SSEN DISTRIBUTION RIIO-ED2

RELIABILITY STRATEGY

RIIO- ED2 Business Plan Annex 7.2

Scottish & Southern Electricity Networks

CONTENTS

EXECUTIVE SUMMARY

The following Reliability Annex details our reliability plans for RIIO-ED2. It covers three key areas within reliability where we are measured by Ofgem;

1. **Interruptions Incentive Scheme (IIS);**
2. **Guaranteed Standards of Performance (GSoPs); and**
3. **Improved network performance for our Worst Served Customers (WSCs).**

The Annex details our plans on:

1. **What consumers will get from our proposals.**
2. **What actions will be taken to deliver on these proposals.**
3. **Why we chose these investments over alternatives.**
4. **A credible transition from RIIO-ED1 to RIIO-ED2.**
5. **What if the future is not as predicted?**

Our plans have been discussed with our key stakeholders and customers and their feedback has been incorporated into our updated plans. The key outputs for Reliability are:

Output	Output type	RIIO-ED2 target	Cost in baseline plan
Reliability – Interruptions Incentive Scheme (IIS)	ODI-F	Meet our targets and reduce the average frequency and duration of unplanned power interruptions affecting our customers by 20% by 2028	£24.2m
Guaranteed Standards of Performance (GSoPs) i.e. quality of supply	LO	Meet our obligations under GSOPs and minimise the number of customers experiencing an outage greater than 12 hours.	N/A
Reliability – Reduce number of Worst Served Customers (WSCs)	PCD	By 2028 improve the network performance for at least 75% of worst-served customers[1]	£25.2m

LO: licence obligation; PCD: price control deliverable; ODI: output delivery incentive (F: Financial, R: Reputational), CVP: Consumer Value Proposition, SSEN Aim: company goal

[1] This is based on 2019/20 fault data and investing to remove 75% of those customers who remain WSC at the start of RIIO-ED2

For IIS we highlight our ambition to continue to improve our performance and reduce the frequency and duration of customer interruptions in line with Ofgem's targets. The above outputs highlight the specific expenditure of £24.2m required to be invested in performance related activities to deliver these benefits for unplanned interruptions across more than 600 circuits on our network. Secondary benefits are driven in performance from other key areas of the plan including increased and focussed investment during the remainder of RIIO-ED1.

We will not have visibility of our IIS targets until these are formally set by Ofgem in 2022. However, we have carried out analysis using industry performance to date and published information on Ofgem's methodology.

Our analysis shows that a significant step-change in performance will be required across most of industry between the end of RIIO-ED1 and the start of RIIO-ED2, and continuing into RIIO-ED2, in order to meet targets. This is of particular concern in the context of CML targets. While Ofgem has stated in previous documents that DNOs will be funded through their baseline business plan to meet their targets, we have concerns that Ofgem's methodology could lead to DNOs spending more to avoid penalties in a way that exceeds value to consumers. Our full analysis is shown in Section 6 – Credible Transition from RIIO-ED1 to RIIO-ED2.

We have therefore only included investments to improve reliability in our business plan where these are supported by a robust cost-benefit analysis. This is based on the assumption that Ofgem will set targets that reflect consumer benefits and drive efficient behaviours, and that we will receive full allowances for all relevant activities included in our business plan. Consequently, our business plan will need revisiting should the methodology require additional investment otherwise not supported by CBA or allowed in our final business plan.

We also note that the RIIO-ED1 fast-tracking process will have an impact on how targets are set in RIIO-ED2. It creates an uneven playing field between companies, as targets take into account both a DNO's own performance and benchmarked industry performance.

Some stakeholders raised concerns that targets in RIIO-ED1 were set on the basis of outdated performance information. We note that Ofgem have already stated that it will use the latest information available to set targets and will therefore not set these prior to draft and final determinations.

To meet the Planned Outages targets, we will manage our work on our assets to minimise the impact on customers when we are undertaking necessary works. The work on our assets will be grouped to maximise the use of any planned interruptions[2], enabling a programme of work to touch the network efficiently during the RIIO-ED2 period and will result in less disruptions for our customers. We will also continue to improve and develop how we interact and notify Customers of planned interruptions including through digital channels such as our PowerTrack outage notification system[3]. See our ***Deliverability Strategy (Annex 16.1)*** for further details.

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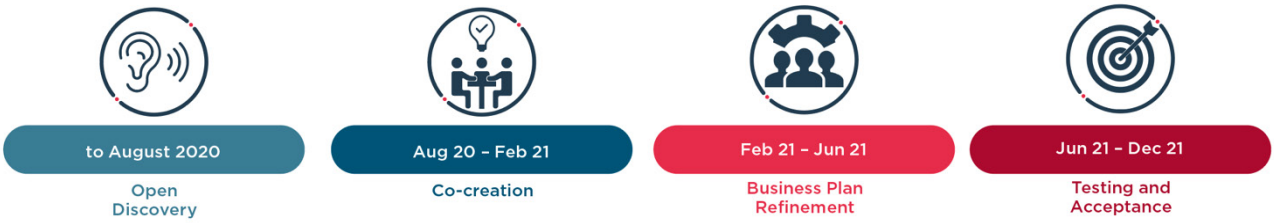
[2] *C.16. Ensuring Deliverability and a Resilient Workforce*

[3] *C.05. IT & Digitalisation*

For GSoPs our key output is focussed on minimising 12-hour outages for our customers (Regulation 5 Supply Restoration: Normal Conditions). Our overall baseline expenditure (rather than any specific investments) will drive improvements in our reliability and associated GSoP and we remain committed to minimise the disruption caused by interruptions.

We have worked with Stakeholders to develop a robust plan, and our output to reduce the number of customers designated as Worst Served by 75%. We have detailed our plans and projects required to deliver this improvement and the associated costs (£25.2m).

1. ENHANCED ENGAGEMENT



Our Reliability strategy has been informed by our Enhanced Engagement programme, full details of which are set out in ***Enhanced engagement strategy (Annex 3.1.)*** Our draft plan was underpinned by three phases of stakeholder and customer engagement (illustrated in the diagram above). The details of this engagement and insights are set out in Appendices C and D to this Annex and provide a clear line of sight between what stakeholders told us and our Reliability strategy and outputs.

1.1 FINAL RELIABILITY STRATEGY TESTING AND ACCEPTANCE

We have refined our final Reliability strategy and outputs based on Phase 4 of our Enhanced Engagement, which involved direct testing of the strategy, outputs and costs with 1,498 stakeholders through seven events. The table below sets out the clear line of sight of the changes between our draft and final Reliability strategy and outputs based on this engagement.

1.2 ENGAGEMENT EVIDENCE TRIANGULATION AND CHANGES BETWEEN DRAFT AND FINAL PLAN

The table below summarises the clear line of sight between stakeholder and consumer insights and our Reliability strategy and outputs. For our **draft Reliability strategy** and outputs, based on phases 1 to 3 of our enhanced engagement program, we demonstrated how engagement insights had informed our outputs using these keys:

Findings converge to support proposals.

Findings generate new insights that lead to further refinement of proposal.

The proposed approach diverges from the findings.

To demonstrate the line of sight between the scope of **change between draft and final**, based on testing our draft proposals with stakeholders and consumers, we use theses keys:

NEW – a new output for the final plan **ENHANCED** – the draft output has increased in ambition for final plan
REFINED – more clarity is provided in final plan

Strategy/Output	Phases 1-3 Enhanced Engagement	Phase 4 Outputs and Cost Testing	Acceptability
REFINED **Output:** Meet our targets and reduce the average frequency and duration of unplanned power interruptions affecting our customers by 20% by 2028	**Stakeholders said** Stakeholders value high levels of reliability. **Our response** We will meet Ofgem's targets for reducing the frequency and duration of power cuts. We will ensure that we communicate effectively during power outages, particularly for remote communities where electricity is heavily relied upon, promote the PSR and the 105 power cut number.	**Stakeholders said** The majority of stakeholders were satisfied that the package of outputs under reliability represented good value for money for customers and was comprehensive enough in meeting the needs of customers. Stakeholders also stated that the outputs in this area were sufficiently ambitious. Some customer segments such as future and fuel poor urged more ambition given the dependency on electricity is increasing and driven by their personal experiences of power cuts respectively. Customers in vulnerable situations urged ambition as many have a dependency on medical equipment	77%%

Strategy/Output	Phases 1-3 Enhanced Engagement	Phase 4 Outputs and Cost Testing	Acceptability
		Our response We have maintained our package of outputs under reliability as the majority stakeholders and customers believe we have correctly identified and addressed the challenges.	
REFINED **Output:** By 2028 improve the network performance for at least 75% of worst-served customers	**Stakeholders said** Stakeholders told us that the level of service experienced by WSCs is unacceptable and we should do all we can to improve their reliability. **Our response** We selected an ambitious target of at least 75% to be remediated during ED2 which encompasses all projects with net benefits. **Stakeholders said** Stakeholders prioritised the number of vulnerable customers as the basis for prioritising schemes. **Our response** We have identified schemes in both Licence Areas that will deliver a 75% reduction. The schemes in the North and South that form the majority of our WSC programme will be sized for optimal practicality of delivery during ED2, and prioritised through a combination of number of WSCs and vulnerability levels. The scope of works is almost twice as large per year during ED2 compared to ED1.	**Stakeholders said** Customers placed a medium priority on 'improving network performance for at least 75% customers that are deemed worst served'. As stated above stakeholders thought the package of power cut targets and improving performance for WSC represented value for money and was sufficiently ambitious. Some stakeholder segments including vulnerable customers and their representatives urged ambition beyond the 75% target, citing the stakeholder may not fully understand the increasing reliance on electricity. This stakeholder also noted that SSEN didn't discuss short interruptions extensively in the plan which is important in the context of reliance on electricity. **Our response** Evidence from our enhanced engagement program reflects majority supports for the target of a 75% improvement. Additionally, this target is cost effective for both Licence Areas. We undertook bespoke consumer research on our strategy for WSCs during phase 3 of our enhanced engagement program which has informed our approach and the 75% target.	81%%

2. INTRODUCTION

Our performance is measured by how reliable and responsive our network is (i.e. by the number and duration of power cuts that homes and businesses connected to our electricity network experience) and we're committed to delivering the highest industry standards as well as continuing to drive performance improvements to ensure any interruptions are kept to a minimum and are as short as possible.

In the last reporting year, we've reduced the number of power cuts by 9% and the duration by 6%. We'll continue to enhance the responsiveness of our network, so interruptions become even more rare, by using innovative technology to improve the way that we inspect, maintain, operate and invest in our network assets. Customers are happy with the level of reliability they currently receive from us. Maintaining this is important. **Reliability was ranked as the second most important priority area overall (second to Value for Money).**

Network Reliability in RIIO-ED2 has three key components that we are measured on:

1. Interruptions Incentive Scheme (IIS);
2. Guaranteed Standards of Performance (GSoPs); and
3. Improved network performance for our Worst Served Customers (WSC).

IIS

The IIS is set by Ofgem to improve the overall reliability of networks by setting target levels of performance for the price control period. It covers all interruptions that are three minutes or longer including any planned interruptions to supply to carry out planned work on our assets and networks which cannot be safely undertaken with the network live.

GSoPs

To ensure a set of common, minimum standards apply to all Distribution Network Owners (DNOs) for interruptions, voltage quality and customer interactions, Ofgem have set specific service levels and compensation for customers impacted by network outages. There are 12 regulations that apply for reliability.

WSC

Ofgem define a WSC as a *"customer experiencing on average at least four higher voltage interruptions per year, over a three-year period (i.e. 12 or more over three years, with a minimum of two interruptions per year)"*.

Within this Annex we provide the follow key details on our plans for IIS, GSoPs and WSC:

1. What consumers will get from our proposals.
2. What actions will be taken to deliver on these proposals.
3. Why we chose these investments over alternatives.
4. A credible transition from RIIO-ED1 to RIIO-ED2.
5. What if the future is not as predicted?

The nature of the three reliability factors outlined above are not new for the RIIO-ED2 period; but our investments reflect evolving stakeholder needs, changing asset conditions and updated policy requirements. They ensure we can deliver on our RIIO-ED2 strategic outcomes of being a trusted and valued service to our customers and communities; a safe and resilient network; and a provider of a smart, flexible and sustainable energy system enabling the transition to Net Zero in our license areas.

3. WHAT WILL CONSUMERS GET FROM OUR PROPOSALS?

3.1 THE TARGETS WE NEED TO MEET

The following section explains the targets we need to meet and the high-level components of each key element.

Interruption Incentive Scheme (IIS)

The IIS is set by Ofgem to improve the overall reliability of networks by setting target levels of performance for the price control period. It covers all interruptions that are three minutes or longer including any planned interruptions to supply allowing work on our assets and networks which cannot be safely undertaken with the network live.

Network performance targets are set by Ofgem through the target setting methodology that drives the IIS. The target setting methodology sets the level of performance expected for unplanned and planned Customer Interruptions (CIs) and Customer Minutes Lost (CMLs) in both of our licence areas.

Ofgem will update the final unplanned interruptions targets once the performance for the 2021-22 reporting year is available[4]. Table 1 below represents the provisional figures based on the methodology defined by Ofgem and they are the basis for our final RIIO-ED2 submission in December 2021.

Table 1 RIIO-ED2 IIS Targets (Unplanned)

	2023/24	2024/25	2025/26	2026/27	2027/28
SHEPD CI	59.6	59.3	59.0	58.7	58.4
SHEPD CML	33.69	32.9	32.2	31.4	30.7
SEPD CI	46.9	46.2	45.5	44.8	44.6
SEPD CML	30.92	30.3	29.8	29.2	28.7

For planned interruptions, Ofgem intend to retain the RIIO-ED1 approach to setting targets. On a three-year rolling average basis (with a two-year lag) ensuring DNOs do not allow their performance to deteriorate without an associated penalty.

[4] Ofgem's RIIO-ED2 Methodology Decision: Annex 1 - Delivering value for money services for consumers

This approach to setting planned interruption targets provides some flexibility for changes in work programmes that may arise from external requirements (such as environmental legislation). Where volumes of work increase due to external requirements, DNOs' targets in subsequent years will reflect this change; and that any reductions in revenue as a result of these increased work volumes will be offset by targets that are comparatively easier in later years.

Ofgem have stated that continuing the RIIO-ED1 weighting on planned interruptions (50% of unplanned interruptions) will help to deliver performance improvements, and that applying the same incentive weighting for all DNOs will help ensure DNOs are equally incentivised to keep planned interruptions to a minimum. Whilst retaining a Financial Output Delivery Incentive (ODI-F) on planned interruptions should continue to encourage DNOs to coordinate their activities with other parties, minimising the cost and disruption to customers.

Our final RIIO-ED2 submission is aligned with the above expected Ofgem targets for improvement in networks performance in our Scottish Hydro Electric Power Distribution (SHEPD) and Southern Electric Power Distribution (SEPD) licence regions for planned interruptions. For unplanned interruptions our plan drives improvements in CI and CML performance whilst ensuring the cost impact to customers is managed and our network performance meets their needs. See Section 6 – Credible Transition from RIIO-ED1 to ED2 for our target setting methodology challenge and Appendix A for our current performance and unplanned outages forecast.

Guaranteed Standards of Performance (GSoP) for Reliability

To ensure a set of common, minimum standards apply to DNOs with respect to interruptions, voltage quality and customer interactions, Ofgem have set specific service levels and compensation for customers who are impacted by network outages. This covers interruptions during normal conditions and during severe weather. It also covers the notice we provide to customers for planned interruptions.

In addition to the above Ofgem stated in their Sector Specific Methodology Decision; "*we will consider the options for determining the minimum standard for short interruptions; at this stage, we consider that a starting point for the development of a standard could be set at eight times the GB average number of short interruptions per customer per year.*

We expect to outline a proposed standard in the Draft Determinations, having been informed by DNOs' business plans, and will incorporate the development of this minimum standard into the GSoPs.[1]

We do not believe at this stage the standard has been sufficiently laid out in within the SSMC. The likely benefits, consumer impacts, and the interaction with multiple interruptions guaranteed standard has not been considered. We are also concerned that a minimum standard as set out in the SSMC would represent a form of delayed incentive, and yet it has not been subjected to the robust assessment process required for an incentive to be included in the price control.

We support Ofgem's ambition to keep DNOs focused on all types of interruptions, rather than only those that contribute to their IIS performance. However, the QoS working group has not sufficiently addressed our comments raised against Ofgem's SSMC. We will continue to work with Ofgem and industry partners to ensure that robust data gathering is developed and undertaken during RIIO-ED2 and reviewed prior to implementation in ED3. We will continue to work with Ofgem through to the start of ED2 to update the wording of the Statutory Instrument

Worst Served Customers (WSCs)

Ofgem have defined a WSC as a *"customer experiencing on average at least four higher voltage interruptions per year, over a three-year period (i.e. 12 or more over three years, with a minimum of two interruptions per year)"*[3].

As calculated against our most recent performance figures (2019/20), SHEPD have 11,740 customers and SEPD have 5,436 customers that meet this WSC criteria.

Ofgem have not set specific performance levels for DNOs for RIIO-ED2 in terms of WSC and have stated that "DNOs, through their engagement with stakeholders and consumer groups, are best placed to establish the appropriate level of performance improvement that should be delivered through the dedicated schemes"[5]

Through our engagement with Stakeholders and Customers we have developed investment plans and dedicated schemes that by 2028 will improve the network performance for at least 75% of customers that are deemed worst served so they will no longer meet the criteria based on the improved performance of their local network.

[5] RIIO-ED2 Methodology Decision: Annex 1 – Delivering value for money service for consumers

3.2 OUR OVERALL CI AND CML IMPROVEMENTS

The following sections explain our overall CI and CML improvement through our baseline expenditure plans.

Unplanned Interruptions

For unplanned interruptions our aim is to continue to improve our CI and CML performance for SHEPD and SEPD and meet the RIIO-ED1 and RIIO-ED2 targets; noting that we will not have visibility of our IIS targets until these are formally set by Ofgem in 2022 Table 2 below highlights for SHEPD and SEPD our forecasted end position for RIIO-ED1 and the RIIO-ED2 provisional targets.

Table 2 RIIO-ED1 End Position and RIIO-ED2 IIS Targets (Unplanned)

	RIIO-ED1	RIIO-ED2 Provisional Targets				
	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28
SHEPD CI	63.5	59.6	59.3	59.0	58.7	58.4
SHEPD CML	45.6	33.69	32.9	32.2	31.4	30.7
SEPD CI	56.50	46.9	46.2	45.5	44.8	44.6
SEPD CML	41.80	30.92	30.3	29.8	29.2	28.7

Our proposed baseline expenditure for RIIO-ED2 includes many activity drivers where the primary purpose is not to improve performance against IIS such as Legal and Safety, but they will drive secondary benefits in IIS. The below Tables 3 and 4 provide a summary of the secondary benefits this expenditure will drive in IIS for SHEPD and SEPD versus the overall improvement required in the period between the end of RIIO-ED1 and the end of RIIO-ED2. This is focussed on CML as there will be no gap for CI following these investments outlined in our baseline plan.

Table 3 SHEPD Overall CML Gap and Base Case Improvement

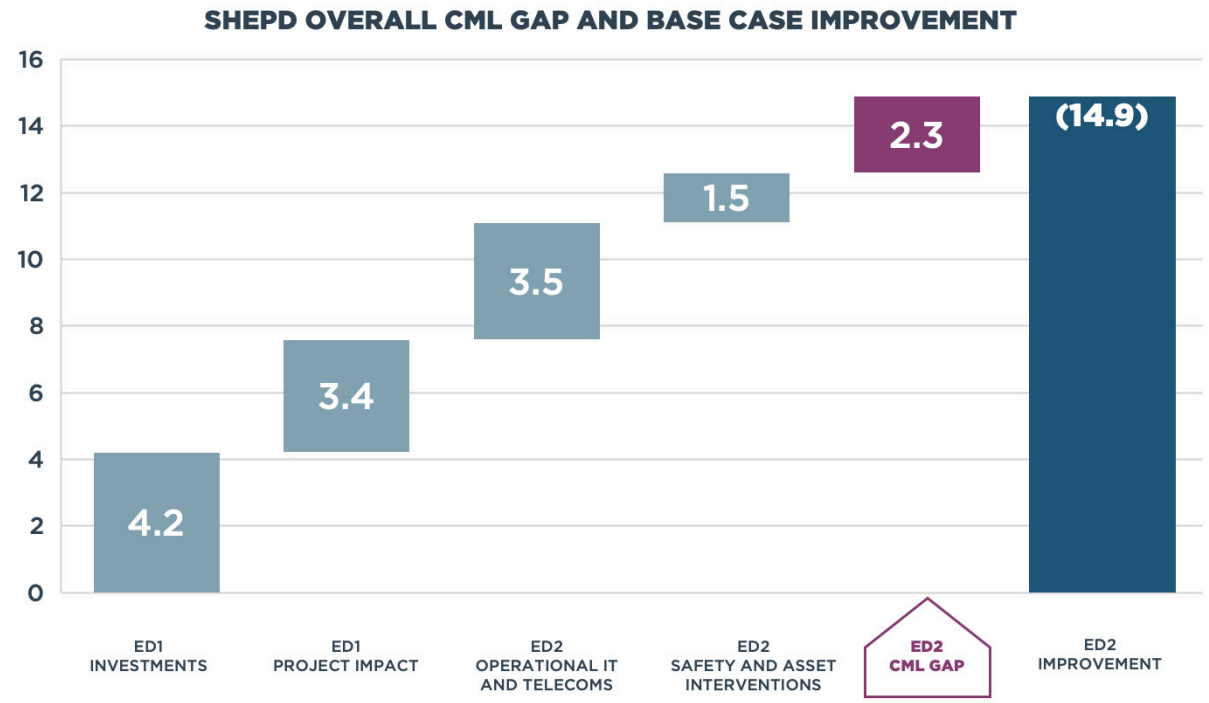
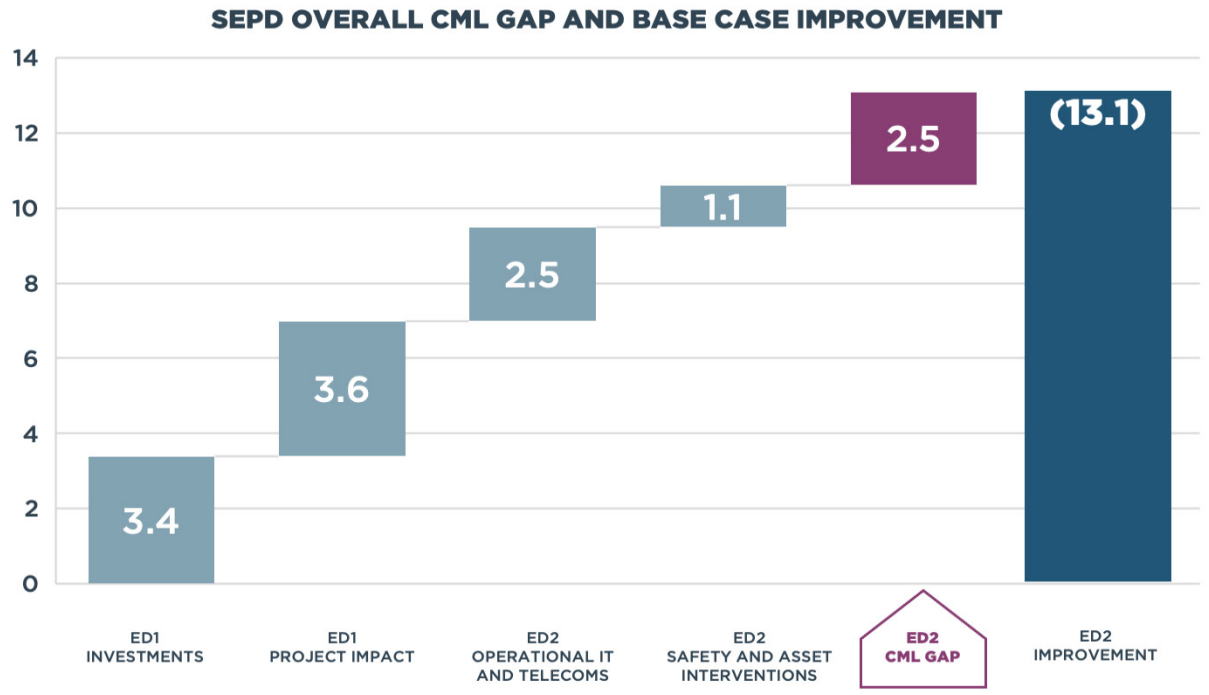


Table 4 SEPD Overall CML Gap and Base Case Improvement



Based on the above, it highlights that whilst our proposed baseline expenditure drives improvements in IIS overall, it will be insufficient to meet the targets by 2.3 and 2.5 CML respectively for SHEPD and SEPD. Our forecast for CI and CML performance for SHEPD and SEPD can be found in Appendix A.

Due to the above, our baseline plan requires expenditure where the primary purpose is to improve performance to meet our IIS targets. This is contained within CV15 - QoS & North of Scotland of our BPDTs and is summarised in Table 5 below for the QoS element only. This represents good value for customers in terms of our expenditure levels to deliver improvements in performance versus funding these improvements via the incentive mechanism. You can read more about this approach in our Automation Engineering Justification Paper[6].

Table 5 BPDT CV15 – Quality of Service

	2023/24	2024/25	2025/26	2026/27	2027/28	Total
SHEPD QoS (£m)	2.0	2.3	1.9	0.4	0.0	**6.6**
SEPD QoS (£m)	6.5	6.7	4.5	0.0	0.0	**17.6**

The associated CML performance improvement based on the above proposed expenditure is summarised in Table 6 below for SHEPD and SEPD respectively and resolves the gap between the CML improvements driven through our overall baseline plan and the RIIO-ED2 targets.

Table 6 BPDT CV15 – Quality of Service

	RIIO-ED2 Improvement
SHEPD CML	2.3
SEPD CML	2.5

Planned Interruptions

To meet the Planned Outages targets, we will manage and co-ordinate work on our assets to minimise the impact on customers when we are undertaking necessary works.

The work on our assets will be grouped to maximise the use of any planned interruptions, enabling a programme of work to touch the network efficiently during the RIIO-ED2 period and will result in less disruptions for our customers.

Our Engineers who develop the programmes of work, understand where flexibility and services can be used to minimise customer impacts and network risk whilst ensuring our work plan is successfully delivered.

We will also explore programmes of work that have similar investment drivers which could present an opportunity for further optimisation and efficiency realisation, by aligning Programmes from neighbouring locations.

[6] Automation EJP - 397/SSEPD/NLR/AUTOMATION

You can read more about this approach in our business plan ***Ensuring Deliverability and a Resilient (Chapter 16)*** [7].

Currently planned outages are notified by sending a letter to an impacted Customers' property. We also have our PowerTrack outage notification system, that is available to customers via our website and via a downloadable App that allows customers to sign-up for updates about specific events. We have plans to develop this further in RIIO-ED2 and open multiple streams of communication by offering customers a portal in which they can see any future impacts/planned work in their area.

We also have plans to continue to develop our Work and Asset Management systems to drive further improvements in effective planning and scheduling across all areas of work.

You can read more about this in our ***Digital Investment Plan Strategic Annex (Annex 5.2).***

3.3 OUR OVERALL BENEFITS DELIVERED FOR GUARANTEED STANDARDS OF PERFORMANCE

As outlined above there are twelve GSoP regulations that apply to reliability. In RIIO-ED2 our baseline expenditure will drive improvements in our reliability and associated GSoP and we remain committed to minimise the disruption caused by interruptions. We remain focussed on minimising 12-hour outages for our customers (Regulation 5 Supply Restoration: Normal Conditions) and this is reflected as a key output of our reliability plans.

3.4 OUR BENEFITS DELIVERED FOR WORST SERVED CUSTOMERS

The following sections explain our overall benefits delivered through our baseline expenditure plans. It outlines our plans to reduce the average number of higher voltage interruptions experienced by WSC.

For SHEPD the proposed expenditure is contained within CV15 - QoS & North of Scotland of our BPDTs and is summarised in Table 7 below for the North of Scotland Resilience element only.

For SEPD the proposed expenditure is contained within CV19 – WSC of our BPDTs and is also summarised in Table 7 below.

Table 7 - SHEPD CV15 North of Scotland Resilience (NoSR) and SEPD CV19 WSC

	2023/24	2024/25	2025/26	2026/27	2027/28	Total
SHEPD NoSR (£m)	4.6	5.5	1.4	3.5	6.8	**21.8**
SEPD WSC (£m)	0.7	0.7	0.7	0.7	0.7	**3.3**

The associated performance improvement based on the above proposed expenditure is summarised in Table 8 below for SHEPD and SEPD respectively.

[7] C_16. Ensuring Deliverability And a Resilient Workforce

Table 8 - SHEPD and SEPD WSC Performance Improvement

	Number of Schemes	Number of Customers Impacted	Total CI Improvement	Total CML Improvement
SHEPD	12	7,139	3.69	1.29
SEPD	32	4,122	0.23	0.27

3.5 OUR OVERALL RELIABILITY REGULATORY OUTPUTS

Table 9 below outlines the key Reliability outputs in our RIIO-ED2 business plan submission.

Table 9 – Our RIIO-ED2 Reliability Outputs

Output	Output type	RIIO-ED2 target	Cost in baseline plan	Consumer benefit
Reliability – Interruptions Incentive Scheme (IIS)	ODI-F	Reduce the frequency and duration of power interruptions by 20%.	£24.2m	More reliable supplies for customers. Reduced carbon emissions (from backup generators).
Guaranteed Standards of Performance (quality of supply)	LO	We will minimise the number of customers experiencing an outage greater than 12 hours.	N/A	Reduced inconvenience caused by power outages.
Reliability – Reduce number of Worst Served Customers	PCD	By 2028 we will improve the network performance for at least 75% of customers that are deemed worst served.[1]	£25.2m	£2m in wellbeing benefits delivered to 12,000 customers as a result of fewer power during power cuts over RIIO-ED2

LO – licence obligation; PCD – price control deliverable; ODI – output delivery incentive (F – Financial, R – Reputational), SSEN Aim – company goal

4. WHAT ACTIONS WILL BE TAKEN TO DELIVER ON THESE PROPOSALS?

4.1 OUR PROPOSED INTERVENTIONS TO MEET CI & CML TARGETS

In Section 2 we outlined proposed expenditure in our RIIO-ED2 baseline plan to improve performance to meet our IIS targets. This is divided into two key areas:

1. **Investment where the sole purpose is to improve performance.**
2. **Investments where the primary driver is not to improve performance, but it delivers a secondary benefit in performance.**

The following section provides further information on the actions we will take in both of the above categories and how these contribute to meeting our CI and CML targets.

Investments Primarily to Drive Performance Improvement

Automation

During RIIO-ED1 we have installed automation equipment and delivered performance improvement benefits on the circuits where it has been deployed. Our plan for RIIO-ED2 is to accelerate the installation of automation on the network by targeting investments that provide the biggest benefit to customers for the least cost.

We propose to undertake a two staged approach to deploying our automation investment strategy on our High Voltage (HV) network. As a minimum, we will fully automate our normally open points (NOPs) on the HV network.

Following a CBA approach, we will target enhanced automation projects beyond the minimum criteria of automating NOPs. Our CBAs will be used to rank projects and circuits in order of the overall network improvement benefits for our Customers ensuring that the costs of the enhanced automation projects are economic and efficient.

Lightning Protection

Through a Network Innovation Allowance project, we have assessed a new methodology for deploying lightning protection along with testing new types of equipment. The initial results of the trial are positive and show an improved performance across the five HV circuit used in the trial. It is proposed that these new lightning protection devices will be installed in both SHEPD and SEPD on the circuits with the highest fault rate associated with lightning. There are 19 circuits in SHEPD and 20 circuits in SEPD that will be targeted to reduce the impact of faults associated with lightning.

The above investments are contained within CV15 - Quality of Service & North of Scotland of our BPDTs and are summarised in Table 10 below for the Quality of Service element only.

Table 10 BPDT CV15 – Quality of Service

	2023/24	2024/25	2025/26	2026/27	2027/28	Total
SHEPD Total	2.4	2.3	1.8	0.4	0.0	**6.5**
Automation	2.0	1.5	1.5	0.4	0	**5.4**
Lightning Protection	0	0.80	0.3	0	0	**1.1**
SEPD Total	6.5	6.6	4.5	0.0	0.0	**17.6**
Automation	6.5	6.4	4.3	0.0	0.0	**17.2**
Lightning Protection	0	0.2	0.2	0.0	0.0	**0.4**

The associated CML performance improvement based on the above proposed expenditure is summarised in Table 11 below for SHEPD and SEPD.

Table 11 BPDT CV15 – Quality of Service

	ED2 Improvement
SHEPD CML	2.3
SEPD CML	2.5

Investments with a Secondary Benefit Driving Performance Improvement

ED2 Safety and Asset Interventions

As part of our RIIO-ED2 plan the need to intervene on assets is driven by many different activities including safety, environmental, demand increases and the condition of our assets. Whilst the drivers are not directly related to improving performance, they do bring an important secondary benefit in this area.

The interventions can result in replacing or intervening on assets which helps to remove or improve assets which may fault or begin to cause a deterioration in the performance of our network. Whilst we have a proactive intervention programme for these assets, it would not be efficient or economic to invest to such a level that we eliminate all asset failures, and these activities provide a benefit in reducing the instances and impact of interruptions on assets in addition to our proactive programmes. In particular, we are investing a discretionary £131.6m on our LV and HV underground cable networks targeting networks that have history of multiple fault repairs[8].

[8] 311/SSEPD/NLR/LV/UG & 312/SSEPD/NLR/HV/UG

Similarly, activities such as tree cutting where we are not intervening on our assets specifically and are primarily driven to ensure we maintain a safe distance between climbable trees and our overhead line network provides benefit from reduced interruptions in terms of trees coming into contact with our overhead lines and causing interruptions. We have also undertaken resilience tree cutting activities which provide improved benefit in terms of removing the possibility of falling trees in storms coming into contact with our network.

You can read more about the above investments in and for our assets in the relevant business plan sections[9].

Operational IT and Telecoms

Operational IT and Telecoms plays a key role in improving performance for our Customers. It allows us to provide improved monitoring and control of our assets and ensures improved communication and technology available to staff on site and in our control centres to make the right decisions in the most effective way at the earliest opportunity. All of which allows us to provide an improved service to our Customers and to reduce the interruptions they experience. The below paragraphs provide some specific examples of our investments in Operational IT and Telecoms included within our RIIO-ED2 plan.

Primary Substation Outage Restoration

In RIIO-ED1 we implemented an Automated Power Restoration System (APRS) system into our Advanced Distribution Management System (ADMS). In RIIO-ED2 we will enhance the capabilities of the overall ADMS by implementing functionality designed to automatically isolate faults which occur within primary substations, and subsequently co-ordinate with the APRS module to restore electricity supply to affected customers from other sources. The module will be effective in improving supply quality by operating quickly in situations where a primary outage affects large numbers of customers and complex restorations are required. The system will be deployed on our 33kV and above networks.

Operational Technology Network (OTN) Rollout

The OTN Rollout covers the rollout of communications to our substations to support our OT systems. The expansion of the underlying physical communications network to all our Primary and Grid substations during RIIO-ED2 and ED3 will be required in order to deliver our Digital Vision. This includes increased and improved monitoring of our assets helping us to identify problem sites which would subsequently create reduced quality or interruptions in Customers' supply of electricity.

System Control and Data Acquisition (SCADA)

Over RIIO-ED1, we developed a Health Index methodology for our Remote Terminal Units (RTUs) which are a key component of our SCADA system and we have developed a new framework for RTUs which provides additional functionality to ensure our Network is ready for the new environment in which we operate. The standardisation approach and removing equipment which is in poor health will ensure that we can rely on this equipment to monitor our networks and ensure that we minimise the duration of any interruptions for our Customers. RTU replacement will be coordinated with protection works and asset replacements to optimise delivery on site.

[9] C_07.1 Safe and Resilient

LV Monitoring

With the onset of the DSO transition, rapid uptake of Electric Vehicles and Heat Pumps and other new technologies, plus the need to utilise flexibility, we need to start monitoring our networks to have the required granular visibility. Our ***Network Visibility Strategy (Annex 11.1.1)*** sets out our plans to ensure we have 100% visibility of power flows by the end of RIIO-ED2, through a combination of LV monitoring and advanced analytics.

In the New Thames Valley Vision innovation project, the use of LV substation monitors was able to demonstrate the value of having a granular visibility of networks, not just to navigate successfully the onset of DSO but also in network operations. This will contribute to improved decision-making and reliability for our Customers.

You can read more about the above investments and all our Operational IT and Telecoms investment plans in our ***Digital Investment Plan Strategic (Annex 5.2)***[10].

4.2 HOW WE HAVE ASSESSED OTHER AREAS OF OUR PLAN WHICH HELP TO MEET CI & CML TARGETS

Previous sections of this Annex provide details of how we have assessed for the reliability impact of different asset activity drivers such as load and the important part our Digital Investment Plans (particularly Operational IT and Telecoms) play in contributing to our plans to continue to improve the performance and reliability of networks during the remainder of RIIO-ED1 and RIIO-ED2; see Section 6 – Credible Transition from RIIO-ED1 to RIIO-ED2 for further detail.

We have also highlighted how we will co-ordinate this work to ensure it is delivered efficiently. This would also include aspects such as connecting a new substation to an existing High Voltage circuit, we will confirm whether the switchgear needs to be automated; this will be dependent on the conditions set out in our policy[11]. If the switchgear does require automation, motors/actuators and fault passage indicators will be fitted as part of the minimum scheme design.

New networks must follow the automation planning standard and must install automation ready equipment where applicable.

As part of our wider network improvement projects, such as Asset Health replacement and Load Related Reinforcement, when assets are being replaced or newly installed, the equipment must be automation ready.

All of the items as stated previously contribute to our consolidated plans for RIIO-ED2 to improve the performance and reliability our Customers' experience.

[10] C_05.1 Digitalisation Strategy

[11] TG-NET-NPL-010

4.3 SUMMARY OF OUR PROPOSED SCHEMES FOR ADDRESSING WSC

The number of WSCs and locations will vary each year as it is dependent on the actual level of higher voltage interruptions, their causes and their locations, experienced throughout the year and over the 3-year average used as part of the calculation/definition of a WSC.

In our SEPD area, the location of the WSCs tends to be much more varied year on year than in the SHEPD area. This is reflective of short to medium term performance and the different investment levels required to address the underlying performance.

Within the SHEPD area however, the locations of the WSCs are relatively stable, occurring at the most remote parts of the distribution network in the Highlands and Islands area. The main reason for this is that the circuits are typically long radial legacy circuits which were built to a low specification and being radial, they suffer from the effects of upstream faults on the network.

We will therefore continue to assess and update our detailed project plans during the remainder of RIIO-ED1 and RIIO-ED2 particularly in SEPD to ensure that the most valuable areas of investment are targeted. WSCs as assessed now may change prior to the start of RIIO-ED2 and during RIIO-ED2 based on the 3-year average data utilised and we would update our detailed plans accordingly whilst delivering to the overall levels of investment and improvement.

Table 12 and 13 below lists the SEPD and SHEPD network circuits for investment to achieve 75% improvement.

Table 12 – SEPD RIIO-ED2 Proposed WSC Projects

Circuit ID	No of WSC	No of PSR	Costs £m
BEACONSFIELD	500	94	0.39
BOWERDEAN	343	76	0.27
WANTAGE	267	70	0.21
SHROTON	390	69	0.3
DUNBRIDGE	289	55	0.23
SHIPTON OLIFFE	242	45	0.19
GROVE	173	41	0.14
BURFORD	169	35	0.13
WHITEWAY	140	31	0.11
YETMINSTER	146	30	0.12
COWLEY LOCAL	123	27	0.1
KIDDINGTON	133	22	0.11
ALDERTON	141	21	0.11
ROWDEN	143	20	0.11
WALLINGFORD	40	15	0.03
HUNGERFORD	100	12	0.08
CHRISTCHURCH	54	11	0.05
MAIDENHEAD	96	9	0.08

Circuit ID	No of WSC	No of PSR	Costs £m
LECKHAMPSTEAD	66	9	0.05
MORTIMER	59	9	0.05
FYFIELD	33	8	0.03
HASLINGBOURNE	20	8	0.02
CHIPPING NORTON	104	7	0.08
FARNBOROUGH	56	7	0.05
MIDHURST	75	6	0.06
CROCKERTON	28	6	0.03
BISHOPS WALTHAM	46	5	0.04
BRAMLEY GREEN	21	5	0.02
PETERSFINGER	18	4	0.02
WARFIELD	29	3	0.03
WYCOMBE MARSH	14	2	0.01
GORING	64	0	0.05
Total	4,122	762	3.3

Table 13 – SHEPD RIIO-ED2 Proposed WSC Projects

Circuit ID	No of WSC	No of PSR	Costs £m
CLACHAN	906	376	1.9
LAXAY	1152	214	1.8
COLL	1941	619	7.4
DRIMORE	453	24	0.7
UNST	319	110	0.9
GUTCHER	77	46	0.7
BRAE	109	101	0.6
TARBERT	307	220	1.0
STROMNESS	813	223	1.6
ARISAIG	377	112	1.2
ACHILTIBUIE	145	26	0.4
LOCHINVER	540	138	3.6
Total	8,166	2,391	21.8

5. WHY DID WE CHOOSE THESE INVESTMENTS OVER ALTERNATIVES?

5.1 OUR DECISION-MAKING AND ANALYSIS PRINCIPLES

Our principles of decision-making, and analysis are grounded in the feedback we have received from Stakeholders on our proposed business plan. Our aim for reliability is to continue to drive improvements in performance for our customers as we have done through RIIO-ED1 and deliver to the targets set by Ofgem for RIIO-ED2.

These principles must, and do follow, the design principles set by Ofgem[12] in developing a framework and methodologies for the RIIO-ED2 price controls.

This helps us demonstrate transparency in our plans for assessment.

These principles set outputs and incentives which are a key area for this Annex that covers reliability. In particular, our analysis and approach is based on one of Ofgem's key design principles; *"the delivery of a target level of outputs which should be funded through baseline allowances, rather than through incentives. Target levels should be set so that the benefit to consumers of achieving target levels is broadly balanced by the cost in higher network charges"*.

This is very relevant for IIS which is covered in this Annex and we have aimed to demonstrate the relevance to this point for our SHEPD and SEPD networks As detailed in Section 6 – Credible Transition from RIIO-ED1 to RIIO-ED2.

Similarly, for WSC and GSoPs we have based our approach on feedback from our Stakeholders and following the guidance set by Ofgem for these areas.

[12] Ofgem– RIIO-ED2 Framework Decision

5.2 OUR ANALYSIS DEMONSTRATES WE ARE GETTING THE LEVEL OF PROPOSED INTERVENTIONS RIGHT FOR IIS AND WSC

IIS

We have developed an asset intervention model to determine baseline network performance through proactive asset interventions that are not driven by quality of supply improvements, but have other primary drivers such as asset health, load and environment. Combining our fault trend analysis and the associated CI and CML impact during RIIO-ED1 we have forecasted the CI and CML performance for RIIO-ED2 based on these asset interventions. This analysis reflects our baseline network performance. We have then compared this performance against the Ofgem targets for RIIO-ED2 to determine the gap.

Our overarching investment plans that are in place for delivery over the remainder of RIIO-ED1 have also been assessed. This assessment includes investments where the primary driver is to improve performance and those where the primary driver is not to improve performance but do provide a secondary benefit in performance improvement. The main categories accounted for as providing continued benefit in RIIO-ED2 are outlined in Sections 3 and 5.

The successful delivery of the investments at the end of RIIO-ED1 will have a continued benefit throughout RIIO-ED2. However, due to the significant step change in Ofgem targets between RIIO-ED1 and RIIO-ED2, these projects alone will not achieve our ambition, as led by our stakeholders, of improving network performance. As such, a similar view has been undertaken across the RIIO-ED2 plan to determine where performance benefits are accounted for where the primary driver is not quality of service.

Our asset interventions model assessed all of these investments and highlighted there is a gap between our forecast performance and Ofgem targets. To address this, we have specified which projects have the sole purpose of improving network quality of service. These are covered in Sections 2 and 3.

The fault forecast for each asset category and the determination of baseline network performance through asset intervention is based on the benefit from these activities delivered in RIIO-ED1, will deliver in the remainder of RIIO-ED1 and what is proposed in our RIIO-ED2 plan. Therefore, our fault and network performance forecast in RIIO-ED2 is fully aligned and dependent on the delivery of the volumes for these activities within our RIIO-ED2 plan (See Appendix A).

WSC

We have listened to the feedback from Customers and Stakeholders and applied our learning from RIIO-ED1 to develop the levels of interventions for WSC in RIIO-ED2.

We have applied the new rules set by Ofgem which defines a WSC and supplemented this by the clear feedback from Stakeholders that vulnerable customers should be prioritised.

We have utilised the data we store for vulnerable customers covering a broad range of inputs contributing to these customers being

defined as Vulnerable and applied this to our selection process. This information will be used to prioritise projects for earlier investment.

Our work in RIIO-ED1 and associated success in improving the performance of those areas of our network where we have WSCs has been analysed and reflected in our proposals for RIIO-ED2.

We can demonstrate that renewing our wood pole overhead lines on a targeted basis based on the fault analysis has been a primary driver to removing faults and improving fault rates. Installing additional protection devices has helped to limit the number of impacted customers when a fault does occur and can help in restoring customers quickly. Similarly, targeted replacement of underground cable sections with high fault rates have also proved an effective solution.

Our investment levels for RIIO-ED2 reflect this analysis and the levels of expenditure required per Customer to deliver the required improvements.

You can read more about our analysis and approach to prioritisation in our Engineering Justification Papers for WSC for SEPD and SHEPD. The full list of EJPs can be found in our Business Plan Map[13].

[13] A_36_Business Plan Map

6. CREDIBLE TRANSITION FROM RIIO-ED1 TO RIIO-ED2

Previous sections of this Annex have outlined and detailed our approach to RIIO-ED2. This Section aims to provide further clarity on the credible transition of our plans from RIIO-ED1 to RIIO-ED2 for the three key areas of this Annex (IIS, GSoP and WSC).

IIS

In RIIO-ED1 we have to date met our IIS targets on customer interruptions and minutes lost in every year; except for minutes lost in SEPD in 2018/19. However, we recognise that other DNOs have outperformed our two networks on IIS incentive reward relative to their targets. In RIIO-ED2 there will be a significant step change in IIS targets for the majority of DNOs driven by the Ofgem target setting methodology to encourage continuous DNO performance improvement. We support the need for continuous performance improvement and this aligns with our Stakeholder led ambition to reduce power interruptions and time off supply by 20%.

While our past performance provides useful context to our RIIO-ED2 plans, it is not a direct read across to future performance; particularly in a mid and post-COVID world where climate change policy is rapidly evolving.

Project Impact

In recognition of our position compared with other DNOs, in early 2020 we commissioned PA Consulting to review our performance relative to other DNOs and recommend areas for improvement. Key observations were:

1) Lower overall CML and CI per fault in DNOs is observed where other DNOs have deployed significantly more protection and automation.
2) There is an opportunity to improve HV performance on the top 20 Worst performing substations.
3) We should improve LV restoration times for underground faults in the SEPD area.

Following the report, in 2020, we set-up a comprehensive strategic improvement programme, named 'Project Impact' to drive improved network performance and overall customer service. This programme covers the end-to-end processes across Asset Management and Customer Operations and aims to deliver a step change in performance leading into 2023 that will provide a solid platform for improvement performance into RIIO-ED2.

The project has identified key areas and developed strategies to ensure that network performance schemes can deliver a co-ordinated, economic and efficient solution. Through the targeted investment proposals, the CI and CML targets set by Ofgem will be achieved for the remainder of RIIO-ED1 and enable us to drive the necessary changes to meet revised RIIO-ED2 targets. Project Impact will continue to drive improvement in network performance throughout RIIO-ED1 and RIIO-ED2 to ensure that we are meeting customer expectations and driving the right investment decisions to improve overall network performance.

As part of the programme there will be additional investments in RIIO-ED1 completing planned operational technology system upgrades and on process improvements.

In order to achieve this, the project's focus is split over four key aims:

1) Reduce CI by improving network's health through targeted investment and defect resolution based on increased data analysis. CI improvements have maximum benefit to customers since they reduce the number of customers affected per fault.
2) Improve CML performance by reducing fault response times, utilising lean principles and a continuous improvement approach, recognising the additional challenges of remoteness and distance associated with restoring supplies in SHEPD, not otherwise captured in Ofgem's CML target-setting methodology.
3) Enhance data capture and management in order to allow the organisation to make data driven decisions, develop enduring root cause analysis for continuous learning and more accurately forward forecast the impact of our intervention plan.
4) Define and implement performance behaviours that allow the organisation to drive for success, empowering teams to deliver optimal customer service.

Each of these is addressed in detail below:

Customer Interruptions (CI) reduction

- To reduce the number of customers affected by faults, we are installing an additional 100 protection and automation schemes to reduce the number of customers per section of network and therefore customers affected per fault. These are targeted to the circuits with the highest number of customers affected for the longest time period in the past 3-years therefore driving the most CI and CML improvement.
- To reduce the number of customers affected by faults on long circuits in rural areas we are installing additional protective devices on the spur lines.
- We are ensuring more customers benefit from tree cutting which helps prevent faults, especially in storm situations, by prioritising the programme using Lidar tree proximity data combined with spatial data on faults and customer locations.

Customer Minutes Lost (CML) Improvements

Where it is not possible to prevent faults, we will be improving our restoration response. Some of the example initiatives are given below:

- To reduce the time off supply experienced by customers, we are upgrading slow dial-up communications infrastructure in parts of the network with modern internet based secure communications to existing remote controlled switches. In most cases, in conjunction with our recently upgraded APRS, this will allow customers to be restored by existing remote-controlled switches in less than 1 minute.
- To reduce the time off supply for the maximum number customers when manual restoration is required, we are reviewing our fault restoration processes on the high voltage network, including the availability and deployment of switching staff out-of-hours in SEPD.
- To improve restoration times in remote areas in SHEPD, we are recruiting additional 'retained switchers' who live in difficult to reach areas and can be trained for limited and specific operations.
- To improve our restoration times on Low Voltage (LV) underground cable faults in SEPD we are carrying out a process review which includes improved analysis of dispatch and repair times and review of specific faults.

Learning is shared across geography and improvements targeted in the Worst performing areas. Outputs will result in an LV response blueprint document against which we will drive standardisation and improve performance.

- To allow some customers to be restored earlier on underground faults we are using improved fault location techniques that have been developed through the LV-UFLT (LV-Underground fault) NIA innovation project. These include the use of acoustic fault location and thermal cameras. By more precisely locating the fault, these allow a joint hole to be excavated near the fault location, the cable cut and customers one side of the fault to be restored earlier. This also reduces disruption to the public due to reduced excavation and is also more efficient.

Digitalisation, Enhanced Data Capture and Management.

Improved capture of fault information and management of data supports improved customer service for example by being able to provide better restoration information, but also by preventing customers experiencing power cuts by spotting trends and dealing with issues before they result in interruptions.

- We are reducing the number of faults experienced by customers through existing investment programmes and remedial repairs using a data analytics platform that brings together multiple sources including past faults, Lidar information, anticipated loading hot spots, weather and local geology. For example, this has already shown that certain regions can best improve performance by focussing on tree cutting on key circuits, whereas others may need to focus on key LV underground circuits.

- Customers will gain additional benefit from our 'Bidoyng' LV fault restoration and monitoring devices, due to improved data analytics that allow us to redeploy existing devices where fault activity has been dormant to newly emerging fault locations where they will benefit more customers at no extra cost.

- In RIIO-ED1 we will replace our legacy Outage Management system with the PowerOn system. This, along with an upgrade to PowerOn, will provide a modern fully integrated Advanced Distribution Management System (ADMS). In RIIO-ED2 we will ensure much of the functionality of this ADMS is available in the field, using integrated mobile facilities. This, in particular, will cover the Outage Management System, so field operatives can have full access to up-to-date information about any outage, and can in turn make updates themselves, leading to a much more efficient management of any outage, either planned or unplanned. The tools will also allow authorised engineers to undertake switching in the field, subject to suitable safety and security controls. This will significantly improve the time taken to restore faults and reduce the restoration time. You can read more about this in our ***Digital Investment Plan Strategic (Annex 5.2)*** [4].

Improved Customer Service and Performance behaviours

Lean process reviews of our high voltage and low voltage fault processes and mapping out the customer journey will ultimately improve both our fault performance and customer experience. The initial areas targeted by Project Impact are those highlighted by PA Consulting and the CI and CML initiatives explained above. One of the main outputs will be blueprint documents covering best practice, the first one being for our LV response.

In addition to addressing the processes the review will also be linked to our working patterns, standby and pay and conditions to ultimately ensure that we reward staff for improved customer service and our teams to be available to serve customers in line with demand.

Resulting Improvements forecast by first year of RIIO-ED2

Following the existing planned investments for the remainder of RIIO-ED1 and the additional improvements due to Project Impact, we have forecast a range of improvements by the end of RIIO-ED1 and the expected contribution in the first year of RIIO-ED2. Due to the long lead nature of some investments, the benefits do not significantly materialise until schemes are fully completed and are not seen until the following year's performance data.

To ensure the plans are delivered to cost and timescales with performance governance, which is being achieved via Director level sponsorship, progress is monitored via a monthly Executive Steering Group where all the key Directorates are represented.

Target Setting Methodology - Our Challenge

Through our RIIO-ED2 business plan we are committed to drive improvement for our customers. Recognising that reliance on electricity is only set to increase over the coming years, we are committed to this improvement in reliability as part of our key outputs. However, specifically for CMLs, we have concerns that Ofgem's target setting methodology could require companies to intervene on their networks in a way that is not in the interests of consumers, in order to avoid penalties.

We have undertaken a full assessment of our RIIO-ED2 plan to determine all expenditure that drives primary or secondary IIS benefits from the final years of RIIO-ED1 to the final year of RIIO-ED2 and compared this with the targets proposed by Ofgem. Our analysis assumes that we will receive full allowances for all relevant activities included in our business plan.

Our assessment for CML highlights two issues:

- the step change of 28% required from average performance in RIIO-ED1 to the beginning of RIIO-ED2 in order to meet targets will be extremely challenging to achieve, in a single year;
- the corresponding targets which follow this trajectory annually to the end of RIIO-ED2 will, as a result also prove challenging to meet, further exacerbated by the increased likelihood of a year 1 penalty.

To improve, we would likely require significant investment in our network and additional operational resources. These are not currently included in our plan, as we do not think that such expenditure would represent value for money for the reasons we articulate below.

We also consider that focussing on trying to achieve this 28% step change is not in the best interests of our customers and our overall stewardship of our networks. 9 of the 14 DNOs including SHEPD and SEPD have a significant step change, between 13% - 31% improvement required to meet targets within the price control period compared with 5 network companies who will be meeting their targets from day one without any improvements required (see Appendix D).

Target Setting Methodology - Our Key Concerns

Since our draft plan we have carried out further sensitivity analysis, using a Monte Carlo simulation. This has provided a range of potential CI and CML forecasts in terms of what is achievable based on relevant contributing expenditure proposals in our RIIO-ED2 plan, and helps describe the uncertainty and risk associated with meeting these targets. Full details of the step change and the results of the forecasts are provided in Appendix C.

In summary our key concerns with Ofgem's RIIO-ED2 CML target setting methodology are as follows;

- the investment required to achieve these targets will result in significant costs to customers, **with a high risk of costs exceeding the value of service improvements to customers**. This is not in line with Ofgem's own principles for designing incentives[14].
  - We flagged this concern in our response to Ofgem's SSMC, prior to the submission of our draft and final business plan, in the context of which we have carried out further analysis[15].
- Practically and **operationally, it is extremely difficult for any network to make this scale of improvement** annually and within the timescales required by RIIO-ED2.
- The CML target setting methodology is further **distorted by comparative analysis** which does not consider the historic funding and network configuration differences across the network companies.
  - The RIIO-ED1 fast-tracking process creates an uneven playing field between companies. The four fast-tracked companies in RIIO-ED1 will have earned a higher allowed return on equity, an ex-ante reward of £140m, and higher totex allowances. Ofgem's own analysis also sets out that the four fast-tracked licensees would have been subject to totex reductions of £678m if they were slow-tracked[16]. Due to the application of the sharing factor to IIS incentive rates, they will have also had opportunities to earn higher rates of rewards. Taken together this creates an imbalance in RIIO-ED2.
- Lack of transparency and clear rationale for consumers, stakeholders and network companies on why the CML target methodology applies comparative analysis that the CI target methodology does not apply.
- Lack of consistency as to how the CML target setting methodology is applied across all voltage levels (LV, HV, EHV & 132kV).

Target Setting Methodology - Our Funding in RIIO-ED2

Ofgem's Design Principle 3 is clear that "the delivery of a target level of outputs should be funded through baseline allowances, rather than through incentives." This is a clear shift in policy from RIIO-ED1, where Ofgem's position was that improvements in service should be funded through incentive revenue.

We have consequently included targeted investments to improve reliability as part of our final business plan. These investments are all supported by robust cost-benefit analysis (CBA). We have not included any additional investments that are not supported by CBAs, as we do not consider this is in the interest of customers. Without any changes to the methodology, there is a risk that, in order to meet final targets, we would need to invest in activities that cannot otherwise be justified by CBA. In line with Design Principle 3 we would need to revise our plan to include these activities.

[14] https://www.ofgem.gov.uk/sites/default/files/docs/2019/12/riio-ed2_framework_decision_dec_2019.pdf Design Principle 3

[15] P.39 of our response: "Whilst overall, we agree with the approach proposed, we remain concerned that there are still issues with the existing methodology that could result in expected performance improvements that consumers are not willing to pay for, especially in more rural communities. As targets continue to get tougher, they are likely to coincide with diminishing marginal benefits from each performance improvement. We think Ofgem could have taken the opportunity in preparation for RIIO-ED2 opportunity to review other approaches more comprehensively."

[16] CEPA Review of RIIO Framework and RIIO-1 Performance (ofgem.gov.uk)

Target Setting Methodology - Our Next Steps

We welcome the continued engagement with Ofgem on the above particularly between our draft and final submission and acknowledge the importance of Ofgem's meetings with all network companies to ensure the right targets are set for our customers. This gives us all the opportunity to highlight our individual and collective concerns for our customers and networks.

As part of these discussions, we have proposed alternative options to set targets which complement the current methodology and provide challenging but achievable improvement targets for all network companies who implement changes and investment effectively, ensuring customers get the service they expect at a price they are willing to pay.

We look forward to further discussions with industry and wider stakeholders through working groups in the new year.

GSoPs

During RIIO-ED1 (May 2015) we introduced the automatic payment of compensation against the GSoP for Regulation 5 for unplanned 12 hrs interruptions. We will continue to make these payments to Customers automatically during RIIO-ED2. We also aim to minimise these interruptions during RIIO-ED2.

We have also shown strong improvements in RIIO-ED1 for Regulation 17 (Making and Keeping Appointments), and we will continue to seek to minimise these during RIIO-ED2.

Worst Served Customers

Table 15 – SEPD RIIO-ED1 WSC Projects Delivered

Circuit	No of WSC
DUNBRIDGE	283
MILL LANE	81
WYCOMBE MARSH	96
EASTERTON	1052
GODALMING	63
BARTON STACEY	76
FYFIELD	189
OVERTON	351
CHARMINSTER	612
WOKINGHAM	5
NORTH FAREHAM	182
Total	2,990

We have incurred expenditure of £2.5m in completing several WSC schemes and we expect to incur a total expenditure of £3.6m by the end of RIIO-ED1 to address all WSC schemes in SEPD.

To date in RIIO-ED1 (first 6 years) we have completed two WSC projects (Pollachar and Sanday) in SHEPD improving the performance as defined in our baseline plan for 1,437 Customers. We have incurred expenditure of £6.3m in completing these schemes. During the remainder of RIIO-ED1 we expect to incur a total expenditure of £11.5m and deliver an additional two projects (Islay and Kinloch). Four schemes i total will be delivered in RIIO-ED1 in line with our plan with a reduced scope for Islay to ensure this scheme drives value for Customers at an efficient cost (this will result in an underspend against allowance). Table 16 below provides the breakdown of the projects for SHEPD with forecast costs, costs incurred, customers with improved performance and the performance improvement.

Table 16 – SHEPD RIIO-ED1 WSC Projects

Circuit	No of WSC	Costs Incurred £m	Total Forecast Costs £m	Performance Improvement (HV Customer Interruptions)
Ludag Teed Circuit, Pollachar - Western Isles	1,103	3.9	3.9	2-11 (from 16-25) Achieved following investment
Islay and Jura Feeder Circuits - Argyll and Bute	1,470	0.3	1.7	23 (from 15-33) Investment in delivery
Kinloch Bridge Cottage Circuit - Argyll and Bute	406	0	3.7	8-11 (from 16-25) Investment in planning
Leyland (Sanday) Feeder Circuit - Orkney	334	2.2	2.2	2-8 (from 14-27) Achieved following investment
Total	3,313	6.3	11.5	

7. WHAT IF THE FUTURE IS NOT AS PREDICTED?

We will continue to develop and adapt our approach to reliability based on the latest information and data available. This will feed into our analysis and the development of our investment plans.

Our base case for reliability may appear to be less impacted by a changing future than other activity drivers such as Load. However, as demonstrated in this Annex our plans are based on contributions from other areas of the plan. Therefore, if our overall base case changes materially as part of the price control process or through areas covered by for example uncertainty mechanisms then our plans will need to assess the impact.

Key areas specifically for Reliability, such as WSC, will require updates during the remainder of RIIO-ED1 and RIIO-ED2 particularly in SEPD to ensure that the most valuable areas of investment are targeted. WSCs as assessed now may change prior to the start of RIIO-ED2 and during RIIO-ED2 based on the 3-year average data utilised and we would update our detailed plans accordingly whilst delivering to the overall levels of investment and improvement.

APPENDIX A: IIS TARGETS & OUR FORECAST

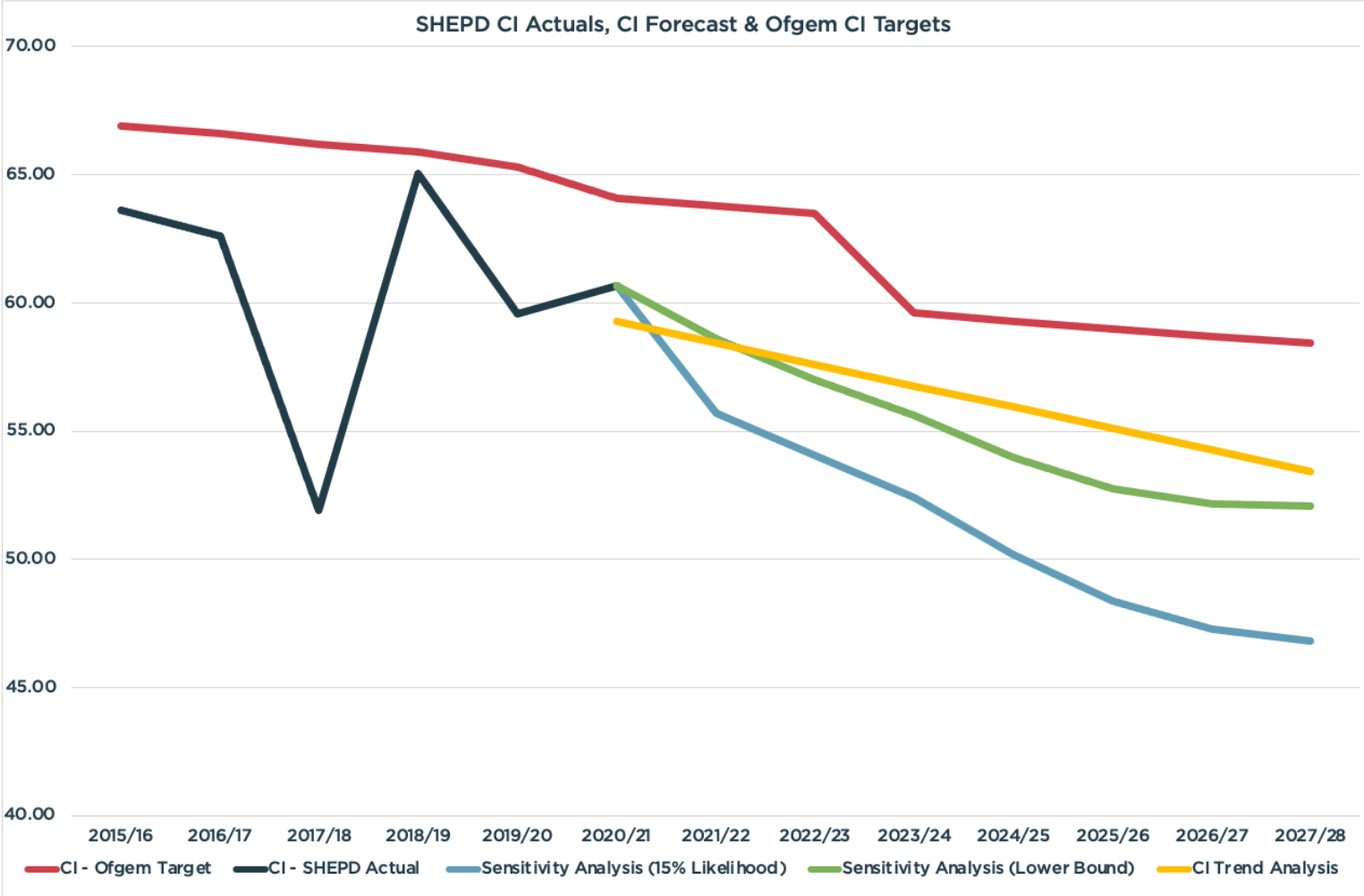


Figure 1 – SHEPD CI Actual Performance Against Targets & SHEPD CI Forecast Against Targets

Trend Analysis – This is our anticipated CI performance based on historic trends
Sensitivity Analysis (Lower Bound) – Our anticipated lower bound CI performance based on our Asset Intervention Model with additional statistical analysis.
Sensitivity Analysis (15% Likelihood) – Our anticipated CI performance based on our Asset Intervention Model with additional statistical analysis; which has a 15% likelihood of success.

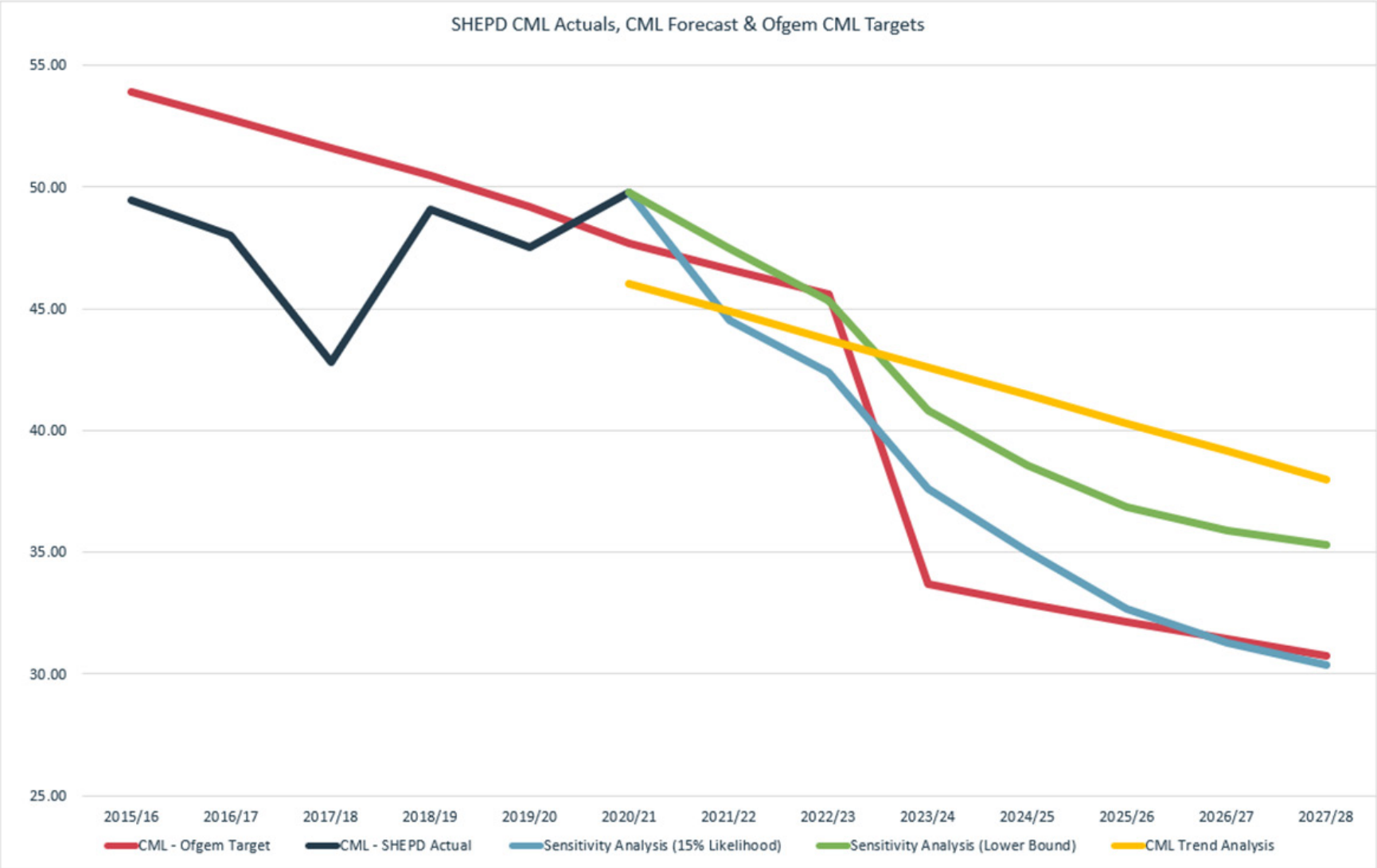


Figure 2 – SHEPD CML Actual Performance Against Targets & SHEPD CML Forecast Against Targets

Trend Analysis – This is our anticipated CML performance based on historic trends
Sensitivity Analysis (Lower Bound) – Our anticipated lower bound CML performance based on our Asset Intervention Model with additional statistical analysis.
Sensitivity Analysis (15% Likelihood) – Our anticipated CML performance based on our Asset Intervention Model with additional statistical analysis; which has a 15% likelihood of success.

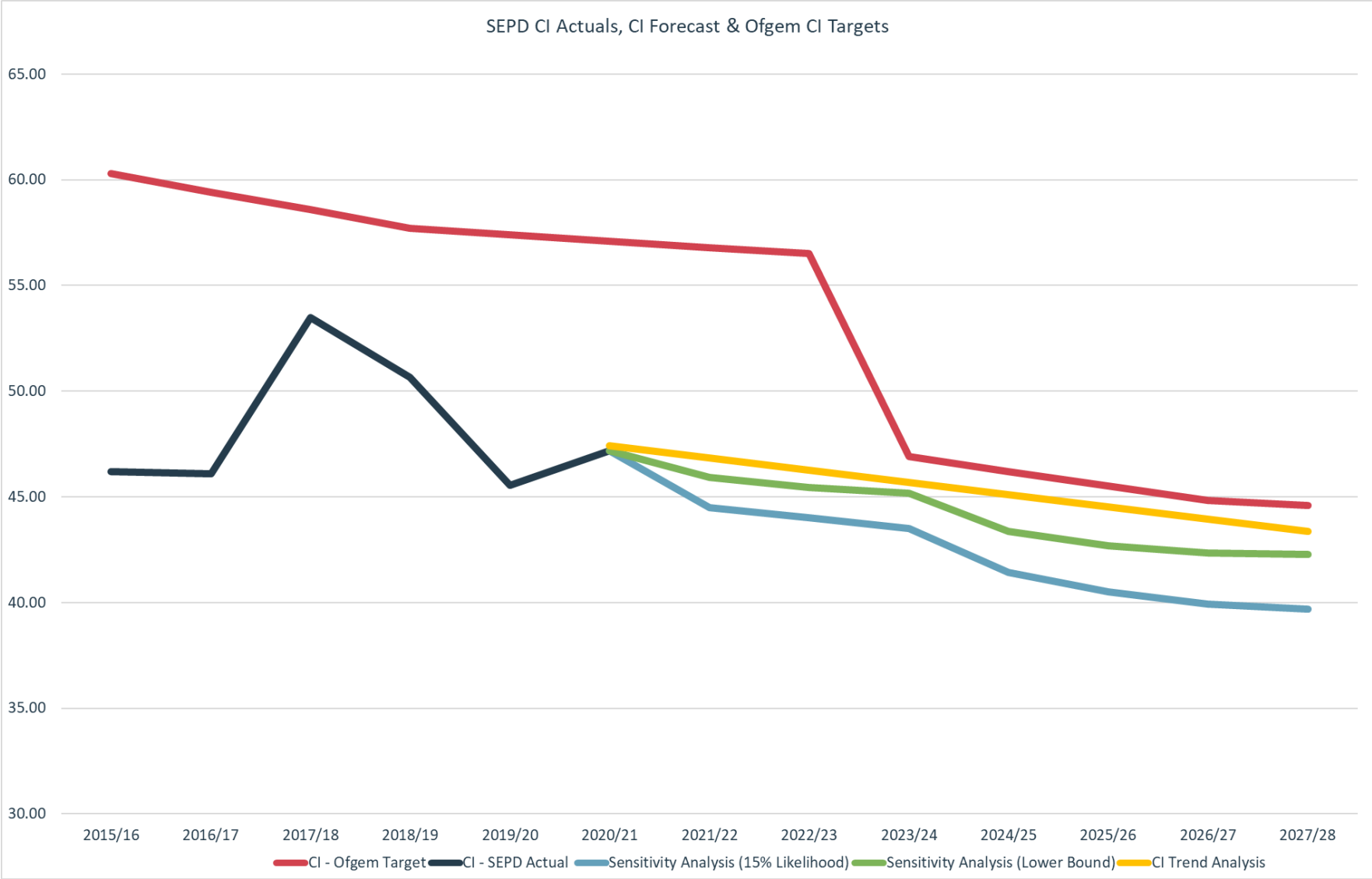


Figure 3 – SEPD CI Actual Performance Against Targets & SEPD CI Forecast Against Targets

Trend Analysis – This is our anticipated CI performance based on historic trends
Sensitivity Analysis (Lower Bound) – Our anticipated lower bound CI performance based on our Asset Intervention Model with additional statistical analysis.
Sensitivity Analysis (15% Likelihood) – Our anticipated CI performance based on our Asset Intervention Model with additional statistical analysis; which has a 15% likelihood of success.

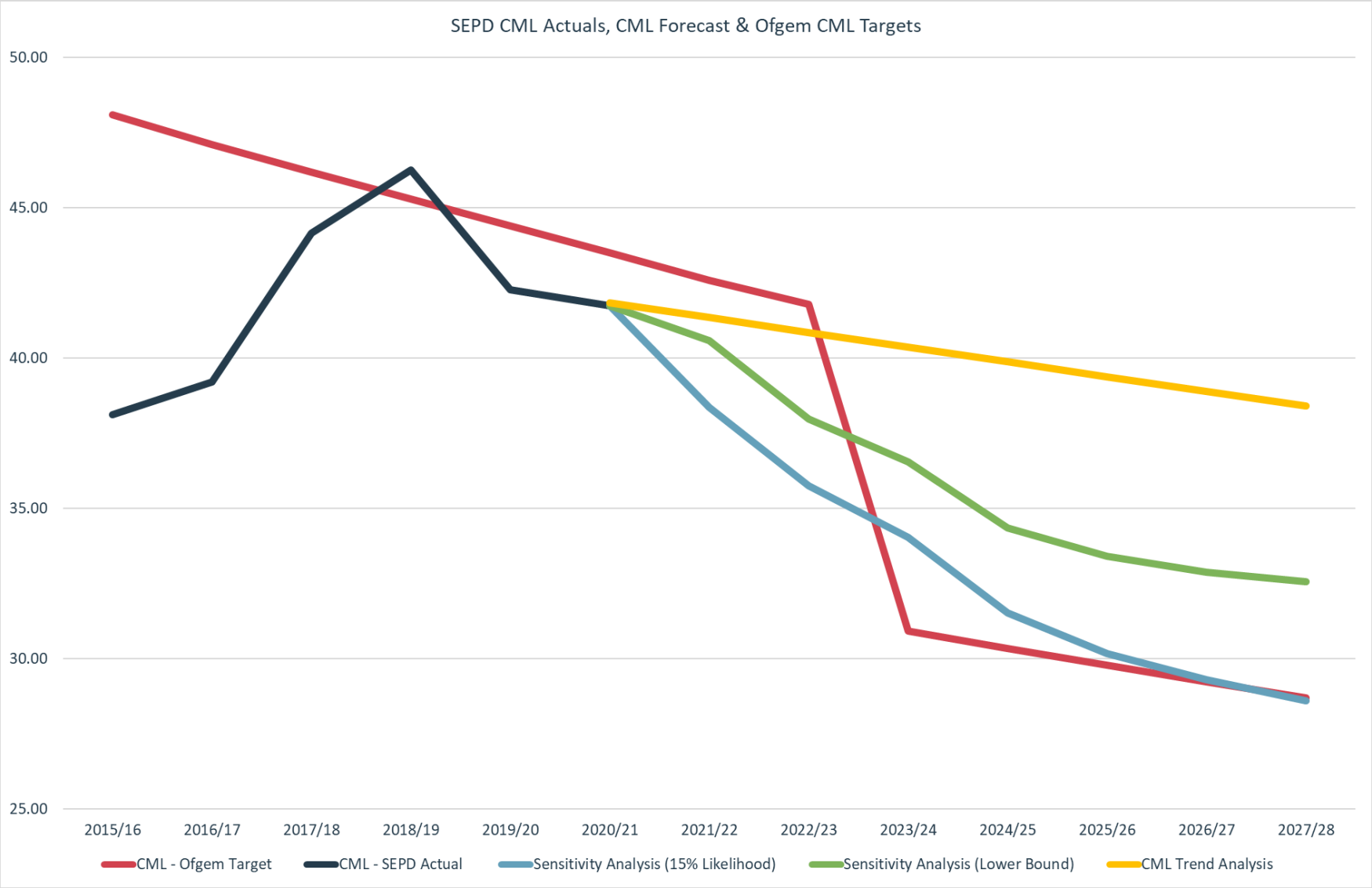


Figure 4 – SEPD CML Actual Performance Against Targets & SEPD CML Forecast Against Targets

Trend Analysis – This is our anticipated CML performance based on historic trends
Sensitivity Analysis (Lower Bound) – Our anticipated lower bound CML performance based on our Asset Intervention Model with additional statistical analysis.
Sensitivity Analysis (15% Likelihood) – Our anticipated CML performance based on our Asset Intervention Model with additional statistical analysis; which has a 15% likelihood of success.

APPENDIX B: DNO CML ANALYSIS

Table 17 – DNO Average CML Performance Against RIIO-ED2 Y1 Targets

DNO	DNO 4yr Average CML Performance (2016/17 – 2019/20)	Ofgem ED2 CML Target (2023/24)	Delta between ED1 Performance & ED2 Target	Percentage Change (%)
1	[redacted]	[redacted]	[redacted]	0.00%
2	[redacted]	[redacted]	[redacted]	0.00%
3	[redacted]	[redacted]	[redacted]	0.00%
4	[redacted]	[redacted]	[redacted]	0.00%
5	[redacted]	[redacted]	[redacted]	0.00%
6	[redacted]	[redacted]	[redacted]	13.00%
7	[redacted]	[redacted]	[redacted]	17.20%
8	[redacted]	[redacted]	[redacted]	17.81%
9	[redacted]	[redacted]	[redacted]	19.93%
10	[redacted]	[redacted]	[redacted]	18.76%
11	[redacted]	[redacted]	[redacted]	24.40%
SSES	43.02	30.92	12.10	28.13%
SSEH	47.16	33.69	13.47	28.56%
14	[redacted]	[redacted]	[redacted]	30.70%

Table 18 – Average DNO ATOS against RIIO-ED2 Y1 Targets

DNO	DNO 4yr Average ATOS (2016/17 – 2019/20)	Ofgem ED2 ATOS Target (2023/24)	Delta between ED1 Performance & ED2 Target	Percentage Change (%)
1	[redacted]	[redacted]	[redacted]	-5.51%
2	[redacted]	[redacted]	[redacted]	-2.56%
3	[redacted]	[redacted]	[redacted]	-0.72%
4	[redacted]	[redacted]	[redacted]	-0.46%
5	[redacted]	[redacted]	[redacted]	-0.09%
6	[redacted]	[redacted]	[redacted]	8.70%
7	[redacted]	[redacted]	[redacted]	11.66%
8	[redacted]	[redacted]	[redacted]	14.40%
9	[redacted]	[redacted]	[redacted]	17.83%
10	[redacted]	[redacted]	[redacted]	18.76%
11	[redacted]	[redacted]	[redacted]	20.67%
SSES	87.87	65.92	21.95	24.98%
SSEH	78.88	56.53	22.35	28.34%
14	[redacted]	[redacted]	[redacted]	28.93%

APPENDIX C: ENHANCED ENGAGEMENT (IIS AND GSOP)

- Overview: **We will reduce the average frequency and duration of unplanned power interruptions**
- Total cost: **£24.2m**
- Contribution to annual customer bills: **£0.66 (North), £0.63 (South)**

RIIO-ED1 context

Our key commitments in ED1 were to reduce the number of unplanned supply interruptions (Customer Interruptions of CI) by 5% and their duration (measured in Customer Minutes Lost or CML) by 25%. So far in ED1, we have either met or exceeded both of these targets in both of our regions. These improvements have been driven by investment in upgrading operational technology, and in automation and monitoring which allow us to identify faults and restore supply quicker.

ENGAGEMENT SYNTHESIS

Stakeholder engagement	
Engagement details	**Insights derived**
Next generation bill payers (future customers), fuel-poor customers, customers in vulnerable situations and medium business customers We tested our ***strategy and outputs and associated costs on Reliability*** with consumers to understand the **acceptability and affordability** of our Draft Business Plan using focus groups and 1-1 interviews	• **Future, fuel poor, vulnerable and business customers** in England and Scotland emphasized the importance of reliability. They thought the strategy was acceptable and affordable, with English future and fuel poor customers urging more ambition. [E156] • **Customers in vulnerable situations** noted reliability was particularly important for those with a medical dependency on power. [E156] • **Business customers** noted the lack of context or 'benchmarking' made it difficult to judge the outputs. [E156] • Some **fuel poor customers** in both licence areas linked good performance on reducing power cuts with improved customer service. [E156]
Non-consumer stakeholders We tested our **Reliability strategy, outputs and costs** with a broad range of non-consumer stakeholders to understand their views on the **acceptability and bill impacts** of our Draft	• Stakeholders strongly approved the Reliability strategy and outputs for reducing the frequency and duration of power cuts and improving reliability for worst-served customers were the appropriate challenges for ED2. [E151] • This high level of approval was echoed in the survey, with the following statement receiving an average vote of 4.0/5 'Is our package of outputs under reliability, resilience and worst-served

Business Plan via an online consultation event and surveys	customers comprehensive enough to meet the needs of our customers?' [E151] • 90% of stakeholders in the north and 89% in the south said that network reliability and reducing unplanned outages were of high or medium priority and our most important job. • 77% of northern stakeholders and 87% of southern stakeholders thought it was a high or medium priority to improve service to worst served customers. • Key areas of investment highlighted were around the automation of the network to reduce power interruptions as well as ensuring we meet the GSOP obligations.
Vulnerable customer representatives/Consumer Groups Citizens Advice provided their views on all DNOs' Draft Business plans via a published report	• Citizens Advice noted that SSEN didn't discuss short interruptions extensively in the plan. [E176]
Consumers We conducted audience research via surveys to understand customers priorities for RIIO-ED2, the impact of Covid-19, and their customer service expectations, we led a trial to test out a new balanced scorecard approach to surveying service quality, and we engaged in-depth through thematic consumer events.	• 71% consumers thought it was very important we are committed to reliability, which was the second highest priority for them (after affordability). [E118] • In terms of reliability, domestic and SME customers' top priorities were 'Restoring the electricity supply as quickly as possible in the event of a power cut' (particularly for those aged 65+ or in vulnerable situations) and 'Keeping my power on with minimal power cuts'. [E019] [E118]. • In the Coronavirus customer survey, when asked about their concerns surrounding impact of power interruptions, 30% respondents stated they were either fairly or very concerned – this figure was higher amongst those interviewed over the phone (47%). [E087] • People were now working from home and therefore more reliant on electricity, and therefore less tolerant of interruptions during the day. [E043] • SMEs stated they are becoming increasingly dependent on electricity for core businesses and communications/IT – they are nervous economically about the post-Covid world and looking for smooth recovery with no power cuts [E098] • A consumer stated that 24/7 supply is taken for granted more than ever and can expect electrical dependency to continue to rise after COVID-19 with increases in smart homes, shift to home working and electric vehicles [E098]

Domestic customers, customers in vulnerable situations, future bill payers We engaged consumers via an online survey to understand their views on our Draft Business Plan	• When asked to prioritise the following output: Our investment in targeted automation will help us meet our reliability targets and reduce the average frequency and duration of unplanned power interruptions affecting our customers by 20% by 2028, alongside other activities. 45% of customers in the south and 53% in the north said it was a high priority, 44% in the south and 37% in the north said it was a medium priority, and only 10% in both regions and said it was a low priority. [E170] • When asked to prioritise the output 'We will meet our obligations under GSOPs and minimise the number of customers experiencing an outage greater than 12 hours', 53% of customers in the south and 51% in the north gave this a high priority, 36% in the south and 33% in the north said it was a medium priority, and 11% in the south and 16% in the north said it was a low priority. [E170]
National Government We engaged MPs about our Draft Business Plan via bilaterals	• MP for North Portsmouth was strongly supportive of our aims, particularly around 20% reduction in power cuts/faults and improving customer satisfaction. Their main concern was faults and power cuts but recognised these have reduced in the last decade. [E166] • MP for the Western Isles also noted that the resilience of our network is very good. When they have experienced faults these have generally been a 50min event which they described as an "amazing difference". [E166]
Consumers We tested domestic and non-domestic customers' priorities for 15 initiatives separately for the North and South Licence Areas via a robust Willingness to Pay study	• Reducing our target for the number of customer minutes lost per year because of unplanned power cuts to 45 minutes in the North and 54 minutes in the South, rather than a basic level of 75 minutes in the North and 90 minutes in the South (the average across both Licence Areas for 2020 is 80 minutes) was a very high priority for domestic customers in the south, and a high priority for non-domestic customers there. In the North, it was a high priority for domestic customers and a medium priority for non-domestic customers [**E126**]. • If we targeted a basic level of 50 minutes in the North and 60 minutes in the South, customers were less willing to pay for this to be reduced further to 45 minutes (North) and 54 minutes (South); although non-domestic customers in the South felt this was a high priority, domestic customers in both regions considered it a medium priority, and non-domestic customers in the North ranked it as a low priority [**E126**].
Local Authority/ Government We conducted audience research via an online workshop to understand stakeholders' views on our plans to ensure reliability and resilience for the	• A local authority representative in Scotland raised the issue of increased reliance on electrical power, coupled with lack of resilience in some communities – the stakeholder thought educational campaign on dealing with power cuts would be useful, particularly in island communities where short outages are common. [**E069**]

future and to reinforce the network to cater for greater electrification and distributed generation	• A local authority officer made the point that the network has to be able to respond to increasing electrification and connection of renewables for net zero, and therefore reliability of the network is a priority [**E071**] • Local authorities stated that we need to ensure the network is fit for purpose and future developments and reinforcement decisions should be driven by central government targets as well as local intelligence [**E062**].
Community Energy Group/ Interest groups Audience research workshop on our reliability and resilience plans	• Both old and new communities need to be resilient - must ensure the transition does not leave people behind [**E069**] • We need to think about current and future populations in areas now in order to plan its investments most effectively [**E071**] • EVs will become 'the new normal' cars [**E071**]
Community interest groups (Islands) We conducted audience research via a bilateral with Shetland Council and via an open forum with developers to validate and gather additional feedback on our ED2 strategy	• All stakeholders agreed that we should prioritise maintaining the current security of supply for the islands at a slightly higher cost [**E067**] • Outages could be graded in a way that took into consideration the number of interruptions, the length of the interruption and the number affected [**E069**]
Developer/ connections representative Audience research workshop on our reliability and resilience plans	• Reliability will be more important now people are working flexibly and from home [**E069**] • We have a good reputation for reliability, however, we should plan for increasing storms in Scotland as a result of global warming [**E069**] • One stakeholder in Scotland highlighted the changes in spatial distribution of people as a result of COVID, particularly away from cities. We should therefore look to focus investments on providing resilience through local energy networks. [E072]
Environmental group We conducted audience research via a workshop to co-create our reliability and resilience plans	• An environmental group representative in Scotland highlighted the importance of reliability with more people working from home. [E072] • After one stakeholder warned that the future connection of renewables, EVs, heat pumps would likely strain the grid in its current state, an environmental group representative gave account of how their county cannot currently add more renewables, suggesting it is already overloaded. [**E071**]
Consultants Audience research workshop on our reliability and resilience plans	• Infrastructure and engineering representatives in the south called for us to make more investments in network reliability, which will be crucial in ensuring the network is ready for the future. They said we should be acting as enabler and think into the future generations – carrying out the work and charging

	consumers will bring benefits to them, however, affordability may become a concern. [E071] • Infrastructure and engineering representatives in the south thought it was important to educate developers so that they are aware of the costs of reinforcing the network, which can become a driver to look at solutions. In relation to the construction community, one stakeholder thought there would benefits from educating the construction community on their options, which they might then adopt, to protect network resilience. [E071] • One infrastructure/engineering representative in the south advised that we need to invest in reliability due to necessity of phasing out of domestic gas systems and the resulting increase in electricity demand. This thought was echoed by a business representative in Scotland who suggested network resilience was more important than ever with electrification of heat. [E071] • An infrastructure/engineering representative wanted to see more data about how reliable individual patches are for comparison. [E071]
Charity/NGO (South) Audience research workshop on our reliability and resilience plans	• A stakeholder suggested we consider equity in outages and how they're managed, as the south is wealthier and have fewer outages than Scotland, echoed by a business representative in Scotland who thought wealthier urban areas should be supporting rural areas where outages are more common. [E071] [E072]
Energy/utilities Charity/NGO (North) We conducted audience research via a workshop on our reliability and resilience plans	• We should be looking at climate change resilience eg avoiding flooding impacts to keep the lights on [E071] • Local energy generation will make people less reliant on wider network and would negate the need for more network resilience [E071] • We should not be installing assets which will be onerous to maintain in the future [E071]
Contractors, Consultants, Local Authorities, National Government, Storage and Renewables suppliers, Supply Chain We tested our Reliability strategy, outputs and costs with a broad range of non-consumer stakeholders to understand their views on the acceptability and bill impacts of our Draft Business	• Difficult to determine whether a 20% reduction in the number and frequency of customer power cuts represent an appropriate level of ambition without any context or benchmark. [E151] • 20% seemed like a good yardstick for now but wanted to establish whether there were any plans to review this figure on a monthly or annual basis? [E151] • Difficult to know if our reducing power cuts goal was ambitious enough if they did not know what current levels were. [E151]

Plan via an online consultation event and surveys	
Current and future employees We engaged colleagues via a survey to co-create our customer service strategy, and later via a survey to understand their views on our Draft Business Plan	• Stakeholders suggested they would like to see more information on the cause of the outage and a summary of the fault, to inform customers of the time taken to make repairs should a similar fault occur again in the future [**E043**]

ENGAGEMENT STATISTICS

ED2 ENGAGEMENT EVENTS	INSIGHTS	STAKEHOLDERS ENGAGED
30	146	7,310

STAKEHOLDER SEGMENTS ENGAGED

CONSUMERS	Domestic customers	Customers in vulnerable situations	Transient customers	Next generation bill payers	SMEs	Major energy users	
CUSTOMERS	Distributed generation customers	Builders and developers	Community energy schemes	Landowners/ farmers			
POLICY MAKERS AND INFLUENCERS	Government	Research bodies, policy forums and think tanks	Media	Consumer groups	Regulators		
COMMUNITIES AND LOCAL DECISION MAKERS	Local authorities	Charities	Academic institutions	Housing associations			
	Vulnerable customer representatives	LEPs	Emergency response	Healthcare	Community interest bodies		
WIDER INDUSTRY AND VALUE CHAIN	DNOs	Transmission	GDNs	Water	Telecoms	IDNOs	
	ICPs	Consultants	Energy suppliers	EV charging	Other supply chain	Storage and renewable providers/ installers	Transport and highways agencies
PARTNERS AND ENABLERS	Current and future employees	Contractors	Service partners	Shareholders	Investors	Business advisers	Trade unions

EVIDENCE ASSESSMENT

ENGAGEMENT SCORING KEY

The engagement score assigns a weight to each source accounting for the robustness of the engagement event and the relevance of the feedback to the topic.

Score	Description
1-1.66	Limited evidence of good event planning, methodology or data collection. Feedback provided is high level with tangential relevance to the topic.
1.67-2.33	Good evidence of engagement planning and discussion of data collection methods, but limited depth of feedback and range of opinions. Feedback not necessarily fully aligned to the topic and only provides a limited insight and thus moderately useful.
2.33-3	Well conducted, trustworthy event with highly relevant feedback. Specific, clear and relevant information with clear link to the topic discussed and high value added.

Phase	Date	Event ID	Event name	Key stakeholder groups	Number of stakeholders engaged	Engagement score
Phase 4: Testing and Acceptability	Oct-21	E153	Employee Consultation Document Engagement on Draft Plan	Current and future employees	3	2.3
	Oct-21	E155	Stakeholder Consultation Document Engagement on Draft Plan	Community interest groups, storage and renewables suppliers, emergency response, healthcare and highways agencies	19	2.8
	Sep-21	E151	Consolidated Outputs and Costings Event	Contractors, Consultants, Local Authorities, National Government, Storage and Renewables suppliers, Supply Chain	106	3.0
	Sep-21	E156	Draft Plan Qualitative Acceptability Testing Event	Future Customers, Fuel Poor Customers, Customers in Vulnerable Situations	46	3.0
	Sep-21	E170	Microsite survey on Costed outputs	Domestic Customers, Vulnerable Customers and Future Customers	1,298	2.7
	Sep-21	E176	Citizens Advice report on DNO Draft ED2 Business Plans	Consumer groups	1	2.5
	Aug-21	E166	Corporate Affairs General Bilateral	Government, Storage and renewables providers	25	2.0

Phase	Date	Event ID	Event name	Key stakeholder groups	Number of stakeholders engaged	Engagement score
Phase 3: Business Plan Refinement	Mar-21	E125	Willingness to Pay Qualitative testing	Domestic customers, customers in vulnerable situations, next generation bill payers, SMEs	54	2.5
	May-21	E126	Willingness to Pay Quantitative report	Domestic customers, customers in vulnerable situations, next generation bill payers, SMEs	1,161	2.5
Phase 2: Co-creation	Mar-21	E103	Sustainability Workshop	Local authorities, consultants, contractors, distributed generation customers	27	3.0
	Mar-21	E098	Improving the customer journey during supply interruptions	Domestic customers, customers in vulnerable situations, SMEs	100	2.0
	Jan-21	E069	Worst served customer resilience workshops	Local authorities	13	2.5
	Dec-20	E043	Customer Service and CV strategy internal engagement	Current and future employees	40	1.5
	Dec-20	E067	Shetland Engagement Forum	Local authorities, distributed generation customers	23	1.2
	Dec-20	E087	Ecuity - SSEN Coronavirus Customer Survey	Domestic customers, customers in vulnerable situations	1,600	2.0
	Nov-20	E062	Local Network Plan follow on survey	Local authorities, consultants	8	1.2
	Oct-20	E041	Corporate affairs - Political stakeholder engagement	National government	15	1.0
	Oct-20	E118	ED2 Customer Priorities Survey	Domestic customers, customers in vulnerable situations, next generation bill payers, SMEs	39	2.5
	Sep-20	E071	Annual Stakeholder Workshops - South	Local authorities, housing associations, water, vulnerable customer representatives	109	3.0
	Sep-20	E072	Annual Stakeholder Workshops - North	Local authorities, vulnerable customer representatives, housing associations	84	3.0
	Jul-20	E116	Hybrid and Service quality trial	Domestic customers	330	2.0
Phase 1: Open Discovery	Aug-20	E019	ED2 Customer Priorities Survey	Wider industry & value chain, ICPs, Supply chain	2,031	2.0
	Mar-20	E015	SSEN Distribution ED2 Online Workshop - Northern Scotland	Wider industry & value chain, Consultants, ICPs	27	2.0
BAU Insights	Sep-19	E008	SSEN Distribution Stakeholders Workshops - Bournemouth	Local government, Community councils	17	2.0
	Sep-19	E009	SSEN Distribution Stakeholders Workshops - Dunblane	Wider industry & value chain, Energy consultants	41	2.0
	Sep-19	E010	SSEN Distribution Stakeholders Workshops - Forres	Consumer groups	24	2.0

Phase	Date	Event ID	Event name	Key stakeholder groups	Number of stakeholders engaged	Engagement score
	Sep-19	E012	SSEN Distribution Stakeholders Workshops - Portsmouth	Builders & developers, DG customers	30	2.0
	Sep-19	E013	SSEN Distribution Stakeholders Workshops - Reading	Local government	27	2.0
	Dec-18	E018	DSO Consultation - Supporting a smarter electricity system	Charities, Local government	5	1.8
	Jul-05	E004	Annual Report from the Stakeholder Advisory Panel	Business Advisors, Current and future employees	7	1.8

MEASUREMENT OF SUCCESS

The table below sets out the benefits that our Reliability strategy, and the outputs within it, will deliver to customers.

Output	Northern target	Southern target	Comparison to RIIO-E1	Cost in baseline plan	Consumer benefit
Meet our targets and reduce the average frequency and duration of unplanned power interruptions affecting our customers by 20% by 2028	CI: 58.4 CML: 30.7 (To be confirmed by Ofgem by Q3 2022)	CI: 44.6 CML: 28.7 (To be confirmed by Ofgem by Q3 2022)	End of ED1: North CI: 63.5 CML: 45.6 South CI: 56.5 CML: 41.8	£24.2m (for specific schemes focused on network reliability improvements)	More reliable supplies for customers Reduced carbon emissions (from backup generators)
By 2028, improve the network performance for at least 75% of worst-served customers	Remove at least 75% of the WSC from the 2019-20 list	Remove at least 75% of the WSCs from the 2019-20 list	£11.2m (North) £2.6 (South)	£25.2m: £21.8m (North) £3.3m (South)	£2m in wellbeing benefits delivered to 12,000 customers as a result of fewer power during power cuts over RIIO-ED2

APPENDIX D: ENHANCED ENGAGEMENT (WORST SERVED CUSTOMERS)

- Overview: **By 2028 we will improve the network performance for at least 75% of customers that are deemed worst served, focusing on circuits with the highest numbers of customers and vulnerability levels**
- Total cost: **£25.2m**
- Contribution to annual customer bills: **£2.18 (North), £0.12 (South)**

RIIO-ED1 context

During ED1 we have delivered multiple schemes to improve the performance of the electricity supply to worst-served customers (WSCs), taking many of them out of this category. For ED2, Ofgem has broadened the definition of a WSC.

ENGAGEMENT SYNTHESIS

Stakeholder engagement

Engagement details	Insights derived
Fuel-poor customers and customers in vulnerable situations We tested our **reliability strategy, outputs and costs** through qualitative focus groups involving fuel poor, future, vulnerable and business customers to get insights into the **acceptability and affordability** of our Draft Business Plan	• Some participants in the **customers in vulnerable situations** group suggested a more ambitious target. [E156]
Domestic customers, customers in vulnerable situations, future bill payers	• Most Customers in both the northern and southern licence areas placed a medium to high priority on 'improving network performance for at least 75% customers that are deemed worst served'.

We tested our **reliability outputs** with consumers via an on-line survey	
Non-consumer stakeholders We tested our **reliability strategy, outputs** and costs with a broad range of non-consumer stakeholders to understand their views on the **acceptability and bill impacts** of our Draft Business Plan via an online consultation event and surveys	• A healthcare representative suggested more funding might be given to the emergency planning department/operational teams to serve those vulnerable communities when power cuts do occur. [E155] • An emergency response stakeholder felt there should be a greater emphasis on collaboration and partnerships to support worst served customers. [E155]
Vulnerable customer representatives Citizens Advice provided their views on all DNOs Draft business plans via a published report	• A target to improve performance for 100% of WSCs may be appropriate in view of the increasing reliance on electricity. [E176]

Domestic customers
 	
We conducted audience research with domestic and SME customers through a RIIO -ED2 consumer priorities survey and conducted targeted engagement with them to modify our services to better meet their needs
	• Customers thought we should offer backup solutions to those who are the worst of the worst served to ensure continuity of service. They also prioritised vulnerable customers and businesses. [E101].
	• Customers thought the plans to reduce the 'worst served' by 75% during 2023-2028 were ambitious. Most domestic customers recognised that 100% reduction would be unrealistic and not cost effective. [E101].
	• If we know that customers will continue to be classed as 'worst served ', proactive plans, covering practical/ communication/financial solutions, should be developed [E101].
	• The proposed investment for 'worst served' areas on top of general infrastructure spend is seen as significant and agreed that the monthly customer contribution was low and broadly affordable [E101].
	• Worst served customers are looking for spontaneous solutions:
	  ○ Practical: backup, storage, emergency packs, 4G dongles, computer backup etc
	  ○ Communication: regular dialogue and real time reassurance, priority number, promotion of PowerTrack app, provision of portal, and regular updates

	○ Financial: reduction in bills for worst served customers and compensation for business customers [E101]. • Customers provided additional solutions for services to support worst served vulnerable customers and these are detailed in the Vulnerable Customer Annex and appendix.
SMEs We conducted targeted consumer engagement with domestic and SME customers to modify our services and better meet their needs	• SMEs were overall disappointed with the investment solutions . They expect 100% of WS businesses to be addressed in 2023-2028 [E101]. • SMEs reported a lack of backup solutions in place beyond emergency low voltage lighting [E101]. • Domestic customers and SMEs stated a preference for being offered the choice of free installation of 'smart' home batteries which could be used for storage from renewables and provide resilience during a power cut. However, customers expressed the following concerns: ○ Short term fix only ○ Positioning of the battery could be an issue ○ Life expectance and maintenance of the battery [E101]. • SMEs reported a loss of confidence in us and were unhappy with lack of or low compensation offered [E101].
Consumers We tested domestic and non-domestic customers' priorities for 15 initiatives separately for the North and South Licence Areas via a robust Willingness to Pay study	• The 75% target for 'worst served customers' is the highest priority for non-domestic customers in the North among the 15 initiatives tested, and a high priority for domestic customers in both License Areas and for non-domestic customers in the South [E126].
Citizens Advice We engaged Citizens Advice through a bilateral on our ED2 strategic outcomes	• Customers that are known to be 'worst served', is unacceptable and we should take proactive action to address those areas with lower levels of service [E042].
Local Authority/ Government We conducted audience research with stakeholders via online workshops/open forums to co-create our strategies and priorities in RIIO-ED2 for improving the network for WSCs	• There was debated about how investment in worst-served circuits should be prioritized: number of WSCs; number of interruptions; level of customer vulnerability; or potential of low carbon technology (LCT) take-up [E069]. • Stakeholders in the North, however, favoured focusing investment efforts on reducing the number of worst-served vulnerable customers was supported [E069]. • Stakeholders in the South had a slight preference towards focusing on WSCs with the highest number of interruptions [E069]. • Stakeholders in our Northern area also suggested that, based on the remote location of some Scottish islands, investment for the WSCs

	there should be seen as a priority, as it will potentially take far longer to restore power there compared to mainland areas [E069]. • Stakeholders suggested that an annual WSC report would be welcome and raise the profile of the issue but might give the incorrect impression that these are the areas where there will be investment [E069]. • The interruption duration which is currently not considered in Ofgem's WSC definition is recognised as an important factor by our stakeholders. Some stakeholders were concerned about the impact of worst-served circuits on generation as well as supply customers [E069].
Developer/ connections representatives Audience research online workshops	• Investment should focus on worst-performing circuits to reduce the number of permanent faults [E069]. • Place more emphasis on the impact of storm-related faults especially in Scotland [E069].
Infrastructure/ engineering representatives Audience research online workshops	• Concern was raised that lower population density in rural areas led to these being prioritised lower for ensuring reliability than urban areas [E069].
Emergency Services Audience research online workshops	• Focus on circuits with the highest number of WSCs would be preferable although there are also strong cases for focus on highest numbers of interruptions and for those with high number of vulnerable customers especially with current increased focus on 'telehealth' (at home treatment enabled by involving entering medical readings online) [E069].
National Government We engaged MPs and MSPs via bilaterals on key topics including our Draft Business Plan	• A local MP mentioned the energy challenge will be to deliver workable, deliverable, and cost-effective solutions that people can use, particularly for rural communities [E148]. • MSP for the Orkney Islands was keen to understand what can be done for worst served customers and the alternatives for diesel generation. [E166]

ENGAGEMENT STATISTICS

ED2 ENGAGEMENT EVENTS	INSIGHTS	STAKEHOLDERS ENGAGED
17	94	4, 997

STAKEHOLDER SEGMENTS ENGAGED

CONSUMERS	Domestic customers	Customers in vulnerable situations	Transient customers	Next generation bill payers	SMEs	Major energy users	
CUSTOMERS	Distributed generation customers	Builders and developers	Community energy schemes	Landowners/ farmers			
POLICY MAKERS AND INFLUENCERS	Government	Research bodies, policy forums and think tanks	Media	Consumer groups	Regulators		
COMMUNITIES AND LOCAL DECISION MAKERS	Local authorities	Charities	Academic institutions	Housing associations			
	Vulnerable customer representatives	LEPs	Emergency response	Healthcare	Community interest bodies		
WIDER INDUSTRY AND VALUE CHAIN	DNOs	Transmission	GDNs	Water	Telecoms	IDNOs	
	ICPs	Consultants	Energy suppliers	EV charging	Other supply chain	Storage and renewable providers/ installers	Transport and highways agencies
PARTNERS AND ENABLERS	Current and future employees	Contractors	Service partners	Shareholders	Investors	Business advisers	Trade unions

EVIDENCE ASSESSMENT

ENGAGEMENT SCORING KEY

The engagement score assigns a weight to each source accounting for the robustness of the engagement event and the relevance of the feedback to the topic.

Score	Description
1-1.66	Limited evidence of good event planning, methodology or data collection. Feedback provided is high level with tangential relevance to the topic.
1.67-2.33	Good evidence of engagement planning and discussion of data collection methods, but limited depth of feedback and range of opinions. Feedback not necessarily fully aligned to the topic and only provides a limited insight and thus moderately useful.
2.34-3	Well conducted, trustworthy event with highly relevant feedback. Specific, clear and relevant information with clear link to the topic discussed and high value added.

Phase	Date	Event ID	Event name	Key stakeholder groups	Number of stakeholders engaged	Engagement score
Phase 4: Testing and Acceptability	Oct-21	E155	Stakeholder Consultation Document Engagement on Draft Plan	Community interest groups, storage and renewables suppliers, emergency response, healthcare, highways agencies	19	2.5
	Sep-21	E156	Draft Plan Qualitative Acceptability Testing Event	Domestic Customers	46	2.5
	Sep-21	E170	Microsite survey on Costed outputs	Domestic Customers, Vulnerable Customers, Future Customers	1,298	2.2
	Sep-21	E176	Citizens Advice report on DNO Draft ED2 Business Plans	Consumer groups	1	2.5
	Aug-21	E166	Corporate Affairs General Bilateral	Government, Storage and renewables providers	25	2.0

Phase 3: Business Plan Refinement	Mar-21	E125	Willingness to Pay Qualitative testing	Domestic customers, customers in vulnerable situations, next generation bill payers, SMEs	54	2.5
	Apr-21	E148	Corporate Affairs Bilats	Government, Consumer groups and Charity	6	1.8
	May-21	E126	Willingness to Pay Quantitative report	Domestic customers, customers in vulnerable situations, next generation bill payers, SMEs	1,161	2.5
Phase 2: Co-creation	Mar-21	E101	Worst served circuits thematic customer engagement	Domestic customers, SMEs	35	3.0
	Feb-21	E042	Bilateral with Citizens Advice	Vulnerable customer representatives	2	2.0
	Jan-21	E069	Worst served customer resilience workshops	Local authorities	13	3.0
	Oct-20	E118	ED2 Customer Priorities Survey	Domestic customers, customers in vulnerable situations, next generation bill payers, SMEs	2,031	2.5
	Sep-20	E071	Annual Stakeholder Workshops - South	Local authorities, housing associations, water, vulnerable customer representatives	109	2.0
	Sep-20	E072	Annual Stakeholder Workshops - North	Local authorities, vulnerable customer representatives, housing associations	84	2.0
Phase 1: Open Discovery	Aug-20	E019	ED2 Customer Priorities Survey	Wider industry & value chain, ICPs, Supply chain	39	2.0
	Mar-20	E015	SSEN Distribution ED2 Online Workshop - Northern Scotland	Wider industry & value chain, Consultants, ICPs	27	2.0
	Mar-20	E016	SSEN Distribution ED2 Online Workshop - Central Southern England	Wider industry & value chain, Consultants, ICPs, IDNOs	49	2.0

MEASUREMENT OF SUCCESS

See Appendix C.