SP Energy Networks Transmission Annual Sustainability Statement

April 2020 – March 2021







Contents

This SP Transmission Annual Sustainability

Statement for 2020-21 provides an overview of strategy developments, describes our performance against key metrics, and gives examples of activities carried out to support the transition to a low carbon economy and manage the environmental and social impacts of our transmission network and operations.

This report conforms to the requirements of the Executive Level Annual Statement (ELAS), submitted as part of Ofgem's Environmental Discretionary Reward (EDR) Incentive for regulatory year 2020-21.

The annual EDR Incentive encourages Transmission Operators (TOs) 'to achieve high standards in environmental management as well as to help move the industry towards a low carbon energy system, where it can do so effectively while providing value for money to consumers'.

This document is intended to be suitable for a non-technical audience, to enable the widest possible range of interested stakeholders to understand the progress we are making in efficiently developing our network to support the low carbon transition, achieving neutral or positive environmental and social impacts.

If you have any questions about the content of this report, please contact sustainable@spenergynetworks.co.uk

Our Sustainability Drivers

Our Sustainable Business Strategy is underpinned by six key drivers, developed in collaboration with stakeholders. Throughout this document, the link between significant outcomes and sustainability drivers will be made clear by the use of one or more sustainability driver icons. The drivers are often interlinked and rarely used in isolation, for example climate change adaptation, land and biodiversity and water are often key drivers in project planning.



Sustainable Society



Water Efficiency and Protection



Carbon and **Energy Reduction**



Land and Biodiversity Improvement



Climate Change Resilience



Sustainable Resource Use

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Introduction

Who we are

SP Transmission is the Electricity Transmission Operator (TO) that delivers electricity to homes and businesses in Central and Southern Scotland as one of three network operation licences held by SP Energy Networks.

We provide a safe, reliable and economic transmission system for current and future network users and deliver a sustainable, low carbon energy system.

We play a critical role in providing security of supply across GB and in facilitating the connection of new renewables.

By adopting a more sustainable approach, we are managing the network more effectively for customers and the environment, year on year.



Company size and scale

SP Transmission is third in terms of the current worth of our regulated assets, but not in terms of our ambition when comparing all three electricity Transmission Operators.



SP Transmission:

- Supply around 2 million customers in Central and Southern Scotland
- Cover an area of approximately 23,000km²
- Comprise over 3,783km of overhead lines
- Comprise over 580km of underground cables
- Comprises 149 substations operating at 400, 275 and 132kV

SP Energy Networks also own and operate the distribution network in Central and Southern Scotland, and the electricity distribution network in Merseyside, the Wirral, Cheshire, North Shropshire, Mid and North Wales.

CEO Message

In the last year, Covid-19 has profoundly altered every part of our society and economy. As the operator of critical national infrastructure, our priority has been to keep the power flowing to homes and businesses in the South of Scotland and maintain the strength of the GB grid, in turn keeping us connected to family, friends and work.

We've paid particular attention to projects enhancing the stability of the network and worked closely with other network operators, Government and regulators to adjust our operations to maintain safety and network resilience throughout the crisis. Our engineers have continued essential maintenance and repair work as well as going the extra mile to inspect, protect and ensure resilient power supplies to critical facilities like hospitals, vaccine centres and social care facilities at the frontline of the fight against Covid-19. Projects funded by our Green Economy Fund and our direct donations have stepped in to help vulnerable individuals, communities and key workers navigate the crisis.

While we've been doing this, we have continued to maintain our strong focus on enabling decarbonisation and reducing our own environmental impacts.

In the past year, we've continued to drive decarbonisation by connecting 448MW of renewable generation to our network, which will displace the equivalent 430,000 tonnes of CO₂ emissions annually. We've seen applications for the connection of renewables to our network increase by 24%, resulting in 11% more final offers, whilst maintaining an average turnaround of 65.3 days, well within our target of 72 days. Our new Customer Connections Portal, coupled with ongoing engagement meetings and improved contract quality control, has enabled customers to access more information in a self-service way, leading to a 20% reduction in questions and 3% reduction in connections offer alterations since the previous year.

Traditional network expansion or upgrade to accommodate exceptionally rapid increases in renewable generation in Scotland is typically slow and costly, and brings with it a wide range of potential environmental impacts. Smarter utilisation of our existing network capacity has remained a key aim in 2020-21. Initiatives such as Project Phoenix, Virtual Synchronous Machine and the Digital Substations Initiative are globally significant in enabling the capacity and system stability required to quickly accommodate increased renewable generation whilst significantly reducing the need for network reconfiguration and upgrade.

Beyond driving societal decarbonisation, reducing our Business Carbon Footprint is a key focus. During 2020-21, we have continued our work to adopt and deliver targets in line with limiting global warming to 1.5°C above pre-industrial temperatures. Overall, we have achieved a 4% reduction in our controllable carbon footprint since our 2013-14 baseline year, however, despite considerable efforts, our 2020-21 emissions as reported were 32% higher than those of 2019-20. Sulphur-hexafluoride (SF₆) emissions dominate the footprint and account for this increase, as all other categories showed significant decreases.

The level of SF₆ emissions is volatile year on year, being heavily influenced by any significant equipment removal or leakage from the large assets on the Transmission network. Although our overall SF₆ leakage rate remains comparatively low, our 2019-20 37% improvement in SF₆ emissions was unfortunately not sustained during 2020-21, despite significant focus and actions to reduce leakage. SF₆ leakage is the subject of intense focus for my senior leaders and right through our organisation, and will continue to be so as we work to achieve our ambitious carbon reduction targets.

As biodiversity and natural capital are interlinked challenges with the climate emergency, it is imperative that nature-based solutions are prioritised in our strategy to reduce climate change. This year, we carried out a major update to our approach to line routeing, placing biodiversity protection and enhancement within the wider consideration of environmental matters which need to be balanced when routeing new infrastructure. We collaborated to identify and pilot tools to assess our impact on biodiversity and natural capital in order to ensure that impacts were fully considered in our decision-making processes.

Recognising the key role of our supply chain in delivering positive environmental impacts and moving towards a more circular business model, we engaged with our supply chain, updated tender specification documents, launched a new online supplier platform and reporting tool and piloted innovative circular approaches.

I'm proud of the outcomes that our integrated approach is delivering, driven by our Sustainable Business Strategy and underpinned by inclusive, responsive engagement with our stakeholders.

As a Principle Partner to the COP26 United Nations Climate Change Conference taking place in Glasgow later this year,

we have the perfect opportunity to highlight and accelerate the critical work we do to help deliver the UK's ambitious Net Zero targets. We will continue to build on our performance in the coming year as we deliver the investments and connections required to ready the UK for a green, electric future.

Frank Mitchell, CEO, SP Energy Networks

Our environmental responsibilities

The SP Transmission network is a crucial enabler of the UK's renewable energy objectives.

Opening up renewable energy to the rest of the UK

Our location in an area of exceptional renewables resource and our position linking SSEN Transmission to the North and NGET areas to the South, means that we provide a key link between renewable generation sources and demand centres.

For example, in 2019 we imported renewable energy from the SHE Transmission area in the North of Scotland for 356 days and exported energy to meet demand in England for 326 days.

Providing a reliable, adaptive service

Our network provides vital reliability and security of supply, adapting to the accelerating rate of change in energy production and use.

In 2010, there was 8GW of connected generation in Central & Southern Scotland, most of which was connected to transmission network. This generation portfolio primarily comprised fossil fuel powered generators, most of which have since been decommissioned. Much of this capacity has been replaced by renewable generation, resulting in 6GW of directly connected generation, of which 3GW is wind generation. However, more of this generation is now located in more remote areas. This means that the transmission network must move energy from these renewable sources to centres of demand in the Central Belt and England. One of the biggest drivers of change is the growth of renewable and smaller scale local generation connected to the distribution network, increasing by 229% between 2015 and 2021 from 0.32GW to 1.05GW.



Supporting long term decarbonisation goals

Driven by more efficient technologies, processes and increased domestic and on-site generation, combined domestic, commercial and industrial demand has decreased by 34% since 2014 in Central and Southern Scotland.

As focus on decarbonisation of transport and heat intensifies, reliance on electricity is likely to increase. Irrespective of overall demand profiles, more individuals and businesses will use electricity exclusively for all of their heat and transport needs.

We engage with a wide range of stakeholders and work together with our network peers to understand the demands that these changes place on UK networks, and invest wisely to improve performance, ensure security of energy supply and facilitate the connection of low carbon technology.

Starting in April 2021, our RIIO-T2 Business Plan provides a greater focus on decarbonisation, with a more strategic, whole system approach to embedding decarbonisation, both in terms of facilitating a zero-carbon network and in improving the environmental outcomes from our own processes and actions.

Managing the network and its impacts

Whilst providing the capacity, flexibility and security of supply to realise this fast-evolving energy future, we work with our supply chain to efficiently manage existing and new network assets in ways that achieve neutral or positive environmental and social impacts.

We operate and maintain linear infrastructure which may be routed through, or adjacent to, a wide range of culturally or environmentally sensitive landscapes and structures, ranging from pristine to degraded habitats. While we provide the network connections and services that customers require, we recognise the need to minimise any negative effects these activities could have on the environment and communities.

Throughout the life of our assets, we not only meet the requirements of government policies and legislation but strive to better them by integrating fair and responsible environmental practices with socio-economic considerations.

Trends and external influences

Regular review and update of our Strategy enables us to recognise and adapt to changes in the way the network must operate.

These changes are influenced by external factors including UK and devolved Government strategies, plans and regulatory frameworks, trends, scientific thinking and forces of nature. We collaborate with external stakeholders to ensure we plan effectively to maximise opportunities and develop strategies to overcome challenges. Please see pages 7 to 10 of our 2020 Sustainable Business Strategy, Opportunities and Challenges for full details.

The following current trends and external influences are outlined for their impact on the development and delivery of sustainability strategy, including COVID-19 which has impacted since the release of our latest Strategy update.

COVID-19

The global pandemic has changed the way people live, work and socialise. Some of these changes may be long lasting and result in a permanent transformation of electricity demand. As a company we are putting the green economy and the road to Net Zero at the heart of COVID-19 recovery.

COP26

Though delayed until November 2021, the United Nations Climate Change conference, taking place in Glasgow, is raising the profile of Climate Change and the demand for decarbonisation. It will present significant opportunities for international collaboration and innovation. We are proud to be a Principal Partner.

Global civil action movements

Global movements such as Fridays for the Future and Extinction Rebellion are raising public awareness of climate change and pushing organisations to show greater transparency and ambition in tackling climate change and biodiversity loss.

Government Net Zero Targets and Ofgem RIIO-2 Price Controls

UK and devolved Government Net Zero targets have continued to tighten during 2020 and 2021 with the announcement of new targets of cutting Scottish emissions by 75% by 2030 and UK emissions by 78% by 2035. We continue to align our goals to match Government ambitions as we complete the current price control (2013-2021) and implement the next (2021-2026), and have further progressed activity to set science-based targets to drive action to achieve Net Zero during 2020-21.

Key societal changes in achieving Net Zero include the electrification of vehicles and decarbonisation of heat, alongside a continued transition to both large scale and local renewable generation. The transmission network is playing a vital role in delivering this transition, which represents a step-change and some significant challenges. We are embracing innovative solutions and a whole systems approach to ensure we deliver an efficient, cost effective, reliable and sustainable network. Our RIIO-T2 Business Plan for 2021-2026 outlines these challenges and our direction of travel in transforming the network.

UK Environment Bill 2020

The Bill mandates the delivery of Biodiversity Net Gain in England. We will develop processes across our network to ensure there is a cumulative net gain and will go beyond compliance to enhance natural capital and biodiversity at our sites.

The Bill also aims to move the UK towards a more circular model of resource use, keeping resources in use for as long as possible at as high a material value as possible. This is a step change from the traditional linear economy model of make, use and dispose. The Scottish Government "Making Things Last: A Circular Economy Strategy for Scotland" also sets out priorities for a Circular Economy. We have already started the transition to circular practices, identifying aggregates as our largest waste stream. We are working with SEPA and Zero Waste Scotland to reduce aggregates waste and the use of primary resources through circular initiatives. Our Strategy drives the maturity of Circular processes in the next 3 years, working to build capacity within our supply chain to deliver change.

Performance dashboard

Driving Decarbonisation

448MW

of renewable generation connected to our network since April 2020.

£4.2m invested in ongoing innovation activities supporting decarbonisation and

environmental protection.

65.28

average number of days to develop a connections offer against 72 day target.

24%

increase in connections applications from 2019-20, 98% increase since 2017.

99%

awarded the highest ever score for industrywide Environmental Discretionary Reward.

Mitigating Climate Change

4%

Business Carbon Footprint, excluding network losses, decreased by 4% since 2013-14.

13%

Business Carbon Footprint, including losses, reduced by 13% this year.

32%

Business Carbon Footprint, excluding network losses, increased by 32% this year.

SF₆ carbon emissions increased by 46%

this year, primarily due to permanent

removal of a large SF₆-filled asset.

46%

eden project

5 years PlanetMark external

verification certificate for 5 years in a row.



SO 4001:2015

Full ISO 14001 Environmental

Management Certification.

Piloted use of Defra

Biodiversity Metric 2.0.

Zero

environmental regulatory interventions in 2020/21.





Partnership development of natural capital assessment tools.

Sustainable Resource Use

SUPPLY CHAIN SUSTAINABILITY

Partner member of the Supply Chain Sustainability School.

4%

reduction in annual total waste from previous year, 35k tonnes total.

65%

landfill avoided.

Sustainable Society

8.6/10

Stakeholder satisfaction is 8.6/10, well above our 7.4 benchmark.

53 full time jobs

281 indirect green economy jobs created via £20m committed to 35 projects through our 2-year Green Economy Fund, delivering an estimated 169 tCO₂ reduction per annum.

20.48%

gender pay gap for SP Transmission in 2020.



supplier engagement platform launched.

SMARTWASTE delivered by bre

Top 10 suppliers by value onboarded.



Strategy

Vision and drivers

Our vision is to be a sustainable networks business:

- Efficiently managing and developing our network in support of the low carbon transition; and
- Achieving neutral or positive environmental and social impacts.

We aim to be a leader in this area. Our actions to become a sustainable network operator drive our supply chain and support our customers and communities to become more sustainable.

Our Sustainable Business Strategy (SBS) has been developed through several years of collaboration with our stakeholders, and is regularly updated in response to internal and external policy developments (described on pages 7 to 10 of the Strategy), in order to ensure that our business continues to manage the transition to a low carbon energy system over short, medium and long-term timelines. Our SBS is built around six Sustainability Drivers, developed with stakeholders to deliver targeted activity where materiality and impact are greatest. Beyond enabling decarbonisation and reducing our environmental impacts, these drivers also deliver activities to enhance social and economic sustainability, supporting the delivery of the United Nations Sustainable Development Goals (SDGs). We carried out a mapping exercise of activity against the Goals, which can be found on pages 14 and 15 of the Strategy. We continue to align activity and business processes to meet our Sustainability Drivers and the SDGs. Our strategy and drivers also align with Ofgem priorities for delivering an environmentally sustainable network. This Statement highlights these links, providing an overview of progress against our Strategy. This Statement also forms part of our review process, including stakeholder feedback, which then helps to inform our annual SBS review.

Table 1. Mapping Sustainability Drivers to impact area and Ofgem priorities

Driver	Impact area	Ofgem priorities for delivering an environmentally sustainable network	
	Carbon footprint of network losses		
	Reducing embodied carbon and scope 3 emissions		
	Business carbon footprint – sulphur hexafluoride (SF ₆)	Decarbonising the energy networks –	
	Business carbon footprint – other	and embodied carbon in networks	
	Climate change adaptation		
8	Supply chain sustainability	Supporting the transition to an environmentally sustainable low-carbon energy system	
	Enhancing visual amenity		
	Land and biodiversity	Reducing networks' other environmental	
	Preventing pollution	Impacts, such as pollution to local environment; resource waste; biodiversity loss; and other adverse local effects that are specific to each sector	
高条	Sustainable resource use		
	Waste reduction		

Key goals

Through analysis of our main environmental sustainability impacts, cognisance of internal and external policy drivers and in consultation with our stakeholders we have developed ambitious goals to drive action towards Net Zero carbon.

Key goals

	Carbon and Energy Reduction	Sustainable Resource Use	Water Efficiency and Protection
2023	-15% carbon footprint*	Divert 95% of waste from landfill	-10% in water use*
2030	-80% carbon footprint*	100% waste recycled or re-used	-25% in water use*
2050	Carbon neutral*	Zero waste	-50% in water use*
Rationale	Essential to meeting global and national CO ₂ reduction targets.	Essential to meeting landfill diversion targets particularly in Scotland where the Scottish Government has Zero Waste Strategy target of 5% to landfill by 2025.	Climate change models forecast reduced summer rainfall putting pressure on scarce water resources. Treating water to potable standards and transportation of water is costly and uses energy.

*targets from a 2013/14 baseline (carbon footprint target excluding losses).

Adapting our Strategy

Our Sustainable Business model is characterised by:

- Consideration of environmental, social and economic costs and benefits in decision making
- Collaboration with stakeholders; and
- Transparency in decision-making processes and reporting of performance.

In line with these key principles, our Strategy is reviewed annually by key internal and external stakeholders, including our Sustainability Stakeholder Working Group made up of key external stakeholders including SEPA, NatureScot, Zero Waste Scotland and the Sustainable Scotland Network. Strategy development is underpinned by expert advice and benchmarking from sustainability-focussed organisations including AccountAbility and Planet Mark. All Directors of SP Transmission and Distribution participate in the Executive Sustainability Steering Group (ESSG). The ESSG conduct a comprehensive annual review of the Strategy to ensure our goals remain in line with policy developments and are ambitious enough to demonstrate leadership.

2021 Sustainable Business Strategy Development

In 2020-21, we carried out ten stakeholder workshops, four working groups and four strategic panels in order to discuss the ongoing development of the Sustainable Business Strategy with a wide range of stakeholders. Topics covered included scope 1-3 greenhouse gas reduction, supply chain sustainability, biodiversity, natural capital and social sustainability.

Feedback from these engagements has led to a number of changes being proposed for the Strategy:

- Development of new draft Net Zero and Carbon Neutrality targets,
- Development of proposed updates to the sustainable society driver and objectives,
- Commitment to the development of a Biodiversity Action Plan, and
- Identification and discussion of new external influences, such as the Scottish Climate Emergency Skills Action Plan.

We also carried out a strategic gap analysis with Resource Futures, developing a series of actions to enhance maturity across all key impact areas.

As our Strategy covers both our Transmission and Distribution licences, our Executive Team made the decision to delay the 2021 update of the strategy document to enable further engagement workshops and the development of the distribution Business Plan to influence it further.

Initiatives and environmental impacts

Initiatives

The following sections of this statement outline our progress in line with our Sustainable Business Strategy, highlighting the significant initiatives that contribute to sustainability, environmental enhancement and low carbon objectives, and laying out drivers, current status, impacts, next steps and links to UN Sustainable Development Goals. The document is presented under five themes which were developed to align with Ofgem priority areas for delivering a sustainable network:

- Driving Decarbonisation
- Mitigating Climate Change
- Enhancing the Natural Environment
- Sustainable Procurement, Resource Use and Waste
- Sustainable Society

Initiative	Description and expected benefit	Target year	Implementation milestones and next steps	Status
Project Phoenix	Phoenix seeks to allow greater use of renewable power from windfarms, solar arrays and batteries whilst maintaining security and stability of supply against a background of recent and planned closures of conventional generation plants. The project will develop and demonstrate the deployment of a new technology, the Hybrid- Synchronous Compensator (H-SC).	2021	 Live trial 2020-2021 Commercial Power systems simulations 2021 Commercial reports 2021 	On track
Digital Substations Initiative	The Digital Substations Initiative seeks to remove barriers to the widespread uptake of digital substations by taking a multi-vendor approach to ensure the convergence of communications protocols to reduce the risk of assets being stranded or unsupported as the market evolves, and through the creation of a replica digital system which will act as a test bed to prove the engineering configurations required for a wide range of installation scenarios.	2021–2026	 Replica system created 2020-21 First business-as-usual installation at Windyhill substation 2022 Subsequent installations throughout RIIO-T2 	On track
Empowering the Connections Customer	Whilst SP Transmission typically successfully makes 100% of connections offers within the relevant deadlines, customers requested access to self-service online application tracking and information, and we also recognised that we could make the application process even smoother for customers if we carried out a corresponding review of our internal processes.	2022	 Launched Customer Connections Portal 2020 Apollo planner tool extended to full functionality 2020 Portal phase 2 2021-22 	On track
Virtual Synchronous Machine	This global-first initiative explored technical approaches to and implications of restoring the electricity transmission network from a wind farm.	2020	 Trial successfully carried out in October 2020 Learnings are being fed into Distributed ReStart project 2021 	Complete

The following table provides an overview of the initiatives covered in this statement:

Initiative	Description and expected benefit	Target year	Implementation milestones and next steps	Status
Reducing whole life emissions	As part of our commitment to reduce greenhouse gas emissions, we are increasing our understanding of the whole-life emissions associated with the infrastructure we build and maintain. Our long-term ambition is to manage and reduce the emissions associated with our new infrastructure developments in line with the PAS2080 Carbon Management in Infrastructure framework.	2020–2026	 Collaborative work will continue throughout RIIO-T2 (2021-2026). A common embodied carbon assessment tool will be introduced by 2023 Metrics to track embodied carbon and Scope 3 carbon reductions will be developed by 2023. 	On track
Sulphur Hexafluoride (SF ₆) Emissions Reduction	As a result of its high global warming potential and its widespread use throughout our transmission network, SF ₆ gas is the largest controllable element of our direct business carbon footprint. This year, as in past years, SF ₆ leakage dominates our footprint, due to the substantial number of SF ₆ -filled assets on our network and leakage from older assets which is challenging to fix. This issue therefore commands intense focus from our Executive, strategic and operational teams and we are committed to exploring every available solution.	Ongoing	 SF₆ working group created 2020 Development of updated repair plan 2020-21 Development of updated policy statement 2020-21 Development of draft temporary offsetting strategy 2020-21 Trial of innovative leakage repair and reduction options 2020-21 Collaboration with other network operators Ongoing 	This remains an area of increased focus for 2021-22 due to its significance to the business carbon footprint.
Biodiversity Net Gain	In 2020/21 we carried out quantitative assessments on a range of projects using the Defra Biodiversity metric 2.0. Assessments were implemented on projects at different stages of the planning process to quantify the impacts of recent and current projects.	2022	 In 2020-21 we carried out quantitative assessments on a range of projects using the Defra Biodiversity Metric 2.0 Route corridor confirmed end of 2021 Consent application 2022 	On track
Access Road Circularity	To date temporary access roads have been procured as part of individual projects. Moving to a framework with one contractor delivering access roads across major projects aims to facilitate aggregates being removed from one project, when access roads are no longer required, and reused in the build of access roads for other projects.	2020	 Agreement with SEPA 2020 Framework is in place for RIIO-T2 projects 2021-26 	Complete
Green Economy Fund	The fund supports a wide range of different activities that positively impact the SP Transmission network in direct or indirect ways, and all projects must demonstrate measurable social and environmental impact.	2021	 Funding fully allocated 2020 Project delivery 2019-21 Workshops and engagement to share learnings 2020-21 	On track
Covid-19 support and green recovery	As the operator of critical national infrastructure, our priority has been to keep the power flowing to homes and businesses in the South of Scotland and maintain a strong GB grid, in turn keeping us connected to family, friends and work. We've paid particular attention to projects enhancing the stability of the network, enhanced the resilience of power supplies to critical facilities, and provided funding to projects supporting help vulnerable individuals, communities and key workers navigate the crisis.	Ongoing	 We will play our part in the green recovery: Providing the network capacity required to enable Net Zero Supporting our communities Reducing our environmental impact Continuing to innovate 	On track

Driving Decarbonisation

The UK economy is decarbonising at pace, driven by ambitious national and international targets to keep global temperature rises well within a maximum of 2°C, and subsequent reports underlining the importance of sub 1.5°C increases, from pre-industrial levels. Driving societal decarbonisation through the timely connection of renewable electricity generation ranks as our top priority, alongside continuing to provide excellent network reliability and availability. The key uncertainty facing our network – and how we develop it economically and efficiently – is the changing generation landscape, the scale, timing and location of new generation and the timing of generation closures.

Not responding quickly enough risks delaying the connection of new generation and the transition to a low carbon energy sector. But building too much or too far ahead of time leads to higher customer bills. We have an ongoing role to help strike the right balance. This means proactive scenario planning, and where necessary taking decisive action to modify our investment plans.

A wide range of our established activities contribute to managing this uncertainty:

Scenario planning: We contribute key information to the Government's Future Energy Scenarios and National Grid's annual Electricity Ten Year Statement, and we update our own forecasts for new connections to capture new information.

Developing strategic investment options: We work jointly with National Grid and SSE Transmission to develop and specify Strategic Wider Works proposals.

Optimising investment needs: We We apply the Security and Quality of Supply Standard, a common and rigorous set of standards to identify what is required in any set of circumstances.

Minimising investment costs: We manage the cost of any necessary investment down to the minimum efficient costs, developing and deploying innovation where required.

SP Transmission's contribution to planning for future transmission network capacity takes account of whole system developments and challenges to whole system network planning for the low carbon transition. The key challenges that we have worked to overcome during the 2020-2021 scheme year are:

- Green recovery from the pandemic
- Significant increases in the anticipated amount of offshore renewable generation planning to connect since the submission of our RIIO-T2 Business Plan, driving:
 - increased volume and complexity of connections and reinforcement projects
 - the need to increase transfer capacity across key network boundaries

- Rapid growth in asynchronous and intermittent renewables and the need to ensure system resilience and stability
- Increased societal reliance on electricity
- Responding to the global and national biodiversity emergency.

In the 2020-21 scheme year we have made a number of significant changes to strengthen our whole systems planning approach, delivering a range of positive outcomes including:

- 1. Influencing national policy and principles Scottish Energy Advisory Board, Energy Networks Strategic Leadership Group (ENSLG), Scottish Government Update to Climate Change Plan 2018-2032, Scottish Offshore Wind Policy Statement, Offshore Transmission Network Review, National Planning Framework 4, Infrastructure Commission for Scotland (ICS).
- 2. Whole systems partnerships for green recovery and Net Zero Whole systems charter, Green Recovery, Innovation partnerships, Environmental partnerships, City engagement and partnerships for Net Zero.
- 3. Whole systems approaches for system capacity, stability and black start – Accelerated capacity requirements, Proactive optimisation of system strength and black start capability, North of England and South of Scotland Security, Global first Virtual Synchronous Machine grid repowering, Distributed ReStart, Stability Pathfinder.
- 4. Integrated whole systems planning, digitalisation and innovation New Whole Systems Team, Cross-network cooperation for efficient whole-systems solutions.
- Integrated whole systems approaches for communities, consumers and low carbon developers – Providing direct enhanced services to reduce impact on customers, Enabling the Stability Pathfinder process, Green Economy Fund, Zero carbon communities.



Materiality

SP Transmission's mission to enable societal decarbonisation through the connection and export of low carbon generation is the single most significant route for the network to halt and reverse climate change and protect and enhance Scotland's natural capital and biodiversity. These activities also have a significant influence on SP Transmission's direct and indirect business carbon footprint by enabling the use of green tariffs for substation and depot energy, electrification of fleet and reduced losses carbon impact, as described in the section below on Mitigating Climate Change.

The scale and speed of renewables wishing to connect to the network is increasing. A study carried out by transmission operators during 2020-21 identified that there has been a large increase in the predicted boundary transfer requirements (network capacity to export electricity) between the 2019 and 2020 Future Energy Scenarios, with the minimum 2030 requirements predicted in the 2020 FES (15GW) outstripping the maximum requirements predicted in 2019 (14.5GW), and predictions now extending to around 25GW in 2035.

Our ability to innovate is therefore increasingly important in order to utilise the network to its fullest potential, maintain system stability under increased intermittent generation and enable renewable generators and service providers to access new markets.

Status update

- 448MW of renewable generation connected to our network during 2020-21
- 1,640MW of renewable generation connected to our network since 2013, displacing approximately 1.3MtCO₂e annually
- £42.8m spent on innovation projects since 2013
- 99.1% connections offers delivered on time
- 24% increase in connections applications from 2019-20, 98% increase since 2017

Performance - low carbon connections

Overview

SP Transmission has cumulatively connected 1,640MW of renewable generation to its network since 2013.

Recent years have been affected by the impact of policy changes, legal challenges to offshore wind and planning delays affecting our customers in the Renewables sector. As per our forecast, one new wind farm was connected to the SP Transmission network in the year. The Neart Na Gaoithe (NNG) offshore windfarm connection was successfully delivered (448MW) despite significant planning delays, COVID-19 and very poor weather conditions in Q1 2021.

Significant development and construction, however, continues across our portfolio of onshore and offshore windfarms for delivery in future years.

109MVA of additional capacity was delivered in 2020-21 around Dunbar, enabling new renewable generation to connection via the distribution network.

A programme to install seven additional shunt reactors to support the effective management of system voltage across Scotland was completed in 2020-21, enhancing system stability under significantly reduced availability of large traditional generation sources such as power stations.

We are delighted that our stakeholders recognise the improvements we are making on a continuous basis to meet their needs. The score on our stakeholder satisfaction survey continued to improve, with a satisfaction score of 8.6 /10, our best result in T1 and significantly better than our benchmark of 7.4.

The new Kendoon to Tongland Reinforcement (KTR) project continued to make progress with overhead line routeing, environmental assessment, stakeholder engagement and consultation continuing in the year.

Unit 2019–20 Activity 2020-21 0 New low carbon MW 448 generation connections Average time to Days (Target 62.38 65.28 issue connection offer of 72 days) Connection Number 183 232 offers made Connections application Number of 175 193 engagement engagements Stakeholder satisfaction Score 1-10 8.4 8.6 (Target of 7.4)

Measures and performance indicators

Performance – innovation

Overview

Innovation is embedded within SP Transmission's investment and operational activities to support the low carbon transition, resulting in £42.8m invested via network innovation funds since 2013. Innovations deployed in recent years range from from the HVDC under-sea cable, through series compensation to deployment of outdoor 400kV Gas Insulated Switchgear (GIS) in March 2021.

In line with SP Transmission's Innovation Strategy, the company takes on the stewardship on areas where we can benefit our customers most including Wide Area Monitoring (WAM), Transmission Substation Digitalisation, new materials and technologies, and new operational processes to accommodate the evolving nature of the low carbon transformation of the sector. Investment in innovation today will benefit future consumers and our innovation to date has enabled over £40m of projected benefits to be integrated into our plans for 2021-2026 through the adoption of pioneering projects such as digital substations into business as usual.

We firmly believe that innovation is at its best when it is carried out in an inclusive and collaborative manner. Our Green Economy Fund (GEF) is a voluntary SP Transmission funded initiative offering £20m over two years to support innovative initiatives that will benefit the people of Scotland and support Scotland's ambitious green energy plans and local economic growth.

The fund takes a grass-roots approach to creating and accelerating a green economy, putting people and planet first, continually evolving, making tangible impacts and providing support where it's needed most. Fund projects recognise the interactions between energy, transport, heat, educational and social systems and explore their impact upon the wider energy network and the just transition.

The following table provides an overview of a selection of key innovation projects progressed in 2020-21, followed by more detailed case studies opposite.

Measures and performance indicators

Innovation	Issue or barrier	Annual achievements	Expected benefits	Timescales
FITNESS (Network Innovation Competition)	The deployment of digital substation solutions, whereby operation is managed by interconnected communications networks, is a key enabler of the digitalised, interconnected network of the future.	Project completion and implementation into business as usual via the Digital Substation Initiative.	 10% reduction in substation costs Improved safety Reduced outage time and 4-5% constraint payment reductions Carbon and materials savings 	2016 – 2020
Phoenix (Network Innovation Competition)	Addressing the technical, engineering and commercial barriers to the roll-out of Hybrid Synchronous Compensators. The project is providing dynamic voltage control, inertia and short circuit level in light of diminishing synchronous generation, all of which increased in importance during the unprecedented network characteristics during Covid-19 lockdown.	Project continued despite Covid-19 delays and restrictions. Live trial commenced in October 2020.	 Enhance system stability helping to reduce power cuts. Reduce the electricity network operating costs with a Net Present Value estimated at around £42m. Release an additional capacity of 662MW to the Electricity Network. Minimise the carbon footprint by saving just over 62k tonnes of carbon which is equivalent to the electricity use of over 6,000 homes. 	2017 – 2021
Distributed ReStart (Network Innovation Competition in partnership with National Grid)	The project is exploring how distributed energy resources (DER) can be used to restore power in the highly unlikely event of a total or partial shutdown of the National Electricity Transmission System. Past and current approaches rely on large power stations but as the UK moves to cleaner, greener and more decentralised energy, new options must be developed.	During 2020-21, SP Transmission led trials to understand how an 'anchor' DER may be used to initially energise a section of distribution network, establish a stable power island incorporating multiple DER types (e.g. wind, solar and batteries), energise up to the transmission network, and synchronise with the wider network (when available) at an appropriate point.	 Anticipated savings of at least £115M through increased competition by 2050 Planning for whole electricity system outcomes – This project will enable ESO to take a holistic 'whole system' approach to restoration. Increasing participation – Opportunities for participation on the Black Start service market by DER should significantly increase the size and breadth of the market. 	2019 – 2022
Green Economy Fund (Voluntary)	The Green Economy Fund (GEF) is a voluntary SP Transmission funded initiative offering £20m over two years to support innovative initiatives that will benefit the people of Scotland and support Scotland's ambitious green energy plans and local economic growth.	The fund has invested in some of the country's most innovative projects to help support the electrification of transport networks, boost innovative low carbon heat projects and train young people in renewable technologies.	• The Green Economy Fund has supported 35 diverse and innovative projects, delivering a wide range of benefits, including helping to create 335 direct and indirect green jobs, eliminating 169tCO ₂ e emissions per year and supporting projects that educated 2,558 students in low carbon technologies.	2018 – 2021

Case studies

Project Phoenix

Project Background

Phoenix seeks to allow greater use of renewable power from windfarms, solar arrays and batteries whilst maintaining security and stability of supply against a background of recent and planned closures of conventional generation plants. The project will develop and demonstrate the deployment of a new technology, the Hybrid-Synchronous Compensator (H-SC). Project partners include ABB, National Grid ESO, The University of Strathclyde and The Technical University of Denmark.

Phoenix will facilitate carbon reduction targets by enhancing network strength and stability to ensure renewable energy sources can be securely accommodated and fully utilised to backfill the services traditionally obtained from those large synchronous generators recently closed or planned for closure. The project will address the technical, engineering and commercial challenges that are currently perceived as the main barriers for wider scale adoption of renewables.

Current Status

During 2020-21, Phoenix was identified as critical to supporting the stability of the network and allowed to continue despite the unique load and demand conditions brought by Covid-19 restrictions. Building works concluded in September, enabling the Hybrid-Synchronous Condenser to be energised in October. The Commercial workstream delivered two output reports aimed at identifying the regulatory enablers and the impacts of H-SC technology upon existing balancing schemes and markets, supported by its independently-chaired Commercial Working Group.

Timescales for Completion and Next Steps

The project is funded under the Network Innovation Competition and scheduled to run for four years, from 2017 to 2021, with the live trial running 2020–2021. During the 12 month Live Trial, project partners including NGESO and University of Strathclyde will continue with power system simulations exploring a range of capacities and locations for Hybrid-Synchronous Condensers within the SP Energy Networks and GB Network Transmission network.

The results of these studies will be compared with real data collected during the live trial to understand the commercial value and mechanisms to incentivise the roll out of this technology.

Sustainability Drivers



Carbon and Energy Reduction

The project aims to minimise carbon footprint and continue creating a sustainable network for customers, enabling a saving of just over 62 thousand tonnes of carbon – equivalent to the electricity use of over 6,000 homes.

Additionally, the deployment of such devices is likely to further reduce the associated carbon emissions and costs by reducing the need for "must run" thermal generation – a practice that is currently essential to acquire auxiliary system support services particularly in times of light load.



Sustainable Resource Use

The project will release 662MW additional network capacity, greatly reducing raw material and waste impacts due to substantially reduced need for network reinforcement while enabling more Distributed Energy Resources – such as solar arrays and windfarms – to connect and flow through the network.

The decommissioning of numerous coalfired power stations across the UK presents an opportunity to divert potentially reusable assets from waste streams. There also exists the opportunity to reuse a portion of retired power stations and some of the existing equipment to operate as a Synchronous Compensator.

Project Phoenix continued

Sustainability Drivers



Land and Biodiversity Improvement

Sites previously used for power generation, or close to the existing network, are also ideal candidates for reuse in our sector, as proximity to the network avoids many issues that arise when considering an alternative green field site. Phoenix will not only evaluate the commercial mechanisms to facilitate future rollout but also conduct an assessment of potential locations for future installations that will include the use of existing generation sites.



Sustainable Society

This collaboration represents a strong commitment from all parties to respond to the changing energy landscape and deliver solutions to meet the needs of all stakeholders. Phoenix will aid the transition to a future GB transmission network that can benefit from clean energy resources without compromising the security and quality of supply to the customers. The project will enhance system stability, helping to reduce power cuts, and supporting the prosperity of an increasingly electrified economy. The joint project will explore future commercial mechanisms by which Synchronous Compensators will be able to compete to provide sustainable electricity network services on the open market. It will reduce the electricity network operating costs, effectively financially benefitting customers.

SDGs





Digital Substations Initiative

Project Background

The deployment of digital substation solutions, whereby operation is managed by interconnected communications networks, is a key enabler of the digitalised, interconnected network of the future. Beyond the central benefits in terms of design, engineering, installation and operation, the move towards digital substation systems will maximise grid visibility, reliability and security for the benefit of the whole system, even helping to open up peer-to-peer markets. As power generation sources become more volatile and intermittent, digitalisation of many substation processes will enable levels of real-time visibility and control unheard of today.

Our globally recognised FITNESS digital substation project successfully demonstrated the multi-vendor installation and operation of a digital substation. As with many innovations, successful demonstration is only the starting point of the journey towards business-as-usual deployment. Without a coordinated, well-supported approach, a lack of real-world technical data relating to actual network locations and assets could lead to failure to adopt the technology into business-asusual.

The Digital Substations Initiative seeks to remove barriers to the widespread uptake of digital substations by taking a multi-vendor approach to ensure the convergence of communications protocols to reduce the risk of assets being stranded or unsupported as the market evolves, and through the creation of a replica digital system which will act as a test bed to prove the engineering configurations required for a wide range of installation scenarios.

Current Status

During 2020-21, despite pandemic travel restrictions, the project continued remotely with the completion of a replica system build. This system has enabled development and testing to be completed before the first full deployment of digital substation systems at Windyhill substation. The ability to test outcomes on a replica system before deployment significantly reduces onsite risks and timelines by informing equipment specifications and enabling teams to understand challenges before physical works commence.

The FITNESS installation has now been handed over to SP Transmission operations teams and is being used as a learning environment to enable teams to train the skills required for network-wide transition to digital substations.

The Windyhill project will inform subsequent deployments at Hunterston and Glenglass substations.

Timescales for Completion and Next Steps

As the working group progresses towards implementation of the first digital substation at Windyhill, the specifications and process documents will be subject to ongoing review and update. The use of the replica system, in collaboration with our vendor partners, will be key to the development of these specifications and processes as it will enable a range of different options to be safely tested offline.

Sustainability Drivers



Carbon and Energy Reduction

A positive benefit of digital substations is the reduction in need for system outages which often need to be planned up to seven years in advance. Digital substations will enable new connections to be provided more quickly and at a reduced cost to meet the UK's renewable energy targets. The projected system availability improvements translate into a carbon saving of between 40.5 and 129.5 thousand tonnes of CO₂ per year by 2030, depending on level of uptake, and based on increased amount of wind generated.



Sustainable Resource Use

Digital substations utilise smaller, lighter, safer equipment, with greatly reduced reliance upon raw materials compared to conventional substations:

- For transformers, a 25% of reduction of steel and the removal of dielectric oil.
- For relays, a reduction of 90% of the use of low voltage transformers and a reduction of 50-60% in most components.
- For civil works, a 50% reduction in Polypropylene, Fibreboard, PVC and Gravel.
- For wiring, a reduction of 70% of copper wiring (Copper, Aluminium and Propylene).

In conjunction with the substitution or reduction in quantity of raw materials used, reducing the time spent onsite during construction and maintenance can mitigate environmental and social effects. End of life decommissioning is also less intrusive, with fewer materials to treat and dispose of.

Digital Substations Initiative continued

Sustainability Drivers



Land and Biodiversity Improvement

A vast number of copper wires can be replaced with a single optical fibre to communicate the same information via a digital signal. This reduces the trenching, clearances and insulation requirements of the substation. The use of optical fibres reduces the number of substation cubicles, as fewer cables require connection within panels. In addition, digital equivalents of current and voltage instrument transformers are inherently safer so clearances to other equipment is reduced.

Overall, the digital substation infrastructure is an estimated 10% smaller than traditional substation design, resulting in a noteworthy reduction in footprint requirements and potential biodiversity impact.



Sustainable Society

Reduced outage time and constraints coupled with greater operational flexibility will enhance system availability and efficiency, meaning that homes and businesses can benefit from fewer power cuts, and that renewable generators can connect sooner and generate with fewer constraints, increasing the potential proportion of renewable energy available for use. Customers and members of staff will benefit from enhanced safety, due to reduced overall hazards, more compact and self-contained substation design and reduced time on site. The digital substation approach will deliver an estimated 10% reduction of substation newbuild and replacement costs and 4-5% reduction of constraint payments, effectively financially benefitting customers.

SDGs





Empowering the Connections Customer

Project Background

As the decarbonisation agenda increases momentum, the number of renewable projects wishing to connect to the SP Transmission network is sharply increasing. SP Transmission saw a 24% increase in total connections applications received during 2019-20, leading to a 11% increase in final offers provided.

Whilst SP Transmission typically successfully makes 100% of connections offers within the relevant deadlines, customers requested access to self-service online application tracking and information, and we also recognised that we could make the application process even smoother for customers if we carried out a corresponding review of our internal processes.

Current Status

In 2020-21 we continued to progress our two-year Empowering the Connections Customer project to design and implement an online connection process, focused on customers, where the whole request and project management for new connections can be done online.

Soft launch and stakeholder testing of the Customer Connections Portal was carried out in Summer 2020, followed by full launch and the development of additional functionality in early Autumn.

Use of our new transmission planner tool, Apollo, extended to its full functionality during 2020. This system has transformed the internal connections application process from a manual, email and spreadsheet-based process into an end-to-end digital process.

Although these processes have now become more streamlined, customers continue to be supported by our connections teams as required throughout the connection process. This tool enables multiple control points against critical-to-quality indicators and enhances accountability across all business teams, making the connections process faster and smoother for customers.

Our new Connections Portal, coupled with ongoing preapplication connection engagement meetings and improved contract quality control, has enabled customers to access more information in a self-service way, leading to a 20% reduction in questions and 3% reduction in connections offer alterations since the previous year.

Timescales for Completion and Next Steps

Feedback from connections portal users has been used to develop plans for phase 2, which was approved in Q1 2021 and will be delivered in regulatory year 2021-22.

Sustainability Drivers



Carbon and Energy Reduction

This initiative is critical in enabling the level of renewable generation required to meet UK and Global carbon reduction targets. By improving the customer experience and smoothing the related processes, we can continue to successfully manage increases in transmission connection applications and support applicants through the process.



Sustainable Society

This initiative enables a more sustainable society by making the connections application process more accessible, understandable and self-service for all customers. In doing so, it enables us to target our expertise more directly to those customers who need the most support, helping to increase the chances of less experienced connections customers achieving successful outcomes.

SDGs



Virtual Synchronous Machine

Project Background

The recovery procedure from total or partial shutdown of the GB Transmission System is called Black Start. The process involves isolated power stations being started individually in sequence and gradually being connected to each other in order to restart the electricity system. Generators can sign up to provide their services in the event of a Black Start, but traditionally this market has only been open to large thermal generators and pump storage, as they are self-starting and can provide consistent levels of generation irrespective of the weather. Inability to access this market is a barrier for many low carbon generators.

As the GB energy mix decarbonises and decentralises, there are fewer and fewer of these large generation sources available to provide Black Start capability. This is especially true in the South of Scotland, where the majority of electricity is generated by renewables. Several collaborative projects, such as the National Grid Electricity System Operator-led Distributed Restart project, are investigating how the market for such services might evolve to include a wider range of green electricity sources, but there was also a need to explore the technical implications of restoring the electricity transmission network from these intermittent sources.

Current Status

During 2020-21, SP Transmission worked jointly with SP Renewables to develop and trial a Virtual Synchronous Machine (VSM) at Dersalloch Wind Farm, successfully re-energising the wind farm and part of the transmission network in a global first trial. The development and trial of the VSM tested the ability of groups of renewable energy resources to self-start, managing the assets using novel algorithms to behave in a way that would allow them to 'form' the grid, rather than 'following' it.

Initially, the scope of the trial only extended to re-energisation of the wind farm back to their network connection, but SP Transmission proactively proposed a third phase for the project to test the Machine's capability to re-energise part of the transmission network and re-synchronise at a point remote from the wind farm on our network.

Preparation for the trial involved over a year of intensive engagement between SP Renewables, SP Transmission and the Scottish Government. The trial was carried out in October 2020 and successfully proved that wind farms can be grid forming.

Timescales for Completion and Next Steps

The successful trial will enable Dersalloch to become the world's first 'black start' enabled wind farm by 2022. This success has huge implications for the global decarbonisation agenda as it effectively removes the need for traditional, often fossil-fuel based grid-forming generators, thereby enabling faster, fuller uptake of renewables, particularly when coupled with battery technology.

The findings from the initiative are being fed into the Distributed ReStart project, which is due to complete in March 2022.

Sustainability Drivers



Carbon and Energy Reduction and Sustainable Resource Use

This project has significant global implications for the decarbonisation of the energy mix as in time it will enable renewable generators to enter into contracts to provide black start services, potentially making green projects more financially viable and enabling faster phase-out of fossil-fuel generation.



Sustainable Resource Use

The project helps to remove the need for fossilfuel-fired generators to be retained or built in order to provide controllable generation only in the event of a black start, eliminating many tonnes of material use.

SDGs



Mitigating Climate Change

We mitigate climate change most significantly through our actions to connect low carbon generation for societal decarbonisation. But while we do this, we must reduce the carbon footprint of our business and operations and ensure that our network is climate-change resilient.

 Greenhouse gas Reduction Goals: In addition to the goals and targets laid out in our Sustainable Business Strategy, this year we have continued to develop a science-based target (SBT). Greenhouse gas reduction targets are considered science-based if they are "in line with what the latest climate science says is necessary to meet the goals of the Paris Agreement – to limit global warming to well-below 2°C above pre-industrial levels and pursue efforts to limit warming to 1.5°C".

Our work to develop Scope 1 & 2 Science Based greenhouse gas reduction targets started in late 2019. In 2020-21, we completed Scope 3 screening, carried out feasibility studies for all scopes and worked to develop our strategy and action plans to deliver the required emissions reductions in collaboration with stakeholders and partners. The outputs of these activities will be presented in our updated Sustainable Business Strategy later this year.

Carbon Management: The key message of the 2013
 Infrastructure Carbon Review – 'reduce carbon, reduce cost' – has been a key driver in developing SP Transmission's carbon management strategy in a way that not only supports the UK Net Zero ambition, but also reduces costs for our customers.

During 2020-21, this carbon management strategy has been developed following the principles and framework outlined in PAS 2080 Carbon Management in Infrastructure standard which sets out a consistent approach to carbon management that can be applied by all parties with the primary objective of reducing carbon emissions in a manner that also reduces cost. This activity has been supported by a PAS2080 selfassessment and the development of a series of stakeholder and collaboration-led actions to improve the maturity of our strategy and plans.

• External Verification: We continue to be ISO14001 certified. The implementation of this environmental management system provides a framework for continuous improvement of environmental performance. We remain focused on compliance, and beyond, improving our existing procedures, the environmental content included within contract specifications and the development and roll out of an environmental training programme. We carry out regular audits and assessments including external audit of our Integrated Management System, and use the system to optimise processes and resources. We also seek external verification of a reduction in our Business Carbon Footprint via the PlanetMark certification, which we have now held for four years. The Planet Mark is a sustainability certification which "recognises continuous improvements, encourages action and builds an empowered community of likeminded individuals".

• **Governance:** Development and delivery of our Sustainable Business Strategy and Sustainability Plan is governed by our Executive Sustainability Steering Group, chaired by our CEO, and supported by our Integrated Management System Executive and Management Review Groups. Delivery of carbon reduction activities is tracked via a range of internal reports and governance forums.

Materiality

SP Transmission's greenhouse gas emissions are a primary environmental impact for the business, and as such, are tracked and managed on a monthly basis by directors and senior leaders.

In 2020-21, the carbon equivalent impact of electricity lost from the network between generator and user (network losses) made up 89% of SP Transmission's total scope 1 and 2 footprint. Sulphur hexafluoride (SF₆) made up 10% and depot and substation energy, business and operational transport combined to make up the remaining 1%.

Status update

SP Transmission 2020-21 business carbon footprint (BCF) is 19,604 tCO₂e (excluding losses), a reduction of 4% from the 2013/14 baseline of 20,334 tCO₂e.

BCF excluding losses increased by 32% on 2019-20, due to increased SF₆ emissions.

BCF including losses decreased by 13% on 2019-20

All other areas reduced:

- 16% reduction in carbon impact of network losses
- 59% and 28% reductions in depot and substation energy carbon impact respectively
- 6% and 45% reductions in operational and business transport respectively.

Performance – business carbon footprint (excluding losses)

Overview

During 2020-21, SP Transmission delivered reductions across all categories of business carbon footprint except for sulphur hexafluoride emissions, which increased. Due to the potency of sulphur hexafluoride (SF₆), which has an extremely high global warming potential, this led to an increase in our overall controllable business carbon footprint. Excluding losses, the Business Carbon Footprint (BCF) has increased from 14,901 tCO₂e in 19/20 to 19,604 tCO₂e in 20/21.

SF₆ emissions: Whilst the underlying trend is downwards, SF₆ emissions are volatile on a year-to-year basis, being significantly influenced by any considerable failure or leakage from the large assets on the Transmission network. In 2020/21 the largest contributing factor to an increase in SF₆ emissions was from measuring the SF₆ recovered from decommissioned equipment at a large 275kV Substation.

As SF₆ is the most significant contributor to our carbon footprint (excluding losses) we continue to prioritise SF₆ leakage reduction and drive alternatives via our supply chain. The SP Transmission T2 SF₆ working group brings internal expertise together to drive forward both SF₆ alternatives and reduce leakage. Options trialled during 2020-21 included the implementation of a flange repair kit and a low-pressure top-up kit that permanently attaches to a leaking asset, reducing the total amount of gas

used for top-up. We also collaborate with the other Transmission Operators to identify areas of challenge, where we can work together to identify and implement solutions. In the reporting year this included an SF_6 alternatives workshop.

Depot and substation energy use: the carbon impact of depot and substation energy use decreased, largely due to 2020-21 being the first full year in which this energy has been purchased on a green source tariff.

Operational transport: Operational activity continued as essential work throughout the COVID restrictions. Non-essential operational travel was reduced and therefore emissions fell to 452 tCO₂e in 2020/21 compared to 478 tCO₂e in the previous year.

Business transport: The move to the majority of our meetings being carried out remotely in the reporting year had a significant positive impact on our business travel related impacts with emissions reducing to 308 tCO₂e in 2020/21 compared to 558 tCO₂e in the previous year. We have launched a new UK travel policy to complement our carbon reduction ambitions. The newly introduced policy includes reductions in overall travel by insisting on business essential travel only, a ban on flights between Scotland and London and no business class flights between Europe and the east coast of the USA.



Performance – business carbon footprint (excluding losses) continued

Measures and performance indicators

Category	2013–14	2014–15	2015–16	2016–17	2017–18	2018–19	2019–20	2020–21	tCO ₂ e difference from 2019–20	% difference from 2019–20
Depot Energy Use tCO ₂ e	187.8	270.24	161.36	365.50	336.14	560.21	351.89	144.53	-207.36	-59%
Substation Energy Use tCO ₂ e	2,301.7	2,553.26	2,377.26	2,123.55	1,798.49	1,439.10	1,433.40	1,028.26	-405.14	-28%
Operational Transport tCO ₂ e	287.69	270.69	322.27	582.05	854.98	432.50	478.45	451.65	-26.8	-6%
Business Transport tCO ₂ e	113.3	126.8	126.85	213.83	427.78	547.14	558.19	307.72	-250.47	-45%
Fuels tCO ₂ e	0.00	9.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0%
SF ₆ Emissions tCO ₂ e	17,435.05	15,305.56	13,366.04	12,164.26	13,803.00	19,178.22	12,078.98	17,671.60	5,592.62	46%
Total BCF (excl. losses)	20,334.42	18,535.57	16,353.78	15,449.19	17,220.39	22,157.17	14,900.92	19,603.76	4,702.84	32%



Performance - electricity losses

Overview

As outlined above, the carbon impact of network losses makes up the largest portion of our overall emissions footprint. This year, the carbon equivalent impact of losses decreased by 16% from 194,256 tCO₂e in 19/20 to 163,198 tCO₂e in 20/21. This due to both a decrease in kWh of losses from 760,000,000 kWh in 2019/20 to 700,000,000 kWh in 2020/21 and a decrease in GB grid carbon intensity.

There are two types of network losses: technical losses, which make up the majority, are an inherent part of power flowing through network assets and can be managed but not ever eliminated; and non-technical losses, which are units of energy transferred but not correctly accounted for, inaccurate billing estimations or illegal abstraction. The carbon impact of the electricity lost is driven by the mix of traditional and renewable generation on the GB grid as it flows through the network. Whilst the actual amount of electricity lost from the network might increase in the coming years, due to increased electrification and greater renewable generation uptake, the carbon intensity of the electricity will decrease as the grid mix decarbonises. There is currently a wide margin of uncertainty as to how far and how fast either of these variables will evolve, meaning that losses greenhouse gas impact may rise before it falls.



Category	2013–14	2014–15	2015–16	2016–17	2017–18	2018–19	2019–20	2020–21	tCO ₂ e difference from 2019–20	% difference from 2019–20
Transmission losses tCO ₂ e	169,282	240,210	194,120	263,712	186,327	203,810	194,256	163,198	-31,058	-16%

Measures and performance indicators

Case studies

Reducing whole life emissions

Project Background

As part of our commitment to reduce greenhouse gas emissions, we are increasing our understanding of the whole-life emissions associated with the infrastructure we build and maintain. Our long-term ambition is to manage and reduce the emissions associated with our new infrastructure developments in line with the PAS2080 Carbon Management in Infrastructure framework.

Consideration of whole life carbon emissions includes the carbon embedded within the materials and the energy expended to build an asset as well as the carbon associated with operating and maintaining our assets over their lifecycle. In order to maximise carbon reduction, carbon management should be:

- implemented at the start of a project, when different options are being considered;
- embedded throughout the design of an asset; incorporated in the procurement process;
- and tracked and managed through construction, use and decommissioning.

As we move towards increased digitalisation and 3D modelling within our designs, we have the potential to greatly increase efficiency and innovation. Sustainability in design is being developed within our new Building Information Modelling (BIM) processes to maximise potential. The long-term aspiration is to develop a dynamic and automated process, where the effect of design decisions on the carbon footprint of a project can be seen in real time, allowing carbon to be effectively used as a metric in the decision-making process.

Current Status

In 2020-21, we undertook a maturity assessment across a number of carbon management maturity areas, including Strategy, Brief, Concept and Definition, Design and Construction. We then worked in partnership with TO peers and stakeholders to implement the resulting recommendations.

We updated our investment processes to consider carbon impact, sustainable procurement, circular economy and other environmental impacts in detail at a far earlier stage than previously, enabling impacts to be eliminated or reduced at source.

In order address the significant challenges faced in developing a carbon management strategy and recognising the benefits of communicating a consistent message across our supply chain regarding carbon reporting and reduction, the three Transmission Network Operators formed a capital carbon focus group: UK Reduction of Capital Carbon in Infrastructure: Transmission (ROCCIT) and also investigated key areas for focus in the development of Net Zero Transmission Substations, such as construction materials, energy efficiency and onsite generation, replacement of diesel generation and digital engineering. Recognising the importance of stakeholder support and supply chain collaboration in developing and delivering our emissions targets, we held dedicated engagement events to understand the readiness levels of our suppliers, explore the potential barriers to delivery and identify innovative solutions and approaches.

Timescales for Completion and Next Steps

Collaborative work in this area will continue throughout RIIO-T2 (2021-2026). A common embodied carbon assessment tool will be introduced by 2023, alongside metrics to track embodied carbon and our progress towards our scope 3 science based target.

Ongoing development of the Building Information Modelling (BIM) strategy will allow sustainability data to be fully integrated into the design and decision-making process.

Sustainability Drivers



Carbon and Energy Reduction and Sustainable Resource Use

Integrating carbon assessment and management into the decision making and design processes on infrastructure developments is crucial on our route to Net Zero. A fundamental part of this is interrogating the resources we use and implementing circular economy principles.

SDGs



Sulphur Hexafluoride (SF₆) Emissions Reduction

Project Background

SF₆ gas has traditionally been used in electricity transmission assets as an insulator and arc-quenching medium in high voltage equipment. However, it has a global warming potential which is 23,500 times the equivalent of carbon dioxide. This means every kg of SF₆ gas which leaks from our equipment has the equivalent global warming potential of 2.35 tonnes of CO₂.

As a result of its high global warming potential and its widespread use throughout our transmission network, SF₆ gas is the largest controllable element of our direct business carbon footprint. This year, as in past years, SF₆ leakage dominates our footprint, due to the substantial number of SF₆-filled assets on our network and leakage from older assets which is challenging to fix. This issue therefore commands intense focus from our Executive, strategic and operational teams and we are committed to exploring every available solution.

The high dielectric properties of SF₆ which make it an excellent insulator are not commonly matched by other gases on the market. If alternative gases can be used, there is a requirement to design innovative new substations to function with these alternative gases.

Our approach to reducing these emissions is to:

- Reduce leakage on existing equipment, targeting the leakiest first where it is economically reasonable to do so;
- Collaborate with manufacturers of new SF₆ equipment and share best practice industry-wide to minimise leakage; and
- Work with manufacturers, innovators and industry peers to develop and install economically viable alternatives to SF₆.

SF₆ leakage needs to be significantly reduced in order to achieve our 2030 and 2050 carbon reduction targets. We intervene promptly to fix leakages, but in addition to the technical challenges relating to fixing leaks, the outages required to fix leaks must be balanced against a range of competing considerations, including existing outages for network maintenance, modernisations and upgrades, and the strategic nature of generation assets connected via the SF₆-filled equipment.

Measures to address existing plant leakage and the deployment of alternatives currently cost more and will continue to cost more in the medium term.

The market by which these technologies may become costcompetitive, will, to a large extent, be influenced by legislative and regulatory developments. We are fully involved in influencing legislation and regulatory policy to provide the market stimulation and funding required to address this industry-wide issue.

Current Status

As can be seen from our Business Carbon Footprint graph, the level of SF₆ emissions is volatile year on year, being significantly influenced by any significant failure or leakage from the large assets on the Transmission network.

Unfortunately, our 2019-20 37% improvement in SF₆ emissions was not sustained during 2020-21 as emissions increased by 46%, despite significant focus and actions to reduce leakage.

In 2020-21, the greatest contributing factors to an increase in SF₆ emissions were a large one-off disposal of an end-of-life-asset, where we must account for any difference between actual and expected SF₆ amounts, leakage from a single aging asset where repairs including the use of innovative approaches are ongoing, and a separate leakage which was fixed promptly. Together, these specific assets account for the vast majority of the increase.

Created in early 2020, the SP Transmission SF₆ working group brings internal expertise together to reduce leakage and drive forward the implementation of SF₆ alternatives. Outputs in 2020-21 include the development of an updated repair plan and policy statement and development of a draft strategy for the temporary offsetting of SF₆ emissions where a repair to a leaking asset proves ineffective and the asset must be replaced.

Options trialled in the reporting year include a flange repair kit and a low-pressure top-up kit that permanently attaches to a leaking asset, reducing the total amount of gas used for top-up. This allows the asset to operate at a lower pressure, significantly reducing the amount of leakage until a full repair or replacement is made at the earliest opportunity.

We have also collaborated with the other Transmission Operators to identify areas of challenge where we can work together to identify and implement solutions. In the reporting year this included an SF_6 alternatives workshop.

Timescales for Completion and Next Steps

Our RIIO-T2 business plan for 2021–2026 aims to use new alternatives to avoid up to 9.7 tonnes of additional SF₆. We will continue to collaborate industry-wide to drive the introduction of new SF₆ alternatives and share best practice to reduce leakage. We will continue in our efforts to identify and fix leaks more quickly and successfully, drawing on innovation where traditional methods prove unsuccessful.

Sustainability Drivers



Carbon and Energy Reduction

Significant reductions in SF₆ leakage are required in order to achieve our 2030 and 2050 targets to reduce our carbon footprint by 80% and reach carbon neutrality respectively.

SDGs



Enhancing the Natural Environment

We aim to protect and continually enhance the biodiversity and natural capital around our assets and support national and local strategies. Our decision making incorporates an assessment of the environment within which we are working to ensure that levels of natural assets are at least protected, if not enhanced.

In line with the Global Assessment on Biodiversity's five drivers of the loss of biodiversity, we mitigate biodiversity loss most significantly through our actions to maximise the utilisation of our network and connect low carbon generation for societal decarbonisation, which lead to benefits in terms of climate change mitigation, avoidance of additional land use and reductions in pollution. Whilst we do this, we have a strong focus on protecting and enhancing the biodiversity and ecosystems within which we operate, whilst being mindful of other key considerations such as people and communities, landscape and cultural heritage and socio-economic effects.

Materiality

Biodiversity is deteriorating worldwide and ecosystems need to be protected to halt the loss of biodiversity and restore the essential services nature provides in supporting wellbeing and a thriving and healthy economy. Biodiversity and natural capital are interlinked challenges with the climate emergency, it is imperative that nature based solutions are prioritised in our strategy to reduce climate change.

Status update

Biodiversity in the routeing process

SP Transmission published the second version of our Approach to Routeing major infrastructure guidance in Spring 2021. https://www.spenergynetworks.co.uk/userfiles/file/SPEN_ Approach_to_Routeing.pdf. We are committed to achieving no net loss and where practical biodiversity enhancement across future Transmission projects. Achieving this at an individual project level when routeing and constructing new electrical infrastructure is a challenging objective, as options are often restricted due to the location of generation. However, our overall approach to routeing places biodiversity protection and enhancement within the wider consideration of environmental matters which need to be balanced when routeing new infrastructure. Our approach to biodiversity is developed on a project by project basis with due regard to the relevant national policy in Scotland, England and Wales. We will continue to review and update this approach as we learn from experiences on implementation on the development of new projects, and through consultation with key stakeholders in our licence areas.

Landscape and Visual mitigation in the routeing process

Our Approach to Routeing document also outlines our methodology for landscape and visual mitigation. This is based on the premise that one of the major effects of an overhead line is visual, as a result of its scale relative to objects in the vicinity such as buildings and trees. As there is no technical way of reducing this other than through the choice of overhead line towers, and only limited ways of achieving screening through planting, one of the most effective ways of causing the least visual disturbance from a new overhead line is by careful routeing. However, the importance of other environmental considerations such as biodiversity must be taken into account. Decisions are therefore made on an individual project basis to assess the best environmental and technical solutions. For example, undergrounding of an overhead line will have less visual impact but may have a greater impact on biodiversity due to the level of ground disturbance.

Tools to assess Biodiversity and Natural Capital

In 2020/21 we started the process of identifying and piloting tools to assess our impact on biodiversity and natural capital and to advise the decision making process to align with our commitments of no net loss and where possible enhancement.

The DEFRA biodiversity metric is the adopted standard for use in England, and while not perfect for assessment in Scottish habitats, use of this tool provides a standardised approach and was therefore piloted on projects in 2020/21. (Please see Biodiversity Net Gain case study for more information).

In order to develop a standardised approach to Natural Capital assessment, the reporting year brought greater collaboration with the other Transmission Operators. We worked together on piloting and reviewing an Innovate UK funded tool (NATURE), project managed by consultants WSP. Further assessment of the tool will be carried out by the end of 2021. This will be a whole systems approach including Distribution Network Operators to ensure the NATURE tool is fit for purpose in assessing natural capital across the network. As part of this wider group we are including discussion of potential additional requirements, such as monetisation of ecosystem services assessment. Our proposed approach will then be tested through stakeholder engagement.

Stakeholder Engagement

In February 2021 we hosted a Biodiversity and Natural Capital stakeholder workshop. Stakeholders were supportive of the use of quantitative assessment through the use of standardised tools, however they also highlighted the importance of qualitative assessment and reporting. Stakeholders supported the development of an overarching SP Energy Networks strategy to ensure that there is consistency in our approach to biodiversity and natural capital, taking into account national, regional and local policy and priorities. Stakeholders also reinforced the importance of working closely with relevant organisations at a local level and collaboration to share data and expertise. In cognisance of this stakeholder feedback we have commenced the development of a Biodiversity and Natural Capital Strategy and are strengthening our collaboration activity with local groups.

Performance

Overview

In line with our sustainability commitments, the reporting year focused on engagement, collaboration and the piloting of tools to advise our approach to measurement and quantitative analysis. Quantification of biodiversity and natural capital is still a developing concept, especially in Scotland, where our transmission network is located. Therefore, quantitative data will mature as we move through RIIO-T2 to 2026. As requested by our stakeholders we will provide a mix of qualitative and quantitative reporting in future annual environmental reporting.



Case study

Biodiversity Net Gain

Project Background

In 2020/21 we carried out quantitative assessments on a range of projects using the Defra Biodiversity metric 2.0. Assessments were implemented on projects at different stages of the planning process to quantify the impacts of recent and current projects. This was the start of our learning journey and provided a sense check on our qualitative approach, assessed the suitability of the use of the metric in Scottish habitats and will help to aid our future strategy on quantitative assessment and meeting our commitment of no net loss in biodiversity, targeting enhancement, where possible. An example of one such assessment was an options appraisal of a new overhead line (OHL) route between Bonnybridge Substation and an existing OHL north of Glenmavis.

Current Status

SP Transmissions environmental consultants undertook a preliminary Biodiversity Net Gain (BNG) assessment of alternative route options identified. The purpose of the assessment was to consider the potential effect of alternative route options on biodiversity and identify BNG constraints and opportunities for the preferred route option.

It should be noted that, at the initial routeing stage, SP Transmission identifies corridors of approximately 200-300m in width. However, for the purposes of the preliminary BNG assessment, a 50m wide corridor was applied to each route option (25m either side of a centre line) in which it is assumed all habitats are affected. In practice, OHL routes are unlikely to result in continuous disturbance of all land within the corridor, rather impacts will occur at OHL tower locations typically 300-350 m apart as well as at temporary construction areas. However, in order to inform this preliminary assessment, it has been assumed that all habitats within the 50m wide corridor are affected. This approach represents a worst-case scenario.

An appraisal of each route option was undertaken to identify potential constraints and opportunities for BNG. Each route option was assessed considering habitat attributes which are used in Metric 2.0 to identify impacts and opportunities. It should be noted that this assessment was undertaken prior to the release of Metric 3.0, future quantitative assessments, to be undertaken during the Environmental Impact Assessment (EIA) and after the final design freeze for the project, will use the most up to date Metric available at that time.

The assessment concluded that, within all route options, there are potential impacts on areas of high distinctiveness and irreplaceable habitat. However, within all options, there are extensive areas of arable fields and modified grassland, low distinctiveness habitats, in which some changes to the route alignment, OHL tower positioning and location of construction requirements could provide opportunities to avoid or reduce impacts on rare and high distinctiveness habitats.

Timescales for Completion and Next Steps

The preferred option is therefore recommended to be taken forward to the next stage of the EIA process. In order for the preferred route option to achieve no net loss, several recommendations have been made which will guide the identification and assessment of a detailed route alignment, tower locations and other ancillary works, such as construction accesses and working areas e.g. undertaking detailed habitat mapping and condition surveys. The route corridor will be confirmed by the end of 2021 with a final biodiversity assessment (metric 3.0 or as updated/amended) to be included in EIA Report for submission with consent application to Ministers by the end of 2022.

Sustainability Drivers



Land and Biodiversity Improvement

The project identifies where there is the greatest opportunity for no net loss of biodiversity and the potential for enhancement through piloting quantitative tools for assessment.



Carbon and Energy Reduction

Biodiversity and carbon reduction are interlinked, protecting and enhancing biodiversity is critical in reducing climate change.

SDGs



Sustainable Resource Use

As a sustainable networks business we need to embed sustainability across everything we do, from the goods and services we procure to the design and delivery of projects and operations, taking into account impacts along the value chain with a cradle to cradle approach to sustainable procurement and resource management.

We work collaboratively to improve the circularity of our resources, recognising the value of keeping them in use for as long as possible and retaining their value. In line with this, we have set challenging business targets to divert 95% of our waste from landfill by 2023, to recycle or re-use 100% of waste by 2030, and to move to zero waste by 2050.

The supply chain plays a crucial role in the delivery of our sustainability commitments through meeting enhanced environmental standards and working with us to innovate to achieve significant change. We recognise this is a step change both internally and for our supply chain, it is imperative that we implement support mechanisms to enable a smooth transition and this will take time and a collaborative approach to be successful.

Our supply chain sustainability strategy is outlined in our RIIO-T2 Business Plan, Supply Chain Sustainability section. This strategy embeds a range of sustainability considerations to deliver 'a reliable, efficient and sustainable network'. Identifying the need to build innovation, efficiency and sustainability into the delivery of our purpose as a transmission network operator. In addition to our supply chain sustainability strategy, Iberdrola, SP Transmissions parent company, set a group objective in April 2020 of improving the sustainability of suppliers. "Supply Chain Sustainability: Strategic Objective 2020-2022 – 70% of strategic suppliers subject to sustainable development policies and standards by 2022." In the reporting year this journey has commenced with stakeholder engagement, review of procurement documentation, a new supplier platform with environmental scoring for strategic suppliers, introduction of an online supply chain sustainability reporting tool, quantification of the impacts and materiality of waste, development of resource metrics and the piloting of innovative circular approaches.

Materiality

We carried out a detailed analysis of our scope 1, 2 and 3 carbon emissions to inform the setting of science-based targets. Scope 3 supply chain emissions are estimated to be 49% of SP Transmissions emissions. The magnitude of this figure provides a clear illustration that a sustainable supply chain, in tandem with a circular approach to resource management, will be critical in achieving our Sustainability goals.



Status update

During scheme year 2020-21 we undertook to understand our suppliers (their environmental sustainability views, plans, current performance and maturity) through various methods, to give us insight into how we can address the associated new and emerging strategic challenges in achieving our goal to become a Sustainable Networks Business.

Action on sustainable procurement and resource management focused on incorporating our sustainability commitments and enhanced environmental standards into documentation, setting up supporting processes and engaging with the supply chain.

We held our annual Transmission Supply Chain event virtually which this year. Topics included our RIIO-T2 sustainability commitments and the next steps in implementation. This event provided an opportunity for suppliers to engage in dialogue with SP Transmission management team and procurement staff. We also held a Sustainable Procurement workshop to gain stakeholder input to develop our approach to strategy implementation in areas of challenge and gauge the maturity of our supply chain.

The SP Transmission Invitation to Tender (ITT) pack sustainability section was revised in the reporting year. This was a first stage revision to incorporate enhanced environmental standards into procurement practices. As we continue to engage with the supply chain and stakeholders to develop our approach to delivery of the enhanced standard, we will carry out future reviews on tender documentation as required.

The BRE SmartWaste online reporting system was introduced in the reporting year as part of our work to improve and streamline environmental and sustainability data collection and analysis processes from the supply chain. As a first step the top 10 suppliers, by value, from SP Transmission, were onboarded to the system. In 2020 SP Transmission became a Supply Chain Sustainability School partner and started to require contractors and suppliers for all new SP Transmission contracts to become members and undertake relevant sustainability and environmental training. The Supply Chain Sustainability School is a collaborative online tool with a catalogue of free resources that offers extensive training in different areas of Sustainability. We have also developed Learning Pathways to provide a more tailored approach to learning.

As part of the Iberdrola group SP Transmission participates in Global Practice Groups for the sharing of best practice and the development of group wide strategy, policy and practice. In the reporting year SP Transmission contributed to a GPG on Environmental and Sustainability targets in procuring products. As well as agreeing a common approach to the sustainable procurement of products the group also shared best practice in circular approaches to procurement, working in collaboration with the supply chain, for example reducing virgin and single use plastics in cable ducting and plastic resin buckets.

Iberdrola also launched a new supplier engagement platform, Go Supply in 2020, all Iberdrola group suppliers, including SP Transmission supply chain, are required to sign up to the platform. The platform provides a mechanism for assessing and recording supply chain sustainability and sets minimum sustainability requirements for strategic suppliers.

Performance

Overview

In the reporting year we have developed draft sustainable resource use metrics, initially we based these on the MI-ROG (Major Infrastructure Resource Optimisation Group) white paper on metrics, we then consulted Zero Waste Scotland to develop these further, we will continue to test these with our stakeholders and seek opportunities for collaboration on common metrics.

We are developing our methodology for assessing supply chain sustainability performance quantitively, to monitor progress against our target of 80% of RIIO-T2 suppliers (by value) meeting enhanced environmental standards. We will do this in two ways, firstly through our Go Supply Platform sustainability scoring which sets minimum standards for supply chain organisation sustainability and secondly through the development of a suite of sustainability Key Performance Indicators (KPIs), based on our new tender documentation requirements, which will ensure standards are met on individual contracts.

This year's quantitative performance focuses on waste produced and final destinations. Quantitative reporting on resource management will mature as we finalise our resource metrics, gather data on key resource inputs, their materiality and identify areas where opportunities exist for us to make an impact in improving circularity. Similarly from 2022 our approach to supply chain sustainability will start to provide quantitative information on meeting enhanced environmental standards.

Performance continued

Measures and performance indicators

Quantitative waste data illustrates an overall improving trend in moving towards our zero waste goal as shown in the chart below.



Quantity and types of waste produced by mayor projects and recycle rates

The introduction of the SmartWaste reporting tool will advance data collection to include reuse, as well as landfill and recycling rates which are the focus in the table below for 2020/21. Converted to percentages the data illustrates a significant improvement from baseline, in 2014 only 7% of waste was diverted from landfill, by 2020 this has increased significantly to 65%.

	Baseline Year 2014 (tonnes)	2015	2016	2017	2018	2019	2020 (tonnes)
Waste to landfill	43,778	52,238	100,315	208,876	50,946	7,418	12,365
Waste recycled	3,370	139,714	156,508	204,877	43,696	29,112	22,580
Total metric tonnes of waste	47,148	191,952	256,823	413,753	94,642	36,530	34,945

Case study

Access Road Circularity

Project Background

Major Projects are SP Transmission's most significant source of waste, of these waste streams aggregates are the most materially significant and continue to be an area of focus. The main source of our aggregates waste is from temporary access roads. We follow the waste hierarchy in reducing this waste, looking at alternative solutions to reduce material consumption in the first place, where this isn't possible, we are working with suppliers to reuse and recycle the aggregate.

Current Status

One example is the SP Transmission Access Road framework. To date temporary access roads have been procured as part of individual projects. Moving to a framework with one contractor delivering access roads across major projects aims to facilitate aggregates being removed from one project, when access roads are no longer required, and reused in the build of access roads for other projects. The framework also provides opportunities for a longer term supplier relationship, to work collaboratively to identify and deliver solutions to reduce aggregates waste. The procurement of the access road framework was carried out in the reporting year, contractors were required to outline in their tender returns how they would cost effectively minimise the use of virgin materials and resulting waste, supporting a circular economy based framework.

In order to support the framework contract we finalised an agreement with SEPA in July 2020 on the reuse of aggregates from temporary roads without waste management authorisations where: aggregate is excavated and moved between locations for use within SP Transmission projects; or where aggregate is excavated and gifted / sold to local landowners for use in their own defined infrastructure projects.

Timescales for Completion and Next Steps

The access road framework is now in place and we will continue to work collaboratively with the contractor to facilitate reduction of aggregates in access roads and their reuse across projects.

Sustainability Drivers



Sustainable Resource Use

This project targets our most significant waste stream, aggregates in access roads. The project follows a circular approach aiming to keep resources in use for as long as possible at a high a material value as possible through prioritisation of reuse.



Land and Biodiversity Improvement

Through taking a strategic framework approach to access roads rather than on a project by project basis we aim to carry out greater analysis of options for temporary access to sites to reduce the use of aggregates as far as possible. Looking at reducing the use of aggregate roads will also reduce the disruption of land and consequently reduce our impact on biodiversity and natural capital.



Carbon and Energy Reduction

As part of this project we will also analyse the carbon impact of reducing and reusing aggregates.

SDGs



Sustainable Society

We aim to have a net positive impact on the environment and the communities in which we operate.

Externally, we do this by working in collaboration with national and local stakeholders to understand their needs and to maximise the positive social and economic impacts of our operations on communities including education, skills and employment.

Internally, at SP Transmission, people really matter, our plans for the future mean we need to retain and attract the best people to help realise our business vison. We have a wide range of programmes in place to develop skills and experience in energy sector careers. These include student sponsorship, graduate trainees, student summer placements and a returners programme.

We endeavour to treat everyone fairly and are committed to promoting a culture where individuality is celebrated. Being a diverse organisation goes beyond having legally compliant policies and practices; it includes a focus on creating an innovative, integrated organisation where people feel valued, inspiring them to perform at their best. We also value the difference our team can make in the community, through our volunteering programme.

Status update

- Stakeholder satisfaction is 8.6/10, well above our 7.4 benchmark
- £20m committed to 35 projects through our award-winning 2-year Green Economy Fund
- 20.48% gender pay gap for SP Transmission in 2020
- Ranked in the FTSE 4Good Index for the 11th consecutive year as part of the Iberdrola Group
- Dow Jones Sustainability Index only European electric utility included in all 21 editions
- Ethisphere World's Most Ethical Companies 2021 – Iberdrola
- First company in to obtain global certification from Aenor for its Covid-19 protocol across all group companies
- Go Supply supplier engagement platform launched.



Case studies

Green Economy Fund

Project Background

The Scottish Government's ambitious drive to a low carbon economy will ultimately require a transformation in all forms of transport and heating. This is dependent upon the key infrastructure that the energy network provides. In response, we pledged to voluntarily contribute £20m over a two-year period to support initiatives that will enable communities and businesses to develop their ideas and to fund the implementation of those ambitious projects that support Scotland's low carbon future, helping accelerate existing ideas and supporting projects that may not otherwise occur.

The fund supports a wide range of different activities that positively impact the SP Transmission network in direct or indirect ways, and all projects must demonstrate measurable social and environmental impact. Initiatives seeking funding were required to demonstrate that they had green credentials and were targeted at areas that may ordinarily struggle to access funding. Lessons learned from projects supported by the fund are shared with other communities to facilitate widespread benefit.

Current Status

Our two-year Green Economy Fund (GEF) is currently supporting 35 diverse and innovative projects to deliver over 169 tonnes of annual tCO₂e savings, creating 53 direct and 281 indirect jobs, installing 24 low carbon generation measures, generating 435MWh of green energy to date and directly supporting over 13,000 customers. The £20m fund has now been fully committed and is now closed for further applications.

Recognising the capacity-building aspects of the GEF, the sharing of experience and best practice between geographically or topiclinked projects was a key focus in 2020-21. In September and October 2020, SP Transmission held dedicated workshop events to enable all projects in the Dumfries and Galloway area and all Transport projects to share key learnings and develop aligned approaches to stakeholder influencing.

Recognising the specific needs of community projects, SP Transmission has a dedicated project liaison team, provided by the Energy Saving Trust, who keep in regular contact with the projects to guide their development and enable robust governance and reporting. In addition, every project is also offered communications support from a professional PR agency.

Timescales for Completion and Next Steps

For RIIO-T2 we will deliver a £5m Net Zero Fund to support local communities to maximise the social, economic and environmental benefits of local energy solutions. We engaged widely with stakeholders, including the Scottish Government and consumer energy groups on this proposed fund and received an overwhelming amount of positive support for our original £20m proposal, however this was reduced to £5m by the regulator upon final determination of our RIIO-T2 Business Plan.

Sustainability Drivers



Carbon and Energy Reduction and Sustainable Resource Use

The fund was established to build the infrastructure and the learnings needed to decarbonise heating and transport, essential in meeting ambitious Net Zero carbon targets. The projects themselves are producing significant carbon savings but perhaps more importantly, they provide proof of concepts which in years to come will be replicated to create the step changes required for the green recovery and transition.

Projects include the delivery of an innovative battery storage project which helped reduce energy costs and increase resilience in 133 homes in Dumfries and Galloway. The £1.25million project, which targeted properties owned by Dumfries and Galloway Housing Partnership (DGHP), provided a unique opportunity to help tenants reduce their energy bills and make homes more resilient in the event of an outage in supply.

The installation of batteries coupled with moving to the right energy tariff and supplier and the installation of smart meters led to some households seeing their energy bills dropping by more than half. The project saw real-life examples of the batteries giving tenants protection from power cuts and keeping vital medical equipment running in the event of power outages.

A further innovation in rural Scotland aims to tackle barriers to electric vehicle use by generating and storing electricity for use in three new electric community transport vehicles.

Several bike hire schemes, including e-bikes have also been supported. As well as cutting carbon by providing an alternative to car use, bike hire schemes support a circular economy approach to resource use with the sharing of resources, reducing the need for individual ownership and reducing the number of bikes purchased, therefore reducing the use of raw materials.

Green Economy Fund continued

Sustainability Drivers



Sustainable Society

In a regulatory framework that means that (outside of the community liaison carried out around transmission investment projects) many interactions between SP Transmission and its end customers are either conducted via the Electricity System Operator or via SP Distribution as DNO, the Fund enables SP Transmission to reach communities directly.

The projects have a real impact on the social and economic wellbeing of communities, with strong links to the UN Sustainable Development Goals.

With a surge in demand for renewable energy, the Fund has supported the Energy Skills Partnership (ESP) in its plans to establish nine Renewable & Energy Efficiency Training Centres in colleges across central and southern Scotland.

Cycle hire schemes provide an economic method of travel, improving physical and mental health and wellbeing. Community electric vehicle transport provides affordable, accessible, sustainable travel, improving mobility and reducing isolation in rural communities. Increased provision of electric buses provides additional health benefits associated with reduced air pollution. Renewable and battery storage projects provide low carbon energy at lower cost, helping to tackle fuel poverty in off-gas-grid communities and increasing the financial sustainability of community hubs.

Project knowledge dissemination increases education, building knowledge and capacity in STEM subjects related to decarbonisation of energy.

Funding community projects also builds capacity and innovation, leading to low carbon job creation.

GEF also funded the development of six Local Area Energy Plans, a community led, grassroots approach to decarbonisation, facilitating a more local, self-sustaining approach to energy production and utilisation at source

This multifaceted approach provides a way for SP Transmission to invest in the communities that we serve, making a real difference to the environment as well as delivering clear economic and social benefits.

SDGs







Covid-19 support and green recovery

Project Background

In the last year, Covid-19 has profoundly altered every part of our society and economy. As the operator of critical national infrastructure, our priority has been to keep the power flowing to homes and businesses in the South of Scotland and maintain a strong GB grid, in turn keeping us connected to family, friends and work.

We've paid particular attention to projects enhancing the stability of the network and worked closely other network operators, Government and regulators to adjust our operations to maintain safety and network resilience throughout the crisis. Our engineers have continued essential maintenance and repair work as well as going the extra mile to inspect, protect and ensure resilient power supplies to critical facilities like hospitals, vaccine centres and social care facilities at the frontline of the fight against Covid-19. Projects funded by our Green Economy Fund and direct donations have stepped in to help vulnerable individuals, communities and key workers navigate the crisis.

Current Status

At the onset of lockdown, our priority was to provide a secure supply of electricity and ensure the safety of our staff and contractors.

In spring and summer 2020, many programmes of work were halted to ensure that the GB transmission network would not be put at risk under the unique load and demand conditions brought by lockdown. Teams worked hard under significant uncertainty to engage with stakeholders and reschedule the vast majority of postponed projects and outages by the end of the regulatory year. Project Phoenix was identified as critical to supporting the stability of the GB network and allowed to continue, underlining the importance of the services it is now providing.

We conducted comprehensive reviews of our infrastructure around 56 large NHS and private hospitals across the areas served by SP Energy Networks to bolster their robust contingency plans, prioritising works to provide additional capacity to new field hospitals and vaccination storage facilities.

Projects funded by our Green Economy Fund adapted their services to provide patient transport, vaccine shuttle services and grocery deliveries to vulnerable people across the South of Scotland. We also provided funding to a number of charities to help them continue to support our communities during lockdown. We partnered with British Red Cross to help them provide food parcels, medicine deliveries, fuel top-ups and welfare checkins, while our donation helped volunteers in their Glasgow hub support vulnerable adults and asylum seekers across Glasgow and Midlothian. Thanks to funding from our COVID-19 charity fund, Food Train Scotland was able to provide reliable weekly shopping delivery services and wellbeing check-in calls for those who were housebound with no family or friends for support, while the Support in Mind charity was able to offer their service users both remote and increased carer support.

Finally, we developed our Unlocking Net Zero ten-point action plan for a green recovery, outlining practical steps which could be taken without any additional cost to government to unlock the significant economic benefits of the Net Zero transition and leverage private investment in energy infrastructure.

Timescales for Completion and Next Steps

As we recover from the pandemic, our focus will remain on providing the network capacity required to enable Net Zero, supporting our communities and reducing our environmental impact as we play our part in the green recovery.

Sustainability Drivers



Sustainable Society

Our activities during the pandemic have protected and maintained vital services, supported vulnerable customers and communities, enhanced the strength of the GB network and challenged policy makers to be ambitious in their green recovery plans.

SDGs





Stakeholder Engagement & Feedback

Stakeholder Engagement Strategy

We develop our Sustainability Stakeholder Engagement Plan in line with the SPEN Stakeholder Engagement Strategy and use the resulting stakeholder feedback to inform the development, review and implementation of our Sustainable Business Strategy.

Our Stakeholder Engagement Strategy embedded across our business operations, ensuring that our strategic priorities and vision continue to be aligned with our stakeholders through a process of continuous proactive engagement.

Our strategy embeds, at its core, the four principles of the AA1000 stakeholder engagement standard – Inclusivity, Materiality, Responsiveness and Impact. These ensure we engage at all levels, with a specific focus on those who are hard to reach, determine the most relevant and significant issues for us and our stakeholders, act on the outcomes of our engagement – making the necessary changes to our business – and then measure the results.

Embedding these principles is important to our business, as good engagement with stakeholders helps us to improve impact, reduce inefficiencies, create greater socio-economic value and reduce risk. Most importantly, effective engagement leads to real, tangible action in our business and benefits for customers and stakeholders.

We are continually looking to make improvements to this process and have built on the strength of our Stakeholder Engagement management system – Tractivity. This system provides us with one central source for our engagement planning and delivery, a single location where we can see the extent of our engagement across all topics, regions and stakeholders, and a means to efficiently track, act upon and report stakeholder feedback.

Sustainability Engagement

Our key engagement route on policy level sustainability issues is with our Sustainability Stakeholder Working Group, comprising key organisations with interests in sustainability issues at a policy level.

Examples of sustainability engagement activities during 2020-21 include:

- Topic specific workshops to develop our approach to delivering sustainability in RIIO-T2
- Quarterly Sustainability Stakeholder Working Group meetings
- Strategic Stakeholder Panels, discussing social sustainability
- Bilateral meetings with key sustainability stakeholder organisations e.g. Scottish Wildlife Trust and Zero Waste Scotland

- Annual SP Transmission Supply Chain Event
- Quarterly supplier newsletters
- Edinburgh and Glasgow Climate Compact Groups
- Supply Chain Sustainability School leaders' group and construction webinar
- Engagement with developers and communities for particular projects/geographic areas
- The Transmission Annual Sustainability Statement
- Online Stakeholder Community
- External communications using a range of tools including website, social media and press releases, with opportunities for feedback

All SP Transmission Engagement outcomes are summarised in our report, Making a Difference: Highlights of our activities and outcomes following stakeholder engagement available **here**.

Engagement on this Statement

Each year, we provide a draft of this statement to a wide range of stakeholders for their comment before we finalise it. Once again, stakeholder feedback has been overwhelmingly positive. Stakeholders liked that it was very comprehensive and gave a clear view of us as a company, our strategy and vision and included an interesting range of case studies that related well to our sustainability drivers and the UN Sustainable Development Goals.

Feedback implemented in this statement:

A number of minor clarifications were made throughout the Statement. More substantive changes made from Stakeholder feedback were:

- Making stronger reference to COP26
- Highlighting the reasons for SF₆ emissions increases
- Retaining the section on Strategy
- Featuring global civil action movements.

We welcome feedback on the content of this report and hope that it provides you with useful information on our activities. If you have questions or need more information about this report or our sustainability activities, please contact us at sustainable@spenergynetworks.co.uk

Further Information

If you would like further information on SP Energy Networks please visit our website: **spenergynetworks.co.uk**

Our Sustainable Business Strategy:

https://www.spenergynetworks.co.uk/userfiles/file/202003_SPEN_Sustainable_Business_Strategy_2020.pdf

All annual reports, including our Transmission Annual Report: www.spenergynetworks.co.uk/pages/stakeholder_reports.aspx

Our Green Economy Fund: www.spenergynetworks.co.uk/pages/green_economy_fund.aspx

Information on our RIIO-T2 Business Plan: www.spenergynetworks.co.uk/pages/riio_2.aspx

If you would like to be informed of forthcoming engagement opportunities, please register as a stakeholder: www.spenergynetworks.co.uk/pages/register_as_a_stakeholder.aspx

Other Sources of Information

The document forms part of a suite of interrelated strategies and stakeholder facing performance reports. These are mapped below with links to their locations:



List of Acronyms

BCF	Business Carbon Footprint
BIM	Building Information Modelling
CO ₂	Carbon dioxide
COP26	26th UN Climate Change Conference of the Parties
COVID-19	Coronavirus disease 2019
DER	Distributed Energy Resources
DNO	Distribution Network Operator
EDR	Environmental Discretionary Reward
ELAS	Executive Level Annual Statement
EMS	Environmental Management System
ESO	Electricity System Operator
EV	Electric Vehicle
FES	Future Energy Scenarios
FITNESS	Future Intelligent Transmission Network Substation
GB	Great Britain
GEF	Green Economy Fund
GHG	Greenhouse Gas
GW	Gigawatt
GWDTEs	Ground water dependent terrestrial ecosystems
H-SC	Hybrid-Synchronous Compensator
ISO	International Organisation for Standardisation
п	Information Technology
kV	Kilovolt
MW	Megawatt
MWh	Megawatt hour
NGESO	National Grid Electricity System Operator
NGET	National Grid Transmission
NIC	Network Innovation Competition

PAS 2080:2016 Carbon Management in	
PAS2080 Infrastructure (Publicly Available Specification	on)
PPE Personal Protective Equipment	
PPP Pollution Prevention Plan	
RIIORevenue = Incentives + Innovation + Outputs (regulatory framework)	
Revenue = Incentives + Innovation +Outputs (regulatory framework for period 12013-2021)	:
Revenue = Incentives + Innovation +RIIO-T2Outputs (regulatory framework for period 2 2021-2026)	:
SBT Science-Based Target	
SCSS Supply Chain Sustainability School	
SDGs Sustainable Development Goals	
SEPA Scottish Environmental Protection Agency	
SF6 Sulphur Hexafluoride gas	
SHET Scottish Hydro Electric Transmission	
SICEF Scottish Infrastructure Circular Economy Forum	
SOF System Operability Framework	
SPEN ScottishPower Energy Networks	
SPT SP Transmission	
SSEN Scottish & Southern Electricity Networks	
Sustainability Stakeholder Working Group	
Science, Technology, Engineering and Math	S
tCO ₂ e tonnes of Carbon Dioxide equivalent	
TO Transmission Operator	
UN United Nations	



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