept of a Health Index Asset Category is retired, and instead DNOs are required to report against the Asset Register Category models only. This should help ensure alignment between CNAIM assets and assets reported elsewhere in regulatory submissions.

8.38 All Asset Register Categories within the current CNAIM should be declared against a company's NARM monetised risk target, with a 'NIL return' provided for assets a licensee does not own.

8.39 Some DNOs have raised concerns that they do not have the sufficiently robust data required to generate suitable outputs from some of the Asset Register Category models. While we recognise this issue, we think there is significant benefit to consumers in, as outlined above, improving the commonality of

reporting across the sector, and thus we would expect DNOs to align with the sector and report against these assets.

8.40 We will continue to work with DNOs and other stakeholders in the run up to our Sector Methodology Decision, in order to understand any concerns with our proposal. This process will include why information is not routinely collected and consider the plans DNOs have in place for the collection of this information.

8.41 In RIIO-ED1, Information Gathering Plans (IGPs), which set out how DNOs gather and record information required for implementation of the CNAIM, were submitted to Ofgem for approval. DNOs were also required, through SLC 51, to keep their IGPs under review, and where necessary to modify them to ensure they continue to align with the reporting requirements. Given the proposed changes to the NARM framework for RIIO-ED2, we intend to review the role of IGPs on the run up to our Sector Specific Methodology Decision.

Production of guidance document

8.42 Robust and quality asset data is of critical importance to the NARM framework. As a result of concerns that we have over the consistency of asset data and application of the methodology, we propose that DNOs work together to develop an Engineering Guidance document on data input to the CNAIM. This should improve the consistency of reported asset data and ensure better alignment across the sector on areas such as external asset condition and leaks.

8.43 In the first instance, we expect the Engineering Guidance document to cover all condition points for primary and ground mounted asset classes in the CNAIM. For the start of RIIO-ED2, we expect the guidance to cover all condition points for all asset classes covered by the CNAIM.

8.44 In our RIIO-ED2 Framework Decision[82], we noted that in order to drive consistency and improved data quality, we might consider the role of an Asset Data Quality Incentive. It is our view that our proposals relating to commonality of reporting and the production of a guidance document sufficiently address these challenges, and as such, we are no longer proposing to consider the introduction of an Asset Data Quality Incentive for RIIO-ED2.

[82] https://www.ofgem.gov.uk/system/files/docs/2019/12/riio-ed2_framework_decision_dec_2019.pdf

Revision of methodology

8.45 The CNAIM has been developed such that it can seamlessly incorporate future innovation in operation and maintenance. Licensees are obliged, under licence condition SLC 51, to keep the methodology under continuous review, and we expect them to work together to identify areas for development and improvement.

8.46 For RIIO-ED2, in addition to updates that capture areas under review and developments based on innovations and experience from RIIO-ED1, we expect the CNAIM to be updated to take into account proposals on the development of the NARM output measures, and the expansion of the methodology to provide greater coverage and alignment across the sector.

8.47 We also note that within the CNAIM there are a number of key fixed values, on which the methodology is dependent. These include: modelling and financial inputs such as discount rates; carbon costs such as traded carbon prices; safety impacts such as the cost of Lost Time Accidents, or Death or Serious Injury to Public; and, environmental and societal inputs including the Defra[83] related Environmental cost per litre of oil, and Ofgem-related CIs and CMLs. These inputs impact the calculation of CoF and hence the risk score per asset type, and as part of the development of CNAIM for RIIO-ED2 should be reviewed and revised as appropriate.

8.48 To ensure consistency across the price control, where appropriate, these values should be set at the same level as the equivalent parameters in the RIIO-ED2 CBA templates, and innovation work streams.

8.49 We recognise the importance of fixing some of these input values early, as they feed in to key decision-making tools that DNOs require to build their Business Plans. We also recognise that there is some benefit in setting these inputs as close to the start of the price control i.e. the point of delivery, as possible given their significance and role in assessing different delivery and investment options.

8.50 We will continue to work with DNOs and stakeholders across the various work streams and in the various working groups, on the revision of key fixed input values in the run up to our Sector Specific Methodology Decision.

[83] Department for Environment, Food & Rural Affairs

Expansion to asset groups not currently in the methodology

8.51 Approximately 70% of the Asset Replacement expenditure (excluding associated civil works) in the first half of the RIIO-ED1 period was covered by Health Index Asset Categories included in the NASDs agreed by DNOs.

8.52 For RIIO-ED2, we want to increase the coverage of the methodology and, where appropriate, to link expenditure to outputs. Our proposal is for a common set of 61 Asset Register Categories models to be adopted by all DNOs (as described in the 'Commonality of Reporting' section above). This would increase coverage of the methodology to cover approximately 75% of the Asset Replacement expenditure (excluding associated civil works).

8.53 We note that even with our proposal there remains a number of asset categories that would not be covered by our proposed NARM framework; these assets are referred to as Non-NARM assets. Non-NARM assets include, but are not limited to: LV services; cut outs; High Voltage (HV) pole mounted switchgear; LV, HV and Extra High Voltage overhead line conductors; substation batteries; and, HV pole mounted transformers.

8.54 Non-NARM assets are currently not included due to a lack of sufficient data at asset or population levels, of sufficiently robust PoF or CoF models or of an understanding of asset deterioration and degradation.

8.55 As the Non-NARM assets sit outside the NARM framework, the allowances that we set in these areas are not linked to specific outputs or delivery targets, and as such, it is difficult to monitor and assess DNOs' performances in delivery, or whether or not DNOs have delivered what they forecast in their Business Plans. This is potentially to the detriment of consumers.

8.56 For RIIO-ED2, as stated above, our ambition is to improve coverage of the CNAIM, and as such we have identified the following three high-level options as potential approaches to setting outputs for the Non-NARM assets not covered by the methodology:

- Option 1: Multi-asset Volume Driver
- Option 2: Notional Risk Weighting
- Option 3: Fault Rate Measure

8.57 Option 1 involves use of a simple input-led multi-asset volume driver, which could be used to provide a measure of delivery against the allowed volumes for Non-NARM Asset Replacement.

8.58 The measure would consider the delivery of Non-NARM Asset Replacement in totality, as opposed to Non-NARM Asset Replacement for the individual asset categories, with an Ofgem benchmarked unit cost providing a possible suitable weighting for each asset.

8.59 A potential drawback of this approach is that it may not be appropriate to extend the proposed methodology to cover refurbishment activities given that the scope of works and range of costs within these activities is broad and does not neatly fall within one single category.

8.60 Option 2 involves the application of some of the underlying principles of the CNAIM, by assigning 'typical' values of PoF and CoF to Non-NARM assets, to create a notional value of monetised risk appropriate for a 'typical' poor condition asset.

8.61 The notional risk weighting could provide a weighting that could be applied in an input-led volume-based mechanism, similar to Option 1, for the Non-NARM assets.

8.62 Given the consistent application of the underlying principles of the CNAIM, this option might enable NARM and 'Non-NARM' delivery and expenditure to be considered together, unlike Option 1, provided the notional monetised risk weightings were suitably calibrated.

8.63 However, similar to Option 1, this approach may not be applicable to refurbishment activities, given the complexity of assumptions required in order to assign a notional value of reduction in monetised risk for refurbishment activities.

8.64 Option 3 involves the use of a Fault Rate measure that was last used in DPCR5. That Fault Rate measure provided an output intended to ensure that a DNO's asset replacement activity maintained the reliability of the 'non-Health Index' asset categories.

8.65 However, Fault Rates can be affected by other expenditure (e.g. Quality of Service, Tree Cutting, Reinforcement (including that driver by Low Carbon

Technology) etc.), and are therefore not a direct output measure of the outcomes of condition-based expenditure such as Asset Replacement.

Summary of options and next steps

8.66 Option 1, the multi-asset volume driver can be developed from existing volumes reporting, but is input-led as it has a direct relationship to Asset Replacement expenditure, and would effectively treat NARM and Non-NARM Asset Replacement expenditure as separate expenditure areas. This means that this approach would not facilitate trade-offs or 'risk trading' between NARM and Non-NARM expenditure.

8.67 Option 2, the notional risk weightings, is more closely aligned with the underlying principles of the NARM framework and, if calibrated correctly, could be incorporated in the NARM framework, but would require significant development work to evaluate suitable monetised risk weightings. Similar to Option 1, one of the drawbacks of this approach is that it is input led.

8.68 Option 3, the Fault Rate measure, can be developed from existing fault volume reporting. However, this is a lagging output measure and does not directly link to Asset Replacement or refurbishment expenditure.

8.69 While our ambition to improve coverage of the methodology remains, if we are not able to overcome some of the key challenges highlighted for the presented options, then in our Sector Methodology Decision we may decide to utilise other price control mechanisms to manage Non-NARM related expenditure, such as the use of uncertainty mechanisms.

8.70 We are also interested in developing a possible roadmap for the NARM framework for RIIO-ED3 and beyond, which would consider the future needs of asset risk assessment. One of the key principles that underpins the NARM framework is the ability to 'Risk Trade' between different asset categories. A key consideration at this stage is the future role of risk trading between the different asset categories and the appropriateness of this as well as the impact potentially on volumes delivered in each category.

8.71 We will continue to develop our thinking in consultation with DNOs and other stakeholders through the SRRWG on the future role of the NARM framework for RIIO-ED3.

Incentives associated with NARM

8.72 For RIIO-ED2, we want to ensure that DNOs are incentivised to deliver efficiently their NARM outputs. We are proposing, as a principle, that where a DNO fails to deliver its output target, it will hand back the associated cost allowances. We also propose that if the DNO fails to justify its under-delivery, it will face a penalty.

8.73 We are also proposing that DNOs should be exposed, under the totex incentive mechanism (TIM), to the cost of delivering more than their output targets. However, where there is material consumer benefit to justify delivering more than the targets, we will consider relevant criteria and options for maintaining cost neutrality.

8.74 We are proposing that monetised risk improvements delivered through investments funded under other mechanisms should not be included in NARM for RIIO-ED2, and thus should not count towards a DNO's delivery of their output targets.

8.75 In addition, where we can objectively identify factors that cause material changes to a DNO's NARM output delivery and these factors are unrelated to their asset intervention actions, our proposal is to exclude the impact of these factors from the DNO's delivery before considering any other funding adjustments.

8.76 We also propose to hold the companies neutral for changes in NARM methodology, including lifetime risk of intervention and fixed parameters for CoF. We propose that the network companies report to Ofgem the impact of any proposed NARM methodology change and also track the actual impact this has on their delivered risk reduction. This would be subject to Ofgem review and then appropriate adjustments to the delivered monetised risk would be applied in order to keep the companies neutral.

8.77 In our Draft Determinations for the Transmission and Gas Distribution sectors, we set out our proposed NARM Funding Adjustment and Penalty Mechanism which will calculate financial adjustments and penalties for all potential delivery scenarios[84]. We encourage DNOs and other stakeholders to review these Draft

[84] Chapter 4. NARM Funding Adjustment and Penalty Mechanism (page 18) https://www.ofgem.gov.uk/system/files/docs/2020/07/draft_determinations_-_narm.pdf

Determinations as the proposed mechanism may be capable of being applied in RIIO-ED2 (noting that the RIIO-ED2 funding and penalty mechanism will be consulted on in the RIIO-ED2 Draft Determinations).

Use of NARM in justifying investment decisions

8.78 For RIIO-ED2, it is our view that NARM should provide a useful tool, as part of a wider toolkit, for assessing and justifying investment decisions. Movements in monetised risk due to asset interventions, shown through changes in the Risk Index, can be directly compared against intervention costs, allowing some cost-benefit analysis and the quantification of risk benefits, as set out below in the illustrative example:

1. Typical Future Risk

		Health Index				
		HI1	HI2	HI3	HI4	HI5
Criticality	C1	1,041,940	1,237,732	1,596,377	1,906,901	2,455,500
	C2	1,488,486	1,768,189	2,280,539	2,724,144	3,507,858
	C3	2,232,729	2,652,283	3,420,808	4,086,216	5,261,787
	C4	3,721,215	4,420,472	5,701,347	6,810,360	8,769,644

2. Future Risk Benefit of Like for Like Replacement

		Health Index				
		HI1	HI2	HI3	HI4	HI5
Criticality	C1	0	195,792	554,437	864,961	1,413,560
	C2	0	279,703	792,053	1,235,658	2,019,372
	C3	0	419,554	1,188,079	1,853,487	3,029,058
	C4	0	699,257	1,980,132	3,089,145	5,048,429

3. Typical Cost of Replacement = £995,144

4. Cost-Benefit

		Health Index				
		HI1	HI2	HI3	HI4	HI5
Criticality	C1	-995,144	-799,352	-440,707	-130,183	418,416
	C2	-995,144	-715,441	-203,091	240,514	1,024,228
	C3	-995,144	-575,590	192,935	858,343	2,033,914
	C4	-995,144	-295,887	984,988	2,094,001	4,053,285

8.79 It is also our view that the probabilities and consequences of failure calculated for individual assets could facilitate more detailed Cost Benefit Analysis (CBA), again as part of a wider toolkit approach to justification, specifically for high materiality investment decisions, or where required the Risk Index does not sufficiently demonstrate a positive cost-benefit outcome.

8.80 While we recognise the important role that NARM can play in justifying DNOs' Asset Replacement and Refurbishment expenditure, we believe that there is a need for additional justification through CBAs and EJPs to provide the narrative for and to explain the DNO's investment decision-making process. We also recognise the important role that our cost assessment has in setting the efficient level of Asset Replacement and Refurbishment expenditure for DNOs to deliver their outputs.

Consultation Question

OUTQ44. Do you have any views on our proposed NARM framework?

Workforce resilience

Table 35: Workforce resilience

Purpose	To encourage DNOs to have a representative and resilient workforce.
Proposed approach	We propose that DNOs should provide sustainable workforce resilience strategies as part of their Business Plan submissions (please see further information in the Business Plan Guidance). We encourage DNOs to work with wider industry bodies to agree appropriate metrics and a consistent approach to reporting to increase openness and transparency.

Background

8.81 A resilient workforce is essential to a network company's ability to deliver the services that its customers expect over the longer term. Companies should plan to deliver a modern, diverse, high quality, and well-trained workforce fit for the future. Without the technically skilled people and processes in place to manage and maintain network assets, the expected standards of service would deteriorate. This could lead to poor standards in customer service and networks becoming less reliable and/or more costly in the future.

8.82 Network companies need to ensure their staff are resilient and properly equipped to carry out their work, which includes receiving sufficient training and support. We understand from our stakeholder engagement with Energy and Utility and Skills and Trade Unions that it is becoming increasingly difficult to attract, develop and hold on to a sustainable workforce. We understand that this issue has been identified across all sectors[85] and we therefore consider it appropriate to align our approach taken to workforce resilience in electricity distribution with the transmission and gas distribution sectors. We understand that the issues identified are partly due to an ageing workforce, limited diversity, competition from other sectors and the challenge of attracting young people into the industry and towards a technical career path.

8.83 In RIIO-ED1 there were no prescribed metrics in place to capture how network companies should measure or improve their workforce resilience. Instead, workforce renewal costs were funded as part of totex to incentivise DNOs to continue to renew their workforce. We expected DNOs to submit robust workforce resilience strategies as part of their Business Plans to demonstrate the steps that they will take to meet the workforce resilience needs that are specific to their circumstances.

8.84 In our RIIO-2 Framework decision, we considered responses to our proposed position to introduce arrangements to ensure DNOs are appropriately managing the risks associated with workforce resilience.[86] Largely, respondents agreed that the responsibility for maintaining a safe and resilient network sits with network companies, including DNOs, and this should be addressed as part of their business plans.

Proposed outputs

8.85 In the RIIO-2 Sector Methodology Decision for the transmission and gas distribution sectors,[87] we decided not to include any additional funding, output measures, or incentives for workforce resilience. In line with the other sectors,

[85] See paragraphs 6.49 and 6.50 on page 49 of the Consultation on the Cross Sector RIIO 2 Sector Specific Methodology: https://www.ofgem.gov.uk/system/files/docs/2019/01/riio-2_sector_methodology_0.pdf
[86] See paragraph 2.39 of the RIIO-ED2 Framework Decision: https://www.ofgem.gov.uk/system/files/docs/2020/01/riio-ed2_framework_decision_jan_2020.pdf
[87] Specifically, paragraphs 6.63 to 6.68, and 6.76 to 6.77 provide the proposed approach and our decision for the transmission and gas distribution sectors: https://www.ofgem.gov.uk/system/files/docs/2019/05/riio-2_sector_specific_methodology_decision_-_core_30.5.19.pdf

we propose that DNOs should provide sustainable workforce resilience strategies as part of their Business Plan submissions.

Reasons for proposed approach

8.86 We consider that it would not be appropriate to set formal performance targets and reporting requirements as this could constrain companies in delivering effective resourcing strategies that meet their specific needs. We recognise that DNOs should have the flexibility to take the steps that are necessary and appropriate for their situation and their workforce. We consider that DNOs have already been taking positive steps towards improving workforce resilience measures, and they remain enthusiastic to continue this while also looking at ways of reporting on progress consistently across the sector.

8.87 We have carefully considered the options around setting specific metrics. While we recognise that stakeholders are broadly supportive of having some consistent measure of workforce resilience, we believe it is important to guard against creating perverse incentives around particular outcomes, given that workforce resilience issues are likely to be unique to DNOs' circumstances. As with the other sectors, we consider there is a risk that setting output measures could distort optimal resourcing decisions.

8.88 As the price control framework was built with overall resilience in mind and workforce resilience is an area in which the DNOs are generally spending in line with their business plans, we consider that it is not necessary to introduce reporting of key metrics in the regulatory space. However, we recognise the value to wider stakeholders in network companies establishing a form of consistent external reporting that sets out progress against commitments in their Business Plans.

8.89 We recognise that there is a shared ambition across network companies to increase transparency of reporting, particularly around the steps DNOs take to improve their workforce resilience. We therefore believe that there is scope for DNOs to work with industry bodies and their CEGs to establish a consistent format for public reporting on an agreed set of key metrics that would improve the openness and transparency of data across the sector in this space.

8.90 Many network companies have indicated that they are already collecting data and reporting on workforce resilience measures. We believe metrics including

workforce satisfaction, diversity/inclusion and mental health in the workplace are a good starting point from which to develop a set of key metrics that all companies can report on, providing consistency in reporting can be achieved.

Next steps

8.91 We would encourage DNOs to work together with their CEGs and collaborate with industry bodies such as Prospect and Energy and Utility Skills to agree appropriate metrics and a common approach to reporting on these metrics.

Options considered but not proposed

8.92 We considered whether a reputational incentive should be put in place to require DNOs to formally report on improvements they are making on their workforce resilience plans, through the RIGs.

Reasons for not proposing options

8.93 We consider that it is important to retain consistency across the industry. We are of the view that it would be inappropriate for Ofgem to set regulatory performance standards in this space in absence of information that action is needed, as we consider that DNOs should agree such standards with their workforce. We therefore do not propose to set any formal reporting requirements in RIIO-ED2 as we believe that any regulatory intervention at this time could risk leading to a drive towards sub-optimal outcomes.

Consultation Question

OUTQ45. Do you agree with our proposal not to introduce outputs or incentives related to workforce resilience?

Cyber resilience

Table 36: Cyber Resilience

Purpose	To reduce risk, improve cyber resilience and response outcomes on the networks, and comply with relevant regulations.
Proposed approach	We propose to introduce a PCD covering cyber resilience in relation to OT and a separate PCD covering IT, with the OT allowance provided on a 'use it or

	lose it' basis. We also propose to include a mid-period re-opener to cover new risks/threats and statutory/regulatory requirements.

Background

8.94 All network companies are increasingly dependent on information and operational technology, which will only increase as the networks become smarter, more automated and more digitised. It is, therefore, crucial that network companies ensure their systems and processes are protected and can withstand the ever-evolving landscape associated with cyber risk.

8.95 We already have strong incentives in place on network reliability and customer satisfaction, which drive DNOs to invest in cyber security. For example, DNOs must make sure their servers are adequately protected to provide data resilience, especially where this data may contain customer information; the introduction of the General Data Protection Regulations strengthen the requirements in this space.[88] Similarly, DNOs are driven to ensure their control centre and technology associated with a 'smart' grid is given appropriate protection to maintain supplies and resilience to any potential cyber-attacks, as a loss of supply in this case would be captured under the IIS.

8.96 In RIIO-ED1, we did not have a direct output that related to cyber resilience. Instead, DNOs were required to ensure and maintain compliance with the established regulations, known as the NIS Regulations.[89]

8.97 The aim of the NIS Regulations[90] is to increase the overall cyber security and cyber resilience of Network Companies, in relation to the network and information systems that support the delivery of essential services. Under these regulations, Network Companies must take appropriate and proportionate technical and organisational cyber security measures to manage the risks posed to the security of the network and information systems on which their essential service depends. Network Companies must also prevent and minimise the impact of incidents on these essential services.

[88] https://eur-lex.europa.eu/eli/reg/2016/679/oj
[89] The Network and Information Systems Regulations 2018 (NIS Regulations) implement Directive (EU) 2016/1148 of the European Parliament and of the Council. This sets out measures for a high, common level of security of network and information systems across the Union. The Gas and Electricity Markets Authority (GEMA, Ofgem's governing body) and the Department for Business, Energy, and Industrial Strategy (BEIS) were designated as the joint Competent Authority (CA) for the electricity and downstream gas sectors in GB.
[90] https://www.legislation.gov.uk/uksi/2018/506/made

8.98 To assist operators covered by the NIS Regulations in achieving compliance, the National Cyber Security Centre has developed a sector-agnostic Cyber Assessment Framework (CAF)[91]. Ofgem has also published guidance to support Network Companies in this area.[92]

Proposed outputs

8.99 We propose to align the approach to cyber security in RIIO-ED2 with the approach taken in the transmission and gas distribution RIIO-2 price controls.

8.100 DNOs will be required, as part of their business plans, to submit a Cyber Resilience Information Technology (IT)[93] Plan and a Cyber Resilience Operational Technology (OT)[94] Plan. The Cyber Resilience IT Plan should cover security for business systems, the cost of which is considered as business-as-usual expenditure; the Cyber Resilience OT plan should be focused primarily on operational technology (OT) in response to the NIS Regulations.

8.101 We have previously published detailed guidance to help inform the development of these strategic investment plans for the transmission and gas distribution price controls.[95] We propose to work with the DNOs to ensure that their plans comply with the NIS regulations and assure an agreed level of cyber resilience in RIIO-ED2.

8.102 DNOs (as Network Companies) are also expected to have already performed a self-assessment against the CAF, and should propose what short-to medium term cyber-security measures they consider proportionate and appropriate to manage the risks they have identified.

8.103 All Cyber Resilience Plans should include, but not be limited to:

- Justification of the selected course of action and methodology which has driven the selection of projects, including options considered.
- Project prioritisation and associated rationale, with detailed activity milestones, key performance indicators, and resource requirements.

[91] https://www.ncsc.gov.uk/collection/caf/cyber-assessment-framework
[92] https://www.ofgem.gov.uk/ofgem-publications/144069
[93] Information Technology are network and information systems that are used within business functions, for example word processing.
[94] Operational Technology are network and information systems that are considered necessary to the delivery of essential services, for example Supervisory Control and Data Acquisition Systems (SCADA).
[95] https://www.ofgem.gov.uk/publications-and-updates/riio-2-cyber-resilience-guidelines

- Cost justification for each project, including specific solutions with associated market comparisons.
- Anticipated business benefits derived from the risk reduction, demonstrating that the costs are appropriate and proportionate.
- Demonstration of anticipated risk reduction improvements.
- For Cyber Resilience OT we would require the plans to also demonstrate improvement on CAF outcome.
- For Cyber Resilience IT we are expecting Network Companies to include their security BAU costs as part of the submissions.

8.104 We will monitor the delivery of these improvement plans for the transmission and gas distribution RIIO-2 price controls, and this will also apply to the DNOs.

8.105 We propose that, for Cyber Resilience IT, baseline allowances will be provided subject to the Totex Incentive Mechanism. For Cyber Resilience OT, allowances will be provided on a 'use it or lose it' basis. We propose that both Cyber Resilience IT and Cyber Resilience OT will be subject to ongoing monitoring as part of outcome-based PCDs. For both Cyber Resilience IT and Cyber Resilience OT, we propose to include a mid-period re-opener mechanism to deal with uncertainty covering new cyber resilience activities, new risks or threats, as well as new statutory or regulatory requirements. We will consult on any materiality threshold for these re-openers as part of the Draft Determinations.

Reasons for proposed approach

8.106 We believe that this approach has been carefully developed through the transmission and gas distribution RIIO-2 price controls and is equally appropriate for RIIO-ED2. DNOs have already started working on their cyber resilience plans on this basis, and have begun to engage with Ofgem's Cyber team to discuss their plans.

Next steps

- Ofgem's Cyber team will continue to engage with DNOs to discuss their plans in the run up to the start of RIIO-ED2.

Consultation Questions

OUTQ46. Do you agree with our proposal that DNOs should submit a Cyber Resilience IT Plan and a Cyber Resilience OT plan?

OUTQ47. Are there further requirements of expectations that we should be considering for the DNOs?

Environmental resilience

Background

8.107 DNOs must make sure they and their networks are resilient against a range of threats that they face, both now and in the future. These include current threats such as flooding of key network infrastructure (substations and/or DNO buildings) or changing growth rates of vegetation surrounding assets. New threats are starting to affect the networks, such as wildfire or moorland fires[96] and increased conductor sag in high temperatures. These threats are in addition to the 'normal' threats brought by adverse weather that the DNOs face each year.

8.108 DNOs develop plans to ensure their networks, and their operations, are resilient to the threats currently facing them, as well as those that can be reasonably anticipated in the future. These plans are developed with long-term risk management in mind, balancing the cost of resilience strategies with the likelihood (and impact) of the various risks. For example, the investment plans for flood resilience use the latest available flood maps produced by the Environment Agency (EA) and Scottish Environment Protection Agency (SEPA). Similarly, the growth rates of vegetation surrounding network assets are updated based on observed trends and cutting cycles are established to factor in these changes.

8.109 As DNOs consider the impacts of longer-term climate change on their networks, we expect them to continue planning for and managing the risks this may bring. To continue this, we believe the DNOs should establish a 'climate resilience' taskforce or working group through the ENA that looks beyond the bounds of the price control. Such a group could consider the strategies and actions undertaken by DNOs across all resilience activities (including NARM and flooding, and those required by the Department for Environment, Food and Rural Affairs' climate change adaptation reporting[97]), over the lifetime of their assets, as well as

[96] Examples include the moorland fire in Yorkshire in 2019.
[97] https://www.gov.uk/government/publications/climate-change-adaptation-reporting-third-round

planning for nearer-term threats, and the solutions that may be required to manage them.

8.110 This working group should build on steps already taken by DNOs, and outline plans for future actions and opportunities to collaborate with other parties, resulting in the production of an annual report or similar publication to help wider stakeholders understand how the DNOs are planning for the impacts of climate change. We expect this group will draw on wider climate change adaptation expertise (including looking at steps taken in other sectors) to help DNOs develop strategies and best practice that will inform their investment proposals for RIIO-3 and beyond.

8.111 As reinforced by the National Infrastructure Commission's recent publication on infrastructure resilience,[98] disruption or failure of one infrastructure system can have serious impacts on others, and we expect DNOs' plans to consider the wider resilience implications of their networks and operations. These plans and strategies could help establish the basis for a wider 'resilience' measure that could be used to track DNOs' activities in ensuring their networks remain resilient to a range of existing and emerging threats.

8.112 In this section we outline our proposals for flood resilience and tree cutting activities, as well as other resilience activities such as black start, physical site security, and telecommunications.

Consultation Questions

OUTQ48. Do you agree with our proposal for the establishment of a 'climate resilience' taskforce or working group, to help DNOs develop strategies for managing the risks of climate change?

OUTQ49. How should DNO strategies inform best practice that is used across the industry? How can these be used to help DNOs develop longer term investment proposals to manage the risks of climate change?

[98] https://www.nic.org.uk/wp-content/uploads/Anticipate-React-Recover-28-May-2020.pdf

Flood resilience

Table 37: Flood Resilience

Purpose	To ensure DNO assets are protected against the risk of flooding to maintain security of supply.
Proposed approach	Continue the approach from RIIO-ED1: retain a licence obligation on DNOs to maintain compliance with the relevant standards, reporting annually on delivery through the Regulatory Instructions and Guidance.

Background

8.113 In order to maintain resilient network, DNOs must ensure their substations are protected against the risk of flooding, whether from rivers (termed 'fluvial' flooding), the sea, or surface water (termed 'pluvial' flooding). Suitable flood protection means they can continue to provide a reliable supply of electricity, even in adverse conditions.

8.114 In RIIO-ED1, the DNOs developed solutions to protect their substations in line with the standards set out in the Energy Networks Association's Engineering Technical Report 138 - Resilience to Flooding of Grid and Primary Substations (ETR 138). ETR 138 is, essentially, a good practice guide that sets out the appropriate level of flood protection based on the risk at the substation.

8.115 The National Flood Resilience Review (NFRR) was published in 2016.[99] While the majority of the electricity network had been protected and was not affected by the flooding, the review updated the protection required for substations that serve more than 10,000 customers. Before the NFRR, the level of protection required was dependent on the risk at the site; the NFRR requirements meant these substations now had to be resilient to a 1 in 1000 year event as standard.

8.116 The results of the NFRR, as well as updates to the information provided by the EA and SEPA, mean that DNOs continually review their work programmes to ensure their networks meet the required standards of protection.

8.117 As customer numbers and the utilisation of the networks increase, the importance of adequate flood protection for DNO substations will also increase.

99 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/551137/national-flood-resilience-review.pdf

This is reinforced by the evolving risk of flooding in GB as climate change brings about new weather patterns. It is therefore likely that flooding will continue to be a threat to the resilience of the networks over the course of RIIO-ED2 and beyond.

Proposed outputs

8.118 We propose to retain the existing approach to flood resilience, where DNOs are provided with an allowance to manage the risk on their network over the course of the price control. Allowances are based, in part, on the risk they propose to remove from the network. DNOs should ensure the measures they put in place meet the recommended specifications of ETR 138.

8.119 We are considering whether, in the course of RIIO-ED2, we could work towards developing a wider 'resilience' metric for the next price control that could track DNOs' progress in managing existing and emerging risks on their networks. This metric could include progress in maintaining flood resilience. At this stage, we envisage such a metric would not seek to compare one form of resilience (or risk) with another, or one DNO's overall resilience with another DNO's, but instead track how the industry is responding to the changing threats the networks face. We anticipate that this metric would be built over the course of RIIO-ED2 with a view to being established, ready for RIIO-ED3.

Reasons for proposed approach

8.120 We believe that the existing approach to flood resilience, where programmes of work are developed using the latest information with a view to removing risk from the network in the most efficient way, drives DNOs to protect their networks in an efficient way. DNOs have made good progress in delivering these programmes and accommodating recent changes, such as the outcome of the NFRR, over the course of RIIO-ED1 to date. We believe that this approach retains the focus on removing risk where it is most valued, and gives the DNOs the flexibility to manage the risk on their networks as they see fit.

8.121 We also believe there may be merit in establishing some form of 'resilience' metric to aid external reporting, so that we can understand how DNOs are managing the overall risk on their networks. We do not want to create an unnecessary additional reporting requirement; instead we want to develop a better way of tracking DNOs' progress in this space.

8.122 A resilience metric could also help the industry and wider stakeholders understand how DNOs are managing both the current risks to their networks and those new or emerging threats. We would expect any reporting in this space to feed into longer term strategies around the resilience of key infrastructure and the consequences of disruptions to wider infrastructure systems.

Consultation Questions

OUTQ50. Do you agree with our proposal to retain the RIIO-ED1 approach to flood resilience?

OUTQ51. What are your views on how we/industry reports on progress against flood resilience plans?

Tree cutting

Table 38: Tree cutting

Purpose	DNOs need to make sure their networks are resilient to the risk of trees coming into contact with their assets and interrupting supplies to customers.
Proposed approach	Continue with the RIIO-ED1 approach to tree cutting, providing baseline allowances for DNOs to maintain their networks' resilience in line with the Technical Specification 43-8.

Background

8.123 Many parts of the DNOs' overhead networks are in close proximity to trees and other vegetation which, if it were to come into contact with the network assets, could interrupt customers' supplies.

8.124 DNOs are therefore required to manage the vegetation that surrounds their networks, by cutting back the vegetation to reduce the risk of it coming into contact with their assets. Broadly speaking, there are two types of tree cutting resilience activities that DNOs carry out: 'maintenance' cutting, and 'resilience' cutting (see Appendix 7).

8.125 For both maintenance and resilience cutting activities, DNOs must regularly inspect their assets and the surrounding vegetation to assess where the greatest

risk to the network is, and how this profile of risk is likely to change over time.[100] These activities were funded in the RIIO-ED1 baseline allowances, with the majority of activities focused around the maintenance cutting (since this is a requirement, whereas resilience cutting is more discretionary).

Proposed outputs

8.126 We propose to continue with the RIIO-ED1 approach to tree cutting, where DNOs are provided with an allowance to manage the risk to their network over the course of the price control and comply with the requirements of the Electricity Safety, Quality and Continuity Regulations (ESQCR). The Energy Networks Association produce standards of good practice, in the form of Technical Specification 43-8 (ENA-TS 43-8) and ENA Engineering Technical Report 132 (ENA ETR 132), that DNOs should use in complying with the requirements of the ESQCR.

8.127 As with flood resilience, we are consulting on whether tree cutting could be incorporated into a wider 'resilience' measure, to help external reporting on how DNOs are managing the risks on their networks. Work on this measure would begin during RIIO-ED2, with a view to establishing a robust framework for RIIO-ED3.

Reasons for proposed approach

8.128 We believe that the RIIO-ED1 approach to tree cutting resilience drives DNOs to monitor and respond to the changing risks facing their networks. Through this approach, they have developed new and innovative approaches to efficiently managing these risks.

8.129 We believe that requiring DNOs to maintain compliance with the ESQCR, and developing solutions in line with ENA-TS 43-8 and ENA ETR 132, means the networks are managed on a common basis. These good practice standards are reviewed periodically by the ENA to ensure they remain fit for purpose, and we consider that they are driving the right level of activity across the industry. Having a common framework for managing vegetation on the networks allows better sharing of learning and best practice across the industry.

[100] DNOs use assumed (and observed) growth rates for the vegetation that surrounds their networks. These rates change with environmental changes (i.e. increasing average temperatures leading to faster growth or longer growing periods), and can also be affected by factors such as Ash dieback.

8.130 As with flood resilience, we believe there could be some merit in incorporating tree cutting into a wider 'resilience' measure to help measure how DNOs are managing the risks on their network. We are consulting on how such a measure could take shape.

Consultation Questions

OUTQ52. Do you agree with our proposal to retain the RIIO-ED1 approach to ensuring networks are resilient to trees?

OUTQ53. Do you agree with our proposal to develop a wider resilience measure over the course of RIIO-ED2? If so, what should it cover?

Other forms of resilience

Table 39: Black Start, physical site security and telecommunications resilience

Purpose	DNOs should have systems and processes in place to ensure the networks can recover from an event that results in the full/partial shutdown of the electricity system. DNOs must maintain resilience of their assets at designated sites to ensure they are safe and secure. DNOs need to be able to appropriately communicate with and control their assets. Resilient telecommunications is particularly important in relation to Black Start.
Proposed approach	Retain existing arrangements for Black Start and physical site security, including ongoing developments through industry working groups (through the ENA). Continue monitoring the development of requirements in relation to telecommunications resilience.

Background

8.131 A safe and reliable network is crucial in allowing customers to get the full benefit from their network, and it is essential for the actions that may be necessary to restore electricity supplies following a total, or widespread, shutdown of the electricity transmission system; this is known as a 'Black Start'.[101]

8.132 Black Start requires distribution substations to be re-energised and reconnected to each other in a controlled way, to re-establish a fully interconnected system.

[101] Further information is available at https://www.nationalgrideso.com/industry-information/balancing-services/black-start

DNOs must work with the Electricity System Operator (ESO) and Transmission Owners (TOs) to deliver the right Black Start capability and resilience.

8.133 In RIIO-ED1, DNOs were funded through baseline allowances to install and maintain batteries or other equipment at dedicated substations to provide the right level of Black Start resilience. Ofgem, the Department for Business Energy and Industrial Strategy (BEIS), and the ESO are currently working to develop the policy around what are the right Black Start capabilities and resilience.

8.134 As owners of electricity distribution assets in GB, the DNOs are responsible for assets that are deemed, by government, as Critical National Infrastructure (CNI). Working with BEIS, DNOs agree and implement measures to enhance the physical security at CNI sites. The RIIO-ED1 baseline allowances enabled DNOs to fund enhanced security at sites where they could provide the evidence that it was needed.[102]

8.135 To be able to manage their networks effectively, DNOs need to be able to communicate with and control their assets. Historically they have relied on a mix of technologies which included fibre, micro-wave radio, public switched telephone network (PSTN), satellite, airwave, and wireless mobile telecommunications. It is becoming increasingly critical for DNOs to have resilient and reliable telecommunications, especially as the energy sector seeks to implement a smart grid that will help facilitate Government commitments to Net Zero.

8.136 Resilient telecommunications is especially important for DNOs as they are a Category 2 responder under the Civil Contingencies Act 2004, meaning they need to be able to communicate with other responders and Local Resilience Fora during emergencies. This is on top of their day-to-day need to communicate with customers, their own staff, and network assets.

8.137 Investments that the DNOs have made over time, funded through baseline allowances, have helped protect assets from draining batteries that are in place for a Black Start event and provided a level of resilience overall. However, new risks are starting to appear that may affect DNOs during RIIO-ED2. As the energy system becomes more digitalised, new asset owners enter the market, and there is a move towards a more localised grid. This means there is a greater

[102] We also provided a reopener to allow for additional protection at new sites that are identified later in the price control.

reliance on data and its exchange, which leads to a requirement for assets to be more connected.

8.138 This reinforces the fact that there is an increasing reliance on electricity networks (and, therefore, the telecommunications that are used to support them), and it highlights that DNOs cannot rely on commercially-provided networks since they are not resilient to a loss of power. Added to this is the gradual switching off of PSTN, which is the backbone of telecommunications in GB; any replacement for PSTN will need to be cyber secure (given the increased reliance on data) to ensure the networks are able to effectively respond to the changing ways in which they are used. Having robust and secure telecommunications in place will be especially important as the move towards Net Zero brings greater digitalisation and decentralisation of the energy system.

8.139 To address this issue, the Office of Communications (Ofcom) are undertaking a study to consider the need for energy utilities companies to have a proportion of radio spectrum allocated for their use. Similarly, the ENA have been working with Government departments to evaluate the opportunities for resilient telecommunications and explore how the DNOs' needs can be met.

Proposed outputs

8.140 We propose that, for each of Black Start, physical site security, and telecommunications resilience, the existing RIIO-ED1 approach of providing appropriate funding for these activities through baseline allowances, should continue into RIIO-ED2. We will continue to monitor DNOs work on these activities throughout RIIO-ED2.

8.141 We propose to have a re-opener for physical site security, to adjust allowed revenues if government mandates changes to the scope of work required during RIIO-ED2. We propose to have two windows for this reopener: one within the price control (around the mid-point), and one at the end.

8.142 We also propose to have a re-opener for Black Start, to cover the costs of workload changes in response to changes in the mandatory resilience period or additional activities that may arise from new obligations once the Black Start standard is in place.

8.143 For telecommunications resilience, we also propose to continue monitoring, through ongoing RIIO-ED1 working groups and updates to the RIGs where necessary, the developments in future requirements for the DNOs. We propose to review whether the current arrangements are appropriate when further clarity has been provided, and whether changes to DNOs' allowances are needed. We will provide an update as part of the Draft Determinations.

Reasons for proposed approach

8.144 Black Start, physical security, and telecommunications resilience are key activities that DNOs carry out; they are essential to providing a safe a reliable network. We believe that DNOs have managed the risks well in the price control to date, and that they are cognisant of developments that may require them to adjust their plans.

8.145 Since the risks posed to the networks in these areas have not changed, and the DNOs continue be proactive in monitoring and managing these risks, we do not consider there is a need for these elements of the price control to change for RIIO-ED2.

8.146 In relation to physical site security, we recognise that the scope of work required is mandated by Government and DNOs may, therefore, require changes to their revenue to accommodate any changes to the requirements. We believe that providing a reopener within the price control gives DNOs certainty of funding where there are significant changes to the work required. At the end of the price control, we can consider all changes in government policy (if necessary) and make adjustments to revenues accordingly.

Consultation Questions

OUTQ54. Do you agree with our proposed approach of retaining the existing arrangements for Black Start, physical security, and telecommunications resilience?

OUTQ55. Do you agree with our proposal to include a reopener for physical site security, with a window during the price control and a window at the end of the price control?

OUTQ56. Do you agree with our proposal to continue monitoring the development of telecommunications resilience and reviewing the arrangements as necessary?

9. Delivering an environmentally sustainable network

Chapter summary

In this Chapter, we outline our proposals for ensuring DNOs take actions towards delivering an environmentally sustainable network. In particular, to decarbonise their own network and to mitigate the wider environmental impact of network activity. We also outline our approach to visual amenity.

Introduction

9.1 In our RIIO-ED2 framework decision, we outlined our expectations that DNOs should decarbonise the electricity distribution networks, reduce the wider impact of network activity on the environment and support the transition to a smarter, more flexible, sustainable low carbon energy system.

9.2 In this Chapter, we outline our proposals to ensure DNOs deliver against these objectives in RIIO-ED2. Our proposals include arrangements which will encourage DNOs to minimise their own carbon and greenhouse gas (GHG) emissions as well as to take additional actions to reduce the wider impact of network activity on the environment. Whilst these are tied most directly to the first two expectations set out above, we consider ambitious actions towards these objectives to be an important facet of supporting the low carbon transition. Additional measures to support decarbonisation and the transition to a smart, flexible energy system, such as our approach to strategic investment for Net Zero, are set out in the Overview Document.

9.3 In this Chapter, we also discuss our approach to how the price control could address visual amenity issues related to infrastructure in certain designated areas.

Decarbonising the networks and reducing the wider impact of network activity

Background

9.4 RIIO-ED1 required companies to reduce the impact of their business on the environment and to improve visual amenity in designated areas. This was largely achieved through reputational incentives, in the form of a requirement on DNOs to publish annual reports outlining progress in the reduction of their business carbon footprint (BCF)[103], the management of leakages of sulphur hexafluoride (SF_6) [104] and of oil from fluid filled cables[105] and to record noise complaints. For some areas, such as SF_6, DNOs set company specific targets for RIIO-ED1 which are included in this annual reporting; there is no financial incentive associated with performance against these targets.

9.5 To drive DNOs to manage electricity losses on the distribution network efficiently, we introduced a licence obligation to design and operate their networks to ensure that losses are as low as reasonably practicable, a requirement to publish a losses strategy[106] and a discretionary reward mechanism to reward companies for innovative approaches to managing losses. We also introduced the Visual Impact Allowance, which DNOs can use for the purposes of undergrounding

[103] A measure of the total greenhouse gas (GHG) emissions (in tonnes of CO_2 equivalent) caused directly and indirectly by the reporting company. This includes direct emissions (Scope 1 emissions) from sources owned or controlled by the reporting company that release emissions straight into the atmosphere. Examples include emissions from combustion in owned or controlled boilers, furnaces, vehicles, and fugitive GHG emissions such as SF_6 from assets operated by a company. It also includes indirect emissions (Scope 2 emissions) being released into the atmosphere associated with the reporting company's consumption of purchased electricity, heat, steam and cooling. In RIIO-ED1, the DNOs are required to report annually on their Scope 1 and Scope 2 emissions, measured as tonnes of CO_2 equivalent emissions (t/CO_2e). This measure also includes t/CO_2e from fugitive SF_6 emissions (leakage) as well as from electricity losses through transporting power on its network.

[104] SF_6 is a particularly potent greenhouse gas (GHG). It has a global warming potential (GWP) approximately 23,500 times stronger than CO_2 but it is emitted in much lower quantities. SF_6 gas is used in some switchgear, because it has excellent insulating properties that cannot commonly be matched by other insulation and interruption gases (IIG) available in the market. SF_6 assets are used when air insulated switchgear is not a viable option, due to limitations such as available building space.

[105] Some underground cables are fluid (oil) filled. There is an environmental risk that these cables can leak, which has particular implications for the integrity of groundwater sources. The Environment Agency (EA) and the ENA created an Operating Code to promote best practices for FFC operational management https://www.energynetworks.org/assets/files/electricity/she/environment/fluid_filled_cables/ENA%20EA%20National%20Operating%20Code%202015.pdf

[106] See Standard Licence Condition 49 https://epr.ofgem.gov.uk/Content/Documents/Electricity%20Distribution%20Consolidated%20Standard%20Licence%20Conditions%20%20-%20Current%20Version.pdf?utm_source=ofgem&utm_medium=&utm_term=&utm_content=licencecondition&utm_campaign=epr

overhead lines in areas of outstanding natural beauty (AONBs) and National Parks (NPs).

9.6 DNOs have made good progress in reducing the environmental impact of network activity. For example, total BCF across the sector has decreased by 42.6%[107] since the start of RIIO-ED1 and DNOs are making progress towards achieving their company specific SF_6 targets by the end of the price control, with a 12% decrease in reported SF_6 emissions in 2018-2019. Top up of fluid-filled cables has decreased by 7% since the start of RIIO-ED1.[108] However, at a company level, performance in some areas is mixed and in multiple areas, there have been changes in the reporting or recording of indicators. This has made it difficult to assess performance on a consistent basis both over time and between companies.[109]

Proposed Approach

Table 40: Environmental framework

Purpose	To ensure DNOs contribute to decarbonising the energy system and reduce the impact of network activity on the environment. To ensure transparent, consistent and comparable reporting of environmental impact performance.
Proposed outputs	Environmental considerations embedded in business plans[110] Annual environmental performance reporting on progress (LO and ODI-R) Re-opener to accommodate specific environmental legislation (UM)

9.7 While DNOs have made good progress in RIIO-ED1, we consider the arrangements do not sufficiently reflect our RIIO-ED2 expectations. We want to drive a more co-ordinated and concerted approach to minimising and ultimately eliminating greenhouse gas (GHG) emissions and harmful environmental impacts in line with Net Zero.

9.8 We propose to adopt the common environmental framework, as applied in the RIIO-2 price controls for the gas distribution and transmission network operators. This would require companies to outline the activities they will undertake to work

[107] Excluding network losses and contractor emissions
[108] For the reputational incentive, we calculate the top up of fluid-filled cables as a percentage of oil in service. The volume of oil in service has increased by 1% since the start of RIIO-ED1.
[109] Please see appendix 9 for further detail on ED1 performance
[110] These could lead to Price Control Deliverables (PCDs)

towards the realisation of an environmentally sustainable network in their RIIO-ED2 Business Plans in the form of an Environmental Action Plan (EAP). The scope of the EAP will encompass activities driving the decarbonisation of the electricity distribution network as well as the reduction of the impact of network activity on the environment as a whole. This is set out in Table 41.

Table 41: Proposed scope of the EAP

Objective	Proposed areas in scope
Decarbonise the networks	• business carbon footprint • electricity distribution losses • sulphur hexafluoride (SF_6) • embodied carbon[111]
Reduce the wider environmental impact of network activity	• supply chain management • resource use and waste • biodiversity and natural capital • fluid-filled cables • noise pollution • NOx and air quality[112]

9.9 We expect DNOs' EAPs to outline their commitments, in the form of activities and associated performance indicators and targets, to deliver an environmentally sustainable network in RIIO-ED2 and beyond. By this, we mean that DNOs' RIIO-ED2 activities, indicators and targets should demonstrably support a longer-term plan to achieve Net Zero by 2050. We expect DNOs to develop their plans in collaboration with their stakeholders and CEGs.

9.10 In the Business Plan Guidance, we outline that a complete EAP should include commitments, aligned with our baseline expectations, for all areas in scope of the EAP. Where appropriate, this includes specific performance indicators and targets. For some of these areas, the DNOs are working together to establish common methodologies to ensure consistency and comparability. The required features of an EAP are set out in the Business Plan Guidance. Our baseline

[111] Embodied carbon is the GHG emissions from the manufacturing of a product.
[112] We are proposing to address the accelerated removal of polychlorinated biphenyls (PCBs) through an uncertainty mechanism. Our proposal for this can be found in Annex 2.

expectations for the specific activities in scope are summarised in Table 42 and are set out in more detail in Appendix 8.

9.11 Funding for these activities will be provided through baseline allowances and where specific schemes require more significant expenditure we may use PCDs to ensure DNOs are accountable for delivery. We will also require companies to publish an Annual Environment Report (AER) outlining progress against their EAP commitments, and further ensure DNOs are held accountable for delivery. We expand on these elements of the framework in greater detail in later sections of this chapter.

9.12 We think that situating RIIO-ED2 EAPs within long-term plans for net zero, supported by consistent and comparable metrics, will drive DNOs to take action that prepare the networks for the type of challenges that lie ahead. The framework will ensure environmental considerations are embedded into decisions on network investment and other operational activities and that these activities are aligned to the latest climate science and Net Zero targets. We think this framework will ensure DNOs have an up to date, in-depth and strategic understanding of climate change, the associated risks to their network and operations. We consider that the framework should drive DNOs to continually improve this understanding and to consider the most appropriate actions to deliver environmentally sustainable networks.

9.13 Additionally, we consider this framework will ensure that company's environmental ambitions and progress towards realising these is transparent and comparable both across DNOs, and across energy network operators in other sectors. The AER should ensure DNOs are clearly accountable for the commitments they set out and drive them to continue to be ambitious in the progress they make against their targets.

9.14 We have considered the use of financial incentives to encourage ambitious performance, in particular for the areas BCF, losses and SF_6, but at this time, do not propose to introduce any into the framework due to the following challenges:

- We need to ensure we are not incentivising one outcome at the expense of another. For instance, financially incentivising a reduction in BCF and/or losses could create a perverse incentive and slow the progress in the rolling

out of LCTs.[113] Similarly, financially incentivising SF_6 reductions may have associated increases in BCF if early life assets were replaced.

- Difficulties in accurately measuring the impact of DNOs' activities, particularly in regards to losses.
- We need to ensure that arrangements are sufficiently flexible to reflect different regional and local approaches to achieving Net Zero.[114] While this flexibility is not incompatible with the use of financial incentives, it may reduce the simplicity and comparability of such a mechanism.
- DNOs have a role to play in achieving Net Zero, but are not always wholly responsible for outcomes.[115] Arrangements must encourage DNOs to undertake activities towards net zero whilst mitigating against windfall gains or losses.

9.15 We remain open to evidence that would demonstrate how financial ODIs could drive additional value for consumers in a manner which is measurable, does not risk perverse incentives and does not reward or penalise DNOs for actions beyond their control.

9.16 Table 42 summarises the proposed areas in scope, our expectations for the content of the plan and the proposed target or performance indicator.[116]

Table 42: Content of environmental plan

Environmental area	Our expectations	Performance Measure and Reporting Commitments
Business Carbon Footprint (BCF)	Efficient and economic actions to address controllable BCF in RIIO-ED2 and achieve Science-based target[117] and Net Zero obligations in the long term[118]	Bespoke metrics to track outcomes of implementing actions Report on progress of BCF reduction using common methodology. Reporting should

[113] It is understood that an increasing uptake in LCTs will increase losses considerably.
[114] eg Scotland's 2045 net-zero target, compared to England and Wales' 2050 target
[115] For instance, a significant proportion of the total losses on the electricity distribution network is not within the direct control of the DNOs.
[116] These baseline standards should be viewed in addition to the requirement to have a complete EAP, details for which can be found in the Business Plan Guidance. The baseline standards reflect the level of ambition we expect companies to demonstrate for individual areas.
[117] Targets are considered "science-based" if they are 'in line with what the latest climate science says is necessary to meet the goals of the Paris agreement - to limit global warming to well-below 2°C above pre-industrial levels and pursue efforts to limit warming to 1.5°C'
https://sciencebasedtargets.org/
[118] Scope 3 (Other indirect): Emissions that occur that are a consequence of the reporting company's actions, which occur at sources they do not own or control and which are not classed as scope 2 emissions. Examples of Scope 3 emissions are business travel by means not owned or controlled by the reporting company, waste disposal, or purchased materials or fuels.
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/652410/SECR_Consultation_-_Final_with_IA_v2.pdf (page 24)

Environmental area	Our expectations	Performance Measure and Reporting Commitments
		include Scope 1, 2 and 3 emissions
Losses	9.17 Implement a strategy to efficiently manage losses, both technical and non-technical, on the network over the long term Contribute to the evidence base on the proportion of losses that network companies can influence/control	Reporting on the progress of implementing the losses strategy and associated performance measures
Embodied carbon	Monitor embodied carbon in new projects Collaboration with supply chain on addressing challenges to reduce embodied carbon in the network	Within RIIO-ED2 establish baseline and a target to reduce embodied carbon on new projects during RIIO-2 Report on embodied carbon within new projects
Sulphur Hexafluoride (SF_6)	Efficient and economic actions to reduce the leakage rates and improve the management of SF_6 assets	Leakage and/or asset reduction targets Report on total SF_6 bank and reduction rates using a common DNO methodology
Supply chain[119] management	High standards of environmental management adopted in supplier code, including requirements for public disclosure of metrics and cascading code to their suppliers that are material to company's inputs	Adopt target of more than 80% of suppliers (by value) meeting supplier code in RIIO-ED2 Report on actual percentage of suppliers (by value) meeting code
Resource use and waste	Procurement processes updated to embed Circular Economy principles	Target for zero waste to landfill by 20xx[120] Target for recycled and reused materials, as a percentage of total materials, by 20xx Report on actual waste to landfill, recycling and reuse as a percentage of total
Biodiversity and/or natural capital[121]	Appropriate tool adopted to assess net changes in natural capital from	Targets against actions to increase environmental value

[119] Refers to all the parties involved in the delivery of electricity and gas to the final consumer – from electricity generators and gas shippers, through to electricity and gas suppliers.
[120] 20xx denotes that companies will need to specify a long term date to achieve the specified target. We would then expect companies to specify the associated RIIO-ED2 milestone.
[121] Natural capital is the stock of renewable and non-renewable resources (e.g. plants, animals, air, water, soils, minerals) that combine to yield a flow of benefits to people; biodiversity constitutes the living component of natural capital

Environmental area	Our expectations	Performance Measure and Reporting Commitments
	different options for new connections and network projects Appropriate tool adopted to monitor the provision of ecosystem services from network sites and commit to reporting annually	
Fluid-filled cables	Efficient management of fluid-filled cables	Adopt a target for reductions in the volume of leakage from fluid-filled cables
Noise pollution	Efficient actions to reduce noise pollution	Report actions taken to reduce noise pollution
NOx and air quality	Efficient actions to reduce NOx and improve air quality	Report actions taken to reduce NOx and improve air quality

Encouraging quality EAPs through the BPI

9.18 We propose to assess companies' EAP as part of the BPI minimum requirements check. If companies fail to include an EAP that is complete, they could be subject to a penalty. This assessment will take account of the extent to which companies' plans are demonstrating the baseline standards we have specified for the activities in scope.

9.19 We expect plans to be developed through extensive stakeholder engagement, be well justified and build on RIIO-ED1 performance. Companies should take into account regional circumstances and opportunities and focus on the most material impacts arising from their network, in order to achieve meaningful improvements in environmental performance.

9.20 While we consider the standards we have outlined will drive ambitious performance across the spectrum of DNOs activities, we recognise that best practice is not fixed and in the course of developing their business plans, companies may identify opportunities to go beyond these standards. Where companies can demonstrate this will deliver additional value for consumers and has the potential to raise the bar across the industry, we propose they could be eligible for a reward through the CVP under Stage 2 of the BPI.

Approach to funding

9.21 We expect that there may be some incremental costs associated with delivering aspects of the business plan in a more environmentally sustainable way (e.g.

lower loss transformers), where justified. As such, we propose that funding for environmental actions and initiatives would be included as a baseline expenditure allowance. We would not expect environmental components to generate large increases in baseline funding. In Chapter 7 of Annex 2 we outline options for our proposed approach to the treatment of incremental costs.

9.22 We expect the actions that DNOs undertake to fulfil their EAPs to be economic and efficient. The framework is not intended to specify the actions the DNO must undertake, but instead ensure environmental considerations are appropriately embedded within the business plan. We expect DNOs' EAPs to be informed by stakeholder engagement and cost-benefit analysis (CBAs), with associated environmental factors costed in. Companies must demonstrate how the proposed activities meet the EAP objectives and deliver sufficient net benefit for existing and future consumers. Within the EAPs, we will require DNOs to draw together the direct carbon impacts claimed in any relevant Engineering Justification Paper (EJP) or CBA submissions.

9.23 If costs are significant, we would consider bespoke PCDs for specific schemes which will help DNOs meet an ambitious target proposed in the EAP. Where PCDs are applied, we would recover allowances in the event of failure to deliver the scheme.

Annual Environmental Report

9.24 We propose that DNOs should be required through a new licence obligation to develop Annual Environment Reports (AERs) detailing their progress in activities outlined in their Business Plans and against their targets, using the agreed metrics from their EAPs. We outline specific reporting commitments for the activities in scope in Appendix 8.

9.25 We consider the AER process would be a reputational incentive for the companies, in particular due to the greater onus on having comparable and specific performance metrics. Through the RIIO-ED2 working group, we will work with DNOs and stakeholders to develop a common approach for annual reporting and metrics for inclusion within a reputational incentive. This will build on ongoing work to develop common methodologies for measuring BCF and SF_6.

9.26 In some areas, for instance losses and BCF, a more explicitly defined reputational incentive could be appropriate. For instance, a scorecard rating or defined league table. We consider this can be embedded within the AER process.

9.27 We propose these annual reports would be submitted to and reviewed by Ofgem as part of the annual reporting cycles. It may be appropriate that the reports are published in a single location accessible by the public, such as the ENA website, in order to aid transparency and enhance the reputational effect. The final format of the annual AER would be subject to Ofgem's approval. This would be to ensure consistency in approach and ensure it remains transparent and effective for stakeholders to engage with. Such principles will be behind any reputational incentives.

Environmental Re-opener

9.28 In the course of RIIO-ED1 so far, significant environmental developments have occurred which are reflected in the need for proposed changes for RIIO-ED2. In addition to Net Zero targets, there were new requirements on persistent organic pollutants, accelerated Polychlorinated Biphenyls (PCB) removal and the introduction of Ultra Low Emissions Zone. There has also been increasing awareness of the impact of business activity on the environment, and the climate, in public discourse. This is evident in many local authorities declaring 'climate emergencies' through the course of 2019.

9.29 We consider the EAP approach enables flexibility within approaches and companies should be able to adapt their delivery within period. However it is likely we will continue to see changes in the environmental policy landscape in RIIO-ED2. This is of most immediate relevance concerning upcoming SF_6 legislation. The European Commission (EUC) has an ongoing review of the F-gas Regulation 517/2014, which is considering alternatives to SF_6-filled medium-voltage switchgear. The ENA have been coordinating a response to the EUC's review with a view to ensuring that any F-gas Regulation amendment is sensible and practical for UK impacted companies and a representative of this process has been feeding into the RIIO-ED2 working group to ensure any implications are accommodated. The final decision may potentially be made after the publication of our Sector Specific Methodology Decision (SSMD).

9.30 We propose to introduce a re-opener mechanism to respond to environmental legislation that would require a material change in the approach to companies'

EAP. Ofgem or the network companies would be able to trigger the reopener. In the case of national legislation, we would expect companies to work together to demonstrate the material change in the approach needed. For regional legislation, all companies impacted should work together to demonstrate this.

9.31 This re-opener is intended to specifically cater for legislation which results in a material change to how the activities within the scope of the EAP are delivered. For instance, in the case of SF_6, it could accommodate the introduction of a retrospective ban. There may be some instances where it could overlap with the proposed scope of the Net Zero reopener, which is to enable us to reset allowances and other elements of RIIO-ED2 in order to align the price control with Net Zero targets. In such instances, we would use the most applicable mechanism to adjust the price control and achieve the legislative objectives. We consider this re-opener would be more suited for more distinct changes in environmental legislation that require DNOs to take action in order to ensure compliance.

9.32 We consider that the proposed environmental framework, combined with the environmental legislation re-opener, should provide DNOs with sufficient flexibility to develop and deliver ambitious initiatives in a way that delivers benefits to the environment and provides value for money for consumers.

Options considered but not proposed

9.33 Through the RIIO-ED2 working group we considered how best to drive the three expectations for this output category outlined in the RIIO-ED2 framework decision. One working group member suggested a societal decarbonisation output may be needed to target the third objective – to support the transition to a smart, flexible and low carbon energy system.

9.34 The RIIO-ED2 working group explored the case of a specific output to target this objective, considering different scenarios where a DNO would need to carry out work to enable decarbonisation. The exercise highlighted the key issues to be in regards to strategic investment and facilitating low carbon connections. We consider these issues are addressed through other areas of the price control (See Chapter 4 of the Overview document for approach to strategic investment, the proposed Net Zero re-opener, and for our proposals to support LCT connections). We also consider the environmental framework proposed in this section contributes to the third objective.

9.35 One working group member proposed a financial incentive mechanism that encompassed all areas proposed for inclusion in the EAP. For areas that can be measured in a more quantifiable way, largely related to the decarbonisation of the network, the incentive would reward or penalise quantifiable differences in performances above or below a specified target. For the areas where the DNOs' activities are less easily measured in a quantifiable way, rewards would be available through a qualitative assessment, which could involve a panel of experts to assess delivery and stakeholder support or co-created measures of performance. We do not consider at this time there is evidence such an approach would overcome the challenges highlighted in Paragraph 9.14 above.

Proposed removal of the Losses Discretionary Reward (LDR)

Name	RIIO-ED1 licence condition
Losses Discretionary Reward	Special Condition 2G

9.36 For RIIO-ED1, a Losses Discretionary Reward (LDR) was introduced. The LDR is designed to ensure that DNOs focus on activities that manage losses effectively and to try to lower these as much as possible on their networks.[122] The aim of the LDR scheme is to encourage and incentivise DNOs to undertake additional actions to better understand and manage electricity losses. The LDR is worth up to £32 million (12/13 prices) across all DNOs spread over three tranches during the eight years of RIIO-ED1. To be eligible for a reward under these tranches, DNOs must put forward a submission evidencing their understanding of losses, effective engagement and sharing of best practice with stakeholders on processes to manage losses, innovative approaches to losses management, and the actions taken to incorporate these approaches into business as usual activities.

9.37 Tranche one was predominantly forward-looking. It focused on the processes the DNOs had, or would, put in place to both better understand losses and to significantly shift expectations of what they are capable of doing to manage losses. Of the £8 million reward available under tranche one of the LDR, we decided to award a total of £3.8 million. Tranche two looked at the specific

[122] Electricity losses are an inevitable consequence of transferring energy across electricity distribution networks. There are a number of factors that affect distribution losses, such as the materials and design of the assets on the network (eg the wires and transformers), the distance the electricity has to travel between supply and demand and the voltage at which the electricity is transported. Losses also contribute to the total CO_2 emitted from the electricity system, either directly through the operation of network assets but also indirectly through the carbon intensity of the sources of generation connected to the network.

outputs produced and actions undertaken by the DNO groups. They were expected to provide evidence of actions taken to improve their operations in managing losses, including, where appropriate, demonstrating how they built upon the processes set out in tranche one. We did not consider that sufficient evidence was provided for each criterion, and no reward was granted for tranche two. Finally, Tranche 3 is a predominantly backward-looking assessment of losses management achievements and preparations for RIIO-ED2.

9.38 So far in RIIO-ED1, we consider the LDR to have driven DNOs to advance their understanding of losses and we have seen some evidence of effective engagement and collaboration within the sector. However, while there some evidence to suggest that DNOs' actions have resulted in new and improved ways to better manage losses on the network, there remain significant challenges in accurately measuring losses and we consider that the administrative burden of this incentive has not been matched by the benefits it has brought. In particular, the LDR does not drive comparability between approaches currently, which makes assessment more difficult but is also less effective for establishing best practice across the sector.

9.39 One result of the LDR has been the establishment of the Energy Networks Association Technical Losses Task Group (ENA TLTG), which was set up in 2016. The task group recently commissioned a study to investigate possible incentive mechanisms which could adequately encourage DNOs to proactively manage network losses wherever possible during RIIO-ED2.[123] The study aimed to provide recommendations for RIIO-ED2 that would avoid unintended consequences such as an inefficient increase in network expenditure or discouraging the uptake of Low Carbon Technologies (LCTs).[124]

9.40 The study recommended a combined reputational and CBA-based incentive mechanism. This approach would use CBA tools to indicate which investments have a positive Net Present Value and represent value for money for GB electricity consumers. The report sets out that "regulatory governance could be created that clearly sets out the process that DNOs must follow to secure any additional funding required to make the network investment that results from the new CBA tool optimal. The CBAs would be used to justify investments with a

[123] https://www.energynetworks.org/assets/files/CEP023%20Technical%20Losses%20Mechanism%20Study%20Final%20Report.pdf, pg.10.
[124] It is understood that an increasing uptake in LCTs will increase losses considerably.

higher capex but lower full life cycle cost during the price control negotiation period".[125] This would complement a reputational incentive, in which DNOs would be assessed against their own strategy, and given a scoring.

9.41 For RIIO-ED2, we are proposing to remove the LDR for RIIO-ED2. We consider effective losses management would be more appropriately driven by embedding the consideration of how to manage losses within the proposed overarching framework. See Table 42 for a summary of our proposals under the EAP; additional detail can be found in Appendix 8.

Consultation Questions

OUTQ57. Do you think our proposed environmental framework will drive DNOs to deliver an environmentally sustainable network?

OUTQ58. Do you consider that the proposed areas in scope of the Environmental Action Plan, and associated baseline standards, are appropriate? We particularly welcome views on any areas that should be omitted/included and if new areas should be included, what the baseline standard should be?

OUTQ59. Do you agree that the annual reporting through the Environmental Impact Report will increase transparency of the DNOs' activities and the resulting impacts on the environment?

OUTQ60. Do you agree with our proposal to introduce a re-opener to accommodate environmental legislative change within the RIIO-ED2 period?

OUTQ61. Do you agree with our proposed removal of the Losses Discretionary Reward?

Undergrounding in areas of outstanding natural beauty (AONBs) and national parks (NPs)

Table 43: Undergrounding in AONBs and NPs

Purpose	Efficiently reduce visual amenity impacts of pre-existing lines on protected landscapes.
Proposed outputs	Retain a visual impact allowance which can be used in AONBs and NPs through a use-it-or-lose it (UIOLI) allowance

[125] https://www.energynetworks.org/assets/files/CEP023%20Technical%20Losses%20Mechanism%20Study%20Summary%20Report.pdf, pg.6.

Background

9.42 The RIIO-ED1 undergrounding scheme allows for the undergrounding of existing overhead lines in areas of outstanding natural beauty (AONBs)[126] and national parks (NPs). [127] The primary objective is the protection of visual amenity in line with specific statutory requirements.[128]

9.43 The scheme is largely stakeholder-led, with interest groups and NP authorities proposing potential undergrounding projects to DNOs. DNOs recover the costs of undergrounding projects (up to a fixed cap) at the end of the price control period, subject to demonstrating that they have taken the advice of local groups and planning authorities as relevant in prioritising expenditure.

9.44 For RIIO-ED1, the funding pot was set at £123.1m (19/20 prices). Additionally, DNOs can spend up to 10% of their allowance on undergrounding overhead lines that are located outside the boundaries of designated areas. Table 44 shows the level of undergrounding and DNO spending against its undergrounding allowance so far in RIIO-ED1.

Table 44: Work undertaken and spending under the RIIO-ED1 undergrounding scheme

DNO	Length of overhead lines removed (km)	Length of underground lines installed (km)	RIIO-ED1 allowance (£m) (19/20 prices)	RIIO-ED1 undergrounding expenditure (£m) (19/20 prices)
ENWL	27.2	29.3	10.7	4.2
NPGN	35.2	37.6	9.4	6.2
NPGY	19.9	20.6	7.1	3.0
WMID	8.3	11.5	12.1	2.0
EMID	5.3	0.3	7.5	0.1
SWALES	1.4	1.3	6.3	0.3
SWEST	2.5	11.5	13.5	1.5
SPN	8.5	9.7	12.5	0.9
EPN	4.1	8	11.5	1.7
SPD	0.3	0	5.6	0.3
SPMW	11.7	3	8.9	1.1
SSEH	4.5	5.6	6.5	1.3

[126] Countryside and Rights of Way Act 2000, s 82.
[127] National Parks and Access to Countryside Act 1949 (as amended by Environment Act 1995), s 5.
[128] Electricity Act 1989; National Parks and Access to Countryside Act 1949 (as amended by Environment Act 1995); Countryside and Rights of Way Act 2000.

DNO	Length of overhead lines removed (km)	Length of underground lines installed (km)	RIIO-ED1 allowance (£m) (19/20 prices)	RIIO-ED1 undergrounding expenditure (£m) (19/20 prices)
SSES	8.5	9.4	11.4	1.1
Total	137.4	147.8	123.1	23.8

LPN does not have an undergrounding allowance

Proposed outputs

9.45 We consider that the undergrounding scheme has worked well in RIIO-ED1 and are proposing to retain it for RIIO-ED2.

9.46 The customer willingness to pay (WTP) research we conducted in DPCR5 indicated that on average, customers were willing to pay £2.29 (2008/09 prices) for the undergrounding of 1.5% of the overhead lines in AONBs and NPs over the course of a five-year price control (ie 46 pence per year).

9.47 For RIIO-ED1, this was multiplied up by the number of customers and the eight years of the price control to give a total funding pot of £123.1m. The undergrounding allowances for individual DNOs were calculated by dividing the total pot between DNOs first by number of customers and second by length of lines to be undergrounded in each licensed region. The allowance for each DNO was calculated as the average of these two values.

9.48 We consider this approach to be appropriate and propose to use the same method to calculate and allocate the funding pot for RIIO-ED2, adjusting it for the shorter price control period. We may take into account, where relevant, the results of Willingness to Pay (WTP) studies carried out for RIIO-ET2.[129] We are aware that the criteria for these studies are different to those we would consider under RIIO-ED1 and that the investment decisions on the transmission system would be on a different scale to those in distribution.

9.49 Given that the scheme is designed to be flexible, we do not propose to set PCDs for project outputs, as is proposed for RIIO-ET2. However, we think that the DNOs should indicate in their Business Plans the value of projects that they could feasibly deliver in RIIO-ED2. We also propose that DNOs should set out, in

[129] The TOs jointly commissioned NERA to undertake a WTP studying covering improvements in several service attributes, including undergrounding of transmission infrastructure in designated areas. A summary of the study can be found here: https://www.ssen-transmission.co.uk/media/3455/consumers-willingness-to-pay-final-0107.pdf.

published policy issued to their relevant stakeholders, their approach to assessing undergrounding projects particularly taking into account their approach to any competing factors. We consider that this will also encourage greater clarity for interest groups when preparing undergrounding projects for submission, in line with DNOs' broader stakeholder engagement objectives.

Reasons for proposed approach

9.50 As set out above, we think the scheme has worked well in RIIO-ED1, and has been an effective mechanism to protect visual amenity in line with statutory requirements.

9.51 In RIIO-ED1 to date, DNOs have spent £23.8m of their £123.1m allowances and have removed over 137km of overhead lines and installed over 148km of underground lines. A benefit of the current scheme is that it is relatively flexible. Under current arrangements, it is up to the DNO and the relevant stakeholders to consider the most appropriate and cost-effective use of the funds to maximise the benefits in terms of visual amenity within these designated areas. Therefore, alternatives to undergrounding can be considered, such as the relocation of overhead lines or camouflage of infrastructure, where this is reasonable.

9.52 From ongoing monitoring of the scheme in RIIO-ED1, and engagement with stakeholders, we do not have evidence to suggest that the scheme needs to be amended. We are therefore proposing to retain the existing scheme in RIIO-ED2.

Consultation Questions

OUTQ62. Do you agree with our proposal to retain the visual impact allowance for RIIO-ED2?

OUTQ63. Do you agree with our proposed approach to setting a funding pot for the visual impact allowance for RIIO-ED2?

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Appendix 2 - Guaranteed Standards of Performance

Connections Guaranteed Standards of Performance

A2.1 If a DNO fails to meet the minimum service levels that are set out in the GSoPs, they are required to make a payment to the affected customers. These minimum service levels and corresponding payment amounts are set out in the Statutory Instrument[130] due to the requirement for network companies to make direct payments to their customers. GSoPs payments are not funded through the price control. Instead, the cost of making these payments come directly from DNO shareholders, giving DNOs an extra incentive to provide these minimum levels of service to customers.

A2.2 Some Connections GSOPs[131] also have accompanying target pass rates (% of times the standard has been met). These are set out in the licence to provide additional protection to customers. Table 45 contains a summary of the Connections GSOPs and the associated payment levels.

Table 45: Connections Guaranteed Standards of Performance[132]

Guaranteed Standard	Period	Amount
Provision of budget estimate <1MVA	10 working days	£65
Provision of budget estimate >1MVA	20 working days	£65
Provision of single phase LV quotation	5 working days	£15 for each working day after the end of the prescribed period up to and including the day on which the quotation is dispatched
Provision of small project LV quotation	15 working days	£15 for each working day after the end of the prescribed period up to and including the day on which the quotation is dispatched
Provision of other LV demand quotation	25 working days	£65 for each working day after the end of the prescribed period up to and including the day on which the quotation is dispatched

[130] A Statutory Instrument (SI) is a form of secondary legislation made under powers set out in an Act of Parliament. An SI making power is conferred onto the Authority and allows the Authority to make laws relating to the matters identified in the Act. This process is necessary for GSOPs due to the requirement for firms to make direct payments to their customers. The Electricity (Connection Standards of Performance) Regulations 2015 Statutory Instrument (SI) No. 698 http://www.legislation.gov.uk/en/uksi/2015/698/contents/made.

[131] When we refer to the Connections GSOPs we also include DG connection customers that are not within the scope of SI 698, but are within the scope of our DG Standards Direction https://www.ofgem.gov.uk/publications-and-updates/distributed-generation-standards-directionguidance-document.

[132] http://www.legislation.gov.uk/uksi/2015/698/pdfs/uksi_20150698_en.pdf.

Guaranteed Standard	Period	Amount
Provision of HV demand quotation	35 working days	£135 for each working day after the end of the prescribed period up to and including the day on which the quotation is dispatched
Provision of EHV demand quotation	65 working days	£200 for each working day after the end of the prescribed period up to and including the day on which the quotation is dispatched
Contact customer (post acceptance) about scheduling <5 LV service connections	7 working days	£15 for each working day after the end of the prescribed period up to and including the day on which contact occurs
Contact customer (post acceptance) about scheduling other LV service connections	7 working days	£65 for each working day after the end of the prescribed period up to and including the day on which contact occurs
Contact customer (post acceptance) about scheduling HV demand connections	10 working days	£135 for each working day after the end of the prescribed period up to and including the day on which contact occurs
Contact customer (post acceptance) about scheduling EHV demand connections	15 working days	£200 for each working day after the end of the prescribed period up to and including the day on which contact occurs
Commence LV, HV & EHV demand works on customer's site	Timescale agreed with customer	£25 for each working day after the agreed date up to and including the day on which the works at the premises are
Complete service connection works		£35 for each working day after the agreed date up to and including the day on which the works are completed
Complete LV works*		£135 for each working day after the agreed date up to and including the day on which the works are completed
Complete HV works*		£200 for each working day after the agreed date up to and including the day on which the works are completed
Complete EHV works*		£270 for each working day after the agreed date up to and including the day on which the works are completed
Complete LV energisation works*		£135 for each working day after the agreed date up to and including the day on which energisation occurs
Complete HV energisation works*		£200 for each working day after the agreed date up to and including the day on which energisation occurs

Guaranteed Standard	Period	Amount
Complete EHV energisation works*		£270 for each working day after the agreed date up to and including the day on which energisation occurs
Emergency fault repair response	2 hours	£65
High priority fault repair - traffic light controlled	2 calendar days	£15 for each working day after the end of the prescribed period up to and including the day on which the fault rectification works are completed
High priority fault repair - non traffic light controlled	10 working days	£15 for each working day after the end of the prescribed period up to and including the day on which the fault rectification works are complete
Multiple unit fault repair	20 working days	£15 for each working day after the end of the prescribed period up to and including the day on which the fault rectification works are completed
Single unit fault repair	25 working days	£15 for each working day after the end of the prescribed period up to and including the day on which the fault rectification works are completed
Provision of a quotation - new works order (1-100 units)	25 working days	£15 for each working day after the end of the prescribed period up to and including the day the quotation is dispatched
New works order - completion of works on a new site	Commence and complete in timescales agreed with the customer	£15 for each working day after the agreed date up to and including the day on which the works are Completed
New works order - completion of works on adopted highways	35 working days	£15 for each working day after the end of the prescribed period up to and including the day on which the works are completed
Quotation accuracy review scheme challenge single LV single phase service connection	N/A	£335
Quotation accuracy review scheme challenge small LV projects	N/A	£670
Where a Distributor fails to make a payment under the regulations	10 working days	£65

* including phased works

Non-Connections Guaranteed Standards of Performance

A2.3 The service levels and payment amounts for the GSoPs that do not relate to connections are stipulated in the Electricity (Standards of Performance) Regulations.[133]

A2.4 Like Connections GSoPs, these GSoPs payments are not funded through the price control. The table below provides a summary of what each standard covers, and the relevant payment levels.

Table 46: Non-connections Guaranteed Standards of Performance

Standard	Explanation	Payment (to all customers, unless otherwise stated)
EGS-1 (Regulation 11): Distributor's fuse	If a DNO's fuse is stopping supply to the customer's property then an appropriate professional must attend the scene within three hours (working days) or four hours (other days).	£30
EGS-2 (Regulation 5): Supply restoration - normal weather conditions	DNOs have 12 hours to restore supplies if it is interrupted during normal weather conditions.	£75 for domestic customers £150 for non-domestic customers. A further £35 will be paid for each additional 12 hour period where supply is not restored.
EGS-2B (Regulation 6): Supply restoration - normal weather conditions where 5,000 of more premises interrupted	DNOs have 24 hours to restore supplies if 5,000 or more premises are interrupted by a single fault during normal weather conditions.	£75 for domestic customers £150 for non-domestic customers. A further £35 will be paid for each additional 12 hour period where supply is not restored (up to a cap of £300 in total per customer).
EGS-2C (Regulation 8): Supply restoration - rota disconnections	Electricity supply shortages leading to customers being interrupted deliberately on a rota basis, so that available supply can be shared fairly. Customers who are off supply for 24 hours or longer.	£75 for domestic customers £150 for non-domestic customers.

[133] http://www.legislation.gov.uk/uksi/2015/699/contents/made

Standard	Explanation	Payment (to all customers, unless otherwise stated)
EGS-4 (Regulation 12): Notice of a planned interruption to supply	DNOs are required to give customers at least two days' notice for planned power cuts.	£30 for domestic customers. £60 for non-domestic customers.
EGS-5 (Regulation 13): Voltage complaints	If a customer reports a problem with the voltage of the electricity coming into their property, the DNO must: Send a written letter explaining the issue within five working days OR offer to visit the customer's property within seven working days.	£30
EGS-8 (Regulation 17): Making and keeping appointments	If a DNO needs to visit a customer, or a customer requests the DNO to visit, DNOs must offer a timed appointment (AM or PM) or a specific two-hour time band.	£30 if the DNO fails to keep (or make) an appointment).
EGS-9 (Regulation 19): Payments owed under the Guaranteed Standards	DNOs must make payments that are owed under the Guaranteed Standards within 10 working days.	£30 if the DNO fails to make the payment within this time.
EGS-11 (Regulation 7): Supply restoration - severe weather conditions	DNOs must restore supplies to customers if they are interrupted during severe weather, within: 24 hours for a 'Category 1' storm 48 hours for a 'Category 2' storm A determined time (dependent on the number of customers interrupted) for a 'Category 3' storm.	£70 A further £70 will be paid for each additional 12 hour period where supply is not restored (up to a cap of £700 in total per customer).

Appendix 3 - Impact of DPCR5 Competition Test on RIIO-ED1 arrangements

A3.1 Unlike the majority of the DNOs' work, the installation of new connection assets is not a natural monopoly. Other parties, such as Independent Connection Providers (ICPs) and licensed Independent Distribution Network Operators (IDNOs) can compete with DNOs to complete some connection activities.

A3.2 The activities that competitors can undertake are detailed in the connection charge methodology statement and are described as 'contestable' activities and include the design, procurement and construction of the sole use connection assets. Those activities that can only be carried out by the DNO are described as 'non-contestable'. Some of the principle non-contestable activities are:

- Determination of the point of connection to distribution system
- Approval of an ICP/IDNO's connection design
- Reinforcement/diversionary work on the upstream distribution system
- Inspection and monitoring of work.

A3.3 In DPCR5, we ran a Competition Test to understand the extent to which effective competition existed in the market for new connections. Through the process, DNOs were able to apply to us to have price regulation lifted if they could demonstrate that competition was successfully effective to constrain prices in its absence.

A3.4 We did not believe that effective competition was viable in certain segments, which were excluded from the Competition Test. These are the Excluded Market Segments set out in Table 47. These market segments primarily cover low value connections that are unlikely to attract competitors (eg domestic work). To ensure that customers' interests are protected, we decided in RIIO-ED1 that connections elements of the Broad Measure of Customer Satisfaction (BMCS)[134] together with the Average Time to Connect Incentive should apply to customers in these market segments.

[134] The RIIO-ED1 Broad Measure of Customer Satisfaction aims to drive the network companies to deliver good customer service. It aims to achieve this by replicating the sorts of measures typically used by consumer-facing businesses in a competitive environment. The RIIO-ED1 BMCS comprises the Customer Satisfaction Survey, Complaints Metric and the Stakeholder Engagement and Consumer Vulnerability Incentive.

Table 47: Excluded Market Segments

Excluded Market Segments	
LVSSA	LV connection activities relating to no more than four domestic premises or one-off industrial and commercial work (ie, one to four houses).
LVSSB	Connection activities in respect of a connection involving three-phase whole current metering at premises other than Domestic Premises. (ie, one off LV connections).

A3.5 For the purpose of the Competition Test, we defined the contestable connections market into nine 'relevant market segments' (RMSs). The Relevant Market Segments are set out in Table 48.

Table 48: Relevant Market Segments

Relevant Market Segments – major connections Market Segments where we consider that competition is likely to develop	
Metered Demand Connections	Low Voltage (LV) Work - LV connection activities involving only LV work, other than in respect of the Excluded Market Segments.
	High Voltage (HV) Work: LV or HV connection activities involving HV work (including where that work is required in respect of connection activities within an Excluded Market Segment).
	HV and Extra High Voltage (EHV) Work: LV or HV connection activities involving EHV work.
	EHV work and above: extra high voltage and 132kV connection activities.
Metered Distributed Generation (DG)	LV work: low voltage connection activities involving only low voltage work.
	HV and EHV work: any connection activities involving work at HV or above.
Unmetered Connections	Local Authority (LA) work: new connection activities in respect of LA premises.
	Private finance initiatives (PFI) Work: new connection activities under PFIs.
	Other work: all other non-LA and non-PFI unmetered connections work.

A3.6 Figure 13 sets out the results of the Competition Test and Table X sets out the impact of the Competition Test on RIIO-ED1 arrangements.

Figure 13: Results of the DPCR5 Competition Test

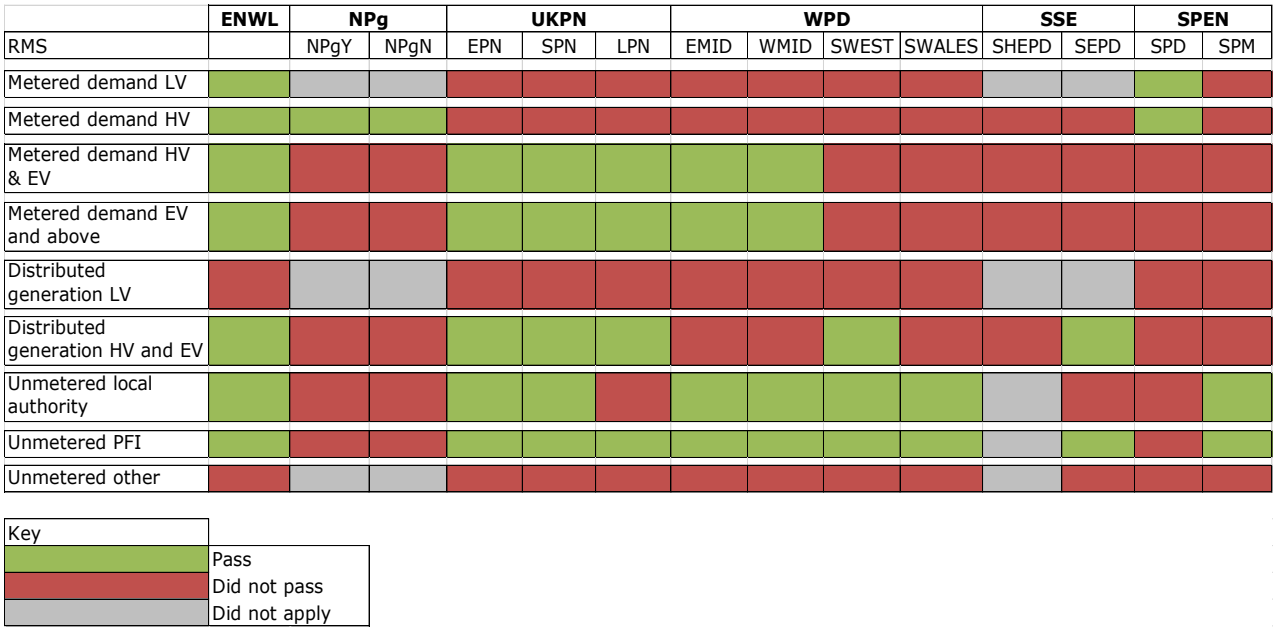


Table 49: Impact of the Competition Test on RIIO-ED1 arrangements

Incentive/Measure		Excluded Market Segments	Relevant Market Segments that passed the Competition Test		Relevant Market Segments that didn't pass the Competition Test
			Contestable	Non-contestable	
Guaranteed Standards of Performance		Apply	Apply	Apply	Apply
Time to connect incentive		Apply	Not apply	Not apply	Not apply
Broad Measure of Customer Service	Customer satisfaction survey	Apply	Not apply	Not apply	Not apply
	Complaints metric	Apply	Apply	Apply	Apply
	Stakeholder engagement and consumer vulnerability incentive	Apply	Apply	Apply	Apply
Incentive on Connections Engagement		Not apply	Not apply	Apply	Apply

Appendix 4 - Improving service standards for major connections customers: principles and baseline standards

A4.1 The following are the principles and baseline standards of performance that we expect DNOs to deliver for major connection customers. DNOs' strategies for major connections customers should be aligned to these principles and standards.

A4.2 Where a DNO considers the baseline standard is not appropriate, the DNO should provide clear justification as to why this is the case. Where relevant, this should be supported by stakeholders and the DNO's CEG.

A4.3 Principle 1: Support connection stakeholders to make informed decisions by providing accurate, comprehensive and user-friendly information

A4.4 The purpose of this principle is to ensure that DNOs provide sufficient, and high quality, information to connection stakeholders so they are able to make informed decisions about connecting to the distribution network.

A4.5 Stakeholders rely on the DNO for information in order to decide how, and where, to connect to the distribution network. DNOs should ensure that all the information they provide to connection stakeholders is accurate and set out in plain English so that all connection stakeholders can understand. DNOs should also ensure all information is sufficiently comprehensive and tailored to the needs of the customer.

A4.6 As a baseline standard, we expect DNOs to:

- Establish and maintain up to date guidance on how, and where, customers can connect to the distribution network. This should include information about the application and delivery process. It should also include the provision of heat maps, capacity registers, Long Term Development Statements (LTDS) to clarify, at a granular level, where capacity is available, where network services may be beneficial, and likely curtailment levels in constrained areas.

- Offer a range of connection options which suit customers' requirements, including where customers are looking to provide energy services, for example to the System Operator.
- Provide customers with clear connection quotation cost breakdowns, listing out the cost components and any assumptions used in the formulation of a quote. This should include:
  - Simple explanations of products and pricing options
  - Clear outline of what prices include and exclude, including contestable cost elements
  - Where appropriate, the likely implications for the customer's connection offer if any changes arise, either as a result of changes to their own requirements or because of other customers that are seeking to connect in the same area.
- Specifically in relation to flexible connection customers, provide clarity around conditions and circumstances of current and future curtailment, including in areas with transmission constraints.
- Where flexible or alternative connections are not available in constrained areas, provide information about when these types of connection will become available. If not, the DNO should explain why this information is not available and when it will be.
- Where consortium connections are available, provide clear and detailed information about where, how and under what conditions such projects can proceed.

A4.7 Principle 2: Deliver value for customers by ensuring simplicity and transparency at all stages of the connections process

A4.8 The purpose of this principle is to ensure that DNOs take the appropriate steps to make connection processes simple and transparent, so that customers receive a streamlined service from application to connection completion. In particular, the DNO will need to have effective communication and engagement processes in place, not only to respond to customers' needs when they arise but also to ensure they are proactively engaging with stakeholders, understanding their needs and improving their processes accordingly.

A4.9 As a baseline standard, we expect DNOs to:

- Have clear and simple customer journey process, which accounts for the particular needs of different groups of customers and which is effectively communicated to customers and delivery partners. This should include:
  - Tailored communication plans to suit different customer needs, including specified engagement methods and points of contact during the connection process
  - Clarity on DNO, customer and third party responsibilities
  - Regular updates on project/connection
- Provide good customer service to connection stakeholders along the customer journey. This should include processes to manage customer accounts and resolve any issues that arise, including a process for escalating issues.
- Have robust and processes in place to proactively engage with connection stakeholders. This should include how the DNO plans to both identify and address connections issues.

A4.10 Principle 3: Facilitate the delivery of timely and economical connections that meet customers' needs.

A4.11 The purpose of this principle is to ensure that DNOs take appropriate steps to identify efficiencies in the connections process to deliver timely and economical connections for customers. This should include consideration of more efficient ways of doing things as well as introducing innovative connection solutions to reduce costs, and improve connection timescales, for customers.

A4.12 As a baseline standard, we expect DNOs to:

- Processes to help customers identify how they could make changes to their connections requirements, that would meet their needs and allow them to get connected quicker or cheaper.
- Ensure the availability of flexible connections for all customers, including storage.
- Where there are slow moving projects, and where these are impacting on other customers, or existing customers that are materially underutilising capacity in constrained parts of the network, have processes in place for releasing capacity that is not being used.
- Have processes in place for the promotion of certain types of customers (such as storage) in connection queue if it will help others connect more quickly/cheaply.

- DNOs to show consideration of innovative connection solutions for customers which may include, amongst other things, improved coordination with other utility connection providers and between connection customers.

Appendix 5 - Improving service standards for consumers in vulnerable situations: principles and baseline standards

A5.1 The following are the principles and baseline standards of performance that we expect DNOs to deliver for consumers in vulnerable situations. DNOs' strategies for vulnerable consumers should be aligned to these principles and standards.

A5.2 Where a DNO considers the baseline standard is not appropriate, the DNO should provide clear justification as to why this is the case. Where relevant, this should be supported by stakeholders and the DNO's CEG.

A5.3 Principle 1: Effectively support consumers in vulnerable situations, particularly those most vulnerable to a loss of supply, through a sophisticated approach to the management, promotion and maintenance of a PSR register.

A5.4 As a baseline standard, we expect DNOs to:

- Undertake proactive and targeted advertising of the PSR and the services offered to vulnerable consumer groups. By targeted, we mean towards specific areas of highest need or where data analysis suggests there are gaps in PSR reach.[135]
- Have an effective data and information strategy in place specific to meeting the needs of vulnerable consumers. This should include effective PSR database maintenance with customer data checks at least every 24 months. Data analysis should be used to inform the development and delivery of service offerings. DNOs should also align the approach to data sharing with suppliers and other utilities to get customers onto the PSR to the requirements of Data Best Practice.
- Provide information for PSR customers in formats suited to a range of additional communication needs.[136] For accessibility services, companies should meet a minimum standard of Accessibility AA. Translation services should be available for at least the top 10 Languages in a DNO area.
- Have dedicated lines, and or prioritisation, available for customers registered on PSR when they need to contact the DNO.

[135] PSR Reach is defined as registrations to a DNO's PSR Register by need code.
[136] Under SLC 10, DNOs must provide information, with regards to a supply interruptions, to a PSR customer with additional communication needs in a manner or format that is suitable for that customer's additional communication needs.

- Deliver a wide range of support during, or in relation to, a supply interruption that reflects different customer needs and is, at a minimum, in line with existing provision. There should be a clear link between the information held about PSR customers and how this is used to target, or prioritise, support. We consider a wide range of support could include, but is not limited to, crisis packs, hot meals and drinks, mobile generation, alternative accommodation or on-site welfare units. We would expect there to be multi-channel information provision during supply interruptions.[137] Companies can deliver this support directly or through/in conjunction with partner agencies.

A5.5 Principle 2: Maximise opportunities to identify, and deliver support to, consumers in vulnerable situations through smart use of data.

A5.6 As a baseline standard, we would expect DNOs to:

- Utilise social indicator or vulnerability mapping to inform their service development and partnership strategy. This approach may form part of the PSR management, but the identification of vulnerability should not be limited to PSR registrations.
- Maintain a good understanding of the social issues associated with the scope of the DNOs role, the prevalence of these within their consumer base and how they are evolving.

A5.7 Principle 3: Understand new forms of vulnerability, in particular by identifying blockers to participating in a smart flexible energy system.

A5.8 As a baseline standard, we expect DNOs to:

- Have an extensive network of partnerships with a range of organisation types, including from beyond the energy sector.
- Make effective use of referral channels and signposting support to customers. This will primarily be done through customer service teams, but we expect DNOs to seek opportunities to maximise consumer touchpoints.
- Be involved in two-way flow partnerships supporting vulnerable customers, in line with the companies understanding of social issues in their region. This should include the network company having direct involvement in the end to end process of delivering support, providing expertise and co-creating

schemes. Where appropriate, we would expect to see example schemes where the DNO is taking a leading role.

- Have a clear process for identifying which partnerships are likely to be most effective at delivering benefits through co-operative working. This should be clearly linked to the priority areas of focus of the strategy, in particular addressing fuel poverty and supporting those at risk of being left by the energy system transition.

A5.9 Principle 4: Embed the approach to protecting the interests of consumers in vulnerable situations throughout a company's operations to maximise the opportunities to deliver support.

A5.10 As a baseline standard, we would expect DNOs to:

- Have processes in place for embedding a commitment to protecting the interests of vulnerable customers. This should include a well justified approach to ensuring all staff have received an appropriate form of vulnerability training to maximise the potential from all customer touchpoints. Companies should have make use of external advice and support to set strategic direction, such as a vulnerability advisory or research panel. DNOs should appoint a vulnerability champion at senior management or board level.
- Seek opportunities to protect vulnerable customers throughout their capabilities.

Appendix 6 - IIS target setting and incentive rates

IIS Target Setting

A6.1 The methodology used to set the targets for the Interruptions Incentive Scheme (IIS), as outlined in Chapter 7 in Annex 1, comprises a number of detailed steps. These steps are provided in this Appendix.

A6.2 As set out in Chapter 7 in Annex 1, we use DNOs' historical performance on interruptions to set targets for Customer Interruptions (CI) and Customer Minutes Lost (CML) at an aggregate level for interruptions across all voltage levels. This historical performance includes interruptions to supply resulting from faults on the transmission network, faults on another system connected to the DNO's system (i.e. another DNO's network), and faults originating from distributed generation.

A6.3 The targets are derived through a process of benchmarking performance across the industry, at each voltage level. The benchmarking process is most complex at HV due to the greatest volume of interruptions occurring here. In this Appendix, we outline the process of setting targets for CIs and CMLs. We also set out the steps taken to generate incentive rates for both CIs and CMLs.

CI Targets

A6.4 At a high level, CI targets are created by comparing a DNO's average performance over recent years to an industry-wide benchmark for each voltage level for the same period of time. This ultimately determines whether each DNO's target is subject to the 1.5% annual improvement factor (if they are performing behind the benchmarked value) or the 0.5% annual improvement factor (if/when they are performing ahead of the benchmarked value).

A6.5 Looking at performance over a number of years reduces the chances that the methodology could be affected by volatility in performance across individual years. There are three stages to producing CI targets, which are set out below.

Stage 1: selecting the benchmark

A6.6 We use DNOs' historical performance to set a benchmark view of where each DNO's current CI performance should be. This benchmark is built up from performance across each voltage level, and we use rolling averages of

performance across a number of years to smooth out any year-on-year volatility. This produces a view of where each DNO's current performance is expected to be, rather than where it happened to be in any particular year.

A6.7 Benchmarks at LV are set on the basis of a DNO's own four-year average CI performance up to and including that year. For example, the benchmark performance for the 2019-20 reporting year would be the average of the actual CI at LV over the 2016-17 to 2019-20 reporting years (inclusive). The LV network(s) tend to differ significantly across Great Britain (GB), which makes it difficult to robustly compare CI performance across the industry. Using a four-year average smooths any volatility whilst emphasising more recent data. The alternative would be to use a longer time period to average performance; however, this would place less emphasis on more recent data which, we believe, is more reflective of DNO practices in managing faults at this voltage level.

A6.8 Benchmarks at EHV and 132kV are set (separately, but with the same methodology) using a DNO's own ten-year average CI performance. For example, the EHV benchmark performance for the 2019-20 reporting year would be the average of the actual CI at EHV for the 2010-11 to 2019-20 reporting years. Interruptions at these voltage levels are more volatile in that they are less frequent but they tend to affect more customers than faults at HV (or LV). Small variations in fault volume (or types) can, therefore, have a large impact on the observed CI and CML; using a shorter time period would expose the benchmark to (potentially) significant variations caused by small fault numbers.

A6.9 Faults on other connected systems, distributed generation, and the transmission network are beyond the DNOs' control, so these faults are excluded from the target setting process.

A6.10 Benchmarks for HV are produced using four years of historical data, based on the subcategorisation of the HV networks. These subcategories split the networks into 23 circuit types (known as bands) that are based on:

a) the proportion (expressed in a percentage) of the circuit that is overhead (OH) conductor - this produces five categories
b) the overall length of the circuit - this produces two or three categories for each of the categories under step (a)
c) the number of customers connected to the circuit - this produces two categories for each of those generated under step (b).

A6.11 These circuit bands are shown in Table 50.

Table 50: Circuit Bands

Band	Percentage OH line	Circuit length	Connected Customers
UG1A	0% (fully underground)	<4km	<1,000
UG1B			>1,000
UG2A		>4km	<2,000
UG2B			>2,000
MA1A	0 < X < 20%	<8km	<1,000
MA1B			>1,000
MA2A		>8km	<2,500
MA2B			>2,500
MB1A	20% < X < 50%	<11km	<1,000
MB1B			>1,000
MB2A		>11km	<2,200
MB2B			>2,200
MC1A	50% < X < 80%	<19km	<500
MC1B			>500
MC2A		>19km	<1700
MC2B			>1700
OH1A	> 80%	<40km	<400
OH1B			>400
OH2A		40km < X < 55km	<700
OH2B			>700
OH3A		>55km	<700
OH3B			>700

A6.12 DNO-specific performance factors are derived for all the circuits in each band. These factors are:

- the number of customers in the band
- the number of customers per circuit
- the length per circuit
- the number of faults per kilometre
- the number of customers interrupted per fault
- a product of the circuit length and the number of circuits.

A6.13 The same performance factors are then derived for the industry (based on averages across all the DNOs' circuits).

A6.14 These performance factors are then used to calculate a DNO's benchmark for each band. Industry data is also used in calculating this benchmark; the proportion of DNO data to industry data varies based on the circuit type. Circuits with a greater proportion of underground cable rely more on DNO-specific data (and vice versa for circuits with a greater proportion of OH line); this is partly due to the lower fault rate typically seen on these circuits.

A6.15 An overall benchmark is then calculated by summing the individual benchmarks created for each of the disaggregated band.

A6.16 The majority of faults occur on the HV network and, therefore, we have a larger volume of data for the HV networks. This means we have a better basis for robust comparison of DNOs' performance at HV (compared with other voltage levels). The blend of benchmark rates and the DNO's own fault rates recognises that DNOs do not have full control over the number of faults per kilometre; this is mainly due to the inherited characteristics of the networks.

Stage 2: target setting

A6.17 The target for the base year (i.e. the first year for which a target will be produced; in RIIO-ED1 the base year was 2013-14, with 2012-13 being the final year of data used to set the targets) is set as the DNO's average total CI over the last four or ten years for each voltage (depending on the voltage level), plus the weighted CI from the transmission network and other connected systems. Targets for subsequent years are derived by applying an improvement factor to this total CI figure (see Stage 3).

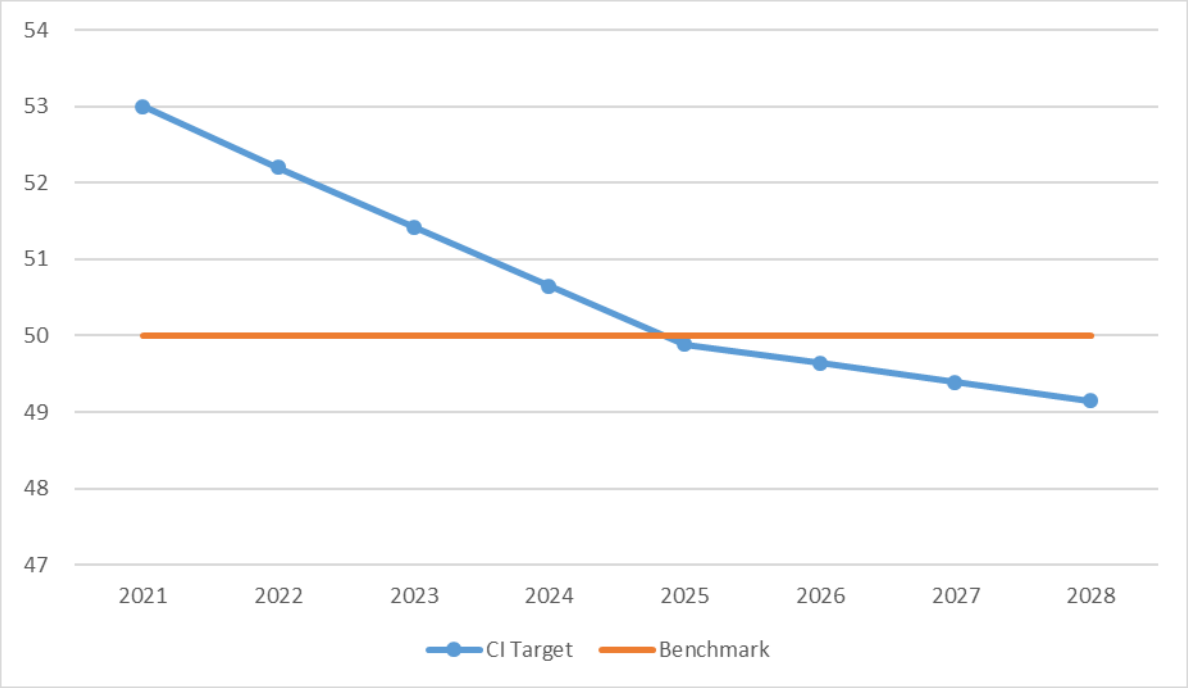
A6.18 We set a target based on each DNO's average performance for several reasons. First, there is a natural level of volatility in the data that is used which means that a target based on the industry average, upper quartile, or even frontier performance, could result in an unrealistic target. Secondly, improvements in CI performance often require significant investment from DNOs; setting unrealistically high targets could, therefore, require the DNOs to make significant investments just to avoid penalties under the IIS (the cost of these investments would be borne by customers). Instead, stricter targets are set for CMLs, where improvements in performance can be achieved through cheaper means, such as operational practices.

Stage 3: selecting the improvement factor

A6.19 Improvement factors are applied to the CI targets to ensure that those DNOs who are performing worse than a benchmark are suitably incentivised to catch up with best practice. The improvement factors also make sure that those DNOs performing exactly at the benchmark level still need to improve over time to remain on target.

A6.20 A higher annual improvement factor (1.5%) applies for DNOs whose total CI value is worse than the benchmark, until this 'improved' total CI value reaches the benchmark level, at which point the lower improvement factor (0.5%) applies (see Figure 14)

Figure 14: Improvement factors against benchmark



A6.21 The CI improvement factors were decided after a review of industry performance using a 4-year rolling average from 2002-03 to 2012-13; this showed that industry performance had improved over time at an average of around 3%.[138] We looked at the range of historical observation to consider whether there was evidence that the average rate might not be appropriate for estimating future improvements.

[138] Across the DNOs, there were notable differences in performance improvements, particularly for those licence areas who had undergone a change of ownership early in DPCR5. These ownership changes, and associated performance changes, had a notable impact on the industry averages.

A6.22 Based on the variations in performance across the industry, and the fact that the improvement seen was an effective response by DNOs to the IIS (rather than an underlying trend in performance improvement), we did not consider it appropriate to apply the historical average improvement as a baseline rate. Instead we chose two improvement factors: one at the lower end of the observed range of annual improvements that we considered sustainable for DNOs, and one that was higher than this to encourage those DNOs who were below the benchmark to catch up with industry best practice.

CML Targets

Stage 1: Setting the CML per CI Benchmark

A6.23 As with CIs, we use historical performance to set a benchmarked view of where each DNO's CML per CI performance should be. This benchmarked view is built up from performance across the different voltage levels.

A6.24 For LV, we set a benchmark by comparing a DNO's own CML per CI performance with the industry CML per CI performance. If the DNO's own performance is higher than the industry performance then the industry performance, plus 75% of the difference between the two, is set as the benchmark. If the DNO's own performance is lower than the industry performance, then the industry performance is set as the benchmark.

A6.25 Since the LV networks across GB vary significantly, it is difficult to compare performance across the industry. We take this into account by giving DNOs who perform worse than the industry performance a target that is between their own performance and the industry performance.

A6.26 For EHV and 132kV,[139] we set a benchmark by comparing a DNO's own ten-year average CML per CI performance with the industry's average CML per CI performance over the same time period; the lower of these two values is used as a benchmark. This recognises that performance on this part of the network can be greatly impacted by small volumes of interruptions. We apply a 'ratchet' mechanism to this benchmark for those DNOs whose performance is better than the average, by using their own historic performance as a benchmark.

[139] The same methodology applies to EHV and 132kV, but the two areas have their own benchmarks that are set separately.

A6.27 In a similar way to CIs, the DNOs have limited scope to control the impacts of interruptions occurring on the transmission networks, other connected systems, and those cause by distributed generation. Unlike CIs, DNOs do have some ability to mitigate the impact on their customers and reduce the duration of an interruption; therefore, a fraction of the CML from these sources (with the exception of distributed generation) are allocated to the DNOs, to ensure they continue to mitigate the impacts of these interruptions.

A6.28 As with CIs, benchmarks for CMLs at HV are produced on the basis of the networks being subcategorised into circuit types that are based on the density of customers supplied by those circuits, and the mix of OH and UG lines. For each of these circuit types, the benchmark level of performance is derived from the upper quartile of CML per CI performance. The overall CML HV benchmark (for all bands) is divided by the overall CI benchmark to be used in the calculation of CML targets. The normalisation of this disaggregated data enables robust comparisons of DNO performance at HV, which is where the majority of faults occur.

Stage 2: creating a first pass target and applying improvement factors

A6.29 In order to derive a target for the base year from the benchmark, we use the values determined from Stage 1 above, along with a reference value of CI for each voltage.

A6.30 For LV, EHV, and 132kV CI performance, we use the DNO's own four or ten-year average (as appropriate) as the reference value. These values are then kept constant until the end of RIIO-ED1. For HV, the reference value is the higher of the last data year's average performance or the last data year's benchmark, minus the sum of the LV, EHV, and 132kV CI values.

A6.31 These values are multiplied together at each voltage, i.e. CML per CI (stage 1) multiplied by the CI number (as set out above). This gives a CML target for the base year (for RIIO-ED1 the base year was 2013-14). To calculate targets for the following years, the CML improvement factors (1% for 132kV, EHV, and LV, and 3% for HV) are applied to the base year target for each voltage level.

A6.32 Our approach to setting CML improvement factors is informed by the rate of improvement seen through historical performance across the voltage levels. For CMLs, the improvement factors are derived from changes in CMLs per CI, rather than just changes in the CMLs. We do this, and set benchmarks on a CML per CI

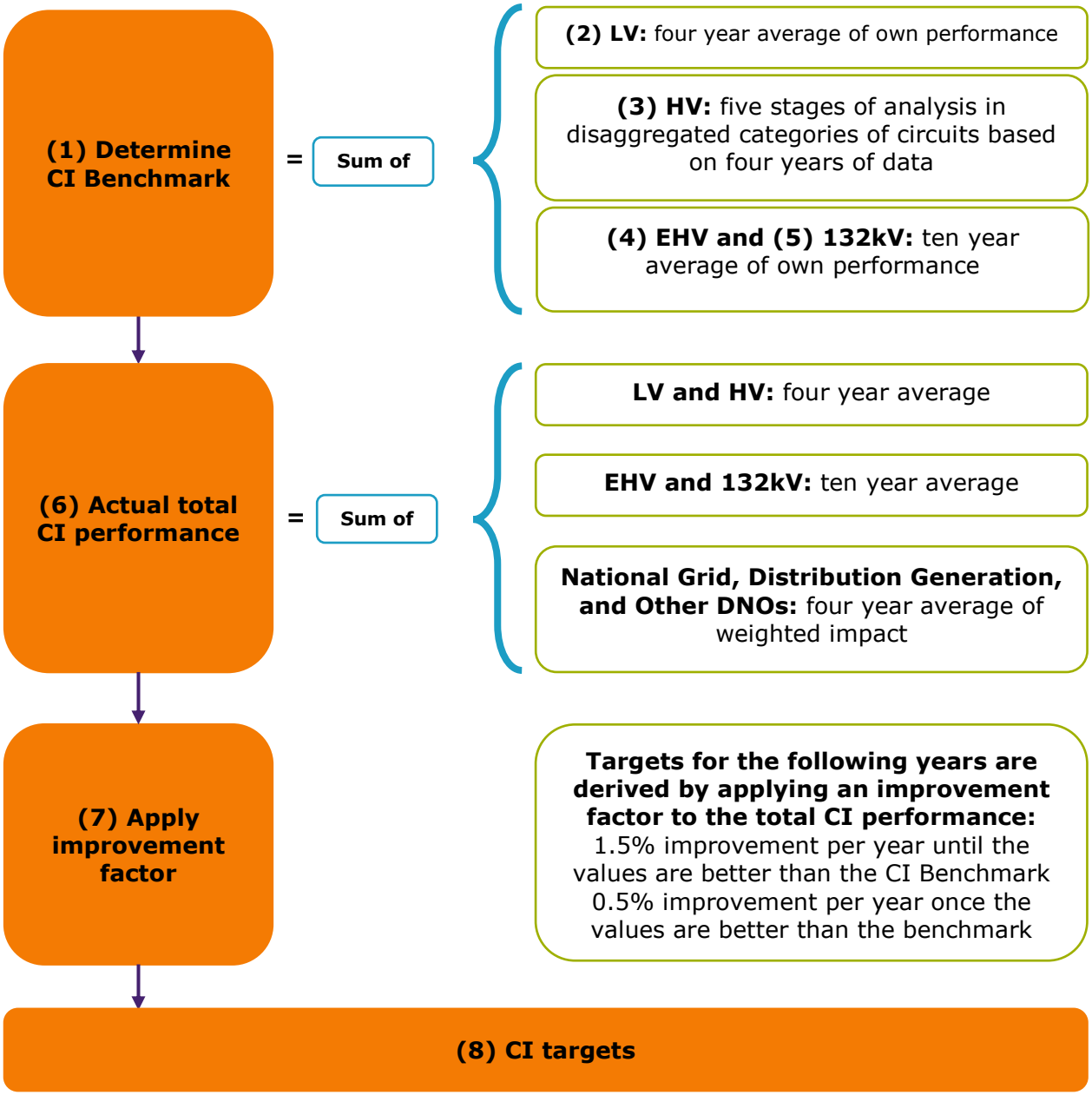
basis rather than just CMLs, because the CML per CI value is a measure of the DNO's average restoration speed. The CML value is driven by a combination of the DNO's restoration speed and the number of interruptions.

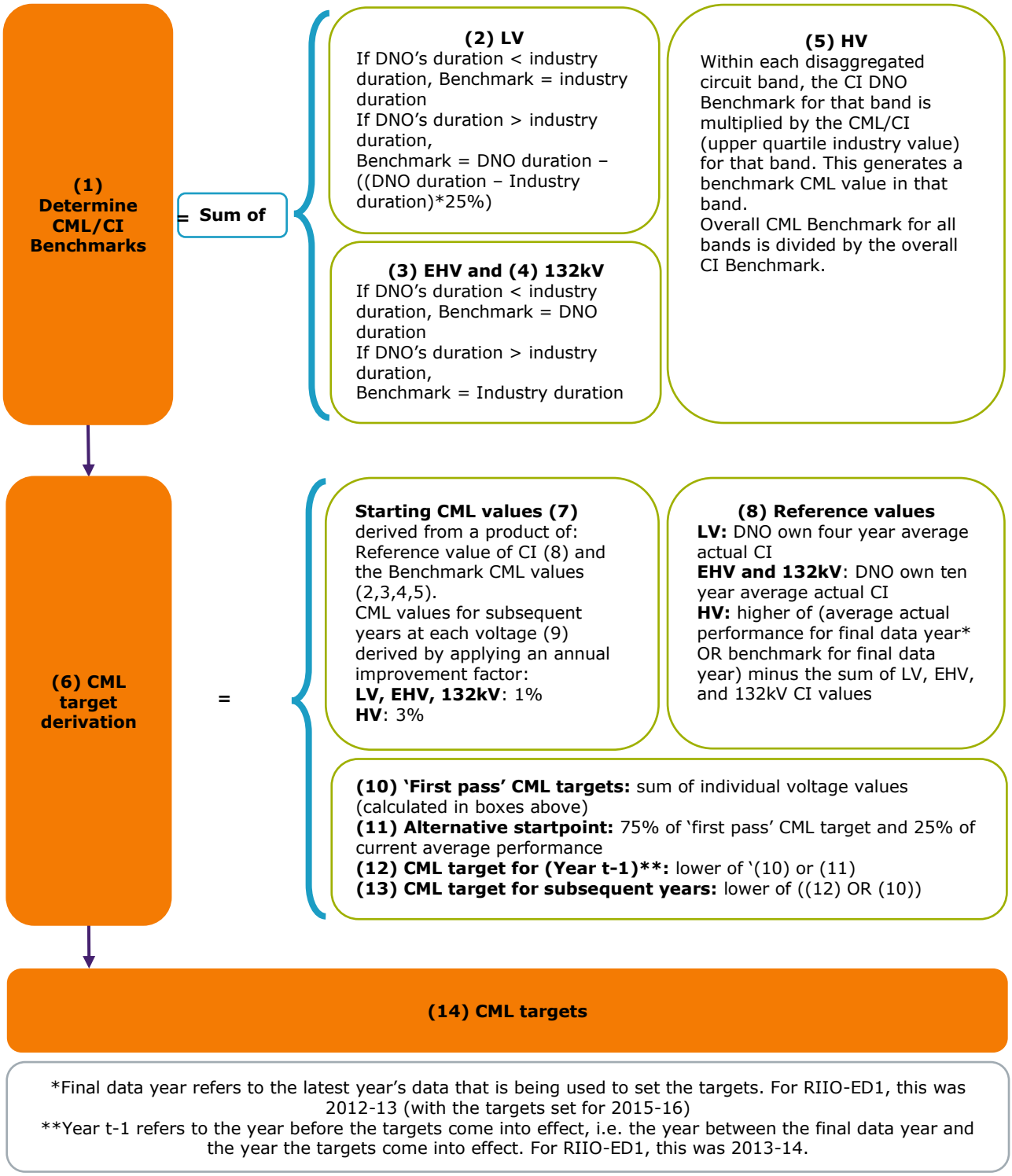
Stage 3: setting final targets

A6.33 The actual CML targets for the base year are based on the minimum of the first pass targets (stage 2) or the startpoint. The startpoint is 25% of the DNO's average performance over four or ten years (as appropriate) and 75% of the first pass target. Each subsequent year, the targets are the lower of the previous year's target or the first pass targets, to ensure the targets do not rise (become less challenging) over time.

A6.34 The final stage to setting unplanned targets for RIIO-ED1 was to compare these calculated targets with any targets proposed by DNOs in their business plans. As part of the price control process, DNOs were able to put forward their own targets with justification for them in their business plans. We reviewed the business plans and took the lower of the calculated unplanned targets or DNO's own business plan targets for each year of the price control, and these formed the final unplanned targets for RIIO-ED1.The approach to setting CI and CML targets also provided in Figure 15 below.

Figure 15: Approach to setting CI and CML targets


(1) Determine CI Benchmark
=
Sum of
(2) LV: four year average of own performance
(3) HV: five stages of analysis in disaggregated categories of circuits based on four years of data
(4) EHV and (5) 132kV: ten year average of own performance
(6) Actual total CI performance
=
Sum of
LV and HV: four year average
EHV and 132kV: ten year average
National Grid, Distribution Generation, and Other DNOs: four year average of weighted impact
(7) Apply improvement factor
Targets for the following years are derived by applying an improvement factor to the total CI performance:
1.5% improvement per year until the values are better than the CI Benchmark
0.5% improvement per year once the values are better than the benchmark
(8) CI targets

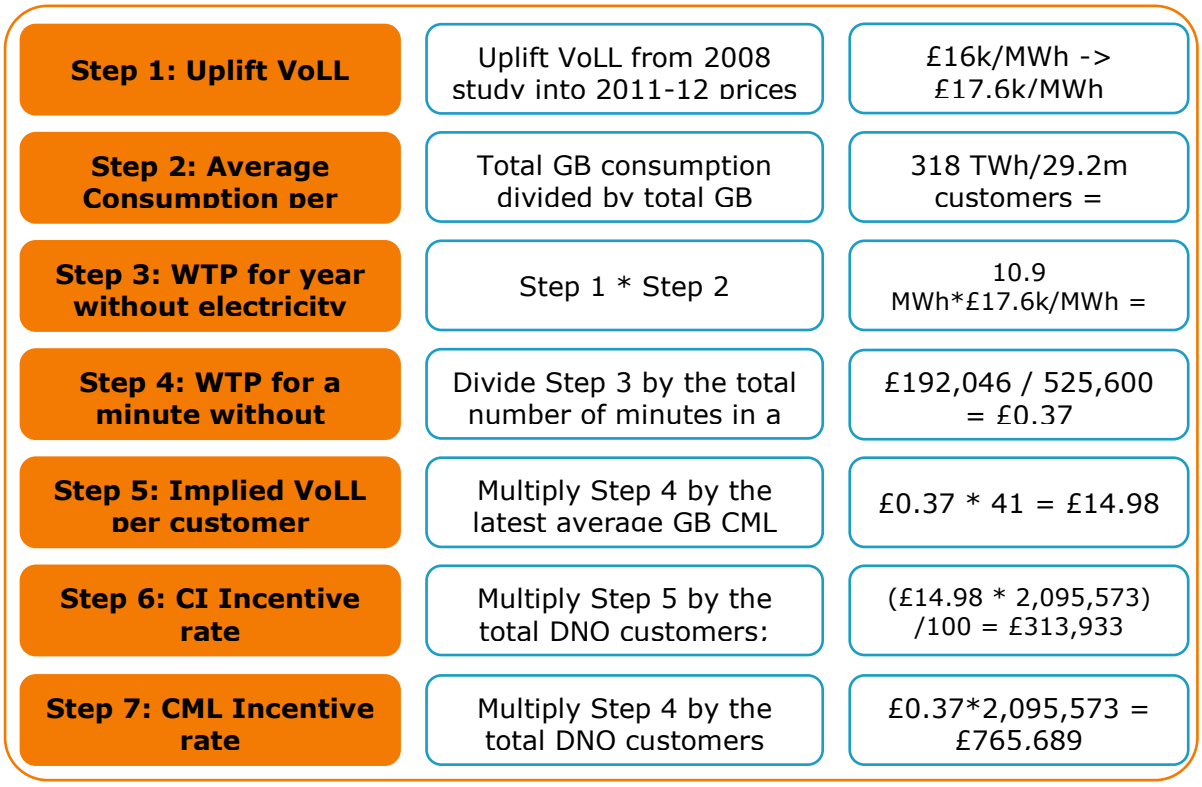


IIS Incentive Rates

A6.35 The incentive rates for the IIS in RIIO-ED1 were based on a combination of the VoLL value produced from the Accent research carried out in 2008 (and subsequently verified by Reckon in 2012), and the average consumption per customer in GB. The steps that are taken to combine these figures are set out below, and in Figure 16.

- Step 1: Uplift the 2008 study VoLL figure into 2011-12 prices.
- Step 2: Calculate average consumption per customer in GB from the total GB consumption and the total number of customers.
- Step 3: Multiply the uplifted VoLL figure (Step 1) by the average consumption figure (Step 2) to produce a value for the total amount the average customer is willing to pay for a year without electricity.
- Step 4: Divide the value from Step 3 by the total number of minutes in a year, to get a value for the amount the average customer is willing to pay for a minute without electricity.
- Step 5: Multiply the value from Step 4 by the latest average CML for GB to produce an implied VoLL for each customer interrupted.
- Step 6: Multiply the implied VoLL for each customer interrupted (Step 5) by the total number of customers for the DNO, and divide that value by 100 to get the CI incentive rate.
- Step 7: Multiply the value from Step 4 by the total number of customers for the DNO to get the CML incentive rate.

Figure 16: Approach to setting incentive rates



Appendix 7 - Background to reliability and resilience

Planned Interruptions

A7.1 Where DNOs need to interrupt customers to carry out essential maintenance or upgrades to the network, they are required to give customers prior notice of any planned loss of supply to help mitigate the impact it may have. This notice should detail the date(s) and time(s) of the planned interruption so that customers can adequately prepare and take steps to reduce the disruption it causes. Under the Guaranteed Standards of Performance, DNOs are required to give customers a minimum of two days' notice of any planned loss of supply.

Tree Cutting

A7.2 Maintenance cutting relates to the activities DNOs carry out to ensure their networks comply with the ENA Technical Specification 43-8 - Overhead Line Clearances (ENA-TS 43-8).140 This provides the recommended clearances for overhead lines and, in relation to tree cutting, means DNOs must have regular programmes of inspection and cutting of the vegetation around their networks (where necessary).[141] Typically this involves cutting back vegetation on a cyclical basis, accounting for the expected growth rates and local stakeholder expectations (since DNOs do not own the vegetation they are cutting).[142]

A7.3 Resilience cutting relates to the activities DNOs undertake to ensure their networks comply with ENA Engineering Technical Report 132 - Improving Network Performance under Abnormal Weather Conditions (ENA ETR 132). This provides guidance on how DNOs should improve the network performance under abnormal weather conditions (such as high winds, ice, snow, heavy rainfall etc.). It uses a risk-based approach to identify the most effective location(s) for carrying out resilience-related vegetation management and solutions. Typically this involves cutting vegetation back further than would be required under ENA-

[140] http://programmeofficers.co.uk/Preston/CoreDocuments/LCC146.pdf
[141] While there are alternatives to cutting the vegetation that surrounds their assets to maintain compliance with ENA-TS 43-8, this is often the most cost-effective way to achieve the required level of resilience. Other protection measures can be put in place, such as growth regulators (based on naturally occurring plant hormones) to limit the speed of growth for some vegetation.
[142] DNOs must ensure they have permission to access land and cut the vegetation around their assets. They must agree the level to which vegetation will be managed with stakeholders, whilst also maintaining compliance with wider requirements, such as the Forestry Act 1967.

TS 43-8 or, in some cases, removing the tree altogether, so as to avoid the vegetation coming into contact with the asset during abnormal weather.[143]

A7.4 One challenge associated with tree cutting activities in RIIO-ED1 is the skillset required by staff to safely carry out the required activities, and the availability of these staff across the country. This is compounded by the appearance of vegetation diseases such as Ash dieback, which have changed both the riskiness of particular trees and the skills required to manage this. Combined with the effects of climate change on assumed growth rates and/or growing periods, these issues present a continuous challenge that DNOs will need to manage over the course of RIIO-ED2.

Flood resilience

A7.5 DNOs use flood maps produced by the EA, for England and Wales, and SEPA for Scotland to determine the risk at each substation, presented in the form of a percentage chance of that site flooding in a year. This risk is then used to determine the level of protection that should be installed at a substation, based on ETR 138. Table 51 sets out the protection levels and associated flood risk. In RIIO-ED1, the DNOs developed programmes of work to ensure their network would have the required protection against the risk of flooding, as set out in out in ETR 138.

Table 51: Protection levels and associated risk

Protection level	Percentage chance of flooding each year
1 in 100 years or 1/100	1%
1 in 200 years or 1/200	0.5%
1 in 1000 years or 1/1000	0.1%

A7.6 The flood risk and protection level at each substation is multiplied by the number of customers it serves to create a 'risk point' for that substation. We provided funding to protect substations to a given level, on the expectation that a certain number of risk points is removed from the network as a whole. DNOs have the flexibility to update their plans based on the level of risk on the network; we hold

[143] Achieving compliance with ENA ETR 132 is not limited to cutting the vegetation around an overhead line. In some cases, DNOs may choose to move the assets underground to achieve the same level of resilience.

them to account for the removal of an overall number of risk points from the network, rather than at specified sites.

Appendix 8 - Environmental Action Plan (EAP): baseline standards

A8.1 DNOs' EAPs should be aligned to the baseline standards set out below. The baseline standards reflect the level of ambition we expect companies to demonstrate for individual areas.

A8.2 Where a DNO considers the baseline standard is not appropriate, the DNO should provide clear justification as to why this is the case. Where relevant, this should be supported **by** stakeholders and the DNO's CEG.

Business carbon footprint (BCF)

- Adopt a science-based target for the company to reduce its scope 1 and 2 BCF by 20xx[144], without relying on international GHG offsetting, that is in line with Net Zero
- Commit to efficient and economic actions to reduce controllable BCF in RIIO-ED2
- Identify metrics, and associated targets, for RIIO-ED2 to track the impact of implementing actions and the overall progress towards the science-based target and Net Zero, against a consistent baseline
- Commit to reporting on BCF reduction and progress towards science-based target and Net Zero using the common BCF methodology. Reporting should include progress in reducing scope 3 emissions.[145]

Sulphur Hexafluoride (SF6)

- Commit to efficient and economic actions to reduce leakage rates and improve management of SF6 assets
- Adopt target(s) for SF6 leakage and/or SF6 asset management

[144] 20XX denotes that companies will need to specify a long term date to achieve the specified target. We would then expect companies to specify the associated RIIO-ED2 milestone.
[145] Scope 3 emissions are a consequence of actions which occur at sources which the DNO does not own or control and which are not classed as Scope 2 emissions. Although a DNO's science-based target does not include scope 3 emissions, DNO's reporting should include progress against reducing scope 3 emissions.

- Commit to reporting on total SF6 bank and leakage reduction rates using a common DNO methodology.

Losses

- Develop and commit to implementing a strategy to efficiently manage both technical and non-technical losses on the DNO's network over the long term. This should include specific actions and performance measures to track the impact of actions in RIIO-ED

- Commit to reporting on the progress of implementing the losses strategy and associated performance measures

- Contribute to the evidence base on the proportion of losses that network companies can influence/control.

Embodied carbon

- Commit to monitoring and reporting on embodied carbon in new projects

- Commit to collaborating with DNO's supply chain on addressing challenges to reduce embodied carbon in the network

- Commit to establishing baseline and a target to reduce embodied carbon on new projects during RIIO-ED2.

Supply chain

- Adopt high standards of environmental management in supplier code, including requirements for public disclosure of metrics and cascading code to their suppliers that are material to company's inputs

- Adopt target of more than 80% of suppliers (by value) meeting code in RIIO-ED2

- Commit to reporting on actual percentage of suppliers (by value) meeting code.

Resource use and waste

- Update procurement processes to embed Circular Economy principles

- Adopt a target for:

- Zero waste to landfill by 20XX
- Recycled and reused materials as a percentage of total materials by 20XX
- Commit to reporting on actual waste to landfill, recycling and reuse as a percentage of total.

Biodiversity/natural capital

- Adopt appropriate tool to assess net changes in natural capital from different options for new connections and network projects
- Adopt appropriate tool to monitor the provision of ecosystem services from network sites and report annually.

Fluid-filled cables

- Adopt a target for reductions in the volume of fluid (oil) used to top up cables.

Noise pollution

- Commit to reporting on actions taken to reduce noise pollution.

NOx and air quality

- Commit to reporting on actions taken to reduce NOx.