SP Transmission

Annual Performance Report 2019/20

SP ENERGY NETWORKS

Welcome

As Scotland continues to drive towards net-zero emissions SP Energy Networks has a critical role to play. Our journey to a Net Zero future is already underway and within the last year we have reduced our business carbon footprint by nearly 33% (excluding losses). We are supporting societal decarbonisation by enabling high volumes of low carbon connections to our network. We play a critical role in providing security of supply across GB and in facilitating the connection of new renewable energy which is crucial to ensure that electricity generators and consumers continue to benefit from the outstanding levels of reliability to which they are accustomed.

Over the last 7 years we have invested over £2bn in our transmission network as part of a demanding investment programme and remained on track to deliver on all our T1 commitments: building major infrastructure to pave the way for a low carbon future, connecting our customers and replacing assets to safeguard the long term performance of our network. We continue to work closely with developers to seek earliest connections where it is cost efficient and economical to do so. We have invested heavily to maintain and upgrade our network to ensure long-term, reliable electricity supplies to our customers. Given the abundance of renewable energy in and around Scotland, our network is strategically important in allowing this energy to be harnessed and transported to meet demand in England. In 2019/20 we installed 1,360MVA of shared use connection capacity through the development of our Coalburn and Kilmarnock South Substations. From now until the end of our T2 Business Plan, we have 57 Transmission Owner Connection Offer (TOCO) contracted projects, which have the capacity to connect an estimated 6,551MW capacity across our network.

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 be high, with a satisfaction score of 8.4 /10, significantly better than our benchmark of 7.4.

The impact of COVID-19 and subsequent lockdown in March 2020 has had significant consequences for this year's outage programme and major effects on our supply chains. We remain committed to the delivery of as much of the remaining work programme as is humanly possible. As the operator of critical national infrastructure, our priority is to keep the power flowing to our 3.5million customers in turn keeping everyone connected to family, friends and work.

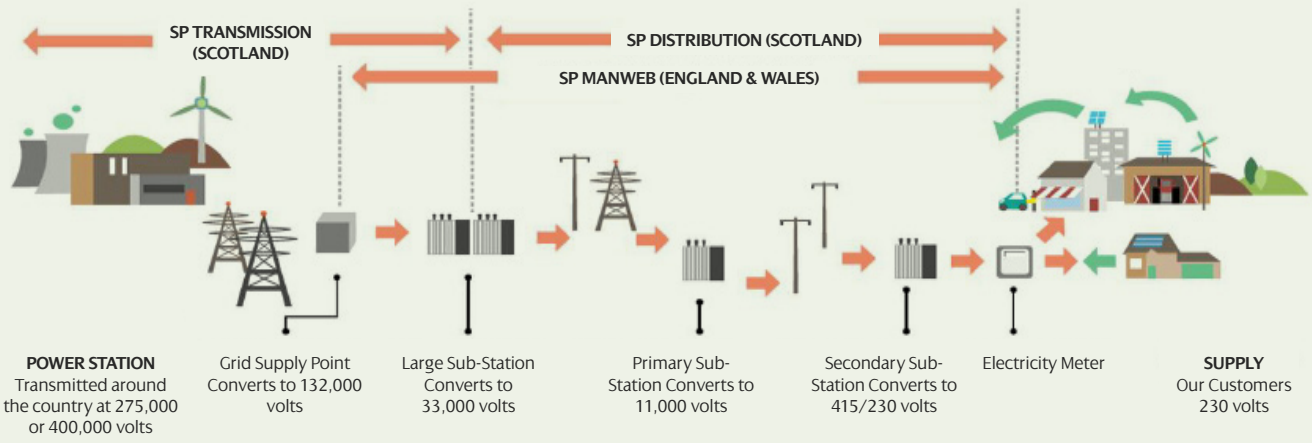
I hope that you find this year's report informative and as ever, we would be delighted to receive feedback on it so that we can continue to develop it for future years.

Frank Mitchell
CEO of SP Energy Networks

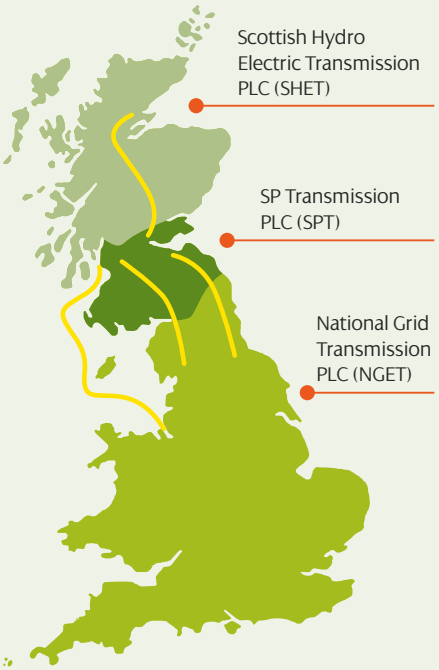
Contents

Our Business

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.



GB Transmission Operators and Interconnections



SP Energy Networks, is part of the Iberdrola Group, that owns three regulated electricity network businesses in the UK: SP Transmission plc (SPT), SP Distribution plc (SPD) and SP Manweb plc (SPM). This report relates to the performance of our transmission company, SPT during 2019/20. We are the licensed Transmission Owner (TO) for the Central Belt and South of Scotland. Our transmission network comprises just under 4,000 kilometres of circuits and 150 substations operating at 400kV, 275kV, 132kV and 33kV. We take electricity generated from power stations, wind farms and other sites and transport it through our vast transmission network to centres of demand. 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. We play a critical role in providing security of supply across GB and in facilitating the connection of new renewables.

Our vision as a business has always been to provide a safe, reliable and economic transmission system for current and future network users; and deliver a sustainable, low carbon energy system. By adopting a more sustainable approach, we are managing the network more effectively for customers and the environment, year on year.

We are a regulated utility with a licence to operate awarded by Ofgem, the GB energy regulator. Our regulation is set to create incentives for us to meet the outputs that our stakeholders value at efficient cost. Price Control is our core mechanism for this and defines outputs and revenue allowances for an eight year period, based on a business plan that we produce in consultation with our stakeholders.

Our business plan for 2013 to 2021 was "fast tracked" as it was recognised by Ofgem as of high-quality. The plan embodies a range of outputs relating to reliability, how we modernise our network, how we contribute to environmental objectives, and how effectively we engage with our stakeholders. These outputs are linked to financial incentives.

Within Scotland we have a key, and strategic role to play in facilitating the connection of renewable generation, which is critical to meeting GB environmental targets. Our revenues are therefore linked directly to specific, large-scale investment schemes – so called 'wider works'. One of the key uncertainties we need to manage is the timing, volume and location of new generation – particularly in the context of large changes to how generators are remunerated and subsidised through Government policy.

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.

SP Transmission
Annual Performance Report 2019/20

Our performance in summary

Executive summary

This report shows how our business has performed during 2019/20.

Overall stakeholder satisfaction survey – highest performance recorded for a third consecutive year, against a benchmark of 7.4.

The outlook from 2019/20 – prior to March 2020 – was favourable. We remained on schedule to deliver equivalent outputs to those agreed at the outset of RIIO-T1. We had placed all relevant contracts, committed the necessary internal resources, works were progressing well on site despite some challenges with outages being cancelled. Outage plans had been agreed with the Electricity System Operator (ESO) for the delivery of the remaining plan. Therefore, subject to this programme being maintained we were confident in our outturn delivery to achieve what we set out to do in RIIO-T1.

The impact of COVID-19 and subsequent lockdown in March 2020 has had significant consequences for this year's outage programme and major effects on our supply chains. We remain committed to the delivery of as much of the remaining work programme as is humanly possible. Strenuous efforts are being made with our supply chain and NGESO to recover as many of the cancelled outages as we can. Notwithstanding this, however, there is a significant risk to our remaining programme delivery from social distancing measures and system outages that now must extend through the winter.

Our asset replacement related programme is continuing very well with delivery of a broad range of outputs. This is evident from the extent to which we are ahead of plan. We completed a cumulative 80% of non-load outputs in the reporting year with our T1 submission forecast set out to achieve 76% for the equivalent period. Our comprehensive planning approach has enabled us to achieve more whilst not increasing network risk. During the year, up to the commencement of lockdown, works progressed well on site for delivery of all the remaining units in RIIO-T1. Planned outages were secured to complete the remaining few circuit breaker, transformer and overhead line outputs required of RIIO-T1.

We are almost 88% through our overhead line replacement programme of 800km, 225km ahead of our plans at this stage. Our total spends in 2019/20 was £205m, £41m below our original plans, taking our cumulative investment in the RIIO-T1 price control period to over £2bn. Overall for the RIIO-T1 period, the position relative to allowance will vary, reflecting changes in project delivery profiles since the RIIO -T1 Business Plan was submitted and the evolving picture of generation connections.

As per our forecast, no new wind farms were connected in the year. The cumulative total remains at 1,500MW, 60% of the output target of 2503MW for the price control period. Our forecast for the RIIO-T1 period has increased to 1,950MW, following commencement of construction works for Nearth Na Goithe (NNG) offshore windfarm. We continue to work closely with developers to seek earliest connections where it is cost efficient and economical to do so.

We provided 1,360MVA of additional capacity in the reporting year around the Coalburn and Kilmarnock areas, facilitating connection of new generation directly to our network and enabling connections via the distribution network. Our forecast has increased very marginally to 3,561MVA for the full period, which is over three times the original target.

The reinforcement of Tongland and Currie Grid Supply Points (GSPs) were substantively completed in 2019/20 to enhance capacity, quality and security of supply to existing and future customers.

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 be high, with a satisfaction score of 8.4 /10, significantly better than our benchmark of 7.4.

The key indicators of our performance are also looking healthy. Undelivered energy because of faults on our networks was 2MWh. This represents the annual electricity consumption of a single house. A reliability of 99.99999%, substantially out performing the benchmark level of 225MWh. This is an exceptional figure and our best performance this century.

Construction of the Western Link HVDC project, a joint venture with National Grid to increase the interconnection capacity between Scotland and England was completed in late summer 2017. This project supports the transition to a low carbon economy by providing further capacity for renewable energy schemes in Scotland whilst also enhancing the ability to import power into Scotland during periods of low renewable generation. Following first commercial operation in Dec'17, contractual takeover took place in November 2019, with the Western HVDC operational, the power transfer capability between Scotland and England is increased to 6,600MW, more than doubling the capacity since the start of RIIO-T1.

Our pipeline of innovation projects and deployment continues to expand, with the aim of addressing key future challenges for UK transmission and delivering our services efficiently and effectively. We continue to lead amongst TOs in respect of innovation and maintain our successful innovation programme whilst simultaneously delivering key outputs.

We are committed to transparency in how we report our performance and welcome the positive feedback that this format of reporting has received to date from our stakeholders. We hope you find this year's edition to be informative, and easy-to-read.

Outputs at a glance

Output	Metric/Target	Actual (In Year)	Status	Year on Year Trend	Comment
Stakeholder KPIs	**69%** (Ofgem break even level)	**77%**			This score of 77 reflects the consistency in our performance on connection offers, engagement with connected customers and broad interest customers.
Stakeholder survey	**7.4** (Ofgem break even level)	**8.4**			This year we have recorded a high performance in the annual survey, with the rating for overall satisfaction remaining broadly consistent 2018/19.
Stakeholder engagement Ofgem panel score	Ofgem – Target out of 10	**5.94**			Our rating from the panel increased from 4.9 to 5.94.
Timely connections	**100%** (74 calendar days to submit final offer)	**100%**			100 in year connection offers made on time maintaining our high standard of achieving 100% last year.
Network capacity	**1,073MVA** (RIIO-T1 baseline forecast)	**1,360MVA**			Cumulative total for the price control is now 3,362MVA. Our new forecast position for the end of RIIO-T1 is to deliver 3,561MVA.
Connections to the network	**2,503MW** (RIIO-T1 baseline forecast)	**0MW**			Cumulative total for the period is now 1,500MW equating to 77% of output target. Our new forecast position for the end of RIIO-T1 is to deliver 1,950MW.
Modernisation outputs	**76%** (RIIO-T1 business plan target)	**80%**			We continue to stay ahead of our planned outputs for RIIO-T1, keeping us on track to deliver our network renewal outputs in full.
Energy not supplied	**225MWh** (Based on 10 year average pre RIIO-T1)	**1.99MWh**			Decrease from the low level of 39MWh recorded last year and represents 0.0001% of energy not supplied across the year maintaining our outstanding network reliability.
Contractor safety	Total Recordable Injury Rate (TRIR)	**0.37**			TRIR is a widely used indicator and expresses injury levels as a factor of hours worked (injuries per 100,000 hours). A continuous drive for zero harm is our aim.
Public safety	**0**	**0**			We can report again this year that there were zero injuries to the general public resulting from our assets or operations.
Carbon footprint – SF_6 leakage	**889kg** (2020 Licence term)	**530kg**			40% below the target and a decrease from 696kg recorded last year.
Carbon footprint – Network losses	No individual target. This is included within the Total BCF target.	**194,256 tCO_2**			This is an improvement over last year's emissions of 203,810 tCO_2e.
Carbon footprint – Building losses*	**6,584 tCO_2e**	**1,785.29 tCO_2e**			This is a decrease on last year's emissions of 2,002.31 tCO_2e.

*Until reporting year 2018/19 we reported on metered substations only, in addition to this we were made aware of duplicate recording of energy consumed at our depots on our annual statement. We have informed Ofgem and made amendments to the start of RIIO-T1.

Status

Ahead of target | On target | Below target

Year on year trend

Improvement over prev yr | In line with prev yr | Deterioration since prev yr | Substantial deterioration

Financial Performance
Summary

Our expenditure

This year:

Our total expenditure this year was £204.5m. This was £41.4m below our totex allowance. The breakdown was as follows:

Totex comparison (2019/20 real £m)	Allowance £m	Actual £m	Variance £m
Load Capex	85.4	34.5	*-50.9*
Non-Load Capex	131.7	114.33	*-17.4*
Controllable Opex	28.9	55.7	26.8
Totex	**245.9**	**204.5**	***-41.4***

Forecast to 2021:

We have updated our forecast expenditure for the duration of the business plan to reflect the response from generation project developers to changes to funding support for renewables. Our best estimate is now:

Totex comparison (2019/20 real £m)	Allowance £m	Actual £m	Variance £m
Load Capex	1,382.0	1,223.3	*-158.6*
Non-Load Capex	876.7	804.9	*-71.8*
Controllable Opex	207.9	295.3	87.4
Totex	**2,466.6**	**2,323.6**	***-143.0***

The forecast is our current best estimate of the scale and timing of renewable generation connections, local network reinforcement, the wider works and modernisation projects that are likely to be needed to strengthen and renew the network to support customers' needs as we move towards a low carbon future.

Our revenues

This year our allowed revenues totalled £404.0m.

Our performance this year earned incentive payments of £6.5m, which reflected in our allowed revenues next year. The breakdown of incentive was as follows:

Incentive awards earned in 2019/20 (revenue received in 2021/22)	
Smaller incentives earned in 2019/20	£ thousands
Stakeholder engagement	738
SF_6 emissions	401
Larger incentives earned in 2019/20	£ thousands
Stakeholder satisfaction	2,379
Reliability	2,951

Our Return on Regulated Equity (RoRE)

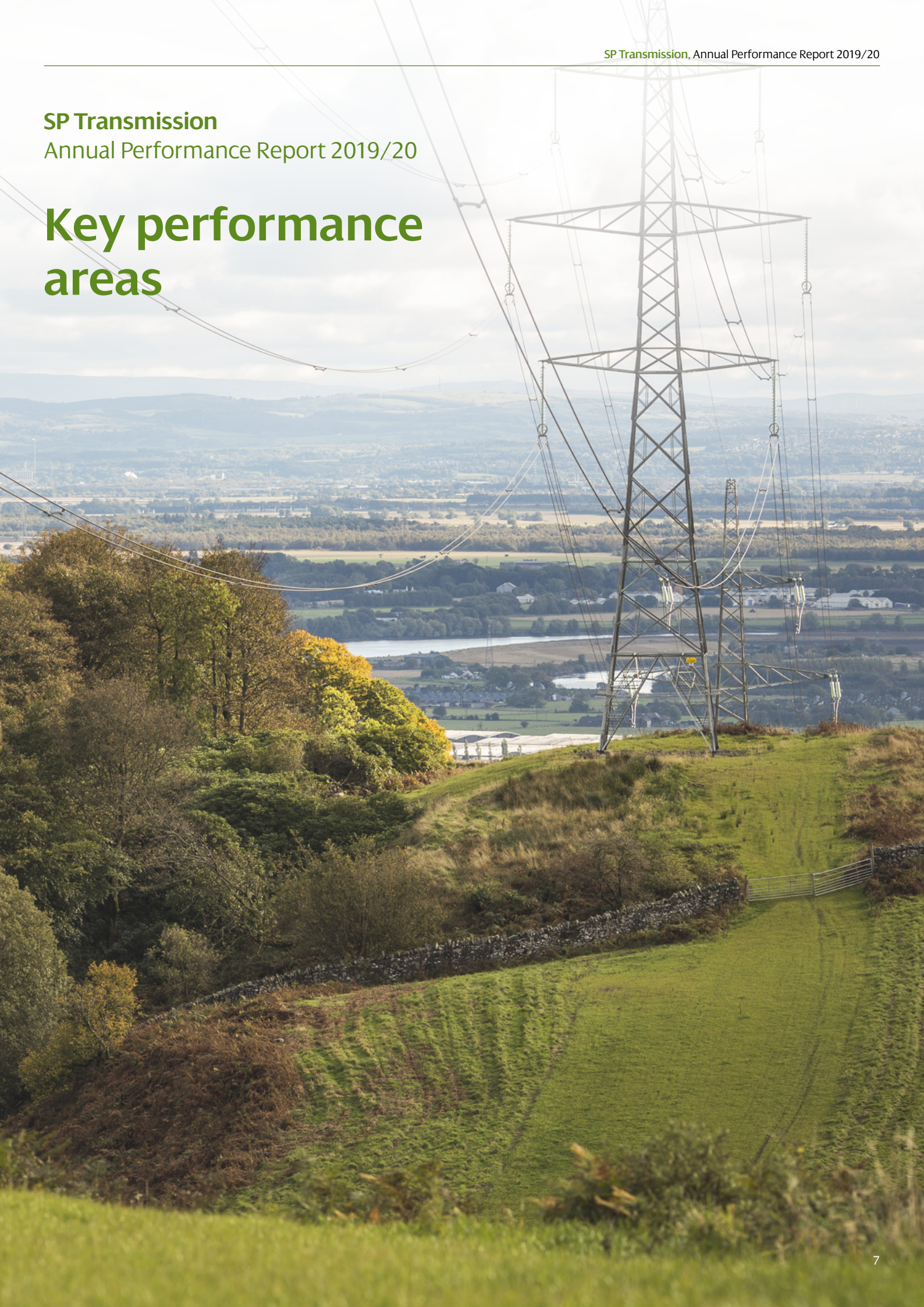
Our closing Regulatory Asset Value (RAV) this year was £2,514m (up from £2,497m last year 2019/20 prices).

Our performance related projected average real return over the 8-year price control period is based on totex out-performance of £74.1m (2016/17 prices):

8-year average 2019/20	**Return on Regulatory Equity (RoRE) –** All numbers reflecting Ofgem's Notional Gearing methodology.
7.00%	**Base Return –** Set by Ofgem for the 8-year period.
0.97%	**IQI Additional Income –** Agreed by Ofgem as part of the price control, and is a reward for the quality of our business plan and recognition of our fast-tracking.
0.89%	**Totex Efficiency Savings –** Any savings we make on our investment plan are shared 50:50 with the consumer, and we are currently forecasting some savings over the 8-year period. This results in a benefit to both consumers and our shareholders, and is in addition to meeting all of our specified outputs.
0.23%	**Reliability Incentive**
0.01%	**SF_6 Emissions Incentive**
0.14%	**Stakeholder Satisfaction**
0.11%	**Environmental Discretionary Reward**
-0.05%	**Network Innovation Contributions**
9.30%	**RoRE – Operational Performance**

SP Transmission
Annual Performance Report 2019/20

Key performance areas



Serving our stakeholders and communities

Relationships with Stakeholders are at the heart of how we operate.

The close relationships we have established with our stakeholders are at the centre of our planning and activity. Along with other successful organisations, SP Transmission realises that achieving consistently high standards is built on working closely with stakeholders.

Over the course of the year we have engaged extensively with stakeholders, customers and end consumers on our future plans. This has included multiple presentations and round table events with industry experts reaching 2,285 stakeholders, engagement with 4,500 end consumers on our priorities and the associated cost of our plans, and monthly meetings with our Independent User Group who have challenged and informed our plans. This has helped to shape our activities and ensure we are prioritising our plans in line with their expectations.

Our focus areas in 2019/20

This year, we have focused our stakeholder engagement on three key areas. Embedding innovation within our processes, ensuring we deliver the network for the future at the pace the industry requires; Supporting communities in the transition to Net Zero; and Network Resilience, as the reliability of our network is fundamental for society.

Collaboration through a pandemic

At the beginning of COVID-19, we worked closely with other network operators, Governments and the electricity regulator, Ofgem to develop contingency plans to ensure we continue to keep the lights on, maintain network resilience and the health, safety and wellbeing of our colleagues and customers during this challenging time.

Embedding innovation in our processes

In the year, we launched a new customer connections portal across our transmission and distribution networks to provide an easy to use platform for our connection customers. The bespoke platform was created following feedback from customers who expressed interest in an efficient way to view and track the status and progress of their individual projects online.

In defining the portal, a workshop was held for customers to let us know what they wanted from an online platform. This feedback was then incorporated into the functionality of the portal to produce a fresh, agile, and user-friendly experience.

The aim of the portal is to improve the customer journey by providing a centralised point for all available information and updates about all the customers' live projects. Customers are also able to create, track and review projects and can contact their project leads at a time that is suitable for them.

Supporting communities in the transition to Net Zero

Our Green Economy Fund focuses on the communities in which SP Energy Networks operates – central and southern Scotland – and will run until the end of RIIO-T1. The fund supports the ambitious green targets of the Scottish Government to boost local economic growth, improve air quality in our cities and deliver a better future, quicker.

Over the course of 2019/2020, a further two rounds of funding have been completed, ensuring that the fund, along with the administration costs is fully allocated. The second tranche of funding saw a further 21 projects, receiving just under £10m of funding. This funding round saw a variety of projects being supported, including two projects developing and utilising e-cargo bikes which are an answer to the inner cities last mile deliveries, removing the need for vans and lorries in these congested areas. The third round of funding has seen a further £3m of funding being allocated.

Further details of our work in this area is presented in the Green Economy section of this report.

Network Resilience

We have engaged with government policymakers on Black Start and the Electricity System Operator (ESO) on system operability to continue to plan for a resilient network with less synchronous generation sites, such as Hunterson, the closure of which has been recently announced. For example, we have engaged with equipment manufacturers and the Scottish Government to investigate new control technology to enable batteries and wind farms to contribute more to the management of network stability within increasing renewable penetration. We have also worked with key stakeholders to examine how important new technologies such as Hybrid-Synchronous Compensators (H-SC) can be rolled out within the UK to support network stability as the UK's generation mix changes.

Facilitating renewable generation

Going low carbon

Connecting renewable energy to the grid is key to the decarbonisation of the energy system. We are finding new and innovative ways to connect more renewables to the system quicker.

We are realising the low-carbon transition in a way that represents the best value for money. Building too many assets would require excessive investment from our customers but building too few risks costing our customers more money in the long run through constraints on low-carbon generation. 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. Despite these issues, we are supporting more connection applications than ever before and currently have 79 live customer connection projects.

SPT has delivered a significant increase in additional network capacity over and above the baseline target of 1,073MVA. We provided 1,360MVA of additional capacity in the reporting year around the Coalburn and Kilmarnock areas, facilitating connection of new generation directly to our network and also enabling connections via the distribution network. Our forecast has increased very marginally to 3,561MVA for the full period, over three times the original target.

We also completed an extension to Kilmarnock South 400kV substation adding new 400kV GIS and a third 400/275kV 1,000MVA transformer. This additional capacity will support the connection of directly connected and embedded renewable generation for the benefit of customers and assist in the achievement of UK and Scottish government climate change targets.

Other load related projects relate to the installation of an additional seven 33kV 60MVAr shunt reactors – with six now in service – to support the effective management of system voltage across Scotland, particularly important with the reduced availability of large synchronous generation plant. Additionally, works related to the completed Beauly to Denny overhead line continue. These include the undergrounding of existing 132kV overhead lines with the removal of the redundant 132kV overhead lines and other works associated with the Stirling Visual Impact Mitigation Scheme (SVIMS) now expected to complete early in 2021.

The new Kendoon to Tongland Reinforcement (KTR) project continues to make progress with overhead line routeing, environmental assessments, stakeholder engagement and technical studies continuing during the year.

Construction of the Western Link HVDC project, a joint venture with National Grid to increase the interconnection capacity between Scotland and England was completed in late summer 2017. This project supports the transition to a low carbon economy by providing further capacity for renewable energy schemes in Scotland whilst also enhancing the ability to import power into Scotland during periods of low renewable generation. Following first commercial operation in Dec'17, contractual takeover took place in November 2019, with the Western HVDC operational, the power transfer capability between Scotland and England is increased to 6,600MW, more than doubling the capacity since the start of RIIO-T1.

Modernising our network

We are nearing the end of to our asset replacement programme, delivering efficiently against our accelerated plans for network renewal – a set of investments which are key to providing long-term, reliable electricity supplies to customers.

As part of the RIIO-T1 Business Plan we had described how we intended to target investment to manage the risk of asset deterioration on our network. We have refined our approach to make best use of developments in resource and outage availability. We therefore brought forward our replacement of overhead lines, and re-profiled replacement of transformers and switchgear. Investment on asset replacement is below allowance due to cost efficiencies achieved through our project delivery model.

Our strong performance on our non-load related programme has continued with the delivery of a broad range of outputs. Prior to the emergence of covid, we were firmly on track to deliver all the outputs or materially equivalent outputs that were committed to at the time of our RIIO T1 submission. We are doing so in an efficient manner. At the end of the penultimate year of the price control, we were ahead of plan – on a cumulative basis, we had delivered 80% of our total non-load outputs, ahead of the planned 76% for the first seven years. This has included further units delivered on 275kV overhead lines, 275kV and 132kV switchgear, 275kV shunt reactors and 132kV transformers over the last year. The network performance benefits of our modernization efforts are already being seen, and despite COVID challenges we are working hard to deliver our entire target Network Replacement Outputs for 2020/21.

Our transformer modernisation programme is progressing well. Despite significant issues with projects at Erskine (extensive asbestos contamination) and Johnstone (transformer manufacturer quality failures) the second units have now been replaced at both these sites. The remainder of the programme, Grangemouth and Shrubhill, were completed during 2019/20.

Strathaven Substation

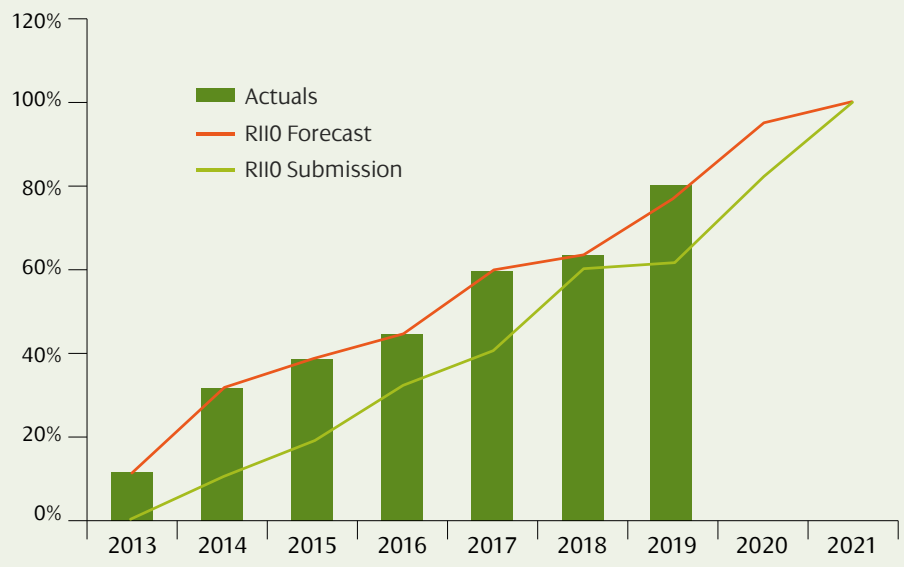
Wishaw Substation

Modernising our network *continued*

A major component of or non load investment programme relates to our overhead line network. We have previously reported good progress in this area, which continued in the reporting year. The modernisation work on the 275kV YW/ YX (Cruachan to Windyhill) was completed in 2019/20 although some associated reinstatement is ongoing. The 275kV programme has only two more projects – XS and XP route – both of which are expected to complete in RIIO-T1. Work also commenced on the refurbishment of V-route (which runs between Galashiels, Hawick and Harker) 132 kV overhead line. This is continuing in 2020/21 and is making good progress despite the impact of covid. This was the last of our overhead line routes to enter the construction phase.

We are also maintaining significant momentum in our 275kV switchgear modernisation programme, despite impacts from unplanned extended generation plant outages in Scotland. Our 132kV programme is on track, with Currie substation substantively complete. Our 275kV programme is delivering outputs at Kaimes , Strathaven and Wishaw, all critically important nodes on our network . Kaimes substation will be the final switchgear project in our RIIO-T1 plan and we are working to mitigate the impact of covid related outage cancellations to complete the outputs at the site within the period. In the case of Currie site, significant efforts have been expended to integrate load and non-load works that were required at the site to ensure the most efficient outcome whilst minimising potential for disruption to customers.

RIIO-T1 Forecast – Non Load Disposals (% of submission)



XP Route

V Route

Tongland

A safe and resilient network

This year we continued our excellent level of network reliability, with faults on our network resulting in only 2MWh of Energy Not Supplied (ENS) to customers. This represents an Overall Reliability of Supply of 99.99999%.

Our network is critical to delivering reliable supplies to customers and has delivered excellent levels of reliability this year again, continuing a trend of strong performance. Whilst transmission faults are rare, they can occur and can result in large impacts. Our network was responsible for only 2MWh of unserved energy this year. This represents the annual electricity consumption of a single house and Overall Reliability of Supply of 99.99999%. We have achieved this despite a high level of network depletion due to the volume of project works, through meticulous co-ordination across our portfolio and robust contingency planning. This is considerably better the benchmark level of 225MWh which was derived from the 10 year average prior to RIIO-T1 review period.

The closure of all large thermal plants in Central Scotland has significant implications for contingency planning. We are a critical service provider for 80% of Scotland's population. As such, it's important we consider every scenario and have robust emergency plans in place. One of the worst possible scenarios we plan for is a 'Black Start' – where the power goes out across the GB network and there is a race against time to get it back on. We continue to expand on our engagement in this area with the key influential stakeholders in the UK. We are working closely with the Department for Business, Energy & Industrial Strategy (BEIS) to mitigate the risks resulting from widespread power outage. Furthermore, we have discovered new ways to restore power quickly in the event of widespread power loss.

A globally significant £11.7 million project, which will look to prove whether distributed energy resources can contribute to the restoration of electricity supplies in the event of a black start, has been given the go ahead by energy regulator Ofgem.

This partnership project between SP Energy Networks, National Grid Electricity System Operator (ESO), and TNEI, will explore how distributed generation can be put to use to get the grid up and running should a 'Black Start' event occur.

The project will test how this new approach could work across both electricity transmission and distribution networks, potentially paving the way for new techniques in electricity system restoration around the world, while supporting the shift to a decentralised low-carbon energy system without compromising network reliability.

A safe and resilient network *continued*

The wellbeing of our customers, our people, our suppliers, and the public is and always will be our number one priority. We have a duty to ensure that our infrastructure is safe.

We have a duty to ensure that our infrastructure is safe. We aspire to deliver the highest standards of Health and Safety performance and are aligned in their approach to prevent injuries and workplace ill-health. Therefore, the wellbeing of our customers, our people, our suppliers, and the public is our number one priority. Our culture is defined by our values, strong leadership, personal accountability and a commitment to achieving excellence.

We are committed to promoting good health, safe behaviour and demonstrating care for the environment. We pride ourselves on our excellent safety track record. We are a constantly evolving business and always aim to improve and challenge ourselves to be world leaders in H&S performance. One of these ways has been improving our Behavioural Safety Model; We have evolved our Behaviour Based Safety initiative program and there is clear evidence that learning from this is being applied with better quality engagements observed on our work sites.

To ensure this is achieved we continue to collaborate with our contractors, with the aim of raising standards above and beyond best practice and be industry leaders in safety initiatives. Continuing on from the great work the 'Utilities Avoidance Working Group' started in 2018/19, we have seen in 2019/20 an impressive 30% drop in utility damages in work undertaken by our contractors.

We monitor performance using Total Recordable Injury Rate (TRIR). TRIR is a widely used indicator and expresses injury levels as a factor of hours worked (injuries per 100,000 hours). Our focus this year was active leadership, situational awareness and collaboration with our contactors to improve safety performance in areas where our TRIR dictated our focus must be. We achieved a TRIR in 2019/20 of 0.37 with the total TRIR incidents our contractors experienced being 10 during the year. Our commitment to promptly investigate incidents to identify root causes remains steadfast and is given the highest priority, thus our learnings from incidents facilitates a better understanding of the causal factors, accountability and assists us in shaping best practice.

Furthermore our management systems are independently externally assessed and certificated to the latest international standards. Notably Scottish Power was the first business in the Iberdrola Group to successfully transition from OHSAS18001 to the new ISO45001 certification.

We work closely with our Distribution colleagues both in Scotland and in the Manweb area and collaborate more broadly across the industry through the Electricity Networks Association where we lead the Vehicle and Mobile Plant working group.

We are very proud of our reputation as an industry leader in public safety. In Transmission In 2019/20 we can again report that there have been zero public safety injuries as a result of interactions with our network or from our operations ; this is a result of public safety education programmes (internet, community and schools teaching programmes), our investments in operational integrity and our embedded safety culture.

Sustainability and environment

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 provide a reliable, adaptive service to support long-term decarbonisation goals, opening up renewable energy to the rest of the UK and closely managing the network and its environmental impacts.

Our Sustainable Business Strategy is underpinned by six key drivers, developed in collaboration with stakeholders.

Sustainable Society

Carbon and Energy Reduction

Climate Change Resilience

Water Efficiency and Protection

Land and Biodiversity Improvement

Sustainable Resource Use

Adapting our strategy

Our Sustainable Business Model is characterised by:

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

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

Sustainability and environment *continued*

Adapting our strategy continued

2020 Sustainable Business Strategy Updates

In 2019/20, a range of updates were made following extensive review and engagement. A key area of focus was alignment with the RIIO-T2 regulatory framework and our T2 Business Plan. New and updated objectives central to both documents focused on the following areas:

- Minimise network losses
- Minimisation of SF_6 leakage and drive the development and implementation of SF_6 alternatives
- Decarbonisation of Transmission vehicle fleet
- Increase the value of natural capital on our sites
- Introduce Circular Economy principles to SPEN processes

Our current maturity levels clearly illustrate our commitment to addressing environmental sustainability impacts, above and beyond compliance. We have focused on areas within our direct control, which have a significant impact, including our scope one and two carbon emissions, reducing our waste and preventing pollution. We will continue to drive activity in these areas. We recognise that decarbonisation of our supply chain, sustainable resource use and embodied carbon are impacts that require partnership working to progress through the maturity matrix. We are at the beginning of our journey in these areas and our Sustainable Business Strategy demonstrates our planned progression to 2023 identifying actions and target setting.

We will also develop processes to enhance the natural capital of our sites, looking at how we interact and impact nature and the value of nature for people and the economy. We have established working groups, with representation from across the organisation, to drive forward our sustainability objectives and our T2 Business Plan ambitions.

Initiatives and Progress

We deploy a wide range of technological, commercial, process and innovation solutions to deliver the evolving aims of our strategy.

Below outlines 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, justifications, alternative considerations and next steps.

The Sustainable Business Strategy presented under five themes which were developed to align with Ofgem priority areas for delivering a sustainable network.

Driving Decarbonisation

- Generation Export Management Scheme
- Empowering the Connections Customer
- Project Phoenix
- Project Distributed ReStart
- Digital Substations Initiative
- Electric Vehicle Strategic Partnership
- Maximising Environmental Benefit from Non-Operational Land

Mitigating Climate Change

- Carbon Management on Projects
- Reducing Energy in Transmission Substations
- SF_6
- Decarbonisation of the Vehicle Fleet

Enhancing the Natural Environment

- Training and Awareness
- Pollution Prevention
- Protection and Enhancement of Species and Habitats

Sustainable Resource Use

- Sustainable Procurement
- Reuse of Plastics in Access Roads
- Access Road Framework

Sustainable Society

- Green Economy Fund
- United Nations Sustainable Development Goal (SDGs) 17 – Partnerships for the Goals
- Employee Networks
- Supporting our Employees to a Better Balance
- Community Volunteering

Carbon footprint

Buildings Energy Carbon Footprint (Depot and Substation Energy) has reduced by 5% in the year.

Buildings Energy Use

Buildings energy carbon footprint (depot and substation energy) has reduced by 5% from 2018/19.

This can be attributed to the following factors:

- Decarbonisation of grid electricity
- Improvements in data
- Switch to the Green Source tariff – providing Renewable Energy Guaranteed Origin (REGO) certification for a proportion of our consumption. Our scope 2 buildings electricity energy emissions are 1,735 tCO_2e for 2019/20 calculated using market based conversion rates as available through the REGO tariff. Our emissions for buildings electricity using location-based conversion rates were 2,687 tCO_2e. We continue to use location-based conversion factors to measure carbon from our losses.

Business Travel

Our fleet and business travel emissions have increased since 2013/14, however this is largely due to our work to improve data completeness and improvements made to apportionment across our three Licence areas, as well as a switch to petrol from diesel fleet vehicles to reduce particulate emissions, though consequently increasing carbon. SP Transmission business travel increased slightly from 547 tCO_2e in 2018/19 to 558 tCO_2e in 2019/20 due to additional travel for RIIO-T2 business planning, resulting in an increase in flights to London. We expect travel will significantly reduce in the next reporting year, as the Business Plan is complete, and travel has been severely limited due to the impact of COVID-19.

Transmission Losses Carbon

The most significant element of our carbon emissions is from transmission losses. In 2019/20 this equated to 194,256 tCO_2e, a reduction in carbon emissions of 5% on the previous year. However, it should be noted that although carbon emissions have reduced, actual network losses have increased and the reduction in carbon is due to the lower carbon intensity of the network.

Losses are an inevitable consequence of transferring energy across electricity networks. Increased renewable generation connections in Scotland lead to increasing amounts of energy being transferred across transmission networks and this leads to higher losses, an upward trend set to continue. Current estimates suggest that total network losses may rise by around 17% during our T2 Business Plan Period (by 2026), however the carbon intensity of these losses will decrease as energy generation continues to decarbonise.

As network losses are largely out with our control these are not included in our Business Carbon Footprint, however, we develop and deliver plans to mitigate network losses and the related economic and carbon impacts where feasible.

Carbon footprint
continued

Sulphur Hexafluoride (SF_6) Emissions Reduction

Project Background

SF_6 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 SF_6 gas which leaks from our equipment has the equivalent global warming potential of 2.35 tonnes of CO_2. 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.

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 SF_6 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 SF_6.

SF_6 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 SF_6-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 cost-competitive, 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

We have made considerable progress in reducing SF_6 emissions during 2019-20, delivering a 37% reduction on the previous year. Overall, we have reduced SF_6 emissions on our network from 17,435 tCO_2e in 2013/14 to 12,079 tCO_2e in 2019/20. We prioritise the repair of leaking assets by leakage rate, taking the accessibility of the asset into account. Specialist surveys are carried out to identify the source of leaks, though the source is not always apparent. We develop action plans then attempt repair or replacement where economically, technically and operationally viable. Unfortunately, not all repairs are successful.

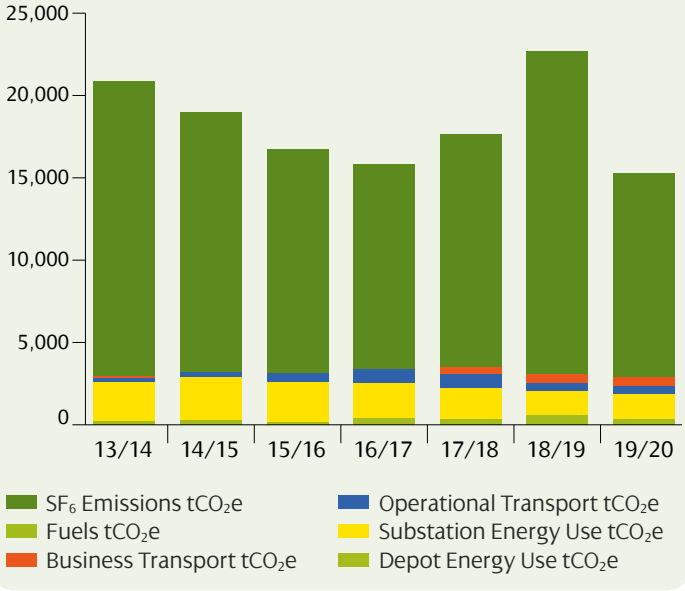
Due to the age of the assets, like-for-like replacement of these pressurised compartments is often not possible as the assets have become obsolete.

Whilst we fix leaking assets, it is also important that we avoid the introduction of new SF_6 assets onto our system where possible. This year, we updated our specifications and now ask all suppliers to include an SF_6 alternative for 132kv gas insulated switchgear in tender submissions. We are working with suppliers and reviewing specifications to increase the use of alternatives to SF_6 across our network. On our Windyhill Project we have been working with our supply chain to implement an alternative dielectric gas to SF_6 within the 275kV Gas Insulated Busbar (GIB). This will ultimately displace approximately 7 tonnes of SF_6 from the network. We are currently in the procurement process and discussing a range of suitable SF_6 replacement gases and associated equipment.

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 SF_6. We will continue to collaborate industry-wide to drive the introduction of new SF_6 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.

SP Transmission Business Carbon Footprint
(Tonnes CO_2 Equivalent)



Green Economy

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 will put the green economy and the road to Net Zero at the heart of COVID-19 recovery.

Our two-year, Green Economy Fund (GEF) is currently supporting 33 diverse and innovative projects to deliver over 21,000 tonnes of annual tCO_2e savings, creating over 40 local jobs, and directly supporting over 2,300 customers. Within the last year, the £20m fund has been fully committed and is now closed for further applications.

Creation of the fund

The GEF criteria was established following a gap analysis of existing funds available focused on low carbon ambition and acceleration. We had a clear goal to enable a fund which would go a step further than anything else and enable other funds to gain greater potential.

An independent panel of experts was established to assess and select successful project applications, based on the GEF criteria. The panel were selected due to their specialist areas of expertise to ultimately recommend the best projects for funding.

Funding dedicated to the GEF was focused on initiatives which drive towards our central pillars of delivering a Better Future, Quicker and supporting communities to achieve Net Zero. As a result, three key focus areas were identified; heat, transport and education.

This ensured the selection of projects to be awarded funding would cross several key focus areas, helping to make sure our initiatives best serve the specific interests of a broad range of challenging groups of communities, customers and stakeholders. Project funding doesn't just help the projects themselves and their communities, it also allows us to build strong relationships with key stakeholder groups to continue to learn and support one another on the journey to Net Zero.

Funding innovation

In July 2019, we hosted a Green Economy Fund awards event to present a further £10 million of funding to innovative projects. This gave us the opportunity to celebrate the fund and individually recognise the efforts of each project and the benefits they deliver to communities. Attended by a wide range of stakeholders including: local MSPs, local councillors, officials, businesses and third sector contacts. The event coincided with our Turning Scotland Green campaign, which involved lighting up Scottish landmarks green and calling for action in the race to Net Zero – 120 stakeholders attended.

Building support systems

In October 2019, we held a project networking event. The focus was to bring all projects together in one room to share learnings and progress updates. This was an opportunity to reiterate the help we can provide, including ongoing project support, managing scope changes, processing payments, reporting, press releases, events and marketing.

The event offered projects the opportunity to raise any challenges faced and discuss key steps taken to overcome them. By hosting various engagement events we have built a sense of community between projects – 60 stakeholders attended.

Expert collaboration

In November 2019, we held a Net Zero event, bringing the country's top energy experts, policymakers and influencers for a debate on the race to Net Zero. The primary objective was to stimulate discussion not only from a policy and regulatory perspective, but at a practical level, allowing us to showcase some of the great work being funded through our GEF – over 300 stakeholders attended.

Green Economy
continued

A highlight of projects from our Green Economy Fund

The following case studies were chosen from our 36 GEF projects. Each one showcases the impact on our local communities across three key areas: **heat**, **education** and **transport**.

Project: Keeping Mobile through Electric
Focus area: Transport
Strategic priority: *Better*

Community Transport Glasgow (CTG) applied for funding to upgrade its ageing fleet from diesel to low carbon vehicles. CTG's purpose is to provide not-for-profit transport solutions to enable affordable, reliable and accessible transport to vulnerable communities. We funded Glasgow's first ever all-electric minibuses, giving us the ability to provide a test bed for the operation of electric minibuses across the country. CTG will utilise these minibuses to provide transport solutions to 75,000 passengers each year. CTG commented that, as a third sector organisation the funding received has been transformational as it has enabled them to renew an ageing fossil fuel fleet with new fully electric vehicles.

Impacts

This project helps to reduce social isolation and loneliness by helping vulnerable, disadvantaged and elderly people across the city access vital appointments and community activities.

An estimated saving of 216 tonnes of CO_2 over a five-year period – the same as 174 return flights between London and New York.

Low carbon vehicles allow CTG to continue to run services into Glasgow's city centre – Scotland's first low emission zone.

This project can be used as a blueprint for the rest of the UK to upgrade ageing fleet to cleaner, greener modes of transport.

Green Economy
continued

A highlight of projects from our Green Economy Fund continued

Project: Warmworks
Focus area: Heat
Strategic priority: *Future*

Through the project, battery storage technology will be installed in 150 off-gas homes in the Stewartry area, where fuel poverty is disproportionately high. A major transmission substation is also being upgraded nearby allowing us to give back to local communities directly impacted by major network upgrades.

The target properties are off-gas grid and electrically heated. These households have been specifically identified as in or at risk of fuel poverty. For the people living here, the project will have a significant impact on their quality of life by helping to make energy bills more affordable.

The project has also allowed us to understand what effect a decentralised storage facility will have on managing demand and reducing carbon emissions. Additionally, this project will help us evaluate the real-life performance and reliability of battery storage equipment and controllers to prevent overcharging.

Impacts

A tested, viable and scalable commercial model and platform for development that both addresses fuel poverty and informs demand management.

Predicted carbon savings of 754 tonnes of CO_2 over the lifetime of the battery units, the equivalent to energy consumption of over 700 medium-sized homes for one year.

178 energy customers received energy advice directly through this project.

Eight jobs have been created, with another four jobs secured, increasing employment opportunities within the area.

Project: Dumfries and Galloway Project
Focus area: Education
Strategic priority: *Quicker*

Dumfries and Galloway College are building a renewables technology hub because of the funding they received from the GEF. So far, the college has installed a wind turbine, heat pumps, solar arrays and electric vehicle charging points.

Students and businesses can use the centre to learn about renewable energy and how to install and maintain the technology, providing valuable skills within the local community. Dumfries and Galloway have approximately 15,000 social housing units. Through this project we will educate as many as 70% of tenants on renewable energy by training in person, or through online learning tools.

The College has installed technology at the STEM Hub to primarily be used as teaching aides but also to provide a minimum of 75% of energy for this building is generated from renewable sources.

Impacts

The project will upskill at least 20 qualified tradesmen per year, bridging the skills gap within the local area.

It will also provide renewable training to over 1,000 future bill payers through local schools and colleges.

The hub will produce around 137,000kWh of renewable energy each year, saving 56 tonnes of CO_2 each year.

Innovation

‘Innovation is at the core of SP Energy Networks. We continue to hold a leadership position in innovation and remain the only TO with projects under all three of the RIIO-T1 innovation funding mechanisms.

NIC

We are now scheduled to start the live trial of the Phoenix Project, world’s first H-SC (Hybrid Synchronous Compensator) system, following a phased energization of the main components at Neilston 275kV Substation. Throughout the Covid-19 pandemic and lockdown, the Phoenix project continued pressing on with the site team adhering to social distancing and having fewer operatives on site. Although there have been some challenges relating to furloughed subcontractors, we have adapted to allow energization of the SC to take place with conclusion of the building works happening in September. During the 12 months Live Trial, our project partners including NGESO and University of Strathclyde will continue with power system simulations exploring a range of capacities and locations for H-SCs within the SP Energy Networks and GB Network Transmission network. These study results will be compared with real data collected during the live trial and will be used for the Cost Benefit Analysis works where we will begin to understand the commercial value and mechanisms to incentivise the roll out of this technology. The synchronous compensator and hybrid synchronous compensator technology is to be rolled out as business as usual in RIIO-T2. Building on the learning from Phoenix project, Eccles voltage support and real time system (ECVC), a project with a total value of £95.3m will give the B6 transmission system boundary a 280MW uplift. Ultimately, Phoenix will aid with the transition to a future net zero transmission network that can benefit from clean renewable energy resources without compromising the security and quality of supply to customers and will enhance capacity for power flow on our transmission network.

Phoenix Project at Neilston Substation

Health & safety induction at Neilston Substation

Innovation
continued

NIC continued

Distributed ReStart, a 3-year NIC project in partnership with NGESO and TNEI, aims to explore how Distributed Energy Resources (DER) can be used to restore power of the National Electricity Transmission System. In the highly unlikely event of a total or partial blackout, the DER could potentially replace or compliment the transmission system black start service in the future. In January 2020, we held a sold-out Annual Conference which brought together key stakeholders and industry experts to disseminate the first year's learnings. Despite lockdown restrictions the project has been able to successfully add an innovative Virtual Event to the knowledge and dissemination activities this year. Held in early July, the 3-day virtual workshop brought together webinars and interactive sessions from all three workstreams. All three workstreams will deliver their design stage reports by the end of the year and the project is pushing ahead with plans for live trials to take place in the coming months.

The success of the FITNESS Project has led to the launch of the digital substations initiative to build the necessary skills within SPEN, development of utility wide standards, specifications and requirements for successful roll-out of digital substations and, most importantly, to raise awareness regarding the benefits of digital substations. This initiative will enable seamless roll-out of digital substations on the network. The potential sites in RIIO-T2 and RIIO-T3 where digital substations can be implemented are identified. In 2020, the FITNESS Project has undertaken a series of activities to establish a suitable framework for digital substation technology, including IEC61850 Global 2019, setup and operation of a replica system and held a FITNESS Close Down Webinar.

Phoenix work site

Health & safety induction at Neilston Substation

Innovation
continued

NIA

Our NIA innovation project portfolio will continue to be shaped by on-going stakeholder engagement, both internal and external, with a view to maintaining a balanced portfolio that will address not just the near/medium term transmission issues, during the current price control period (RIIO-T1), but also those anticipated as longer term requirements. In addition to funding smaller projects, we will continue to utilize NIA Transmission funding, where appropriate, to prepare for future NIC submissions. Our NIA projects continue to play a key role informing the development and delivery of our NIC projects and we recognize the importance of wider stakeholder engagement and knowledge sharing for the wider benefit of the industry. As a Scottish Transmission SP invests significant efforts to safeguard our system resilience and supply reliability. Partnering and collaboration is a critical part of our innovation strategy and we believe that our projects are greatly enhanced by incorporating wider experience, knowledge and skill sets.

Three examples are:

NIA 1504 Managing Uncertainty in Future Load Related Investment:
This project deals with the rising uncertainty of future demand, and further increased uncertainty caused by renewable generation output and the expected uptake of heat pumps, electric vehicles and other low-carbon technologies (LCT). This project has developed and demonstrated methods to use simulation techniques and statistical models to examine a large range of future scenarios. The project is now in its final reporting stage, with technical work being complete.

NIA SPEN0035 Transient Recovery Voltage Investigation:
This project was formally kicked off in 2019 and is now complete. Transient Recovery Voltage (TRV) can be defined as the voltage which appears across a circuit breaker's terminals upon interruption of the current resulting from a switching operation. When specifying circuit breakers, designers are often unsure about the TRV requirements that should be requested, particularly when switching e.g. series reactors or transformer circuits. This can lead to issues including over specification of TRV capability within circuit breakers or a requirement for additional TRV studies, both of which lead to additional cost. The project has addressed the issue through undertaking EMT modelling, using PSCAD software, for network scenarios which are potentially susceptible to onerous TRV conditions. Project findings have been disseminated by webinar and a guidance document has been developed for use in the network design and plant specification process. The outcomes bring improved knowledge across the wider business and the findings are being taken forward into our business as usual practices where we expect improved efficiencies to be delivered.

SF_6 Circuit Breakers

Innovation
continued

NIA SPEN0044 400kV Dynamic Cable Rating Retrofit:
This is another transmission project registered in the past reporting year. This project can potentially help reduce constraint payments and network reinforcement costs by identifying spare head room capacity within a power cable for increase power transfer. As the penetration of low carbon technologies increase in the UK greater circuit loading will be experienced on the transmission network. Under certain loading scenarios the power flow on transmission circuits may need to be constrained, which can result in significant constraint payments. Rather than undertaking costly network reinforcement schemes, with long lead times and environmental impacts, one option is to operate the network using dynamic ratings. The project will investigate the feasibility of using Random Phase Multiple Access wireless technology coupled with point sensors connected to the cable jacket and integrated with a Dynamic Capacity Rating scheme to provide a cost effective retrofit dynamic rating solution to evaluate real-time thermal behavior of strategic cable circuits, ultimately will determine additional headroom of the circuit.

Measurement through RPMA wireless technology

Last year SP Energy Networks launched the Year of Innovation, which we have subsequently transitioned to DRIVE, a 3-year program to strengthen a culture of innovation and to make innovation relevant for everyone across the business. The focus of the initiative remains to empower and enable employees to get involved in innovation and provide the tools and mechanisms to do so.

Our highlights from 2020 include:

Continued use of a digital innovation platform to allow collaboration and engagement on real business challenges. To date, over 1,000 colleagues have used our platform across 8 innovation campaigns. This has resulted in the generation of over 200 ideas and has helped support colleagues in developing and implementing innovative ideas within the business.

We have expanded our Innovation Champion network to 102 Champions to support with the development and implementation of innovation projects that have been generated through the DRIVE program.

DRIVE

COVID-19

The end of the regulatory reporting year 2019/20 was dominated by the emergence of the COVID-19 pandemic on a global scale.

This affected us in multiple ways:

- Impact on the operation of the UK transmission network
- Adherence to Governmental guidelines on activities
- Constraints on national and international supply chains
- Implementation of COVID – secure working arrangements
- Resultant Impact on our work programmes

Across SPEN, as part of our UK Parent Company's approach to Business Continuity management, we implemented the 'Gold, Silver, Bronze' incident management model used widely by UK authorities and emergency services. This structure was established in February 2020 and has remained in operation since. This approach, alongside close co-operation with the ESO, other TOs, and our sister DNO has ensured that we maintain the performance of our network throughout the crisis.

Impact on the operation of the UK transmission network

March 2020, and the escalation of the COVID-19 pandemic, saw the implementation of a UK wide lockdown. The lockdown saw levels of demand on the UK electricity system drop to record lows, which presented challenges that had to be addressed to maintain the integrity of the network. In particular, if not managed correctly, voltages across the network could increase to unacceptable levels, ultimately causing blackouts. As it became clear that the UK would be heading into a period of sustained low demand, we worked closely with the ESO to maximise the facilities available to them to control network voltage. Key actions we took were accelerating the commissioning of new reactors and reworking our planned outage programme to ensure that the network was as intact as possible to allow maximum flexibility in operations.

In addition, we worked closely with our sister DNO, SP Distribution, to identify and map all locations critical to COVID-19 response across our geographic area including critical locations such as hospitals and health centres, and temporary locations such as the 'Louisa Jordan' hospital in Glasgow and testing centres. We implemented additional procedures to protect power supplies to all of these facilities, supported by contingency plans to respond should a loss of supply occur. Our network has performed exceptionally well through this most challenging of periods as a result of our efforts.

COVID-19
continued

Adherence to Governmental guidelines on activities

As the pandemic evolved, we ensured we adhered to UK and Scottish Governmental guidance on activity. As an essential service provider, it was important that we continued to conduct critical activities throughout lockdown, however we continuously reviewed our work activities to assure ourselves that, at all points we complied with guidelines.

Constraints on national and international supply chains

We rely heavily on our supply chains, both local and international, to deliver our maintenance and investment programmes. As part of our incident management process, we engaged extensively with our contractors and suppliers to ensure that critical staff and materials remained available. Inevitably, our supply chain was affected, with smaller organisations ceasing operations temporarily and furloughing staff, and restrictions on activities impacting manufacturing facilities. Through close co-operation, we sought to support our supply chain through this period, and to minimise these impacts on our maintenance and investment programmes.

Implementation of Covid-secure working arrangements

The safety of our workforce, our contractors and the general public is our top priority. We have worked hard to ensure that working environments across our business are COVID-secure. From the outset of lockdown, we made extensive use of home working for staff in roles where this is possible. We have also deployed comprehensive social distancing measure across all of our locations along with enhanced hygiene practices. Social distancing has changed the way we can work, and we have re-organised facilities and re-planned activities to ensure that the principles of social distancing are observed in everything we do.

Resultant Impact on our work programmes

We have maintained a high level of activity throughout this period; however, we have been unable to fully mitigate the impact on our programme. Prior to the pandemic, we were on course to deliver all of our RIIO-T1 outputs, an objective we have maintained throughout the price control period. The necessary deferral of outages to ensure security of supply to critical services has meant that some outputs due to be completed in 2020 can no longer be achieved. We are working with the ESO to reschedule all affected works and wherever possible, we are looking to recover lost time before the end of the price control in March 2021. However, it is likely that some of the work we intended to complete in RIIO-T1 will now fall into the early stages of RIIO-T2.

In addition, we have seen and will continue to experience cost impacts associated with COVID. Whilst we are making every effort to minimise incremental costs, the working practices required to maintain social distancing impacts productivity and increases the amount of equipment needed to deliver activities. We have also incurred costs associated with demobilisation and remobilisation worksites as a result of the necessary outage programme changes.

We continue to make every effort to minimise these impacts, whilst ensuring the security of our network, the safety of our workforce, our contractors and the general public and the integrity and longevity of our supply chains.

SP Transmission
Annual Performance Report 2019/20

Financial performance: Expenditure and revenues

"RIIO" is Ofgem's framework for setting price controls for network companies. RIIO stands for Revenue = Incentives + Innovation + Outputs. Effectively this means that we are only rewarded for delivering exceptional performance in our incentive, outputs and innovation.

Our Costs
Performance this year

There are two key areas of expenditure: load related i.e. projects to cater for significant increases in customer demand and renewable generation, and asset replacement to renew our existing network. The load related programme is by far the more volatile and uncertain as we and our customers/developers are subject to many external factors outwith our control.

Load-Related Programme 2019/20 position: £51m below allowance

Our plan continues to deal with uncertainty on timing of renewable generation and delays on some Baseline Wider Works projects. The completion of the original wider works projects portfolio of projects has yielded significant cost efficiencies through engineering design solutions and supply chain savings that will be shared with consumers.

The Western Link HVDC was completed in late summer 2017 utilising subsea cables to provide the link. Due to damage to the facility during commissioning, full operation was delayed. The Western Link HVDC is now in full operational service following commercial take-over in November 2019. With the Western HVDC operational, the power transfer capability between Scotland and England is increased to 6600MW, more than doubling the capacity since the start of RIIO-T1.

A substitute wider works project relates to the installation of an additional seven 33kV 60MVAr shunt reactors – with six now in service – to support the effective management of system voltage across Scotland, resulting from reduced availability of large synchronous generation plant. Other load related expenditure is below allowance primarily due to timing differences as the allowance is recognized on delivery of the output.

Totex comparison (2019/20 real £m) **Capex**	Allowance £m	Actual £m	Variance £m
Baseline – Wider Works (BWW)	8.3	2.8	*-5.6*
Baseline – Other LR Capex	77.1	31.8	*-45.3*
Sub-Total Load Related Capex	**85.4**	**34.5**	*-50.9*
Asset Replacement Capex	102.8	60.5	*-42.3*
Other Capex	27.6	52.7	25.1
Non Operational capex	1.2	1.1	*-0.1*
Total Capex	**217.1**	**148.9**	***-68.2***

Opex	Allowance £m	Actual £m	Variance £m
Faults	1.2	1.6	0.4
Inspections & Maintenance and Other direct costs	12.7	18.2	5.5
Indirect Costs	15.0	34.1	19.1
Adjustment for IAS 19 pension accrual	0.0	1.8	1.8
Total Controllable Opex	**28.9**	**55.7**	**26.8**
Totex	**245.9**	**204.5**	***-41.4***

Our Costs
Performance this year *continued*

Opex

Our indirect costs during 2019/20 exceeded allowances by nearly £19m. The main driver for this was an increase in our Business Support costs which were impacted following a change to accounting measurement made after the RIIO-T1 bid.

We repaired a larger than expected volume of minor plant and cable defects (classified under faults), to maintain the integrity of our network. These defects are identified through our regular routine inspection and maintenance regimes. Other direct costs are lower than allowance due to timing of the contractual take-over of West Coast HVDC project.

Asset Replacement & Other Capex: £17m below allowance

Our RIIO-T1 Business Plan described how we intended to target investment to manage the risk of asset deterioration on our network. We have prioritised activity and profiled investment accordingly in the first seven years, whilst delivering cost efficiency within our overhead line modernisation programme.

Whilst investment in the year is below plan, the cumulative Asset Replacement and Other Capex position to date shows £634m spent modernising assets, which is broadly in accordance with plan when cost efficiency and minor timing differences are taken into account. The associated outputs are in line or ahead of submission with 707km of overhead line conductor replaced to date against the RIIO-T1 plan of 482km. The replacement of transformers at Erskine, Johnstone 132kV sites and Grangemouth 275kV have been completed to maintain reliability of supplies to consumers. A new dual LV-wound unit entered service at Shrubhill. In 2019 we commenced site works at Charlotte St – the last ransformer replacement project from our T1 plan to enter the delivery phase – and expect to commission it by November 2020.

We have entered the final phase of delivering our T1 switchgear modernisation programme. Projects have progressed well on site with works at 132 kV (Chapelcross) and 275 kV substations (Currie, Kaimes, Strathaven and Wishaw).

Construction works continued on V-route 132kV overhead line, which is scheduled for completion by end of RIIO-T1.

Despite some challenging outage restrictions on these projects we had the necessary resources in place to be confident – prior to COVID-19 impacts – of completing all the required works by the end of the period.

Our Costs
Forecast for RIIO-T1

Highlights of future performance

Our current forecast total expenditure (totex) over the eight years of RIIO-T1 is around £2.3bn. As we prepare for RIIO-T2 we have increased our forecast of development expenditure for new schemes. It is approximately 6% below allowance due to cost efficiencies and innovative solutions in major projects and programmes of work. The 2019/20 RIGs and RRP derive an overall totex out-performance of £143m (£106.5m in 2009/10 prices), once revised allowances for generation connections are taken into account. Following the introduction of a Green Economy Fund with Ofgem's support, a further two rounds of funding have been completed in 2019/20, ensuring that the fund, along with the administration costs is fully allocated. The second tranche of funding saw a further 21 projects, receiving just under £10m of funding. The third round of funding has seen a further £3m of funding being allocated. SPT has been active in reviewing proposals and allocating funding to projects that enable further uptake of low carbon technology.

The forecast is our current best estimate of the scale and timing of renewable generation connections, local network reinforcement, the wider works and modernisation projects that are likely to be needed to strengthen and renew the network to support customers' needs as we move towards a low carbon future.

Totex comparison (2019/20 real £m) **Capex**	Allowance £m	Forecast £m	Variance £m
Baseline – Wider Works (BWW)	711.8	564.6	*-147.2*
Baseline – Other LR Capex	145.1	102.4	*-42.7*
Uncertainty Mechanism – Generation Connections Sole-Use Infrastucture	65.0	89.9	24.9
Uncertainty Mechanism – Generation Connections Shared-Use Infrastucture	430.4	435.1	4.7
Uncertainty Mechanism – Strategic Wider Works (SWW)	29.6	31.3	1.6
Sub-Total Load Related Capex	**1,382.0**	**1,223.3**	***-158.6***
Asset Replacement Capex	611.5	534.8	*-76.8*
Other Capex	255.5	253.8	*-1.7*
Non Operational capex	9.7	16.4	6.7
Total Capex	**2,258.7**	**2,028.3**	***-230.4***

Opex	Allowance £m	Forecast £m	Variance £m
Faults	9.3	14.5	5.2
Inspections & Maintenance and Other direct costs	79.8	74.2	*-5.7*
Indirect Costs	118.8	199.1	80.3
Adjustment for IAS 19 pension accrual	–	7.1	7.1
Total Controllable Opex	**207.9**	**294.8**	**86.9**
Totex	**2,466.6**	**2,323.2**	***-143.5***

Our Costs
Forecast for RIIO-T1 *continued*

We anticipate that our forecasts will change over time as new information becomes available. After the UK Government's announcement (Summer 2015) on changes to subsidy arrangements for renewable generation, we undertook an extensive exercise to gain a better understanding of likely levels of generation that will ultimately connect to our network. The current forecast reflects the outcome of our review; we will continue to monitor the situation and reflect changes in future forecasts. It is recognised that such uncertainty exists, and our regulatory contract includes mechanisms that enable cost allowances and revenues to accommodate such circumstances through movement above or below agreed baselines.

In the remaining period of RIIO-T1, we expect to only utilise one capex uncertainty mechanism – associated with generation connections – which will adjust allowances up and down. The mechanism has been triggered; it is expected to add approximately £205m to the current baseline allowance. This is slightly higher than last year's forecast due to assessment of actual civil works volumes for schemes completed in South West Scotland. This year's portfolio now includes the connection of Neart Na Goithe (NNG (450MW)) offshore windfarm in RIIO-T1, which is now in construction.

The forecast for generation connections requiring sole-use infrastructure has increased, 1,950MW. As this still falls below the 2,503MW baseline it results in a reduction to our baseline allowance of around £37m, which will be returned to consumers. There is still a significant requirement for additional shared-use infrastructure capacity for other generation connections, including smaller embedded generators. We expect to deliver some 3,561MVA of additional network capacity in RIIO-T1 – above our 1,073MVA target. We continue to develop and deliver a range of cost-efficient and economic technical solutions that best meets our customers' needs. SPT continues to connect new customers to support Scottish and UK government targets for renewable generation. It is anticipated that we will incur investment, in this area, in excess of allowance by c£100m in RIIO-T1.

In our totex forecast we have assumed that as a result of the revised methodology for allocating indirect costs described in the previous section (Performance this year), approximately £64m of indirect costs will be allocated to opex instead of capex.

Our Costs
Change in Forecast for RIIO-T1

Update on Forecast from 2018/19
Our latest totex forecast of £2.3bn is very marginally lower by £22m (0.9%) than the view presented last year, mainly attributable to lower development expenditure for RIIO-T2. Overall, totex performance has marginally increased as a result of higher allowances for civil works in South West Scotland and inclusion of an offshore windfarm. There continues to be cost and delivery challenges in several areas including generation connections and switchgear replacement. The main changes are highlighted in the sections below.

Load-Related RIIO T1 Forecast: £35m below 2019/20 Forecast
The primary difference has been a transfer of costs from load to non-load for one project. This has been coupled with delays with forecast development activity for load related works, mainly wider works, expected to be required in RIIO-T2. In the case of generation connections our higher forecast reflects an adjustment for lower forecast capital contributions. The forecast outputs of new generation expected to connect (c2GW) is higher whilst the associated new network capacity (c3.5GMVA) that will be required in RIIO-T1 is unchanged from prior years.

Non-Load RIIO T1 Forecast: £8m above 2018/19 Forecast
The forecast increase mainly related to a project transferred from load and updates to development investment associated with timing of RIIO-T2 schemes and scope of refurbishment of four inter-related 275kV overhead line routes in the Kincardine – Currie part of our network.

Opex
Overall, our Faults, Inspections & Maintenance and Other direct costs forecasts are lower to the 2018/19 Forecast mainly due to timing of Western HVDC takeover. Our forecast for indirect costs is higher than the prior year and we have reflected an increase in our IAS 19 pension accrual.

Totex Forecast (2019/20 real £m) **Capex**	RIIO-T1 Forecast (2019/20) £m	RIIO-T1 Forecast (2018/19) £m	Plan-on-Plan £m
Baseline – Wider Works (BWW)	564.6	561.0	*-3.6*
Baseline – Other LR Capex	102.4	138.4	36.0
Uncertainty Mechanism – Generation Connections Sole-Use Infrastucture	89.9	96.4	6.6
Uncertainty Mechanism – Generation Connections Shared-Use Infrastucture	435.1	424.7	*-10.4*
Uncertainty Mechanism – Strategic Wider Works (SWW)	31.3	37.8	6.5
Sub-Total Load Related Capex	**1,223.3**	**1,258.4**	**35.0**
Asset Replacement Capex	534.8	527.2	*-7.5*
Other Capex	253.8	253.1	*-0.7*
Non Operational capex	16.4	19.2	2.8
Total Capex	**2,028.3**	**2,058.0**	**29.6**

Opex	RIIO-T1 Forecast £m	RIIO-T1 Forecast £m	Plan-on-Plan £m
Faults	14.5	14.7	0.2
Inspections & Maintenance and Other direct costs	74.2	79.6	5.5
Indirect Costs	199.1	189.5	*-9.6*
Adjustment for IAS 19 pension accrual	7.1	3.6	*-3.5*
Total Controllable Opex	**294.8**	**287.4**	***-7.4***
Totex	**2,323.2**	**2,345.4**	**22.3**

Our Revenues

In 2019/20 we recovered £404.0m. Our revenues are set through regulation by Ofgem. They comprise an element which is fixed, an element which is linked to specified variables (such as the amount of connected generation), and an element to capture incentives and adjustments from previous years.

We recover our revenues through charges to the system operator, National Grid – who, in turn, levies charges on users of the transmission system across GB. Based on our forecast performance, the Operational Return on Regulatory Equity over the full RIIO-T1 period is estimated at 9.3%.

Our revenue allowance – the basics:

An allowance is set by Ofgem.

This is calculated using a formula.

There are various components to the formula.

Some components are fixed, and some depend on variables (such as MW of generation connected).

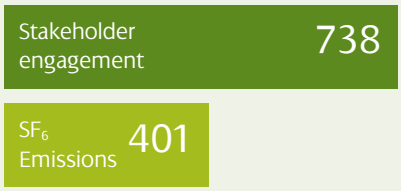
Some components relate to individual investment schemes, e.g. those listed under Strategic Wider Works.

Performance under the various incentive schemes will affect revenue allowance with a lag of two years.

Differences between what we recover and what we are allowed to recover are adjusted for in subsequent years.

Incentive awards earned in 2019/20 (revenue rec'd in 2020/21)

Smaller incentives earned in 2019/20 (£ thousands)



Larger incentives earned in 2019/20 (£ thousands)

From our charges to customer bills:

Our charges form part of the total revenues recovered by National Grid through transmission charges.

The cost of running the Transmission network in Great Britain is spread out over consumers and generators across the country. For non-half hourly metered customers (representing domestic and small business customers), the average cost of running SP Transmission amounts to approximately £4 per customer per year. Note: Average over the 8-year RIIO ET1 price control. Calculations prepared by National Grid).

Our RoRE (Return on Regulatory Equity)

Investment into the electricity transmission network is a long-term project, the costs of which are spread out over the lives of assets.

RAV (Regulatory Asset Value)
For every pound that we spend, we collect:

10% of the costs in the same year.

90% of the costs over the life of the asset, which gets added to the 'Regulated Asset Value' (RAV) balance.

Ofgem assume that we fund this RAV by:

55% borrowing – on which we receive interest payments of 1.58% (for 2019/20).

45% equity – on which we receive a return of 7.0%, as set by Ofgem for the 8-year price control.

The weighted average cost of **funding the RAV is therefore 4.02%** for 2020.

At 31st March 2020 **our RAV was £2,514m (19/20 prices)**, an increase of 1% from £2,497m (19/20 prices) in the prior year, as we continue to invest in the network.

Consistent with the RIIO price control framework Ofgem attached a financial reward/penalty to a number of the incentives. This has the effect of changing our Return on Regulated Equity (RoRE) below.

RoRE is calculated based on values in 09/10 prices and therefore represents an average real equity return over the 8-year price control.

We have followed the Operational RoRE methodology used by Ofgem in their Regulatory Financial Performance Reporting (RFPR) to ensure consistency.

For detailed information about our financial performance, please see the SP Transmission Regulatory Accounts which are published annually, available from https://www.spenergynetworks.co.uk/pages/accounts_information.aspx

Our Regulatory Financial Performance Report, available from https://www.spenergynetworks.co.uk/pages/regulatory_financial_performance_report.aspx

8-year average 2019/20	**Return on Regulatory Equity** (RoRE). All numbers reflecting Ofgem's National Gearing methodology.
7.00%	**Base Return** – Set by Ofgem for the 8-year period.
0.97%	**IQI Additional Income** – Agreed by Ofgem as part of the price control, and is a reward for the quality of our business plan and recognition of our fast-tracking.
0.89%	**Totex Efficiency Savings** – Any savings we make on our investment plan are shared 50:50 with the consumer, and we are currently forecasting some savings over the 8-year period. This results in a benefit to both consumers and our shareholders, and is in addition to meeting all of our specified outputs.
0.23%	**Reliability Incentive**
0.01%	**SF_6 Emissions Incentive**
0.14%	**Stakeholder Satisfaction**
0.11%	**Environmental Discretionary Reward**
-0.05%	**Network Innovation Contributions**
9.30%	**Return on Regulatory Equity – Operational Performance**

SP Transmission
Annual Performance Report 2019/20

Looking forward – RIIO-T2

Looking forward – RIIO-T2

Preparing for our next price control period – from April 2021 to March 2026.

SPT is a natural monopoly and is governed by The Office of Gas and Electricity Markets ("Ofgem") via a regulatory price control. The company remains on track to complete an ambitious eight-year price control programme, RIIO-T1 (Revenue = Incentives + Innovation + Outputs) programme of network renewal, which concludes on 31 March 2021. The price control review for RIIO-T2 is in progress with the draft determination published on 9 July 2020. SPT and other stakeholder submitted consultation responses by the 4th September.

Ofgem is now considering these responses in advance of the publication of a final determination in early December which will set the terms for the next price control period from 1 April 2021 to 31 March 2026. We continue to collaborate and work constructively with Ofgem to inform its final determination. Following publication of the final determination, for RIIO-T2, the Transmission Operators, individually, have a decision to accept Ofgem's proposals or refer it in whole or part to the UK's Competition Markets Authority.

SP ENERGY NETWORKS

spenergynetworks.co.uk