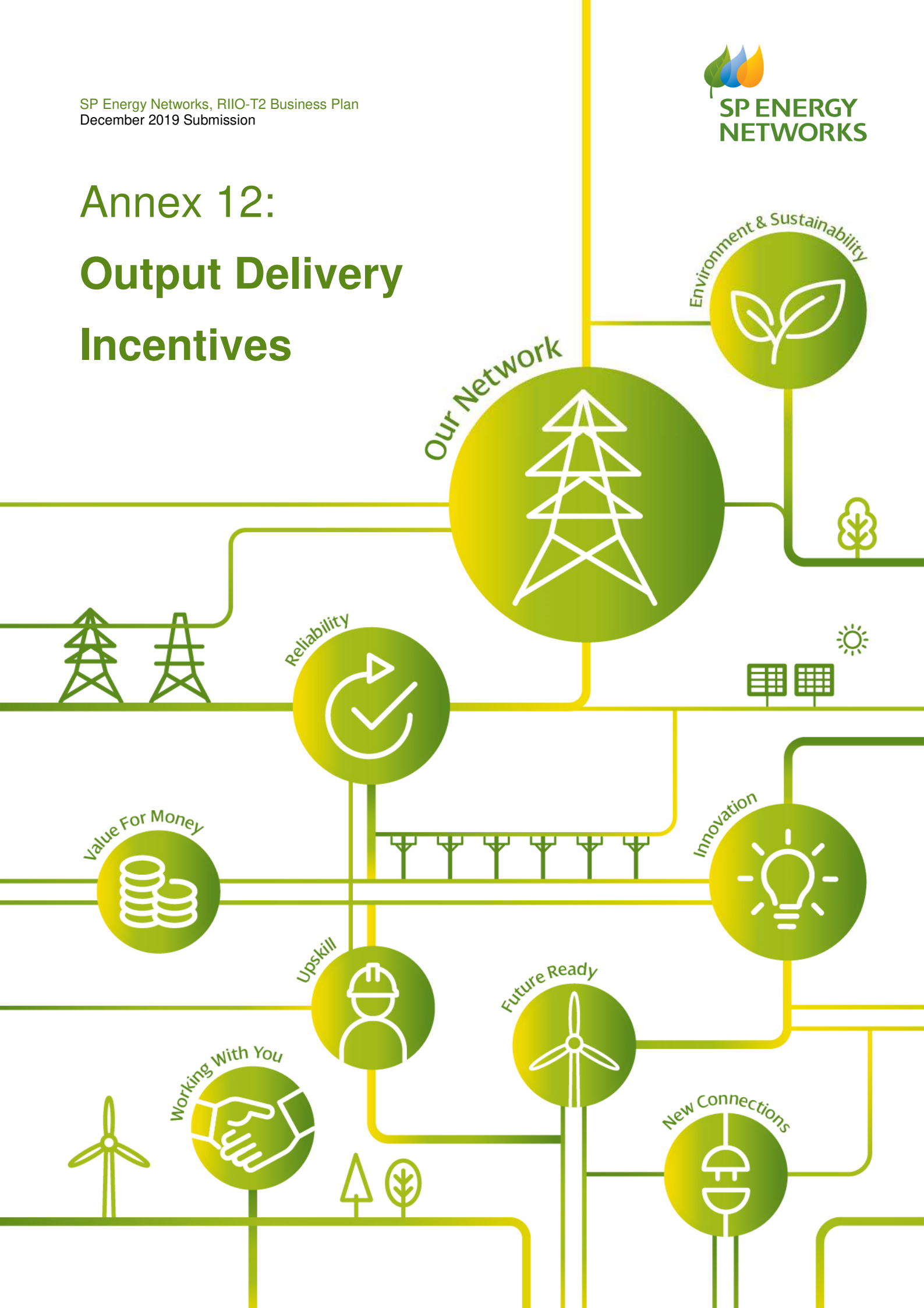


# Annex 12: Output Delivery Incentives



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## 1.0 EXECUTIVE SUMMARY

We have set out a package of incentives that will drive our business forward to serve network customers better, reduce our environmental impact whilst keeping costs low for consumers. These are ambitious proposals that include:

- Digitising the new connection process including an on-line portal which will bring efficiency and quality for connecting customers.
- Even better network reliability for our distribution customers in the central belt of Scotland who are uniquely exposed to loss of supply risks as result of transmission faults due to the different transmission voltage levels across the border (132kV is Transmission in Scotland).
- We aim to become the first TO to be incentivised to improve network availability for generators allowing more low carbon energy to flow onto our network.
- We are promoting the use of transmission infrastructure solutions to reduce the risk of future constraint costs that could unlock millions of pounds worth of savings for consumers.
- We have set out commitments that we will deliver under each output incentive to respond to our customer and stakeholder feedback.
- We have proposed an enduring role for the User Group to review our performance and progress against all our incentives and commitments. This keeps us accountable to consumers, customers and wider stakeholders.
- We are the only TO to propose that the User Group assesses our bespoke financial discretionary incentives, this is to ensure full accountability and continual challenge.
- We have committed to reporting against “reputational only” incentives to ensure transparency for our stakeholders – there is no reward in this for us.
- We have identified a set of Core Metrics that, along with our reporting on Output Delivery Incentive, performance and progress against our commitments constitutes a balanced scorecard

The financial range of our output package is broadly in line with our RIIO-T1 package and constitutes a positive consumer value proposition of £9.62 for every £1 invested in our incentives. The cost impact on consumer bills is calculated to be 7p per year per consumer if we are able to deliver increased levels of performance and service above our baseline targets (based on the average reward over the RIIO-T2 period).

## 2.0 INTRODUCTION

This annex expands on information provided in the Output Delivery Incentive Proposals Section (pages 147 to 160) in the main business plan and describes in detail each output delivery incentive (ODI) proposal that we have developed for RIIO-T2. These proposals have been built up from our experience and learning in RIIO-T1, developed in response to consumer, network customer and wider stakeholder feedback and aligned with the RIIO-2 regulatory framework. We have tested these proposals using consumer value proposition (CVP), cost benefit analysis (CBA) and against consumer willingness to pay (WTP) and willingness to accept (WTA) studies.

The rewards and penalties quoted in this annex are based on Ofgem's assumption of a 4.8% Cost of Equity. Our proposed rewards and penalties at a 6.5% Cost of Equity can be found in Appendix H.

### 2.1 Structure of this Document

This annex starts with an overview of our ODI package.

The chapters that follow cover each of the three<sup>1</sup> RIIO-2 incentive categories we have grouped our ODIs under. In each chapter, we highlight the outputs and commitments we are making on our ODIs and the structure of any reward or penalty mechanism associated with the ODI.

Finally, we have a chapter explaining the proposed enduring role of the User Group to review and assess our incentive progress and performance throughout RIIO-T2.

There are a number of supporting appendices that explain the consumer, network customer and wider stakeholder engagement we have conducted to inform our proposals. We have also provided an appendix to this Annex that summarises our CBA analysis and implementation plans. The appendices also capture practical examples from our RIIO-T1 experience that are intended to provide ins on how certain ODIs could be implemented effectively in RIIO-T2.

### 2.2 Overview of our Output Delivery Incentives (ODI) Package

Our ODI package includes common financial and reputational incentives that are set out in Ofgem's RIIO-T2 Sector Specific Methodology Decision (SSMD). All TOs are required to implement these incentives. In addition, we have proposed bespoke financial and reputational incentives that the RIIO-T2 framework encourages companies to do. Appendix A of this document "Bespoke ODI Justification Spreadsheet" provides a summary of each financial bespoke ODI and how they meet the guidelines set out in Ofgem's Business Plan Guidance document<sup>2</sup>.

We are proposing two types of bespoke financial ODIs – *deterministic* and *discretionary*. Deterministic ODIs generate a financial reward or penalty based on our performance against targets and incentive rates pre-set in our licence at the start of the price control.

Discretionary ODIs will involve an assessment by the User Group and a final decision by Ofgem. We have proposed discretionary ODIs where we feel baseline targets and costs are harder to forecast and where the scale of our effort, innovation and value to consumers may not be obvious from a deterministic measure of outputs. The result of this assessment will then form the basis of a recommendation to Ofgem on the level of reward or penalty for our performance in these areas. Ofgem will have access to all the information we provide to the User Group and will make the final decision on the level of reward or penalty. More details are provided in Section 5 of this annex.

We have identified a set of commitments for every incentive in direct response to the customer feedback we have received. They are key deliverables we believe our stakeholders want us to deliver to improve our performance and service. They are inputs to each ODI and are presented throughout each chapter and set out in full in Appendix C of this document.

We will submit annual reports to the User Group containing a Balanced Scorecard of these ODIs. Chapter 5 of this annex includes an example of what our Balanced Scorecard will look like. In summary, the Balanced Scorecard will incorporate:

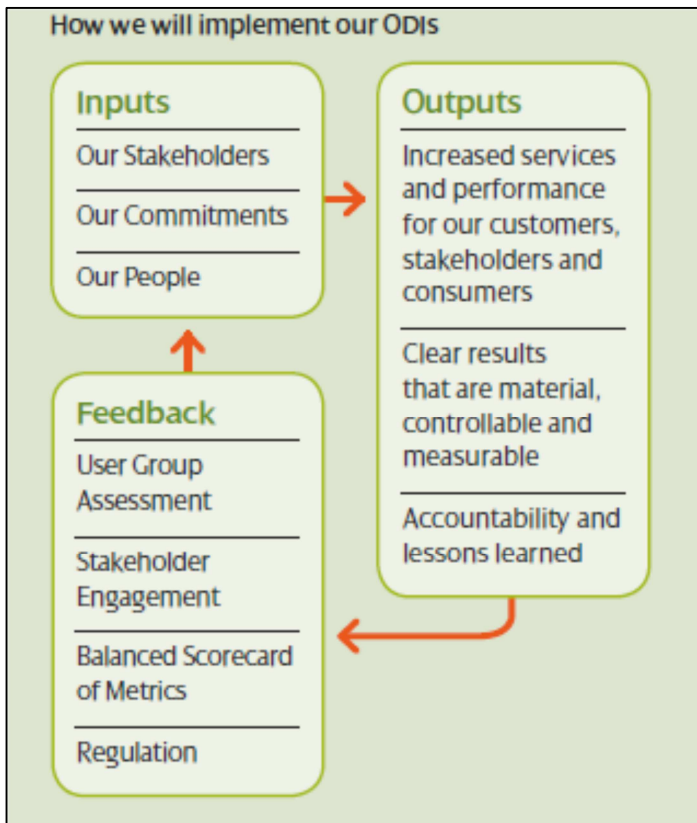
1. Our performance in respect of our ODIs
2. Our progress on delivering against our commitments
3. Our performance in respect of a set of Core Metrics

<sup>1</sup> Category 1 – Meeting the needs of consumers and network users; Category 2 – Maintaining a safe and resilient network; Category 3 – Delivering an environmentally sustainable network

<sup>2</sup> Ofgem, 31 October 2019, RIIO-2 Business Plan Guidance

The report to the User Group will include a review of the effort and approach we have taken to implement these ODIs.

Reputational incentives will also be reported to the User Group as part of a Balanced Scorecard. There is no financial reward or penalty associated with these incentives. They are deemed to be ‘reputational’ because our performance in these areas will be reported to the User Group, published and open to public scrutiny.



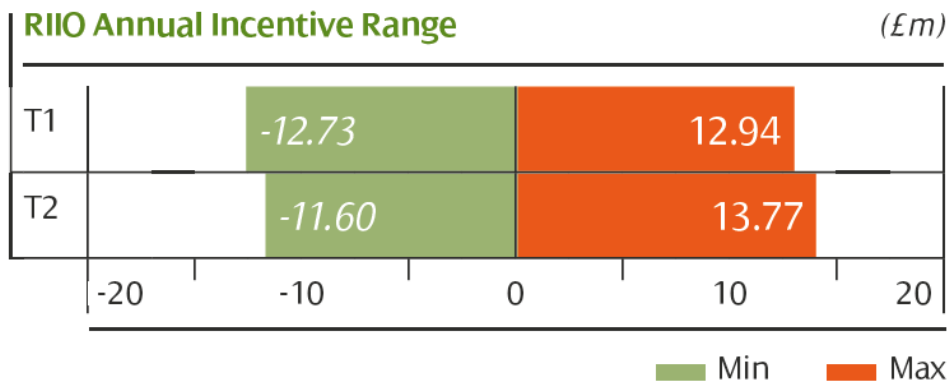
**Figure 1: How We Will Implement our ODIs**

Figure 1 above illustrates the relationship between our commitments (inputs), outputs associated with our ODIs and the feedback that will help us make year-on-year improvements. We aim to capture our year-on-year performance in a set of Core Metrics, which we describe later in this chapter.

### **2.3 Our RIIO-T2 ODI Package Financial Range**

In RIIO-T2 we are proposing to tighten targets to reflect our RIIO-T1 performance and lessons learned. We are proposing a suite of incentives that will drive us to deliver further performance improvements throughout RIIO-T2.

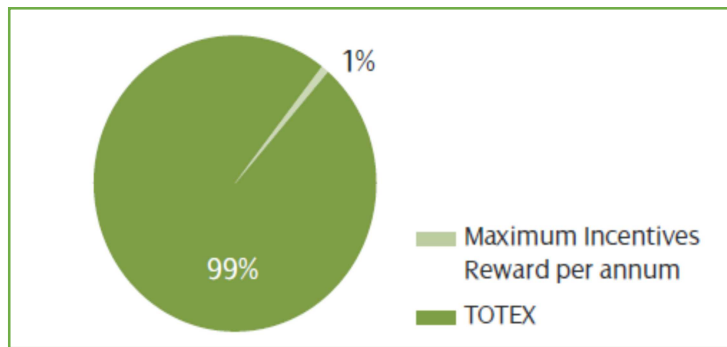
Figures 2 and 3 below highlight the range of the financial rewards and penalties associated with our incentive package, and the size of the incentives in relation to our total expenditure (TOTEX) package respectively.



**Figure 2:** *Our RIIO Annual Incentive Range*

The chart in Figure 2 compares the output incentive ranges between RIIO-T1 and RIIO-T2. This range is supported by our stakeholders who believe a strong incentives package will result in better outcomes for consumers.

Our ODI package is designed to drive us to deliver above our current standards, setting more stringent targets so we can raise the bar on existing performance levels for customers. We have incorporated the views of the User Group to ensure our targets are challenging such that maintaining our RIIO-T1 performance (where we are currently receiving a reward) will lead us to a zero reward position in RIIO-T2.



**Figure 3:** *Our ODI package as % of total expenditure*

Figure 3 shows that the value our potential maximum reward is 1% of our overall annual TOTEX value. A breakdown of how each individual ODI we have proposed for RIIO-T2 contributes to this overall annual range is shown in the table below.



**Table 1: Output Delivery Incentive Package**

Min Max

Incentive Category	Output Area	Output Name	Incentive Mechanism	Output Type	Annual Indicative Reward/Penalty Range (£m 2018/19 Prices)	
					Min	Max
1	Connections	Quality of Connections Survey	Financial (Deterministic)	Common	-3.45	3.45
		Quality of Engagement Survey	Reputational		—	—
		Timely Connection Offers	Financial (Deterministic)		-1.73	0.00
	Stakeholder Engagement	Delivery against our Stakeholder Strategy	Reputational	Bespoke	—	—
	Stakeholder Engagement PLUS	Black Start Resilience of Communities in Vulnerable Circumstances	Financial (Discretionary)	Bespoke	0.00	1.73
		Community Energy Schemes Capability				
	Network Reliability	Energy Not Supplied*	Financial (Deterministic)	Common	-6.42	2.03
Optimising Network Availability for Connected Generators			Bespoke	0.00	2.56	
2	Safe and Resilient Network	Health and Safety	Reputational	Bespoke	—	—
		Successful Delivery of Large Capital Projects	Reputational	Common	—	—
		Non-Lead Asset Output Measurement				
		Network Access Policy (NAP)				
		Whole System ESO-TO Constraint Mitigation	Financial (Deterministic)	Bespoke	—	2.28
3	Environmental	Environmental Framework	Reputational	Common	—	—
		Minimising Electricity Losses	Reputational	Common	—	—
		Sulphur Hexafluoride (SF <sub>6</sub> ) and other Insulation Interruption Gases (IIG) Leakage	Financial (Deterministic)	Common	TBC by Ofgem**	TBC by Ofgem**
		Maximising environmental benefit from non-operational land	Reputational	Bespoke	—	—
	Additional Contribution to the Low Carbon Transition	Maximising supply chain sustainability	Financial (Discretionary)	Bespoke	0.00	1.73
Accelerating adoption of low carbon fleet						
		Delivering biodiversity net gain initiatives				
<b>Annual</b>					<b>-11.60</b>	<b>13.77</b>

\*Please see page 154 for details on our proposal for an associated 'Use it or Lose it' ENS funding pot mechanism.

\*\*In theory, a maximum penalty would be incurred when 100% of IIG leaks and a maximum reward received when 0% of IIG leaks. These are extreme values which would distort the indicative reward/penalty range.

(Excluding the SF<sub>6</sub> and IIG output as Ofgem will finalise the methodology for setting baselines, and hence the incentive financial range, at Draft and Final Determinations.)

The table above sets out all of our incentives, including the maximum financial reward or penalty range where relevant. These values have been developed with respect to historic levels of performance, or where historic performance data is not readily available, we have used a combination of the latest business data and case studies to set targets. Our approach where data is limited is to draw on areas of our work with a similar range of activity as proposed in the ODI. We have also incorporated the views of the User Group.

## 2.4 Our RIIO-T1 Output Incentive Performance

In 2010 Ofgem introduced an incentive based regulatory methodology to meet the changing priorities that were materialising in the energy sector. Ofgem wanted to drive network companies to deliver, not just lower costs for consumers, but to support the low carbon energy transition that was being driven by global and UK climate change targets. "RIIO" was implemented with the intention to set network companies Revenue using Incentives to deliver Innovation and Outputs. This regulatory ambition is even more important as the priority and speed of change to meet these targets increases. Incentive regulation will help deliver these.

The first price control under this framework arrived in 2013 with the RIIO-T1 price control and that has successfully driven us to deliver a step change in customer satisfaction, environmental management and network reliability performance, over and above our baseline licence obligations. Please see the "Our Track Record" section (pages 12-15) of the main business plan (for an overview of our performance. Highlights include:

- 75% reduction Energy Not Supplied (ENS)
- 15% increase in Customer satisfaction
- 99% success rate in Timely Connection offers

We want to build on our performance in RIIO-T1 and use the experience we have gained implementing ODIs to deliver 'a better future quicker' for consumers. In RIIO-T1 the performance improvement required changes to our behaviours, organisational structure, our processes and our priorities in response to the incentives we were delivering. To do this even better in RIIO-T2 we believe it is essential that the right incentives are applied using the right mechanisms in the right output delivery areas.

The overall ODI package we are proposing has been built up firstly from the feedback of our consumers, customers and wider stakeholders. To ensure we have understood their requirements and demonstrate we are committed to meeting their needs we have developed a set of commitments in each incentive areas. These are set out in Appendix C of this document and embedded within each incentive section.

We have scrutinised the scope, guidelines and requirements of the RIIO framework to develop proposals for each incentive mechanism and identified bespoke incentive proposals where we think these can add value to consumers, customers and wider stakeholders. Appendix A of this document reviews these obligations and shows how we have fulfilled each aspect.

Having established a set of ODI proposals we have tested these in two ways. Firstly, by calculating the Consumer Value Proposition (CVP) associated with our incentives. This is summarised below and explained in full in Annex 30 of our business plan submission.

Secondly, we have tested each incentive against the willingness to pay and willingness to accept research we have conducted in support of this submission. This is summarised below, expanded in Appendix B of this document in the context of output incentive and explained in full in Annex 5: "Co-creating the Plan with our Stakeholders" of our main business plan submission.

Finally, we intend to demonstrate this package is delivering the consumer value, customer needs and wider stakeholder benefits by reporting annually to the User Group and presenting performance using a Balanced Scorecard approach. This will ensure accountability; keep consumers, customers and wider stakeholders at the centre of our plans; and demonstrate delivery against our business plan submission. This approach is explained in section 5 of this annex.

## 3.0 TESTING OUR ODI PROPOSALS

### 3.1 Consumer Value Proposition (CVP)

This section explains our approach to demonstrating the consumer value propositions (CVP) of our ODI proposals using Social Return on Investment (SROI) calculations and Cost Benefit Analysis (CBA).

Annex 30 of our Main Business Plan submission “**Consumer Value Proposition**” describes how the CVP statements in each section of our Business Plan are developed including the CVP assumptions for the ODIs presented in this chapter.

It explains that for each financial ODI we have used measurable data where possible to calculate the output incentive CVPs (e.g. carbon savings, avoided constraint costs). However, where this is not possible, we have used Willingness to Pay research findings as financial proxies for the value that stakeholders have said that they place on an output.

We have used the CVPs to inform the social return on investment (SROI) values presented in the ODI Proposals chapter of the main business plan which are:

**For every £1 invested implementing our ODIs categories, they will deliver the following Social Return on Investment (SROI):**

- **Meeting the Needs of Consumers: £3.43**
- **Maintaining a Safe and Resilient Network: £4.19**
- **Delivering an Environmentally Sustainable Network: £2.00**

Social Return on Investment (SROI) is a powerful method for measuring value that is not commonly reflected in traditional cost-benefit analyses. This includes:

- Environmental benefits (e.g. a reduction in CO2 emissions);
- Health benefits (e.g. a reduction in hospital visits); and
- Financial benefits to customers (e.g. reduction in future household utility bills)

It assigns a monetary value to the positive ‘externalities’ (i.e. impact) enjoyed by society to ultimately demonstrate the value of a network’s actions in full.

We have chosen to express the consumer value proposition of our ODI package in terms of SROI for the reasons above but also because we are aware that other utilities have adopted this measure and we feel it would aide comparability across utilities if we adopt the same measure.

SROI is a relatively new measure and one that draws on a database of financial proxies (some of these are mentioned in the bullet points above) to measure societal benefit. The strength of an SROI measure is underpinned by the depth and validity of these financial proxies. We anticipate our SROI measure will strengthen over time as we build and refine the sources of financial proxies. For now, we have approached SROI as a top-down desktop exercise using a relatively new dataset of financial proxies. Therefore, we expect our SROI measure to evolve and become more sophisticated over the course of RIIO-T2.

#### 3.1.1 Cost Benefit Analysis for Our ODIs

We consider that the SROI model should therefore be used as one of several methods to measure the benefits delivered by our ODIs. In addition, we have decided to provide traditional cost-benefit analyses (CBAs) associated with the implementation of our financial ODIs. These CBAs have been constructed using a bottom-up approach which draws from implementation plans set out by operational teams with responsibilities for implementing the ODIs.

Our SROI measure and CBAs are not intended to align because of the different approaches used in the development of both tools. However, we think it is right to maintain both these indicators of benefit to ensure there is a societal and operational perspective on the effectiveness of our ODIs, and to ensure that we promote comparability across utilities.

We have undertaken a bottom-up cost-benefit analysis for each of our proposed financial ODIs. The CBAs have captured annual recurring and (where relevant) non-recurring costs associated with the implementation of our ODIs. Direct and

indirect staffing costs (e.g. full time SPEN employees, agents, etc.) of teams responsible for implementing these ODIs and materials (e.g. information packs, external venues, etc.) have been factored into these recurring and non-recurring costs. The benefits captured in the CBAs are based mainly on consumer value proposition and, where relevant, include benefits to customers and our organisation. The present value discount rate we have adopted is 3.5%, in line with the HMRC Green Book for projects less than 30 years.

The CBAs for all our proposed ODIs demonstrate that a net benefit is delivered by implementing each ODI. The costs we capture in the CBA and implementation plans do not necessarily cover the costs (mainly FTEs) of all teams involved in responding to the implementation of ODIs. We believe that the inclusion of such costs would be highly subjective and could introduce significant errors in our analysis. For now, we have focussed on operational teams with direct responsibility for implementing ODIs. In addition, we anticipate that our implementation plans will evolve as we refine them over time. The information we present in our CBAs and implementation plans reflects our view of requirements at this time. The CBA values are included in the relevant section against every ODI throughout this Annex. We also provide a table of all our CBA's and the implementation plans underpinning them in Appendix F of this annex.

## **3.2 Testing Consumer Willingness to Pay**

In support of the RIIO-T2 investment plans we have conducted extensive studies to understand consumer and wider stakeholder views. These are explained in the “Co-creating the plan with our Stakeholders” section of our Business Plan and presented in full in Annex 28: Strategy for Engaging Stakeholders in RIIO-T2. Two reports are referenced here to inform and test our ODI proposals.

### **3.2.1 Report 1: NERA and EXPLAIN Study for all TOs**

In early 2019 NERA Economic Consulting (NERA) and Explain Market Research (Explain) were commissioned by a consortium of the four Transmission Operators (TOs) in Great Britain (National Grid Gas Transmission, National Grid Electricity Transmission, SP Transmission and Scottish Hydro Electricity Transmission) to design, implement and analyse a series of stated preference (SP) surveys to estimate domestic and non-domestic gas and electricity customers' willingness to pay (WTP) for improvements in the service provided by the TOs.

Their report<sup>3</sup> concluded electricity customers are, on average, willing to pay for improvements in all attributes which were presented to them. The attributes that attracted the highest WtP values were:

- Investing to make sure the network is ready to connect renewable generation.
- Improving environment around transmission sites;
- Investing to make sure the network is ready for electric vehicle charging
- Risk of power cuts

The WtP values associated with these attributes were relatively high compared to our actual investment plans (circa £8 to £11 per annum for each attribute compared to our forecast of £4.43 per annum for our entire plan). However, the priorities for consumers are reflected in these results. For transmission investment our scenario planning has concluded that electric vehicle uptake alone will not constitute an increase in required capacity to trigger additional transmission investment in the RIIO-T2 period.

### **3.2.2 Report 2: EXPLAIN May 2019 Study for SPT**

We wanted to analyse the above results further and in May 2019, we commissioned Explain consultancy. In May 2019, Explain was commissioned to conduct a qualitative review of the areas (attributes) covered in our Transmission business plan, to help support understanding and provide an evidence base around the outputs of the TO Willingness to Pay (WtP) research<sup>4</sup>.

Details of these reports are included in Appendix B “Consumer, Network Customer & Wider Stakeholder feedback” of this annex. In summary these reports support the following findings in support of our ODI proposals:

<sup>3</sup> Estimating Electricity and Gas Transmission Customers' Willingness to Pay for Changes in Service during RIIO2; April 2019; NERA Economic Consulting

<sup>4</sup> SP Energy Networks, Qualitative review of Transmission Willingness to Pay, August 2019

- 87% of face to face respondents said that they did think it was a useful idea to incentivise companies to deliver their targets.
- 78% of online respondents said that they did think it was a useful idea to incentivise companies to deliver their targets.
- 82% of business respondents said that they did think it was a useful idea to incentivise companies to deliver their targets.

To understand how much the audiences engaged valued each of the nine attributes, we asked them to undertake two indicative ‘willingness to pay’ exercises – one unconstrained, i.e. they could allocate as much as they wanted, the second constrained to £5.00 maximum total spend.

**Table 2: WtP Consumer Priorities**

Attribute	Unconstrained	Constrained to £5.00
1. A reliable transmission network – reducing the risk of power cuts	£1.75	£1.08
2. Investing in innovation projects (including cost reductions) to create future benefits for consumers	£1.62	£0.86
3. Investing in infrastructure to connect renewable generation	£1.42	£0.82
4. Recovering more quickly from blackouts	£1.13	£0.71
5. Investing in electric vehicle charging infrastructure	£0.91	£0.53
6. Improving the environment at transmission sites	£0.88	£0.45
7. Supporting local communities	£0.62	£0.27
8. Improving the visual impact of existing overhead lines	£0.26	£0.13
9. Putting existing overhead lines underground	£0.19	£0.12
<b>Overall combined average spend</b>	<b>£8.80</b>	<b>£4.97</b>

The WtP values for the unconstrained test provides a value of £8.80 as the amount consumers might be prepared to pay for all these investments. This compares favourably to the estimated £4.43 impact on the average consumer bill for our entire RIIO-T2 plan. Consumer allocation of the £5.00 constrained, as shown in the second column, approach resulted in the attribute priorities being replicated.

The contribution of our output incentives to our overall costs in RIIO-T2 is only 7p per annum per consumer (based on average annual reward). The scale of our actual costs compared to the WtP studies results give confidence that our investment proposals are well within consumer expectations. More significantly, they provide an indicator of the priorities of where consumers want our investment costs to be targeted.

In summary, our consumers have indicated our ODI priorities should be:

- A reliable transmission network – reducing the risk of power cuts;
- Investing in innovation projects (including cost reductions) to create future benefits for consumers;
- Connecting renewable generation;
- Recovering more quickly from blackouts; and
- Improving the environment of our transmission sites.

The following sections demonstrate that our ODIs target these areas and will deliver the benefits consumers are expecting from us.

## 4.0 CATEGORY 1: MEETING THE NEEDS OF CONSUMERS AND NETWORK USERS

### 4.1 Overview of Our Category 1 ODIs

This category describes our incentive proposals for the output areas related to connections, enhanced stakeholder engagement and network reliability. In line with Ofgem’s Sector Specific Methodology Decision (SSMD)<sup>5</sup>, this includes the common ODIs for the Quality of Connections Survey; Quality of Engagement Survey; Timely Connections; Energy Not Supplied and Stakeholder Engagement.

In addition, we have proposed a bespoke financial ODI to go beyond our baseline stakeholder engagement explained in our “Continuing to Engage with our Stakeholders” chapter of our main business plan. We are calling this incentive “Stakeholder Engagement PLUS”<sup>6</sup>.

These output delivery incentives are summarised in the table below:

**Table 3: Category 1 ODIs**

Output Area	Output Name	Incentive Mechanism	Output Type
<b>Connections</b>	Quality of Connections Survey	Financial (Deterministic)	Common
	Quality of Engagement Survey	Reputational	Common
	Timely Connections Offers	Financial (Deterministic)	Common
<b>Stakeholder Engagement</b>	Delivery against our Stakeholder Strategy	Reputational	Bespoke
<b>Stakeholder Engagement PLUS</b>	Black Start Resilience of Consumers in Vulnerable Circumstances	Financial (Discretionary)	Bespoke
	Community Energy Schemes Capability		
	Stakeholder Engagement Performance Levels		
<b>Network Reliability</b>	Energy Not Supplied	Financial (Deterministic)	Common
	Optimising Network Availability for Connected Generators	Financial (Deterministic)	Bespoke

In RIIO-T1 we started with a general approach to engagement and measuring satisfaction of all our stakeholders. As our experience grew over the period we began to segment and differentiate between customers and stakeholders. This led to the adoption of more targeted approaches in our engagement and performance measurement for each group of stakeholders. We have built on this for RIIO-T2, where we have adopted the following differentiation of ‘Customers’ and ‘Stakeholders’:

**Customers are network users, who can be individuals or organisations that have a generation or demand site that they are seeking to connect to our transmission network or have already connected to our network.**

**Stakeholders are those individuals and organisations who are interested or impacted by our activities but do not receive a direct output or service from us and all consumers who are domestic bill-payers.**

In Ofgem’s May 2019 Sector Specific Methodology Decision<sup>7</sup>, it was determined that the output incentive mechanism in ‘Connections’ will comprise two separate surveys; one survey with a financial incentive on the quality of the connections process and the second survey with a reputational incentive on the quality of engagement in new transmission investment projects.

<sup>5</sup> RIIO-2 Sector Specific Methodology Decision - Electricity Transmission, May 2019, Ofgem

<sup>6</sup> Above and beyond typical Stakeholder Engagement

<sup>7</sup> RIIO-2 Sector Specific Methodology Decision - Electricity Transmission (para 2.94), May 2019, Ofgem



Our differentiation between customers and stakeholders has helped us build more appropriate and targeted incentives for both groups. We have already segmented our RIIO-T1 annual stakeholder satisfaction survey to include alternative sets of questions for customers in different groupings. For example, those in the connection process; those who have already connected; and those stakeholders affected by our construction activity.

## 4.2 Quality of Connections Survey

As a Transmission Owner we design, deliver and connect new generation and demand sites to our network. We then operate our network to transport energy to and from these sites.

We have identified network users as our customers because we are providing a direct output or service to them. In RIIO-T2, we are committing to deliver an increased level of service to them. This will ultimately benefit all our stakeholders and consumers by improving the process of connecting low carbon generation onto our network, increasing efficiency and reducing costs for these connections.

### 4.2.1 Quality of Connections Survey Methodology

In line with Ofgem’s SSMD decision, we will implement a Quality of Connections Survey based on the following survey methodology. The survey will be undertaken on our behalf by an external consultancy firm, who will conduct a series of surveys across the life-cycle of the connections process from the early stages of a potential new connection through to a fully commissioned, connected and operational site. These surveys will capture our performance at key milestones, or “moments that matter”.

We will utilise more convenient survey channels (e.g. SMS, online and telephone) at different points to reduce respondents’ survey fatigue and ensure we are not being overly intrusive. This will ensure customers can give a more targeted assessment of our performance at these different stages. We have consulted with customers and identified the following ‘moments that matter’ which are important to them in the connections process.

**Table 4: Moments that Matter Survey Milestones**

<b>Moment that Matters in the Connection Process –Survey Milestones</b>	<b>Survey Scope</b>
Survey 1- Pre-application engagement	Covers all aspects of initial online experience, available data, pre-application meeting etc.
Survey 2- Application Process and Post Offer Review	Covers all aspects of offer application, acknowledgement, design, flexibility, in flight engagement and final offer quality.
Survey 3- Project Development and Handover Meetings	Covers quarterly updates on reinforcement projects affecting each project, consents updates and all other project milestone during the development phase up to handover to the delivery stage.
Survey 4- Project Delivery and Commissioning	Covers quarterly updates on reinforcement projects affecting each project, and all other project milestone progress through the delivery stage up to site energisation and post commissioning review.
Survey 5- Outage Plans and Impact	This covers our current engagement on year-ahead outage plans.
Survey 6- Operational Site Engagement	This covers the engagement the transmission operational team conducts with demand and mainly conventional generation customers relating to site safety, access, etc.

Each survey will comprise of questions specific to the ‘moments that matter’ stage of the process, allowing us to make targeted improvements. Where aspects of the performance for customers is outside our control due to the tri-partite relationship with customers through NGENSO, we will continue to work with NGENSO to help drive up standards in customers’ experiences.

All customers will be asked to rate our performance and will be taken through the same core set of questions for each ‘moment that matters’ survey, up to, and including the main question:

- “Overall on a scale of 1 to 10, where 1 is ‘very dissatisfied’ and 10 is ‘very satisfied’, taking all aspects of the service you have received into account, how satisfied are you with SP Transmission?”

This main question is used to determine the overall Quality of Connections satisfaction score for that site at the particular ‘moment that matters’ milestone. We then ask the respondents more process specific questions relevant to their site, to identify areas we perform well in and where we need improvement.

On an annual basis, we will contract with an external provider to prepare a report, incorporating the verbatim comments and the overall satisfaction performance score across all “moments that matter” surveys they have undertaken. The results will be analysed, and lessons learned by reviewing the scores and verbatim comments.

The satisfaction scores for each of the “moments that matter” milestones will be aggregated to provide an annual performance score for each survey milestone. Each annual milestone score will be aggregated and weighted by the number of surveys for each milestone.

#### 4.2.2 How the RIIO-T2 Incentive Will Operate.

Our RIIO-T1 stakeholder satisfaction performance is measured by our annual satisfaction survey process and is carried out by a third-party provider and subject to an external assurance process. Our performance scores are submitted to Ofgem in the annual Regulatory Reporting process. Our RIIO-T1 scores for connecting customers is presented in the table below:

**Table 5: Annual Satisfaction Connections Survey T1 Scores**

Year	Connecting customers Satisfaction Score
2018/19	7.7
2017/18	7.8
2016/17	7.4
2015/16	5.8
2014/15	7.1
2013/14	6.3
<b>Average</b>	<b>6.9</b>

Our RIIO-T1 stakeholder satisfaction performance is based on our regulated annual satisfaction survey process and is carried out by a third-party provider and subject to an external assurance process. Our performance scores are submitted to Ofgem in the annual Regulatory Reporting Pack (RRP). Our average overall satisfaction score of connecting customers is 6.9, lower than our overall stakeholder satisfaction RIIO-T1 baseline target of 7.4. This highlights that customers are seeking improvements in this area compared to other stakeholder groups.

For RIIO-T2 we are proposing to set a baseline target of 7.0 as the point of zero reward or penalty (i.e. the baseline). This is founded on the weighted average score of actual survey results received so far in RIIO-T1 (6.9). We believe that a target above our current level of performance will drive the delivery of our commitments as set out above.

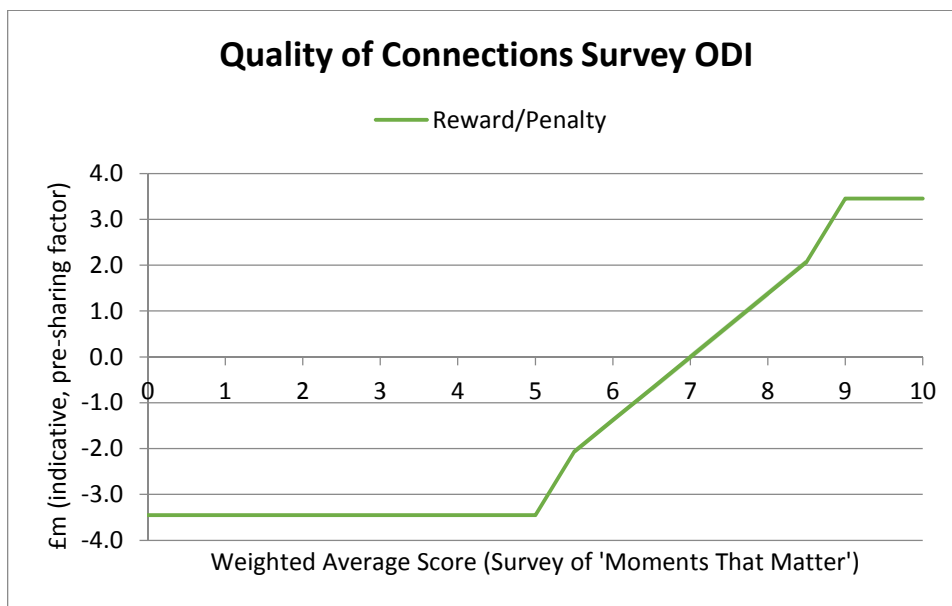
An incentive strength of +/-1% of base revenue remains an appropriate cap and collar for this incentive. It is consistent with the equivalent RIIO-T1 Stakeholder Satisfaction Output (SSO) mechanism. The strength of the incentive reflects the importance of the connections process to supporting the low carbon transition; digitalisation and other commitments we want to deliver to respond to customer feedback and develop the process.

A cap on the reward will be set at a score of 9 and a collar of penalties set at a score of 5 also in line with the RIIO-T1 mechanism. The cap was agreed at the start of RIIO-T1 as it was recognised that the expectation of achieving a perfect score of 10 is unrealistic due to the subjective nature of how customers complete survey responses and the requirement for



the incentive to operate over a realistic range of scores. It is appropriate for the incentive to be symmetrical, and that a collar should therefore be set at a score of 5.

The proposed structure of this ODI is illustrated in Figure 4 below.



**Figure 4: Our Quality of Connections Survey Range**

We propose to introduce a “knee” point to increase the strength of the incentive at the upper and lower ends of the incentive range. This is to reflect the challenge (and cost) of achieving incremental improvement at the higher ranges and the increasing impact of poor performance at the lower end. The selection of 8.5 for the ‘upper knee’ point, and 5.5 for the ‘lower knee’ reflects these factors. A score of 8.5 is higher than our best score of 8.4 achieved across all stakeholder groups in 2017/18. So, we will have to improve on our highest ever score to reach a higher rate of incentivisation.

**4.2.3 Willingness to Pay (WtP) & CBA Support**

The WtP studies we conducted throughout 2019 and summarised in section 1.8 above, identified the attribute “Investing in infrastructure to connect renewable generation” as priority 3 out of 9 for consumers.

This output is mandated as a common output incentive within the RIIO-T2 framework highlighting the priority this has for stakeholders. Our CBA analysis confirms a positive net benefit for this ODI as shown in the table below:

**Table 6: CBA for the Quality of Connections Survey**

Output Name	Overview of Cost-Benefit Analysis			High-level Annual Implementation Plan	
	Total Benefits (£)	PV (£)	Net Benefit (£)	Activities/Tasks	FTE
Quality of Connections Survey	14,766,930	516,843	14,250,088	Review of TOCOs for all commercial and technical aspects and interface with TORIS and other TOCOs. Engineering solutions Confirmation of delivery capability Identifying and managing early project issues Regular reviews and sign-off process	2.6

#### 4.2.4 Our Quality of Connections Survey Commitments

Our engagement with our connections customers throughout the RIIO-T1 period, and in respect of our RIIO-T2 proposals, has provided clear direction as to the changes and improvements they would value from our service. This feedback has fundamentally informed our plans and commitments for RIIO-T2. We have set these out in the following commitments we intend to make to improve the quality of the connection service we deliver in the table below:

**Table 7: Quality of Connections Survey Commitments**

Quality of Connection Survey commitments	Consumer, Customer and Wider Stakeholder Feedback (See appendices 1 & 2 for more details)
<p><b>We will build on our existing pre-application meetings and develop a range of pre-application connection engagement (PACE) services. We will examine the potential for co-designing with network customers at an early stage of the connections application.</b></p>	<ul style="list-style-type: none"> <li>• <i>“I do think it would be useful during the connection process if there was a point in time where they could discuss different options. I suppose that could be a discussion at the pre-meeting but not after the application process as sometimes there aren't multiple options any more. Sometimes there is only one option but sometimes there are multiple options.”</i></li> <li>• <i>“The pre-app process could be enhanced with more robust technical data such as circuit loadings and transformer flows, including publishing load flow system mods.”</i></li> </ul>
<p><b>We will develop a digitised online connection portal to facilitate early stage analysis by customers, pre-application connection engagement, online application and ongoing project management from pre-application to post commissioning</b></p>	<ul style="list-style-type: none"> <li>• <i>“Positive developments would be more upfront information as to high optimal capacity for connecting at certain locations, what realistic timescales are but short of full feasibility study.”</i></li> <li>• <i>“Improve the current SPT Capacity Maps included providing additional layers of functionality to show capacity available, future capacity available, contract position with these being updated quarterly. Details of the contracted positions, and ability to understand connections options such as “firm”, “non-firm” and commercial opportunities such as the forthcoming GEMS scheme. Also provide search functions for maps by location and capacity.”</i></li> </ul>
<p><b>As a measure of connection offer quality, we will report on the number and cause of post offer modifications that are attributable to our own actions.</b></p>	<ul style="list-style-type: none"> <li>• <i>“Inconsistency in costs are sometimes evident in the BCA they receive from NGESO.”</i></li> <li>• <i>“Cost of connection assets are too high, and we need to find ways to bring them down for a subsidy free world and to reduce consumer costs.”</i></li> <li>• <i>“One thing I've found and it's worth feeding back, when we apply for Transmission offers, our contract is with National Grid, and SP Transmission have to feed info into that and I have found on a number that connection dates have been wrong, or information hasn't been fully fed through.”</i></li> </ul>
<p><b>We will improve the quality of our offers by providing:</b></p> <ul style="list-style-type: none"> <li>○ <b>more detailed cost breakdown information</b></li> <li>○ <b>milestone development and delivery plans</b></li> <li>○ <b>clear explanation of protection schemes</b></li> <li>○ <b>potential impact and degradation of network access.</b></li> </ul>	<ul style="list-style-type: none"> <li>• <i>“Feasibility studies may be helpful. Early warning of costs would be helpful to avoid triggering offer process to find out a connection is untenable; but balanced by robustness of costs if a quick and dirty estimate is used.”</i></li> <li>• <i>“The ability to adjust MW capacity in the offer process would make a big difference and the ability to avoid mod-apps very beneficial.”</i></li> <li>• <i>“Better transparency, breakdown and explanation of costs in the connection offers received. For example, an explanation of protection schemes value and extent of how this is shared with other connecting parties.”</i></li> </ul>

<p><b>We will review the current obligations which require our design, delivery and construction information to be incorporated into a connection contract between customers and the ESO. We will work with the NGESO to identify if there are improvements that could be made.</b></p>	<ul style="list-style-type: none"> <li>• <i>“Justification for commissioning dates in an offer are standard timescales but can be varied post offer – this can change the business model so it’s better to have accurate dates up front – and for mod-apps. “</i></li> <li>• <i>“Revise your connection design/operational connection arrangements to allow use of shared bay/site.”</i></li> <li>• <i>Introduce bespoke design compared to standard design to shoe horn connection to the site capacity and optimise.”</i></li> </ul>
<p><b>For connected customers, we will provide earlier planned outage information, supplementing the formal processes provided to customers via the NGESO.</b></p>	<ul style="list-style-type: none"> <li>• <i>“Awareness of system Outage plans that affects the connection is essential to minimise impact and avoid high generation periods. We would appreciate more information in advance of the outages to be able to account for the impact on production budgets.”</i></li> <li>• <i>“For sites connected through flexible approaches, more information related to downtime, curtailments and trips will be necessary to built-up expectations from the customer and the TO.”</i></li> </ul>
<p><b>We will seek to increase the number of outages included in the year ahead plan and reduce those added to our within year plan. We will establish a set of outage metrics as part of NAP reporting ODI.</b></p>	<ul style="list-style-type: none"> <li>• <i>We believe there is still work to be done regarding planning outages ahead of time in order to give the customer time to include them within budget. Every outage being planned within a quarter is considered an unplanned outage for us and therefore a loss on production that erodes our financial KPIs.</i></li> <li>• <i>We continue to experience a high volume of within year outages which appear to have had the capacity to be planned year ahead but have not. For Q1 2018/19 for example, week 49 data was showing no outages. However, by the end of April we have experienced 26 planned outages that could not be included in our production budgets.</i></li> </ul>
<p><b>We will publish an annual connections performance report which will incorporate a range of information. For example, the volume of applications and volume of contracted offers.</b></p>	<ul style="list-style-type: none"> <li>• <i>“We are interested in following issues: - Grid connections - Network outages (planned and unplanned) - Innovation projects - Queue management - Flexible connections - Load Management and Active Network Management schemes - Network resilience programmes - Renewable integration initiatives - Heat maps “</i></li> <li>• <i>“I think they could improve their communication channels for example I receive a lot of updates and newsletters from other transmission owners including National Grid. I think it’s very unlikely to get a wider email from SPEN telling me or regarding any information on what they have been doing and connections have in the pipeline.”</i></li> </ul>

### 4.3 Stakeholders Impacted by Our New Transmission Infrastructure Projects

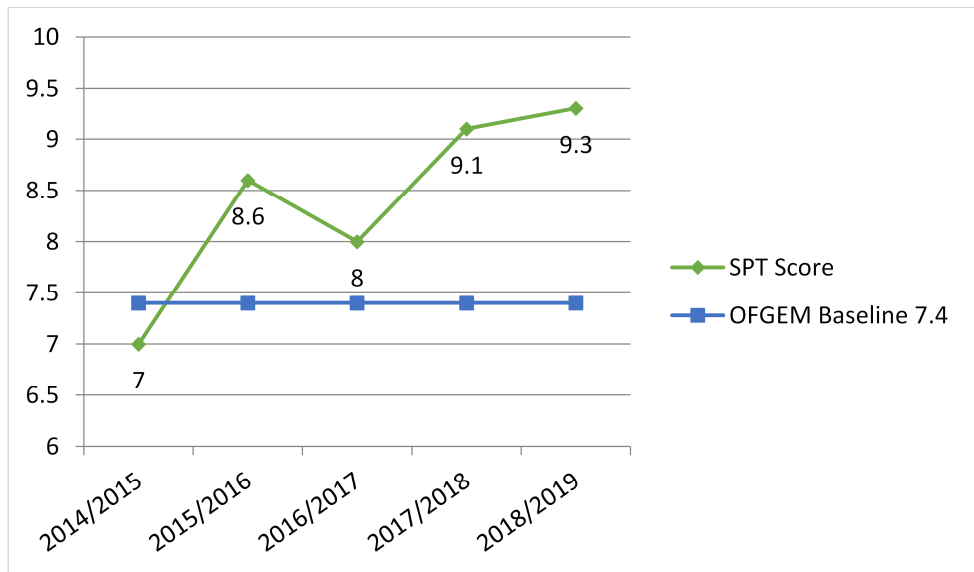
In line with Ofgem’s SSMD decision, we will implement a survey for stakeholders impacted by our new transmission infrastructure projects.

Our extensive construction activities in RIIO-T1 have extended our transmission network into increasingly remote areas to provide connections for wind farms. We have increased the transfer capacity of our network to 6.6 GW through other major construction works. These can have a significant impact on the communities that live near these works.

Throughout RIIO-T1 we have engaged fully with stakeholders impacted by our works, often as part of the consenting process. We have also surveyed these stakeholders as part of our annual stakeholder satisfaction incentive process. The second element of the Quality of Connections Incentive ODI, as determined by Ofgem in their May 2019 SSMD, is a survey

of stakeholders impacted by our new infrastructure projects. Again, this will build on our existing survey which incorporates bespoke survey questions for this group of stakeholders.

The chart below shows our survey performance in this area:



**Figure 5: RIIO-T1 Satisfaction Scores for Stakeholders Impacted by New Investment Projects**

This graph highlights the level of improvement we have achieved for this group of stakeholders. We will continue to drive our performance in this area and measure our performance through a survey of stakeholders impacted by new investment projects on an annual basis. This will be a reputational survey, but we will report our performance in this area to the User Group as part of our balanced scorecard.

#### **4.4 The Timely Connection Offers**

In line with Ofgem’s SSMD, we will operate the timely incentive on connection offers in a similar manner to the existing RIIO-T1 mechanism under which every offer will be issued within the timescales set out in the System Operator - Transmission Owner Code (STC). In addition, to demonstrate our performance, we will measure and report our average time to our offers on annual basis.

Our customers have told us that we must keep our focus on providing connection offers on time and we are committed to deliver every offer on time in RIIO-T2. This is our business as usual standard and any offer that is provided late will continue to result in a financial penalty to our business.

Our customers have told us that they would like the quality of our offers to improve and the proposals for the “Quality of the Connections Survey” will measure this in RIIO-T2 in terms of customer satisfaction levels. We are therefore committed to getting every offer right first time for our customers. To measure this, we will record every offer that is subsequently varied because we have made an error in the original offer and we will set this as a key performance indicator that we will report as part of our balanced scorecard that will inform the annual assessment of our performance by the User Group.

##### **4.4.1 Our performance in RIIO-T1**

In RIIO-T1 this ODI operates as a penalty-only incentive that focuses on the provision of timely connection offers for new connection applications. The volume of generation applications triggered by the low carbon transition over this period has required a step change in how we resource and organise our business to meet these service levels. We have not achieved a perfect performance with 5 offers being issued slightly later than our licence obligation deadline. Our performance level under this ODI incurred a financial penalty of approximately £400,000 in total for these offers.

#### 4.4.2 Timely Connection Project Delivery

Our customers have also highlighted that the timely development, delivery, energisation and commissioning of their connection is of paramount importance. We want to go beyond the business as usual Timely Connection Offers ODI and are making a commitment to report on our performance in achieving the agreed connection date.

Our customers have told us that they are concerned that a financial incentive focussed only on timely connection offers may not necessarily achieve better outcomes for project delivery and could result in higher costs and later connection dates being offered. However, we want to be transparent and accountable for our delivery performance, so we are making this commitment to complement the Timely Connection Offers ODI.

We recognise that the early delivery of renewable generation can have a broader benefit to consumers by increasing the density of low carbon generation flowing onto our network. We have forecast approximately 900MW of low carbon generation connecting in the RIIO-T2 period (baseline plan of 889MW connected to our transmission network plus an additional 300MW connecting to our distribution network.). Timely delivery of these connections will decrease the density of carbon emissions from generation.

We will therefore report to the levels of carbon reduction we are able to achieve through our connection delivery performance to the User Group. This information will be presented as part of our balanced scorecard (please see Chapter 5 of this Annex) to inform the User Group’s annual assessment of our performance.

#### 4.4.3 Willingness to Pay (WtP) & CBA Support

The WtP studies we conducted throughout 2019 and summarised in section 1.8 above, identified the attribute “Investing in infrastructure to connect renewable generation” as priority 3 out of 9 for consumers.

This output is mandated as a licence obligation within the RIIO-T2 framework with a penalty only incentive mechanism highlighting the priority this has for stakeholders.

Our CBA analysis confirms a positive net benefit for this ODI as shown in the table below

**Table 8: CBA for Timely Connection Offers**

	Overview of Cost-Benefit Analysis			High-level Annual Implementation Plan	
Output Name	Total PV Benefits (£)	Total PV Costs (£)	Net Benefit (£)	Activities/Tasks	FTE
Timely Connection Offers	29,907,707	843,958	29,063,749	Interfacing with National Grid and owners Check applications Customer queries Lead internal sign-off process and governance, including compliance with all regulatory requirements.	2.6

#### 4.4.4 Our Timely Connections Commitments

The commitments we are making to respond to our customers’ feedback are as follows:

**Table 9: Timely Connections Commitments**

Timely Connections	Consumer, Customer and Wider Stakeholder Feedback (See appendices 1 & 2 for more details)
We will deliver every offer on time. We will report on our average time to offer.	<ul style="list-style-type: none"> <li>“90-day offer period OK, but more transparency would be better – Distribution offers set a benchmark here. Pre-application engagement could be better and would make a big difference”</li> </ul>
We will agree the earliest energisation date and where we	<ul style="list-style-type: none"> <li>“Certainty on energisation dates is important to developers. Delays are frustrating, so engagement is important at the</li> </ul>

<p><b>cannot meet the customer's preferred date, we will explain why it is the best date we can offer, providing them with a delivery programme.</b></p>	<p><i>earliest sign of delay. Key milestones achievement would be reassuring to have sight of."</i></p>
<p><b>We will measure and report our performance in achieving the agreed energisation date and demonstrate the increase in low carbon intensity achieved against a baseline across our full portfolio of new connections over the price control period.</b></p>	<ul style="list-style-type: none"> <li>• <i>"You would also support a financial incentive that drives network companies to connect LCG ahead of required reinforcement to the network. The behavioural change from such an incentive could be that network companies employ more sophistication in how the network is operated to provide interim export capacity for LCG. "</i></li> <li>• <i>"Be on top of the contractors to make sure they were keeping to their hours. There should be no Sunday working or working after 7:00pm. They were on site at 6:00am, there was not very much noise, just once or twice tooting their horn. It was not much of a problem, but it shouldn't happen."</i></li> </ul>

#### 4.5 Stakeholder Engagement Plus Incentive

We want to exceed our business as usual engagement for our stakeholders and are proposing this discretionary bespoke financial incentive to enable us to achieve this ambition. There are three elements to our Stakeholder PLUS proposals:

- Improving black start resilience for communities in vulnerable circumstances;
- Improving the capability levels of community energy schemes; and
- Achieving an overall standard of 'Mature' in our stakeholder engagement performance.

These are explained below.

##### 4.5.1 Black Start Resilience of Communities in Vulnerable Circumstances

We have defined a community in vulnerable circumstances as follows:

*"A community and its citizens who are disadvantaged and less able than an average community to plan for, cope with, or recover from adverse situations, which are either temporary or permanent."*

In the first instance, we will conduct a programme of engagement with communities in vulnerable circumstances with the aim of contributing to an increase in their resilience during events which result in extended periods without supply (such as a Black Start event). Based on the Department for International Aid and Development's (DFID) measure of community resilience,<sup>8</sup> we propose a target level of resilience to be each community's 'ability to absorb shock of extended periods without supply'. We will measure and evaluate our interventions based on an assessment of whether our programme has contributed to increased resilience, measured by improvements in key indicators of resilience.

We must assess on a case by case basis the level of resilience a community has to absorb the shock of extended periods without supply. That could translate to knowing where to go to for information or us finding ways to restore supply to these communities more promptly.

##### 4.5.2 Community Energy Schemes Capability

The second element to this incentive is where we support the capability of Community Energy Schemes (CESs) to interact effectively with the energy sector. For instance, when confronted with sector-specific issues (opportunities to participate in flexibility services) we would like CESs to have the ability to access support, make informed decisions and explore options.

<sup>8</sup> <https://www.gov.uk/dfid-research-outputs/measuring-resilience>



We propose adopting the Government's Digital, Data and Technology (DDaT) framework for measuring the capability of CESSs. The framework describes job roles in the Digital, Data and Technology Profession and provides details of the skills needed to work at each role level (i.e. Expert, Practitioner, Working and Awareness). We anticipate engaging with CESSs and ensuring that we upskill community volunteers to an "Awareness"<sup>9</sup> level. This will enable them to positively contribute to their own communities.

#### **4.5.3 Stakeholder Engagement (SE) Performance Level**

The third element comprises of an 'AccountAbility healthcheck', which will be conducted annually by the owners of the AA1000 standard, a globally recognised standard for stakeholder engagement. Within this standard, we aim to achieve a 'Mature' status score of above 76 out of 100. This has only been achieved by 7% of companies globally.

#### **4.5.4 How this incentive will operate**

Taken together these three proposals will constitute our "Stakeholder Engagement PLUS" incentive. We will ask the User Group to assess our progress as part of their annual review of our performance. Their assessment will use the methodology laid out below to guide their recommendation to Ofgem as to whether our performance in that year constitutes a reward or not. This is proposed as a reward only incentive as it will support activity that accounts for initiatives which do not form part of our RIIO-T2 Stakeholder Engagement strategy and are therefore not funded within our baseline plan. We propose that the reward is limited to a cap of 0.5% of our allowed revenue forecast which equates to approximately £1.73m per annum on average.

#### **4.5.5 Willingness to Pay (WtP) & CBA Support**

The WtP studies we conducted throughout 2019 and summarised in section 1.8 above, identified three attributes in the list of 9 priorities that these three output areas directly support, specifically:

- Investing in infrastructure to connect renewable generation
- Recovering more quickly from blackouts
- Supporting local communities

These are prioritised at 3, 4 and 7 out of 9 respectively.

This output is proposed as part of the overall stakeholder engagement incentive and specifically as a response to para 2.97 of the SSMD which states:

*"This does not preclude TOs from gathering views from a broader stakeholder base and/or from proposing additional bespoke outputs in this space. As we outline in our decision for the SEI our view is that this is a BAU function of the TOs activity and should not be financially incentivised."*

Contrary to Ofgem's view above, our WtP evidence does support the proposition that a financial incentive is justified. We have set out in Appendix B of this document how our set of initiatives fulfils Ofgem's Business plan criteria for Bespoke ODI's.

This output is proposed as a bespoke financial output to strengthen the incentive as costs to deliver these outputs are not included in our baseline funding.

Our CBA analysis confirms a positive net benefit for this ODI as shown in the table below:

<sup>9</sup> <https://www.gov.uk/government/publications/business-analyst-skills-they-need/business-analyst-skills-they-need>

**Table 10: CBA for the Stakeholder Engagement Plus**

Output Name	Overview of Cost-Benefit Analysis			High-level Annual Implementation Plan	
	Total PV Benefits (£)	Total PV Costs (£)	Net Benefit (£)	Activities/Tasks	FTE
<b>Black Start Resilience of Communities in Vulnerable Circumstances</b>	9,993,100	1,803,809	8,189,291	Management of Agency Staff Identification, analysis and monitoring of vulnerable communities Community liaison, co-ordination and facilitating SPEN input	2.3
<b>Community Energy Schemes Capability</b>	1,689,248	1,490,712	198,536	Management of Agency Staff Community liaison, co-ordination and facilitating SPEN input	2.2
<b>Stakeholder Engagement Performance Levels</b>	515,011	429,923	85,087	Management oversight Embedding process and governance	0.6

**4.5.6 Justification for a financial rather than reputational incentive**

Our experience in RIIO-T1 with respect to the discretionary reward for stakeholder engagement is that this acted as a strong incentive to drive business change. Our year-on-year results have shown a significant increase in our engagement performance.

We believe there is much more to do that cannot necessarily be anticipated at this stage. The pace of change in the low carbon transition is increasing and new stakeholders and activities that we do not currently engage with will emerge as the transition intensifies. Assuming a leadership position in this space requires a strong incentive that a reputational incentive will not bring. Our proposal to put the User Group at the heart of the assessment and development of this incentive ensures that consumers, customers and wider stakeholders can ensure that we keep on track with our activities and initiatives to ensure they continue to meet their evolving needs.

**4.5.7 Our Stakeholder Engagement PLUS commitments**

The commitments we are making under this incentive are as follows:

**Table 11: Our Stakeholder Engagement PLUS commitments**

Stakeholder engagement Plus	Consumer, Customer and Wider Stakeholder Feedback (See appendices 1 & 2 for more details)
<b>To provide expert guidance and support for consumers in the least resilient communities to be able to respond to a black start scenario.</b>	<ul style="list-style-type: none"> <li>“The proposal to actually measure the impact of the programme is good and the proposal to actively assist communities to interact with the energy sector is excellent, but, again, something on what you would actually do would be useful”</li> <li>“The most resilient communities tend to be those which have the highest level of community confidence, are well informed and are progressing a range of development options which they themselves have designed or developed in relation to the needs they have &amp; issues they face. External agencies such as SPEN could have a big impact by being demonstrably open to finding out about &amp; responding creatively to local plans. I think this</li> </ul>



	<p>would strengthen the proposal.”</p> <ul style="list-style-type: none"> <li>“On Community Resilience- this is something that SSEN (distribution) support through the SECV (RIIO 1) and it makes sense that SPEN made a similar offering in the South of Scotland (even if it is through the transmission part of the business).”</li> </ul>
<p><b>To provide expert guidance and support to local community energy schemes impacted by transmission constraints to help them achieve their connection.</b></p>	<ul style="list-style-type: none"> <li>“On support for Community Energy Schemes – this again is an area where I think there is a need and it seems appropriate that SPEN support this type of initiative. This is particularly important if the focus can be on communities who do not currently have the capability or empowerment to enter the community energy space.”</li> <li>“The proposals seem very sensible and logical, especially like the engagement and awareness raising with CES aspect.”</li> </ul>
<p><b>Annually, carry out a rigorous AccountAbility healthcheck of our stakeholder engagement activity, leading to a performance level of ‘Mature’ status.</b></p>	<ul style="list-style-type: none"> <li>“It seems more around governance and good practice itself rather than stakeholder engagement (seems a measure of stakeholder engagement rather than engagement itself).”</li> </ul>

The User Group will assess the evidence we present each year. They will have the discretion to recommend to Ofgem that we receive a reward of zero, 50% or 100% of the incentive value (i.e. 0.5% of allowed revenue) based on the evidence we present. The table below presents a guideline of how performance against our targets could relate to a recommended reward by the User Group.

**Table 12: User Group ODI Performance Assessment Matrix (Stakeholder PLUS)**

Engagement opportunity	Zero Reward	50% Reward	100 % reward
<b>Black Start Resilience</b>	0 communities engaged	1 community engaged and progressing towards greater resilience	≥ 3 communities engaged, and target level of resilience achieved
<b>Community Scheme Capability</b>	0 schemes engaged	1 scheme identified and progressing towards "Awareness"	≥ 3 schemes identified, and all have achieved "Awareness"
<b>Stakeholder Engagement Level</b>	Advance level achieved (Score of 50)	Score 60 or above	Score 75 or above

This presents a high-level view of the assessment approach we would ask the User Group to undertake. Final details will be developed with the User Group and we will seek approval from Ofgem through the draft and final determinations process.

## 4.6 Network Reliability Incentives

There are three elements to our proposals in Network Reliability. These are our Energy Not Supplied (ENS) ODI, an ENS fund for short-term outage management to mitigate risks to demand customers, and an ODI for optimising network availability for connected generation. The two ODIs are financial deterministic and the fund is on a ‘use it or lose it’ basis.

ENS is a measure of the effect of a fault or incident on our transmission network that results in customers and consumers losing their electricity supply for a period of time. It is measured in megawatt hours (MWh) and is the volume of energy that would have been transmitted through our network if the fault or incident did not occur. Transmission faults can cause a loss of electricity supply for distribution-connected customers as well as transmission-connected customers.

Generators connected to the network could also be affected by a transmission fault if their connection to the network is lost and they are unable to generate for the duration of the incident. This can result in a loss of revenue for them.

#### **4.6.1 Our Performance in RIIO-T1**

The purpose of the ENS incentive is to drive network companies to efficiently improve network reliability above minimum standards. The ENS, or reliability, incentive in RIIO-T1 gives a broad measure of the impact on all demand connected customers and consumers. We have a target baseline of incurring 225 MWh per annum. If we incur less than this, we receive a financial reward; if we incur more we face a financial penalty.

The value of the reward or penalty is symmetric based on the value of lost load (VoLL) set at a price of £16,000. A collar is applied to the penalty of 3% of allowed revenue, which could be up to £8m per year if high levels of ENS occur. There is a natural cap on the maximum reward we can achieve if we achieve zero MWh of unsupplied energy.

So far in RIIO-T1 we have achieved an average annual ENS of 19MWh. This highlights the effectiveness of the incentive to achieve a considerable improvement in our performance as the RIIO-T1 target was set in 2011 based on our 10-year trailing average of 225MWh at that time.

Reliability of our network is a fundamental part of our service to customers and we could face a significant financial penalty if high levels of ENS occur. This has driven our business to focus on managing short-term operational risk and mitigating risks of supply interruptions for every planned network outage we need to take to carry out work on the network. This achieves reliability for customers over and above the minimum standards. Appendix D provides a detailed explanation of our approach and examples of how we have been mitigating the ENS risk to customers in RIIO-T1.

ENS is also a lagging indicator of our longer-term network design and asset management effectiveness and the ENS incentive has ensured we continue to focus on and deliver strong performance in these areas. As we have already achieved exceptional levels of reliability, stakeholders have advised that we should be incentivised to maintain or improve these exceptional levels of reliability, as demonstrated in our Willingness to Pay study (please see Appendix B).

### **Energy Not Supplied (ENS) Incentive**

#### **4.6.2 How the ENS incentive will operate**

In RIIO-T2, Ofgem's SSMD confirmed that ENS will remain as the measure of network reliability and continue as a symmetrical financial incentive and retain a Licence Obligation with a minimum performance standard for RIIO-ET2.

Based on our experience in RIIO-T1 and feedback from our customers we are proposing a more targeted approach to incentivising network reliability as measured by ENS. We propose to identify the different aspects of our actions to mitigate the risk of ENS and, to incorporate the impact on connected generation customers which ENS does not incorporate. There are 3 elements to our network reliability proposals.

1. ENS performance in respect of our long-term design and asset management
2. ENS performance in respect of short-term outage management and impact on demand customers
3. Optimising Network Availability for Connected Generation.

These are each described in detail in the following sections.

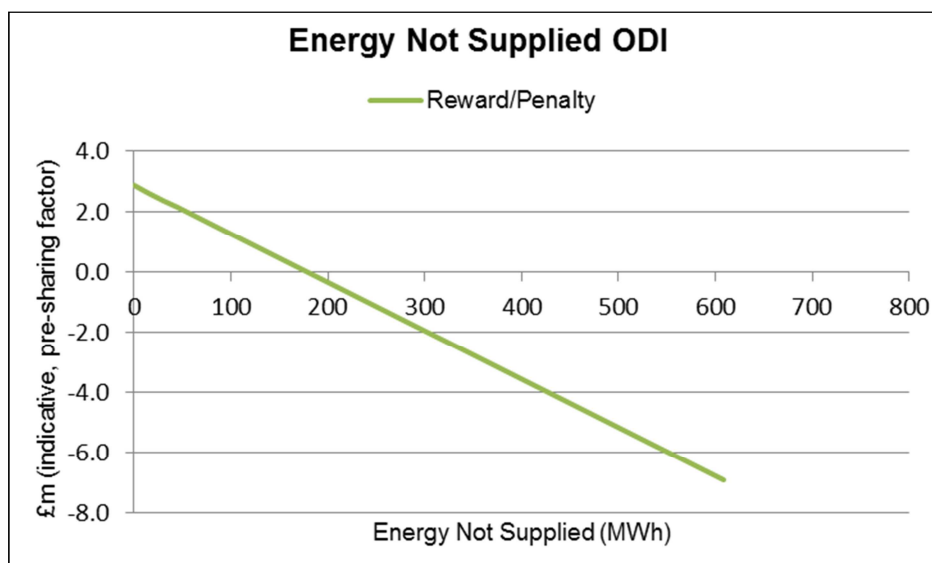
#### **4.6.3 ENS Performance in Respect of Our Long-Term Design And Asset Management**

ENS is a lagging indicator of our historic longer-term network design and asset management effectiveness and is a fundamental element of our service provision for customers. Transmission network reliability is crucial to power the economy and is fundamental to modern society. As the low carbon energy system transition accelerates, the use of electrical energy for transport and heating will only increase these factors.

The increase of intermittent, non-synchronous generation that is part of this low carbon transition carries a consequential loss of system inertia and degradation to other network characteristics. This makes the design and asset management of our network to maintain reliability even more challenging.

The volume of new generation connections and associated network upgrade required to accommodate the flow of energy across our network requires increasing numbers of planned outages on our network to carry out the work. Typically, we have seen a 50% increase in the volume of outages in a year since the start of RIIO-T1 and have extended the outage season to the full year where once the winter period was embargoed.

We are proposing a baseline of 178MWh of ENS each year, which is the average of our 18-year rolling ENS performance and our current ENS target. This incorporates more than a 20% reduction against our current target of 225MWh and strikes a balance between reflecting improved performance in RIIO-T1 and outage risks that we cannot control. We have proposed this target because it incorporates a 21% reduction against our current target of 225MWh and strikes a balance between reflecting improved performance in RIIO-ET1 and the risk of events outside our control resulting in outages on our network. Figure 6 below illustrates this ODI proposal graphically;



**Figure 6: ENS Performance In Respect Of Our Long Term Design And Asset Management**

The structure of the ENS ODI we are proposing is similar to the structure of the same ODI from RIIO-T1, except that we are proposing a lower collar. Given the reduced timeframe in RIIO-T2 we believe it is appropriate for the collar to be reduced on a pro-rata basis from -3% in RIIO-T1 to -1.9% for RIIO-T2. The duration of the price control period has reduced from 8 to 5 years and our proposed reduction of the collar is in line with the considerations set out in the March 2011 RIIO-T1 Ofgem strategy document 10 (e.g. para 6.68).

#### **4.6.4 ENS Performance in Respect Of Short Term Outage Management And Impact On Demand Customers**

The second element of our ENS proposal is responding to the proximity of our distribution-connected customers and the extent of the impact faults on the transmission network can have on them in our network areas.

Both directly connected transmission customers and distribution-connected customers can feel the impact of an outage on our transmission network. ENS measures loss of supply events on the transmission network and is not sensitive enough to differentiate the impact of the event on transmission and distribution-connected customers. Typically, a directly connected transmission customer can be restored quickly in the event of a fault. Distribution connected customers may be exposed to longer duration outages due to design characteristics of networks at lower voltage levels.

Due to the unique electrical and geographic characteristics of our transmission network in Scotland due to the differing voltage levels from England, distribution customers in our area are especially exposed to the risk of an ENS from a transmission fault occurring at the same time as a planned outage on an adjacent circuit.

<sup>10</sup> [https://www.ofgem.gov.uk/sites/default/files/docs/2011/03/t1decisionoutput\\_0.pdf](https://www.ofgem.gov.uk/sites/default/files/docs/2011/03/t1decisionoutput_0.pdf)

For example, the planned outage of a transmission circuit supplying a transmission Grid Supply Point (GSP) substation reduces the security of supply to the GSP by half. A GSP is typically designed with sufficient security to comply with the SQSS by connection of two circuit in-feeds. This is the normal operating condition, and sufficient capacity is provided such that the second circuit without interruption to any supply will support the loss of one in-feed. In a planned outage scenario, one circuit is withdrawn from service to carry out work and only the remaining circuit connects the GSP. Should a fault occur on this circuit during the planned outage of the other circuit, the supply to the entire GSP will be lost.

Typically, as a result of the volume of essential planned work we have needed to undertake on the transmission system throughout RIIO-T1 up to 500,000 distribution customers can be at single circuit risk every week.

Up to April 2018 our ENS performance achieved an average of 15MWh from 21 transmission loss of supply events. Of these, 16 affected the distribution network with over 300,000 customers suffering a loss of supply. The average CMLs associated with these events was 64 minutes per year.

Appendix 3 “ENS Methodology and Risk Mitigation Examples” provides examples of three RIIO-T1 projects of the sort of mitigation actions we have funded in RIIO-T1 to limit the impact on distribution customers and deliver this level of performance. Our approach to mitigating ENS constitutes an end to end process that assesses every planned network outage that we have to take. The extent of the risk of a no supply event is evaluated and reported weekly at Senior Management level to inform decisions to respond to ENS risk.

Due to the increasing risk from the changing background generation and volume of work to deliver the low carbon transition we want to implement an alternative approach to mitigating the ENS risk using a dedicated funding allowance that could deliver better reliability for consumers and distribution connected customers in particular.

We are proposing a targeted funding mechanism to allow us to invest in solutions to protect distribution-connected consumers from extended periods of no supply. This approach would create a more proactive mechanism and decision process for TOs to take action to mitigate risks to distribution-connected demand.

#### **4.6.5 Consideration for Embedded Generation**

ENS is becoming a less effective measure of reliability for transmission system due to the increase in embedded generation undermining the ability to accurately calculate ENS in real time. There is no simple solution to this. The extent of the impact of transmission faults on the distribution network also leads to a need to better assess the consumer impact. Aligning targets of Customer Minutes Lost (CML) and Customer Interruptions (CI) with the distribution network offers a practical and accurate mechanism to achieve this. Currently DNOs are exposed to a 10% penalty for the CML impact of a transmission fault as explained in the relevant regulatory guidance document. This means that CML and CI data is potentially available and historical evidence may also be available.

In addition, by incorporating CML and CI measures as evidence of performance under this incentive, it addresses the possibility that embedded generation may be masking the true extent of loss of supply incidents. CML and CI are metrics directly affected by the actions we can take as a transmission business as demonstrated in the examples presented in Appendix D.

The potential costs for solutions we may need to implement in RIIO-T2 are uncertain. Historic expenditure was embedded within project expenditure and difficult to clearly evidence. Also, each project and solution will be bespoke. However, we have provided some evidence in Appendix C. For the reasons highlighted, we have not included any baseline funding and are seeking to identify an appropriate mechanism which we will agree with Ofgem in advance of the RIIO-T2 draft and final proposal. However, we propose the value of this be capped at £1.50m (2018/19 prices) per annum. This aligns with the funding mechanism associated with mitigation of network security and constraint costs set out in the System Operator – Transmission Owner Code (STC) specifically STCP 11-3 and STCP 11-4.

We will report our performance to the User Group on an annual basis. We anticipate that this incentive would enable us to build an evidence base of performance and costs that can inform future price controls and the provide insights on the impact of embedded generation on measures of ENS. It also promotes a whole-system approach by encouraging us as a transmission owner to take into consideration the impact of our actions on distribution-connected demand.

#### **4.6.6 Optimising Network Availability for Connected Generation**

The third element of our ENS proposals is in response to the increase in low carbon generation connecting to our network, now 4.7GW, which is a major contributing factor to the low carbon transition in GB. Transmission network availability for generators connected to the network can be impacted by both planned and unplanned outages. Network availability can

depend on the type of connection and the commercial arrangements governing the connection. Network availability provides the route to market for generation and therefore loss of availability can reduce revenues.

Where low carbon generation is constrained through lack of network availability, more expensive and higher carbon-based generation, such as gas peaking plan, is frequently required to be contracted by the NGENSO to balance the network. Consumers could benefit by reduced costs and increased carbon flows through optimisation of network availability.

The increase in intermittent non-synchronous and distributed generation and reduction of traditional large scale conventional generation is changing the way the transmission system is operating. The increasing number of smaller, often single circuit connected generation sites connected to our transmission and distribution networks introduces a new customer priority to the impact of a transmission fault that we need to respond to. The loss of network availability, and consequent reduction in generation flow that these sites experience as result of a fault, is not captured by the ENS incentive. The system security and network operability impact of the traditional large synchronous generation protects their network availability in a way that much smaller generation does not benefit from.

A clear message from our customer feedback is the need to develop an incentive for reducing the impact of no supply events on our connected generation customers in the manner ENS incentivises mitigation for demand customers.

We are therefore proposing a bespoke financial ODI “optimising network availability for generation”. We measure and report on our performance by using the established “Availability” metric. The justification for funding the costs and incentivising the provision of optimised network available is the corresponding increase in low carbon generation.

#### 4.6.7 How the Incentive Will Operate

There are tools and solutions that we can deploy to optimise network availability for generation. These tools are already implemented when requested by the NGENSO but we want to utilise these more effectively and more frequently during RIIO-T2 and extend their scope to ensure all types of generation can be provided with optimal network access. Currently, there is often no funding nor licence obligation to deploy these services. Three areas where we can potentially provide optimisation of network availability are identified below:

1. Applying dynamic line ratings to constrained areas of our network will provide better availability for generators onto our network for short periods.
2. Providing additional services to reduce the extent of duration of planned outages where generation is affected as well as demand.
3. Identifying alternative design or construction solutions at an early stage to mitigate the effect of major construction works on connected generation.

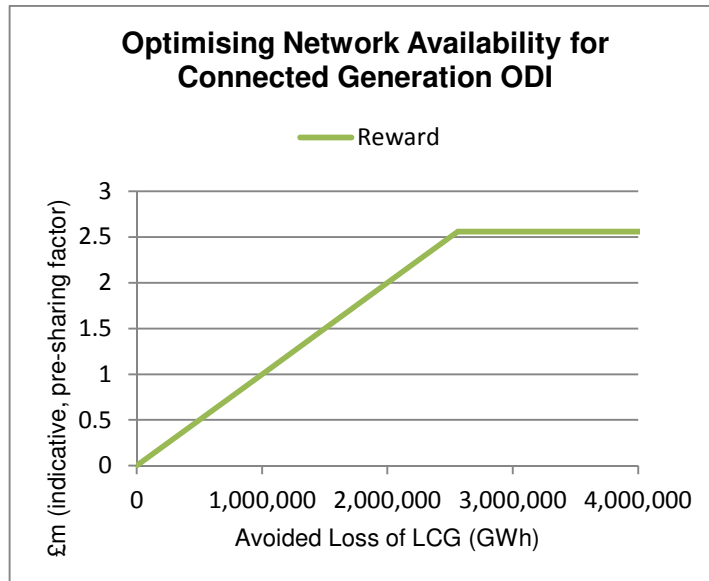
All of these tools and solutions are described in detail in Appendix E: Optimising Network Availability for Connected Generation and each can bring increased network availability for connected generation.

The bespoke financial ODI applies a reward for any avoided loss of low carbon generation in a constrained network that is directly attributable to our interventions using the three types of tools and opportunities outlined above, but not limited to these. For each solution, we would have to demonstrate and justify the potential increase in low carbon generation the solution unlocks.

The volume of renewable generation connected to our transmission network by the end of RIIO-T2 is forecast to be 5.7GW. We estimate that this equates to approximately 2,560GW<sup>11</sup> of energy flowing through our network. The incentive provides a reward for the avoided loss of any GWh of this flow of energy (as a direct result of our intervention in a constrained network) and proposes a cap on this reward once we have managed to optimise the network for 10% (2566GWh) of this energy flow. That equates to a cap of £2.56 million per annum. The figure below presents this graphically:

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<sup>11</sup> Derived from 5.7GW reduced by a 30% load factor, 60% availability and around 30% of the portfolio a year potentially impacted by constraints or outages on our network.



**Figure 7: Avoided loss of LCG in a Constrained Network ODI**

Figure 7 illustrates the proposed incentive reward based on the volume of avoided loss of low carbon generation capped at £2.56m

We propose this incentive should be structured as a reward-only mechanism on the basis that it drives network companies to explore and implement operational options it would not ordinarily consider or have obligations to deliver in a constrained network.

We understand that the loss of revenue to a windfarm during an outage is in the region of £100/MWh. Our proposed incentive strength is £1/MWh or 1% of the lost revenue that a wind farm would suffer without network availability. We believe this incentive strength to be proportionate with the risks and costs to operate the network differently to optimise network availability for connected generators and the benefit to consumers from keeping low carbon generation connected to the grid.

**4.6.8 Willingness to Pay (WtP) & CBA Support**

The WtP studies we conducted throughout 2019 and summarised in section 1.8 above, identified the attribute “**A reliable transmission network – reducing the risk of power cuts**” as the number 1 priority consumers expect us to deliver.

In addition, the attribute “**recovering quickly from blackouts**” is also a high priority at 4 on the list. This is the focus of our proposals for driving improved performance in respect of short term outage management and impact on demand customers.

This output is mandated as a common output incentive within the RIIO-T2 framework, highlighting the priority it has for stakeholders. The SSMD states “We have decided that the ENS incentive should continue to involve a reward and penalty in RIIO-ET2”.

Our additional proposals for bespoke financial ODIs deliver levels of service to customers and consumers above baseline obligations and beyond the current scope of the ENS incentive. Our CBA analysis confirms a positive net benefit for all these ODIs as shown in the table below.



**Table 13: CBA for the Network Reliability**

Output Name	Overview of Cost-Benefit Analysis			High-level Annual Implementation Plan	
	Total PV Benefits (£)	Total PV Costs (£)	Net Benefit (£)	Activities/Tasks	FTE
Energy Not Supplied	13,308,930	1,530,433	11,778,496	Network risk management Contingency planning to restore customers and minimise ENS Deployment of standby engineering teams	1.3
Optimising Network Availability for Connected Generators	170,918,992	327,116	170,591,877	Forward assessment of investment programme and outage plans Planned and unplanned outage analysis Engagement between OCC \ NGESO \ Generators Manage deployment of Active Network Management\Load-Management Service\Other Network Management Techniques	1.0

#### 4.6.9 Our Network Reliability Survey Commitments

The commitments we are making under this incentive based on our consumers, network users and wider stakeholders are shown in the table below:

**Table 14: Network Reliability Survey Commitments**

Energy Not Supplied	Consumer, Customer and Wider Stakeholder Feedback (See appendices 1 & 2 for more details)
We will document and publish our policy and approach to mitigating the risk of Energy Not Supplied for RIIO-T2. We will implement this policy to reduce the risk of ENS for transmission and distribution demand and generation customers.	<ul style="list-style-type: none"> <li>“Network reliability is generally good. Issues arise when a feeder is taken offline due to limited capacity available in some areas (e.g. south side of Glasgow). Hugely important to railway to keep trains moving. If trains become trapped due to power outage, risk of passengers de-training onto track.”</li> </ul>
We will mitigate the risk of ENS and Customer Interruptions (CI)/Customer Minutes Lost (CML) caused by our essential planned outages by targeted use of a funding mechanism up to a maximum value of £1.50m per year.	<ul style="list-style-type: none"> <li>“In terms of network reliability experience is good. Most issues are distribution-related.”</li> <li>“I think as a customer, that’s an important thing because nobody wants to be without power. I think doing what they can to prevent that, as a customer, is a priority”</li> </ul>
We will measure our impact of ENS on the distribution network in customer minutes lost (CML and Customer Incidents (CI) in addition to ENS.	<ul style="list-style-type: none"> <li>“In terms of the value of a continuous supply it is high, but not at any cost. Accept that the system may fail sometimes (rarely).”</li> </ul>
Optimising Network Availability for Connected Generation	Consumer, Customer and Wider Stakeholder Feedback (See appendices 1 & 2 for more details)
We will improve network availability for connected generation in respect of no supply and planned outage events and report on the potential increase in low carbon flow our actions achieve.	<ul style="list-style-type: none"> <li>“Network companies have traditionally focussed on maintaining energy supply for end consumers. Current financial output incentives strengthen that focus. That is the right thing to do but what you’ve correctly identified is that are no incentives which drive network companies to proactively explore options to keep low carbon generation (which may be on single circuits by choice) on the network instead of interrupting the generator’s export when the network is constrained.”</li> <li>“Interrupting export has tended to be the ‘default’ action in such circumstances and you would like to see a financial incentive which</li> </ul>

	<p><i>changes behaviours so we more actively consider steps we can take to keep low carbon generation (LCG) on the system.”</i></p> <ul style="list-style-type: none"> <li>• <i>“The opportunity cost for a windfarm unable to export is around £100/MWh and that brings the economic harm to LCG into sharp focus.”</i></li> </ul>
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## 5.0 CATEGORY 2: MAINTAINING A SAFE AND RESILIENT NETWORK

This category describes our incentive proposals for the output areas related to efficiently deliver a safe and resilient network that is also responsive to change. In line with the Ofgem SSMD category this includes the common ODIs for the Network Access Policy, we are also proposing bespoke reputational ODIs for Health and Safety, Non-Lead Assets and Delivery of Large Capital Projects. Finally we are also bringing forward a bespoke financial ODI to reduce constraint costs. We summarise these in the table below.

**Table 15: Category 2 ODIs**

Output Area	Output Name	Incentive Mechanism	Output Type
<b>Safe and Resilient Network</b>	Health and Safety	Reputational	Bespoke
	Network Access Policy		Common
	Non-Lead Asset Output Measurement		Bespoke
	Successful Delivery of Large Capital Projects		Bespoke
	Whole System ESO-TO Constraint Mitigation	Financial	Bespoke

### 5.1 Health and Safety

Health and Safety within SP Energy Networks cascades all the way through our business into every work activity that our employees and contractors deliver and through all our interactions with members of the public. Visible leadership on Health and Safety is clear through the commitments detailed in our Health and Safety policy which is signed and endorsed by the SP Energy Networks Chief Executive Officer.

In response to stakeholder feedback, which suggested they would value more visibility of our health and safety initiatives, we are proposing the following commitment under this reputational incentive:

**Table 16: Health and Safety Commitment**

<b>Health and Safety</b>	<b>Consumer, Customer and Wider Stakeholder Feedback</b> (See appendices 1 & 2 for more details)
<b>We want to be more transparent and accountable to our consumers, network users and wider stakeholders and share our experience, learning and initiatives in a more focused way and so we will report annually on the health &amp; safety initiatives that we deliver. This will include updates on performance and track record, how we are managing operational risk and reducing harm.</b>	<ul style="list-style-type: none"> <li>• <i>“In our 2018/19 Annual stakeholder survey ‘Maintaining safety’ was the highest scoring priority area whilst ‘expansion of their supply chain’ was rated as lowest priority by respondents.”</i></li> <li>• <i>“I didn’t know the (SPEN) website existed. Health and safety stats and initiative; environment initiative and stats and reports and that sort of thing would be helpful.”</i></li> </ul>

Full details of our Health and Safety approach and priorities are provided in our main business plan in a dedicated Health and Safety Chapter (pages 48 – 53 of our main business plan).



## 5.2 Successful Delivery of Large Capital Projects

We recognise the value that we deliver as a network company, and that successful delivery of our major projects is crucial to the electricity system and consumers. We are proposing this reputational ODI to drive transparency in our approach, activities and performance in delivering these projects. We are committing in RIIO-T2 to identify delivery milestones in large capital projects and report on our progress against these milestones to the User Group.

As part of the RIIO framework we have incentives to deliver our large capital delivery projects on time and to budget including:

- Licence obligations which may be subject to enforcement if breached;
- Commercial contracts with our suppliers and contractors that expose us to additional costs if there are delays;
- The totex efficiency sharing mechanism if we over or under spend on cost relative to price control allowance; and
- A penalty/reward incentive through our RIIO-T1 Stakeholder Satisfaction Incentive mechanism, which has a KPI to measure our delivery performance on large capital projects.

These amount to a strong set of incentives for us to deliver these projects to meet forecast completion dates. To complement these incentives, we feel it is important to drive a culture of continuous improvement by being open about our performance in the run up to each milestone, to learn lessons and to demonstrate how we have embedded those lessons for future milestones.

Ofgem’s SSMD confirmed an update to the existing regulatory financial model will be implemented to ensure cost allowances provided to TOs to fund the delivery of large capital projects will be aligned with actual delivery timescales. We support the principle of allocating allowances against project milestones, whereby recovery of costs would not be permitted until the TO has demonstrated successful delivery against the criteria for that project milestone. The aim of our proposed ODI is to broaden the focus from costs and delivery timescales to include scrutiny of our performance throughout a major project.

### 5.2.1 Our Large Capital Project Delivery Commitments

The commitments we are making based on our customer and stakeholder feedback are below:

**Table 17: Successful Delivery Large Capital Project Commitments**

Successful Delivery of Large Capital Projects	Consumer, Customer and Wider Stakeholder Feedback (See appendices 1 & 2 for more details)
<p><b>We will identify delivery milestones in large capital projects and report on our progress against these milestone dates to the User Group.</b></p>	<ul style="list-style-type: none"> <li>• <i>“Given that there are no incentives and a unilateral ability for TOs to delay contracts, we have been on the wrong end of many delays and at cost to our business. Over the course of long delays, the cost to connect can also significantly increase. There is also no ability to ‘fix-price’ contracts with the TO (contrary to what NGESO offer in England and Wales) therefore costs can spiral with no consequence to the TO but with an impact to the developer.”</i></li> <li>• <i>“Discussions with stakeholder at our “Lighthouse” event in Sept 2019 included comments that an incentive to deliver connections early could drive up costs and be mitigated by initially proposing later dates. A reputational incentive was considered more appropriate. It was emphasised we should just give the right date and stick to it and that increased collaboration and communication would be valued.”</i></li> </ul>

### 5.3 Networks Access Policy (NAP)

Our RIIO-T1 incentive requires us to have a Network Access Policy (NAP) and to perform in line with the principles of our NAP. It is a reputational incentive with no financial reward or penalty. The purpose of the incentive is to increase co-ordination and engagement with the GB Electricity System Operator (National Grid ESO) in managing network outages on our system that are required to connect parties to the network and maintain our assets. Better co-ordination and engagement between a TO and NGENSO can reduce overall costs for consumers and mitigate the impact of outages for our connected customers.

Adherence to the NAP throughout the RIIO-T1 period has facilitated the successful implementation of thousands of system outages every year. These outages are becoming increasingly complex with challenging outage patterns and interdependency associated between them. This has added risk to security of supply for our customers and consumers but we have delivered these with increasing levels of reliability measured by our Energy Not Supplied (ENS) metric. Crucially, this has enabled us to deliver our outputs for connecting new generation, upgrading our network and maintaining our existing assets.

The incentive has led to a step change in the engagement we have with the ESO throughout RIIO-T1 and has helped us deliver, safely and effectively, an ever increasing number of system outages with more and more complexity. This has been critical to our ability to deliver our outputs for connecting new generation, upgrading our network and maintaining our existing assets.

Under the NAP incentive in RIIO-T1 we have established a bi-annual series of engagement with all our connected parties to explain in detail our annual outage plan, identifying where this may have an impact on their connection. This engagement is measured as part of our Stakeholder Satisfaction annual survey and supplements the formal outage communication lines the customer will have with NGENSO.

For RIIO-T2, we will optimise the delivery of our essential network outages, working jointly with other network owners and NGENSO. We will provide better reporting, better third-party engagement and better performance monitoring of our outage related activity.

We will build on our RIIO-T1 performance and optimise the delivery of our essential network outages working jointly with other network owners and NGENSO for the RIIO-T2 period.

**Annex 35 of this submission provides the draft NAP document prepared jointly by the three TOs and agreed with the NGENSO through the NAP working group during 2019.**

The following milestone plan is designed to demonstrate to Ofgem and key stakeholders how each transmission owner will collaborate with the other transmission owners to produce a single GB Network Access Policy.

The table below shows that the milestone plan highlights the key dates and stages involved in turning our RIIO-T2 draft Network Access Policy proposal document submitted to Ofgem as part of our business plan submission on 9th December 2019 into a final industry approved document by the 31st December 2020, ready for implementation on 1st April 2021.

**Table 18: Network Access Policy Milestone Plan**

	9 <sup>th</sup> Dec 2019	31 <sup>st</sup> March 2020	30 <sup>th</sup> June 2020	31 <sup>st</sup> Dec 2020	1 <sup>st</sup> April 2021
<b>Timeline</b>					
<b>Comments</b>	<p>Proposed draft single GB Network Access Policy submitted to OFGEM as part of the Transmission Owner business plan submissions.</p> <p>This draft will form the basis of the document that will be developed in 2020 to meet the requirements of a final industry approved Transmission Owner GB wide Network access Policy</p>	<p>NGET, SHETL &amp; SPT will engage, consult with, listen to our stakeholders (NGESO, generators, OFGEM and transmission connected parties) to canvas their views and opinions. This engagement will enable the 3 TOs to further develop the 2019 draft proposal document</p> <p>The 3 TOs aim to carry out our TO consultation phase by the 31<sup>st</sup> March 2020, though further engagement with stakeholder may take place up to the 30<sup>th</sup> June.</p>	<p>NGET, SHETL &amp; SPT will update the Network Access Policy with relevant comments for our stakeholders and OFGEM during the period 31<sup>st</sup> March – 30<sup>th</sup> June 2020.</p> <p>NGET, SHETL &amp; SPT will then submit to OFGEM a final single GB Network Access Policy ready for wide industry consultation</p>	<p>NGET, SHETL &amp; SPT will carry out a further document update reviewing any comments returned during OFGEM's industry consultation period. This will take place in Q4 2020 after the consultation period has ended and comments have been submitted to NETG, SHETL &amp; SPT.</p> <p>NETG, SHETL &amp; SPT will then aim to have an industry agreed, OFGEM approved single GB Network Access Policy signed off by all parties by the 31<sup>st</sup> December 2020.</p>	<p>Start of RIIO-T2 regulatory period</p> <p>Single GB Network Access Policy go live date</p> <p>Single GB Network Access Policy available on TOs website and replaces the RIIO-T1 Network Access Policy</p>

Appendix A of this draft NAP includes proposals for a set of KPI's as required by the May SSMD. These are listed below:

**Table 19: Network Access Policy KPIs**

<b>Network Access Policy KPIs</b>	
<b>1. Number of faults due to asset failure</b>	This would not include weather related faults or those caused by external parties. It would only include faults which are attributable to TO behaviour, require emergency switching, or where failure causes protection operation.
<b>2. Number of unplanned outages</b>	This would include faults identified through routine inspections and managed via unplanned outage requests, such as hot spots.
<b>3. How many assets are out of service more than once per annum?</b>	This KPI helps identify good outage alignment practices which help reduce constraint costs and stakeholder impact
<b>4. Percentage of TO outages started outside 60mins of agreed start time (delay attributable to TO)</b>	Stakeholders at OC2 forums have requested a measure of TOs ensuring outages are started on time.
<b>5. MW/HRs of generation curtailed by BCA per annum - firm connections</b>	This is a measure of lost network access due to transmission outages and connection agreements requiring a generator to be at 0MW.
<b>6. MW/HRs of generation curtailed by BCA per annum - non firm connections</b>	This is a measure of lost network access due to transmission outages and connection agreements requiring a generator to be at 0MW

<b>7. Percentage of outages plan started within +/-3 days (tbc) of date agreed at Week 49</b>	This is a measure of the TOs capability to construct and deliver a robust outage plan. This KPI was used through RIIO-T1 and it is to be continued in RIIO-T2 to provide a consistent KPI through price control periods.
<b>8. Number of outage changes within 4 weeks of start date (attributable to TO)</b>	This measure only includes significant outage scope change such as a new outage, change to the start or end date but would not include a minor ERTS change or start time change made to manage workload and prevent outage congestion. All stakeholders agree these changes should be highlighted to identify root causes so they can be addressed and help reduce stakeholder impact of outages
<b>10. Average outage duration accuracy</b>	This KPI would measure how accurate a TO plans their outage durations. A negative figure would indicate outages generally overrun, a positive figure would indicate outages generally finish early. It would help identify good and bad planning practices to further improve outage planning efficiency
<b>11. Number of uses of STCP 11.4 (attributable to TO proposal)</b>	This would highlight how often the TO is able to proactively generate consumer savings as STCP 11.4 requires consideration in longer timescales.

We will report performance against these KPIs to the User Group as part of an annual report.

### 5.3.1 Our Network Access Policy Commitments

The commitments we are making based on our customer and stakeholder feedback are:

**Table 20: Network Access Policy Commitments**

<b>Network Access Policy</b>	<b>Consumer, customer and wider stakeholder feedback (See appendices 1 &amp; 2 for more details)</b>
<b>We will work with the other TOs through the Network Access Policy group to develop a more transparent approach to reporting to consumers, network users and wider stakeholders as part of the NAP incentive.</b>	<ul style="list-style-type: none"> <li>• <i>“Yes, these changes have improved our relationship, knowledge and engagement around outages across the year. However, we believe there is still headroom for improvement in the amount and duration of planned and unplanned outages that our fleet has experienced in recent years. There are a considerable number of ‘planned outages’ that are scheduled in very short timeframes and were never included in the TOGA report with enough time in advance for our business to account for them.”</i></li> </ul>
<b>Better Reporting: We will work with the other TOs through the NAP group to develop a more transparent approach to reporting to consumers, network users and wider stakeholders.</b>	<ul style="list-style-type: none"> <li>• <i>“More upfront visibility regarding network outages coming up; I appreciate that is sometimes through National Grid. We technically deal with National Grid but from time to time we deal with SPT and we have direct contact with them. It would be good to understand who we should be speaking to at what points.”</i></li> </ul>
<b>Better 3rd Party Engagement: We will work with the other TOs through the NAP group to clearly document the roles and responsibilities for the ESO and TOs in respect of engagement with third parties. We will also clarify procedures around outage planning notifications where required.</b>	<ul style="list-style-type: none"> <li>• <i>“Without a doubt – we have been asking for this for a number of years. We believe both examples will improve engagement and quality.</i></li> <li>• <i>There are a number of unplanned outages that we believe could have been avoided, particularly around installed management schemes that operate</i></li> </ul>

	<i>unexpectedly. We have an ongoing concern that there are no real incentives for outages to be minimised outside of high level licence clauses between the ESO and TO.”</i>
<b>Better Performance Monitoring: We will work with the other TOs through the NAP group to identify relevant KPIs. We will also include these metrics where relevant in an annual report to the User Group.</b>	<ul style="list-style-type: none"> <li>• <i>“We would also appreciate KPIs are designed around loss production and costs incurred by generation customers in alignment with Energy Not Supplied and network reinforcement costs”</i></li> </ul>
<b>A Single NAP: We commit to working through the NAP industry working group to agree the proposed changes to incorporate arrangements for creating a single joint NAP.</b>	<ul style="list-style-type: none"> <li>• <i>“See Annex 30 which comprises the draft consolidated Network Access Policy.”</i></li> </ul>

## 5.4 Non-Lead Asset Output Measurement

Transmission network assets are categorised as lead or non-lead assets depending on whether they play a direct or indirect role in the transmission of electricity. Lead assets are defined as circuit-breakers, transformers, reactors, underground cables and overhead line towers conductors and fittings. Non-lead assets are all other types of assets such as, instrument transformers, civil structures and substation buildings, control and protection equipment.

Investment in lead assets is governed by the Network Asset Risk Methodology (NARM), which defines a monetised risk output and a mechanism to adjust revenues for a company’s performance that is either higher or lower than the output target. There has been significant effort by the TOs and Ofgem to develop the monetised risk methodology to allow a single target to be set for the different asset categories.

Currently, there is no equivalent NARM output for non-lead assets and a monetised risk methodology has not yet been applied to them. It is acknowledged that the very large number of different asset types – from a concrete structure to the network’s central control system – and the wide range of associated costs present some practical difficulties in setting a single output target.

However, we have recently developed monetised risk models for some non-lead assets and we propose to set a target for these for the RIIO-T2 period. We will report on performance against these targets and propose them for inclusion into the formal NARM Methodology.

In the absence of a formalised quantitative target for the other types of non-lead assets, we propose to improve the transparency of delivery of non-lead asset investment during RIIO-T2. We will do this by providing the User Group with an annual report for each non-lead asset project. This report will track progress on output volumes and expenditure against our business plan commitments. We will produce a justification pack, using the RIIO-T2 template, to document any necessary variances from our business plan.

### 5.4.1 Our Non-Lead Asset Commitments

The commitments we are making under this bespoke reputational ODI are:

- We will report annually on each non-lead asset project. This report will track progress on output volumes and expenditure against our business plan commitments.
- We will produce a justification pack, using the RIIO-T2 template, to document any necessary variances from our business plan.

We acknowledge that this proposal is an early step towards greater transparency and accountability so we propose that a sector-working group should be established to develop a more quantitative methodology to assess performance in non-lead asset investment.

### 5.5 Whole System ESO-TO Constraint Mitigation

Constraints are an inevitable part of any transmission system but they add a short-term cost on network users and consumers. These costs are on a rising trend with the increasing volumes of intermittent generation that are connecting to the electricity network. Reporting by NGENO<sup>12</sup> shows that annual constraint costs in Scotland across the Cheviot (B6) boundaries were £210m in 2018/19.

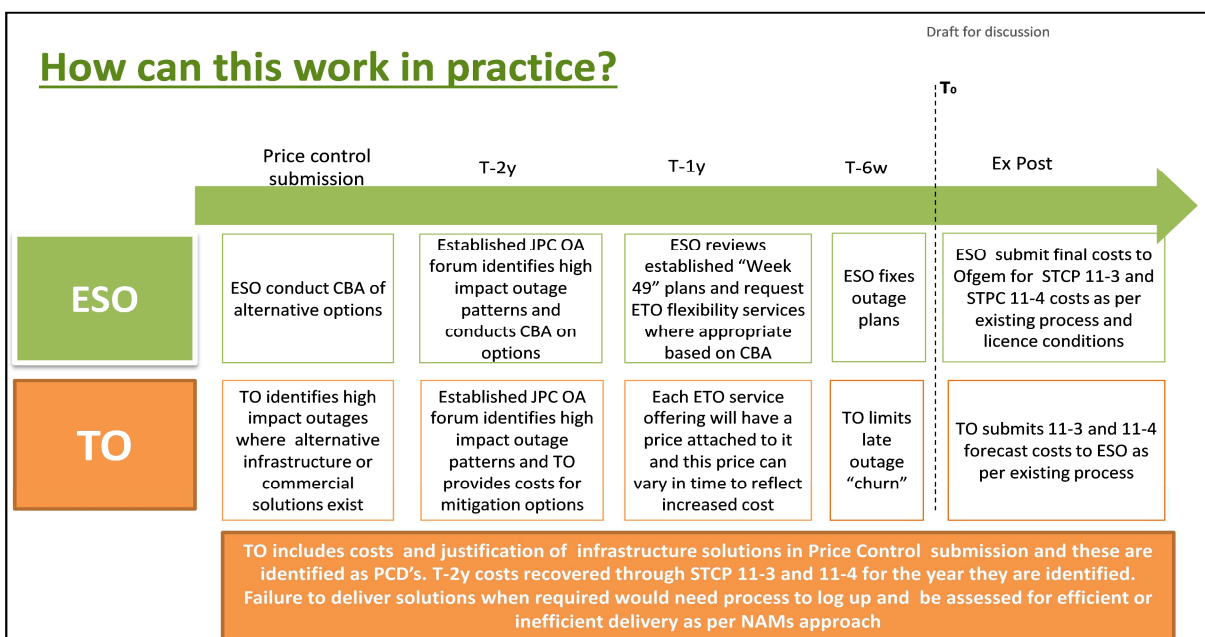
Constraint costs are incurred by the NGENO to enable them to pay for services that balance the electricity system. When TOs require planned network outages to carry out essential work, this can reduce the capacity of the transmission network, requiring excess generation to be constrained. We work hard to mitigate these costs, but we believe we can do more if we are funded throughout the price control period to provide infrastructure solutions for network situations that arise during the period. This could significantly reduce constraints costs. These solutions will incur an incremental cost to consumers but the corresponding decrease in high constraint costs could exceed these by significant amounts, achieving an overall reduction in whole system costs.

The ODI we are proposing builds on existing licence and regulatory arrangements that provide funding for infrastructure services to mitigate the risk of high constraint costs associated with network outages. It encourages proactive use of the provisions in STCP 11-4 which we believe have been under-utilised since their introduction.

The Network Access Policy working group developed the ESO-TO process by which such projects can be analysed on this basis through RIIO-T1. This process was adopted into the STC in April 2018 to align with the business separation of NGET and NGENO. The appropriate licence mechanism to support STCP 11-4, which described the proposed ESO-TO arrangements for implementing solutions to reduce constraints, was included in the NGENO licence in April 2017 as Special Condition 4J "The SO-TO mechanism". To date we are not aware of any opportunities have been taken to implement solutions brought forward by us under this scheme

This mechanism provides an investment pot of £1.5m (2018/19 prices, per event) to the ESO to pay TOs for services to mitigate the cost of constraints by deploying alternative design or infrastructure solutions. The challenge remains to implement the mechanism effectively and we are proposing a Whole System ESO-TO Constraint Mitigation bespoke financial ODI to drive this forward in RIIO-T2 and unlock substantial financial benefits for consumers through reduced constraint costs.

The figure below describes how we envisage this ODI working in practice.



**Figure 8: Whole System ESO-TO Constraint Mitigation Process**

<sup>12</sup> Monthly Balancing Services - Summary 2018/19 (March 2019)



This diagram shows that, within our RIIO-T2 Price Control Submission, we assess constraint costs in the design of our non-load and load investment projects.<sup>13</sup> Where a particular project is identified as being at risk of incurring significant constraint costs, that could be reduced by increasing the infrastructure cost, we have asked the ESO to conduct a cost benefit analysis of the options to determine if the constraint mitigation solution is in consumer interests to progress.

Throughout the price control period, changes to the background generation or issues that arise once delivery begins could change the assumed constraint impact of a project. This is anticipated in the operational planning procedures laid out in the System Operator Transmission Owner Code (STC). These procedures require outage plans to be assessed two or three years ahead of time.

The Joint Planning Committee (JPC) operational assessment (OA) working group involving NGENSO and TOs are the formal forums where this assessment is carried out. These forums present an opportunity to trigger an economic assessment of options of outage patterns that present a high risk of constraint costs. The consolidated Network Access Policy (annex 35) explains the scope of the Long Term Planning meetings:

*“A minimum of 4 outage planning meetings will be arranged each planning year between NGENSO, the Transmission Owner and other Transmission Owners. These meetings will develop the long term planning years’ outages via the Joint Planning Committee Operational Assessment (JPCOA) meetings. Options for Enhanced Service Provision and any enhanced stakeholder engagement are a priority here to identify and make best use of STCP 11.4 funding.”*

Examples of the types of changes that could be proposed are also listed in the consolidated Network Access Policy as follows:

- Design changes such as an offline build of a key network node rather than an inline.
- The building of a temporary bypass
- Provision of enhanced ratings from various techniques
- Reduction of Emergency return to Service times
- Temporary intertrip schemes
- Automatic Network Management (ANM) schemes
- Bringing investment forward
- Enhanced supply chain / procurement / resourcing contracts

This would require additional work for a TO to identify and propose alternative options to design or deliver, that mitigate the risk of a project that is presenting a high risk of constraints. There would also be additional work for the NGENSO to assess these options in terms of constraint cost savings. Where the recommendation for an option involves higher costs for the TO these will be funded through the existing STCP 11-4 mechanism. To date no proposals raised through STCP 11-4 have progressed to implementation. This, in part, is due to a perception of risk as to how decisions to deploy funding will be assessed by the regulator.

We propose that the key performance indicators be introduced to highlight performance in these areas as proposed under the Network Access Policy incentive. The number of projects that are identified as suitable for funding under this mechanism could be one of these KPIs and a forecast range of constraint cost reduction presented along with the forecast cost of the funding required to implement the solution.

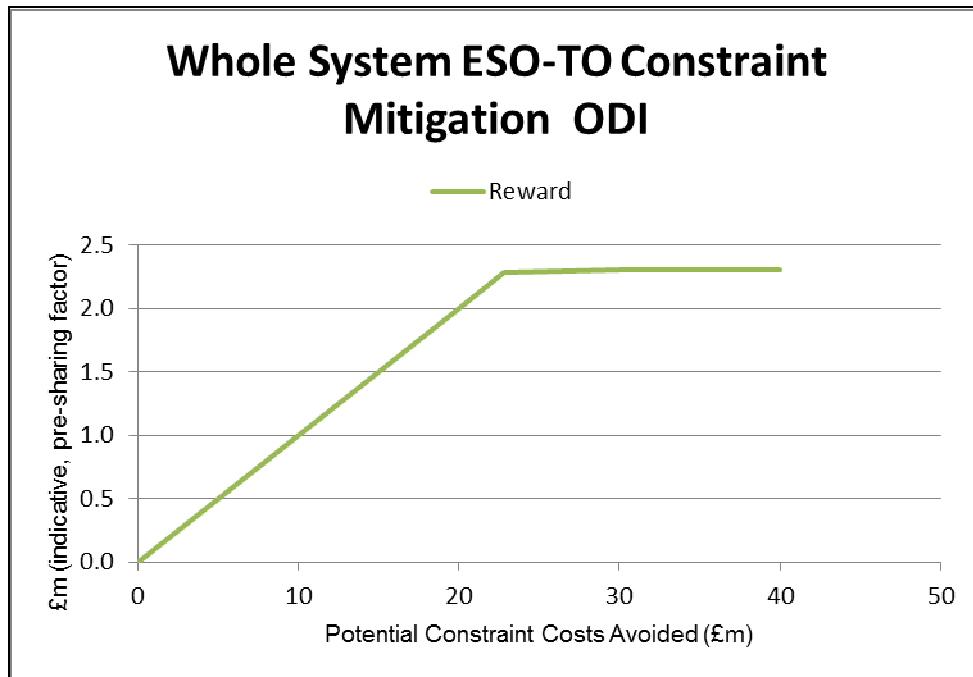
These metrics will in turn be presented as part of an annual report which will be submitted to the User Group to provide accountability to our customer and stakeholders.

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<sup>13</sup> See page 165 of our main business plan submission section “Access to the network” and page 104 Windyhill substation for examples of how we have done this.

### 5.5.1 How the Incentive Operates

The incentive reward will be based on the forecast £m of constraint costs avoided through provision of our services. We anticipate the possibility of agreeing two high value constraint cost mitigation solutions with the NGENSO per year. This is a reward only incentive to promote greater use of the existing facility within STCP 11-4. We propose capping the incentive reward at £2.28m per annum based on the consumer benefit of achieving a forecast reduced constraint costs of £22.8m. This is an incentive strength of 1% of forecast constraint cost avoided approximately 11% of typical annual constraint values of £210m. The diagram below illustrates this incentive.



**Figure 9: Whole System ESO-TO Constraint Mitigation Incentive Range**

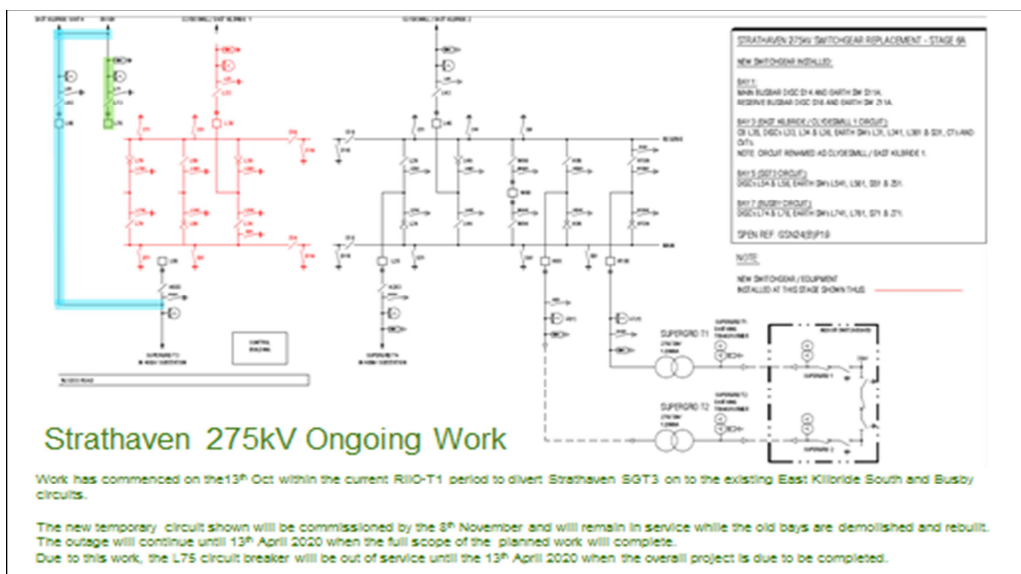
### 5.5.2 ESO-TO Constraint Example: Strathaven L75 Circuit Breaker Replacement

This is presented as an example of the sort of action that could be taken using STCP 11-4 that would unlock future benefits for consumers. It is an actual scenario that materialised but not implemented in the RIIO-T1 period. Our ambition by proposing this bespoke incentive is that similar opportunities can be capitalised upon in RIIO-T2 for the benefit of consumers.

#### Background

Work has commenced as of 13<sup>th</sup> October 2019 to divert Strathaven super grid transformer SGT3 on to the existing East Kilbride South and Busby circuits. This is a constituent part of our RIIO-T1 275kV switchgear replacement programme. The outage will continue until 13<sup>th</sup> April 2020 to complete the full scope of planned work. Due to this work the L75 circuit breaker will be out of service until the 13<sup>th</sup> April 2020 when the overall project is due to be completed. The figure below presents the network schematic diagram.





**Figure 10: Strathaven L75 CB Network Diagram**

Figure 10 above shows the circuit breaker in question highlighted in green and available during the current outage period to be replaced.

This L75 circuit breaker model currently in use at Strathaven has been identified as experiencing ongoing issues with electronic component failure which could render the unit inoperable. Due to the age and style of the components within the breaker, they are no longer supported or manufactured with the number of replacement components in short supply.

Within the RIIO-T2 programme of works, the Strathaven L75 GE FE2 circuit breaker was initially identified to be refurbished to ensure the unit meets end of life. Following a review of the refurbishment plan it has been identified that it would be more economical to replace the existing unit with a new circuit breaker as opposed to refurbishment.

Although the proposed circuit breaker replacement plan for Strathaven Substation was identified for delivery within the RIIO-T2 period as part of a wider replacement programme. In reviewing the RIIO-T2 outage programme the opportunity to bring the L75 circuit breaker replacement at Strathaven forward to coincide with the current works and outage which is currently in place until 13<sup>th</sup> April 2020 was identified.

**Proposal to Deploy STCP 11-4**

However, there is no funding available for SPT in the T1 period which would allow this breaker replacement to be brought forward. The opportunity to be funded via STCP 11-4 to allow L75 to be changed within this current outage window was brought forward to the NGESO on the basis that bringing the work forward would prevent an additional long duration outage on a 275kV MITS (main interconnected transmission system) circuit in the RIIO-T2 period.

SPT made a request to the NGESO of forecasts costs of £200k to be funded through STCP 11-4 to prevent a further six week outage on the circuit in 2023 when it is earmarked to be changed, thus resulting in removing the risk of any constraint costs this future outage would have in conjunction with what other works would be planned on the MITs in 2023 as well as all the other MITs outages that will be eventually planned for 2023. This SPT proposal would be a good opportunity to keep a MITs circuit in service in this year.

**Outcome**

Our proposal was not accepted by the NGESO on the basis that their modelling of this outage in combination with other outages that we have notified for 2023, do not indicate any risk of constraints. We believe this is a conservative assessment and an example of where whole system costs could have been reduced had there been an incentive to drive proactive behaviours. Our proposal can deliver this change and ensure there is a clear regulatory mandate that mitigates the risk for network companies of delivering solutions in RIIO-T2 that will bring overall benefits to consumers.

**5.5.3 Willingness to Pay (WtP) Support**

The WtP studies we conducted throughout 2019 and summarised in section 1.8 above identified the attribute **“Investing in innovation projects (including cost reductions) to create future benefits for consumers”** as the number 2 priority consumers expect us to deliver.

In Ofgem’s May SSMD, they explain their thinking of the need to incentivise this output area. They conclude that:

*“In summary, we do not currently see a clear and identifiable gap in the current procedures. Therefore, we cannot confidently anticipate how these proposals might deliver any benefit in this space, at this time.”*

There is lack of clarity on the level of scrutiny and justification required for what potential constraint mitigation solutions are appropriately funded using the SCTP 11-4 mechanism. It is not clear whether the justification of solutions needs to be able to demonstrate actual cost avoidance, or if reducing future risk is sufficient. This uncertainty creates a risk for the network companies to implement proposals. The default position for any organisation is to avoid unnecessary risk, and there is no explicit licence obligation or regulatory driver to mitigate this risk currently. This proposal fills that gap.

Ofgem support the potential for such a proposal being brought forward in their May SSMD:

*“We recognise from responses to the NAP, that one TO will present their proposals for an incentive in this space, as part of their Business Plans. We note that should the TOs choose to reflect any other whole system proposals of this nature in their Business Plans, these proposals must be underpinned by robust evidence of the benefit to consumers. All proposals will be assessed against the criteria for bespoke outputs set out in Chapter 4 of the Core Document”*

Appendix A of this document provides more evidence of how this incentive meets the Business Plan guidelines for bespoke ODIs.

This output is proposed as a bespoke financial output within the RIIO-T2 framework that will be assessed by the User Group as explained below. Our CBA analysis confirms a positive net benefit for this ODI as shown in the table below.

**Table 21: CBA for the Whole System ESO-TO Constraint Mitigation**

Output Name	Overview of Cost-Benefit Analysis			High-level Annual Implementation Plan	
	Total PV Benefits (£)	Total PV Costs (£)	Net Benefit (£)	Activities/Tasks	FTE
<b>Whole System ESO-TO Constraint Mitigation</b>	98,078,586	179,914	97,898,673	Assessment and optimisation of 1 – 6 year ahead project plans and outage requirements Alignment of outage requirements with whole system requirements (constraints, system security and stakeholder impact) Review, revise and update outage plans as changes occur due to project delays, faults, system conditions and stakeholder needs. Oversight of outage planning	3.4

**5.5.4 Our Whole System ESO-TO Constraint Mitigation Commitments**

The commitments we are making under this incentive are:

**Table 22: Whole System ESO-TO Constraint Mitigation Commitments**

<b>Whole System ESO-TO Constraint Mitigation</b>	<b>Customer and Stakeholder feedback</b>
<b>Working with the ESO, we will identify potential high risk constraints on our network and implement solutions as part of the ESO-TO constraint mechanism to reduce the risk of high constraint costs in being incurred.</b>	<ul style="list-style-type: none"> <li>• <i>“We are fully supportive of this approach and believe that bespoke cost benefit analysis should be undertaken to explore these options in order to reduce consumer’s bills and facilitate renewable integration as soon as possible.”</i></li> </ul>
<b>We will demonstrate our performance under the Whole System ESO-TO incentive comprising benefits, details and cost for every opportunity we have identified and progressed to implement a solution to reduce the risk of high constraints.</b>	<ul style="list-style-type: none"> <li>• <i>“I think, going back to money, as the customer this seems better because you're looking at ways of reducing your bill as well which is one of the things that I'm all for”</i></li> </ul>

## 6.0 CATEGORY 3: DELIVERING AN ENVIRONMENTALLY SUSTAINABLE NETWORK

In line with the Ofgem SSMD category this incentive category includes the outputs and wider price control measures intended to support network owners to reduce the adverse impact of their networks and business activities on the environment (Annex 7), and to support the transition to a low carbon energy future. See our Environmental Action Plan (Annex 7) for details of our main proposals for action in this category.

These baseline outputs are referred to in this annex as we intend to report to the User Group on our progress and performance against these areas. In this annex we are also providing details of one reputational bespoke ODI for maximising environmental benefits from operational land and one bespoke discretionary financial ODI comprising three initiatives to deliver Additional Contribution to the Low Carbon Transition as presented in the table below:

**Table 23: Category 3 ODIs**

Output Area	Output Name	Incentive Mechanism	Output Type
<b>Environmental</b>	Environmental Framework	Reputational	Bespoke
	Minimising Electricity Losses	Reputational	Common
	Sulphur Hexafluoride (SF6) and other Insulation Interruption Gases (IIG) Leakage	Financial (Deterministic)	Common
	Maximising environmental benefit from non-operational land	Reputational	Bespoke
<b>Additional Contribution to the Low Carbon Transition</b>	Maximising supply chain sustainability	Financial (Discretionary)	Bespoke
	Accelerating adoption of low carbon fleet		
	Delivering biodiversity net gain initiatives		

### 6.1 Environmental Framework

Environmental considerations are embedded within our Business Plan that will deliver value-for-money initiatives and activities to reduce our environmental impacts. Further details on these proposals are included within the chapter titled “An Environmentally Sustainable Network” in our main Business Plan submission (pages 35-47) with further detail in our Environmental Action Plan (Annex 7).

We propose to publish an annual environmental report that will focus on

- Business carbon footprint (BCF) and embedded carbon
- Other environmental impacts including pollution to the local environment, resource efficiency and waste, biodiversity loss, and visual amenity issues relating to infrastructure
- Contribution to the low carbon energy transition.

Our progress in delivering our Environmental Action Plan will also be reported on, including performance against the metrics identified. We are committed to working with the other TOs to develop a common reporting methodology for this purpose.

#### 6.1.1 Minimising Electricity Losses

Transmission losses arise when electricity is transported across a network. Factors affecting losses includes the materials and design of assets on the network, the distance electricity travels, and the voltage at which the electricity is transported. Losses are expected to increase in future as an increasing number of decentralised renewable generation assets are connected to the transmission network.

**For full details see our Losses Strategy detailing our approach to minimising controllable losses, located within our Environmental Action Plan in Annex 7.**

**6.1.2 Our Commitment:**

We will implement our RIIO-T2 Losses Reduction Strategy to reduce losses on the network by an estimated 14,500 MWh (circa 3% of 2018/19 losses), thereby limiting losses to a lower level than would otherwise be the case, where this is economic and provides benefit to customers.

**6.1.3 How the incentive operates**

We have integrated our Losses Strategy and reporting of the initiatives we are taking to mitigate the losses on our network within the Environmental Action Plan and annual reporting framework. This is therefore a reputational incentive.

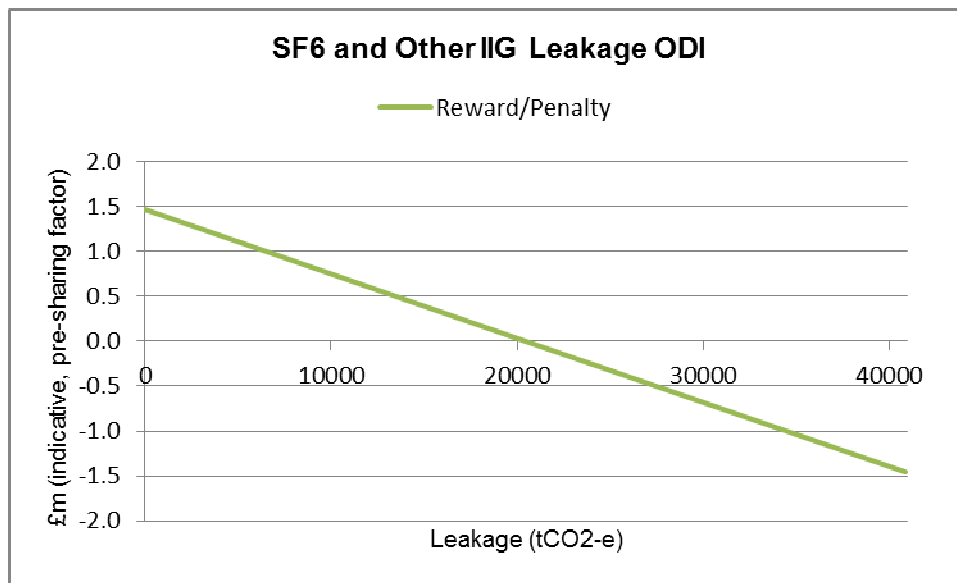
**6.1.4 Sulphur Hexafluoride (SF6) and other Insulation Interruption Gases (IIG) Leakage**

During RIIO-ET1, a symmetrical financial (reward and penalty) incentive was implemented to drive TOs to fully consider lifetime costs when making decisions about sulphur hexafluoride (SF6) assets and to improve the management of, and reduce leakage rates from, SF6 assets operating on the system. We have been able to deliver a lower leakage rate than our target through effective management and mitigation approaches.

**For full details please see our SF6 Strategy located within our Environmental Action Plan in Annex 7.**

**6.1.5 How the S<sub>6</sub> and IIG Incentive Operates**

A financial reward or penalty applies for over or under performance against a target leakage rate of Insulation and Interruption Gasses (IIG) measured in equivalent tonnes of Carbon Dioxide (tCO<sub>2</sub>-e).



**Figure 11: SF6 and other IIG leakage Incentive Range**

This is a symmetrical incentive around a baseline of tCO<sub>2</sub>-e emissions from leakage from SF6 and other IIG. The baseline target is our annual leakage of SF6 and other IIG (in kg) multiplied by the relevant kg-to-tCO<sub>2</sub>-e conversion factor for each IIG. The target is adjusted each year to account for additions and disposals of assets containing these IIGs.

At the start of RIIO-T2 we estimate our leakage of g<sup>3</sup><sup>14</sup> to be around 3kg (625kg installed \* 0.5% assumed leakage rate for indoor assets post RIIO-T1) and SF6 leakage to be approximately 900kg. The conversion factor of SF6 to tCO<sub>2</sub>-e is 23.9 and 0.33 for g<sup>3</sup>. Therefore, the indicative baseline emissions for Year-1 of RIIO-T2 are estimated to be just over 20,000 tCO<sub>2</sub>-e. The baseline will be reviewed and finalised with Ofgem using actual leakage information prior to the start of RIIO-T2.

The incentive strength is set using the non-traded carbon price set by BEIS (approximately £70 - £75/tCO<sub>2</sub>e).

<sup>14</sup> Green Gas for Grid (g<sup>3</sup> is GE's environmentally-friendly alternative gas to SF6 developed for high voltage (HV) electrical transmission equipment.

<sup>15</sup> High indicative figure which will be reassessed based on actual leakage at the end of the RIIO-ET1 period.

### 6.1.6 Willingness to Pay (WtP) & CBA Support

The WtP studies we conducted throughout 2019 and summarised in section 1.8 above, identified the attribute “Improving environment around transmission sites investing” as a strong priority for them.

This output is mandated as a common output incentive within the RIIO-T2 framework highlighting the priority this has for stakeholders. Our CBA analysis confirms a positive net benefit for this ODI

**Table 24: CBA for SF6 and other IIG leakage**

Output Name	Overview of Cost-Benefit Analysis			High-level Annual Implementation Plan	
	Total PV Benefits (£)	Total PV Costs (£)	Net Benefit (£)	Activities/Tasks	FTE
<b>SF6 and Other IIG Leakage</b>	1,223,487	710,085	513,402	Improving processes and advising on legal requirements Reporting Fixing leaks, including using non-standard approaches where necessary Identifying leaks Developing a strategy Monitoring top up/leakage levels External engagement Driving alternatives (supply chain) Piloting / trialing alternatives to SF6 Updating contracting approaches Design Updating systems	1.8

### 6.1.7 Our Sf6 and other IIG Leakage Commitments

The overall commitment we are making in this area is:

**Table 25: Our Sf6 and other IIG Leakage Commitments**

<b>Sulphur Hexafluoride (SF6) and other Insulation Interruption Gases (IIG) Leakage</b>
<b>We will continue to minimise the leakage of SF6 gas from our assets and collaborate with supply chain and industry peers to drive the development and adoption of SF6-free technologies.</b>

### 6.1.8 Maximising Environmental Benefit from Non-Operational Land

We often replace old substation assets with newer versions that take up less space or remove redundant assets if they are no longer required. The resulting vacant land represents a number of opportunities for the installation of renewable technologies and the introduction of biodiversity enhancement initiatives. We have recently undertaken a study to understand the scale of opportunity that these areas of land may represent, including options for enabling community energy groups to use the land for free for solar PV installation.

Our study identifies up to 20 sites initially, which conservative estimates suggest could support upwards of 4MW of new renewable generation. This initiative will promote pathways and realise opportunities for community-driven LCG schemes. Furthermore, the initiatives under this incentive are not at a scale that would impact the commercial roll-out of mainstream LCG.

Our stakeholders have emphasised the value of us enhancing biodiversity at our sites where operationally appropriate to do so, therefore we will include the requirement for the successful energy groups to also deliver and manage biodiversity enhancement initiatives on these sites over the lifetime of the lease.

We have included in our RIIO-T2 Business Plan provision for costs relating to the development of contracts and any civil works required to enclose the operational parts of the sites for safety purposes.

This is a reputational incentive and we will report our progress in our annual environmental report. The commitment we are making in this area is shown in the table below:

**Table 26:** *Maximising environmental benefit from non-operational land*

<b>Maximising environmental benefit from non-operational land</b>	<b>Consumer , customer and wider stakeholder Feedback</b>
<b>We will deliver environmental benefits from non-operational land and report annually on the generation connected and biodiversity improvements delivered</b>	<ul style="list-style-type: none"> <li data-bbox="836 689 1458 786">• <i>“I think that if you have space around it then it should be used for nature. Let’s embrace it, if this is an ugly thing lets surround it”</i></li> </ul>



## **6.2 Additional Contribution to the Low Carbon Transition**

We have identified a range of initiatives to reduce our environmental impacts and contribute to the transition towards net Zero. We propose three initiatives that are incentivised under this bespoke, discretionary ODI. These initiatives have been identified for inclusion because they relate to significant opportunities to deliver environmental impact reductions, but are particularly challenging due to our intention to take a leadership role or because our work is at an early stage and quantifiable targets and costs cannot be identified. The three initiatives are:

- Maximising supply chain sustainability
- Accelerating adoption of low carbon fleet
- Delivering biodiversity net gain initiatives

These are described in turn below:

### **6.2.1 Maximising Supply Chain Sustainability**

Our recent life cycle assessment pilot indicates that activities in our supply chain may represent over 70% of the total environmental impact of our network and operations. These findings are backed up by our stakeholders and similar figures are quoted by other organisations.

We recognise that our ability to influence these environmental impacts is greatest at the point at which we specify contracts and designs. That's why we are updating our specification, design, procurement and contract management processes to maximise the positive benefit delivered through our supply chain.

Our procurement model rightly focusses on minimising the cost of delivery of our specified requirements. This can be a barrier to environmental improvement, particularly new activities.

We will include environmental impact reduction requirements in our specifications and contracts as far as possible, including carbon metrics in the tender assessment process. And we will include a requirement for suppliers to explain how they have minimised the environmental impacts associated with their bids.

We propose to introduce in our tender documentation a request to suppliers to identify further environmental impact reduction options, with associated quantified costs and benefits, which they can deliver beyond their core bid. This is to allow us to leverage our supply chain's expertise and knowledge, and to bring forward opportunities to deliver greater environmental impact reductions than would otherwise be proposed as part of suppliers bids given the significant focus on minimisation of price. We expect to see proposals for additional activities, alternative equipment and approaches, and even options where a deviation from our specification/design can deliver our required outputs at lower environmental impact.

These proposals being part of the tender assessment process will provide assurance that they are cost effective and competitive

Due to the unpredictable nature of potential opportunities, we have not included any associated costs in our Business Plan. This will protect consumers and is why we have proposed this as a discretionary financial reward. We will report annually to the User Group on what proposals our suppliers offered, which we chose and the associated costs and benefits. This it will provide the evidence to inform the User Groups' recommendation as to the level of reward merited. It will also build up evidence throughout RIIO-T2 on the effort and risk associated with delivering additional environmental benefits through our supply chain.

### **6.2.2 Accelerating Adoption of Low Carbon Fleet**

Our business has signed up to The Climate Group's EV100 initiative. This is a global initiative bringing together forward-looking companies committed to accelerating the transition to electric vehicles (EVs) and making electric transport the new normal by 2030. Under the agreement, SPT will fully electrify our vehicle fleet, a total of 72 vehicles by 2030.

We have successfully piloted the use of small electric vans and are working with our General Services fleet providers and our vehicle leasing provider to bring electric vehicles into our fleet. During 2020, we aim to transition 8 small vans in our fleet to electric, followed by more rapid transition from 2021 onwards as technology for medium sized vans becomes available and more cost-effective.

As a network operator, we are required to connect customers who wish to charge their electric vehicles, and with a fleet of our own, we believe that we are uniquely placed to lead this electrification of transport and our stakeholders agree. We are therefore proposing to accelerate the electrification of our operational fleet, targeting the end of T2, as one of our key decarbonisation ambitions. This ambitious target will require the early adoption of new technology and considerable effort to address the various technological, regulatory and economic challenges, with the associated risks and costs.

Achieving this goal requires the removal of several barriers, for example:

- Development of technology for larger vehicles, higher load carrying capability, longer travel distances and faster charging;
- HMRC rules covering provision of charging points at employees' homes to allow company vehicles to be charged there (all SPT employees with vehicles start their working days from home); and
- Business continuity considerations require the mitigation of the risks associated with full reliance on electricity for our fleet.

We have created a programme for the decarbonisation of our fleet to meet our 2030 EV100 commitment. As we commence implementation of this programme, we will look for opportunities to accelerate this transition, such as the piloting and early adoption of new vehicles and charging technologies.

We propose to report our progress to the User Group on an annual basis demonstrating our success in accelerating the electrification of our fleet ahead of our baseline rollout programme. We have included the extra costs of electrifying our fleet in our business plan, as these costs are predictable, so the incentive will reward the effort and risks associated with accelerated delivery.

### **6.2.3 Delivering Biodiversity Net Gain initiatives**

Our stakeholders have emphasised the value of us enhancing the biodiversity at our sites where operationally appropriate to do so.

Our aim in RIIO-T2 is to work with our local communities, landowners and other stakeholders to deliver 'no net loss' in biodiversity and natural capital across our Business Plan activities and a net positive impact in biodiversity and natural capital across our existing sites. We will collaborate with our stakeholders and other TOs to develop and pilot a common approach and robust methodology to measure and drive improvements in biodiversity and the value of natural capital.

We intend to focus our activity initially on measuring biodiversity at our sites and establishing a robust baseline. As our methodology develops, it will enable us to deliver 'no net loss' and allow us to identify additional opportunities for biodiversity net gain in relation to our projects or sites.

The costs for this will be recovered through our proposed legislative, policy and standards uncertainty mechanism, should the combined costs exceed the reopener threshold. Therefore, the incentive will reward the effort and risk associated with implementing new and more extensive biodiversity enhancements.

### **6.2.4 How the Additional Contribution to Low Carbon incentive operates**

Taken together, these three initiatives constitute a bespoke financial ODI that we will ask the User Group to assess as part of their annual review of our performance. Their assessment will use the methodology laid out below to inform their

recommendation to Ofgem as to whether our performance in that year constitutes a reward or not. This is proposed as a reward only incentive as it will support activity that is beyond our business as usual commitments.

We will present our progress and performance in all of these areas to be assessed by the User Group. The reward will be limited to a cap of 0.5% of our allowed revenue forecast at £1.73m per annum.

The User Group will assess the evidence we present each year. A simple approach would be that they can recommend to Ofgem that we receive a reward of zero, 50% or 100% of the incentive value (0.5% of allowed revenue) based on the evidence we present. However, we will work with the User group to establish an appropriate methodology. The table below presents a guideline of what the evidence should demonstrate.

**Table 27: User Group Bespoke ODI Performance Assessment Matrix 2**

<b>Additional Contribution to the Low Carbon Transition ODIs</b>	<b>Zero Reward</b>	<b>50% Reward</b>	<b>100 % reward</b>
Maximising supply chain sustainability	No evidence of additional measures to promote lower carbon emissions in our supply chain	Some evidence of additional measures to promote lower carbon emissions in our supply chain	Extensive evidence of additional measures to promote lower carbon emissions in our supply chain
Accelerating adoption of low carbon fleet	No evidence of enabling activity to implement the transition and/or additional measures to accelerate a low carbon fleet	Some evidence of enabling activity to implement the transition and/or additional measures to accelerate a low carbon fleet	Extensive evidence of enabling activity and/or additional measures to accelerate a low carbon fleet
Delivering biodiversity net gain initiatives	No evidence of additional measures to implement biodiversity net gain	Some evidence of additional measures to implement biodiversity net gain	Extensive evidence of additional measures to implement biodiversity net gain

This presents a high-level view of the assessment approach we would ask the User Group to undertake. Final details will be developed with the User Group and approved with Ofgem through the licence drafting process.

### 6.2.5 Willingness to Pay (WtP) & CBA Support

The WtP studies we conducted throughout 2019 and summarised in section 1.8 above identified the attribute “Improving environment around transmission sites” as a strong priority for them.

This output proposed as a bespoke discretionary financial incentive in line with the RIIO-T2 guidelines for bespoke ODIs (see Appendix A for more details). Our CBA analysis confirms a positive net benefit for this ODI as shown in the table below:

**Table 28: CBA for Additional Contribution to Low Carbon incentive**

<b>Output Name</b>	<b>Overview of Cost-Benefit Analysis</b>			<b>High-level Annual Implementation Plan</b>	
	<b>Total PV Benefits (£)</b>	<b>Total PV Costs (£)</b>	<b>Net Benefit (£)</b>	<b>Activities/Tasks</b>	<b>FTE</b>

<b>Maximising Supply Chain Sustainability</b>	10,467,697	2,044,472	8,423,225	Early engagement with suppliers, before contract award; Additional design-stage discussion; Updating procurement policies and processes; Managing risk of using new designs/approaches/materials; Accommodating design ideas; Enhanced supply chain engagement; Gathering data to measure the impacts of projects with and without alternative options, normalising and comparing.	6.3
<b>Accelerating Adoption of Low Carbon Fleet</b>	3,275,971	2,289,809	986,162	Engagement with HMRC to remove barriers (home start charging points); Trialling vehicles/assets with unproven performance due to early adoption; Engaging with other fleet operators; Contracting - embedding within lease framework on renewal; Vehicle waiting lists - engagement with leasing companies to pull forward the options; Industry engagement to remove barriers; Development of charging strategy; Development and delivery of rollout programme. Awareness and culture change; Data analysis to understand maintenance savings, usage and charging behaviours;	7.0
<b>Delivering Biodiversity Net Gain Initiatives</b>	4,205,771	1,661,747	2,544,024	Engagement with Scottish Government and other key stakeholders to influence the development of Scottish Biodiversity Net Gain policy; Using of national and local data and engagement to determine the most appropriate net gain initiatives and locations; Managing risk of new initiatives/approaches/processes; Delivery of additional biodiversity initiatives; Multi-year monitoring of biodiversity as it establishes; Ongoing management of biodiversity improvements; Management of activities not undertaken within existing projects.	5.1

The commitments we are making in this area are as follows:

**Table 29: Additional Contribution to the Low Carbon Transition Commitments**

<b>Additional Contribution to the Low Carbon Transition</b>	<b>Consumer, Customer and Wider Stakeholder Feedback</b>
<p><b>We will work with our suppliers and contractors to drive additional environmental improvements by accessing their expertise to identify cost effective opportunities.</b></p>	<ul style="list-style-type: none"> <li>• Supply Chain members highlighted they need to be able to influence projects at an early enough stage to be able to deliver sustainability benefits.</li> <li>• User Group highlighted the importance of the supply chain, embodied carbon and procurement.</li> </ul>
<p><b>We will strive to lead the decarbonisation of fleet vehicles, working with suppliers and other fleet operators to pilot technically viable alternatives to drive technical advancements and early adoption.</b></p>	<ul style="list-style-type: none"> <li>• Signatories of EV100 commitment to fully electrify our fleet by 2030. Early adoption stimulates the market and delivers carbon reductions sooner.</li> <li>• Scottish Government is promoting ‘the use of ultra-low emission vehicles (ULEVs) and aim to phase out the need for new petrol and diesel cars and vans by 2032.’</li> <li>• Networks must lead by example, while also enabling ‘the roll out of a truly national, visible charging infrastructure for electric vehicles, sufficient to encourage consumer demand to reach c.100% of new electric car and van sales by 2030’ – National Infrastructure Committee.</li> </ul>
<p><b>We will accelerate the delivery of a low carbon fleet, aiming to deliver by the end of T2 ahead of our 2030 programme, thereby increasing our contribution to GB carbon footprint reduction and contributing to improved air quality.</b></p>	
<p><b>We will work collaboratively with our stakeholders, including the other Transmission Operators, throughout RIIO-T2 to develop and pilot a common approach and robust methodologies for delivering Biodiversity Net Gain alongside Natural Capital assessment and enhancement.</b></p>	<ul style="list-style-type: none"> <li>• High consumer priority and willingness to pay on all Sustainability and Environment areas, including:</li> <li>• Improving the environment around our assets, developing opportunities to enhance biodiversity and building stronger links between habitats.</li> <li>• Collaboration is seen as a priority, especially in regard to the collection, analysis and sharing of data.</li> <li>• Transmission Operators have agreed to develop a common approach and methodology.</li> </ul>
<p><b>We will deliver biodiversity net gain in our network area.</b></p>	<ul style="list-style-type: none"> <li>• Environmental regulator:</li> <li>• Highlighted the need for a strategic approach which enables grouping of biodiversity enhancements in the</li> </ul>

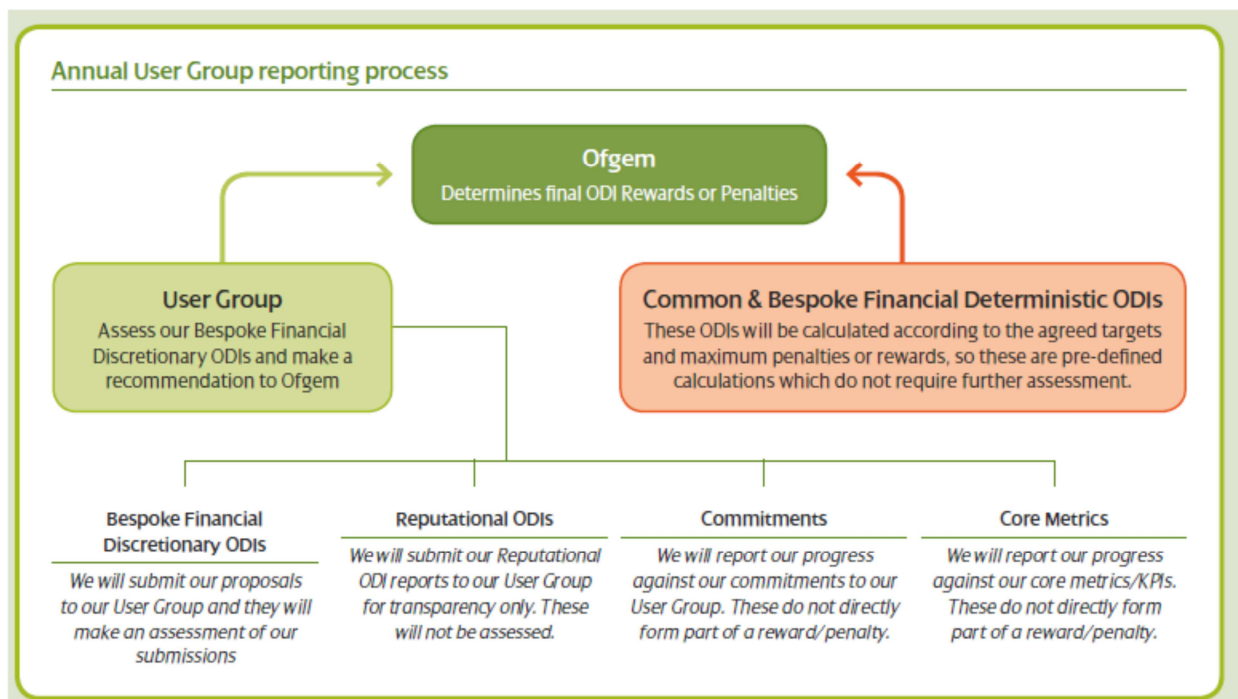
	<p>locations where they can deliver the greatest value, but which also enables a community and place-based approach and strong ongoing engagement.</p> <ul style="list-style-type: none"><li>• Identified that government and agency buy-in is key, and that there is a need for Scotland-wide coordination. Underlined the need to understand the approaches and resources required to prove the ongoing viability of biodiversity net gain initiatives, which can take a long time to establish.</li><li>• Confirmed they expect to see a firm commitment to net gain, but recognise the challenges in SP Transmission committing to this ahead of developing baseline data and in advance of Scottish Government legislation on Biodiversity Net Gain.</li><li>• User Group Encouraged greater ambition in Biodiversity Net Gain and Losses commitments</li></ul>
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## 7.0 IMPLEMENTING OUR ODIs, ANNUAL REPORTING AND PERFORMANCE ASSESSMENT

### 7.1 Role of the User Group

Throughout each of the incentive categories described above we have indicated that we will report on our performance and progress of delivering our ODIs to the User Group, on an annual basis. We also intend to report progress of the output commitments we have made for each ODI in response to our consumer, network customer and wider stakeholder feedback. To demonstrate our overall performance, we are also proposing a set of Core Metrics which together constitute an overall balanced scorecard approach. Our existing Annual Report provides a good basis for what this could look like.<sup>16</sup>

This approach will provide a strong, additional reputational incentive for our ODI package as a whole and the scope of the report is illustrated in the diagram below.



**Figure 12: Annual User Group Reporting Process**

This figure shows a balanced scorecard reflecting our performance across all our ODIs, a set of core metrics and progress against our commitments this will demonstrate our overall output incentive performance.

This will allow the User Group to assess our overall performance and the ability to hold us accountability to an external, independent and informed group of customer and stakeholder representatives. The User Group are well placed to assess our performance in these areas having built up knowledge and understanding through the RIIO-T2 submission process.

This approach can ensure consumers, network customers and wider stakeholders can continue to have a key role in influencing our business making throughout the RIIO-T2 period, ensuring commitments are delivered and assessing performance in delivering our RIO-T2 Plan.

We intend to report progress on all our ODIs to the User Group and in addition propose that they undertake a formal performance review of two of our proposed bespoke discretionary financial ODIs leading to a recommendation to Ofgem for a financial reward or penalty, specifically these are:

<sup>16</sup> [https://www.spenergynetworks.co.uk/userfiles/file/Annual\\_Transmission\\_Report\\_2017\\_18.pdf](https://www.spenergynetworks.co.uk/userfiles/file/Annual_Transmission_Report_2017_18.pdf)



- Stakeholder Engagement PLUS suite of ODIs
- Additional Contribution to the Low Carbon Transition suite of ODIs

The methodology as to how the User Group will make recommendations on our performance is set out against each of these two bespoke ODI sections in tables 12 and 27 of this Annex respectively. We propose that the User Group will assess the evidence we present each year in each of these bespoke discretionary ODIs. They will have the discretion to recommend to Ofgem that we receive a reward of zero, 50% or 100% of the incentive value (0.5% of allowed revenue) based on the evidence we present. This presents a high-level view of the assessment approach we would ask the User Group to undertake. Final details will be developed in conjunction with the User Group and approved by Ofgem through the draft and final determinations process.

## 7.2 Proposals for a Set of Core Performance Metrics

Our draft set of Core Metrics subject to further stakeholder and User Group engagement are set out below:

**Table 30: *Proposals for Core Metrics***

<b>RIIO2 Output Category</b>	<b>Core Metrics</b>				
<b>Meet the needs of consumers and network users</b>	Quality of Connections Survey score	Average time to issue an offer	Number of connection offers issued and any late offers	Number of variations to a connection offer attributable to our actions	Number of outages included in the year ahead outage plan and those added to our within year plan.
<b>Maintain a safe and resilient network</b>	Level of network reliability against target of 9.9998%.	Distribution CML and CI as a result of transmission faults.	Network availability for connected generation in respect of no supply and planned outage events.	Increase in network capacity (MVA).	Number of Mental Health First Aiders
<b>Deliver an environmentally sustainable network</b>	Performance in achieving the agreed energisation date and increase in low carbon intensity achieved against a baseline of 900MW for the period.	% change in our controllable carbon footprint.	Transmission Losses as a % of the total energy transmitted .	Use of SF6 alternatives to reduce SF6 impact by 9700kg.	SF6 & IIG leakage.
<b>Impact on Consumers</b>	Report our annual bill impact.	Forecast constraint cost reduction.	Totex outperformance (% expenditure against allowance).		

We will submit these core metrics to the User Group on an annual basis to keep stakeholder influence and accountability at the heart of our RIIO-T2 incentive delivery performance. Their review and feedback will help us meet the challenges of delivering the energy system transition to support environmental targets, minimise consumer bills and maintain a reliable network.

The User Group will be asked to review our overall performance against these core metrics, incentive commitments and output incentives. The outcome of this review will be a report that will be published on our website as a reputational incentive to hold us accountable for our overall performance.

The User Group review we expect can challenge our progress and recommend areas for improvement. New commitments can be proposed or accepted and completed commitments closed out. This will allow ongoing development for our customer and stakeholder actions and focus.

These Core Metrics are presented as a draft set of proposals and will be reviewed and assessed in advance of the RIIO-T2 period starting.

## **APPENDIX A: BESPOKE FINANCIAL ODI CHECKLIST**

This appendix presents a checklist highlighting our view of where our bespoke ODIs meet Ofgem’s business plan guidance. The table below summaries the bespoke ODIs we are proposing and the annual maximum range value associated with them.

*Summary Table of Bespoke ODIs*

	<b>BESPOKE FINANCIAL OUTPUT DELIVERY INCENTIVE</b>	<b>Annual Max £m (2018/19 prices)</b>	<b>Performance mechanism</b>
1	Stakeholder Engagement Plus: Black Start Resilience Community Energy Schemes Capability SE Performance levels	£1.73	Initial assessment by User Group
2	ENS for increasing reliability for distribution customers	£1.50	Use it lose it Pot
3	Optimising Network Availability for Connected generators	£2.56	Reward based on additional low carbon generation flowing onto our network
4	Whole System ESO-TO Constraint Mitigation	£2.28	Reward based on forecast reduction in constraint costs
5	Additional Contribution to the Low Carbon Transition Maximising Supply Chain Sustainability Accelerating Adoption of the low carbon fleet Delivering Biodiversity new gain initiatives	£1.73	Initial assessment by User Group
	Total	£9.80	

## Stakeholder Engagement Plus ODI

Ofgem Business Plan Guidance para's 2.16 & 2.17	Stakeholder Engagement PLUS Proposals		
	Black Start Resilience of Consumers in Vulnerable Circumstances	Community Energy Schemes Capability	Stakeholder Engagement Performance Levels
Reflect the network services that existing and future consumers/network users and/or wider stakeholders require	our WTP studies showed Increased reliability and reduction in restoration times are a priority for customers	This proposal will support low carbon community energy schemes (CES) as part of the energy system transition.	This provides evidence of stakeholder engagement about our business as usual performance that we believe will support the energy system transitions and consumers will value as we increase our scope and depth of engagement. This will support whole system thinking and potentially lead to initiatives and relationships we do not currently have but could become essential.
Be as complete as possible in capturing the activities and costs of the company	The costs are uncertain as each identified community could require different levels of support but are limited to prioritised allocation to staff engagement time, travel, event hires, materials etc.	The costs are uncertain as each scheme could require different levels of support but are limited to prioritised allocation to staff engagement time, travel, event hires, materials etc.	The health check is a rigorous assessment that effectively tests our engagement approach. The resource requirement to achieve this level is difficult to quantify.
Be measureable and reportable	Performance will be measured using the Dept. for International Aids measure of community resilience. Performance and progress will be reported annually to our User Group	Metric will be the Government's Digital, Data and Technology Profession (DDaT) framework for measuring the capability of CESS	The proposal to use this health check provides a clear and measureable outcome.
Allow comparison of performance across companies, where there is sufficient commonality	This could become a common incentive and the same performance measures used.	This could become a common incentive and the same performance measures used.	This could become a common incentive and the same performance measures used.
Where relevant, capture the long-term nature of outputs.	The measurement scale provides the ability to reassess a communities resilience on an enduring basis.	Connection of the community scheme will be the demonstrable goal.	This audit will be conducted annually
Set stretching targets which are well-evidenced and deliver clear outcomes/outputs	This is an innovative proposal that has not been deployed previously but has clear outcomes and outputs that will demonstrate effectiveness	This is an innovative proposal that has not been deployed previously but has clear outcomes and outputs that will demonstrate effectiveness	Within this standard, we aim to achieve a 'Mature' status score of above 76 out of 100. This has only been achieved by 7% of companies globally.
Deliver clear consumer value	The resilience and improved restoration of all consumers is of importance as the dependency on electricity for heating, transport as well as lighting becomes more	The value is in the increased likelihood of getting a community scheme connected. Positive CVP calculated - see Annex 30	Stakeholder engagement is a key enabler to ensuring we are meeting the needs of our parties interested in or affected by our activities but do not have a direct

	widespread. No one should be left behind by the energy system transition. Positive CVP calculated - see Annex 30		connection to our network. Positive CVP calculated - see Annex 30
<b>Whether the activity in question is best dealt with through the price control, rather than through a government body responsible for the public interest in that area (e.g. Highways Authorities for matters relating to the occupation of the highway)</b>	The specific nature of the resilience and restoration due to a network issue is consistent with the scope of our the RIIO framework	The connection of community schemes is consistent with the scope of our the RIIO framework and the increasing impact of transmission constraints on these scheme highlight the need for this whole system thinking	stakeholder engagement is a fundamental element of the RIIO framework
<b>Whether proposals are backed by robust evidence and justification (such as cost-benefit analyses) and demonstrate value for money for existing and future consumers</b>	This is a new low cost opportunity to develop knowledge with a cap on potential revenue that will be assessed year on year by the User group. Refer to our CBA appendix for evidence of Net benefit.	This is a new low cost opportunity to develop knowledge with a cap on potential revenue that will be assessed year on year by the User group. Refer to our CBA appendix for evidence of Net benefit.	This is not primarily a cost based incentive but provides drive and focus that leads to better outcomes for consumers. Refer to our CBA appendix for evidence of Net benefit.
<b>The value that consumers will receive from a proposed new service level and, by extension, the potential associated reward and/or penalty, and the extent to which these are symmetrical, in terms of value and likelihood of outcome</b>	Consumers will benefit from the greater resilience and reduced restoration times for vulnerable communities	Consumers will benefit from the successful connection of a low carbon community energy scheme potentially quicker and more efficiently.	Consumers will benefit from the increased quality and effectiveness of our engagement.
<b>The extent to which an independent measure of the existing level of service that consumers receive is available and the degree to which the target level being proposed represents an improvement on this</b>	Proposed Dept. of International aid scale is objective measure that can demonstrate a rising level of resilience	the Government's Digital, Data and Technology Profession (DDaT) framework provides an objective and provides a leading measure in support of the ultimate evidence of the scheme connecting	The AA1000 standard is a globally recognised standard for stakeholder engagement.
<b>The level of service provided by other companies/comparators (where available)</b>	We believe this is leading edge proposal.	We believe this is leading edge proposal.	We believe this is leading edge proposal.
<b>The activities (and indicative cost) associated with achieving the targeted level of service</b>	as above	as above	as above
<b>Proposals for licence conditions and/or penalties if performance falls below existing service levels</b>	not applicable	not applicable	not applicable

## ENS Performance In Respect Of Short Term Outage Management And Impact On Demand Customers

<b>Ofgem Business Plan Guidance</b>	<b>ENS for Distribution Customers</b>
<b>Reflect the network services that existing and future consumers/network users and/or wider stakeholders require</b>	No1 priority for consumers who responded to the joint willingness to pay study conducted by "Explain" Qualitative review of Transmission Willingness to Pay August 2019 Top 3 priority area for based on evidence from our latest Annual stakeholder survey (annex section 2.4)
<b>Be as complete as possible in capturing the activities and costs of the company</b>	Process and examples described in "Appendix 1 ENS Methodology and Risk Mitigation Examples. Costs identified for one of the projects (Erskine) and laid out in our annex (section 4.4)
<b>Be measureable and reportable</b>	Going forward should this incentive mechanism be approved we would ring fence future contingency costs and report to our User group on an annual basis)
<b>Allow comparison of performance across companies, where there is sufficient commonality</b>	We will present future CML and CI figures caused by Transmission incidents and compare these to our historic performance. Other TO's can present similar figures as CML and CI are reported by DNO's for each transmission fault. However, comparison is not relevant due to different network arrangements and background demand and generation profiles.
<b>Where relevant, capture the long-term nature of outputs.</b>	ENS, CML and CI do provide measures of reliability that have been established for a significant time period.
<b>Set stretching targets which are well-evidenced and deliver clear outcomes/outputs</b>	Targets are measured using historic ENS, CML and CI performance. Level of risk could be used as a secondary indicator as this informs our historic decision making. Targets need to be considered against cost of removing ENS risk altogether so cap is set as a basis to build evidence case for future price controls.
<b>Deliver clear consumer value</b>	Positive CVP calculated - see Annex 30. "VoLL" provides the measure of consumer value.
<b>Whether the activity in question is best dealt with through the price control, rather than through a government body responsible for the public interest in that area (e.g. Highways Authorities for matters relating to the occupation of the highway)</b>	This is appropriate for incentivising under the price control as it is a development of the established ENS reliability incentive mechanism.
<b>Whether proposals are backed by robust evidence and justification (such as cost-benefit analyses) and demonstrate value for money for existing and future consumers</b>	Refer to our CBA Appendix F for evidence of net benefit and Appendix D for examples of RIIO-T1 events and mitigating actions present clear evidence of the implementation of the current ENS incentive. This proposal seeks to use a low cost capped mechanisms to target improvements in ENS for distribution customers. It also presents a basis for developing a measures for incorporating the impact of embedded generation on transmission faults as an alternative to estimating actual volumes of embedded generation.
<b>The value that consumers will receive from a proposed new service level and, by extension, the potential associated reward and/or penalty, and the extent to which these are symmetrical, in terms of value and likelihood of outcome</b>	Consumers value security of supply – we are targeting maintaining the existing level of reliability for a capped amount and less than incurred in RIIO-T1.

<b>The extent to which an independent measure of the existing level of service that consumers receive is available and the degree to which the target level being proposed represents an improvement on this</b>	<p>We can demonstrate a benchmark based on CML/CI as well as ENS as this would better reflect the impact on consumers of a transmission fault. We will report this annually to our User Group along with examples of what mitigation we are doing and the cost of this funded through the volume driver.</p> <p>Historic targets do not necessarily reflect future performance as the specific outages, and volume of work changes.</p>
<b>The level of service provided by other companies/comparators (where available)</b>	This incentive does target consumers in our area more than other network areas but the general contribution of these large and small demand customers impacts the whole of the economy whether through the services they provide or pay for from beyond our network area.
<b>The activities (and indicative cost) associated with achieving the targeted level of service</b>	capped at £1.5m to deliver reduction in risk exposure to distribution customers
<b>Proposals for licence conditions and/or penalties if performance falls below existing service levels</b>	We propose to report on performance to the User group annually and include the associated metrics as KPI's in a balanced scorecard supported by qualitative feedback on the ENS mitigation we have delivered. This would be an element of the assessment of performance and associated reward or penalty under the customer or stakeholder incentive mechanism.

### Optimising Network Availability for connected Generation

<b>Ofgem Business Plan Guidance</b>	<b>Optimising Network Availability for Connected Generation</b>
<b>Reflect the network services that existing and future consumers/network users and/or wider stakeholders require</b>	Our customer feedback has specifically highlighted the lack of an incentive for connected generators to go beyond baseline licence obligations. See Appendix B.
<b>Be as complete as possible in capturing the activities and costs of the company</b>	This incentive will drive proactive use of additional services beyond baseline licence requirements. Costs are uncertain as a range of services are proposed that will incur costs on a case-by case basis. We propose to capture these and report them to our User group as evidence and transparency for this incentive. The cap of £2.56m ensures consumers are protected from overspending.
<b>Be measureable and reportable</b>	Every instance of the provision of the range of services will be reported to the user group. Metrics for each will be calculated in terms of increased network availability, potential low carbon generation flowing in MWh and costs of delivering the service.
<b>Allow comparison of performance across companies, where there is sufficient commonality</b>	This incentive can be rolled out as a common incentive once its merits are established over this price control period.
<b>Where relevant, capture the long-term nature of outputs.</b>	The increase in low carbon generation and increasing ability to deploy increased network availability will deliver long term benefits.
<b>Set stretching targets which are well-evidenced and deliver clear outcomes/outputs</b>	this incentive is intended to establish the use of these services and reporting processes in the RIIO-T2 period. This can lead to evidence that can support stretching targets in future price controls
<b>Deliver clear consumer value</b>	Positive CVP calculated - see Annex 30. The increase in low carbon generation is the primary consumer value being delivered. A secondary benefit exists in lower constraint costs as increased generation is being allowed to flow.



<b>Whether the activity in question is best dealt with through the price control, rather than through a government body responsible for the public interest in that area (e.g. Highways Authorities for matters relating to the occupation of the highway)</b>	Network availability is a service provision that only network companies in conjunction with the NGENSO can provide, and is a primary output of the RIIO framework.
<b>Whether proposals are backed by robust evidence and justification (such as cost-benefit analyses) and demonstrate value for money for existing and future consumers</b>	See CBA Appendix F for positive net benefit. The ability to provide these services is tried and tested but measurement and proactive incentives are required to increase and improve the extent of their application. The risk network companies of delivering these tuples of solution includes stressing our assets, and additional costs which are currently unfunded or there is uncertainty of funding route.
<b>The value that consumers will receive from a proposed new service level and, by extension, the potential associated reward and/or penalty, and the extent to which these are symmetrical, in terms of value and likelihood of outcome</b>	Generators forecast the value of increasing network availability as £100/MWh. Consumers will benefit from the increase in low carbon and reduction in constraint costs.
<b>The extent to which an independent measure of the existing level of service that consumers receive is available and the degree to which the target level being proposed represents an improvement on this</b>	The NGENSO may be in a position to support the reporting of increase MWh of potential low carbon generation. Historic network availability levels are reported annually by network companies through the "C17 Annual System Performance report". Multiple factors affect this measure so although they present a view they are not necessarily sensitive enough to capture the increase in these service going forward.
<b>The level of service provided by other companies/comparators (where available)</b>	this could be rolled out as a common incentive in future price controls should the benefits be demonstrated effectively in RIIO-T2.
<b>The activities (and indicative cost) associated with achieving the targeted level of service</b>	The activities are explained in the narrative but future costs are uncertain.
<b>Proposals for licence conditions and/or penalties if performance falls below existing service levels</b>	These are services being provided above current levels

### Whole System ESO-TO Framework

<b>Ofgem Business Plan Guidance</b>	<b>Whole System ESO-TO Constraint Mitigation</b>
<b>Reflect the network services that existing and future consumers/network users and/or wider stakeholders require</b>	Reducing constraint costs is a clear ambition for consumers and connected parties including generators who are directly affected by variable BSuOS.
<b>Be as complete as possible in capturing the activities and costs of the company</b>	Reporting by the NGENSO shows that annual constraint costs in Scotland across the Cheviot (B6) boundaries was £210m.
<b>Be measureable and reportable</b>	We will report to our User group on annual basis on the project costs and reduced forecast constraint costs that could be achieved by implementing the

	solutions we are proposing.
<b>Allow comparison of performance across companies, where there is sufficient commonality</b>	Comparison against the proposals brought forward by other TOs can be made although as each project will be unique the scale of cost savings is not necessarily comparable.
<b>Where relevant, capture the long-term nature of outputs.</b>	The reporting of constraint costs is routinely made and potentially the impact of these solutions in future years could be identified on ENS reduction. However, the ability to quantify actual constraints for individual projects against a counterfactual of not doing this is not currently achievable. The forecast risk mitigation is the only justification for implementing the solutions..
<b>Set stretching targets which are well-evidenced and deliver clear outcomes/outputs</b>	Targets for the number of proposals brought forward should be reputational only as it is the prevailing outage patterns and background generation will give risk to opportunities, factors not all in the control of the TO.
<b>Deliver clear consumer value</b>	See CBA annex 30 for positive net benefit. Reduced constraint costs will bring direct benefits to consumers and BSUoS payers.
<b>Whether the activity in question is best dealt with through the price control, rather than through a government body responsible for the public interest in that area (e.g. Highways Authorities for matters relating to the occupation of the highway)</b>	This incentive needs the support of the NGESO and is appropriate for inclusion within the RIIO2 price control. A similar or parallel incentive could be required within the NGESO incentive framework.
<b>Whether proposals are backed by robust evidence and justification (such as cost-benefit analyses) and demonstrate value for money for existing and future consumers</b>	See our CBA annex F. Examples included in our incentives annex of a type of project that could be brought forward to reduce the risk of constraint costs.
<b>The value that consumers will receive from a proposed new service level and, by extension, the potential associated reward and/or penalty, and the extent to which these are symmetrical, in terms of value and likelihood of outcome</b>	Mechanism links constraint costs savings to asset based solutions to reduce overall whole system costs bringing value to consumers by contributing to reducing bill impact.  The mechanism is asymmetric with no penalty but a 1% reward of value of the potential risk of constraint costs being incurred and passed onto consumers.
<b>The extent to which an independent measure of the existing level of service that consumers receive is available and the degree to which the target level being proposed represents an improvement on this</b>	The NGESO can verify that no solutions have been accepted to date under the STCP 11-4 mechanism. The historic constraint costs are evidenced in the publicly available NGESO reports
<b>The level of service provided by other companies/comparators (where available)</b>	this can be clearly evidence going forward in conjunction with the NGESO
<b>The activities (and indicative cost) associated with achieving the targeted level of service</b>	The level of costs are capped by the STCP 11-4 process
<b>Proposals for licence conditions and/or penalties if performance falls below existing service levels</b>	Risk of failure by TO's is to not deliver the proposed solutions on time or at all if they have been funded for the works through the mechanism. A logging up mechanism to return any incentive or costs recovered with no evidence of completing this works at the end of the price control can be developed.

### Additional Contributions to the Low Carbon transition

Ofgem Business Plan Guidance	Additional Contributions to the Low Carbon transition		
	Maximising supply chain sustainability	Accelerating adoption of low carbon fleet	Delivering biodiversity net gain initiatives
<b>Reflect the network services that existing and future consumers/network users and/or wider stakeholders require</b>	This initiative will help us to drive additional environmental improvements by allowing our supply chain partners to apply their expertise and experience to our projects. Our recent life cycle assessment pilot indicates that activities in our supply chain may represent over 70% of the total carbon impact of our network and operations.	Our business has signed up to The Climate Group’s EV100 initiative. This is a global initiative bringing together forward-looking companies committed to accelerating the transition to electric vehicles (EVs) and making electric transport the new normal by 2030. Under the agreement, we will fully electrify our vehicle fleet a total of 64 vehicles by 2030, For the RIIO-T2 period, we will create a defined programme for decarbonisation of our fleet to meet our 2030 target. As this programme is implemented, we will look for opportunities to accelerate our transition to low carbon vehicles.	Our stakeholders have emphasised the value of us enhancing biodiversity at our sites where operationally appropriate to do so.
<b>Be as complete as possible in capturing the activities and costs of the company</b>	This cover the full extent of our supply chain where they can deliver environmental improvements	Costs and activities are clearly understood.	Our aim in RIIO-T2 is to work with our local communities, landowners and other stakeholders to deliver ‘no net loss’ in biodiversity and natural capital across our Business Plan activities and a net positive impact in biodiversity and natural capital across our existing sites.
<b>Be measureable and reportable</b>	We will report on progress and performance to our User Group on an annual basis and seek to develop effective measure to assess the impact and extent of these,	We will report annually to our User group on the extent to which we are delivering ahead of our baseline	We collaborate with our stakeholders and other Transmission Operators to develop and pilot a common approach and robust methodology to measure and drive improvements in biodiversity and the value of

			natural capital.
<b>Allow comparison of performance across companies, where there is sufficient commonality</b>	There may be ways to carry out benchmarking that we will seek to do over the price control period.	there can be comparisons against other companies as this is a generic area	the achievement of a common approach as above will enable benchmarking cross companies although topology and network configuration are bespoke to each company
<b>Where relevant, capture the long-term nature of outputs.</b>	Driving environmental improvement capability in our supply chain will support the low carbon energy system transition potentially delivering low carbon benefits for full asset lifetimes	the low carbon improvements of a 100% EV fleet once achieved will be an enduring benefit	
<b>Set stretching targets which are well-evidenced and deliver clear outcomes/outputs</b>	This incentive will drive new initiatives and measurement methodologies	Our baseline target of 64 vehicles, 100% of our fleet, is clearly set out	we will report to our User group the potential benefits our biodiversity initiative are intended to achieve and monitor them over time
<b>Deliver clear consumer value</b>	See CVP Annex 30 for positive benefit. We will report on the initiatives and benefits on an annual basis and demonstrate consumer value on a case by case basis	See CVP Annex 30 for positive benefit. This will increase our contribution to GB carbon footprint reduction and contributing to improved air quality.	See CVP Annex 30 for positive benefit. Biodiversity net gain supports GB climate change targets.
<b>Whether the activity in question is best dealt with through the price control, rather than through a government body responsible for the public interest in that area (e.g. Highways Authorities for matters relating to the occupation of the highway)</b>	The scope of this incentive is based on our existing supply chain delivering outputs and services that are essential for us to deliver our licence obligations hence fundamental to this price control	The scope of this incentive our transport fleet essential to delivering outputs and services that are essential for us to deliver our licence obligations hence fundamental to this price control	Minimising the environmental impact of our activities is a fundamental objective of the RIIO framework
<b>Whether proposals are backed by robust evidence and justification (such as cost-benefit analyses) and demonstrate value for money for existing and future consumers</b>	We have clearly established the need and opportunity and this incentive will drive the environmental benefits consumer value	obstacles remain to implementing this proposals including EV range, operational need for responding to black out situations, market readiness for certain vehicle types	We have clearly established the need and opportunity and this incentive will drive the environmental benefits consumer value

<p><b>The value that consumers will receive from a proposed new service level and, by extension, the potential associated reward and/or penalty, and the extent to which these are symmetrical, in terms of value and likelihood of outcome</b></p>	<p>This incentive could establish baseline performance and measurement systems that may be able to be used to set targets in future price controls.</p>	<p>increasing our contribution to GB carbon footprint reduction and contributing to improved air quality.</p>	<p>This incentive could establish baseline performance and measurement systems that may be able to be used to set targets in future price controls.</p>
<p><b>The extent to which an independent measure of the existing level of service that consumers receive is available and the degree to which the target level being proposed represents an improvement on this</b></p>	<p>Our recent life cycle assessment pilot indicates that activities in our supply chain may represent over 70% of the total carbon impact of our network and operations.</p>	<p>We have presented our 2030 commitments as our baseline and we will report our performance in accelerating this target.</p>	<p>Achieving biodiversity net gain is a new commitment beyond historic performance</p>
<p><b>The level of service provided by other companies/comparators (where available)</b></p>	<p>not known</p>	<p>not known</p>	<p>not known</p>
<p><b>The activities (and indicative cost) associated with achieving the targeted level of service</b></p>	<p>not know but will be established through the implementation of this incentive</p>	<p>not know but will be established through the implementation of this incentive</p>	<p>not know but will be established through the implementation of this incentive</p>
<p><b>Proposals for licence conditions and/or penalties if performance falls below existing service levels</b></p>	<p>This incentive will drive performance above existing service levels</p>	<p>This incentive will drive performance above existing service levels</p>	<p>This incentive will drive performance above existing service levels</p>

## **APPENDIX B – CONSUMER, NETWORK CUSTOMER & WIDER STAKEHOLDER FEEDBACK**

We have used this feedback to define our outputs and a set of inputs (our ‘commitments’) we want to deliver for our customers.

### **Purpose of engagement in relation to Incentives**

Output incentives when they are constructed effectively drive the priorities that customers and stakeholders want and that consumer benefit from. It is therefore paramount that we listen to our network users (connected/connecting customers), stakeholders and consumers to ensure we have identified the right incentive packages. Given the wide-ranging nature of our stakeholders, their priorities can also be different and sometimes conflicting. Strategic engagement allows us to understand variance in opinions. Incentives are funded by consumers and so we must balance that burden with the aspirations of customers to improve our service level to them. The value of effective output incentives is that they drive cost-efficiencies and wider benefits for everyone. Our goal for RIIO-T2 has been to identify the right incentives to help us continue to maximise benefits for network users, consumers and wider-stakeholders alike as we continue to facilitate Net Zero.

### **Why and how we engaged with Consumers, Network Customers and Wider Stakeholders**

Throughout 2018 and 2019 we have engaged with our network customers at large, well-established industry events where we have hosted round table discussions and presented our RIIO-T2 incentive plans. We took this approach to minimise the time burden on customers to attend additional events, reduce engagement costs and maximise feedback from these stakeholders. These events include the National Grid Connection Seminars, our Annual Connection Summit and the “OC2” Forum. In addition, we also held numerous bilateral discussions with developers and connected parties. Key to our engagement was also our bilateral discussions with wider stakeholders including the Scottish Government, Citizens Advice and Citizens Advice Scotland, SHE Transmission, NGENSO, NGET and Renewables UK. To ensure that our plans were open to public scrutiny, we also conducted an online consultation on Incentives during May to June 2019. New to RIIO-T2, we also engaged extensively with the User Group at each phase of the development of our incentives.

The feedback we captured is provided as follows:

### **Customer Feedback from Industry Events**

Hosted roundtable discussions with generation developers as part of the NGENSO Customer Seminars event in October 2018 captured these comments:

- 90-day offer period OK, but more transparency would be better – Distribution offers set a benchmark here. Pre-application engagement could be better and would make a big difference.
- Justification for commissioning dates in an offer are standard timescales but can be varied post offer – this can change the business model so it’s better to have accurate dates up front – and also for mod-apps. Feasibility studies to inform offers and mod-apps would be valuable. This could involve on site surveys and assessments.
- More engagement in the offer period would be helpful.
- The quality of the offer is the most important so if extending the offer period would improve the quality that would be helpful. 60/90/120 days makes little difference
- Feasibility studies may be helpful. Early warning of costs would be helpful to avoid triggering offer process to find out a connection is untenable; but balanced by robustness of costs if a quick and dirty estimate is used.
- Certainty on energisation dates is important to developers. Delays are frustrating so engagement is important at the earliest sign of delay. Key milestones achievement would be reassuring to have sight of.

At a similar event in March 2019 we met with more generation developers:

- Better visibility of existing connection applications would help identify were opportunities were for connection. An accurate TEC register would be valuable.

- Awareness of system Outage plans that affects his connection is essential to minimise impact and avoid high generation periods
- Better transparency, breakdown and explanation of costs in the connection offers they receive. For example, an explanation of protection schemes value and the extent these scheme are shared with other connecting parties.
- Inconsistency in costs are sometimes evident in the BCA they receive from NGESO and the
- Positive developments would be more upfront information as to high optimal capacity for connecting at certain locations, what realistic timescales are but short of full feasibility study.
- They have been frustrated with obligations to extend a substation which requires planning permission but the size and position of the land they require to secure has not been provided by us.
- The ability to adjust MW capacity in the offer process would make a big difference and the ability to avoid mod-apps very beneficial.
- Cost of connection assets are too high and we need to find ways to bring them down for a subsidy free world and to reduce consumer costs.
- Revise our connection design/operational connection arrangements to allow use of shared bay/site.
- This could introduce contestability similar to competition in connections at distribution. An opportunity to propose additional competition arrangements.
- Introduce bespoke design compared to standard design to shoe horn connection to the site capacity and optimise
- Roll out real time thermal monitoring to optimise use of assets and reduce redundancy in design

### SPT Annual Connection Summit

In December 2018 we asked delegates the following questions at a roundtable discussion at our annual connection summit:

1. Do you agree the quality of the connection offer is more of a priority than shorter offer period?
2. What are your views on how the quality of the offer process be improved?
3. What are your views on how pre-application engagement could be enhanced?

14 feedback forms were returned on the day with which highlighted the following messages:

- 63 % agreed the quality of the connections offer was more important than the time to offer.
- In terms of quality offers more or improved engagement and communication is seen as key to ensuring the “right” solution is offered, with no surprises at the post offer stage. Early engagement was emphasised as helpful and a suggestion that more time was needed to allow development of robust programme. Fewer post offer queries were identified as a measure that offers are “quality” offers. A couple of respondents highlighted that meeting the current statutory timescales can lead to less than optimum solutions and that “stopping the clock option” might be beneficial in certain circumstances.
- The pre-app process could be enhanced with more robust technical data such as circuit loadings and transformer flows, including suggestion to publish load flow system model annually; more design involvement, real solution optioneering with design and delivery; more online tools such as heat maps, generic programmes were suggested.

#### Key messages we took from the above feedback for developing the quality of our connection process:

*Better quality and accuracy on data; more up-front engagement and ability to identify optimum connection sites and design; an online platform is important for connections*

Some highlights are:

Timely connection penalty should remain to ensure focus on delivering offers remains. However, longer offer for more complex projects would be acceptable if this improved the quality. Quality of the offer is critical. Securities need to be accurate and no change due to errors. Over securing is bad for developers. Transparency on costs is also important.

Better engagement throughout the offer period should result in no surprises at the end,

Cost assumption breakdowns would be more helpful than lump costs for works, also connection route assumption maps

There should be a pre-application design meeting with applicants, prior to submission



## Bilateral Engagement August 2019 with Connections Developer

We met informally with representatives from the wind farm community to explore our proposals for responding to the feedback we have already received regarding the lack of incentive to provide reliability and network availability for generation. The agreed conclusions of the discussions were:

- Network companies have traditionally focussed on maintaining energy supply for end consumers. Current financial output incentives strengthen that focus. That is the right thing to do but what you've correctly identified is that there are no incentives which drive network companies to proactively explore options to keep low carbon generation (which may be on single circuits by choice) on the network instead of interrupting the generator's export when the network is constrained.
- Interrupting export has tended to be the 'default' action in such circumstances and you would like to see a financial incentive which changes behaviours so we more actively consider steps we can take to keep low carbon generation (LCG) on the system. For example, a desirable outcome from the incentive would be for us to apply a degree of risk management to circuits with LCG on the end of them when operating a constrained network (an approach similar to that applied for demand connected to the system). Another 'input' behaviour driven by this incentive could be further consideration of how we might minimise the duration of outages impacting LCG.
- You would also support a financial incentive that drives network companies to connect LCG ahead of required reinforcement to the network. The behavioural change from such an incentive could be that network companies employ more sophistication in how the network is operated to provide interim export capacity for LCG.
- From your perspective, these are incentives which promote the transition to a low carbon energy system. The opportunity cost for a windfarm unable to export is around £100/MWh and that brings the economic harm to LCG into sharp focus.

## Annual Stakeholder Survey

Our most recent annual stakeholder survey was undertaken in December 2018 covering the period for 2018/19. The survey includes both quantitative and qualitative opportunities for stakeholders to provide feedback on their levels of satisfaction with us. We differentiate between stakeholders to better understand their feedback and be able to respond to it.

Some of the feedback we received has informed our thinking and plans for RIIO-T1:

They also provided qualitative responses including:

Feedback from our Annual Stakeholder Survey	Stakeholder Category
<i>"It comes down to connection dates, that's the key thing; to bring them forward rather than pushing them back"</i>	Connecting to the Network
<i>"Maybe more transparency on connection for wind farms. Programmes informing of all connections"</i>	Connecting to the Network
<i>"Give us earlier connection dates"</i>	Connecting to the Network
<i>"On a number of occasions people have come onto the call that we were really expecting them to have answer to the question and haven't been fully prepared. I'm thinking about design engineers and you know, it's been like oh well what the point of having a call when someone didn't have background information to hand. It would be better to say can we push that back"</i>	Connecting to the Network
<i>"The only thing is any delays be relayed to us. If there are any delays on their part, it is up to SP Transmission to update us and change that before the trigger date, and that is key. They need to take the initiative"</i>	Connecting to the Network

<i>to change the date and that needs to be before the trigger date. I understand it could be delayed"</i>	
<i>"One thing I've found and it's worth feeding back, when we apply for transmission offers, our contract is with National Grid, and SP Transmission have to feed info into that and I have found on a number that connection dates have been wrong or information hasn't been fully fed through."</i>	Connecting to the Network
<i>I do think it would be useful during the connection process if there was a point in time where they could discuss different options. I suppose that could be a discussion at the pre-meeting but not after the application process as sometimes there aren't multiple options any more. Sometimes there is only one option but sometimes there are multiple options</i>	Connecting to the Network
<i>Keep us more informed with where we are with planning, surveys, etc.</i>	Connecting to the Network
<i>More upfront visibility regarding network outages coming up; I appreciate that is sometimes through National Grid. We technically deal with National Grid but from time to time we deal with SPT and we have direct contact with them. It would be good to understand who we should be speaking to at what points</i>	Connected Customer
<i>I think some of the time between communications; there have been a number of meetings with Stakeholders and in between it has been a while to get answers to questions asked. A more prompt response that may help the process</i>	Connected Customer
<i>"More regular contact I think via phone &amp; better visibility of planned works"</i>	Connected Customer
<i>"I think they could improve their communication channels for example I receive a lot of updates and newsletters from other transmission owners including National Grid. I think it's very unlikely to get a wider email from SPEN telling me or regarding any information on what they have been doing and connections have in the pipeline. I want to be more informed and on their distribution list. I have been in the industry more than two years and I have received a lot of information from district operators. SPEN need to more assertive on communication channels perhaps. Their distribution list keeps changing and I am not receiving emails as I used to."</i>	Connected Customer
<i>"They could be doing more. To be fair they have helped at any point I have asked them. We could do more as a partnership. They could arrange site visits. They do workshops and things in Dumfries but it's quite a bit away from us so it's not accessible for our young people. They should work together more on the things like that"</i>	Impact on the Community
<i>Been on top of the contractors to make sure they were keeping to their hours. There should be no Sunday working or working after 7:00pm. They were on site at 6:00am, there was not very much noise, just once or twice tooting their horn. It was not much of a problem but it shouldn't happen. "</i>	Impact on the Community
<i>"I didn't know the website existed. Health and safety stats and initiative; environment initiative and stats and reports and that sort of thing would be helpful."</i>	Supply Chain

**Key recommendations our external survey provide we took from the survey feedback from our Annual Survey:**

For application, development and delivery respondents, having consistently good quality information in portfolio meetings, clear explanations for connections dates and a clear explanation of what elements make up costs will help to improve overall satisfaction scores.

Improving communication, providing earlier connections dates and improving timescales will increase satisfaction scores amongst connecting to the network respondents.

Improving engagement and working more collaboratively were areas cited for improvement by respondents throughout all five survey areas, therefore exploring ways to improve interaction with stakeholders and make them feel more closely involved with SP Transmission and informed of your current priorities will help towards seeing a continued increase in overall satisfaction scores.

## Online Survey March to June 2019

We published on our website a set of incentive consultation documents explaining the background and purpose of incentive regulation and what stakeholders wanted us to prioritise in RIIO-T2. We received some feedback from this exercise against a set of questions summarised as follows (note respondents' identity/company are redacted for reasons of confidentiality):

**Are there any of our transmission related issues that you would especially like to hear about?**

*Network investment plans and also non-build solutions*

**Are there any priorities you would like us to focus on in RIIO-T2 period?**

*Upgrade of GSP transformers to full reverse power ratings will assist in providing opportunities for new connections for many of our projects.*

**If so, what would you like this engagement to achieve for you?**

*The engagement helps us assess site viability and helps make sure that the offer received is as expected. We are generally happy with the engagement from SPT prior to formal application*

**Would you value increased visibility, engagement or communication with us on these safety related matters?**

*Yes, more visibility and transparency would be welcomed. As mentioned above, we think that we have not being included in distributions list as we currently do not receive information in these topics.*

**What has been your experience of any planned network outages that have affected you?**

*We would appreciate more information in advance of the outages in order to be able to account for the impact on production budgets.*

**What are your views on how the Network Access Policy could be developed to improve performance in this area further? For example, would you value; More engagement and communication with us in respect of planned outages? Better visibility and reporting of our outage performance including identification of a KPI to demonstrate impact on constraint costs?**

*Without a doubt – we have been asking for this for a number of years. We believe both examples will improve engagement and quality. We would also appreciate KPIs are designed around loss production and costs incurred by generation customers in alignment with Energy Not Supplied and network reinforcement costs.*

**Would you value more engagement and communication with us in respect of planned outages?**

*Yes*

**Would you value better visibility and reporting of our outage performance including identification of a KPI to demonstrate impact on constraint costs?**

*Yes*

**What are your views on reducing the risk of high constraint costs by introducing asset based solutions?**

*We are fully supportive of this approach and believe that bespoke cost benefit analysis should be undertaken to explore these options in order to reduce consumer's bills and facilitate renewable integration as soon as possible.*

**What are your views on introducing an incentive for the Successful Delivery of Large Capital Investment projects?**

*Given that there are no incentives and a unilateral ability for TOs to delay contracts, we have been on the wrong end of many delays and at cost to our business. Over the course of long delays, the cost to connect can also significantly increase. There is also no ability to 'fix-price' contracts with the TO (contrary to what NGENSO offer in England and Wales) therefore costs can spiral with no consequence to the TO but with an impact to the developer.*

**Are there any of our transmission related issues that you would especially like to hear about?**

*As a Renewables developer who operates in SPEN's geographical area, we have keen interest on transmission related activities by SPEN. We are interested in following issues: - Grid connections - Network outages (planned and unplanned) - Innovation projects - Queue management - Flexible connections - Load Management and Active Network Management schemes - Network resilience programmes - Renewable integration initiatives - Heat maps*

**What, if anything, can we do to improve our engagement and communication with you?**

*We would welcome our inclusion to the distribution lists for stakeholder events as we don't seem to be receiving information from SPEN activities across the year. We believe it would be useful to have a schedule of yearly events with rough dates in order to improve organisation and therefore increase/improve engagement. This may be an IT issue due to cyber security so we would welcome investigation into this*

**Are there any priorities you would like us to focus on in RIIO-T2 period?**

*We believe that focus on flexible connections could allow an increase of early connections and improve the performance of the existing LMS/ANM schemes to deliver reductions on emissions targets. We would also welcome more involvement and agility from SPEN regarding renewables integration and low system inertia management. SPEN's network in South-Central*

Scotland is key to deliver decarbonisation targets and we expect to see a keen and proactive engagement with the SO in order to find and trial the range of potential solutions to enable carbon free low inertia systems.

**What are your views on how the quality of the transmission offer process can be improved?**

We believe heat maps play an important role on delivering an added value to the potential customer. We would welcome heat maps to be provided on a recurrent basis. We also believe that the IT interface to manage heat maps should have a 'user-friendly' interface; allowing the customer to explore different locations, distances without losing sight of the network infrastructure. This is our experience from the world of distribution. Links with this information and that of the ESO's TEC register would help too.

**Do you value additional pre-application engagement?**

Yes

**If so, what would you like this engagement to achieve for you?**

Yes, we definitely do. This is invaluable, particularly due to the length of time it takes to secure a connection offer. More certainty about costs and connection timeframes

**What, if anything, can we do to improve our engagement with you through the connection delivery period up to, and including commissioning?**

For sites connected through flexible approaches, more information related to downtime, curtailments and trips will be necessary to built-up expectations from the customer and the TO. We believe there is enough information out there regarding the performance of LMS and ANM that could help us understand what the customer is signing to beforehand and therefore don't incur in false expectations. From the side of the TO, analysis of the performance data should help them understand whether the flexible scheme is under/over performing in order to create a best practice standard and implement lessons-learned in the future

**If you are an existing transmission connected customer, do you value the changes we have made to introduce bilateral meetings with our outage planning teams where we go through our year ahead outage plan?**

Yes, these changes have improved our relationship, knowledge and engagement around outages across the year. However, we believe there is still headroom for improvement in the amount and duration of planned and unplanned outages that our fleet has experienced in recent years. There are a considerable number of 'planned outages' that are scheduled in very short timeframes and were never included in the TOGA report with enough time in advance for our business to account for them. Equally, there are a number of unplanned outages that we believe could have been avoided, particularly around installed management schemes that operate unexpectedly. We have an ongoing concern that there are no real incentives for outages to be minimised outside of high level licence clauses between the ESO and TO. Equally, we have experiences significantly long outages on sites where we have opted for a single circuit connection where the length of outage is determined as 'reasonable'. There being no definition of reasonable means that the outage length can be 6 months plus. We consider this as significantly unreasonable.

**Is there anything more we can do to improve our communication and engagement with you in outage planning?**

Yes. We believe there is still work to be done regarding planning outages ahead of time in order to give the customer time to include them within budget. Every outage being planned within a quarter is considered an unplanned outage for us and therefore a loss on production that erodes our financial KPIs. As mentioned above, we continue to experience a high volume of within year outages which appear to have had the capacity to be planned year ahead but have not. For Q1 2018/19 for example, week 49 data was showing no outages. However, by the end of April we have experienced 26 planned outages that could not be included in our production budgets.

**Key messages we took from the online survey feedback:**

- Increase engagement throughout the connection process from pre-application to post commissioning is important to customers.
- Identifying and reporting on KPIs around loss production and costs incurred by generation customers in alignment with Energy Not Supplied and network reinforcement costs would be valued by customers.
- More information and better performance for customers connected on Load Management Schemes (LMS) would be welcomed.
- Digital information such as heat maps would help developers in the early stages of design.

## **Empowering the Connection Customer - Online Portal workshop July 2019**

We invited customers to review our proposals for implementing an online Connection Process, focused on our customers, where the whole request and project management for new connection can be done online. Our roundtable discussions captured the following feedback:

- Some Customers did not know about the existing SPT Investment Maps although these are visible on the website
- Customers that do know of them use Capacity Maps and in conjunction with DNO Maps, the TEC register and try to make assumptions.
- Suggestion to improve the current SPT Capacity Maps included providing additional layers functionality to show capacity available, future capacity available, contract position with these being updated quarterly. Details of the contracted positions, and ability to understand connections options such as “firm”, “non-firm” and commercial opportunities such as the forthcoming GEMS scheme. Also. Search functions on MAPS by locations and capacity
- Customers like our existing “TORI” Reports (quarterly) but again some can’t find on the website:
- Single points of reference – ensure the SPD & SPT maps are aligned at GSP and to include the TEC register.
- Some other general comments were that the SPEN website is confusing to navigate; our Charging Statement could be presented in a more user friendly way. Definitions on key processes would be useful and up front information to help new entrants to the market would be useful.

We then engaged in a detailed review of potential improvements and scope for a digital portal to facilitate our new PACE (Pre-Application Customer Engagement) process. Our Customers told us they would like to see functionality including:

Online applications and meeting organisation;

- A single System Briefing note (SBN) to simplify the initial application
- Auto validation of SBN's to improve on the 45% failure rate
- A portfolio view of all a customer projects with their status incorporating a document sharing system
- Status and progress of transmission owners development and delivery project milestones including land agreements , procurement and commissioning.
- Use of automated online signatures

We are already developing this portal and intend to run a pilot exercise in early 2020 with customers to further inform and test these proposals and have a platform ready for the start of RIIO-T2.

## **Customer Workshop at the Lighthouse Glasgow Sept 2019**

We invited customer and stakeholder audience who had a specific interest in our load and non-load plans to review our RIIO-T2 proposals in these areas. Directly connected customers and connection developers represented our customers, with Scottish Government, Citizens Advice, Heriot Watt University, Scottish Renewables and Community Energy groups also attending. We included a review of relevant incentives specifically our Energy Not Supplied incentive focusing on network reliability.

The event comprised two sessions, the first focusing on our network reliability and asset management proposals. This was supplemented with a presentation and proposal on our Energy Not Supplied incentive. We asked the following questions:

- What do you think of our RIIO-T2 proposals for Energy Not Supplied?
- What do you think of the current level of network reliability you experience?
- What do you think of the value you place on having a continuous supply of electricity?
- What areas we could to improve on, such as service levels and general engagement, in respect of ENS reliability?



Delegates provided feedback including:

- “Transparency of proposals is helpful. But, further thought needed on penalty aspect. Not clear how this will work.”
- “Network reliability is generally good. Issue are apparent when a feeder is taken offline due to limited capacity available in some areas (e.g. south side of Glasgow). Hugely important to railway to keep trains moving. If trains become trapped due to power outage, risk of passengers de-training onto track.”
- In terms of network reliability experience is Good. Most issues are distribution-related.
- In terms of the value of a continuous supply it is high, but not at any cost. Accept that the system may fail sometimes (rarely).

The second session in the afternoon focused on our investment proposals to meet the changing background generation and level of network upgrades and new connections we forecast we will need to deliver. This was supplemented by a presentation on our incentive proposals for increasing the flow of generation onto our network. We asked the following questions:

- Do you value our proposals for increasing low carbon generation flow: By delivering connections quickly and by reducing outages and providing short term capacity ratings?
- How should we develop these incentives for increasing low carbon generation?
- Financial or reputational incentive?
- Who should pay for the benefits that are achieved through such an approach?

Discussion included concerns that an incentive to deliver connections early could drive up costs and just be mitigated by initially proposing later dates. A reputational incentive was considered more appropriate. It was emphasised we should just give the right date and stick to it and that increased collaboration and communication would be valued.

### **Bilateral Engagement October & November 2019**

We conducted some specific engagement with customers following our October draft submission to further inform our final plans on Stakeholder Engagement PLUS. Particularly we were keen to understand:

1. Do you think that our Stakeholder Engagement PLUS proposals would bring value to stakeholders and consumers in RIIO-T2?
2. Do you think our Stakeholder Engagement PLUS proposal should be expanded or reduced to include other priorities or remove existing ones?

Feedback we received included:

*“The proposals seems very sensible and logical, especially like the engagement and awareness raising with CES aspect. The third element seems more around governance and good practice itself rather than stakeholder engagement (seems a measure of stakeholder engagement rather than engagement itself).”*

*“I think all ideas are credible and attempt to address areas where there is a genuine need.*

*1) On Community Resilience- this is something that SSEN (distribution) support through the SECV (RIIO 1) and it makes sense that SPEN made a similar offering in the South of Scotland (even if it is through the transmission part of the business).*

*2) On support for Community Energy Schemes – this again is an area where I think there is a need and it seems appropriate that SPEN support this type of initiative. This is particularly important if the focus can be on communities who do not currently have the capability or empowerment to enter the community energy space.*

*I think my only concern is whether the first two ideas are enough in the ‘stakeholder engagement’ space. They both feel like initiatives where there could be some overlap with the Net Zero Fund. That is my only concern and I suspect Ofgem may challenge this aspect too. I would also be interested to see if other stakeholder /customers supported these initiatives and whether there is any duplication with projects being funded through the distribution part of the business. (SPEN response: This is a good point. We have subsequently ensured that our Net Zero fund Criteria is clear that it will not fund any projects which fall within this category).*

## Qualitative review of Transmission Willingness to Pay

### Report 1: NERA and EXPLAIN Study

In early 2019 NERA Economic Consulting (NERA) and Explain Market Research (Explain) were commissioned by a consortium of the four Transmission Operators (TOs) in Great Britain (National Grid Gas Transmission, National Grid Electricity Transmission, SP Transmission and Scottish Hydro Electricity Transmission) to design, implement and analyse a series of stated preference (SP) surveys to estimate customers' willingness to pay (WTP) for improvements in the service provided by the TOs, domestic and non-domestic gas and electricity customers.

The two electricity surveys consisted of nine attributes related to the service provided by the TOs:

- Risk of power cuts;
- Time taken to recover from blackouts;
- Undergrounding of Overhead Lines (OHLs);
- Improving visual amenity of OHLs;
- Improving environment around transmission sites;
- Investing in innovation projects to create future benefits for consumers;
- Supporting local communities;
- Investing to make sure the network is ready for electric vehicle charging;
- Investing to make sure the network is ready to connect renewable generation.

Their report<sup>17</sup> concluded electricity customers are, on average, willing to pay for improvements in all attributes which were presented to them. The attributes that attracted the highest WtP values were:

1. Investing to make sure the network is ready to connect renewable generation.
2. Improving environment around transmission sites;
3. Investing to make sure the network is ready for electric vehicle charging
4. Risk of power cuts

The WtP values associated with these attributes were relatively high compared to our actual investment plans (circa £8 to £11 per annum for each attribute compared to our forecast of £4.43 per annum for our entire plan. However, the priorities for consumers are reflected in these results. For transmission investment our scenario planning has concluded that electric vehicle uptake alone will not constitute an increase in required capacity to trigger additional transmission investment in the RIIO-T2 period. The priority for this investment consumers have indicated may inform distribution investment.

We wanted to analyse these results further and in May 2019, we commissioned Explain consultancy to conduct a qualitative review of the areas (attributes) covered in SPEN's draft Transmission business plan, to help support understanding and provide an evidence base around the outputs of the TO Willingness to Pay (WtP) research.

Extracts from the final report most relevant to our output delivery incentive areas are included here as qualitative evidence of consumer views. For full details of the report see Annex 28: Strategy for Engaging Stakeholders.

### Views on Priorities – Ranking

A reliable transmission network was seen as an important foundation to SPEN's service:

- *"I put that as the top one, it's all about investing in the network, it has to be reliable"* (Dumfries, C1C2, 36-50)

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<sup>17</sup> Estimating Electricity and Gas Transmission Customers' Willingness to Pay for Changes in Service during RIIO2; April 2019; NERA Economic Consulting



- *“Reducing the risk of power cuts is super important I think because it affects everything overall, so I think that’s super important” (Dunfermline, C2DE, 51+)*
- Investing in innovation was ranked highly across all three groups;
- *“Innovation covers so many other aspects, so the environment, you’re reducing costs and reducing blackouts” (Dumfries, C1C2, 36-50)*
- *“My least is putting existing overhead lines underground, because obviously it’s important but everything else comes first. I think it’s all important, so I haven’t missed any out, but for me personally, all the others are necessary. We need it to keep our world, well the UK surviving. We’ve got good overhead lines as well”*

### A Reliable Transmission Network – Reducing The Risk Of Power Cuts

Focus group respondents understood this information and across all consumer groups, there was a consensus that this was an important area for investment. Respondents felt that it was important to allay consumer fears of power cuts, due to the negative impact having no electricity would have.

- *“I think as a customer, that’s an important thing because nobody wants to be without power. I think doing what they can to prevent that, as a customer, is a priority” (Edinburgh, ABC1, 18-35).*

Both consumers and stakeholders felt that it was core to SPEN and SP Transmission’s role to ensure reliability.

- *“In regard to the reliable supply, it is SP Transmission’s responsibility and in their best interests to have a reputable and reliable supply that’s available to the customers” (Stakeholder).*
- *“I think it’s core to the business. It is effectively the most important part of the business, so they have to manage it to the best of their ability and that’s what the job’s based on. I’ll agree that my reliability has improved significantly” (Dumfries, C1C2, 36-50).*
- *“The primary function of SP Transmission is to get electricity to the consumer safely and to maintain the service level that the consumers are used to” (Stakeholder).*

Additionally, some respondents commented that the video and information provided had caused them to think more about a service they’d tend to just ‘expect’ to run smoothly and typically take for granted.

- *“It’s just one of those things you assume will just be okay and is taken care of and it is really important to have a reliable company and that has made me wake up and think” (Dunfermline, C2DE, 51+).*
- *“I just wasn’t aware; I pay my electricity bill and can just switch on the light and don’t overthink about where it is coming from” (Dunfermline, C2DE, 51+).*
- *“I think it’s something we take for granted isn’t it? We think it’s something that won’t happen” (Stakeholder).*

### Improving the Environment Around Transmission Sites

All respondents in the consumer groups felt that looking after the environment was important and a majority agreed that investing in this area was a good idea.

- *“I think it is important because it discusses the environment and if we don’t look after the environment then there won’t be one to look after” (Dumfries, C1C2, 36-50)*
- *“Anything improving the environment is good” (Dunfermline, C2DE, 51+)*
- *“I think that if you have space around it then it should be used for nature. Let’s embrace it, if this is an ugly thing lets surround it” (Dunfermline, C2DE, 51+)*

There was mixed response as to whether consumers would pay more for this. Although some people said that they would, others wanted to know exactly how this would affect their bill.

- *"I would have to look at how that all affects the overall percentage and looking at the overall costs to where the split is going and if it's fair" (Dumfries, C1C2, 36-50)*

Additionally, some consumers felt strongly that if they were to pay extra on their bill then they would need reassurance that this was not tokenistic, and that metrics were in place to measure the impact this work was having, to demonstrably justify additional spend. One respondent suggested that a rise in the population of endangered species would be a reassuring sign that projects focussing on improving the environment around transmission sites were proving successful.

- *"If I was going to be satisfied to pay more so that SPEN could look after the environment around their sites, I want to make sure that it wasn't tokenistic and that they're actually something measurable that was happening. If you have got two or three beehives, that's great but is it just something for a PR stunt... I would say that if in the wild meadows if there were endangered wild species, especially in the Highlands, if the population is rising in these areas that would make me feel better knowing that these animals aren't dying" (Edinburgh, ABC1, 18-35)*

### Investing In Infrastructure To Connect Renewable Generation

Most respondents felt that this was an important area for investment, for the environment and provision for future generations. The majority (including all attendees in Edinburgh) felt that it was important to invest ahead of demand, in order to prevent roadblocks to projects which align with national priorities; it was noted that the targets set by government removes uncertainty that renewable generation will gain pace.

- *"You're getting pushed that way anyway, so this isn't something that might not happen, it's going to happen" (Edinburgh, ABC1, 18-35)*
- *"That's where it's ending up, the way things are going, with renewable. I know they're going with it even in the Scottish Parliament. They're talking about banning fossil fuel all together" (Dunfermline, C2DE, 51+)*

The majority were willing to see an increase in their bill for investment in infrastructure of this nature; this was reflected in the indicative willingness to pay exercises (results can be found later in this report).

Queries were raised in Dunfermline about the impact of renewable generation on the network, as they were of the perception that renewable energy sources take pressure off the network, and around why additional investment is needed if generators are also required to pay a connection fee.; both queries were clarified by the SPEN representative present.

Overall, stakeholders saw investment in infrastructure for connection of renewable generation to be important. It was considered by one to be a current blockage in rural areas, and this respondent wanted to see more use of local energy. One felt strongly that though renewable generation was important given climate challenges and government agenda, the spend should not come at additional cost to consumers, in light of current social challenges. This was supported by another respondent who noted a preference for a central government increase in funding to the networks.

- *"I'm not being blinkered and I'm not being ignorant. I realise these things are here and they should be utilised and there's a focus for it all, climate change, carbon emissions, carbon reduction, I get all of that. I just think that in the current scheme of things with the ongoing austerity, universal credit, fuel poverty, self-disconnection, I think that's one of the lesser things SP Energy Networks should be concerning themselves with... I don't think this is something that the consumer should have to pay for" (Stakeholder)*

### Investing In Innovation Projects To Create Future Benefits (Including Cost Reductions) For Consumers

A majority of both consumer and stakeholders engaged felt that investment in innovation projects was important for SPEN, as it was prudent for technology to progress and align with the changing needs of both the electricity system and wider operating environment.

- *"Innovation's there, you can't just sit still and hope for the best; it's got to go on and on" (Dunfermline, C2DE, 51+)*
- *"If you're not going to go forward and you're going to have the same type of technology then you're going to be stuck because everything else is going to move on and technology is going to get more advanced and the power and the strain on the system is going to get more advanced" (Edinburgh, ABC1, 18-35)*

- *“I think right now, given the rate of change in the energy systems on the whole, that’s an important thing to invest in, because the networks must be under huge pressure to get things right and there’s a big risk of stranded assets if they don’t” (Stakeholder)*
- *“UK infrastructure is never going to improve unless we do innovate, and without innovation we’re going to be stuck in a world where we’re causing climate change and we’re not moving forward. So, I think innovation is very important to move forwards as a society” (Stakeholder)*

Support was also expressed based on the potential for innovation projects to derive benefits for consumers in the long run, for example reducing bills, improving reliability of the network for future generations and supporting the economies in local areas.

- *“It can save us money in the long run as well. The more we put in the more we might be paying less for our electricity in 10-20 years’ time” (Dumfries, C1C2, 36-50)*
- *“I would contribute. Because you’re making things better, I’d contribute money so you can do it quicker” (Dunfermline, C2DE, 51+)*
- *“I think, going back to money, as the customer this seems better because you’re looking at ways of reducing your bill as well which is one of the things that I’m all for” (Edinburgh, ABC1, 18-35)*

## **Report 2: EXPLAIN (May 2019)**

In May 2019, Explain was commissioned by SPT to conduct a qualitative review of the areas (attributes) covered in our Transmission business plan, to help support understanding and provide an evidence base around the outputs of the TO Willingness to Pay (WtP) research<sup>18</sup>.

An online tool was developed which included videos taking respondents through explanation of who SP Transmission are and our plan, and included both closed and open questions. 243 domestic consumers completed the online tool face to face with an interviewer, and to date 530 domestic consumers completed the tool online via a panel and 493 business representatives have completed the tool online<sup>19</sup>.

In response to the question “Do you think it is a useful idea to incentivise companies to better deliver their targets?”

- *87% of face to face respondents said that they did think it was a useful idea to incentivise companies to deliver their targets.*
- *78% of online respondents said that they did think it was a useful idea to incentivise companies to deliver their targets.*
- *82% of business respondents said that they did think it was a useful idea to incentivise companies to deliver their targets.*

The survey included a question that states

**“We have estimated that the average cost of delivering our overall plan will be £4.43 per year of the average total electricity bill (£577 per year).”**

When considering areas of priority for SPEN’s Transmission business unprompted, a wide range of suggestions were made, from fundamental aspects of service provision such as safety and reliability of the network, to wider operating considerations such as Brexit and futureproofing the network with investment in new technology. Several respondent suggestions were reflected in the nine attributes chosen to explore in more depth.

In order to understand how much the audiences engaged valued each of the nine attributes, we asked both to complete two indicative ‘willingness to pay’ exercises – one unconstrained, i.e. they could allocate as much as they wanted. The second exercise use a constrained value of a £5.00 maximum total spend, based on the value of our forecast bill impact.

The try and gain an understanding of how consumers felt the 8% of the average electricity bill that all domestic consumers across Britain contribute towards transmission costs should be divided, we asked consumers to allocate spend. All

<sup>18</sup> SP Energy Networks, Qualitative review of Transmission Willingness to Pay, August 2019

<sup>19</sup> ID 1081 - SPEN Acceptability interim headlines

respondents were then asked to complete the same process, but this time with a constrained amount of £5.00. The results based on overall averages are presented in the table below:

**Table A1: WTP Consumer Priorities**

Attribute	Unconstrained	Constrained to £5.00
<b>1. A reliable transmission network – reducing the risk of power cuts</b>	£1.75	£1.08
<b>2. Investing in innovation projects to create future benefits</b>	£1.62	£0.86
<b>3. Investing in infrastructure to connect renewable generation</b>	£1.42	£0.82
<b>4. Recovering more quickly from blackouts</b>	£1.13	£0.71
<b>5. Investing in electric vehicle charging infrastructure</b>	£0.91	£0.53
<b>6. Improving the environment at transmission sites</b>	£0.88	£0.45
<b>7. Supporting local communities</b>	£0.62	£0.27
<b>8. Improving the visual impact of existing overhead lines</b>	£0.26	£0.13
<b>9. Putting existing overhead lines underground</b>	£0.19	£0.12
<b>Overall combined average spend</b>	£8.80	£4.97

All respondents engaged approached the nine attributes with prioritisation of functional investment, with consideration of those which were ‘essential’ (which included reliability of the network and quicker recovery from blackouts) versus ‘nice to have’ (which included improving the visual impact of existing overhead lines). There was concern for consumer bills and awareness that any increases should be considered in the context of rising fuel poverty.

The willingness to pay values for the unconstrained test suggests a value of £8.80 as the amount consumer might be prepared to pay for all these investments. This compares favourably to the estimated £4.43 impact on the average consumer bill our entire RIIO-T2 plan. Assessing the allocation of the £5.00 constrained approach the attribute priorities were replicated.

The contribution our output incentives could make to our overall costs in RIIO-T2 is only 7p per annum per consumer (based on average performance in RIIO-T2). Naturally, we have not used the above willingness to pay data to solely justify our investment plans. This is because, as we explain in our business plan, our investment plans have to be well justified in light of a wide range of factors such as good engineering practice. However, it is notable that we are investing in line with our consumers. The table below shows the mapping against each attribute against the value of each of our incentives that supports the relative allocation of our incentive values.

**Table A2: Mapping Consumer Priorities against our ODIs**

Incentive Mechanism	Output Name	Max penalty	Max Reward	Closest Attribute	Priority
<b>Common financial incentives</b>	Quality of Connections Survey	-3.45	3.45	Investing in infrastructure to connect renewable generation	3
	Energy Not Supplied	-6.42	2.03	A reliable transmission network	1
	Reducing Carbon Impact from Insulation and Interruption Gasses	-1.08	1.08	Improving the environment at transmission sites	6
	Timely Connections Offers	-1.73	0.00	Investing in infrastructure to connect renewable generation	3
<b>Network Reliability and Resilience Bespoke Financial delivery incentives</b>	Whole System ESO-TO Constraint Mitigation	0.00	2.28	Investing in innovation projects to create future benefits	2
	Optimising Network Availability for Connected Generators	0.00	2.56	Investing in infrastructure to connect renewable generation	3

<b>Additional Contribution to Low Carbon Bespoke Financial Discretionary incentives</b>	Maximising supply chain sustainability	0.00	1.73	Improving the environment at transmission sites	6
	Delivering biodiversity net gain initiatives			Improving the environment at transmission sites	6
	Accelerating adoption of low carbon fleet			Improving the environment at transmission sites	6
<b>Stakeholder Engagement PLUS Bespoke Financial Discretionary incentives</b>	Going Beyond Business as Usual Stakeholder Engagement	0.00	1.73	Investing in innovation projects to create future benefits	2
	Black Start Resilience of Consumers in Vulnerable Circumstances			4. Recovering more quickly from blackouts	4
	Community Energy Schemes Capability			Investing in infrastructure to connect renewable generation	3

The table shows our incentives correlate well with consumer priorities. We are proposing to focus on delivering a reliable network, reducing the risk of power cuts through our Energy Not Supplied incentive which is consumers' number 1 priority and the incentives we would be most penalised for not delivering against.

Our bespoke financial incentives for Whole System ESO-TO constraint mechanism will bring down consumer costs by reducing constraint costs which is a future benefit of the Investing in innovation projects attribute, the second highest consumer priority. Optimising Network Availability for Connected Generators is the third highest priority for consumers and is our strongest bespoke financial incentive.

### Learning from our Stakeholder Engagement

In summary, our consumers emphasised that their priorities for us are:

- A reliable transmission network – reducing the risk of power cuts
- Investing in innovation projects (including cost reductions) to create future benefits for consumers
- Connecting renewable generation
- Recovering more quickly from blackouts and
- Improving the environmental impact of our transmission sites are priorities for them they expect us to deliver.

For network customers a better quality offer and accuracy on data is important; more up-front engagement and ability to identify optimum connection sites and design. An online platform is essential for facilitating connections. They believe we should be subject to a timely connection penalty to ensure focus on delivering offers remains. However, the quality and detail of the offer is critical for example, securities need to be more accurate and not changed due to errors as over securing is bad for developers. Transparency on costs is also important and better engagement throughout the offer period should result in no surprises at the end. Cost assumption breakdowns would be more helpful than lump costs for works, also provision of assumed connection route maps.

The User Group has told us that we need to increase reliability for connected generators. We should be incentivised to drive better behaviours and we need to work harder to maximise network availability minimising interruptions so that more low carbon generation is flowing on to the network benefiting all of society. Stakeholders have emphasized that delivering projects on time is crucial and where we are late we should “feel the pain”. However, customers are also concerned that being incentivised or penalised for late delivery may not result in better outcomes for consumers. The clear message has been to “just make sure you deliver on time”.

Consumers, network users and wider stakeholders including the User Group have consistently told us that adding even 1p to a consumer's bill can have an impact on the most vulnerable consumers. We understand we cannot unnecessarily

burden consumers with additional costs unless there is a clear benefit to society and the economy as a whole. Our CVP analysis estimates that a positive benefit is being delivered by our proposals.

## APPENDIX C: OUR ODI COMMITMENTS

We have reviewed all the feedback we have had from our consumers, network customers and stakeholders and captured evidence of this this in Appendix B. This feedback is relevant to and informed our ODI proposals.

In response to this feedback we have identified a set of commitments for each output delivery incentive. These are incorporated in to the relevant section for each ODI in the main chapter and replicated here for completeness.

The table below presents the full set of commitments for each incentive we have identified so far. We expect these can evolve and be added to during the RIIO-T2 period in line with ongoing consumer, customer and wider stakeholder feedback. These commitments will be presented to the User group as to provide accountability, demonstrate performance and ensure progress and improvement in these and any future commitments.

**Table B1: Our RIIO-T2 Output Incentive Commitments**

Output Category	Description	Consumer, Customer and Stakeholder Feedback
<b>Category 1: Meet the Needs of Consumers and Network Users</b>	<b>Quality of Connection Survey</b>	
	We will build on our existing pre-application meetings and develop a range of pre-application connection engagement (PACE) services. We will examine the potential for co-designing with network customers at an early stage of the connections application.	<ul style="list-style-type: none"> <li>“I do think it would be useful during the connection process if there was a point in time where they could discuss different options. I suppose that could be a discussion at the pre-meeting but not after the application process as sometimes there aren't multiple options any more. Sometimes there is only one option but sometimes there are multiple options”</li> <li>“The pre-app process could be enhanced with more robust technical data such as circuit loadings and transformer flows, including suggestion to publish load flow system mod”</li> </ul>
	We will develop a digitised online connection portal to facilitate early stage analysis by customers, pre-application connection engagement, online application and ongoing project management from pre-application to post commissioning	<ul style="list-style-type: none"> <li>“Positive developments would be more upfront information as to high optimal capacity for connecting at certain locations, what realistic timescales are but short of full feasibility study”</li> <li>“Improve the current SPT Capacity Maps included providing additional layers functionality to show capacity available, future capacity available, contract position with these being updated quarterly. Details of the contracted positions, and ability to understand connections options such as “firm”, “non-firm” and commercial opportunities such as the forthcoming GEMS scheme. Also. Search functions on MAPS by locations and capacity”</li> </ul>
	As a measure of connection offer quality, we will report on the number and cause of post offer modifications that are attributable to our own actions.	<ul style="list-style-type: none"> <li>“Inconsistency in costs are sometimes evident in the BCA they receive from NGENSO”</li> <li>“Cost of connection assets are too high and we need to find ways to bring them down for a subsidy free world and to reduce consumer costs”.</li> <li>“One thing I've found and it's worth feeding back, when we apply for Transmission offers, our contract is with National Grid, and SP Transmission have to feed info into that and I have found on a number that connection dates have been wrong or information hasn't been fully fed</li> </ul>



	<p>We will improve the quality of our offers by providing:</p> <ul style="list-style-type: none"> <li>o more detailed cost breakdown information</li> <li>o milestone development and delivery plans</li> <li>o clear explanation of protection schemes</li> <li>o potential impact and degradation of network access.</li> </ul>	<p>through”.</p> <ul style="list-style-type: none"> <li>• <i>“Feasibility studies may be helpful. Early warning of costs would be helpful to avoid triggering offer process to find out a connection is untenable; but balanced by robustness of costs if a quick and dirty estimate is used”</i></li> <li>• <i>“The ability to adjust MW capacity in the offer process would make a big difference and the ability to avoid mod-apps very beneficial”.</i></li> <li>• <i>“Better transparency, breakdown and explanation of costs in the connection offers received. For example, an explanation of protection schemes value and extent of how this is shared with other connecting parties”.</i></li> </ul>
	<p>We will review the current obligations which require our design, delivery and construction information to be incorporated into a connection contract between customers and the ESO. We will work with the NGESO to identify if there are improvements that could be made.</p>	<ul style="list-style-type: none"> <li>• <i>“Justification for commissioning dates in an offer are standard timescales but can be varied post offer – this can change the business model so it’s better to have accurate dates up front – and also for mod-apps”.</i></li> <li>• <i>“Revise your connection design/operational connection arrangements to allow use of shared bay/site”.</i></li> <li>• <i>“Introduce bespoke design compared to standard design to shoe horn connection to the site capacity and optimise”</i></li> </ul>
	<p>For connected customers, we will provide earlier planned outage information, supplementing the formal processes provided to customers via the NGESO.</p>	<ul style="list-style-type: none"> <li>• <i>“Awareness of system Outage plans that affects the connection is essential to minimise impact and avoid high generation periods. We would appreciate more information in advance of the outages in order to be able to account for the impact on production budgets”</i></li> <li>• <i>“For sites connected through flexible approaches, more information related to downtime, curtailments and trips will be necessary to built-up expectations from the customer and the TO”.</i></li> </ul>
	<p>We will seek to increase the number of outages included in the year ahead plan and reduce those added to our within year plan. We will establish a set of outage metrics as part of NAP reporting ODI.</p>	<ul style="list-style-type: none"> <li>• <i>“We continue to experience a high volume of within year outages which appear to have had the capacity to be planned year ahead but have not. For Q1 2018/19 for example, week 49 data was showing no outages. However, by the end of April we have experienced 26 planned outages that could not be included in our production budgets”.</i></li> <li>• <i>“We believe there is still work to be done regarding planning outages ahead of time in order to give the customer time to include them within budget. Every outage being planned within a quarter is considered an unplanned outage for us and therefore a loss on production that erodes our financial KPIs”.</i></li> </ul>
	<p>We will publish an annual connections performance report which will incorporate a range of information. For example, the volume of applications and volume of contracted offers.</p>	<ul style="list-style-type: none"> <li>• <i>“We are interested in following issues: - Grid connections - Network outages (planned and unplanned) - Innovation projects - Queue management - Flexible connections - Load Management and Active Network Management schemes - Network resilience programmes -</i></li> </ul>

		<p><i>Renewable integration initiatives - Heat maps</i></p> <ul style="list-style-type: none"> <li>• <i>"I think they could improve their communication channels for example I receive a lot of updates and newsletters from other transmission owners including National Grid. I think it's very unlikely to get a wider email from SPEN telling me or regarding any information on what they have been doing and connections have in the pipeline".</i></li> </ul>
	<b>Stakeholder engagement Plus</b>	
To provide expert guidance and support for consumers in the least resilient communities to be able to respond to a black start scenario.		<ul style="list-style-type: none"> <li>• <i>"The proposal to actually measure the impact of the programme is good and the proposal to actively assist communities to interact with the energy sector is excellent, but, again, something on what you would actually do would be useful"</i></li> <li>• <i>"The most resilient communities tend to be those which have the highest level of community confidence, are well informed and are progressing a range of development options which they themselves have designed or developed in relation to the needs they have &amp; issues they face. External agencies such as SPEN could have a big impact by being demonstrably open to finding out about &amp; responding creatively to local plans".</i></li> <li>• <i>"On Community Resilience- this is something that SSEN (distribution) support through the SECV (RIIO 1) and it makes sense that SPEN made a similar offering in the South of Scotland (even if it is through the transmission part of the business)".</i></li> </ul>
To provide expert guidance and support to local community energy schemes impacted by transmission constraints to help them achieve their connection.		<ul style="list-style-type: none"> <li>• <i>"On support for Community Energy Schemes – this again is an area where I think there is a need and it seems appropriate that SPEN support this type of initiative. This is particularly important if the focus can be on communities who do not currently have the capability or empowerment to enter the community energy space".</i></li> <li>• <i>"The proposals seem very sensible and logical, especially like the engagement and awareness raising with CES aspect".</i></li> </ul>
Annually, carry out a rigorous AccountAbility healthcheck of our stakeholder engagement activity, leading to a performance level of 'Mature' status.		
	<b>Timely Connections</b>	
We will deliver every offer on time.. We will report on our average time to offer.		<ul style="list-style-type: none"> <li>• <i>"90-day offer period OK, but more transparency would be better – Distribution offers set a benchmark here. Pre-application engagement could be better and would make a big difference"</i></li> </ul>
We will agree the earliest energisation date and where we cannot meet the customer's preferred date, we will explain why it is the best date we can offer, providing them with a delivery programme.		<ul style="list-style-type: none"> <li>• <i>"Certainty on energisation dates is important to developers. Delays are frustrating so engagement is important at the earliest sign of delay. Key milestones achievement would be reassuring to have sight of"</i></li> </ul>

	<p>We will measure and report our performance in achieving the agreed energisation date and demonstrate the increase in low carbon intensity achieved against a baseline across our full portfolio of new connections over the price control period.</p>	<ul style="list-style-type: none"> <li>• <i>“You would also support a financial incentive that drives network companies to connect LCG ahead of required reinforcement to the network. The behavioural change from such an incentive could be that network companies employ more sophistication in how the network is operated to provide interim export capacity for LCG”.</i></li> <li>• <i>“Be on top of the contractors to make sure they were keeping to their hours. There should be no Sunday working or working after 7:00pm. They were on site at 6:00am, there was not very much noise, just once or twice tooting their horn. It was not much of a problem but it shouldn't happen”.</i></li> </ul>
<b>Energy Not Supplied</b>		
	<p>We will document and publish our policy and approach to mitigating the risk of Energy Not Supplied for RIIO-T2. We will implement this policy to reduce the risk of ENS for transmission and distribution demand and generation customers.</p>	<ul style="list-style-type: none"> <li>• <i>“Network reliability is generally good. Issue are apparent when a feeder is taken offline due to limited capacity available in some areas (e.g. south side of Glasgow). Hugely important to railway to keep trains moving. If trains become trapped due to power outage, risk of passengers de-training onto track.”</i></li> </ul>
	<p>We will mitigate the risk of ENS and Customer Interruptions (CI)/Customer Minutes Lost (CML) caused by our essential planned outages by targeted use of a funding mechanism up to a maximum value of £1.50m per year.</p>	<ul style="list-style-type: none"> <li>• <i>“In terms of network reliability experience is Good. Most issues are distribution-related”.</i></li> <li>• <i>“I think as a customer, that's an important thing because nobody wants to be without power. I think doing what they can to prevent that, as a customer, is a priority”</i></li> </ul>
	<p>We will measure our impact of ENS on the distribution network in customer minutes lost (CML and Customer Incidents (CI) in addition to ENS.</p>	<ul style="list-style-type: none"> <li>• <i>“In terms of the value of a continuous supply it is high, but not at any cost. Accept that the system may fail sometimes (rarely)”</i></li> </ul>
	<p>We will improve network availability for connected generation in respect of no supply and planned outage events and report on the potential increase in low carbon flow our actions achieve.</p>	<ul style="list-style-type: none"> <li>• <i>“Network companies have traditionally focussed on maintaining energy supply for end consumers. Current financial output incentives strengthen that focus. That is the right thing to do but what you've correctly identified is that are no incentives which drive network companies to proactively explore options to keep low carbon generation (which may be on single circuits by choice) on the network instead of interrupting the generator's export when the network is constrained”.</i></li> <li>• <i>“Interrupting export has tended to be the 'default' action in such circumstances and you would like to see a financial incentive which changes behaviours so we more actively consider steps we can take to keep low carbon generation (LCG) on the system”.</i></li> <li>• <i>“The opportunity cost for a windfarm unable to export is around £100/MWh and that brings the economic harm to LCG into sharp focus”.</i></li> </ul>

	<b>Health and Safety</b>	
	<p>We want to be more transparent and accountable to our consumers, network users and wider stakeholders and share our experience, learning and initiatives in a more focused way and so we will report annually on the health &amp; safety initiatives that we deliver. This will include updates on performance and track record, how we are managing operational risk and reducing harm.</p>	<ul style="list-style-type: none"> <li>• <i>"In our 2018/19 Annual stakeholder survey 'Maintaining safety' was the highest scoring priority area whilst 'expansion of their supply chain' was rated as lowest priority by respondents".</i></li> <li>• <i>"I didn't know the website existed. Health and safety stats and initiative; environment initiative and stats and reports and that sort of thing would be helpful"</i></li> </ul>
	<b>Network Access Policy</b>	
	<p>We will work with the other TOs through the Network Access Policy group to develop a more transparent approach to reporting to consumers, network users and wider stakeholders as part of the NAP incentive.</p>	<ul style="list-style-type: none"> <li>• <i>"Yes, these changes have improved our relationship, knowledge and engagement around outages across the year. However, we believe there is still headroom for improvement in the amount and duration of planned and unplanned outages that our fleet has experienced in recent years. There are a considerable number of 'planned outages' that are scheduled in very short timeframes and were never included in the TOGA report with enough time in advance for our business to account for them".</i></li> </ul>
<b>Category 2: Maintain a Safe and Resilient Network</b>	<p>Better Reporting: We will work with the other TOs through the NAP group to develop a more transparent approach to reporting to consumers, network users and wider stakeholders.</p>	<ul style="list-style-type: none"> <li>• <i>"More upfront visibility regarding network outages coming up; I appreciate that is sometimes through National Grid. We technically deal with National Grid but from time to time we deal with SPT and we have direct contact with them. It would be good to understand who we should be speaking to at what points"</i></li> </ul>
	<p>Better 3rd Party Engagement: We will work with the other TOs through the NAP group to clearly document the roles and responsibilities for the ESO and TOs in respect of engagement with third parties. We will also clarify procedures around outage planning notifications where required.</p>	<ul style="list-style-type: none"> <li>• <i>"Without a doubt – we have been asking for this for a number of years. We believe both examples will improve engagement and quality".</i></li> <li>• <i>"There are a number of unplanned outages that we believe could have been avoided, particularly around installed management schemes that operate unexpectedly. We have an ongoing concern that there are no real incentives for outages to be minimised outside of high level licence clauses between the ESO and TO"</i></li> </ul>
	<p>Better Performance Monitoring: We will work with the other TOs through the NAP group to identify relevant KPIs. We will also include these metrics where relevant in an annual report to the User Group..</p>	<ul style="list-style-type: none"> <li>• <i>"We would also appreciate KPIs are designed around loss production and costs incurred by generation customers in alignment with Energy Not supplied and network reinforcement costs"</i></li> </ul>
	<p>A Single NAP: We commit to working through the NAP industry working group to agree the proposed changes to incorporate arrangements for creating a single joint NAP.</p>	-
	<b>Successful Delivery of Large Capital Projects</b>	-
	<p>We will identify delivery milestones in large capital projects and report on our progress against these</p>	<ul style="list-style-type: none"> <li>• <i>Given that there are no incentives and a unilateral ability for TOs to delay contracts,</i></li> </ul>

	milestone dates to the User Group.	<p><i>we have been on the wrong end of many delays and at cost to our business. Over the course of long delays, the cost to connect can also significantly increase. There is also no ability to 'fix-price' contracts with the TO (contrary to what NGENSO offer in England and Wales) therefore costs can spiral with no consequence to the TO but with an impact to the developer.</i></p> <ul style="list-style-type: none"> <li>• <i>"Discussions with stakeholder at our "Lighthouse" event in Sept 2019 included concerns that an incentive to deliver connections early could drive up costs and just be mitigated by initially proposing later dates. A reputational incentive was considered more appropriate. It was emphasised we should just give the right date and stick to it and that increased collaboration and communication would be valued".</i></li> </ul>
	<b>Non-Lead Asset Output Measurement</b>	
	We will report annually on each non-lead asset project. This report will track progress on output volumes and expenditure against our business plan commitments.	-
	We will produce a justification pack –using the RIIO-T2 template – to document any necessary variances from our business plan.	-
	<b>Whole System ESO-TO Constraint Mitigation</b>	
	Working with the ESO, we will identify potential high risk constraints on our network and implement solutions as part of the ESO-TO constraint mechanism to reduce the risk of high constraint costs in being incurred.	<ul style="list-style-type: none"> <li>• <i>"We are fully supportive of this approach and believe that bespoke cost benefit analysis should be undertaken to explore these options in order to reduce consumer's bills and facilitate renewable integration as soon as possible".</i></li> </ul>
	We will demonstrate our performance under the Whole System ESO-TO incentive comprising benefits, details and cost for every opportunity we have identified and progressed to implement a solution to reduce the risk of high constraints.	<ul style="list-style-type: none"> <li>• <i>"I think, going back to money, as the customer this seems better because you're looking at ways of reducing our bill as well which is one of the things that I'm all for".</i></li> </ul>
<b>Category 3: Delivering an Environmentally Sustainable Network</b>	<b>Sulphur Hexafluoride (SF6) and other Insulation Interruption Gases (IIG) Leakage</b>	
	We will continue to mitigate the leakage of SF6 gas from our assets and work with industry to identify alternative insulation and interruption technology to find a better alternative to SF6 gas.	-
	<b>Maximising environmental benefit from non-operational land</b>	
	We will deliver environmental benefits from non-operational land and report annually on the generation connected and biodiversity improvements delivered	<ul style="list-style-type: none"> <li>• <i>"I think that if you have space around it then it should be used for nature. Let's embrace it, if this is an ugly thing lets surround it"</i></li> </ul>

	<b>Additional Contribution to the Low Carbon Transition</b>	
	We will work with our suppliers and contractors to drive additional environmental improvements by accessing their expertise to identify cost effective opportunities.	-
	We will strive to lead the decarbonisation of fleet vehicles, working with suppliers and other fleet operators to pilot technically viable alternatives to drive technical advancements and early adoption.	-
	We will accelerate the delivery of a low carbon fleet, aiming to deliver by the end of T2 ahead of our 2030 programme, thereby increasing our contribution to GB carbon footprint reduction and contributing to improved air quality.	-
	We will work collaboratively with our stakeholders, including the other Transmission Operators, throughout RIIO-T2 to develop and pilot a common approach and robust methodologies for delivering Biodiversity Net Gain alongside Natural Capital assessment and enhancement.	<ul style="list-style-type: none"> <li>• <i>"If I was going to be satisfied to pay more so that SPEN could look after the environment around their sites, I want to make sure that it wasn't tokenistic and that they're is actually something measurable that was happening. If you have got two or three beehives, that's great but is it just something for a PR stunt."</i></li> </ul>
	We will deliver biodiversity net gain in our network area.	<ul style="list-style-type: none"> <li>• <i>"BNG should be built into O+M at operational sites and count towards an overall incentive for net gain".</i></li> </ul>

These commitments are intended to ensure the feedback we have received in relation to our proposed RIIO-T2 incentive package is put into action. The specific feedback we have included is a sample of the views and comments expressed to us throughout our engagement process. We believe our commitments present a comprehensive and balanced response to the overall feedback we have received. We believe delivering on them will help us achieve our Net Zero ambition, drive us to deliver a better level of service for connecting and connected customers; improve network availability for generation customers and thereby increase the volume of low carbon generation flowing onto our network. The approach and methodology for each incentive is set out in the respective chapters.



## APPENDIX D – ENS METHODOLOGY AND RISK MITIGATION EXAMPLES

### ○ *ENS Mitigation in Outage Planning Processes*

To carry out any work on our transmission assets, whether upgrading or extending our network to connect new customers; maintaining existing assets; or repairing faults, a system outage is required. An outage is the switching out of an asset to de-energise it and making it safe for staff to come into proximity and work by earthing it to ensure it does not become inadvertently energised. This work may then involve disconnection of the asset from the network or allow modification or maintenance to be carried out. The process to identify the need, extent and duration of an outage sequence can be long and complex and is a core element of our transmission business.

The transmission system in GB is designed and operated to meet the NETS SQSS standard<sup>20</sup>. Section 5 of the standard explains the operation of the transmission system under “prevailing” conditions which will therefore normally include planned outages and unplanned outages.

#### **Consumer Impact of ENS**

The impact of an outage on our transmission network can be felt by directly connected transmission customers and distribution connected consumers alike. The ENS incentive is limited to demand customers and is not sensitive to differentiate between these types of customer. Typically a directly connected transmission customer is restored quickly in the event of a fault. Distribution connected customers may be exposed to longer duration outages due to the reduction in design contingency at lower voltage levels.

For example, a transmission outage of a circuit supplying a GSP substation reduces the security of supply to the GSP by half and the NETS SQSS allows for this risk. A GSP is typically designed with sufficient security to comply with the SQSS by connection of two circuit infeed's. This is the normal operating condition, and sufficient capacity is provided such that the loss of one in-feed will be supported by the second circuit without interruption to any supply. In a planned outage scenario, one circuit is withdrawn from service to carry out work and the GSP is connected only by the remaining circuit. Should a fault occur on this circuit during the planned outage of the other circuit, the supply to the entire GSP will be lost.

Our ENS mitigation ensures that in this event our distribution customers can be restored as quickly as possible. This is the benefit the current ENS incentive supports.

An outage can only be taken with the approval of the GB Electricity System Operator (NGESO) and this is achieved according to rules set out in the **System Operator Transmission Owner Code (STC)**<sup>21</sup> and the Network Access Policy (NAP). NGESO has final approval of a planned outage because it has responsibility for the flow of energy across the GB transmission system to balance generation and demand effectively in real time. An outage of a transmission asset can disrupt that flow and reduce the security of supply for consumers. NGESO will assess the security of supply risk to ensure the national security of supply standard (NETS SQSS) is maintained. For all outages on Transmission system we will further review the increased risk of supply to customers being lost above and beyond what is required by the NETS SQSS.

This risk of suffering a loss of supply can increase when we take an outage on a transmission asset. This can be an overhead line or cable circuit, a whole substation or single asset at a substation such as transformer, circuit breaker or protection system. This risk is experienced by our directly connected transmission customers and distribution connected customers who are supplied through our grid supply point (GSP's) substations where the transmission /distribution interface exists.

### ○ *ENS Mitigation in Investment Planning and Approval Processes*

The process of assessing the ENS risk is incorporated within our **investment approval process**. This process follows a staged approach to investment approval, where investments are approved at distinct points (gates) throughout the process. Initial concept, technical design and financial approval are achieved at different stages, for a number of reasons; including amongst other things:

<sup>20</sup> <https://www.nationalgrideso.com/sites/eso/files/documents/NETS%20SQSS%20V2.3.pdf>

<sup>21</sup> <https://www.nationalgrideso.com/codes/system-operator-transmission-owner-code>



- a separate concept and technical approval stage ensures that only those projects that have viable solutions (including meeting strict safety criteria) have resources allocated to develop full technical specifications;
- a separate approval for the release of risk mitigation costs ensures that these are being utilised appropriately and provides visibility as to how project expenditure is being managed; and
- while financial re-approval may not be required, having a separate approval stage provides an opportunity to challenge the underlying reason(s) for increases in project expenditure and draw out 'lessons learned' for application to future projects. of any capital investment

Throughout this process, at each stage gate, all project risks and mitigating actions are considered, evaluated and determined as to whether these are sufficient. Specifically, as part of the Technical Approval process, projects involving transmission outages are assessed for the ENS risk. Where this is identified, ENS mitigation is achieved through appropriate contingency actions. These mitigating actions vary according to the extent of the risk and will be incorporated within the project development.

#### **ENS Risk**

The extent of the ENS risk will be assessed in terms of the monetary value based on the ENS incentive mechanism. Customer Minutes Lost (CML) and Customer interruptions (CI) impact are also assessed as these are incentivised under the ED1 price control and our SP Distribution licence. As well as the financial impact on our business in respect of ENS, CML or CI, other key metrics considered are the "Emergency Return to Service" (ERTS) and Emergency Restoration of Supply (EROS) values. These provide a better view of the impact on customers, should a loss of supply occur, is the length of time it takes to achieve the restoration of supply. Under the ED1 distribution licence (Guaranteed Standards), targets for EROS have reduced from 18 to 12 hours in the current price control period. Achieving improved restoration times is valued by consumers and is explicitly considered in our ENS mitigation approach.

This is important as ENS is based on MWh. If the customers primarily affected are multiple distribution connected domestic consumers, the associated MWh value can be considerably less than if a single large industrial transmission connected customer will incur. Yet the impact on that individual customer can be significant, especially if they are vulnerable customers.

As the Electricity Networks business in Central and South Scotland, the reputational impact of a loss of supply experienced by our customers, whether from a transmission incident or distribution incident, is largely immaterial to them. Therefore any risk of loss of supply from a transmission related event needs to consider the impact on our distribution customers.

The mitigation of risk can be achieved in different ways and will be bespoke for each project and requires project specific assessment and actions for every outage. The main technical document that captures system outage requirements and risk assessment is our System Construction Authorisation (SCA) document. A SCA is prepared for each project and is reviewed by multiple parties with technical, financial and safety responsibilities. SCAs are prepared by our Engineering Design teams. A **job description** for the Engineering Design role is provided alongside this report. Final technical approval for a project is made at the Transmission System Review Group (TSRG) which meets monthly.

#### ○ **ENS Mitigation in Construction and Operational Processes**

The design phase of a transmission construction project typically start years in advance of outages being taken and consideration of ENS mitigation is embedded throughout this process. As the project moves through its life cycle and into the construction phase focus and mitigation of ENS risk continues and develops. The assessment of specific outage requests is carried out by our Operation Control Centre Planning teams including engagement with NGENSO to secure their formal approval of an outage. The assessment will include challenge of the proposed ENS mitigation measures, request for evidence that these measures are in place and suggestions of further measures that might be undertaken. A weekly risk review is conducted by Senior Management to assess all operational risks facing the business. An example of a recent **network risk report** is provided which highlights this and demonstrates the fundamental place Customer impact and ENS have in our risk management processes. In addition weekly engagement by Operational Control room staff and each of the six Regional District that our distribution business comprise, is conducted to notify and explain the transmission outages and risks that effect each District.

To demonstrate this process and provide specific evidence examples of two live projects are provided in section 4 as follows.

○ **Examples of ENS Mitigation in Live Projects**

Two projects have been selected as typical examples of how mitigation has been implemented through the project life-cycle. These are two of multiple projects that SP transmission are delivering to achieve their RIIO-T1 outputs and the principles illustrated in these are replicated throughout all our portfolio of projects. Over 1500 outages are taken annually by SPT and ENS mitigation is a risk consideration in every outage.

○ **Johnstone GSP Substation 132/33 kV Transformers Replacement**

**This Johnstone Project SCA** is the technical that describes this project and explains how all civil, switchgear and protection works at Johnstone 132/33 kV Substation will be carried out for the replacement of power transformers). Both existing Grid T1 and T2 power transformer are 60MVA 132/33kV units, which were installed in 1965. These transformers have been identified as having reached end of life and require to be replaced in advance of failure and are included in our RIIO T1 non-load plan as required outputs to deliver in this period.

Johnstone GSP 132/33kV Substation has no 33 kV interconnections (which would deliver the capability to provide alternative supply from another part of the network) with any other GSP, which leaves it vulnerable to faults on the transmission system. The available 11 kV interconnection is only capable of picking up around 20% of the demand at Johnstone GSP. The proposed approach to the work is therefore to install the new Grid Transformers off-line, with the existing Grid Transformers connected to the transmission system, as far as practicable. This will reduce the lengths of the outages and the inherent customer risk. The works are planned in such a way as to minimise outage timescales, by carrying out the offline construction for both replacement T1 and T2 transformers. The replacement T1 Transformer and associated equipment will be installed in a new location within the site, enabling works for T1 to be completed offline. The replacement T2 transformer and associated equipment will utilise space vacated by T1 transformer, allowing these also to be offline built. The aerial photograph below shows the layout.



The project was designed in 2013 and the risk of ENS is mitigated by delivering an offline build. Additional land was available in the site which subject to planning permission being secured, would allow the new transformers can be installed before removing the existing transformers. The work involved at each stage was designed to meet an 18 hour ERTS with no further contingencies required. The Technical approval for this project was predicated on this risk mitigation. **The formal IP2** technical approval paper documenting this project is provided as evidence and page 3 of this document confirms that:

*“The carrying out of these works offline will enable the project to be completed without introducing a significant single circuit risk or costly contingencies”*

Section 9.3 of the Johnstone GSP SCA outlines the 9 system outages that are involved to deliver the project. Each outage is explained in detail in section 13 and each outage has an ERTS forecast and contingency arrangements described. Page 42 section 13.2.2 for example explains the ERTS for the first outage as being limited to 2 hours. Section 13.2.3 on page 45 however has an ERTS of 18 hours, the worst case for the project. The contingency provisions are described as follows:

*“None. The works have been planned in order to minimize the ERTS to 18 h. All works shall be carried out without modifying the existing post insulators, busbars, and down lead, until the last moment, i.e., post insulators and the portion of the busbars that don't imply any connection to the existing arrangement shall be installed at a first moment, without modification of those existing, so that it is possible to go back to the original stage, by removing tools and evacuating workers from the compound. The final connections to the new red phase arrangement (repositioning of the down lead, and connection of the droppers and clamps and last busbar portion) can be done in 18 h. The system is ready to be reconnected from the remote Substation”.*

The extent of the review of the proposed design is includes 67 different comments from various expert staff included in the assessment process. The risk of ENS and ERTS is a significant element of this assessment for example comments 63 to 67. Comment 67 highlights an estimated £5 million ENS penalty associated with the 18 hour restoration.

The operational phase of the project ultimately commenced in 2018. The ENS risk highlighted above and ability to deliver an ERTS of 18 hours at worst was fully considered in advance of the actual outages. Further evidence of this is provided by the method statement prepared that describes the actions to deliver the **18 Hour ERTS at Johnstone**, in the event of a fault on the second circuit. The document provides details of the safe methods of working to achieve the ERTS at each stage of the project. For example, on page 6 the actions described are as follows:

*ERTS OPTION 1*

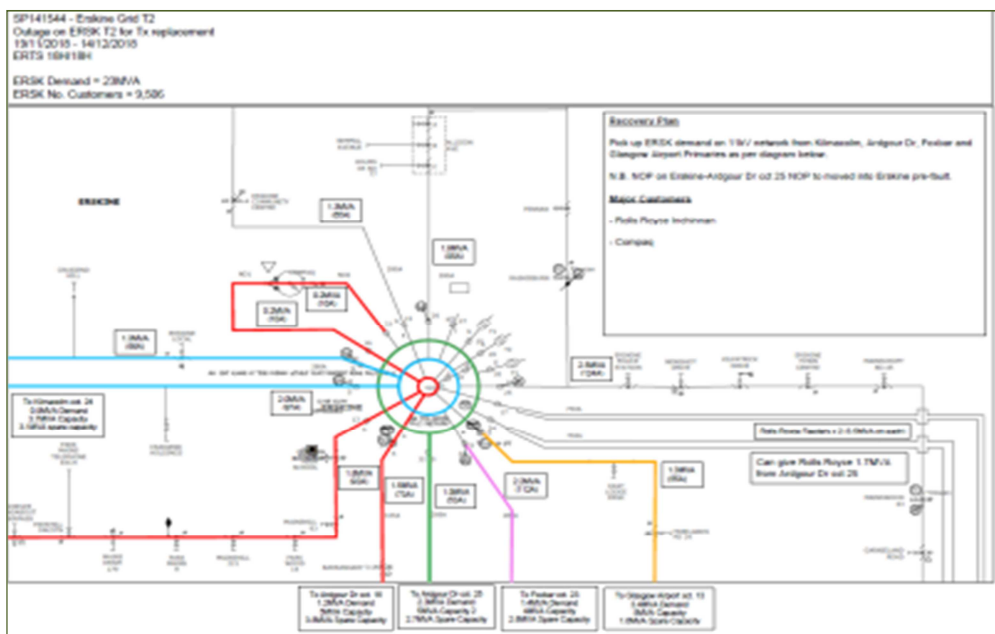
- If ERTS is called before sequence #2 then the existing infrastructure can be relied upon to be returned to an energised state – duration expected to be maximum 5 hours to refit old download, remove PI & Structure and switch circuit in to service. Personnel available on standby to execute the above works are detailed below in table.
- If ERTS is called during section #3 the site team will continue to install the new Downloads & Droppers to the new Anchor block, however, a temporary connection to the existing PI & Busbars can be made and only the above PI (#1) will need to be removed – duration expected to be maximum 7 hours
- Once #4 has commenced then the new build of Red phase including the temporary busbar section to the existing 113 disconnector will be made available to be energised – maximum duration expected to be 9 hours

Ultimately this project is being successfully delivered and has not resulted in any loss of supply to consumers.

o **Erskine Grid T2 transformer replacement project**

This project provides further evidence of ENS mitigation but compared to Johnstone (which had no interconnection) this GSP has the opportunity to use alternative supply routes from the connected 11kV (distribution network) to mitigate the risk of ENS and reduce ERTS.

The circuit diagram below highlights the ability to secure some supplies to Erskine GSP in the event of a fault during the outage window.



The circuits that have been coloured are those that can provide interconnection from other parts of the network to restore some of the consumers Erskine GSP substation normally supplies. Not all the circuits are coloured highlighting that Erskine does not have full switchable recovery and a permanent fault on the 132kV overhead line in-feed circuit will result in the loss of some supplies. Additional contingency to achieve full customer restoration

has been identified by converting the second 132kv overhead line in-feed circuit to run temporarily, as a 33kV circuit by connecting it using 33kV cable connections to the 33kV network.

The **outage request form** which is the internal document from our delivery teams to the operational control room, confirms this 132kV contingency arrangement are to be achieved as follows:

*“This connection is a temporary arrangement which does not include the replacement of disconnectors 203,213 & 403. The ERTS for GT2 is Oncom but in the event of N-2 the contingency circuit can be commissioned in 18Hrs”*

This is a typical example of ENS risk mitigation achieved through a contingency arrangement and requires significant preparatory work:

- The 33kV breakers at the supporting GSP substation are to have their protections schemes altered to enable the overhead line circuit to be energised at 33kV rather than its normal operating voltage of 132kV.
- 33kV cables will be laid from these circuit breakers out to the post insulator structures at the overhead lines where the jumpers/downloads connections can be made to connect the cables to the lines.
- In the event of the fault, proximity switching will be carried out to allow for the jumper connections to be made and the protections switched in for the circuit to be energised as a 33kV interconnector restoring supplies.
- The materials for the jumpering to connect the cables to the overhead lines will be measured and stored on site at each site in advance.

Evidence of the focus at the operational stage on ENS mitigation is emphasised by the correspondence between our OCC Planning and the **construction teams**. This demonstrates a drive to achieve a 12 hour EROS target above and beyond the ERTS capability of 18hrs:

*“Given that we will be in mid-winter, with us likely only being able to pick up 3-5MVA of the 30MVA Erskine GSP (10% to 20% of the customers), it important that we have the restoration plan as robust as possible. Personally I believe that a <12hr RTS could be achieved if all the preparations were in place, but as I don't have visibility yet of the details, I suspect the 18hrs currently may be optimistic dependant on the points below. Will all the points below be in place prior to the Grid T2 outage?”*

- 33kV Cables terminated into switchgear at Erskine and Devolmoor
- 33kV Cables terminated onto structures at Erskine and Devolmoor
- Protection Configuration tested / available (applied??) to 33kV feeder breakers at Erskine and Devolmoor
- OHL Jumpers, (previously cut to size) on site
- Clarity on day / night availability of key staff (Contractors / SPEN)”

Additional evidence from the Erskine project of the focus on customers connected at distribution with the **correspondence** documenting the challenge from the operational control room staff responsible for approving the outage request to the deliver teams who are submitting the request as follows:

*“I recognise and support the need to proceed with these works but to gain my unconditional approval, there are a few outstanding activities that need to be completed (some of which I understand are being worked on). These are (not limited to);*

1. **A detailed plan outlining who and what needs to be done to minimise the ERTS, including;**
  - a. contact details of critical resources both NWD and OOO (who needs to do what and when); we cannot afford to 'waste' a number of hours trying to contact critical resources (e.g. 9pm on a Saturday evening)
  - b. the sequence of activities and expected (committed?) timescales
3. **A detailed plan of the 11kV switching that would be undertaken to manage partial recovery, including;**
  - a. the dispatch of resources from my team to exact locations to assist
  - b. the effect this would have?
  - c. do we propose to 'rota shed' customers during the recovery period?
4. **How we propose to manage customers during this period, should we lose the 132kV in feed?**

*Clearly, we will assist in supporting these works as we move towards the outage but given the scale of the issue, albeit at low risk, I think it's vital that we undertake this assessment and document the associated plans so everyone is clear on their responsibilities should we lose the grid infeed.”*

This is another example of the focus we have on mitigating the risk of an ENS event on distribution connected customers and domestic consumer. This is over and above the obligations we have to meet NETS SQSS standards and the attention or responsibility for managing energy flows on the main interconnected transmission system NGESO would ask us to consider for them to approve our outages.

## **APPENDIX E: OPTIMISING NETWORK AVAILABILITY FOR CONNECTED GENERATORS**

Three opportunities or services that we can as a TO deliver, are identified to support this incentive to increase availability for generators. These are:

1. Applying dynamic line ratings to constrained areas of our network will provide better availability for generators onto our network for short periods.
2. Providing additional services to reduce the extent of duration of planned outages where generation is affected as well as demand.
3. Identifying alternative design or construction solutions at a nearly stage to mitigate the effect of major construction works on connected generation.

And are explained in more detail as follows:

### **1. Applying dynamic line ratings to constrained areas of our network will provide better availability for generators onto our network for short periods.**

Providing enhanced network ratings have long been a service TOs provide to the system operator to manage the transmission system. The traditional approach utilises static ratings based on modelling tools to calculate short term ratings. Dynamic or real time ratings are increasingly becoming available through deployment of innovative and increasingly sophisticated measurement and forecasting tools.

We intend to develop our capability in RIIO-T2 to offer more short term capacity ratings to the ESO that will reduce constraint costs and allow more low carbon generation to flow onto the network.

The thermal rating of transmission circuits can be enhanced by applying Real-Time Rating (RTR) systems to individual circuits or by using actual and forecast weather conditions to increase (or sometimes reduce) declared ratings range of research projects and trials have been undertaken by TOs and DNOs to demonstrate these techniques and technologies. We intend to implement these throughout as part of our normal business processes, to improve our current standard of service in this area. Our Load plan (page 81) includes details on this circuit rating management system (CRMS) project<sup>22</sup> which will provide enhanced circuit ratings in planning and operational timescales. This will improve the utilisation of our assets and enhance the capability of our network to transmit more renewable energy.

Effective deployment of these approaches will provide increase low carbon flows onto our network for consumers and improve reliability and availability for connected generation.

### **2. Providing additional services to improve network availability for generation**

The current Network Access Policy<sup>23</sup> explains (section 2.7) there may be opportunities for the Scottish TOs to do things that go beyond the minimum requirements of which are in the interests of consumers. Opportunities may arise from a number of different sources, such as changes over a period of time in the costs that a TO faces or innovations to asset management practices during the price control period. Examples may include:

- Compressed working hours – shorter outages but longer overall project durations;
- Real time equipment monitoring;
- Thermal monitoring;
- Sag monitors;
- Reduction of Emergency Return to Service times;

<sup>22</sup> RIIO T2 Engineering Justification Paper Circuit Rating Management System (SPT200130/1)

<sup>23</sup> [https://www.ofgem.gov.uk/sites/default/files/docs/2012/10/7\\_network\\_access\\_policy\\_shetlandsptl\\_0.pdf](https://www.ofgem.gov.uk/sites/default/files/docs/2012/10/7_network_access_policy_shetlandsptl_0.pdf)



- Temporary intertrip schemes;
- Energy management schemes / constraint management across boundaries;
- Temporary bypass schemes;
- Hotwiring schemes;
- Meteorological Office Ratings Enhancement;
- Bringing investment forward; and
- Enhanced supply chain / procurement / resourcing contracts.

These may be driven by SO requests to the TO for voluntary improvements in its service, based on the SO's understanding of the latest information on the scale, location and timing of constraint costs. Alternatively the TO could offer enhanced services to SO, which the SO could choose to take up, again based on the SO's understanding of constraint costs. The TOs are open to any suggestions for improvements in its service. However, the TOs will always need to consider the full impacts of any enhanced service before taking any decision on any proposed approach.

One example of this type of solution was presented by the NGENSO at the Sept 2019 OC2 forum:

An initial outage plan to commission a new substation required outages for 10 days on two single circuits in the same geographical area, which reduced the thermal export capability of the group to 130MW. NGENSO worked in partnership with the TO to review all possible options to deliver the work whilst reducing the impact on the system. After careful assessment and optimisation, the outage combination was split into sequential single outages on separate days and was still completed within the original 10-day period. This action increased the thermal export capability limit to 260MW and released an estimated 28,600MWh of renewable generation to the market reducing GHG emissions by over 8000t with a value of £400k to consumers.

Where generators are not contributing to constraint costs there is no means to fund these services and no incentive to restore their network availability that may be diminished through planned or unplanned network outages. This typically applies to generators who have opted for a single circuit connection that we define as "non-firm" connections. This is usually a commercial decision that reduces the security of supply for the generator but with the benefit of a cheaper connection costs.

Throughout RIIO-T1 we have provided early access for distribution connected generation that is impacted by transmission constraints, to connect ahead of transmission network availability being made available. We define these as "restricted availability access" or "RAA" connections and require the generator to be connected via a load management scheme (LMS). An LMS is a protection control system which monitors load flows on the transmission network and trips off generation in advance of network overloads arising thereby protecting the network and other connected parties. These schemes usually have a limited life-cycle until such time as a network reinforcement project is completed to provide sufficient network capacity to accommodate all the connected generation in the area.

We will also seek to improve the performance of existing Load Management Schemes to reduce the number of hard trips experience by customers as part of this incentive where it is reasonably practicable to do so and a corresponding increase in low carbon generation can be demonstrated.

An example of the benefit of optimising generation where LMS schemes are in place was also presented by the NGENSO at the Sept 2019 OC2 forum:

A planned 2 day outage on a Load Management Scheme to facilitate modernisation of the network was requested by a TO which would normally have restricted 6 windfarms to 0MW export. Working with the TO, the NGENSO undertook extensive system studies, which determined that it was possible to release capacity to all generators in the group during certain wind conditions. Commercial contracts and connection agreements were reviewed to ensure fair and equitable treatment to all. The LMS scheme was configured in a unique way to protect against faults, ensuring security was maintained at all times with no additional risk to the firm generation in the group. The wind levels were monitored and a decision was made at day ahead regarding the generation capacity that could be released. Through this innovative approach we released 6,750MWh of renewable generation to the market, reducing GHG emissions by nearly 2000t with a value of almost £100k to consumers.

### **3. Identifying alternative design or construction solutions at a nearly stage to mitigate the effect of major construction works on connected generation.**



The extent and volume of generation connecting to our network is coinciding with an aging transmission network much of which was built in the 1960's. The advent of single circuit connections adds to the risk that network availability for generation can be reduced to zero for months at a time to facilitate major asset replacement projects.

As explained above unless there is a reduction in constraint costs there is no route to fund mitigation schemes to mitigate the extent of these outage. Throughout RIIO-T1 we have had requests from customers to pay themselves for works above the lowest most efficient cost to reduce the impact on their network availability. However, there appeared to be no clear route or basis for accommodating this request. Nevertheless, we continued to engage with NGENSO and customers to identify a solution and eventually found a way to enable a generator to pay for a more expensive design and delivery solution in our planned asset replacement works that would reduce a planned outage by several months. A summary of the problem and the solution is provided below:

- A large windfarm, which is operated by the customer, has a single circuit connection and is subject to an extended outage on the 275kV GSP for major refurbishment works we need to undertake. This work will involve a 6 month outage potentially, and is currently scheduled for 2020.
- We identified an innovative, alternative design solution, involving higher costs of up to £3.5million whereby we would create a temporary transformer connection by building a new bay at our 275kV substation. This would minimise the duration of the outage and mitigate the negative revenue impact the customer would face.
- The temporary connection is being progressed via the standard contractual process with National Grid i.e. SP Transmission will enter into a construction contract with NGENSO and the customer will enter into a bilateral connection.
- The SP Transmission works involve swapping out transformers and installation of new switchgear. The works are in 3 phases: (i) construct the new transformer bay (ii) disconnected the original configuration and create temporary connection and finally (iii) once the outage is complete, re-connect under the original configuration.
- The estimated costs of construction and de-commissioning for the additional work is c£3.5m . The customers own cost benefit analysis of this against their forecast loss of revenue has concluded that this project brings benefit.
- The estimated time the windfarm will be off was reduced by 60%, saving the customer £m's and releasing 80GWh<sup>24</sup> of renewable wind generation to the market reducing GHG emissions by 65Kt. with a value of £3.3m to consumers.

This type of approach requires advanced planning and a combination of factors to come together. We anticipate this will be a reasonably rare occurrence but have established a precedent for this sort of solution and this type of approach. There is no licence obligation to provide this but we want to promote this opportunity for other customers who may be similarly affected in the future. This incentive will drive the proactive identification of such solutions and provide the low carbon benefits for consumers by increasing the volume of low carbon generation flowing onto our network.

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<sup>24</sup> Data presented at Sept 2019 OC2 forum by NGENSO

## **APPENDIX F: COST BENEFIT ANALYSES AND IMPLEMENTATION PLANS**

The following table captures all the CBA values presented throughout this chapter for every financial ODI.

Output Area	Output Name	Overview of Cost-Benefit Analysis			High-level Annual Implementation Plan	
		Total PV Benefits (£)	Total PV Costs (£)	Net Benefit (£)	Activities/Tasks	FTE
<b>Connections</b>	Quality of Connections Survey	14,766,930	843,958	13,922,972	Review of TOCOs for all commercial and technical aspects and interface with TORIs and other TOCOs. Engineering solutions Confirmation of delivery capability Identifying and managing early project issues Regular reviews and sign-off process	2.6
	Timely Connection Offers	29,907,707	843,958	29,063,749	Interfacing with National Grid and owners Check applications Customer queries Lead internal sign-off process and governance, including compliance with all regulatory requirements.	2.6
<b>Stakeholder Engagement PLUS</b>	Black Start Resilience of Communities in Vulnerable Circumstances	9,993,100	1,803,809	8,189,291	Management of Agency Staff Identification, analysis and monitoring of vulnerable communities Community liaison, co-ordination and facilitating SPEN input	2.3
	Community Energy Schemes Capability	1,689,248	1,490,712	198,536	Management of Agency Staff Community liaison, co-ordination and facilitating SPEN input	2.2
	Stakeholder Engagement Performance Levels	515,011	429,923	85,087	Management oversight Embedding process and governance	0.6
<b>Network Reliability</b>	Energy Not Supplied	13,308,930	1,530,433	11,778,496	Network risk management Contingency planning to restore customers and minimise ENS Deployment of standby engineering teams	1.3

	Optimising Network Availability for Connected Generation	170,918,992	327,116	170,591,877	Forward assessment of investment programme and outage plans Planned and unplanned outage analysis Engagement between OCC \ NGENSO \ Generators Manage deployment of Active Network Management\Load-Management Service\Other Network Management Techniques	1.0
<b>Safe and Resilient Network</b>	Whole System ESO-TO Constraint Mitigation	98,078,586	179,914	97,898,673	Assessment and optimisation of 1 – 6 year ahead project plans and outage requirements Alignment of outage requirements with whole system requirements (constraints, system security and stakeholder impact) Review, revise and update outage plans as changes occur due to project delays, faults, system conditions and stakeholder needs. Oversight of outage planning	3.4
<b>Environmental</b>	SF6 and Other IIG Leakage	1,223,487	710,085	513,402	Improving processes and advising on legal requirements Reporting Fixing leaks, including using non-standard approaches where necessary Identifying leaks Developing a strategy Monitoring top up/leakage levels External engagement Driving alternatives (supply chain) Piloting / trialing alternatives to SF6 Updating contracting approaches Design Updating systems	1.8
<b>Additional Contribution to the Low Carbon Transition</b>	Maximising Supply Chain Sustainability	10,467,697	2,044,472	8,423,225	Additional design-stage discussion; Updating procurement policies and processes; Managing risk of using new designs/approaches/materials; Accommodating design ideas; Enhanced supply chain engagement; Gathering data to measure the impacts of projects with and without alternative options, normalising and comparing.	6.3

	Accelerating Adoption of Low Carbon Fleet	3,275,971	2,289,809	986,162	Engagement with HMRC to remove barriers (home start charging points); Trialling vehicles/assets with unproven performance due to early adoption; Engaging with other fleet operators; Contracting - embedding within lease framework on renewal; Vehicle waiting lists - engagement with leasing companies to pull forward the options; Industry engagement to remove barriers; Development of charging strategy; Development and delivery of rollout programme. Awareness and culture change; Data analysis to understand maintenance savings, usage and charging behaviours;	7.0
	Delivering Biodiversity Net Gain Initiatives	4,205,771	1,661,747	2,544,024	Engagement with Scottish Government and other key stakeholders to influence the development of Scottish Biodiversity Net Gain policy; Using of national and local data and engagement to determine the most appropriate net gain initiatives and locations; Managing risk of new initiatives/approaches/processes; Delivery of additional biodiversity initiatives; Multi-year monitoring of biodiversity as it establishes; Ongoing management of biodiversity improvements; Management of activities not undertaken within existing projects.	5.1

## **APPENDIX G: CHANGES BETWEEN SUBMISSIONS**

These proposals were initially prepared for our July 2019 Business Plan submission and updated for our October submission in light of Ofgem's May 2019 RIIO-2 Sector Specific Methodology Decision documents (SSMD) and feedback from the User Group, the challenge group and our stakeholders.

Specifically, between July and December we have:

- Defined a set of commitments for each output delivery incentive
- Provided more detail on each incentive proposal including a baseline target and an overall customer value proposition
- Balanced our overall risk and opportunity across our output incentive range values including a penalty for Energy Not Supplied
- Developed the scope of the ENS incentive to include the impact on connected generation caused by network faults and constraints associated with planned outages Included a reputational incentive to drive early delivery of generation connection projects
- Added a stakeholder engagement output delivery incentive to go beyond our business as usual engagement.
- Removed proposals for a Visual Amenity bespoke ODI in non-designated areas as this was a low priority for stakeholders and consumers
- Determined our proposals to incentivise early delivery (commissioning) of new generation connections measured in carbon reduction achieved should be reputational only. This is due to the delivery challenges that can beyond our control and stakeholders consider there could be higher costs and later offered dates.

## APPENDIX H: FINANCIAL REWARDS AND PENALTIES AT 6.5% COST OF EQUITY

Incentive Category	Output Area	Output Name	Incentive Mechanism	Output Type	Annual Indicative Reward/Penalty Range (£m 2018/19 Prices)	
					Min	Max
1	Connections	Quality of Connections Survey	Financial (Deterministic)	Common	-3.60	3.60
		Quality of Engagement Survey	Reputational		—	—
		Timely Connection Offers	Financial (Deterministic)		-1.80	0.00
	Stakeholder Engagement	Delivery against our Stakeholder Strategy	Reputational	Bespoke	—	—
	Stakeholder Engagement PLUS	Black Start Resilience of Communities in Vulnerable Circumstances	Financial (Discretionary)	Bespoke	0.00	1.80
		Community Energy Schemes Capability				
		Stakeholder Engagement Performance Levels				
Network Reliability	Energy Not Supplied*	Financial (Deterministic)	Common	-6.42	2.03	
	Optimising Network Availability for Connected Generators		Bespoke	0.00	2.56	
2	Safe and Resilient Network	Health and Safety	Reputational	Bespoke	—	—
		Successful Delivery of Large Capital Projects	Reputational	Common	—	—
		Non-Lead Asset Output Measurement				
		Network Access Policy (NAP)				
		Whole System ESO-TO Constraint Mitigation	Financial (Deterministic)	Bespoke	—	2.28
3	Environmental	Environmental Framework	Reputational	Common	—	—
		Minimising Electricity Losses	Reputational	Common	—	—
		Sulphur Hexafluoride (SF <sub>6</sub> ) and other Insulation Interruption Gases (IIG) Leakage	Financial (Deterministic)	Common	TBC by Ofgem**	TBC by Ofgem**
		Maximising environmental benefit from non-operational land	Reputational	Bespoke	—	—
	Additional Contribution to the Low Carbon Transition	Maximising supply chain sustainability	Financial (Discretionary)	Bespoke	0.00	1.80
Accelerating adoption of low carbon fleet						
Delivering biodiversity net gain initiatives						
<b>Annual</b>					<b>-11.82</b>	<b>14.07</b>

\*Please see page 154 for details on our proposal for an associated 'Use it or Lose it' ENS funding pot mechanism.

\*\*In theory, a maximum penalty would be incurred when 100% of IIG leaks and a maximum reward received when 0% of IIG leaks. These are extreme values which would distort the indicative reward/penalty range.

(Excluding the SF<sub>6</sub> and IIG output as Ofgem will finalise the methodology for setting baselines, and hence the incentive financial range, at Draft and Final Determinations.)