



Promoting choice and value

for all gas and electricity customers

Strategy decision for the RIIO-ED1 electricity distribution price control

Reliability and safety

Supplementary annex to RIIO-ED1 overview paper

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Contact: James Hope

Team: RIIO-ED1

Tel: 020 7901 7029

Email: RIIO.ED1@ofgem.gov.uk

Overview:

RIIO-ED1 will reflect the new RIIO model. RIIO is designed to drive real benefits for consumers. It will provide network companies with strong incentives to step up and meet the challenges of delivering a low carbon, sustainable energy sector at a lower cost than would have been the case under our previous approach. RIIO puts sustainability alongside consumers at the heart of what network companies do. It also provides a transparent and predictable framework with appropriate rewards to for delivery.

Having consulted on our strategy for RIIO-ED1 in September 2012 this sub-annex to the 'Supplementary annex – Outputs, incentives and innovation', sets out our decisions on the areas of reliability and safety. This document is aimed at those seeking a detailed understanding of our decisions. Stakeholders wanting a more accessible overview should refer to either the 'Supplementary annex – Outputs, incentives and innovation' or the 'Strategy decision – Overview' documents.

Associated documents

Strategy decision for RIIO-ED1 - Overview

<http://www.ofgem.gov.uk/Networks/ElecDist/PriceCtrls/riio-ed1/consultations/Documents1/RIIOED1DecOverview.pdf>

Links to supplementary annexes

- Strategy decision for RIIO-ED1 - Outputs, incentives and innovation
<http://www.ofgem.gov.uk/Networks/ElecDist/PriceCtrls/riio-ed1/consultations/Documents1/RIIOED1DecOutputsIncentives.pdf>
- Strategy decision for RIIO-ED1 - Business plans and proportionate treatment
<http://www.ofgem.gov.uk/Networks/ElecDist/PriceCtrls/riio-ed1/consultations/Documents1/RIIOED1DecBusinessPlans.pdf>
- Strategy decision for RIIO-ED1 - Uncertainty mechanisms
<http://www.ofgem.gov.uk/Networks/ElecDist/PriceCtrls/riio-ed1/consultations/Documents1/RIIOED1DecUncertaintyMechanisms.pdf>
- Strategy decision for RIIO-ED1 - Financial issues
<http://www.ofgem.gov.uk/Networks/ElecDist/PriceCtrls/riio-ed1/consultations/Documents1/RIIOED1DecFinancialIssues.pdf>
- Strategy decision for RIIO-ED1 - Tools for cost assessment
<http://www.ofgem.gov.uk/Networks/ElecDist/PriceCtrls/riio-ed1/consultations/Documents1/RIIOED1DecCostAssessment.pdf>
- Strategy decision for RIIO-ED1 – Reliability and safety
<http://www.ofgem.gov.uk/Networks/ElecDist/PriceCtrls/riio-ed1/consultations/Documents1/RIIOED1DecReliabilitySafety.pdf>
- RIIO-ED1 Glossary of terms
<http://www.ofgem.gov.uk/Networks/ElecDist/PriceCtrls/riio-ed1/consultations/Documents1/RIIOED1SConGlossary.pdf>

Links to other associated documents

- Strategy consultation for RIIO-ED1 - Overview
<http://www.ofgem.gov.uk/Networks/ElecDist/PriceCtrls/riio-ed1/consultations/Documents1/RIIOED1SConOverview.pdf>
- Open letter consultation on the way forward for RIIO-ED1
<http://www.ofgem.gov.uk/Networks/ElecDist/PriceCtrls/riio-ed1/consultations/Documents1/RIIOED1LaunchOpenLetter.pdf>
- Handbook for implementing the RIIO model
<http://www.ofgem.gov.uk/Networks/rpix20/ConsultDocs/Documents1/RIIO%20handbook.pdf>
- Electricity Distribution Price Control Review 5 (DPCR5) Final Proposals
http://www.ofgem.gov.uk/Networks/ElecDist/PriceCtrls/DPCR5/Documents1/FP_1_Core%20document%20SS%20FINAL.pdf

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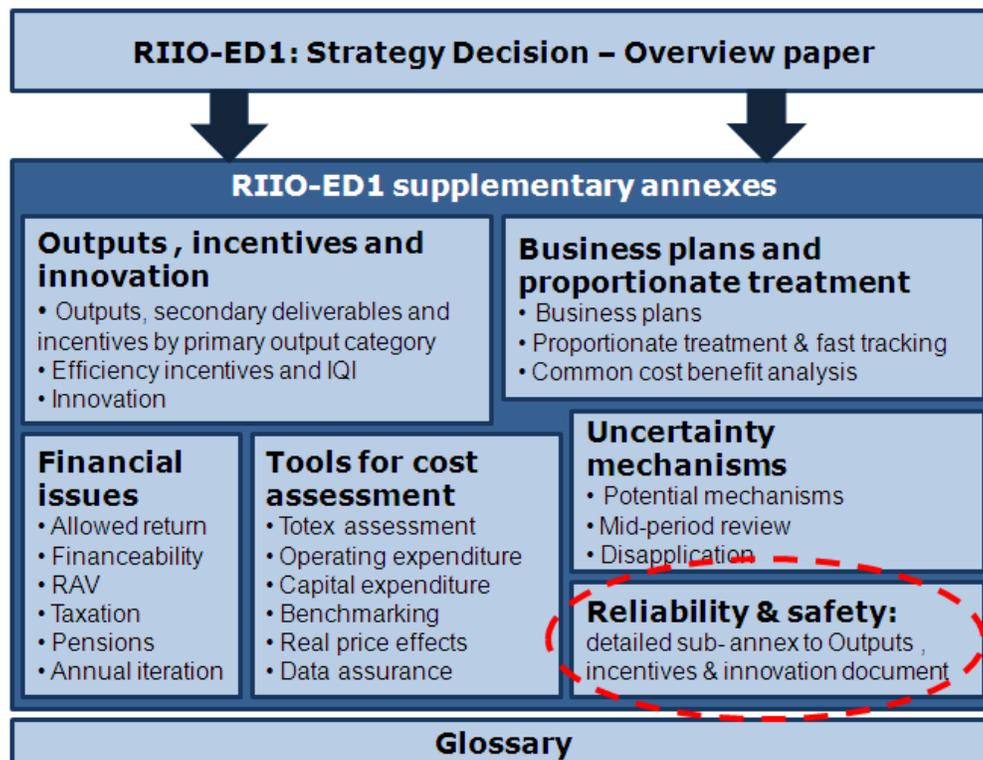
1. Introduction

Chapter Summary

This chapter sets out what is covered in this document. We set out where this document fits in with the 'Strategy decision for the RIIO-ED1 electricity distribution price control' and how the document is structured.

- 1.1. The next electricity distribution price control, RIIO-ED1, will be the first time the new RIIO model is reflected in electricity distribution. This document is a sub-annex to the 'Supplementary annex – Outputs, incentives and innovation'.
- 1.2. This document is aimed at those who want an in-depth understanding of our decisions on reliability and safety. Stakeholders wanting a more accessible overview should refer to either the 'Supplementary annex – Outputs, incentives and innovation' or the 'Strategy decision – Overview documents'. Figure 1.1 provides a map of the documents published as part of the March strategy decision.

Figure 1.1 Map of RIIO-ED1 strategy decision documents



Links to these documents can be found in the 'Associated documents' section of this document

1.3. The remainder of this document is structured as follows:

- Chapter 2 provides an overview of the primary outputs, secondary deliverables and incentives in the areas of reliability and safety. It also sets out how Climate Change Adaption should be approached in this area.
- Chapter 3 chapter presents our decisions on the health and safety outputs that companies should deliver over the next price control period and the incentive mechanisms that will be used.
- Chapter 4 details our decisions in relation to the interruptions incentive scheme.
- Chapter 5 sets out our decisions on Load Indices (LI) for RIIO-ED1.
- Chapter 6 set out our decisions for developing existing asset health arrangements in RIIO-ED1. These include our decisions on proposals to introduce a measure of asset criticality into the framework and to create a composite risk index.
- Chapter 7 sets out our decisions on changes to the guaranteed standards of performance in RIIO-ED1.
- Chapter 8 sets out our decision on improving the quality of service offered to customers deemed worst served.
- Chapter 9 sets out our decisions on the area of network resilience.

2. Overview of reliability and safety

Chapter Summary

This chapter summarises our decisions for the output areas of reliability and safety in RIIO-ED1. It gives an overview of the primary outputs, secondary deliverables and incentives in these two areas. It also sets out how Climate Change Adaptation should be approached in this area.

We have set out full details of our decisions, summaries of the September strategy consultation proposals and responses to these, and the reasons for our decisions in the corresponding chapters of this document.

Introduction

- 2.1. The long-term safety and reliability of the electricity distribution networks and their impact on customers are key priorities for Ofgem. Customers expect the distribution network operators (DNOs) to maintain a safe network while minimising the number and duration of supply interruptions. We also expect DNOs to use their price control funding to prevent longer-term deterioration of the network.
- 2.2. Whilst working to improve reliability and restoration, DNOs must maintain compliance with their overall requirement to ensure that their networks are designed and operated in a way that ensures the safety of the public and their employees.
- 2.3. This chapter summarises the decisions we have made in the area of reliability and safety as well as a summary of responses to the high-level question asked in the summary chapter of the September strategy consultation. The relevant chapters of the document explain our decision in each area in greater depth and set out the specific proposals consulted on, summarise responses to these proposals and explain the reasons for our decisions.

Health and safety

- 2.4. Our decision is that the appropriate primary output for health and safety is compliance with the safety requirements set out in legislation and enforced and regulated by the Health and Safety Executive (HSE). We have decided not to introduce any financial incentive.
- 2.5. We are introducing secondary deliverables which have an element of safety performance embedded within them. These are the health indices, criticality indices and composite risk indices. These indices provide a framework for managing network risks. They will include some safety implications and

provide a useful means of monitoring and ensuring that the DNOs' compliance with future safety requirements is not put at risk by decisions made during RIIO-ED1.

- 2.6. As we set out in our consultation, DNOs must comply with all health and safety legislation. The HSE enforces regulations that are contained within this legislation and has powers to secure compliance with the law. Our view is that our primary output and secondary deliverables should therefore support rather than duplicate the HSE's functions. Our decision not to apply a financial incentive is also consistent with the RIIO principles which set out that we will not use automatic financial mechanisms that could have a detrimental effect on safety.

Reliability

Introduction

- 2.7. Customer research indicates that the reliability of supply remains the most important output category for customers.¹ We will continue with the Distribution Price Control Review 5 (DPCR5) package of outputs and incentives to drive the DNOs to ensure their networks are reliable both in the short and long term. This package consists of:
- Interruptions Incentive Scheme (IIS) – DNOs are incentivised on the number and duration of network supply interruptions versus a target derived from benchmarked industry performance
 - guaranteed standards of performance – customers are eligible for direct payment of specific fixed amounts where the DNOs fail to deliver them specified minimum levels of reliability performance
 - worst served customers - DNOs have access to funding to improve the reliability of performance experienced by a subset of customers experiencing a specific level of interruptions. This funding is given on the condition that the specific customers experience a specified improvement in service
 - health and load indices – these are secondary deliverables designed to tie specific price control network investment to specific in-period risk reduction, which is associated with the condition and loading of assets. These metrics encourage longer-term strategies by linking the longer-term reliability

¹ Findings from the Ofgem Consumer First Panel Year 4:
<http://www.ofgem.gov.uk/Networks/ElecDist/PriceCntrls/riio-ed1/consultations/Documents1/RIIOED1ConResConsumerPriorities.pdf>
<http://www.ofgem.gov.uk/Networks/ElecDist/PriceCntrls/riio-ed1/consultations/Documents1/RIIOED1ConResConsumerPriorities.pdf>

benefits of healthier and less highly-loaded assets to a measurable deliverable within the price control

- resilience – this refers to the ability of the electricity distribution networks to continue to supply electricity to customers during disruptive events such as floods or severe storms. DNOs are required to design and operate their networks in accordance with relevant statutes, codes and standards (such as Engineering Recommendation P2/6).² For RIIO-ED1 we have decided we will monitor and publish secondary deliverables for performance in each of the areas of flooding, Black Start (which refers to actions necessary to restore electricity supplies following total or widespread shutdown of the GB transmission system) and overhead lines under the overall banner of “Network Resilience.”

Interruptions Incentive Scheme

- 2.8. We are retaining the Interruptions Incentive Scheme (IIS) in RIIO-ED1, with some modifications to the DPCR5 scheme.

Incentive rates

- 2.9. We have aligned the IIS incentive rates with those proposed as part of the RIIO-T1 Energy Not Supplied incentive. We have decided that the efficiency incentive rate should be applied to these rates. These changes ensure that the IIS incentive rates best reflect the value that customers put on supply interruptions.
- 2.10. DNOs can propose alternative incentive rates in their well-justified business plans. Proposals should include justification for why the incentive rates should differ from those we have set out.

Revenue exposure

- 2.11. We have decided that the overall revenue exposure to the IIS will be 250 return on regulatory equity (RORE) basis points (bps). This will be symmetrical, meaning that 250 RORE bps will be the maximum reward or penalty available in each year of RIIO-ED1. This will be converted into a fixed £m value, to be set out in the licence.
- 2.12. We believe that this range is more reflective of credible DNO performance ranges than the higher ranges put forward within the September strategy consultation.

² Referenced in Guidance Note 1 (p. 5) of the Distribution Code:
<http://www.energynetworks.info/storage/Distribution%20Code%20v%2019.pdf>

Targets

- 2.13. We have decided to separate planned and unplanned targets to provide clarity for stakeholders and due to the fact that there are different methods used to calculate planned and unplanned targets.

Planned target setting

- 2.14. A certain level of planned interruption will inevitably be required to allow for the necessary asset expenditure plans in RIIO-ED1. As customers are inconvenienced less by planned outages, where sufficient notice is given, we will weight the incentive on these interruptions at 50 per cent relative to equivalent levels of unplanned interruptions.
- 2.15. Annual DNO targets for planned interruptions will be set at the annual average level of planned interruptions and minutes lost over a previous three year period. There will be a two year lag on the years utilised in setting the target, so the starting 2015-16 target would be the average annual performance over the 2011-12 to 2013-14 period. This three-year average performance rolling target will update on an annual basis. DNOs will be rewarded or penalised based on the difference between their actual performance and the target using the incentive rate that is half that of unplanned interruptions.
- 2.16. DNOs can propose alternative targets for their planned interruptions in their well-justified business plans. Proposals should include justification for why targets should differ from those we have set out.

Unplanned target setting

- 2.17. We have decided to set unplanned targets for each DNO up front in advance of RIIO-ED1, using the same methodology as indicated in the September strategy consultation. We have decided to use data up to 2012/13 for setting unplanned targets for all DNOs. In Appendix 2 of this document we set out indicative targets for RIIO-ED1. These have been set using the methodology we will be using for RIIO-ED1 targets, but without the future performance figures that will be included in the setting of the final targets.
- 2.18. DNOs can propose alternative targets for unplanned interruptions in their well-justified business plans. Proposals should include justification for why targets should differ from those we have set out.

Exceptional events

- 2.19. Particular large interruptions can occur that DNOs have limited ability to prevent. In order to reduce the volatility and impact of these occurrences on their performance (and future target setting), these "exceptional events" are

excluded from annual performance figures. Exceptional events are classified as being either a severe weather exceptional event or a one-off exceptional event.

- 2.20. Severe weather exceptional events refer to a level of interruptions occurring for a period of time that result directly from bad weather. To be considered a severe weather exceptional event, a specific and verified number of higher voltage interruptions, directly caused by bad weather, are required to have occurred within a 24 hour period. This is referred to as the severe weather exceptional event threshold.
- 2.21. As proposed in the September strategy consultation, we have decided to maintain this severe weather exceptional event threshold at eight times the average daily higher voltage fault rate. The indicative threshold numbers using data including the 2011-12 reporting year are presented in Appendix 2.
- 2.22. One-off exceptional events are those where a single cause outside of the DNO's control causes a significant level of interruption. To be considered a one-off event, a specific and verified number of interruptions and/or minutes lost are required to have resulted. These numbers are referred to as the one-off exceptional event thresholds.
- 2.23. We have also decided to maintain the one-off exceptional event thresholds of 25,000 customers interrupted and two million customer minutes lost.

Cut-out failures

- 2.24. We have decided not to include interruptions resulting from a single premise cut-out fault within the IIS. This is primarily driven by concern over the robustness of the relevant historical data and its suitability for setting targets. We have put in place improved reporting during DPCR5 which will allow us to explore the possibility of introducing these failures into the IIS as part of RIIO-ED2.

Short interruptions

- 2.25. Having explored the possible approaches to incentivising the reduction of short interruptions, we have decided that it is not appropriate to implement such an incentive for RIIO-ED1. This is based on our research on customer willingness to pay and awareness of the potential for adverse interactions and overlaps between a scheme to reduce short interruptions and the IIS.

Guaranteed standards of performance

2.26. The guaranteed standards of performance (Statutory Instrument (SI) No. 698, 2010)³ relate to the quality of network service. We have decided to amend the guaranteed standards as follows:

- the 18 hour normal weather interruption duration standard will be reduced to 12 hours
- the Highlands and Islands exemptions from specific guaranteed standards will be removed
- the DNO exemption from paying out in the event of a one-off exceptional event will be removed
- the specific levels of payment identified within SI No. 698, 2010 will be up-rated in line with the forecast inflation rate at the midpoint of RIIO-ED1 (2018-19) and rounded to the nearest £5.

2.27. The guaranteed standards relating to severe weather will continue as in DPCR5. The exceptional event thresholds for the guaranteed standards will continue to be aligned with the IIS severe weather thresholds.

2.28. Payments to customers on the priority service register should be made automatically as DNOs will be aware of when, and for how long, they have been interrupted.

2.29. We do not expect DNOs to make automatic payments to other eligible customers that are not on the priority service register. As DNO systems are currently unable to individually identify which premises are impacted by individual interruptions, customers will still need to apply to their DNO for payments. Until smart meters are rolled out, we do not think it is appropriate to expect DNOs to make payments to these customers automatically.

2.30. DNOs are encouraged to set out in their business plans their proposals on how they can better inform their customers of their eligibility for payment, as well as raising awareness of the guaranteed standards among their customers by providing clear links on their website. This should ensure that eligible customers are more aware of their entitlements under the guaranteed standards. To further encourage payments being made to eligible customers, we have decided to apply a penalty rate on unpaid compensation.

2.31. The changes that we have made to the guaranteed standards were widely supported by stakeholders. In particular the reduction of the normal weather standard from 18 to 12 hours and the removal of exemptions covering certain circumstances for one-off exceptional events and the Highlands and Islands, both received support.

³ http://www.legislation.gov.uk/ukxi/2010/698/pdfs/ukxi_20100698_en.pdf

Worst served customer mechanism

- 2.32. We have decided to retain the current mechanism to provide a conditional allowance on a use it or lose it basis that requires DNOs to improve the reliability of service experienced by customers experiencing a service significantly worse than the majority of customers.
- 2.33. We have made modifications to aspects of the existing scheme, permitting DNOs to propose appropriate parameters to particular areas that have previously been prescribed by Ofgem. An overall allowance of £76.5m will be distributed across DNOs in line with the number of qualifying customers in each region. Within the constraints of this allowance, based on engagement with relevant stakeholders and likely solution costs, DNOs will be able to propose an appropriate cap on the expenditure per customer covered by the scheme. DNOs will also be able to propose the service improvement that these customers will experience.
- 2.34. Further details of our decision on the worst served customer mechanism are set out in Chapter 8.

Secondary deliverables

Load Index (LI)

- 2.35. The LI provides a measure of the loading of the substations on each DNO's primary network.
- 2.36. We have worked with industry to develop greater consistency in calculating loading and the classification of substations into LI ratings. We set out the classifications for the LI1 - LI5 ratings that are to be used in business plans within Chapter 5. We have decided that the DNOs' business plans will set out the funding that they will need to deliver a specific level of loading across their substations, rather than being funded for a specific level of improvement. Chapter 5 also sets out how the impacts of distributed generation (DG) growth are to be captured in the LI framework.

Health, criticality and risk indices

- 2.37. Health and safety compliance must remain the priority for DNOs when developing their business plans and making investment decisions. The health, criticality and risk indices are secondary deliverables, which we will use to assess changes in the respective position of DNOs' networks in these areas over time.

- 2.38. We have decided to modify the existing health index (HI) by stripping out the criticality element and creating a separate criticality index. The criticality index will be measured on a scale of C1 to C4 and will include criticality elements not previously embedded in the HI. We believe this will allow DNOs to more clearly demonstrate that actions taken by them during RIIO-ED1 to reduce network risk, take account not only the probability that an asset fails but also the expected impact of such failures.
- 2.39. The health and criticality scores for relevant assets will be combined and consolidated into a newly developed composite risk index. Using DNOs' forecasts for their network's position, according to the risk index, we will be able to determine an asset risk score improvement, or delta, which will represent the DNOs' agreed deliverables for RIIO-ED1. We believe that such a framework will enable us to quantify improvements over time and provide sufficient flexibility for DNOs to pursue asset management practices they deem to be most appropriate for their networks.
- 2.40. At the end of RIIO-ED1 the risk index will attract a reward or penalty for DNOs who have materially over or under delivered against their agreed risk score improvement. This incentive mechanism will contain two elements. If a DNO has not delivered the agreed total asset risk score improvement and does not have a reasonable justification for doing so, then a downward adjustment to their RIIO-ED2 allowed revenue will be applied. The DNO will also be subject to a penalty of 2.5 per cent of the value of the under delivery. Conversely, where a DNO has delivered more than the agreed total asset risk score improvement, and this improvement has been justified, an upward adjustment to their RIIO-ED2 allowed revenue will be applied. The DNO will also receive a reward of 2.5 per cent of the value of the over delivery. Consultation respondents agreed with our proposal to include a financial incentive mechanism, and we believe it will help to drive good asset management practice through efficient and timely investment decisions over the course of RIIO-ED1.

Resilience

- 2.41. We have decided that for RIIO-ED1 we will monitor and publish performance against specific secondary deliverables relating to resilience. For each of the areas of flooding, Black Start and overhead lines we will track DNO performance in removing risk against the level of risk reduction provided by their agreed settlement.
- 2.42. High impact, low probability (HILP) events are extreme events which could potentially result in the prolonged loss of electricity supply. The impact of such events are beyond the level of credible first or second outage event impacts, which distribution networks are designed to ensure high levels of security of supply for. For HILP events, we will maintain the option for the government to provide guidance to us on what work is required by the DNOs and whether this should be funded through the price control. If we receive this guidance in a timely enough fashion for us to consider it as part of the

mid-period review for RIIO-ED1, we will do so. If we receive such guidance after the timeframe in which we can include it in the mid-period review, we will instead consider appropriate funding mechanisms during the review period for RIIO-ED2, for possible inclusion then. Responses to the consultation were in favour of this approach.

Climate Change Adaptation

- 2.43. Climate change is likely to have an increasing influence on both average conditions and the frequency and severity of extreme weather in the UK. This could have an adverse impact on DNOs' safe and reliable operation of their networks, if appropriate risk management measures are not in place. This is particularly relevant for those assets which DNOs expect to be in operation for several decades.
- 2.44. The main factors affecting electricity networks from current climate change projections are:
- hotter average and extreme temperatures, particularly in summer
 - more rain in winter and more extreme downpours all year – leading to a greater risk of flooding
 - sea level rises and greater storm surges – leading to a greater risk of coastal flooding.
- 2.45. The potential impacts of these changes are described in more detail in the ENA's 'Electricity Networks Climate Change Adaptation Report (2011)'.⁴
- 2.46. Ofgem expects DNOs to present evidence for how risks to their networks from extreme weather and climate change have been assessed using the latest climate projections and science. DNOs should also explain how they plan to manage climate risks to make sure that new and existing schemes are sustainable. DNOs' business plans should set out:
- the risks climate change pose to their services
 - how these risks have been assessed
 - what options have been influenced by climate change, and how resilient these options are to different climate change projections.

⁴ Energy Networks Association 'Electricity Networks Climate Change Adaptation Report', 2011: <http://archive.defra.gov.uk/environment/climate/documents/adapt-reports/04distribute-trans/ena-networks.pdf>

- 2.47. The specific assets and areas of investment that we would expect DNOs to consider in regard to these risks and more broadly their networks' overall resilience, would include:
- flooding resilience
 - overhead electricity lines eg overhead line (OHL) ratings and structural strength of supporting structures
 - vegetation infestation eg changes in growing season prompted by climate change
 - underground Cables eg the impact of climate change on cable ratings
 - substation earthing eg the impact of climate change on earth resistance
 - transformer and substation resilience.
- 2.48. Climate change cannot be used to justify investment in unnecessary infrastructure. If business plans include a need for greater investment to cope with climate change, DNOs should justify how the extra investment will save money and protect services in the future. This may involve cost benefit assessments for potential issues in order to determine the most appropriate investment strategy. Details of this are set out in chapter 5 of the 'Supplementary annex – Business plans and proportionate treatment'. Where appropriate, this will include consideration of customers' willingness to pay for adaptation measures, as assessed by Ofgem, and take into account any wider societal aspects.
- 2.49. Sometimes it may be appropriate for a DNO to delay investment in some measures to reduce climate risk. This is to ensure that it leaves these options open so it has the ability to respond flexibly and employ these measures should future needs demand this.

3. Health and Safety

Chapter Summary

This chapter presents our decisions on the health and safety outputs that companies should deliver over the next price control period, and the incentive mechanisms that will be used. We also summarise the views expressed in response to our proposals for primary outputs and secondary deliverables for health and safety.

Background

- 3.1. Following publication of the strategy consultation document, the Health and Safety Executive (HSE) pointed out some necessary clarifications to be made to the Safety chapter. These clarifications have been reflected in our decision.

Our decision

- 3.2. The primary output for health and safety is compliance with the safety requirements set out in legislation and enforced and regulated by the HSE. We have decided not to introduce any financial incentive. We are introducing secondary deliverables which have an element of safety performance embedded within them. These are the health indices, criticality indices, and composite risk indices which are explained in more detail in Chapter 6.
- 3.3. DNOs must comply with all relevant health and safety legislation including:
 - The Electricity Safety, Quality and Continuity Regulations (ESQCR) 2002 (as amended) that specifies the standards DNOs (and their contractors) must adhere to on their networks. It also specifies events which must be reported to the Secretary of State (for example deaths and injuries occurring to members of the public caused by incidents on the electricity networks).
 - The Health and Safety at Work Act (HSWA) 1974, which makes provision for securing the health, safety and welfare of persons at work, and for protecting others against risks to health and safety in connection with the activities of persons at work.
 - The Electricity at Work Regulations (EAWR) 1989, which ensures health, safety and welfare of persons at work specifically in relation to electricity including the standard of equipment.
- 3.4. The HSE enforces these regulations and has powers to secure compliance with the law. HSE inspectors may offer DNOs information and advice, both face to face and in writing. Where appropriate, HSE may serve improvement and

prohibition notices, and they may prosecute (or report to the Procurator Fiscal with a view to prosecution in Scotland).

- 3.5. We envisage that our strong bilateral engagement developed through previous price controls and the RIIO-ED1 review process will be ongoing so that:
- the HSE can continue to assist Ofgem to understand the safety obligations that DNOs have
 - DNOs are aware of their health and safety obligations and are able to quantify the efficient cost of their current and proposed work towards meeting these.
- 3.6. An additional issue, which we did not refer to in the September strategy consultation, is that of cut out safety. We have decided that it is important DNOs take up certain opportunities afforded by RIIO-ED1 to address cut out safety, with particular reference to actions agreed by the meter operators' code of practice agreement (MOCOPA).⁵ This should involve DNOs building up a more detailed picture of their cut out populations.

Summary of consultation proposals

- 3.7. In the strategy consultation document we proposed that the primary output for safety should be compliance with the safety requirements set out in legislation and enforced and regulated by the HSE. This is because the HSE is the principal regulator and this primary output supports rather than duplicates their functions. We proposed that for this primary output, no financial incentive would be included in the price control.
- 3.8. We proposed that the secondary deliverables for safety should be the health, criticality and risk indices. These secondary deliverables provide a framework for managing network risks including some safety implications. Our view was that asset health, criticality and risk indices provide a useful means of monitoring and ensuring that the DNOs' compliance with future safety requirements is not put at risk by decisions made during the price control period.

Summary of responses

- 3.9. Respondents were broadly supportive of our proposed output and secondary deliverables and no additional outputs and deliverables were suggested. The majority of respondents agreed with our proposal not to include a financial incentive for the primary safety output, although one respondent expressed disappointment. This respondent felt that RIIO-ED1 presents an opportunity

⁵ <http://www.mocopa.org.uk/>

for Ofgem to target improved safety performance through an incentive mechanism. The respondent suggested that this could be achieved either through a one off IQI reward for business plans that demonstrate a commitment to safety, or through a discretionary reward scheme for exceptional safety performance. They also felt that DNOs should not be eligible for fast tracking unless their safety commitment was demonstrated in their well justified business plans.

- 3.10. The majority of respondents also supported our proposal to create an incentive framework for our proposed secondary deliverables, with only one respondent not supportive. One of the respondents that supported this proposal felt it would be unhelpful to describe the proposed deliverables as “secondary deliverables for electricity distribution safety” as risk indices such as these are not safety specific. We have adjusted the definitions of these secondary deliverables to reflect this.

Reasons for our decision

- 3.11. As the majority of respondents agreed with our proposals, with only one respondent disagreeing, we believe it is appropriate to adopt the approach to outputs and incentives that we set out in the September strategy consultation. Our views that our primary output should support rather than duplicate the HSE’s functions and that the appropriate secondary deliverables for safety are the health, criticality and risk indices therefore remain unchanged. We will continue our strong bilateral engagement with the HSE, developed through previous price controls, and through the RIIO-ED1 review process.
- 3.12. Our decision not to apply a financial incentive to the safety output is also consistent with the RIIO principles which set out that “we will not use automatic financial mechanisms that could have a detrimental effect on safety.”⁶ In taking this approach, our primary output will not stipulate an exhaustive list of legislative requirements, as these are explained in detail elsewhere and enforced by the HSE. We will sometimes make reference to specific examples of legal obligations such as ESQCR, HSWA and EAWR. This will ensure that the primary output remains relevant if there are changes to legislative requirements for the DNOs during the RIIO-ED1 period.
- 3.13. We have also decided not to include an additional reputational incentive for DNOs for their performance on health and safety. The primary reason for this is that data on safety performance is already collected and published elsewhere for example in the HSE public register of enforcement notices.

⁶ From the RIIO Handbook p.33:
<http://www.ofgem.gov.uk/networks/rpix20/consultdocs/Documents1/RIIO%20handbook.pdf>

- 3.14. With regards to cut out safety, part of DNOs' work during the smart meter roll out will involve the inspection and replacement of cut outs. As set out in the 'Supplementary annex – Outputs, incentives and innovation', DNOs will be able to pass through any fixed costs of smart metering data until completion of the smart meter roll out. There will also be a volume driver for DNO related call outs that are attributable to the roll out of smart meters, as set out in the 'Supplementary annex – Uncertainty mechanisms'. Given these funding mechanisms, we believe that DNOs should take the opportunity during RIIO-ED1 to build up a more detailed picture of their cut out populations, which will include knowledge of the age and type of cut outs inspected during the smart meter roll out. This information should be used to identify any potential safety risks attributable to cut outs on DNOs' networks.

4. Interruptions incentive scheme

Chapter Summary

This chapter details our decisions in relation to the interruptions incentive scheme (IIS). In particular, it covers the areas of incentive rates, target setting, revenue exposure and exceptional events, taking account of responses to the September strategy consultation.

Background

- 4.1. The Interruptions Incentive Scheme (IIS) is designed to encourage DNOs to manage the number and duration of supply interruptions. The IIS provides an incentive for DNOs to invest in and operate their distribution system to manage and reduce both the frequency and duration of power cuts experienced by their customers, where efficient to do so.

Our decision

- 4.2. We have decided to continue the IIS as the primary output and incentive for network reliability. We have made amendments to the following aspects of the existing framework which are set out in more detail later in the chapter:
- separating planned and unplanned targets
 - unplanned target setting, consisting of:
 - benchmarking for unplanned targets
 - severe weather exceptional events
 - one-off exceptional events
 - improvement factors
 - planned target setting
 - incentive rates for the IIS
 - revenue exposure
 - smart meter roll-out and the impact on IIS
 - cut-out failures
 - short interruptions.

Separating planned and unplanned targets

- 4.3. We have decided to separate planned and unplanned targets due to the fact that we are using different methods to calculate planned and unplanned targets and to provide clarity for stakeholders.

Unplanned target setting

- 4.4. We have decided to set unplanned targets for each DNO up front, in advance of RIIO-ED1, using the methodology indicated in the September strategy consultation document. We have decided to use data up to 2012-13 for setting unplanned targets for all DNOs. We have set out indicative targets for RIIO-ED1 in Appendix 2, using data up to 2011-12. To assist DNOs in anticipating where their targets may be set at for RIIO-ED1 a glidepath has been applied to the targets.
- 4.5. DNOs can propose alternative targets for unplanned interruptions in their well-justified business plans. Proposals should include justification for why targets should differ from those we have set out.

Severe weather and one-off exceptional events

- 4.6. We have decided to maintain the existing severe weather and one-off exceptional events mechanisms in the IIS. The severe weather mechanism removes the impact of extreme weather periods such as storms from the DNOs' performance, once certain thresholds have been breached. The one-off exceptional event mechanism removes certain incidents where DNOs have limited ability to prevent or reduce the volatility and impact of occurrences on their performance, such as wilful damage or theft to a DNO's assets. As such appropriate adjustments are made to the DNO's performance when relevant thresholds and exceptionality requirements are met. The indicative thresholds that will apply for RIIO-ED1 are presented in Appendix 2. We will finalise the thresholds that will apply for RIIO-ED1 using the 2012-13 data.
- 4.7. We have decided not to introduce a mechanism for substituting average performance during one-off exceptional events.

Improvement factors

- 4.8. For the RIIO-ED1 targets we have decided to apply improvement factors to both the unplanned customers interrupted (CI)⁷ and customer minutes lost (CML)⁸ target methodologies. The higher CI improvement factor of 1.5 per cent only applies until such time as the DNO is meeting the benchmark performance used in setting the unplanned CI targets. The CML improvement factors will apply to every DNO's CML performance targets. The values that will apply for RIIO-ED1 are presented in Appendix 2.

⁷ Customers Interrupted (CI) is a measure of the number of customers interrupted per 100 connected customers.

⁸ Customer Minutes Lost (CML) is a measure of the number of customer minutes lost per customer.

Planned target setting

- 4.9. We have decided that the planned targets for RIIO-ED1 will be based on a three year rolling average, with a two year lag. This is set out in the formula below.

$$\text{Planned target}_{\text{year } t} = \frac{\sum(\text{Planned Perf.}_{\text{year } t-4} + \text{Planned Perf.}_{\text{year } t-3} + \text{Planned Perf.}_{\text{year } t-2})}{3}$$

- 4.10. DNOs can propose alternative targets for planned interruptions in their well-justified business plans. Proposals should include justification for why targets should differ from those we have set out.

Incentive rates for the IIS

- 4.11. For RIIO-ED1 we have decided to align the IIS CI and CML incentive rates with the value of lost load (VoLL) used as part of RIIO-T1. In calculating the CI incentive rate, we have consciously not apportioned the VoLL across CI and CML. The incentive rates for all DNOs to apply throughout RIIO-ED1 for CI and CML are outlined in Appendix 2.
- 4.12. We will apply the efficiency incentive to the IIS incentive rates.
- 4.13. Given that we have applied the nationwide RIIO-T1 VoLL evenly across all DNOs, we are willing to consider DNOs setting their own incentive rates in their well-justified business plan. Proposals should include justification for why the incentive rates should differ from those that we have set out.

Revenue exposure

- 4.14. We have decided to reintroduce a cap on the IIS revenue exposure for upside performance which will be symmetric with the downside exposure. Both will be set at 250 RORE bps per annum. The indicative values using the latest view of regulatory equity are shown Appendix 2.
- 4.15. Notwithstanding the downside limit, if a DNO is consistently hitting the maximum penalty then we will have power via the licence, to take appropriate action, including enforcement action where deemed necessary.

Smart meter roll-out and the impact on IIS

- 4.16. We have decided that for the purposes of IIS reporting during RIIO-ED1, DNOs should provide IIS performance data generated by smart meters to Ofgem where possible, along with the data derived from the current recording approach. We expect that DNOs should commence planning their requirements (eg IT systems) for using smart meter derived data for

performance reporting during RIIO-ED1, and comment on this in their business plans. As is currently the case under the reporting of the IIS, the time of first notification will be the start time of an incident regardless of the source of the notification (ie by a telephone call from a customer or through a smart meter message).

Rebasing mechanism

- 4.17. We have decided that we will not use a rebasing mechanism during RIIO-ED1 for resetting targets.

Cut-out failures

- 4.18. The DNOs will be required to report cut-outs faults in greater detail for RIIO-ED1 but this reporting will continue to be outside of the incentive itself.

Short interruptions

- 4.19. We have decided not to incentivise short interruptions (ie those less than three minutes) for RIIO-ED1.

Summary of consultation proposals

Separating planned and unplanned targets

- 4.20. We proposed separating these targets in our consultation as different methods are used in setting the planned and unplanned elements of the IIS, due to the varying levels of robustness of the data.

Unplanned target setting

- 4.21. We consulted on four potential options to use for unplanned targets: set up front; rolling average; capped rolling average; or allowing DNOs to set their own targets. Each approach had different aspects which we discussed. We outlined that our preferred option was to set targets up front for all DNOs using the established benchmarking process and also to apply improvement factors to the targets.

Severe weather and one-off exceptional events

- 4.22. In the consultation we discussed the impact that unplanned events cause on a DNO's interruptions performance. The two categories of exceptional events, are severe weather (such as those caused by storms and lightning), and one-off events (such as those caused by vandalism). We proposed to retain and update the thresholds that apply to these mechanisms, and outlined the

severe weather thresholds. For one-off exceptional events we also considered the option of replacing exceptional event days performance with average performance for the period.

Improvement factors

- 4.23. We proposed that the improvement factors would only apply after setting the initial CI and CML targets for the first year of RIIO-ED1. We also looked at the RIIO-GD1 rolling incentive mechanism on shrinkage and asked for views on whether such a mechanism was needed for customer interruptions and customer minutes lost as part of RIIO-ED1.

Planned target setting

- 4.24. We outlined two options for setting planned targets. The options were the rolling target approach or allowing DNOs to set their own targets aligned with their business plan.

Incentive rates for the IIS

- 4.25. In our consultation we outlined the interaction between the IIS and the efficiency incentive mechanism and proposed to adopt a consistent valuation of lost load as we used in RIIO-T1. We also proposed to take account of funding provided by customers via the efficiency incentive by multiplying the CI and CML incentive rates by the efficiency incentive.

Revenue exposure

- 4.26. We consulted on whether or not to reintroduce a cap on the upside IIS revenue exposure and to have symmetric exposure on the upside and downside of between 250 and 300 RORE basis points.

Smart meter roll-out and the impact on IIS

- 4.27. In the September strategy consultation we discussed using data from smart meters in the IIS, both for reporting and setting targets in RIIO-ED2. We also outlined at a high level our expectations for DNOs to ensure that they make adequate preparations for the effective use of this new data through adequate IT systems, etc.

Rebasing mechanism

- 4.28. Due to the uncertainty surrounding the impact of smart meters on IIS performance, we proposed to include a rebasing mechanism within the RIIO-ED1 licence.

Cut-out failures

- 4.29. We did not outline any proposal in the consultation on cut-out failures and IIS reporting. Under the current reporting rules fixing a cut-out fault which affects one customer, but requires all other customers on the feeder to be interrupted, is not counted under the IIS. Individual customers who experience such interruptions are covered by relevant guaranteed standards.

Short interruptions

- 4.30. In the September strategy consultation, we proposed not to introduce an incentive to reduce the number of short interruptions that customers experience.

Summary of consultation responses

Separating planned and unplanned targets

- 4.31. Respondents to this question supported our proposed treatment of these targets. They believed this would create clarity for stakeholders as the targets are not readily comparable due to the different methodologies used in their calculation.

Unplanned target setting

- 4.32. Most respondents felt that setting targets for RIIO-ED1 up front would provide clarity for customers, ensure readily measurable targets against performance for stakeholders and create certainty for DNOs with regards to investment decisions. The application of a glidepath to the unplanned target setting method was considered appropriate by one respondent. The capped rolling targets approach was favoured by one respondent.
- 4.33. Respondents felt that the rolling incentive mechanism on shrinkage proposed for RIIO-GD1 could be adopted but would add significant complexity compared to maintaining our current approach. They noted that it would introduce an additional level of uncertainty for DNOs. Respondents also suggested that in presenting this information the performance assessment at the end of the price control would be misleading and confusing for stakeholders. If we were to introduce this approach for the IIS, it was suggested that it may be appropriate to do so in a two stage process over RIIO-ED1 for implementation in RIIO-ED2.

Severe weather and one-off exceptional events

- 4.34. Respondents felt that it was appropriate to continue these processes as they are seen to be fair and reasonable for determining performance. Another

aspect reflected in responses related to the proposals concerning the changes being made to the guaranteed standards of performance, (SI 698, 2010). Respondents agreed with our proposal to reduce the normal weather standard duration from 18 to 12 hours. One respondent felt that replacing exceptional event days with period average performance would be a complication that is unnecessary given that most one-off exceptional events affect only a small number of days.

Improvement factors

- 4.35. The CI improvement factors which were set at 0.5 per cent and 1.5 per cent were queried by some respondents. One respondent, whilst agreeing with the use of improvement factors, suggested that the proposed values were too blunt. Other respondents felt that the anticipation of performance improvement was appropriate.

Planned target setting

- 4.36. The consultation responses presented varying views on the different options with more respondents favouring the rolling targets ahead of the option to allow DNOs to set their own targets. The respondents that favoured targets set using the rolling mechanism felt that it would allow DNOs to find their own appropriate economic level of planned interruptions over RIIO-ED1. They believed it would reflect actual changes in investment decisions by companies. They noted that this would be different from the approach in DPCR5, which was based on investment plans set a number of years before the price control. The responses in favour of DNOs setting their own targets felt that their own targets should be based on the workload identified in their well-justified business plans.

Incentive rates for the IIS

- 4.37. Respondents largely felt that the application of the efficiency mechanism incentive was an unnecessary complication to the IIS scheme. They believed this works well in its current form, through rewarding companies where their investment decisions have paid off (through capital work or operational techniques) and penalising those companies that have underperformed.
- 4.38. Respondents favoured our approach for retaining the current strength of the incentive rates as they felt that it has worked well in delivering on its aims. One respondent favoured the use of their own incentive rate based on their stakeholder engagement work.

Revenue exposure

- 4.39. Respondents favoured the retention of the downside exposure along with extending it to the proposed RORE basis points of between 250 and 300. With

regards to the reintroduction of an upside cap, some respondents were not in favour of this. They considered it a retrograde step as it could reduce the incentive on DNOs to identify and implement performance improvements for the benefit of their stakeholders. Others felt that the use of a cap would not create any change in DNOs' responsiveness to the IIS as the proposed symmetric cap and collar is unlikely to be reached by DNOs. One DNO queried how the prepared RORE basis points translated into £ millions.

Smart meter roll-out and the impact on IIS

- 4.40. The majority of respondents agreed with our proposals regarding DNOs' preparation for the smart meter roll-out.

Rebasing mechanism

- 4.41. Some respondents felt that the inclusion of a rebasing mechanism during RIIO-ED1 was appropriate as it would provide protection for customers and DNOs from excessive penalties or rewards during the period. Other respondents felt that there was no need for it as they believe that it is highly unlikely that smart meters will have a material impact on network performance during RIIO-ED1, or that any change in performance could be solely attributed to smart meters.

Cut-out failures

- 4.42. No responses were received on cut-out failures.

Short interruptions

- 4.43. Respondents agreed that we should not create an incentive on short interruptions. They outlined the impact that investments made in remote control and automation technologies have made in improving customer service by reducing the duration of interruptions, thereby reducing the inconvenience experienced by customers. Certain DNOs indicated that their own research into stakeholder views of proposed investments to reduce short interruptions suggested that costs associated with these were beyond what customers were willing to pay. They noted that their stakeholders continue to value reduced duration interruptions, ahead of reducing the number of interruptions. Others noted that the data was not currently robust enough to justify the introduction of an incentive scheme.
- 4.44. One DNO indicated that a particular group of their customers provided strong feedback in relation to the three minute short interruption threshold. This group of customers wanted to reduce the number of short interruptions as they are particularly sensitive to these. The DNO in question agreed that at present the data reported regarding short interruptions needs to be reviewed

by the industry, with a view to gathering sufficiently robust data across the industry in time for the RIIO-ED2 price control period.

Reasons for our decision

Separating planned and unplanned targets

4.45. We feel that the transparency achieved through having separate targets is a positive step forward for stakeholders. The agreement of all respondents is welcome and reinforces our position on this. We have therefore decided to separate these targets.

Unplanned target setting

4.46. We have decided to set targets up front in accordance with the method which was discussed in the consultation document. We feel that this is a prudent approach to adopt as it will provide clarity for stakeholders on the targets that their DNO has and will enable stakeholders to easily interact with their DNO on their performance. It also provides certainty for any investment decisions by DNOs that will be of benefit to their customers.

4.47. Following discussions at the reliability and safety working group (RSWG) we have decided to apply a glidepath to the indicative targets. These are presented in Appendix 2. The aim of this decision is to allow DNOs to anticipate where their targets may be set for RIIO-ED1. Once 2012-13 data is available this will replace the assumed values for that year.

4.48. We have decided not to use a rolling target method. While it would allow more responsive targets to be set, we believe the targets would be uncertain. This would create uncertainty surrounding any investment decisions by DNOs as the targets would not be known in advance.

4.49. Having reviewed the comments on the merit of adopting the rolling incentive mechanism as per RIIO-GD1, we do not intend to introduce a similar scheme for the IIS. Our current approach is straightforward and easy to communicate to stakeholders. The IIS has proven successful in driving behaviour to improve interruption performance. A rolling incentive mechanism has the risk that it potentially places too much focus on performance in the final year of the scheme.

4.50. We will use data up to 2012-13 to set unplanned targets.

Severe weather and one-off exceptional events

- 4.51. We have decided to keep both these exclusion mechanisms for RIIO-ED1. The use of these exclusion mechanisms recognises the limited ability of network operators to prevent and reduce the impact of these volatile events on their performance. By excluding such events from the IIS, it allows DNOs to focus on the underlying day-to-day performance of their network. We have reviewed the exceptional event thresholds as outlined in the consultation, using the most recently available data. We will update the thresholds with the 2012-13 data once this becomes available and publish them as part of the Initial Determination on fast-tracking. The threshold targets will apply to both fast and slow-tracked companies.
- 4.52. The one-off exceptional events thresholds will be maintained at 25,000 customers and two million minutes lost. We have decided not to substitute in average performance during one-off exceptional events. We have decided to maintain the thresholds at these limits as these events are particularly rare. We do not consider it is necessary to substitute in average performance for an equivalent period as only the residual impact beyond the threshold is removed from the IIS. Our decision to remove the guaranteed standards of performance (SI 698 of 2010) exemption that applies to these events will ensure that the customers affected receive payments if they qualify for them.

Improvement factors

- 4.53. We have decided to apply improvement factors to both the unplanned CI and CML targets for RIIO-ED1, taking into account historical improvements made across the industry. Some respondents questioned the sustainability of these factors. Our analysis has shown that the improvements factors are feasible. They have been derived from data spanning the entire IIS period, rather than just more recent IIS data.

Planned target setting

- 4.54. In presenting the two options in the consultation we were mindful of the history of setting these targets using the same method as adopted for DPCR5. Given that the basis of using forecasts of workload and expenditure was our previous approach in DPCR5, allowing DNOs to set their own targets may create an incentive for them to over forecast their use of planned interruptions in RIIO-ED1, and to set targets that do not create any incentive on DNOs to seek reductions in interruptions.
- 4.55. We feel that the use of a rolling target approach is much more suitable for setting planned targets for RIIO-ED1. This approach allows flexibility for DNOs and is intuitive for their stakeholders as it will be based on actual performance rather than forecasts made by the DNOs up to ten years in advance of the end of the price control. The benefit of using rolling targets was that it would cater for increases or decreases in the amount of planned interruptions being

carried out automatically (with a two year lag). This flexibility would over time reflect the actual number and duration of interruptions being incurred rather than being based on estimates up to ten years away from the end of price control.

- 4.56. While no maximum target is being proposed for DNOs, the use of a two year lag based on three years of performance data in the rolling mechanism should limit a DNOs' use of planned interruptions to carry out maintenance. Planned interruptions should be limited to situations where there is no feasible alternative. If a DNO chooses to use more planned interruptions each year, than they have used in previous years, it will take a number of years for this to feed through to their performance targets.

Incentive rates for the IIS

- 4.57. We consider that it is appropriate for the value of lost load (VoLL) to be consistent across both electricity distribution and transmission as it reflects the same underlying impact on customers. For RIIO-ED1 we are translating this into values for CI and CML based on assumptions regarding the average number of units distributed and the average length of interruptions.
- 4.58. We believe it is appropriate to reflect in the CI incentive rate the disturbance costs of an interruption, noting that at transmission most interruptions do not result in customers losing supply. This approach is consistent with previous price controls in having separate CI and CML incentive rates, without arbitrarily weighting customers' valuations across the two. We have used average duration per customer rather than per customer interrupted. This has the effect of reducing any double counting of VoLL.
- 4.59. DNOs will have the opportunity to put forward a case for alternative incentive rates, provided this is well justified. For example, there may be a case that customer willingness to pay to avoid interruptions is greater within the London area.
- 4.60. We consider that it is appropriate to apply the efficiency incentive to the incentive rate under the IIS, for consistency across electricity transmission and distribution. As customers bear a proportion of any cost to improve interruption performance, they should also retain a proportion of the benefit (or value of avoided loss load) from the performance improvement.

Revenue exposure

- 4.61. We have decided to reintroduce the cap on upside revenue exposed to the IIS. By reintroducing the cap on upside performance, we intend to provide protection to customers from excessive returns for DNOs from the IIS over the eight years of the price control. As we are extending the range of RORE bps to 250 over the price control from 139 in DPCR5 the DNOs retain

substantial opportunities for out performance and the cap is unlikely to be reached by many DNOs.

Smart meter roll-out and the impact on IIS

4.62. We have decided that for the purposes of IIS reporting during RIIO-ED1, DNOs should provide IIS performance data generated by smart meters to Ofgem, where possible, based on the notification time of the interruption. This is currently the case with reporting based on first notification of an interruption from a customer. As such we expect that DNOs should start planning now for using the data arising from the national smart meter roll-out, (eg IT systems that can cater for and make effective use of this data), as this will occur during RIIO-ED1.

Rebasing mechanism

4.63. We have decided that we will not have a rebasing mechanism in RIIO-ED1 for unplanned targets.⁹ The contrasting views in DNOs' responses highlighted uncertainty about the possible impact on performance that may result from the smart meter roll-out. We believe that any impact on performance could be positive or negative for DNOs.

4.64. An assessment to attribute changes in performance for CIs and CMLs would be a complicated and subjective process for Ofgem and the DNOs. For example, determining the performance impacts on CIs driven by changes from the one-third, two-thirds rule to smart meter data reporting, or on CMLs driven by DNO led improvements to operational response or faster fault location due to smart meter data, could be problematic.

4.65. Another reason for not conducting a rebasing mechanism was due to the preference from DNOs to have targets set clearly up front of the price control, and to not use either of the rolling average mechanisms. By having a rebasing mechanism, we would effectively be having two price controls for IIS targets during the RIIO-ED1 period.

4.66. Overall we feel that the uncertainty surrounding the impact on IIS performance will be short-lived, and in setting targets for RIIO-ED2, any impact can be reflected in the next price control.

Cut-out failures

⁹ Our preferred option for planned targets, the rolling average method, should by its design cater for any smart meter data performance related impact on planned interruptions.

- 4.67. As part of our discussions at the RSWG meetings, we queried whether such interruptions should count towards a DNO's performance under the IIS for RIIO-ED1. Based on the feedback that we received via the discussions at the working groups it would appear premature to use this data in setting targets for RIIO-ED1. We have decided to revisit the reporting of this data during RIIO-ED1.

Short interruptions

- 4.68. We have decided not to create an incentive on reducing short interruptions. We have based this decision on our stakeholder feedback¹⁰ which indicated a preference for reducing the duration of interruptions over reducing the number of interruptions. Investments by DNOs in remote control and automation technologies can significantly reduce the length of interruptions, but still result in short interruptions. We also have concerns that the short interruption data is not sufficiently robust to support a financial incentive. We intend to revisit the reporting of this data during RIIO-ED1.

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<http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=142&refer=Networks/ElecDist/QualofServ>

5. Load indices

Chapter Summary

This chapter sets out our decisions on Load Indices (LI) for RIIO-ED1. It details the improvements that we have made to the scheme, such as the introduction of consistent LI categorisation and accounting for the impact of Distributed Generation (DG). It also explains our decision on how the deliverables are set for the RIIO-ED1 period.

Background

- 5.1. One of the key factors in the overall reliability of a network is how often assets are loaded above their rated capacity. Networks that are overloaded will experience increased interruptions to customer supplies. This is because the physical condition of their individual assets will deteriorate at a faster rate than otherwise anticipated, leading to an increase in outages.
- 5.2. Whilst the IIS incentivises DNOs to ensure that assets operate in a reliable way, interruptions are a lagging indicator of the effectiveness of a DNO's wider asset management strategy. At a given point in the price control period, a well-justified long-term investment decision to increase capacity at a particular substation is unlikely to immediately result in an improved IIS performance. Without a secondary deliverable, there may be circumstances in which a DNO would not be financially incentivised within the period to do the right thing and make the investment.
- 5.3. The Load Index (LI) ties the investment program within the price control to the delivery of a particular level of loading at the end of the period that is in line with the DNO's longer-term asset management strategy. The LI should therefore reduce the circumstances in which a DNO would not be financially incentivised within the period to do the right thing and make the investment.
- 5.4. For the primary network (EHV and higher), DNOs are required to deliver an equal or equivalent reduction in the risk of overloading to substations as was forecast to be delivered by the schemes that are included in their baseline allowance.

Our decision

- 5.5. For RIIO-ED1, we will continue the LI framework as a secondary deliverable for general reinforcement expenditure on the primary network.
- 5.6. To improve the metric we have put in place a number of amendments to the existing framework for the RIIO-ED1 period. These changes should provide

greater clarity for customers regarding the relevant starting levels of loading on the primary network relative to capacity in each DNO network as well as the level that will be delivered through the business plans. Our specific decisions are set out below.

- 5.7. Under the LI framework, primary network substations are given a LI1-LI5 loading score based on the percentage of capacity that is utilised at peak demand. For the purposes of the LI, this calculation is referred to as:

- 5.8. Table 5.1 below sets out the bandings that should be applied to substations within DNO business plans.

Table 5.1: Common LI bandings for RIIO-ED1

LI Banding	Loading percentage	Duration factor
LI1	0-80	n/a
LI2	80-95	n/a
LI3	95-99	n/a
LI4	100	<9 hours
LI5	100	>9 hours

Standardisation

- 5.9. Through the RSWG, we have sought to develop a common approach to how these loading percentages are categorised within the LI scores LI1-LI5. This will provide greater comparability and transparency in terms of both the relative initial loading levels across DNOs and the improvements their investment programs will deliver.
- 5.10. In order to get meaningful consistency in the application of the LI scores, we need greater consistency in how DNOs define Maximum Demand and Firm Capacity. Our decisions on these definitions are summarised below:

Maximum Demand

- 5.11. In determining the maximum demand at a substation, the RSWG have developed a more standardised approach to how DNOs should account for latent demand, non-firm demand and generation connections and data adjustments for weather conditions. Engineering Technical Report 130 (ETR 130), already embedded within DNO policies and network operation, will be a reference point for how latent demand that is offset by connected generation will be accounted for and considered in determining the half-hour period and level of maximum demand. The assessment of both the level and timing of

this maximum demand will also discount non-firm load connected at the substation.

- 5.12. The annual reporting will include both a pre and post weather correction column to allow greater visibility of the effect of correcting data back to average cold spell conditions. DNOs will have the freedom to determine whether or not it is appropriate to carry out this correction to reconcile their demand data back to the standard assumed winter peak conditions. This decision, as well as any associated methodology, will need to remain constant throughout the RIIO-ED1 period.

Firm Capacity

- 5.13. With regards to the firm capacity of a substation, the RSWG have developed clearer instructions on how it should be measured. Specifically, the interpretation of how to determine the appropriate asset ratings to use will be more prescriptive where the transformer is the constraining asset of the circuit. This will ensure greater consistency across DNOs and give a more transparent view of the relevant loading levels across the DNO networks. Additionally, we have agreed that the firm capacity available at a substation should be adjusted to reflect any capacity that is immediately available through demand side response (DSR).

Setting the deliverable

- 5.14. In terms of setting what a DNO will need to deliver through the LI for the baseline allowance set for RIIO-ED1, we have decided to aggregate the individual substation scores to give a network wide score reflecting network loading risk. DNO business plans will need to target the delivery of a particular level of loading risk, within a suitable tolerance band across their substation portfolio. For the avoidance of doubt, this could amount to either maintaining a current level of risk, or for delivering a specific higher or lower level informed by stakeholder engagement. This is the approach we proposed in the September strategy consultation.

Extension of the LI to the secondary network

- 5.15. We do not feel that the limited benefits of applying the LI principles to the secondary network are commensurate with the significant difficulties that would be faced in delivering this work. For this reason we have decided against applying the LI in its existing, or an alternative, format for RIIO-ED1. As DNO data on secondary network performance improves as the smart meter roll-out takes place, we may revisit this decision as part of the RIIO-ED2 review.

Development of a Distributed Generation (DG) Index for DG dominated substations

- 5.16. We will work with the membership of the RSWG to develop an equivalent metric to the LI (a DG Index) to account for load growth at substations that are dominated by generation rather than demand over the course of RIIO-ED1. We accept that this will not be a formal part of the RIIO-ED1 price control settlement but would look to implement it, if required, as part of RIIO-ED2.

Summary of consultation proposals

- 5.17. Within the September strategy consultation, we proposed to improve consistency and comparability within the LI through a set of standardised LI bandings, based on greater alignment in the definitions on which the framework is based.
- 5.18. We set out two options for how the deliverable could be set:
1. DNOs are required to commit to a specific movement in loading levels for the expenditure put forward in their business plan. This movement would be set as the difference between the end of period position, with and without the proposed investment.
 2. DNOs are funded to deliver a specific targeted aggregate level of loading, between a tolerance band, across their portfolio of substations. This was our preferred approach.
- 5.19. We proposed that developing the LI further to cover the secondary network would not provide a benefit commensurate with the level of work required to implement it. Developing the LI in such a way would still leave significant limitations on its applicability to the issues faced on the secondary network.
- 5.20. We also consulted on whether it would be appropriate to develop a DG Index, equivalent in nature to the LI, to act as a secondary deliverable for reinforcement investment occurring at substations that cater for more generation than demand. We proposed that this metric could be implemented as part of the mid-period review of outputs.

Summary of consultation responses

- 5.21. Respondents were generally supportive of our proposed amendments to the LI framework. There was general agreement with our proposal to set out standardised LI bandings, but some disagreement over whether the specific thresholds, as set out, were appropriate. Specific concerns raised were that the bandings might drive particular DNOs to increase expenditure rather than to optimise asset capability.

- 5.22. None of the respondents supported the extension of LIs to the secondary network.
- 5.23. All parties that responded to the specific questions outlined agreed with our proposed approach to setting an aggregate loading target within a tolerance band.
- 5.24. Five out of six respondents felt that the implementation of the DG Index was an appropriate approach at the mid-period review of outputs where levels of DG connected are significantly higher than demand.

Reasons for our decision

Standardisation

- 5.25. Our decision on creating greater standardisation in how the LI is structured and operates across DNOs reflects our desire to allow for greater comparability and transparency in the indicative level of loading and spare capacity across DNO networks. We also see a potential use for proposed LI movement as part of a composite loading score. This would be a potential cost driver for primary network reinforcement within the mid-model, discussed in Chapter 4 of the 'Supplementary annex - Tools for cost assessment'.
- 5.26. With regards to the LI bandings set out above in Table 5.1, the LI5 threshold does not reflect our interpretation of the level of risk that would require an intervention on a network. The framework and LI bandings will function as a reference framework, with DNOs (as the custodians of the assets) free to choose how their substation population best sits against the criteria. We have used the distribution of substation loadings across the 14 DNO areas to set these bandings.

Setting the deliverable

- 5.27. We agree with consultation respondents that given the levels of uncertainty that surround potential changes in overall demand and load profiles within RIIO-ED1, it is appropriate and in the interests of customers for DNOs to agree to deliver a particular level of loading. We believe this approach is preferable to requiring DNOs to agree to deliver a particular level of extra capacity headroom that may not be required.

Extension of the LI to the secondary network

- 5.28. Our decision not to extend the LI to the secondary network is based on a number of reasons. The likely complexity of the associated development work, in light of a lack of robust data on the precise loading profile along HV feeders as well as a lack of a comparable definition to that of firm capacity, means

that the level of work required is not commensurate with the potential benefits of the resulting index.

- 5.29. Additionally, respondents to our strategy consultation agreed that this would not be an appropriate measure to put in place for RIIO-ED1. Finally, the funding and uncertainty mechanisms that have been considered for load-related interventions on the secondary network are not suitably compatible with a metric equivalent to the LI. For further details on our decision on these funding mechanisms, please refer to Chapter 5 of the 'Supplementary annex - Tools for cost assessment'.

Development of a Distributed Generation (DG) Index for DG dominated substations

- 5.30. In terms of the development of a DG Index for implementation at the mid-period review of outputs in RIIO-ED1, we believe it is inappropriate to include it as an element of the RIIO-ED1 price control settlement. This is because it is not currently possible to give further detail on how this metric would work in practice. It will also be difficult to capture the relevant data within the business plan templates.
- 5.31. We believe that it is appropriate to work with members of the RSWG to set in place the relevant arrangements to operate a DG Index on a trial basis in RIIO-ED1 ahead of full implementation, if deemed feasible and appropriate, as part of the RIIO-ED2 process.

6. Asset Health and Criticality

Chapter Summary

In this chapter we set out our decisions for developing existing asset health arrangements in RIIO-ED1. These include our decisions on proposals to introduce a measure of asset criticality into the framework and to create a composite risk index. We also explain how we intend to assess delivery during the price control.

The chapter also contains a summary of the views that were expressed in response to our proposals.

Background

- 6.1. Asset health data has been used by the DNOs to assist with their identification of capital programmes for the reduction of network risk. Throughout DPCR5 the asset Health Index (HI) has been used to track changes in asset health relative to the targets for the price control. For RIIO-ED1 we have been exploring how the existing HI could be developed further, for example through the introduction of a criticality index, and a composite risk index.
- 6.2. Health and safety compliance (as discussed in Chapter 3) must remain the priority for DNOs when developing their business plans and making investment decisions. Whilst considering some health and safety impacts, the health, criticality and risk indices are secondary deliverables and are not intended to replace the primary outputs of safety and network reliability. In addition, the achievement of reductions in overall asset risk scores should not be a driver for unjustified investment by DNOs.

Our decision

- 6.3. We have decided to introduce two new secondary deliverables: a criticality index and a composite risk index. The risk index will be derived from a modified version of the existing HI and the criticality index. Table 6.1 shows how the HI and criticality index will be combined to determine the risk index of an asset.

Table 6.1 – How the HI and criticality index will be combined to generate risk index ratings

	HI1	HI2	HI3	HI4	HI5
C1	RI1	RI1	RI1	RI2	RI3
C2	RI1	RI1	RI2	RI2	RI3
C3	RI1	RI1	RI2	RI3	RI4
C4	RI1	RI1	RI2	RI4	RI5

- 6.4. The final risk index ratings that will be assigned to assets of specific combinations of HI and criticality ratings are still to be finalised. The highest risk index rating will be for those assets in the bottom right corner of the table. We intend to use a five point scale to measure risk index ratings, using the definitions set out in table 6.2.

Table 6.2 – Risk index definitions

RI1	Very Low Risk
RI2	Low Risk
RI3	Medium Risk
RI4	High Risk
RI5	Very High Risk

- 6.5. We will require DNOs to demonstrate how the expenditure that we allow through the price control will be linked to the management of network risk. We intend to use the DNOs' risk index forecasts for the end of RIIO-ED1 to establish each DNO's agreed deliverable. We will measure the difference in the DNOs' forecasts for the risk index that will result, depending on whether planned network investment has or has not taken place. This will provide us with an asset risk score improvement or delta, which each DNO will agree to deliver during RIIO-ED1. We will also require DNOs to forecast their expected total asset risk score midway through the price control period, assuming network investment has occurred. This will assist us in monitoring the ongoing performance of the DNOs during RIIO-ED1.
- 6.6. If the DNO achieves its risk deliverable we will not apply any financial reward or penalty at the end of RIIO-ED1. If a DNO has not delivered the agreed total asset risk score improvement and does not have a reasonable justification for not delivering, the DNO will also be subject to a penalty of 2.5 per cent of the avoided costs associated with the under delivery. Conversely, where a DNO has delivered more than the agreed total asset risk score improvement, and this improvement has been justified, the DNO will receive a reward of 2.5 per cent of the incremental costs associated with over delivery. The mechanism will only come into effect if the under or over delivery is of a level considered material. The table below contains a summary of this RIIO-ED1 mechanism alongside the DPCR5 mechanism.
- 6.7. We will take the RIIO-ED1 risk deliverable as the opening position when determining the allowance for the DNO to meet its RIIO-ED2 risk deliverable. As such the cost of catching-up any under-delivery will have to be met by the DNO, while any over-delivery will receive funding as long as it is justified.

Outcome	DPCR5 into RIIO-ED1 (HI only)	RIIO-ED1 into RIIO-ED2 Health, Criticality and Risk Indices
Under delivery	Size of the shortfall in deliverables valued with reference to the higher of allowed and latest unit costs. The efficiency incentive rate plus a penalty rate of 2.5 per cent is then applied. Reduction applied to RIIO-ED1 base revenue.	Cost of catching up with the RIIO-ED1 targets will not be funded in the RIIO-ED2 allowance. Penalty for an unjustified under delivery of outputs of 2.5 per cent of the avoided costs associated with the under-delivery
Over delivery	DPCR5 does not reward over-delivery	Cost of a justified over delivery will be funded through the RIIO-ED2 allowance. DNO receives a reward for the justified over-delivery of 2.5 per cent of the incremental costs associated with the over-delivery

- 6.8. For the criticality index, we have decided to include financial consequences as a factor for deriving ratings, alongside system, safety and environmental consequences. We are taking forward further work on the criticality index through the Reliability and Safety Working Group (RSWG) and the Criticality and Health Working Group (CHWG). DNOs have been asked to devise a common methodology for assessing the criticality of different classes of assets. We expect DNOs to work together in this area and will consider both this work and responses to the consultation before finalising the framework for RIIO-ED1. This will be set out in the business plan templates we issue and the agreed methodology for the calculation of criticality will be used by the DNOs when completing these.
- 6.9. We have decided to require greater consistency in the way DNOs calculate HIs for common asset types. Some work has already commenced to achieve this through the RSWG and we will continue to progress this. We do not intend to require these changes to be applied when DNOs complete and submit their business plans later this year. We do however want DNOs to clearly explain their methodologies for assessing HI and criticality index ratings alongside their business plans, to help inform ongoing work on achieving consistency and to receive assurance that their approach is robust. Any changes to DNOs' HI ratings that result from measures introduced to achieve greater consistency will be taken into consideration by us when assessing DNOs' delivery of network

risk improvements. This will either be through an adjustment to their agreed deliverables or through consideration of evidence when their overall performance across RIIO-ED1 is assessed, prior to penalties or rewards being applied.

6.10. We will mandate DNOs to develop and maintain HIs in the majority of asset classes. We may not require HIs for those asset classes where a DNO has clearly demonstrated that it is not possible or proportionate to collect robust information however. We have identified a number of areas where it is appropriate to collect HIs from all DNOs. We will not stipulate an exhaustive list of assets in the business plan templates. Assets for which HI collection will be deemed mandatory will display one or more of the following characteristics:

- a high replacement cost
- a high consequence of failure
- overall expenditure on the asset is high.

6.11. They will also generally be asset classes of which all DNOs manage significant populations. Examples of relevant asset classes include: EHV transformers, EHV switchgears, HV switchgears and LV overhead line supports. If a DNO has demonstrated that it is unable or it is inappropriate to collect HIs for certain asset classes, we will expect the DNO to continue to collect fault rate data for such assets. This will be in line with the approach taken during DPCR5.

6.12. One area where we have not previously collected HIs but intend to do so for RIIO-ED1 is the condition of civil assets. We have asked DNOs to begin developing processes for collecting this information ahead of submitting their business plans.

6.13. We would welcome DNOs reporting HIs on additional asset classes to those that we have specified. The business plan template pack we provide will cover all of the areas where we know DNOs currently collect HIs and where we want HIs to be collected for RIIO-ED1. The pack will also include room for DNOs to add their own HI reporting data on any additional asset classes.

Summary of consultation proposals

6.14. In the strategy consultation document we proposed to retain the fundamental principles of the DPCR5 HI framework for RIIO-ED1, making improvements to the arrangements where feasible. As was the case for DPCR5, we proposed that the HI secondary deliverable should require the DNOs to demonstrate how the expenditure we allow through the price control will be linked to the management of network risk.

Consistency of HI categorisation

- 6.15. In the strategy consultation document, we recognised that although common methodologies are desirable for many secondary deliverables, for some DNOs company specific methodologies are appropriate. We considered whether it would be appropriate to require greater consistency in the way DNOs calculated their HIs for common asset types. We suggested that this could be achieved by asking DNOs to jointly develop a set of requirements for each asset type, setting out minimum standards for input data and the ways this should be used.
- 6.16. We also set out that we were considering whether we should mandate companies to maintain and provide HI data for specified asset types.

Criticality and Risk Indices

- 6.17. We proposed to introduce a separate criticality index which would provide a measure of the consequences of failure of network assets. This would allow DNOs to demonstrate that their actions to reduce network risk take account of not only the probability that an asset fails, but also the expected impact of failure. Information on the consequences of asset failure should also be useful to DNOs in the prioritisation of asset interventions.
- 6.18. We proposed that the DNOs would assess the criticality of their network assets through a number of "consequence factors" and provide this data to us both prior to the commencement of RIIO-ED1 (for use in the allowance and risk index target setting process) and during RIIO-ED1 (for use in monitoring DNO performance). We also proposed that for RIIO-ED1, a framework incorporating data on both the health and criticality of assets should be introduced, similar to that used in RIIO-T1 and GD1. This would allow DNOs to provide us with a composite risk index for their assets.

Assessment of delivery

- 6.19. We proposed that at the end of RIIO-ED1 each DNO would be required to demonstrate that their package of works completed delivers the network risk reduction agreed at the start of the price control. This would be measured by a points delta improvement of the DNO's risk index. We did not propose that companies would be required to carry out a specific mix of work to achieve this.
- 6.20. We set out our desire for DNOs to continue to improve the quality of information that they hold on their network assets. We also emphasised the importance that any arrangements we put in place do not preclude this. We felt that the risk index and the delivery of asset risk score improvements could form part of an annual progress check on the percentage of the total agreed

risk improvement package that a DNO completes each year. This information could also be published in the Electricity Distribution Annual Report.

- 6.21. We proposed to continue to ask companies to show how movements in the asset health, criticality and risk indices have been brought about, whether through asset replacement, refurbishment or otherwise. In order to retain a link between allowed expenditure and delivery, we stated that it may not be appropriate for all movements in the indices to be counted as progress towards delivery of the agreed deliverables. For example, for the criticality index, certain factors beyond DNOs' control may change the position of their assets on the index.

Financial Incentives

- 6.22. We proposed to introduce arrangements to enable DNOs to over deliver against the agreed package, and that where this occurred DNOs would be required to demonstrate that the over delivery was carried out efficiently and in the interests of customers. We proposed that a financial reward would apply where we find that a DNO had justifiably over delivered against its targets. If a DNO had under delivered on their agreed package, any under delivery would have to be funded from their RIIO-ED2 allowance unless it could be justified. If the under delivery could not be justified a financial penalty would also apply.
- 6.23. We proposed that where a DNO delivered exactly what it agreed at the start of the period, or an equivalent package of outputs, no action would be taken.

Summary of responses

- 6.24. All respondents expressed their support for, or at least general agreement with, our proposals for health, criticality and risk indices. One respondent emphasised that they wanted to see a common framework specified for all DNOs, designed to work for the whole RIIO-ED1 period.
- 6.25. Respondents unanimously agreed with our proposal to introduce criticality into the HI framework. It was felt that this would reflect the risk based investment prioritisation of DNOs. Respondents also agreed with the types of consequence of failure identified in the strategy consultation document. Several felt that an additional consequence of failure category, "financial consequences", should also be included. One respondent felt that it would not be necessary or efficient for DNOs to collect and maintain criticality information for low value, high volume assets, or for those assets in near new or good condition. The respondent felt that it was important to understand the potential benefits of extending criticality into the risk index for all such assets before doing so.
- 6.26. All respondents agreed that financial rewards and penalties would be appropriate for material under or over delivery of network risk improvements.

One respondent felt that these should avoid weakening incentives for DNOs to undertake actions that could otherwise reduce costs for customers. This respondent also felt that rewarding over-delivery of outputs should only occur if customers were shown to receive a proportionate benefit from this. Another respondent felt that any financial consequences should be designed in a way so as to prevent DNOs agreeing to provide long term solutions but opting instead for cheaper short term options which would later prove not to be the most cost effective means of managing risks, when whole life costs of the solutions were considered.

- 6.27. All respondents agreed that greater consistency was needed in the types of assessments DNOs used to set HIs. Some respondents felt that this could be best achieved by determining a set of principles which would remain applicable for the duration of RIIO-ED1 and potentially beyond. It was felt that such a framework would allow DNOs to utilise their existing inspections and maintenance regimes and apply their own views on how asset health and risk are assessed. One respondent felt that safety or environmental considerations should not be included in HIs as they may have been included in some DNOs' assessment of the end of serviceable life for assets in DPCR5.
- 6.28. Some respondents were not supportive of the suggestion that DNOs should be mandated to develop and maintain HIs in specified classes. While most respondents felt that this was appropriate for some asset classes, some identified certain asset classes where they felt this would be inappropriate. In particular, low value, high volume assets were seen as one area where mandatory collection of HIs was inappropriate. Some respondents felt that mandating HI collection on such assets could be detrimental to an effective overall risk management strategy. Some assets were also felt to present practical obstacles to the effective collection of HI data, for example non-pressurised underground cables.

Reasons for our decisions

- 6.29. We feel that the DPCR5 HIs have provided an effective means of quantifying DNOs' delivery of improvements to the overall health of their networks. They have also enabled Ofgem to identify areas where investment may need to be prioritised and to challenge DNOs on their investment plans. They have provided DNOs with a means of demonstrating to us where improvements to network health have been made. The framework also allows sufficient flexibility for DNOs to pursue asset management practices that they deem to be most appropriate for their networks. These views were supported by the consultation respondents.
- 6.30. The inclusion of criticality in the framework was a relatively straightforward decision and respondents expressed strong agreement for this. We feel that creating a separate criticality index and developing a composite risk index will improve the current framework and enable it to remain effective throughout the RIIO-ED1 period.

- 6.31. We consider that a penalty/reward will help to drive good asset management practice and efficient and timely investment decisions over the course of RIIO-ED1. We consider this to be complementary to the effective reputational incentives in place. The addition of a reward mechanism for justified over delivery of outputs was also felt to be conducive to driving better long term investment decisions. As highlighted by the concerns of some consultation respondents, under or over delivery will need to be demonstrably in the long term interests of customers. It is therefore important that we retain the option to assess whether DNOs' investment has been justified at the end of the RIIO-ED1 period and not introduce automatic penalties or rewards. The agreement of all consultation respondents with the inclusion of financial consequences provided us with further confidence that they are appropriate.
- 6.32. Our decision to require greater consistency in the types of assessment that DNOs should feed into the calculation of HIs was based on a number of reasons. Primarily, we see this as a necessary step towards enabling more meaningful comparisons of the health of different DNOs' networks and facilitating efficient and timely investment decisions. There was also unanimous agreement from consultation respondents that this was necessary. Our suggestion that this could be achieved by asking DNOs to jointly develop a set of requirements for each asset type was met with approval. Work in this area is in progress through the RSWG, and we will ensure that this continues to be driven forward, beginning with the establishment of a set of common principles for HI assessment.
- 6.33. We also consider that mandating HI assessment across a range of asset classes will support the creation of more consistent and reliable performance assessment across DNOs. We anticipate that a greater degree of comparability for overall network health measures will result from this. We recognise the views of some respondents that mandating HIs on certain asset classes, for example low value, high volume assets, could inadvertently encourage an inefficient use of resources. We do feel that the interests of consistent and comparable reporting outweigh this concern and that mandating HIs for certain asset classes is necessary.

7. Guaranteed standards

Chapter Summary

This chapter sets out our decisions on changes to the guaranteed standards of performance in RIIO-ED1. We detail our decisions regarding normal weather standards, exemptions for the Highlands and Islands of Scotland and payment levels in RIIO-ED1.

Background

7.1. The Electricity (Standards of Performance) Regulations 2010 (the guaranteed standards as set out in Statutory Instrument (SI) No.698, 2010)¹¹ provide for individual customers to receive payments from DNOs if they fail to meet specified standards. These standards cover a range of areas, including supply interruptions. This chapter focuses on compensation payments to customers who have experienced an interruption to their supply.

Our decision

7.2. We will retain the guaranteed standards for RIIO-ED1, making improvements to some standards as proposed in the 'Supplementary annex – Reliability and Safety'.¹² This is based on responses to the September strategy consultation and the experience gained so far in DPCR5.

7.3. We will follow the set procedure for turning our decision into a legally enforceable document. This will mean that we will consult on the necessary changes to the SI No.698, 2010, ahead of the start of RIIO-ED1.

Mid-period review

7.4. We will not conduct a mid-period review of the guaranteed standards during RIIO-ED1. The guaranteed standards are sufficiently mature to cater for the full price control period, even with the inclusion of smart meter data when this becomes available.

¹¹ http://www.legislation.gov.uk/ukxi/2010/698/pdfs/ukxi_20100698_en.pdf

¹² Ofgem reference 122/12
<http://www.ofgem.gov.uk/Networks/ElecDist/PriceCtrls/riio-ed1/consultations/Documents1/RIIOED1SConReliabilitySafety.pdf>

Removal of exemptions

- 7.5. We will remove the double exemption that occurs under both the Interruptions Incentive Scheme (IIS) (adjusting a DNO's performance data for one-off exceptional events) and payments under guaranteed standard 2 (b) (GS2B) (5,000 or more customers interrupted during normal weather conditions). All customers interrupted will receive the relevant payment for failure to meet this guaranteed standard (capped at £300 per customer).
- 7.6. Compensation payments under GS2B will be funded through the price control if the DNO's exceptional event claim under the IIS is valid. The DNO will be exposed to these payments if the exceptional event claim is not valid. Where a DNO is subjected to penalties under both the IIS and the normal weather standard which exceeds the exposure cap, the DNO will be limited to the annual revenue exposure (as stated in Table 7.1), with full cost pass-through of payments made beyond this level.
- 7.7. We will be removing all specific exemptions related to Highlands and Islands customers¹³ from the guaranteed standards to ensure consistency of payments for all customers across the country. We will not provide any additional funding to allow for this.

Normal weather standard

- 7.8. The normal weather standard (Regulation 5) will be reduced from 18 to 12 hours. Payment levels will be adjusted to reflect inflation throughout the price control as discussed below.

Guaranteed standards payment level

- 7.9. We have calibrated guaranteed standards payment levels to take account of forecasts of inflation to the mid-point of the RIIO-ED1 period (2018-19), as set out in Table 7.1. These payments will apply to both fast-tracked and slow-tracked DNOs, based on the forecast of inflation available at the time of calibration.
- 7.10. Payment levels will be rounded to the nearest £5, as will any applicable caps on individual payments to customers. Payments to individual customers will continue to be capped at a level based on forecasts of inflation to the mid-point of RIIO-ED1, as stated in Table 7.1.

¹³ "Highlands and Islands" means the following Scottish local authority areas: the Shetland Islands, the Orkney Islands, Eilean Siar (the Western Isles), the Highlands (consisting of Caithness, Sutherland, Ross and Cromarty, Inverness, Nairn, Badenoch and Strathspey, Skye and Lochalsh, and Lochaber), and Argyll and Bute.

Table 7.1: Guaranteed standards payments for RIIO-ED1

Reporting code	Service	RIIO-ED1 Guaranteed standards payments	DPCR5 Guaranteed standards payments
EGS1	Responding to failure of distributor's fuse (Regulation 12)	£30 for domestic and non-domestic customers	£22 for domestic and non-domestic customers
EGS2	Supply restoration - normal conditions (Regulation 5)	£75 for domestic customers, £150 for non domestic customers, £35 for each further 12 hours	£54 for domestic customers and £108 for non-domestic customers, plus £27 for each further 12 hours
EGS2A	Supply restoration: multiple interruptions (Regulation 11)	£75 for domestic and non-domestic customers	£54 for domestic and non-domestic customers
EGS2B	Supply restoration - normal conditions (5,000 or more premises interrupted) (Regulation 6)	£75 for domestic customers, £150 for non domestic customers, £35 for each further 12 hours up to a cap of £300	£54 for domestic customers and £108 for non-domestic customers, plus £27 for each further 12 hours up to a cap of £216 per customer
EGS2C	Supply restoration – rota disconnections (Regulation 8)	£75 for domestic customers, £150 for non domestic customers	£54 for domestic customers and £108 for non-domestic customers
EGS4	Notice of planned interruption to supply (Regulation 14)	£30 for domestic customers, £60 for non domestic customers	£22 for domestic and £44 for non-domestic customers
EGS5	Investigation of voltage complaints (Regulation 15)	£30 for domestic and non-domestic customers	£22 for domestic and non-domestic customers
EGS8	Making and keeping appointments (Regulation 19)	£30 for domestic and non-domestic customers	£22 for domestic and non-domestic customers
EGS9	Payments owed under the standards (Regulation 21)	£30 for domestic and non-domestic customers	£22 for domestic and non-domestic customers
EGS11 (EGS11A, EGS11B and EGS11C)	Supply restoration: severe weather conditions (Regulation 7)	£35 for domestic and non domestic customers, plus £35 for each further 12 hours up to a cap of £300 per customer	£27 for domestic and non domestic customers, plus £27 for each further 12 hours up to a cap of £216 per customer

Non-domestic customers and consequential losses

- 7.11. We will retain non-domestic customers within the guaranteed standards for RIIO-ED1.
- 7.12. We will not introduce consequential losses into the guaranteed standards for RIIO-ED1.

Paying out guaranteed standards

- 7.13. We expect DNOs to do their utmost to increase awareness of the guaranteed standards among their customers, and to set out how they intend to do this in their business plans. This includes establishing clear and simple links to the guaranteed standards on their websites. They must work with energy suppliers to distribute the guaranteed standards to consumers, in accordance with the Notice of Rights¹⁴. Customers should also be made aware of the guaranteed standards when they contact their DNO.

Penalty rate for unpaid compensation

- 7.14. We have decided that a penalty rate will apply to unpaid compensation beyond the mechanism to recover unclaimed guaranteed standard payments from DNOs in the form of a negative revenue adjustment. This penalty rate shall be 20 per cent of the difference between the payments due and payments made terms, as reported by the DNOs.

Automatic payments

- 7.15. Guaranteed standards payments to customers will not be automatic from the start of RIIO-ED1, since DNOs do not currently receive notification of which customers are off supply until the customer contacts the DNO. We will review this once smart meters have been well established. We would like DNOs to consider the approach taken by suppliers, where payments to customers were made under the Failure to Supply Gas guaranteed standards, based on data provided to xoserve by gas network operators.

Priority Service Register (PSR) customers

- 7.16. Customers on the PSR, who experience a qualifying interruption, should receive compensation payments automatically.

¹⁴ Clause 24 of Statutory Instrument 2010 No. 698
http://www.legislation.gov.uk/ukxi/2010/698/pdfs/ukxi_20100698_en.pdf

Severe weather standards

7.17. The exceptional event thresholds will be aligned with the IIS severe weather thresholds in RIIO-ED1. These indicative thresholds are set out in Table 7.2.

Table 7.2 - Thresholds for normal and severe weather conditions

	Category 1 - Medium severe weather events	Category 2 - Large severe weather events	Category 3 – Very large severe weather events
DNO	8 x mean HV and above	13 x mean HV and above	35% of exposed customers
ENWL	54	87	257,000
NPgN	36	58	220,000
NPgY	39	63	407,000
WMID	63	102	355,000
EMID	66	108	457,000
SWALES	42	68	213,000
SWEST	59	96	282,000
LPN	12	20	318,000
SPN	54	87	297,000
EPN	93	151	559,000
SPD	76	123	229,000
SPM	69	112	174,000
SSEH	59	95	132,000
SSES	66	108	403,000

Guaranteed standards exposure

7.18. We will maintain overall revenue exposure caps which apply to payments under the normal weather (including large scale events, where 5,000 or more customers are interrupted) and severe weather supply interruption standards (Table 7.3). These exposure caps are values from DPCR5, updated for RIIO-ED1. We will preserve an overall collar on downside exposure to the IIS and the severe weather standards (Table 7.4). We have made a decision on the RORE exposure, but the revenue exposure figures are indicative and will need to be updated using the latest regulatory equity assumptions for RIIO-ED1.

Table 7.3 – RIIO-ED1 total downside RORE and annual exposure to the normal and severe weather standards

	Normal Weather Standard		Severe Weather Standard	
	Total RIIO-ED1 RORE bps (pre tax)	Annual revenue exposure £m	Total RIIO-ED1 RORE bps (pre tax)	Annual revenue exposure £m
ENWL	155	9.2	207	12.3
NPgN	155	6.0	207	8.0
NPgY	155	8.3	207	11.1
WMID	155	11.2	207	14.9
EMID	155	10.8	207	14.4
SWALES	155	5.0	207	6.7
SWEST	155	7.6	207	10.1
LPN	155	8.4	207	11.2
SPN	155	8.8	207	11.7
EPN	155	13.3	207	17.7
SPD	155	9.2	207	12.3
SPM	155	9.5	207	12.7
SSEH	155	5.7	207	7.6
SSES	155	11.7	207	15.6

Table 7.4 – RIIO-ED1 total downside RORE and annual exposure collar on the IIS and severe weather standards

	Total RIIO-ED1 RORE bps (pre tax)	Annual Revenue Exposure £m
ENWL	413	24.6
NPGN	413	16.1
NPGY	413	22.1
WMID	413	29.8
EMID	413	28.8
SWALES	413	13.5
SWEST	413	20.2
LPN	413	22.4
SPN	413	23.4
EPN	413	35.3
SPD	413	24.5
SPMW	413	25.5
SSEH	413	15.2
SSES	413	31.3

Summary of consultation proposals

Mid-period review

7.19. We proposed to conduct a mid-period review due to the anticipated impact of smart meters and further adjustments for inflation.

Removal of exemptions

7.20. We proposed to remove the double exemption under the IIS, and all exemptions related to Highlands and Islands customers. This proposal was based on a review of payments made over a number of years. The review showed that removing this exemption would not significantly affect the level of risk to which DNOs are exposed.

7.21. When a one-off exceptional event occurs, customers must claim for a compensation payment from their DNO (except PSR customers who would receive this payment automatically), and payments are made to those that qualify. DNOs must then submit a claim to Ofgem for exemption under the IIS and, if valid, the DNO is refunded through adjusted revenues in the following year.

Normal weather standard and payment levels

7.22. We proposed to reduce the normal weather standard from 18 to 12 hours as this has been identified as a priority from stakeholder engagement.

7.23. We proposed two options regarding payment levels:

- to increase the payments to reflect inflation levels from 2009-10 (when the current payment levels were determined) to the end of DPCR5
- to base the payments on forecasts of inflation at the mid-point of the RIIO-ED1 period (the end of reporting year 2018-19).

7.24. The first option reuses the uplift method applied in DPCR5 and adjusts the payment levels by actual inflation data. The second option takes account of the longer price control period.

Paying out guaranteed standards

7.25. In the consultation we outlined our concerns regarding low levels of customer awareness of the guaranteed standards, and how DNOs will aim to improve awareness through their business plans.

Penalty rate for unpaid compensation

- 7.26. In DPCR5, a negative revenue adjustment occurs when guaranteed standard payments due to customers are not claimed by those eligible customers. These payments are recovered from DNOs. We proposed enhancing the DPCR5 recovery mechanism by including a penalty rate on top of unpaid compensation, to act as an incentive on DNOs to pay compensation where it is due.

Non-domestic customers and consequential losses

- 7.27. We proposed to retain all non-domestic customers within the guaranteed standards. We also proposed not to extend the remit of the guaranteed standards to cover consequential losses.

Automatic payments

- 7.28. We did not propose to introduce automatic payments to customers until the relevant data from smart meters is available. We proposed that DNOs must put forward in their business plans their intentions of how to raise awareness of the guaranteed standards amongst customers.

- 7.29. We proposed that DNOs should make payments to PSR customers automatically.

Severe weather standards

- 7.30. For supply restoration during severe weather events, we proposed to continue to align the exceptional event thresholds with the IIS severe weather thresholds.

Guaranteed standards exposure

- 7.31. We proposed to retain the overall revenue caps for payments for normal and severe weather events and keep the same party that funds these payments.
- 7.32. We proposed to maintain an individual payment cap per customer under severe and normal weather event standards, but to adjust these levels for inflation. It was proposed to round payment values to the nearest £5 (as in Table 7.1).

Summary of responses

Mid-period review

- 7.33. Respondents felt that a mid-period review was not necessary since the guaranteed standards have been in place for a long period of time. However it was noted that the proposed arrangements would allow a mid-period review if required.
- 7.34. In addition, one respondent believed that the proposed adjustment of payment rates, taking account of forecast inflation, further removes the need for a mid-period review.

Removal of exemptions

- 7.35. Respondents were in favour of the proposals to remove the specific Highlands and Islands exemptions and certain exemptions for GS2B relating to one-off exceptional events. The views expressed by DNOs indicated that this would result in improved clarity for customers across the country, irrespective of their geographic location.
- 7.36. Respondents supported the removal of the double exemption for one-off exceptional events, noting that although the circumstances may be out of the DNOs' control, customers have still experienced an inconvenience and should be appropriately compensated.
- 7.37. One DNO recommended that the payment caps be reviewed for one-off exceptional events, creating a common cap for all DNOs equivalent to 5,000 customers being off supply for four days, each receiving the maximum compensation amount.
- 7.38. The DNO affected by the removal of the Highlands and Islands exemption agreed to the proposal under the provision that they are allowed to pass through guaranteed standards payments for severe weather circumstances.
- 7.39. One respondent indicated that during a storm, two or more periods without power should be added together and compensation provided to the affected customers once a duration threshold had been reached.

Normal weather standard and payment levels

- 7.40. Respondents agreed with our proposals to tighten normal weather standards, although some DNOs noted that this will require an extra effort and potentially increase expenditure on their part to comply with this. Respondents highlighted that this change in standards is something that has been identified as a priority by their stakeholder engagement.

- 7.41. One respondent echoed our concerns surrounding consumer awareness of the guaranteed standards and the need for them to actively claim for payments from their DNO.
- 7.42. We received a variety of responses regarding payment levels. Two DNOs agreed that the payment rates should be set to reflect inflation up to the middle of RIIO-ED1; one DNO indicated that the payment levels should be reduced so as to offset an anticipated increase in the number of payments; one DNO considers it reasonable to keep the payments at the existing level; and one DNO believed that an efficient level of 12 hour failures should be funded. The overall view from the DNOs was that the payment levels should be kept broadly similar to current levels. This view was shared by another respondent, who supported the index linking of payments to the end of DPCR5.

Non-domestic customers and consequential losses

- 7.43. Respondents agreed with our proposals to retain non-domestic customers within the guaranteed standards. One respondent highlighted that the retention of non-domestic customers within the guaranteed standards was particularly important for small businesses.
- 7.44. Respondents to the inclusion of non-domestic customers thought it prudent to continue our current policy on consequential losses and that altering the guaranteed standards to include them would significantly raise the risk to which a DNO is exposed.

Automatic payments

- 7.45. Responses from DNOs agreed that automatic payments to all customers are not currently achievable, since it is not possible to establish exactly which customers have experienced an interruption unless those customers contact the DNO. All DNO responses noted that automatic payments to customers will be feasible once data from smart meters is available. Until this time, making these payments will be costly to implement.
- 7.46. One response noted that if a customer has called a DNO to report they are off supply, it could be argued that this customer should receive an automatic payment if they subsequently qualify.

Priority Service Register customers

- 7.47. Respondents were generally in agreement with our proposal. Although a procedural challenge, most accept that making automatic payments to PSR customers should be feasible from the beginning of RIIO-ED1, especially since they should be able to tell if a low voltage feeder has PSR customers on it, even without data from smart meters. All responses noted that automatic

payments to PSR customers will be easier once data from smart meters has been validated.

- 7.48. Another respondent was also in favour of making payments to PSR customers automatic, since DNOs have all the details they need in order to do this.

Severe weather standards and guaranteed standards exposure

- 7.49. We did not receive any direct responses to our proposals for severe weather standards. A number of respondents supported our proposals, which were for approaches substantively the same as those taken in DPCR5, such as the severe weather standards and guaranteed standards exposure.

Reasons for our decision

Removal of exemptions

- 7.50. Removing the double exemption and the proposed arrangement for one-off exceptional events aims to provide clarity for customers who have experienced power cuts. This will ensure customers receive the payments where the DNOs fails to meet the standard, regardless of the cause of the interruption.
- 7.51. The exemptions that apply to Highlands and Islands customers were introduced due to the network structure in particular parts of Scotland. In these areas, the network is less resilient than in other parts of Great Britain and the work that would be required to raise resilience to an equivalent level could be prohibitively expensive for the affected customers to bear. The decision to remove these exemptions resulted from experience during DPCR5, where storms in December 2011 and January 2012 affected tens of thousands of customers but resulted in confusion over eligibility for payments. Removing this exemption will therefore improve clarity for all customers without significantly affecting the level of risk to which DNOs are exposed.
- 7.52. We consider that removing both exemptions will provide improved clarity for all stakeholders across the country, without significantly affecting the risk to which DNOs are exposed.

Normal weather standard and payment levels

- 7.53. Following stakeholder engagement in DPCR5¹⁵, it is evident that customers felt being off supply for 18 hours, before they qualify for a guaranteed

¹⁵Ofgem reference 106/08

<http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=142&refer=Networks/ElecDist/QualofServ>

standards payment, was too long a period of time. We believe there is a strong case for changing the standard to 12 hours, without the provision of additional allowances.

- 7.54. DNOs and independent parties indicate this is an appropriate move that will benefit customers and provide improved clarity of compensation arrangements. The agreement of all respondents reinforces our position to tighten these standards for RIIO-ED1.
- 7.55. Both options put forward in the strategy consultation document for updating payment levels were supported by respondents. As such, up-rating DPCR5 payments for forecasts of inflation to the mid-point of RIIO-ED1 will provide a clearer payment structure for customers and DNOs. We believe it is appropriate to take account of the longer price control period and to use inflation forecasts in setting payment levels for RIIO-ED1.

Penalty rate for unpaid compensation

- 7.56. To encourage DNOs to pay compensation where it is due to eligible customers, we have decided to enhance the DPCR5 recovery mechanism by applying a penalty rate of 20 per cent on top of the difference between the payments due and distribution licence terms. We believe that this will create an incentive on DNOs to ensure that payments due to their customers are being made.

Non-domestic customers and consequential losses

- 7.57. The guaranteed standards are a method of recognising the inconvenience caused by loss of supply to all customers, as it is not possible to guarantee a continuous supply of electricity in all circumstances.
- 7.58. The guaranteed standards were not intended to cover consequential losses that customers may experience as a result of a power-cut. Instead they are a method of recognising the inconvenience caused by loss of supply, as it is not possible to guarantee a continuous supply of electricity in all circumstances. We consider that it is important for non-domestic customers to be retained within the standards in order that DNOs continue to have appropriate focus on all customers.

Automatic payments

- 7.59. DNOs are required to provide information and advice to PSR customers and ensure these customers are kept informed of when their supply is likely to be restored during an interruption. They should be able to tell if a low voltage feeder has PSR customers on it even without data from smart meters. DNOs also have all the details they need in order to make payments to affected PSR customers automatically.

- 7.60. Making payments to PSR customers automatic is a practicable measure that can be implemented as an interim step before guaranteed standards payments are made automatic for all eligible customers.
- 7.61. Those customers who are not on the PSR are still required to submit a claim to the DNO for guaranteed standards payments. This is dependent upon customers being aware of the guaranteed standards and whether they are entitled to compensation. Since many customers are not aware of these details, DNOs should provide clear links on their website to the relevant guaranteed standards, outlining when customers are entitled to a payment and how to claim it.
- 7.62. It is considered premature to introduce automatic payments for all customers before the smart meter roll out, as this is not practical with existing systems. Ensuring DNOs raise awareness of the guaranteed standards among all customers is an important step before the smart meter roll out.

Guaranteed standards exposure

- 7.63. Ofgem has a duty to ensure that licence holders are able to finance the activities which are necessary to fulfil obligations on them. We consider that it is appropriate to retain this exposure cap to manage the overall level of risk that is faced by the DNOs. The annual exposure will be updated when we receive the latest data.

8. Worst served customers

Chapter Summary

This chapter sets out our decision on improving the quality of service offered to customers deemed worst served.

Background

- 8.1. The worst served customer mechanism is designed to reduce the number of interruptions experienced by those customers who experience an unusually poor level of service from their DNO. This is in addition to the IIS, which encourages DNOs to focus on reliability improvements yielding the greatest return per pound invested. The worst served mechanism is intended to address those customers who may not be adequately catered for by the IIS.

Our decision

- 8.2. We have decided that we will keep the existing structure of the DPCR5 worst served customer mechanism, and relax some of the parameters surrounding the scheme, principally setting alternative spending caps per worst served customer, and reducing the required performance improvement. We have decided that the total allowance across all DNOs for RIIO-ED1 will be £76.5 million. This will be provided on a use it or lose it basis. This is based on the same average annual figure as for DPCR5, but updated for the longer length of the RIIO-ED1 period and inflation up to 2011-12.
- 8.3. Ofgem will continue to set the definition of what a worst served customer is for the industry. Our current definition is a customer *“experiencing on average at least four higher voltage interruptions per year over a three year period ie 12 or more over three years.”* A worst served customer must also be one who has had *“a minimum of three higher voltage interruptions in each year,”* during the three year period. We feel that these changes will improve the current framework and improve the performance experienced by worst served customers during RIIO-ED1.

Summary of consultation proposals

- 8.4. In our consultation we set out three potential options for encouraging DNOs to manage the performance experienced by worst served customers. The first option was to refine the DPCR5 mechanism, including revising a number of the parameters. The second option was to create an incentive scheme. This would have moved the focus of the scheme to a DNO regional level rather than the current focus of the scheme in DPCR5 on those specifically identified as worst

served customers. The third option was to utilise guaranteed standards so that customers experiencing the worst level of service would receive compensation.

Summary of responses

- 8.5. Respondents were generally in favour of retaining the existing mechanism. They believed that it is targeted specifically at those customers who have experienced ongoing poor performance as opposed to targeting all customers who have received several HV interruptions. The incentive option was favoured by some respondents as they felt that it was a move away from an investment led focus to improving worst served customers' service, to one that would allow a DNO to develop a mix of investment and operational solutions. Most respondents felt that the use of the third option, guaranteed standards would overlap with other existing standards which are already considered sufficient.

Reasons for our decision

- 8.6. In coming to our decision on continuing the DPCR5 mechanism and relaxing the parameters on both the spending cap per worst served customer and the required performance improvement, we believe that we are continuing to put the interests of worst served customers first in a targeted manner. We feel that our decision will encourage DNOs to improve the service experienced by specifically those customers identified as worst served during RIIO-ED1.
- 8.7. One aspect of the DPCR5 approach that was considered limiting its uptake by the industry so far in DPCR5 was that the funding available of £1,000 per worst served customer was not sufficient to implement schemes. Another aspect which DNOs reported that was limiting their investment in schemes during DPCR5 was the uncertainty in achieving delivery of performance improvements of 25 per cent. By opening these parameters we feel that schemes aimed at improving worst served customers' service performance will be more widely undertaken across the industry during RIIO-ED1.
- 8.8. For consistency and clarity of comparison across the industry, Ofgem will continue to set the definition of what a worst served customers is, and we will create a metric of the higher voltage interruptions data as a reputational comparator of DNO performance to be used in the ED Annual Report from this point onwards. Table 8.1 summarises our proposals for worst served customers for RIIO-ED1.

Table 8.1: Details of the RIIO-ED1 worst served customer proposals

Issue	Proposal
Definition of worst served customer	Customer experiencing on average at least four higher voltage interruptions per year over a three year period ie 12 or more over three years. Additional requirement for a minimum of three higher voltage interruptions in each year.
Required performance improvement	DNO proposed per cent reduction in the average number of higher voltage interruptions for worst served customers - measured over full three reporting years post commissioning, based on fully evidenced and supported decisions following stakeholder engagement work. If this is not achieved then there is scope for the DNO to provide evidence of the expected long-term benefit of the scheme.
Total allowance pot	£76.5 million over RIIO-ED1 provided on a use-it-or-lose-it basis.
Distribution of allowance pot	Based on the number of worst served customers in each eligible DNO.
Cap per worst served customer	DNO proposed spending cap per worst served customer, based on fully evidenced and supported stakeholder engagement.
Funding arrangements	Logged up and funded ex post on a net present value (NPV) neutral basis provided that performance and eligibility criteria are met.

9. Resilience

Chapter Summary

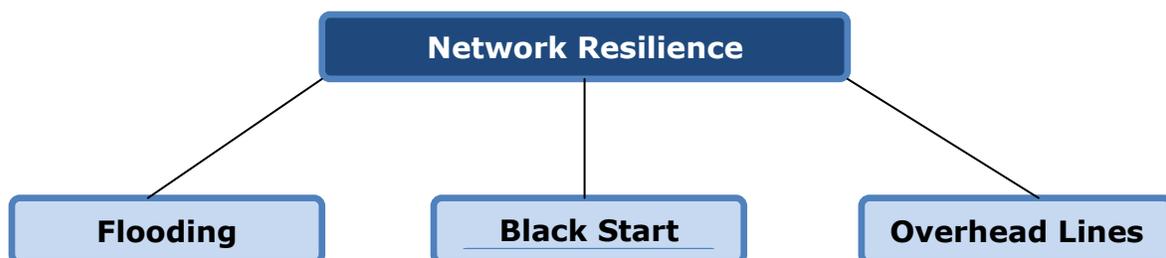
This chapter sets out our decisions on the area of network resilience, including high impact, low probability events, flood risk mitigation and Black Start. It also summarises the views that were expressed in response to our proposals as set out in the strategy consultation document.

Background

- 9.1. Resilience refers to the ability of the electricity distribution networks to continue to supply electricity to customers during disruptive events, such as floods or severe storms. DNOs are required to design and operate their networks in accordance with relevant statutes, codes and standards (such as Engineering Recommendation P2/6.)¹⁶
- 9.2. As set out in Chapter 2, we also expect DNOs to present evidence for how risks to their networks from extreme weather and climate change have been assessed using the latest climate projections and science. DNOs should also explain how they plan to manage climate risks to make sure that new and existing schemes are sustainable. The effects of climate change will be particularly relevant for DNOs when assessing flooding resilience and the resilience of their overhead line assets.

Our decision

- 9.3. We have decided that for RIIO-ED1 we will monitor and publish performance on secondary deliverables for each of the areas of flooding, Black Start and overhead lines as part of network resilience. Our inclusion of overhead line performance as a secondary deliverable for network resilience was in part a result of responses received during the consultation, which suggested that this was necessary.



¹⁶ Referenced in Guidance Note 1 (p. 5) of the Distribution Code:
<http://www.energynetworks.info/storage/Distribution%20Code%20v%2019.pdf>

- 9.4. We do not intend to create a composite metric of these three areas for RIIO-ED1 and will maintain distinct performance indicators for each. For all three areas these indicators will be based on the amount of risk reduction achieved at a given point in time, compared to the amount of risk reduction the DNO committed to achieve over the RIIO-ED1 period. For overhead lines, risk reduced will be based on fault rates from the interruptions data sets (including the “disaggregation by frequency band” data) as reported to Ofgem. We also intend to include the effect of exceptional events (including storms) in this measure as we feel this is necessary to provide a true representation of resilience.
- 9.5. In Chapter 6 of the ‘Supplementary annex - Tools for cost assessment document’, we have set out our decisions for how flood mitigation work and any necessary improvements in Black Start capabilities should be funded and assessed in RIIO-ED1.
- 9.6. For high impact, low probability (HILP) events, we will maintain the option for the government to provide guidance to us on what work is required by the DNOs and whether this should be funded through the price control. We will consider it as part of the mid-period review for RIIO-ED1, if we receive this guidance in sufficient time to do so. If we receive such guidance after the timeframe in which we can include it in the mid-period review, we will instead consider appropriate funding mechanisms during the review period for RIIO-ED2, and possible inclusion then.
- 9.7. We intend to remain open to additional elements being incorporated as part of resilience at a later stage. This may involve the development of measures for other areas as RIIO-ED1 progresses, some of which were identified by consultation respondents. An example of an area that this may apply to is cyber security. We also intend to further align our monitoring of resilience with the contents of the national risk register, working with DECC as appropriate to achieve this.

Summary of consultation proposals

- 9.8. In the strategy consultation document we proposed that the three areas covered by network resilience should be HILP events, flooding, and Black Start. Black Start refers to the actions necessary to restore electricity supplies following total or widespread shutdown of Great Britain’s transmission system.
- 9.9. For HILP, we proposed to adopt a similar approach to that of DPCR5 and maintain an option for government to provide guidance on the issue, with us working alongside them to ensure efficient investment by the DNOs if this was forthcoming.
- 9.10. For flooding we stated that we were considering the introduction of an incentive scheme to promote timely reduction of flooding risk. We also set out that we were considering whether to build on the flood resilience metric used

to determine cost allowances in DPCR5 and use this as a secondary deliverable.

- 9.11. On Black Start we set out that we were considering whether it is appropriate to introduce an arrangement to ensure that work to prepare for scenarios covered by this was delivered within a reasonable timescale.

Summary of responses

- 9.12. Respondents were generally supportive of our proposed approach to monitoring network resilience. No respondents objected to the inclusion of measures for flood resilience and Black Start as part of this. One respondent did not feel it was necessary to introduce an incentive scheme to promote more timely reduction of flooding risk. This respondent was also unsure of the benefits of combining flooding and Black Start into an overall metric. Their suggestion was that DNOs should instead look to remove risk at network “pinch points” identified following the major supply interruption at Dartford Creek in July 2009.¹⁷
- 9.13. With regard to our proposal not to include HILP events in network resilience, but to maintain the option for government to provide guidance on the issue, one respondent felt it was not necessary to include it at all. The other respondents who commented on HILP events agreed with our proposal.
- 9.14. Two respondents suggested that a metric for the resilience of the overhead line network to severe weather events or storms should be covered by network resilience. Of these respondents, one drew particular attention to the presence of light-construction overhead lines in the Highlands and Islands area, which are below the current design standards required for severe weather. This respondent also drew attention to the lack of interconnection for providing alternative supplies for many grid supply points and the potential consequences should a catastrophic event strike one of these.
- 9.15. One respondent stated that cyber security was an area that should also be considered under network resilience. The respondent felt that as DNOs were increasingly dependent on IT systems in controlling their networks, defences against cyber terrorism needed to be established and maintained to ensure system security and to protect customer databases.

¹⁷ Details of the consultation on Ofgem’s minded to position on the major supply interruption at Dartford Creek in July 2009 are available at:
<http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=150&refer=Networks/ElecDist/QualofServ/QoSIncent>

Reasons for our decision

- 9.16. Following the consultation we have greater confidence that the areas of flooding and Black Start should be covered in network resilience.
- 9.17. The most significant change from our proposals in the strategy consultation document is our decision to include a metric related to the resilience of overhead lines under overall network resilience. Several respondents to the consultation felt this was needed due to the importance of maintaining robust overhead lines capable of withstanding severe weather conditions. We therefore intend to use fault rates from interruptions data sets to develop performance indicators for overhead line networks. Such metrics will not be incentivised financially but we intend to include these indicators under network resilience.
- 9.18. In the September strategy consultation, we suggested three options for driving DNOs' performance in dealing with worst served customers. The second option suggested introducing an incentive scheme approach based on the number of higher voltage interruptions that occur in a DNO region in each year of RIIO-ED1. We have decided not to introduce this as an incentive for RIIO-ED1. We feel that the measure of performance intended to be used for this incentive provides a useful proxy metric of resilience and we will continue to collect this information however.
- 9.19. Our decision to remain open to additional elements being included under the banner of resilience at a later stage is in recognition of the fact that threats and other factors with the potential to affect resilience, are unlikely to remain static during RIIO-ED1. The scope of work required to mitigate such threats and factors will therefore be likely to change.

Appendices

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Appendix 1 – Summary of consultation responses

Chapter 2 – Overview of Reliability and Safety

Question 1: What are your views on the primary outputs and secondary deliverables for reliability and safety? In particular:

- (a) Do you agree that these are appropriate areas to focus on?
- (b) Are there any other areas that should be included?

Respondents were in agreement with our focus in terms of areas covered by primary outputs and secondary deliverables.

There was some concerns raised over the proposal to reintroduce the upside cap on the IIS and the proposal to apply the criticality measure to a wide scope of assets unlikely to be replaced within RIIO-ED1.

One respondent was concerned that moving towards a more standardised approach to the Load Index would drive particular DNOs to become more risk-averse and invest rather than optimising the use of assets for customers.

Chapter 3 – Safety

Question 1: What are your views on the proposed primary output and secondary deliverables relating to safety?

Respondents were broadly supportive of our proposed output and secondary deliverables and no additional outputs and deliverables were suggested.

Question 2: Are these appropriate areas to focus on and are there any other areas that should be included?

Respondents were broadly supportive of our proposed output and secondary deliverables and no additional outputs and deliverables were suggested.

Question 3: Do you agree with our proposal not to place a financial incentive on the primary safety output?

The majority of respondents agreed with our proposal not to include a financial incentive for the primary safety output, although one respondent expressed disappointment. This respondent felt that RIIO-ED1 presents an opportunity for Ofgem to target improved safety performance through an incentive mechanism. The respondent suggested that this could be achieved either through a one off percentage IQI reward for business plans that demonstrate a commitment to safety, or through a discretionary reward scheme for exceptional safety performance. They

also felt that DNOs should not be eligible for fast tracking unless their safety commitment was demonstrated in their well justified business plans.

Question 4: Do you agree with our proposal to create an incentive framework for secondary deliverables for electricity distribution safety?

The majority of respondents supported our proposal to create an incentive framework for our proposed secondary deliverables, with only one respondent not supportive. One of the respondents that supported this proposal felt it would be unhelpful to describe the proposed deliverables as “secondary deliverables for electricity distribution safety” as risk indices such as these are not safety specific. We have adjusted the definitions of these secondary deliverables to reflect this.

Chapter 4 – Interruptions Incentive Scheme

Question 1: Do you agree with our proposal to align the IIS incentive rates with those proposed as part of RIIO-T1?

Respondents largely felt that the application of the efficiency mechanism incentive was an unnecessary complication to the IIS scheme which they feel works well as it is, through rewarding companies where their investment decisions have paid off (through capital work, or operational techniques) and penalising those companies that have under-performed.

Question 2: What are your views on applying the efficiency incentive rate to the IIS incentive rates?

Respondents favoured our approach for retaining the current strength of the incentive rates as they felt that they have worked well in delivering on its aims. One respondent favoured the use of their own incentive rate based on their stakeholder engagement work.

Question 3: Do you believe we need to introduce a rolling incentive mechanism for IIS, along the lines of the shrinkage rolling incentive proposed in RIIO-GD1, and if so outline your views on the merits of this approach for the IIS?

Respondents felt that the rolling incentive mechanism on shrinkage proposed for RIIO-GD1 could be adopted but would add significant complexity compared to maintaining our current approach and it would introduce an additional level of uncertainty for DNOs.

A further consideration raised by respondents was that in presenting this information to stakeholders, it was felt that the performance assessment at the end of the price control would be misleading and confusing for stakeholders. If we were to introduce this approach for the IIS, it was suggested that it may be appropriate to do so in a two stage process over RIIO-ED1 for implementation in RIIO-ED2.

Question 4: What are your views on the level of revenue exposure and do you believe we need to reintroduce a cap on outperformance?

Responses favoured the retention of the downside exposure along with extending it to the proposed RORE basis points of between 250 and 300. With regards to the re-introduction of an upside cap, some respondents were not in favour of this and considered it a retrograde step as it could reduce the incentive on DNOs to identify and implement performance improvements for the benefit of their stakeholders. Others felt that the use of a cap would not create any change in DNOs responsiveness to the IIS as the proposed symmetric cap and collar would be unlikely to be reached by DNOs. One DNO queried how the prepared RORE basis points translated into £ millions.

Question 5: Do you agree with our proposal to set separate planned and unplanned interruptions and minutes lost targets under the IIS?

Responses to this question supported our proposed treatment of these targets as it would create clarity for stakeholders as they are not readily comparable due to the different methodologies used in their calculation.

Question 6: Do you have a preference amongst the options which we have outlined for planned interruptions and minutes lost target setting in RIIO-ED1?

The consultation responses presented varying views on the different options with more respondents favouring the rolling targets ahead of the option to allow DNOs to set their own targets. The respondents that favoured targets set using the rolling mechanism felt that it would allow DNOs to find their own appropriate economic level of planned interruptions over RIIO-ED1, and it would also reflect actual changes in investment decisions by companies rather than rigidly being set up front as was done in DPCR5 based on investment plans set a number of years before the price control. The responses in favour of DNOs setting their own targets felt that their own targets should be based on the workload identified in their well justified business plans.

Question 7: Do you have a preference amongst the options which we have outlined for unplanned interruptions and minutes lost target setting in RIIO-ED1?

Most respondents felt that setting targets for RIIO-ED1 up front would provide clarity for customers, ensure readily measurable targets against performance for stakeholders and would create certainty for DNOs with regards to investment decisions. The application of a glidepath to the unplanned target setting method was considered appropriate by one respondent. The capped rolling targets approach was favoured by one respondent.

The CI improvement factors which were set at 0.5 per cent and 1.5 per cent were queried by some respondents. One respondent, whilst agreeing with the use of improvement factors, suggested that the proposed values were too blunt. Other respondents felt that the anticipation of performance improvement was appropriate.

Question 8: Do you agree with our proposals on exceptional events?

Respondents felt that it was appropriate to continue these processes as they are seen to be fair and reasonable for determining performance. Another aspect reflected in responses related to the proposals concerning the changes being made in the

guaranteed standards of performance (SI 698 of 2010). Respondents agreed with our proposal to reduce the normal weather standard duration from 18 to 12 hours. One respondent felt that replacing exceptional event days with period average performance would be a complication that is unnecessary given that most one-off exceptional events affect only a small number of days.

Question 9: Do you agree with our proposed approach to smart electricity meters?

The majority of responses agreed with our proposals regarding DNOs preparing their systems for the smart meter roll-out.

Some respondents felt that the inclusion of a rebasing mechanism during RIIO-ED1 was appropriate as it would provide protection for customers and DNOs from excessive penalties or rewards during the period. Other respondents felt that there was no need for it as they believe that it is highly unlikely that smart meters will have a material impact on network performance during RIIO-ED1, or that any change in performance could be solely attributed to smart meters.

Question 10: Do you agree with us not incentivising short interruptions in RIIO-ED1?

The responses agreed that we should not create an incentive on short interruptions. Responses outlined the impact that investments made in remote control and automation technologies have made in improving customer service by reducing the duration of interruptions, thereby reducing the inconvenience experienced by customers. Certain DNOs indicated that their own stakeholder engagement research into making investments to reduce short interruptions was beyond what their customers were willing to pay and that their stakeholders continue to value reduced duration interruptions ahead of reducing the number of interruptions. Others noted that the data was not currently robust enough to justify the introduction of an incentive scheme.

A DNO indicated that a particular group of their customers provided strong feedback in relation to both the three minute short interruption threshold and also wanted to reduce the number of short interruptions, as they are particularly sensitive to short interruptions and disturbances. The DNO in question agreed that at present the data reported regarding short interruptions needs to be reviewed by the industry, with a view to gathering sufficiently robust data across the industry in time for the next price control period.

Chapter 5 – Load Indices

Question 1: What are your views on our proposals on load indices (LIs)?

Respondents were generally supportive of our proposed amendments to the LI framework.

No respondent supported the extension of LIs to the secondary network for the RIIO-ED1 period.

Question 2: Do you agree with our proposed common LI bandings?

There was general agreement that it was appropriate to set out standardised LI bandings as long as a common set of definitions could be reached. There was some disagreement over whether the specific thresholds as set out, were appropriate. Specific concerns raised were that the bandings might drive particular DNOs to increase expenditure rather than optimising asset capability.

Question 3: Of the two options outlined for determining the LI deliverable, which do you think is the most appropriate?

All parties that responded to the specific questions outlined agreed with our proposed approach to setting an aggregate loading target within a tolerance band.

Question 4: Where significant numbers of substations that predominantly cater for demand arise, do you agree that the development of a Distributed Generation (DG) index for generation-dominated substations would be feasible and appropriate to implement at the mid-period point of RIIO-ED1?

Five out of six respondents felt that the implementation of the DG Index was an appropriate approach at the mid period review of outputs where levels of DG connected are significantly higher than demand.

Chapter 6 – Health Indices

Question 1: What are your views on our proposals for health indices (HIs)?

All respondents expressed their support for, or at least general agreement with, our proposals for health, criticality and risk indices. One respondent emphasised that they wanted to see a common framework specified for all DNOs, designed to work for the whole RIIO-ED1 period.

Question 2: Do you agree with our proposals to introduce criticality into the HI framework?

Respondents unanimously agreed with our proposal to introduce criticality into the HI framework. It was felt that this would reflect the risk based investment prioritisation of DNOs. Respondents also agreed with the types of consequence of failure identified in the strategy consultation document. Several felt that a fourth consequence of failure category, “financial consequences”, should also be included however. One respondent felt that it would not be necessary or efficient for DNOs to collect and maintain criticality information for low value, high volume assets, or for those assets in near new or good condition. The respondent felt that it was important to understand the potential benefits of extending criticality into the risk index for all such assets before doing so.

Question 3: Do you agree with our proposals for applying financial consequences in the case of material under or over delivery?

All respondents agreed that financial rewards and penalties would be appropriate for material under or over delivery of network risk improvements. One respondent felt that these should avoid weakening incentives for DNOs to undertake actions that could otherwise reduce costs for customers. This respondent also felt that rewarding over-delivery of outputs should only occur if customers were shown to receive a proportionate benefit from this. Another respondent felt that any financial consequences should be designed in a way so as to prevent DNOs agreeing to provide long term solutions but opting instead for cheaper short term options which would later prove not to be the most cost effective means of managing risks, when whole life costs of the solutions were considered.

Question 4: Do you agree with our proposals to require greater consistency in the types of assessments that the DNOs should feed into the calculation of the asset health indices?

All respondents agreed that greater consistency was needed in the types of assessments DNOs used to set HIs. Some respondents felt that this could be best achieved by determining a set of “principles” which would remain applicable for the duration of RIIO-ED1 and potentially beyond. It was felt that such a framework would allow DNOs to utilise their existing inspections and maintenance regimes and apply their own views on how asset health and risk are assessed. One respondent felt that safety or environmental considerations should not be included in HIs as they may have been included in some DNOs’ assessment of the end of serviceable life for assets in DPCR5.

Question 5: What are your views on the suggestion that we would mandate DNOs to develop and maintain HIs in specified asset classes?

Some respondents were not supportive of the suggestion that DNOs should be mandated to develop and maintain HIs in specified classes. While most respondents felt that this was appropriate for some asset classes, some identified certain asset types where they felt this would be inappropriate. In particular, low value, high volume assets were seen as one area where mandatory collection of HIs was inappropriate. Some respondents felt that mandating HI collection on such assets could be detrimental to an effective overall risk management strategy. Some assets were also felt to present practical obstacles to the effective collection of HI data, for example non-pressurised underground cables.

Chapter 7 – Guaranteed Standards

Question 1: What are your views on our proposals for the guaranteed standards?

Respondents were generally supportive of our proposals for guaranteed standards. Views on specific areas of the proposals were addressed in answer to the relevant questions.

Question 2: Do you feel that we should conduct a mid-period review of the guaranteed standards?

Respondents felt that a mid-period review was not necessary since the guaranteed standards have been in place for a long period of time. However it was noted that the proposed arrangements would allow a mid-period review if required.

In addition, it was expressed by one respondent that the proposed adjustment of payment rates, taking account of forecast inflation, further removes the need for a mid-period review.

Question 3: Do you agree with our proposal to remove the potential double exemption of one-off exceptional events under the IIS and the guaranteed standards?

Respondents supported the removal of the double exemption for one-off exceptional events, noting that although the circumstances may be out of the DNOs' control, customers have still experienced an inconvenience and should be appropriately compensated.

One DNO recommended that the payment caps be reviewed for one-off exceptional events, creating a common cap for all DNOs equivalent to 5,000 customers being off supply for four days, each receiving the maximum compensation amount.

Question 4: Do you agree with our proposal to remove all of the Highlands and Islands customer exemptions?

Responses are in favour of the proposals to remove the specific Highlands and Islands exemptions and certain exemptions for GS2B relating to one-off exceptional events. The views expressed by DNOs indicated that this would result in improved clarity for customers across the country, irrespective of their geographic location.

The DNO affected by the removal of the Highlands and Islands exemption agreed to the proposal under the provision that they are allowed to pass through guaranteed standards payments for severe weather circumstances.

One respondent indicated that during a storm, two or more periods without power should be added together and compensation provided to the affected customers once a duration threshold had been reached.

Question 5: What are your views on our proposal to reduce the normal weather standard from 18 to 12 hours, the associated changes to payment levels and options for funding?

Respondents agreed with our proposals to tighten normal weather standards, although some DNOs noted that this will require an extra effort and potentially increase expenditure on their part to comply with this. Respondents highlighted that this change in standards is something that has been identified as a priority by their stakeholder engagement.

One respondent echoed our concerns surrounding consumer awareness of the guaranteed standards and the need for them to actively claim for payments from their DNO.

We received a variety of responses regarding payment levels. Two DNOs agreed that the payment rates should be set to reflect inflation up to the middle of RIIO-ED1; one DNO indicated that the payment levels should be reduced so as to offset an anticipated increase in the number of payments; one DNO considers it reasonable to keep the payments at the existing level; and one DNO believes that an “efficient level” of 12 hour failures should be funded. The overall view from the DNOs is that the payment levels should be kept broadly similar to current levels. This view is shared by another respondent, who supports the index linking of payments to the end of DPCR5.

Question 6: Do you agree with our proposal to keep non-domestic customers in the guaranteed standards?

Respondents agreed with our proposals to retain non-domestic customers within the guaranteed standards. One respondent highlighted that the retention of non-domestic customers within the guaranteed standards was particularly important for small businesses.

Respondents to the inclusion of non-domestic customers thought it prudent to continue our current policy on consequential losses, and that altering the guaranteed standards to include them would significantly raise the risk to which a DNO is exposed.

Question 7: What are your views on the feasibility and practicality of making payments to all customers automatic?

Responses from DNOs agreed that automatic payments to all customers are not currently achievable, since it is not possible to establish exactly which customers have experienced an interruption unless those customers contact the DNO. All DNO responses noted that automatic payments to customers will be feasible once data from smart meters is available; until this time, making these payments will be costly to implement.

One response noted that if a customer has called a DNO to report they are off supply, it could be argued that this customer should receive an automatic payment if they subsequently qualify.

Question 8: Do you agree with our proposal to make payments to Priority Service Register customers automatic?

Responses from DNOs were generally in agreement. Although a procedural challenge, most accept that making automatic payments to PSR customers should be feasible from the beginning of RIIO-ED1, especially since they should be able to tell if a low voltage feeder has PSR customers on it even without data from smart meters. All responses noted that automatic payments to PSR customers will be easier once data from smart meters has been validated.

Another respondent was also in favour of making payments to PSR customers automatic, since DNOs have all the details they need in order to do this.

Chapter 8 – Worst Served Customers

Question 1: What are your views on the proposed options that we have outlined for the worst served customers scheme? Please include what you see as the pros and cons of each of the options, whether you have a preferred option and why.

Respondents were generally in favour of retaining the existing mechanism. The main reasons for their support of this are that it is targeted specifically at those customers who have experienced ongoing poor performance as opposed to targeting all customers who have received several HV interruptions. The incentive option was liked by some respondents as they felt that it was a move away from an investment led focus to improving worst served customers' interruptions experience, to one that would allow a DNO to develop a mix of investment and operational solutions. Most respondents felt that the use of the third option, guaranteed standards would overlap with other existing standards which are in themselves considered sufficient already.

Chapter 9 – Resilience

Question 1: What are your views on our proposals for network resilience?

Respondents were generally supportive of our proposed approach to monitoring network resilience. No respondents objected to the inclusion of measures for flood resilience and Black Start as part of this. One respondent did not feel it was necessary to introduce an incentive scheme to promote more timely reduction of flooding risk however. This respondent was also unsure of the benefits of combining flooding and Black Start into an overall metric. Their suggestion was that DNOs should instead look to remove risk at network "pinch points" identified in post-Dartford incident risk assessments.

Question 2: Do you think that our proposals cover the right areas or are there other areas that you think we should be considering?

With regard to our proposal not to include HILP events in network resilience, but to maintain the option for government to provide guidance on the issue, one respondent felt it was not necessary to include it at all. The other respondents who commented on HILP events agreed with our proposal.

Two respondents suggested that a metric for the resilience of the overhead line network to severe weather events or storms should be covered by network resilience. Of these respondents, one drew particular attention to the presence of light-construction overhead lines in the Highlands and Islands area, which are below the current design standards required for severe weather. This respondent also drew attention to the lack of interconnection for providing alternative supplies for many grid supply points and the potential consequences should a catastrophic event strike one of these.



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One respondent stated that cyber security was an area that should also be considered under network resilience. The respondent felt that as DNOs were increasingly dependent on IT systems in controlling their networks, defences against cyber terrorism needed to be established and maintained to ensure system security and to protect customer databases.

Appendix 2 – Interruptions Incentive Scheme

Tables for the Interruptions Incentive Scheme

Table 1 - Indicative targets for unplanned Customer Interruptions (CIs)

DNO	Current Average	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
ENWL	48.1	47.9	47.6	47.4	47.2	46.9	46.7	46.5	46.2	46.0	45.8	45.5
NPgN	63.2	62.3	61.3	60.4	60.1	59.8	59.5	59.2	58.9	58.6	58.3	58.1
NPgY	70.3	69.2	68.2	67.2	66.2	65.2	64.2	63.2	62.3	61.3	60.4	59.5
WMID	93.6	92.2	90.9	89.5	88.2	86.8	85.5	84.2	83.0	81.7	80.5	79.3
EMID	59.2	58.3	57.4	56.6	55.7	54.9	54.1	53.8	53.5	53.2	53.0	52.7
SWALES	55.6	55.3	55.0	54.7	54.4	54.2	53.9	53.6	53.4	53.1	52.8	52.6
SWEST	57.3	57.0	56.7	56.5	56.2	55.9	55.6	55.3	55.1	54.8	54.5	54.2
LPN	29.3	29.1	29.0	28.8	28.7	28.5	28.4	28.3	28.1	28.0	27.8	27.7
SPN	73.2	72.1	71.0	69.9	68.9	67.8	66.8	65.8	65.5	65.2	64.8	64.5
EPN	75.0	73.9	72.8	71.7	70.6	69.6	69.2	68.9	68.5	68.2	67.9	67.5
SPD	51.8	51.5	51.3	51.0	50.8	50.5	50.3	50.0	49.8	49.5	49.3	49.0
SPMW	37.6	37.4	37.2	37.0	36.9	36.7	36.5	36.3	36.1	35.9	35.8	35.6
SSEH	69.0	68.6	68.3	67.9	67.6	67.3	66.9	66.6	66.3	65.9	65.6	65.3
SSES	64.8	63.9	62.9	62.0	61.0	60.7	60.4	60.1	59.8	59.5	59.2	58.9

* Current average (LV, HV, NGC, DG, OCS 08/09 - 11/12) (EHV, 132kV 02/03 - 11/12)

Table 2 – Indicative targets for unplanned Customer Minutes Lost (CMLs)

DNO	Current Average Performance*	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
ENWL	43.4	44.3	43.6	42.8	41.9	41.1	40.3	39.5	38.7	37.9	37.2	36.5
NPgN	62.8	57.6	56.5	55.3	54.3	53.2	52.2	51.2	50.2	49.2	48.3	47.4
NPgY	63.2	62.7	61.5	60.2	59.0	57.8	56.7	55.6	54.5	53.4	52.4	51.3
WMID	67.3	65.7	64.2	62.8	61.5	60.1	58.8	57.6	56.3	55.1	53.9	52.8
EMID	45.5	45.3	44.3	43.3	42.3	41.4	40.4	39.5	38.7	37.8	37.0	36.2
SWALES	28.7	41.6	41.6	41.6	41.6	41.6	40.7	39.8	38.8	37.9	37.1	36.2
SWEST	35.0	49.5	49.5	49.5	49.5	49.5	48.6	47.6	46.6	45.6	44.6	43.6
LPN	41.4	42.2	41.8	41.2	40.5	39.9	39.3	38.7	38.2	37.6	37.0	36.5
SPN	70.3	54.6	53.3	52.1	51.0	49.8	48.7	47.6	46.6	45.5	44.6	43.6
EPN	64.7	55.6	54.3	53.1	51.9	50.8	49.7	48.6	47.5	46.5	45.5	44.5
SPD	47.8	46.7	45.8	44.8	43.9	43.0	42.2	41.3	40.5	39.7	38.9	38.1
SPMW	41.0	40.0	39.1	38.2	37.3	36.4	35.6	34.8	34.0	33.2	32.5	31.8
SSEH	62.8	59.9	58.6	57.3	56.0	54.8	53.6	52.4	51.3	50.2	49.1	48.1
SSES	59.4	53.3	52.2	51.1	50.1	49.1	48.1	47.2	46.2	45.3	44.5	43.6

* Current average (LV, HV, NGC, DG, OCS 08/09 - 11/12) (EHV, 132kV 02/03 - 11/12)

Table 3 - Severe weather exceptional event thresholds for RIIO-ED1

DNO	Threshold	
	Category 1 - Medium severe weather events	Category 2 - Large severe weather events
	8 x mean HV and above daily average incident rate	13 x mean HV and above daily average incident rate
ENWL	54	87
NPgN	36	58
NPgY	39	63
WMID	63	102
EMID	66	108
SWALES	42	68
SWEST	59	96
LPN	12	20
SPN	54	87
EPN	93	151
SPD	76	123
SPM	69	112
SSEH	59	95
SSES	66	108

Table 4 - One off exceptional event thresholds for RIIO-ED1

DNO	CI threshold	CML threshold
ENWL	1.1	0.8
NPgN	1.6	1.3
NPgY	1.1	0.9
WMID	1.0	0.8
EMID	1.0	0.8
SWALES	2.3	1.8
SWEST	1.6	1.3
LPN	1.1	0.9
SPN	1.1	0.9
EPN	0.7	0.6
SPD	1.3	1.0
SPM	1.7	1.3
SSEH	3.4	2.7
SSES	0.8	0.7

Table 5 - CI improvement factors for RIIO-ED1

	Improvement factor
DNO beating benchmark	0.5%
DNO worse than benchmark	1.5%

Table 6 - CML improvement factors for RIIO-ED1

Voltage	Improvement factor
132kV	1%
EHV	1%
HV	3%
LV	1%

Table 7 - Annual CI and CML incentive rates for RIIO-ED1

DNO	CI incentive rates £m	CML incentive rates £m
ENWL	0.35	0.86
NPgN	0.24	0.58
NPgY	0.34	0.83
WMID	0.37	0.90
EMID	0.39	0.96
SWALES	0.17	0.40
SWEST	0.23	0.57
LPN	0.34	0.83
SPN	0.34	0.82
EPN	0.53	1.29
SPD	0.30	0.73
SPMW	0.22	0.54
SSEH	0.11	0.27
SSES	0.44	1.08

Table 8 – RIIO-ED1 total RORE and indicative annual revenue exposure to IIS

DNO	Customer Interruptions (CI)		Customer Minutes Lost (CML)	
	Total RIIO-ED1 RORE bps (pre tax)	Annual Revenue Exposure £m	Total RIIO-ED1 RORE bps (pre tax)	Annual Revenue Exposure £m
ENWL	67	3.96	183	10.92
NPGN	67	2.59	183	7.14
NPGY	67	3.56	183	9.82
WMID	67	4.80	183	13.24
EMID	67	4.64	183	12.80
SWALES	67	2.17	183	5.97
SWEST	67	3.25	183	8.97
LPN	67	3.60	183	9.93
SPN	67	3.77	183	10.39
EPN	67	5.69	183	15.69
SPD	67	3.95	183	10.88
SPMW	67	4.10	183	11.30
SSEH	67	2.45	183	6.76
SSES	67	5.03	183	13.88