Scottish & Southern Electricity Networks

TRANSMISSION

Annual Performance Report

2021/22

www.ssen-transmission.co.uk

About us

We are SSEN Transmission (the trading name for Scottish Hydro Electric Transmission), and are part of the SSE plc Group.

We are responsible for the electricity transmission network in the north of Scotland maintaining and investing in the high voltage 132kV, 220kV, 275kV and 400kV electricity transmission network.

Our network consists of underground and subsea cables, overhead lines on wooden poles or steel towers, and electricity substations. It extends over a quarter of the UK's land mass, crossing some of its most challenging terrain and powering our communities by providing a safe and reliable supply of electricity.

We do this by taking the electricity from generators and transporting it at high voltages over long distances through our transmission network for onwards distribution to homes and businesses in villages, towns and cities.

Scotland's transmission network has a strategic role to play in supporting delivery of the UK's net zero target. We're already a mass exporter of renewable energy, with around two thirds of power generated in our networks area exported south.

By 2050, the north of Scotland will need 40GW of low carbon energy capacity to support net zero delivery. For context, we currently have close to 8GW of renewable generation connected in the north of Scotland.

We are committed to inclusive stakeholder engagement, and conduct this at an 'Advanced' level as assessed by AccountAbility, the international consulting and standards firm.

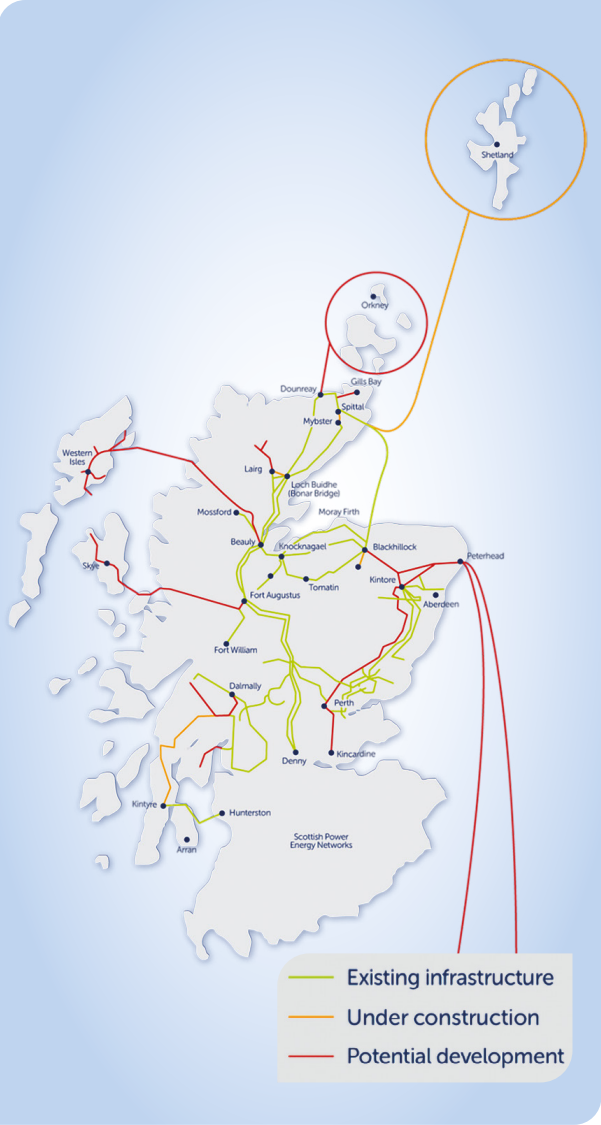
Find out more: www.ssen-transmission.co.uk

Five Years, Five Clear Goals

In April 2021, we entered our new five year price control period known as RIIO-T2, having actively consulted with our stakeholders on the development of our Business Plan for the RIIO-T2 period.

This Business Plan, titled **'A Network for Net Zero'**, covers the period from April 2021 to March 2026 and follows substantial consultation with national and local stakeholders as well as SSEN Transmission's independent expert RIIO-T2 User Group. It aims to support both the UK and Scottish Governments' net zero emissions targets and meet the needs and expectations expressed by stakeholders through five clear, ambitious goals:

- Transport the renewable electricity that powers 10 million homes
- Aim for 100% transmission network reliability for homes and businesses
- Every connection delivered on time
- One third reduction in our greenhouse gas emissions
- £100 million in efficiency savings from innovation



Rob McDonald
Managing Director

Contents

Welcome

Welcome to SSEN Transmission's Annual Performance Report for 2021/22, which provides an overview of our performance in the first year of the RIIO-T2 price control period.

Our dedicated teams, supported by our contractors, customers and stakeholders, have made an excellent start to the RIIO-T2 price control period, with the foundations in place to deliver against all our regulatory outputs. We are also well on track to deliver against, and in some cases exceed, our ambitious five goals.

Starting with our operational performance, despite the significant challenges caused to network companies across GB as a result of several major weather events, our operational teams had another exceptional year, receiving the highest award in the energy not supplied incentive. This sets us up strongly to meet our RIIO-T2 price control goal to aim for 100% transmission system reliability for homes and businesses by 2026.

We are making excellent progress in our capital investment programme, investing in new and upgraded network infrastructure to enable the growth in renewable electricity needed to deliver a network for net zero.

This includes work to connect Shetland to the GB system for the first time, unlocking Shetland's vast renewable resources as well as helping secure the islands' future security of supply. Upon completion, the Shetland link will connect to the existing Caithness-Moray HVDC link, becoming the world's first multi-terminal HVDC system outside of China.

We are also making great progress incrementally upgrading the existing electricity network in the north east and along the east coast, with this investment key to support the growth of renewables across the north of Scotland.

This includes the Moray offshore wind farm, which we successfully connected in 2021/22 and at 900MW, played a major role in increasing the renewable capacity connected to the north of Scotland in 2021/22 by around 1GW, to almost 8GW, putting us well on the way to exceed our RIIO-T2 goal to transport the renewable electricity that powers 10 million homes.

As we know from our own scenarios and the Electricity System Operator's Future Energy Scenarios, significant investment in transmission infrastructure is needed to deliver net zero and we have made great progress progressing several additional investments beyond our RIIO-T2 certain view through Ofgem's Uncertainty Mechanisms. This includes work to replace the existing Fort Augustus to Skye overhead line with a higher capacity, the upgrade of the network across Argyll to allow 275kV operation, as well as the first subsea superhighway of electricity transmission from Peterhead to Drax in Yorkshire, a joint venture between ourselves and National Grid Electricity Transmission.

Looking beyond the RIIO-T2 price control period, the publication of the ESO's Pathway to 2030 Holistic Network design sets out a clear requirement for over £7bn of additional investment in onshore electricity transmission infrastructure across the north of Scotland to meet 2030 offshore wind targets. These investments will also support Government's plans to reduce the UK's dependence on, and price exposure to, volatile global wholesale gas markets via the deployment of homegrown and affordable low carbon electricity generation, supported by robust electricity network infrastructure.

We are also making good progress in tackling our own impact on climate change, underpinned by our world leading science based target, which is consistent with net zero pathways, putting us well on track to meet our one third reduction in emissions goal by the end of the price control period.

Finally, we have updated our capital expenditure forecasts based on the additional growth in network infrastructure expected and now expect to invest around £4bn over the RIIO-T2 period, which includes over £600m in 2021/22. As part of our updated forecasts, we can confirm we are well on track to delivering of RIIO-T2 goal of £100m in efficiency savings from innovation, with over half of these savings supporting energy consumers through reductions in electricity costs.

Safety

At SSEN Transmission nothing is more important than the safety and wellbeing of our staff and colleagues so that they return home in good health to their families each day.

We have made positive progress with our safety performance over the last five years with TRIR reducing from our previous year and crucial to this improving trend is the performance of contract partners who we continue to actively support and engage with through local safety communities. The SSEN Transmission Safety, Health and Environment (SHE) team continue to explore ways to better understand our data to further improve our performance in future years.

In 2021/22 our teams continued to navigate through the ever changing challenges associated with COVID and have continued to ensure we minimise risk as much as possible. Our teams have also been faced with some extremely challenging storm weather over the last year. However, during these times, we continued to look after the safety of ourselves and others, ensuring that everyone got home safe. Where required, our teams have reinforced their safety licence and stopped work when it wasn't safe. If it's not safe we don't do it.

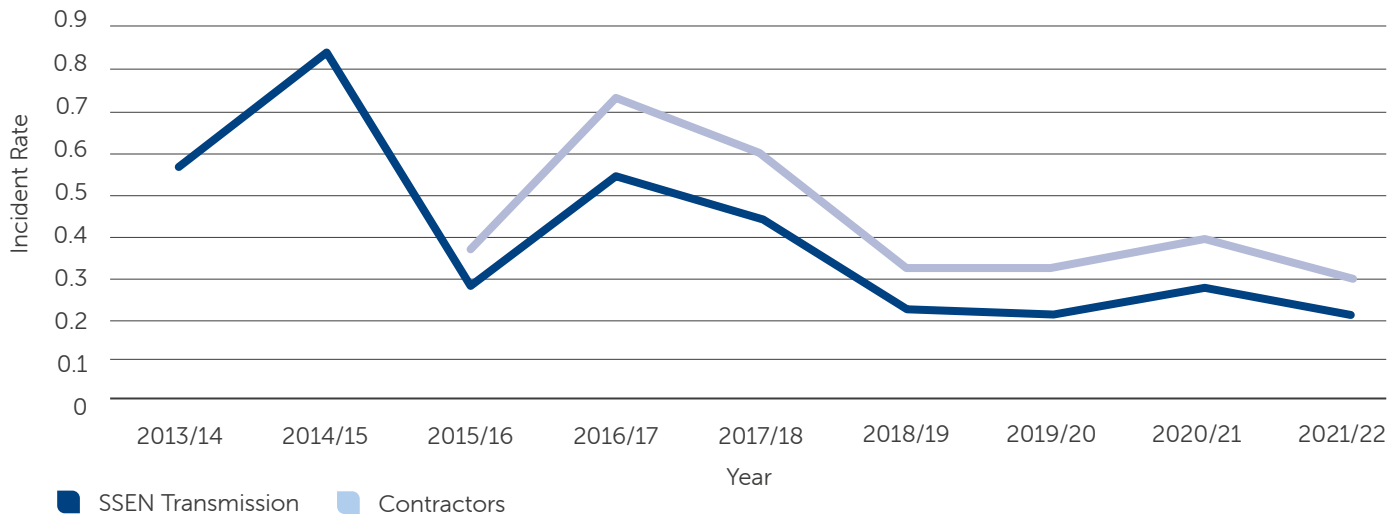
In the last year, we increased our focus on health and wellbeing and our Mental Health First Aiders played a critical role with supporting to deliver Wellbeing Cafes to our Transmission colleagues. Since November 2021, we delivered over 60 sessions covering a wide range of different topics.

We have also looked at ways in which we can improve the way we work in Transmission and have focussed our attention on reaffirming construction (design and management) compliance, assessing effectiveness of our process safety plans and made positive progress with the implementation of a new safety management tool.

For 2022/23 we will seek to build on what we have done previously and explore ways in which we can make it easier for our team and contractors to do the right thing. As our business grows, we want to explore ways in which we can do safety differently to support continual improvement and are committed to adopting a proactive approach to health and safety management.

We recognise that our people, contractors, the way we lead and take accountability will enable us to positively influence our safety culture and we want to ensure that health, safety and wellbeing is at the heart of our decision making so that it becomes integrated in our day to day business. We have created a new safety strategy which outlines four strategic themes that we can expand and strengthen in 2022/23 to deliver our vision of creating a healthy, happy and safe workplace: Our Communities; Reactive to Proactive; Improved Systems; and, Make it Easy to Do the Right Thing.

Total Recordable Incident Rate



Environment and Sustainability

Whilst our most material contribution in addressing the climate emergency is building the network infrastructure required to connect and transport clean, renewable electricity generation, we recognise we have a responsibility to take action to reduce our own impacts on climate change. We remain extremely proud to have been the first network company globally to have our science based emissions reduction target, consistent with net zero pathways, accredited by the Science Based Target Initiative. This includes our RIIO-T2 goal to deliver a one third reduction in our greenhouse gas emissions, which we are well on track to delivering, having reduced our scope 1 and 2 emissions by 11% from our 2018/19 baseline.*

We are also making great progress delivering against our wider Sustainability Action Plan and are on track to meet, and in some cases exceed, our targets. This includes our commitment to deliver no net loss in biodiversity, which we have successfully delivered on all projects gaining consent from April 2021; and from 2025 onwards, biodiversity net gain, which we are already successfully delivering on several projects across the north of Scotland.

The table below shows our progress in reducing our business carbon footprint and a full overview of our performance against our Sustainability Strategy and Action Plan in 2021/22 is available on our website.

Business Carbon Footprint – Scope 1 & 2 (tCO_2e)*

Target = 6,428 tCO_2e (by end of RIIO-T2)
This measures the carbon footprint of the business against our RIIO-T2 target of a 33% reduction against a 2018/19 baseline.

Scope 1 greenhouse gas emissions are those which occur directly from sources owned or controlled by the company e.g. our operational transport, on-site generators and SF_6 fugitive emissions. Scope 2 refers to indirect greenhouse gas emissions from the generation of purchased electricity consumed by the company.

SCIENCE BASED TARGETS
DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

BUSINESS AMBITION FOR 1.5°C

Insulation and Interruption Gas Emissions

SF_6 is a greenhouse gas which has been used extensively across the electrical industry as an insulating gas for switchgear in substations, however, if leaked, the gas is harmful to the environment. In 2021/22, our SF_6 leakage rate was 0.19% of mass holdings in March 2022, down from 0.24% for the previous year.

This is despite considerably expanding our network to achieve net zero which means adding equipment that uses SF_6 as an insulating gas. We continue to explore SF_6-free technologies such as those installed at our Kintore substation.

Emissions in tCO_2e	Specific area	Emissions scope	2018/19 SBT baseline	2019/20	2020/21	2021/22
Building energy use	Buildings electricity	2	266	148	69	49
	Buildings natural gas	1	14	13	7	5
	Substation electricity (est.)	2	6,374	5,770	5,272	4,872
Operational transport	Operational transport	1	568	520	402	675
	Company vehicles mileage	1	347	337	116	144
Fugitive emissions	IIG emissions	1	1,925	3,120	2,947	2,777
Fuel combustion	Generator diesel	1	100	69	20	0.1
Total scope 1			**2,954**	**4,058**	**3,492**	**3,601**
Total scope 2 (market based)			**6,640**	**5,918**	**5,342**	**4,921**
Total scope 1 & 2			**9,594**	**9,977**	**8,834**	**8,522**

*Further information about our Science Based Target and Business Ambition for 1.5°C can be found on our website:
https://www.ssen-transmission.co.uk/news-views/articles/2020/8/ssen-transmission-world-first-science-based-target-accreditation/

IIG Type		2018/19 SBT baseline	2019/20	2020/21	2021/22
SF_6	tCO_2e	1,925	3,120	2,947	2,777
Leakage rate*	%	0.21	0.32	0.24	0.19
Interventions per annum	Number	Not recorded in T1	Not recorded in T1	Not recorded in T1	27
Estimated impact of interventions	tCO_2e avoided or abated	Not estimated in T1	Not estimated in T1	Not estimated in T1	699*

* 111 (tCO_2e avoided through SF_6 alternatives) 588 (tCO_2e abated through leakage reduction)

Environment and Sustainability 2021/2022 Highlights

Showing Leadership

Won the Utility Week Net Zero award for our drive to deliver a net zero future.

With our specialist supplier partners, we have co-created a new strategy and specifications for avoiding the use of sulphur hexafluoride (SF_6) gas on our network.

SSE Group, and therefore SSEN Transmission, continue to be accredited to the Fair Tax Mark.

Published report: Getting to Net Zero The critical contribution from electricity generated in the north of Scotland, showing that the north of Scotland can contribute 10% of total action needed to achieve UK net zero.

Taking Action

We've reduced our scope 1 & 2 emissions by 11% from 2018/19 and are on track to achieve our Goal of one third reduction by 2026.

We launched our new Inclusion & Diversity forum Harne-SSE to help make Transmission the most inclusive environment for all its staff.

We launched a new supply chain reporting system to help us measure the impacts of our projects and work with our supply chain to improve sustainability performance.

Increased renewable capacity by around 1GW - and are on track to meet our Goal to transport enough renewable energy through our network to power 10 million homes.

Working Together

We established a partnership with community group Argyll and the Isles Coast and Countryside Trust to help support out commitments to compensatory planting while investing within our local community in Argyll and the Isles.

In 2021/22 27% of our approved suppliers were in the north of Scotland – ahead of our target to have 25%.

We were honoured to support COP26 as Principal Partner.

We are real Living Wage accredited, and this year was our first year of achieving Living Hours accreditation.

Delivering a Network for Net Zero

Tackling the climate emergency and delivering a network for net zero emissions is at the heart of our business, underpinned by our strategic objective to enable the transition to a low carbon economy. We do this by building the electricity transmission infrastructure required to harness the north of Scotland's vast renewable resources and transporting that clean power to areas of demand across the country.

Over the RIIO-T2 price control period, we expect to invest around £4bn, a significant proportion of which will be in new or upgraded network infrastructure. This investment is key to support decarbonisation targets and help secure the country's future energy independence and energy security.

Those investments beyond our certain view, which is our baseline investment case for the RIIO-T2 period of £2.2bn, include the Shetland High Voltage Direct Current (HVDC) link which is under construction; the replacement of the existing Fort Augustus to Skye overhead line, with an increased capacity to accommodate new electricity generation along its route; and the Argyll 275kV strategy, which will increase the capacity of the electricity transmission network across the Argyll region to accommodate the forecast growth in renewables in the area.

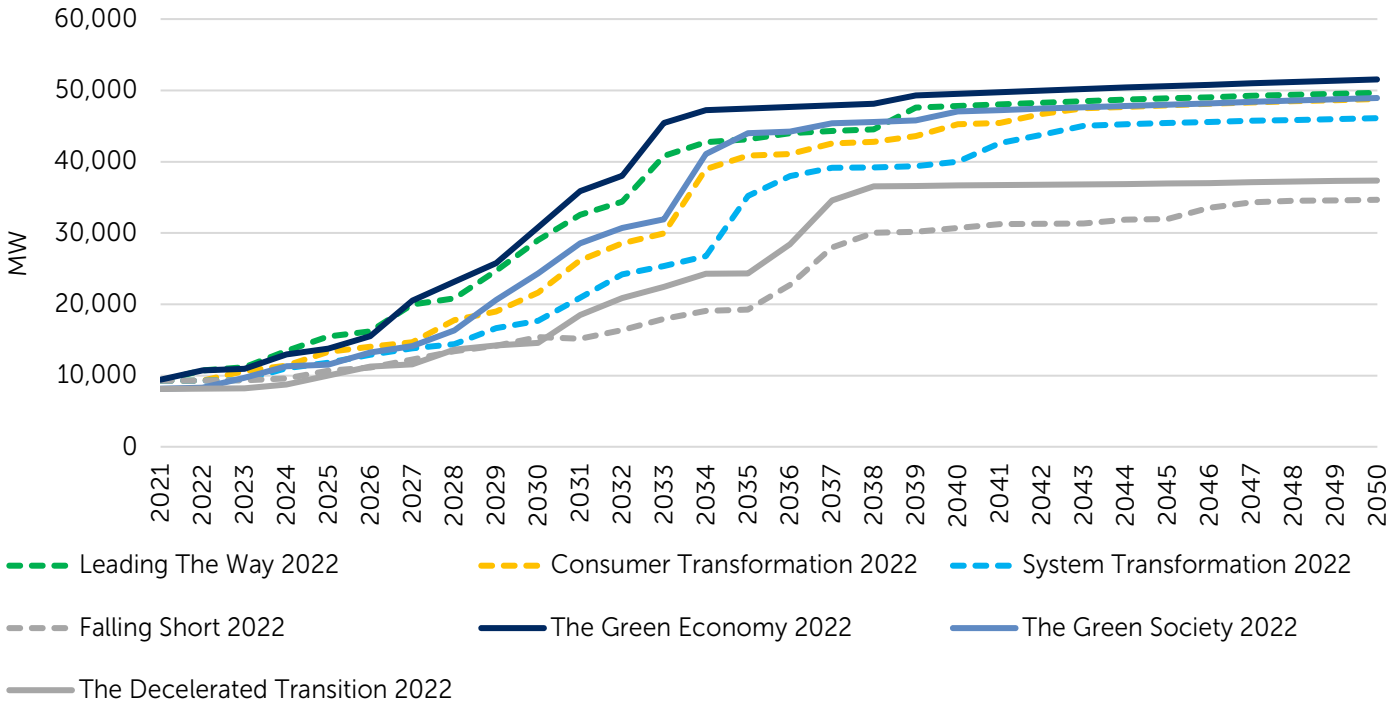
The Argyll 275kV strategy and Skye reinforcement project are both being taken forward as part of Ofgem's Large Onshore Transmission Investment (LOTI) Uncertainty Mechanism, with both projects making good progress through Ofgem's regulatory approvals process. The Final Needs Case for the Skye reinforcement project was submitted to Ofgem in July 2022 and the Initial Needs Case for the Argyll 275kV strategy in March 2022.

In July 2022, Ofgem provisionally approved the first subsea superhighway of electricity transmission, Eastern Green Link 2 (EGL2), which will see a 2GW HVDC subsea link from Peterhead to Drax in Yorkshire. A joint venture between SSEN Transmission and National Grid Electricity Transmission, the project is on track for delivery in 2029, with key pre-construction activities progressing well.

Future Energy Scenarios

We continue to use Future Energy Scenarios (FES) to help inform the ongoing planning of our network and what is required to deliver a pathway to net zero emissions. Both our own North of Scotland Future Energy Scenarios (NoSFES) and the ESO's FES continue to highlight the significant and outsized contribution the north of Scotland will make to delivering net zero targets.

Based on our 2021/22 NoSFES, by 2030, the north of Scotland will need between 24GW and 31GW of renewable electricity capacity to put us on the right trajectory for net zero by 2050, triple today's installed capacity. This is based on our Green Economy and Green Society scenarios, both of which are consistent with delivering net zero. The Highlands and the North East are expected to lead the way in the growth in renewables to the end of this decade and beyond, particularly offshore wind following the outcome of the ScotWind leasing round and the vast offshore renewables potential ScotWind will deliver.



Further information on our NoSFES and the ESO's FES can be found via the following links:
https://www.ssen-transmission.co.uk/information-centre/north-of-scotland-future-energy-scenarios-nosfes/
https://www.nationalgrideso.com/future-energy/future-energy-scenarios

The Pathway to 2030 Holistic Network Design

Looking beyond the RIIO-T2 price control period, in July 2022, the GB Electricity System Operator, National Grid ESO, published the Pathway to 2030 Holistic Network Design (HND). This sets out the blueprint for the onshore and offshore electricity transmission network infrastructure required to enable the forecast growth in renewable electricity across Great Britain, including the UK and Scottish Governments 2030 offshore wind targets of 50GW and 11GW.

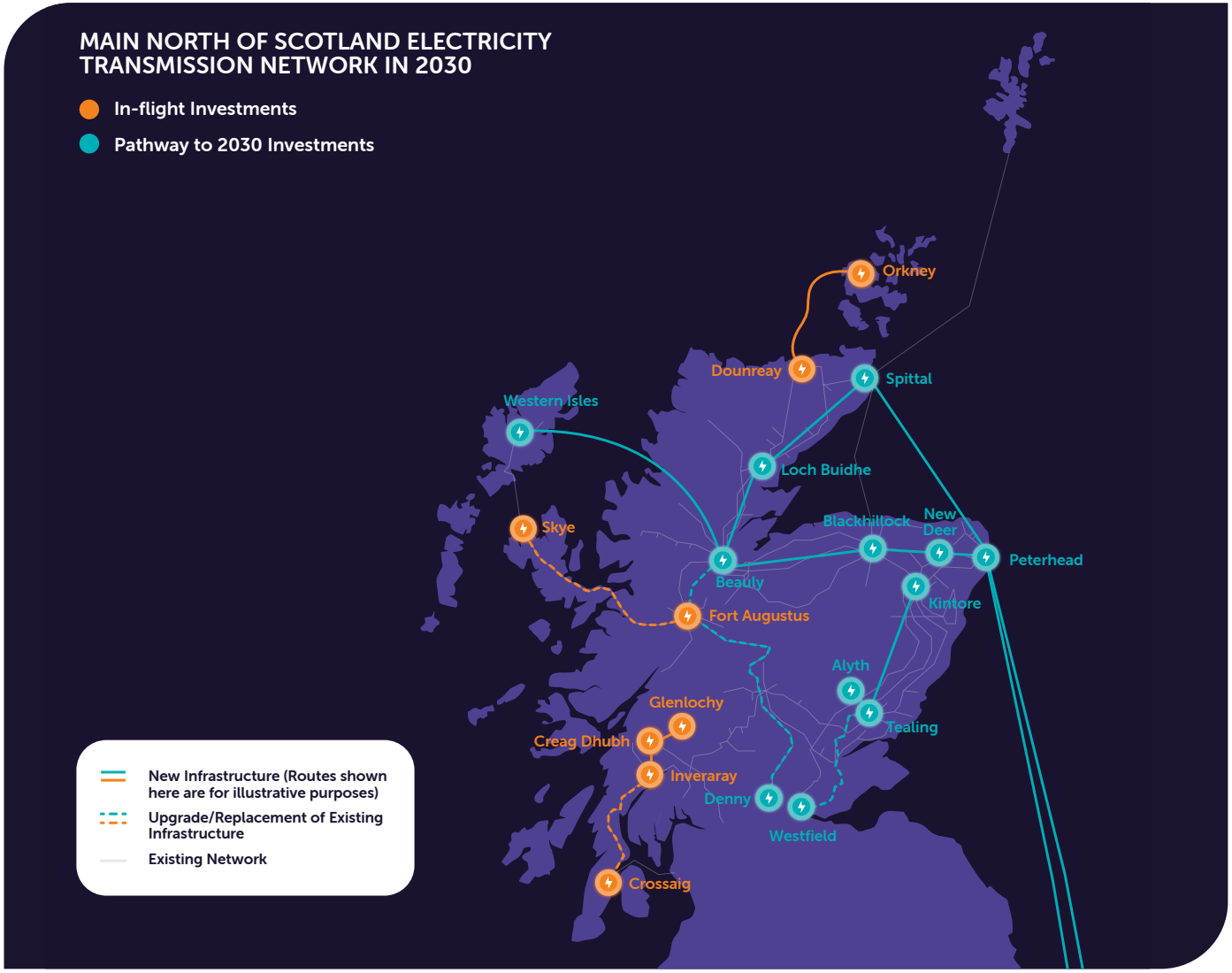
For the north of Scotland, the blueprint confirms the need for over £7bn of additional investment in onshore electricity transmission infrastructure, unlocking Scotland's vast offshore wind resources by connecting the huge renewable energy potential of wind energy needed to meet legally binding emissions reduction targets and put Scotland and the UK on the pathway to net zero.

These investments will also be key to unlocking the first phase of the hugely ambitious ScotWind leasing round, which at 25GW, potentially rising to around 28GW through the ScotWind clearing process, vastly exceeded expectations and marks a massive vote of confidence in Scotland's offshore sector.

The need for these reinforcements has been further underlined with the UK Government's British Energy Security Strategy, which set out Government's plans to reduce the UK's dependence on, and price exposure to, volatile global wholesale gas markets via the deployment of homegrown, low carbon electricity generation supported by robust electricity network infrastructure.

These major investments will also provide huge economic opportunities for communities across the north of Scotland, supporting thousands of skilled jobs, as we continue to deliver a network for net zero emissions in the north of Scotland.

We continue to work closely with Ofgem Government and wider stakeholders to establish the regulatory and policy framework required to accelerate these investments for 2030 delivery. This includes the need for sufficient pre-construction expenditure to support the development of these projects, as well as securing the supply chain to support delivery.



Innovating to a Net Zero Future

Our focus this year has been on establishing the foundations of our RIIO-T2 innovation portfolio, coupled with the conclusion of our remaining RIIO-T1 projects. RIIO-T2 has brought fresh opportunities for innovation, with a renewed Network Innovation Allowance (NIA) and Ofgem's new Strategic Innovation Fund (SIF) - to support the acceleration of our energy system towards net zero.

In alignment with our innovation strategy, we have taken a 'User Driven' approach to identifying new innovation opportunities that can deliver the most benefit for our customers and stakeholders. Throughout 2021/22, our Innovation Team has led the development of five new NIA projects that aim to tackle the most pressing issues we experience as we grow our network. In parallel, the launch of the first round of the SIF saw success with three new Discovery innovation projects delivered throughout the year. These projects create the basis of our RIIO-T2 innovation portfolio that we aim to grow throughout the price control.

Network Innovation Allowance	Strategic Innovation Fund
6 projects ongoing in 2021/2022	3 projects ongoing in 2021/2022
2 new projects started in 2021/2022	3 projects complete in 2021/2022
£568k portfolio spend over 2021/2022	£166k portfolio spend over 2021/2022

Project Aquila

Alongside and co-ordinated with our 'Pathway to 2030 Holistic Network Design' investments, a new HVDC Switching Station at Peterhead, 'Project Aquila', will be developed to help accelerate the development of offshore wind and net zero targets.

By integrating HVDC systems through multi-terminal and multi-vendor interoperability, this leading innovation aims to demonstrate, for the first time outside of China, the interoperability of two HVDC technology providers. This has the potential to help reduce the number of HVDC Convertor Stations required to support the development of future HVDC links and the integration of HVDC grids, reducing costs and minimising community and environmental impacts.

This innovation has been announced as one of the UK Government's successful first tranche 'Pathfinder' projects, which are being progressed under the BEIS led Offshore Transmission Network Review Early Opportunities workstream.

Innovating to a Net Zero Future

Dynamic Line Rating Project Fund: BaU

Our Dynamic Line Rating (DLR) project has continued to make great progress in 2021/22. DLR refers to the active varying of presumed thermal capacity for overhead power lines in response to environmental and weather conditions. This is done continually in real time, based on changes in ambient temperature, solar irradiation, wind speed and wind direction, with the aim of minimising grid congestion.

DLR reduces congestion on power lines, optimises asset utilisation, improves efficiency and reduces costs. This permits increased solar and wind integration, reduces curtailment for these variable renewable energy sources and makes power generation dispatch more cost-effective. This innovative approach to increasing capacity on our overhead lines (OHL) is expected to deliver significant benefits to our business and consumers by preventing costly reinforcements to our network that would otherwise be needed to connect the large volumes of renewable energy connected to the system.

Project Incentive: Project Fund - SIF

With the increasing capacity of offshore wind, innovation is required to facilitate the rapid roll-out of this intermittent generation to support grid balancing and address stability challenges. Without this, the GB grid will become weaker leading to issues such as increasing the likelihood of blackouts and maintaining an undesirable reliance on fossil fuel generators.

Project Incentive will investigate new solutions to address this through demonstrating the use of innovative voltage, current and frequency control technologies coupled with energy storage at the point of onshore connection of offshore wind farms, to allow offshore wind farms to stabilise the onshore grid.

Low Profile 132kV Steel Poles: Project Fund – NIA

Our Low Profile 132kV Steel Poles project aims to create a low-profile overhead line pole design that replicates the visual consenting envelope, reliability levels, insulation levels, and construction methods associated with wood poles, significantly reducing future construction costs. Application of the low-profile design as a substitute for steel structures could provide a significant reduction in future construction costs, providing lower cost connections for our customers and savings for energy consumers, supporting the energy system transition.

Network-DC: Project Fund - SIF

Unlike conventional Alternate Current (AC) electricity systems, Direct Current (DC) electricity systems have largely been single point to point interconnectors. To support the development of future HVDC grids there is a requirement to develop circuit breaker technology for DC systems to ensure the system can continue to operate in the event of a fault on the system. Using advanced simulation technology, through the Network DC project we aim to demonstrate DC circuit breaker technology, de-risking the development of this innovation which will be critical to support net zero ambitions.

Customers and Stakeholders

Our Leading Approach to Stakeholder Engagement

We are proud to be a stakeholder-led business with a stakeholder-led strategy. We work hard to meet the needs of all our stakeholders and customers, collaborating and working in partnership with our stakeholders to overcome environmental, societal and economic challenges as we strive to reach mutually acceptable outcomes.

We also committed to advocate on behalf of our stakeholders to drive positive change along our pathway to Net Zero, such as our ongoing work calling for reform of Transmission Use of System Charges.

Carrying out effective engagement with our stakeholders is crucial to our critical work and we are committed to delivering the highest stakeholder engagement standards.

Achieving the AccountAbility AA1000 Stakeholder Engagement Standard

Reflecting our commitment to deliver the highest standards of stakeholder engagement, our approach to stakeholder engagement is underpinned by AccountAbility's AA1000 Stakeholder Engagement Standard.

These series of standards represent a principles-based framework, used globally by businesses to demonstrate leadership and performance in accountability, responsibility, and sustainability. This is considered the 'gold standard' in stakeholder engagement accreditation. As of June 2022, our score according to these standards is 82% with a top-tier rating of "Advanced" in the AccountAbility Stakeholder Engagement Maturity Ladder. This is a 20% increase on our 2019/20 score and demonstrates our commitment to continuously improving our stakeholder engagement practice.

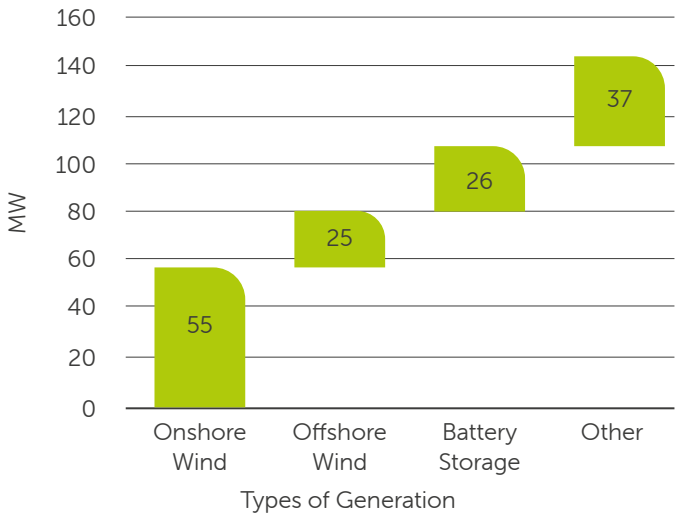
SSEN TRANSMISSION AA1000 STAKEHOLDER ENGAGEMENT PERFORMANCE ADVANCED 2022

Customer Connections

During 2021/22 we engaged with customers through surveys, interviews and focus groups to identify areas of good performance and areas for improvement. We used these insights to develop new standards of service which have been implemented to improve speed and consistency of service. This has contributed to strong performance in the Quality of Connections Survey, where we achieved an overall quality of connections score of 8.1 out of 10, which is above the baseline target of 7.7.

In 2021/22 we experienced a 39% increase in licenced new connection applications and applications for modification to connection offers. Through improved processes and increased resources, we successfully delivered this increased volume of offers on time. Whilst onshore wind continues to be the dominant generation source looking to connect to our network, 2021/22 saw a significant increase in battery storage applications and offshore wind, mainly made up of ScotWind applications.

Customer Connection Offers 2021/22



Accelerating Delivery of the Pathway to 2030

Delivering the unprecedented programme of reinforcements to meet 2030 targets will require an acceleration of project development and delivery. This includes looking at ways to fast track the development process, which we are actively exploring with the relevant consenting bodies, statutory stakeholders, and other interested parties.

As a stakeholder-led business, we are committed to do this in a way that maintains our open and transparent approach to project development, where stakeholders, including local communities, have the opportunity to help shape our plans through regular and meaningful public consultation.

Listening to our Stakeholders

In 2021/22, as part of our RIIO-T2 requirements, we conducted our first Infrastructure Stakeholder Engagement Survey which will be carried out annually in this regulatory period in order to gain an understanding of the engagement experiences of our stakeholders and how they have been impacted by infrastructure projects both directly and indirectly. We set out the following objectives:

1. Understand stakeholders' perceptions and attitudes towards infrastructure projects and our engagement and communications;
2. Identify challenges faced by stakeholders with regards to infrastructure projects and engagement and communication;
3. Understand improvement that could be made and identify opportunities for stakeholders with regards to infrastructure projects, engagement and communication.

For details of the key themes and initiatives we are engaging on in 2022/23 please see our SSEN Transmission Annual Engagement Plan on our website.

Survey findings

- 70% of stakeholders were happy with the level of engagement on infrastructure projects
- 95% of stakeholders affected by infrastructure projects had at least some knowledge of the project
- 66% of stakeholders had attended consultation events for projects; 17% said they didn't know about consultation events
- 94% of stakeholders had contact with SSEN Transmission in the last 12 months
- 82% of stakeholders felt that our engagement was proactive
- 38% of stakeholders suggested that our engagement helped reduce the impact caused by infrastructure projects
- 62% of stakeholders lived within a mile of the infrastructure project; 78% said the project had a negative impact on them

Network Investment: Growing Our Network

In the first year of the RIIO-T2 price control period, we have made a strong start in delivering against our RIIO-T2 outputs and remain on track to deliver all network investments set out in our Business Plan for the RIIO-T2 period.

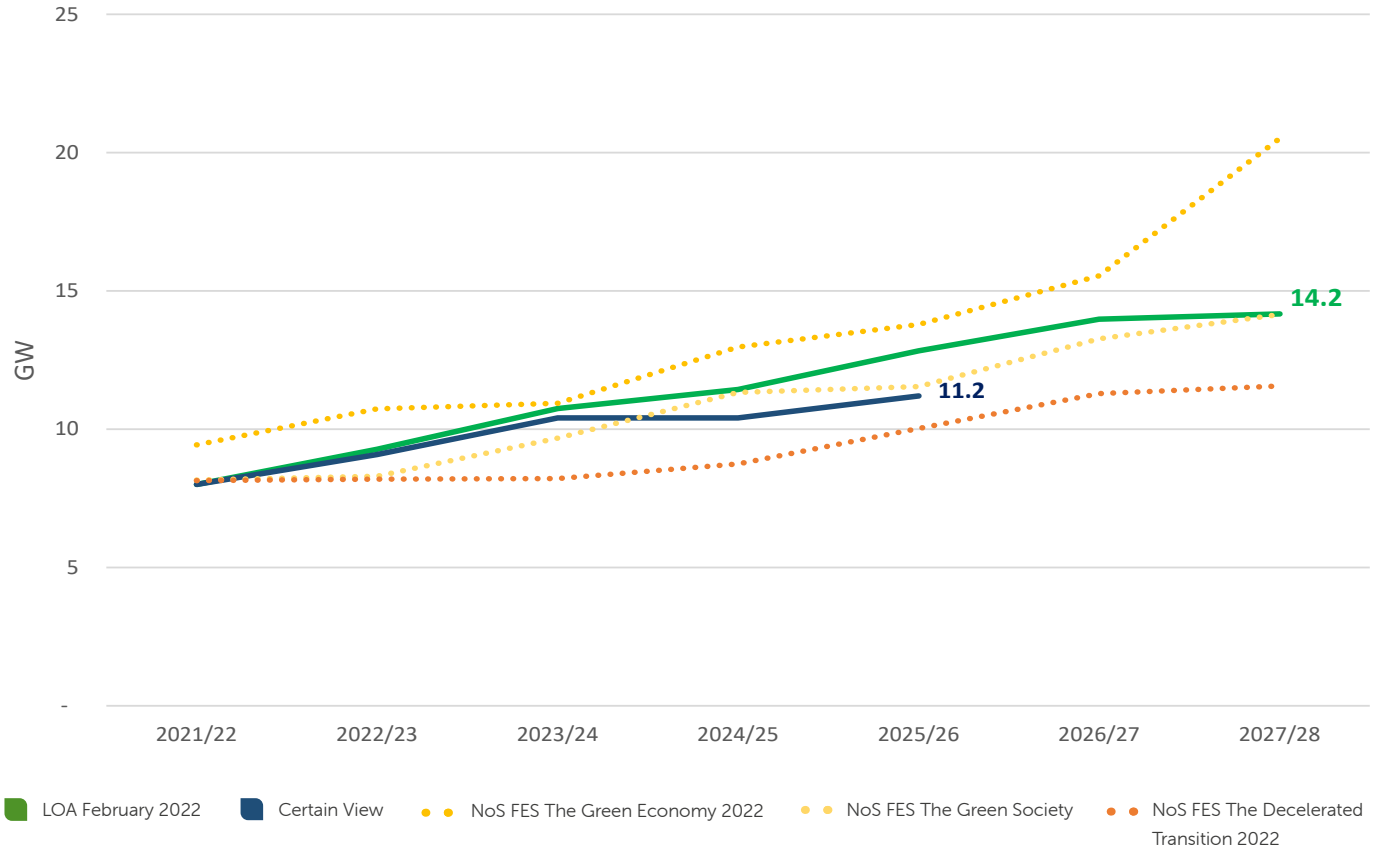
As we continue to deliver a network for net zero emissions in the north of Scotland, we have made excellent progress in building the strategic reinforcements to the transmission system required to support the forecast growth in renewable electricity generation across the region. This includes growth of around 1GW in 2021/22, which brings the total installed capacity connected to the North of Scotland transmission network to around 9GW, of which just under 8GW is from renewable sources.

This investment will support our RIIO-T2 goal to transport the renewable electricity that powers 10m homes, which will be met once the installed capacity of renewables supported by our network reaches 10GW, which we are well on the way to delivering.

Looking beyond the Certain View for the RIIO-T2 period, which is our baseline investment case, the generation that will be connected through the various uncertainty mechanism projects, particularly the Shetland HVDC link, Skye reinforcement and Argyll 275kV Strategy, we expect the total installed generation capacity in the north of Scotland to increase to around 14GW by the end of RIIO-T2, with up to 13GW of this from renewable sources. This would increase the number of homes our network could power from renewable electricity to around 13m homes, greatly exceeding our RIIO-T2 goal.

We call this increase to our baseline our Likely Outturn Assessment (LOA), which remains under constant review in response to changes to the underlying generation background looking to connect to our network.

Total Generation Capacity Forecast to Connect to our Network: Likely Outturn Assessment



Network Investment: Growing Our Network

Load Projects

The forecast growth in renewables across the north of Scotland will be enabled by a series of strategic investments in new and upgraded infrastructure. We refer to these investments that increase the capacity of our network as 'load projects'. This includes the following major projects:

Connection Projects

These are works to facilitate new electricity generator connections to our network.

Shetland

Excellent progress continues to be made on the Shetland HVDC transmission link, which will see Shetland connected to the GB transmission system for the first time, enabling the connection of renewables and supporting Shetland's future security of supply.

The substation and convertor station sites at Kergord (Shetland) and switching station at Noss Head (Caithness) are taking shape, with all main building structures now complete.

Cable installation preparatory works have also progressed well, with all land cable ducting now in place and the first phase of subsea boulder clearing successfully completed.

Subsea cable installation works will follow from 2022/23, alongside the fit out of substation and convertor station buildings, with the project on track for completion and energisation in 2024.

East Coast Upgrades

Good progress continues on works to incrementally increase the capacity of the north east and east coast transmission network to 275kV then to 400kV, with new substations at New Deer and Rothienorman now energised at 275kV to be subsequently upgraded to 400kV in 2023. These works also include key substation developments at Alyth, Kintore, Peterhead and Tealing, which are all progressing well.

The 400kV overhead line upgrade works between Peterhead, Rothienorman and Blackhillock are also well under way and are due for completion in 2023, with the overall upgrade of the east coast network to 400kV remaining on track for completion in 2026.

At both Alyth and Kinardochy substations in Perthshire, specialist voltage control devices are being installed which will will play a critical role in ensuring voltage limits on the transmission network remain stable and power flows can be efficiently and safely managed.

Creag Riabhach Windfarm Connection

In 2021/22, this includes Creag Riabhach windfarm connection, which will see the construction of a new 132kV overhead line, approximately 20km in length supported by trident wooden poles from the wind farm substation to a proposed new substation to the north.

Network Investment: Existing Network Interventions

Non-load Projects

Our non-load projects are those where we replace assets nearing the end of their useful life, before failure occurs. This helps to ensure we "keep the lights on". Our non-load projects also include our VISTA scheme.

Inverary to Crossaig

In 2021/22, a major milestone was reached on the Port Ann to Crossaig overhead line replacement project with the commencement of tower installations, which will span across 45km between Lochgilphead and Crossaig Substation.

The project is the second phase in the wider Inveraray to Crossaig powerline upgrade, with the first phase – Inveraray to Port Ann – successfully energised in July 2021.

The replacement powerline will provide a robust and reliable transmission network across the region serving as one of the network's main arteries in the west of Scotland.

Initially operating at 132kV, the new overhead line will be capable of uprating to 275kV as part of our wider Argyll 275kV strategy, which will increase the capacity of the transmission network in the region to facilitate the connection of new renewable electricity generation, supporting the transition to net zero.

Investments to Improve the Visual Impact of Scottish Transmission Assets

Throughout 2021/22, progress was made on our Visual Impact of Scottish Transmission Assets (VISTA) projects, schemes which aim to reduce the impact of existing historic electricity transmission infrastructure in some of Scotland's most precious landscapes.

In the Loch Lomond and Trossachs National Park, three different schemes have progressed or been completed where we're removing sections of overhead line and replacing it with underground cables, improving the visual impact without compromising on the quality of crucial energy transmission in the area.

Killin

At both Alyth and Kinardochy, construction of new substations, including specialist voltage control devices, have commenced with good progress also being made at Peterhead substation and an upgrade to Tealing substation.

Sloy

Work at Sloy progressed well in 2021/22 where 12 towers have been removed and 6.6km of cable has been undergrounded. The area of Glen Sloy is popular with hikers accessing walking routes to Ben Vorlich, and the reduction in overhead lines in the scenic glen has been welcomed.

Glen Falloch

At Glen Falloch, 15 towers have been removed and replaced with 4.5km of underground cable through the scenic glen near Crianlarich.

Operations and Asset Management

The extreme storms that impacted much of the country over the winter of 2021/22 were amongst the most challenging ever experienced for all electricity network operators. Storm Arwen, in November 2021, was reported as the worst storm to affect the North East of Scotland in almost 70 years, with sustained northerly winds of up to 90mph experienced. Only two months later, Storm Malik was almost as extreme and impacted across a wider geographical area, followed only 36 hours later by Storm Corrie where wind gusts of 147mph were recorded, the second highest on record. Our operational teams, field, office and control room teams, supported by colleagues from across the business, acted upon early warnings and mobilised resources in preparation for each of the events, which ultimately led to fantastic, coordinated response, restoring record numbers of transmission faults, in many cases within hours in extremely challenging conditions.

Despite the impacts of these extreme weather events, we again delivered network reliability of over 99.9% and for the second year running, we achieved the full reward through the Energy Not Supplied Incentive, in line with our RIIO-T2 goal to aim for 100% transmission network reliability for homes and businesses.

2021/22 was also our best year in Insulation and Interruption Gas leakage and our third best year since the beginning of RIIO-T1, whilst the gas held on our network has more than tripled over this time, from 17,500kg to almost 60,000kg.

Our strong operational performance is underpinned by a robust programme of inspection, maintenance and refurbishment of our transmission assets, keeping the lights on for communities across the north of Scotland and ensuring reliable network access for our electricity generation customers, supporting security of supply. This includes enhanced tree cutting activities in 2021/22 to enhance network resilience, particularly in those areas most impacted by last year's storms.

Asset Interventions	T2 Non Load Asset Replacements in 2021/22
400kV	
Circuit Breaker	3
275kV	
OHL Wooden Poles	12
OHL Towers	3
OHL Tower Fittings	10
OHL Tower Conductors	2.2km
132kV	
Underground Cable	3.3km
Circuit Breaker	1
OHL Wooden Poles	12
OHL Pole Fittings	12
OHL POle Conductors	0.5km
OHL Towers	3
OHL Tower Fittings	6
OHL Tower Conductors	1.1km

Financial Performance During the Year

The majority of our total expenditure (TOTEX) in 2021/22 continues to be focussed on the delivery of large capital investment projects, particularly those investments in new and upgraded network infrastructure that are required to grow the capacity of our network to facilitate the connection of new renewable electricity generation. This includes the Shetland HVDC link and upgrades to the existing East Coast and North East transmission network.

The table below shows our actual expenditure vs allowances for 2021/22, broken down against each investment category that we report against.

As this is the first year of the five year price control period, it is difficult to accurately assess performance vs allowances, given investments will span several years within price control periods and even crossover from one price control period to another.

We therefore believe a better indicator of performance is our forecast for the full price control period, as set out in the Financial Forecast for RIIO-T2 table on page 18.

	2021/22 actual (£m)	2021/22 allowance (£m)	Delta (£m)
Load Related- Wider works	248.90	262.20	(13.30)
Load Related- Other	144.80	174.10	(29.30)
Non-Load Related	71.2	92.2	(21)
Non-Load Related- Other	9.1	23.3	(14.2)
Non-Operational Capex	7.5	16.2	(8.7)
Network Operating Costs	37.3	41.8	(4.5)
Indirect and Other Costs	86.2	95.9	(9.7)
Total Expenditure as per RRP	605.00	705.70	(100.70)

Return on Regulatory Equity (RoRE)

4.9% 5 year weighted average operational RoRE*

*(excluding debt and tax performance)

Regulated Asset Value (RAV) at end of year

2012/13 = £1.1bn
2018/19 = £3.5bn
2021/22= £4.2bn

The RAV is a useful indicator of the growth in the size of our network over the price control period and we are forecasting that by March 2026 it could reach between £6.5bn - £7bn.

Load Related Expenditure

Our reported outperformance of around £43m in 2021/22 is due to several factors beyond the phasing of expenditure across the price control period. This is primarily explained by efficiencies in our contracting strategy, alongside savings realised through the competitive tendering process, the early placement of material orders and changes in the technical scope of certain projects.

Non-Load Related Expenditure

Our reported outperformance of around £35m in 2021/22, beyond the phasing of expenditure across the price control period, can primarily be attributed to these replacement works, including savings in the competitive tendering of projects.

Non-Operational Capex

Non-operational capital expenditure relates to investments in activities such as IT, Telecoms and non-operational property. Our reported underspend of £8.7m is largely due to underspend in IT & Property. This is due to a slow start on our IT programme along with our Operations Centre and Warehousing projects. This is a phasing issue with the Price Control Deliverables still on track for delivery in RIIO-T2.

Network Operating Costs

Network Operation Costs relate to the ongoing operation of our network, including costs associated with faults, repairs and maintenance, and inspections. They also capture costs associated with our VISTA schemes. The bulk of our reported underspend of £4.5m in 2021/22 relates to our refurbishment and maintenance programme and the phasing of expenditure, which recovers during the remainder RIIO-T2.

Indirect and Other Costs

Indirect and Other Costs relate to various costs not captured within the other cost categories, such as business support costs, including costs allocated to SSE Group for shared services such as IT and Telecoms and Property. This cost category also includes indirect costs associated with the additional investments being progressed beyond our RIIO-T2 baseline Certain View. Our reported underspend of £9.7m is largely due to the phasing of expenditure.

Financial Forecast for RIIO-T2

	Expenditure (£m)						Allowances (£m)	Performance (£m)
	2022	2023	2024	2025	2026	T2 Total	T2 Total	T2 Total
Load Related- Wider works	248.9	200.3	287.9	498.8	538.9	1,774.8	1,799.9	25.1
Load Related- Other	144.8	121.0	217.5	286.3	176.1	945.7	852.6	-93.1
Non-Load Related	71.2	98.5	196.9	242.3	156.0	764.9	759.1	-5.8
Non-Load Related- Other	9.1	25.3	16.6	20.7	13.7	85.4	85.2	-0.2
Non-Operational Capex	7.5	32.1	33.3	16.9	8.6	98.4	98.6	0.2
Network Operating Costs	37.3	24.3	35.4	39.3	35.7	172.0	176.4	4.4
Indirect and Other Costs	86.2	127.5	128.8	129.7	128.6	600.8	526.2	-74.6
Total Expenditure (TOTEX) as per Regulatory Reporting Pack (RRP)	605.0	629.0	916.4	1,234.0	1,057.6	4,442.0	4,298.0	-144.0
Enduring Value Adjustments								241.1
TOTEX Performance as per Regulatory Financial Reporting Pack (RFPR*)								97.1
Adjustments to allowances within Price Control Financial Model (PCFM**)						0.0	189.8	189.8
Sub-total						4,442.0	4,487.8	45.8
Enduring Value Adjustments per RFPR								51.3
TOTEX Performance as per RFPR								97.1
Projects commenced in T1 completed T2	369.3	266.2	203.6	44.6	0.0	883.7	978.0	94.3
Projects commenced in T1 completed T3	7.1	6.9	59.4	59.3	59.1	191.8	170.0	-21.8
Projects commenced in T2 completed T3	1.0	11.8	100.2	441.1	541.0	1095.1	1092.0	-3.1

As is the case with our actual expenditure for 2021/22 and building on our RIIO-T1 financial performance, the majority of our forecast expenditure for the RIIO-T2 period continues to be focussed on the delivery of large capital investment projects. Over 60% of this investment is forecast in new and upgraded network infrastructure that is required to grow the capacity of our network to facilitate the connection of new renewable electricity generation as we continue to deliver a network for net zero emission in the north of Scotland.

We are forecasting RIIO-T2 cost allowances of £4,442m against forecast expenditure of £4,298m (including the RIIO-T1 cross over and RIIO-T3 spend relating to T2 projects). We use the Ofgem methodology for calculating Enduring Value adjustments which remove non-RIIO-T2 related activity such as RIIO-T1 or RIIO-T3 costs and allowances. This leads to an adjustment in outperformance by £241m leaving a revised totex outperformance of £97.1m over the full RIIO-T2 period. This is around 2% of outperformance against allowances which is in line with our RIIO-T2 goal to deliver £100m in efficiency savings over the period.

This forecast includes the impact of uncertainty mechanisms we are progressing throughout the RIIO-T2 price control period and associated early construction and pre-construction impact of investments which span the RIIO-T1 and RIIO-T3 price control periods. Uncertainty mechanisms are an important element of the RIIO-T2 price control and constitute a significant proportion of expenditure. Our current forecasts to the end of RIIO-T2 include around 50% related to Uncertainty Mechanisms of totex allowances. At the time of submitting our Business Plan, our Likely Outturn Assessment totex forecast was between £3-3.5bn, with the increased forecast expenditure of around £4.3bn mainly reflective of the acceleration of renewable electricity generation to support Government net zero targets.

Outperformance has been forecast for our load RIIO-T2 Certain view schemes, driven by a combination of innovation, intelligent/value engineering and efficiencies in the contracting strategy. Outperformance has also been forecast in Closely Associated Indirect (CAI's) costs in part due to the automatic allowances funded through the opex escalator for Medium Sized Investment Projects (MSIP) and Volume Driver Reopener projects. Overall outperformance was partially offset by both higher internal CAI costs driven by increased headcount, required for pathway to 2030 projects, and higher Business Support Costs (BSC) costs, attributed to higher corporate recharges from SSE Group.

*this is a document published based on Ofgem guidance and is to summarise the financial performance covering the Return on Regulatory Equity (RoRE) over a price control period.

** this is the financial model that Ofgem publishes each and every November and contains financial information such as cost allowances, actual and forecasted expenditure and revenue calculations.

Delivering Outputs for Consumers, Customers and Society

As we deliver our ambitious RIIO-T2 business plan, we are making excellent progress delivering against the commitments we have made and are on track to deliver all Price Control Deliverables (PCDs) and our ambitious five goals, where in many cases we are exceeding original expectations.

PCDs were introduced in RIIO-T2 to better hold Transmission Owners (TOs) accountable for delivering work funded through the price control by providing a greater level of clarity between baseline allowances and the associated outputs for certain view projects. We are on track to deliver all 20 PCDs included in the 2021/22 reporting period in line with our license commitments. Cyber Resilience PCDs and PCDs that contribute to Network Asset Risk Metrics (NARMs) are excluded as they have separate reporting processes which are currently ongoing.

We are also performing strongly against our Output Deliverable Incentives (ODIs), a series of penalty or reward incentives to drive continual improvement; and our Consumer Value Propositions (CVPs), where our Business Plan delivers additional benefits and value for energy consumers, our customers and stakeholders, over and above minimum requirements.

The table below summarises our ODI and CVP performance in 2021/22, and where applicable, the financial reward or penalty against each of these measures alongside our target/baseline.

Incentive	Description	Type	Metric	Target/Baseline	Output	Incentive reward 21/22	Max Potential 21/22
Energy Not Supplied (ENS)	Encourage Transmission Owners to improve network reliability in an efficient way to reduce loss of supply events	"ODI (Reward/ Penalty)"	Volume of unsupplied energy incidents due to Incentivised Loss of Supply Events (MWh)	0MWh lost	0MWh lost	£0.85m	£0.85m
Insulation and Interruption Gas (IIG) emissions	Incentivise a reduction in leakage of SF_6 and other IIGs from assets on the network. Support transition to low greenhouse gas alternatives.	"ODI (Reward/ Penalty)"	Measured Leakage (tCO_2e)	<5,742 tCO_2e	1,869 tCO_2e	£0.36m	£0.44m
Timely Connections	Encourage the timely delivery of connection offers to applicants for new connections to our Network.	"ODI (Penalty)"	% of offers of time	100%	100%	£0.0m	£0.0m
Quality of Connections	Incentivise TOs to improve the quality of service delivered to connections customers.	"ODI (Reward/ Penalty)"	Overall satisfaction at customer connection milestones. (marked out of 10)	7.7	8.1	£0.47m	£1.36m
Biodiversity No Net Loss/Net Gain	Delivering Biodiversity No Net Loss on all projects consented from 1 April 2021; and Net Gain on all projects consented from 1 April 2025	CVP	% projects meeting biodiversity targets (No Net Loss until 2025)	100%	100%	n/a	n/a
Science Based Target	Direct and indirect greenhouse gas emissions reductions targets based on the levels required to deliver net zero and 33% RIIO-T2 emmissions reduction goal	CVP	Scope 1 & 2 Emissions (tCO_2e) reduction from 2020/21	8,208 tCO_2e	-3.5%	n/a	n/a
SO:TO Optimisation	An incentive to proactively identify and provide solutions to the Electricity System Operator to help reduce constraint costs	"ODI (Reward)"	Forecast constraint savings to the ESO (£)	n/a	£2.8m	£0.28m	£1.2m

~ Assumed Non Trade Price of Carbon per GOV UK Green Book £242/tCO_2e.
* Not activated per SHET election. 21/22 position therefore not calculated.

Scottish & Southern Electricity Networks

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Living Hours