

TRANSMISSION

About the Energy Industry and our Role

A Network for Net Zero Draft RIIO-T2 Business Plan

Scottish Hydro Electric Transmission plc

Overview

What's in this section?

How the energy industry is changing... exemplified by the four Ds : decarbonisation, decentralisation, digitisation and democratisation. The scale of the challenge, the action needed and the impact on the north of Scotland transmission network.

About our role... as an essential facilitator of the changes our society and economy needs and as an advocate for the needs of north of Scotland energy stakeholders

Our performance to date... on the origin of the electricity grid in the north of Scotland and how it has grown to accommodate renewable generation over the past decade. Our performance during RIIO-T2 on safety and reliability, environment, customer satisfaction and stakeholder engagement, and connections.

A strategy for GB... the outcome of a review of our Srategic Objective – to enable the transition to a low carbon economy – and the definition of our four strategic themes: stakeholder-led strategy, safe and secure network operation, sector leading efficiency and leadership in sustainability.

Dealing with uncertainty... how we use scenarios of future energy generation and demand to help with the planning of the north of Scotland transmission network.

How our draft Business Plan has been developed... we followed a four-step approach that involved collaboration with all stakeholders including the RIIO-T2 User Group and Scottish and Southern Electricity Networks (SSEN) Stakeholder Advisory Panel including examples of how stakeholders have shaped our draft Business Plan.

Governance and assurance... our 'three lines of defence' model for ensuring the quality and accuracy of data and information, but noting that this is a draft plan so will change. The SSE approach to corporate governance and culture.

The future of the energy industry

The transition to cleaner economic growth is one of the grand challenges of the UK Industrial Strategy¹. As the name suggests², there is no simple solution or quick route to success, and it will require co-ordination across numerous sectors if it is to be achieved and targets met.

Our changing relationship with energy

This ambition is set against our evolving relationship with energy. In GB, there is an ever-increasing reliance on electricity as we move away from traditional carbon dense power sources, such as gas to heat our homes and petroleum to drive our cars. At the same time, we rely ever more on electrical appliances and these, in turn, are becoming ever more energy efficient.

The consequences of these changes have the potential to profoundly impact upon electricity demand. At a GB level (but not, as our research shows, in the north of Scotland), electricity consumption has fallen in recent years (Figure 2.1). Looking forward, many models predict rising demand as transport and potentially heat are electrified.

The generation of electricity has also changed **(Figure 2.2)**. Again, this shift has been away from the traditional carbon dense sources of power: oil, coal and (to a lesser extent) gas. Power derived from the wind and sun has become the norm, aided by dramatic reductions in the price of the technology. An existential question remains over the future of nuclear power in GB.

A further shift in the generation of electricity has been in location. The historic view of large centralised power stations has been replaced by small-scale community generation. From solar panels on suburban rooftops to single wind turbines in the local farmers' fields.

Responding to change

The GB energy sector has responded rapidly and effectively to the transition to cleaner economic growth. Yet, while much has been achieved within the electricity generation sector, much remains to be done. The key challenges as we look ahead are in energy efficiency and the decarbonisation of heat and transport.

www.ssen-transmission.co.uk

¹Industrial strategy, the grand challenges (BEIS, 2019) available at:

www.gov.uk/government/publications/industrial-strategy-the-grand-challenges/industrial-strategy-the-grand-challenges

²Industrial strategy, building a strategy fit for the future (BEIS,2019) available at: www.gov.uk/government/publications/industrial-strategy-building-a-britain-fit-for-the-future

The Energy Industry

Our role as the owner of the north of Scotland high voltage transmission network is to ensure that electricity continues to be transported safely and reliably from the changing sources of electrical power to meet the needs of homes and businesses.

As we look to the future and the transition to enable cleaner economic growth, we identify four significant societal shifts that are impacting on the way electricity networks are designed, built and operated:



The growth in capacity and output of low carbon generation.

Decentralisation

Energy being produced and stored, close to use.

Figure 2.1 Non-weather adjusted average electricity consumption per point of supply³.

(a) Residential



(b) Industrial and Commercial





The use of new information communications technologies and analytical tools to improve performance without increasing cost.

Democratisation

The collaboration of customers and stakeholders in designing our energy future.

We explore each of these shifts, and the potential impacts on the north of Scotland transmission network, in the following pages.

Figure 2.2 Generation capacity by technology⁴.

(a) GB



(b) North of Scotland



www.ssen-transmission.co.uk

³Future Energy Scenarios (SSEN Transmission, 2018) available at: www.ssen-transmission.co.uk/information-centre/industry-and-regulation/future-energy-scenarios/ ⁴Digest of UK Energy Statistics (DUKES) 2018: main report (BEIS,2018) available at: https://www.gov.uk/government/statistics/digest-of-uk-energy-statistics-dukes-2018-main-report

Decarbonisation

The challenge

Energy is used to heat, light, transport and power our lives, our homes and our businesses; making that energy cleaner and greener is central to both the UK⁵ and Scottish⁶ governments' ambitions to deliver economic growth and decrease emissions.

Considerable progress has been made over the past decade, disproportionately driven by the decarbonisation of the electricity generation sector (Figure 2.3). At the end of September 2018⁷, the UK's renewable generating capacity totalled 43 GW (of 82 GW total installed generation) and, during the preceding quarter, low carbon generators (including nuclear) accounted for 56% of electricity consumed. At the time of writing our draft Business Plan, a record of 18 days without coal-fired generation had just come to an end.

While this change in the electricity generation sector has been rapid and profound, more remains to be done. Electrification has an important role to play in removing the carbon emissions from gas⁸ (96% of use is for heating) and petroleum (86% is used for transport).

In June 2019, the UK Government set a target of net zero greenhouse gas emissions by 2050 (see box on the right), and in May 2019 the Scottish Government set a target for 2045.

Figure 2.3 UK greenhouse gas emissions¹⁰



Action needed

The Committee on Climate Change (CCC) describe a range of technologies and behaviour changes that can help reduce emissions split into:

- Core options include lower-cost energy efficiency and extensive decarbonisation of the power and transport sectors;
- Further ambition options for electricity generation, Greenhouse Gas Removals industry, buildings, agriculture, transport and aviation;
- Speculative options that currently have very low levels of technology readiness, very high costs and/or significant barriers to public acceptability.

Core options are those low-cost low-regret options that make sense under most strategies to meet the current 80% carbon reduction by 2050 target. For the core options, by 2050:

- The share of low carbon generation is 97%;
- Consumption of low carbon electricity increases 3.5x;
- Low carbon heat is in 80-100% of homes and businesses; and
- Cars and vans are 80% electric.

For the electricity sector, this means supporting rapid electrification and greater build rates of low-carbon generation capacity, accompanied by measures to enhance the flexibility of the electricity system to accommodate high proportions of inflexible generation (e.g. wind). The CCC argues that the Energy White Paper planned for 2019 should aim to support a quadrupling of low-carbon power generation by 2050.

Impact on the north of Scotland transmission network

The north of Scotland has an exceptional renewable energy resource (Figure 2.4), and is likely to continue to make a disproportionate contribution to the transition to low carbon electricity generation.

We have a strong track record in planning, developing and constructing the necessary infrastructure to facilitate the connection of renewable generation. This includes GB first deployment of innovative and flexible connection arrangements.

www.ssen-transmission.co.uk

⁵Clean Growth Strategy (BEIS, 2017) available at: www.gov.uk/government/publications/clean-growth-strategy ⁶Scottish energy strategy future energy Scotland (World Commission on Environment and Scottish Government, 2017) available at: www.gov.scot/publications/scottish-energy-strategy-future-energy-scotland-9781788515276/ ⁷Energy trends 2018 (BEIS, 2018) available at: https://www.gov.uk/government/collections/energy-trends#2018 ⁸Energy consumption on the UK (BEIS, 2018) available at: www.gov.uk/government/statistics/energy-consumption-in-the-uk



Figure 2.4 Met Office GB average wind speeds9

However, facilitating high volumes of renewable generation on the system poses operational challenges for electricity networks as a result of weather dependent intermittent output often in remote locations and far from population centres. These challenges must be planned for and actively managed to ensure they do not negatively impact on system security and reliability.

As well as the physical and environmental challenges to timely network development and operation, facilitating more renewable generation brings additional, less tangible challenges. Renewable generators are high capital and low operational cost. Maintaining the affordability of network connections is essential for renewable energy generation development in markets with reduced subsidies and challenging economics.

The distinction between the operation of the high voltage transmission and low voltage distribution system is also breaking down. Increasingly, all energy sector participants must work together to establish and deliver timely, cost effective solutions for the GB consumer. The Committee on Climate Change (the CCC) is an independent, statutory body established under the Climate Change Act 2008.



The purpose of the CCC is to advise the UK Government and Devolved Administrations on emissions targets and report to Parliament on progress made in reducing greenhouse gas emissions and preparing for climate change.

In May 2019¹⁰, the CCC advised the UK Government to set an ambitious new target to reduce the nation's Greenhouse Gas Emissions (GHGs) to zero by 2050. Given Scotland's greater potential to remove carbon pollution from its economy than the UK overall, the CCC further advised that Scotland should target reaching netzero GHGs by 2045.

A net-zero target would require a 100% reduction in GHGs. It is referred to as 'net' as the expectation is that it would be met with some remaining sources of emissions which would need to be balanced by removals of CO_2 from the atmosphere – by growing trees, for example.

The CCC argues that, with strengthened policy direction and support, net zero GHG is necessary, feasible and of manageable cost to the GB economy. The CCC highlight the essential role of renewable electricity to achieving a net zero outcome.

In June 2019, the UK Government accepted the CCC recommendation and laid the necessary legislation to amend the Climate Change Act 2008.



"Standing by is not an option. Reaching net zero by 2050 is an ambitious target, but it is crucial that we achieve it to ensure we protect our planet for future generations." Theresa May, UK Prime Minister, 12 June 2019

www.ssen-transmission.co.uk

⁹Where are the windiest parts of the UK? (Met Office, 2010) available at: https://www.metoffice.gov.uk/weather/learn-about/weather/types-of-weather/wind/windiest-place-in-uk ¹⁰Net Zero – The UK's contribution to stopping global warming (CCC, 2019) available at: www.theccc.org.uk/publication/net-zero-the-uks-contribution-to-stopping-global-warming/

Decentralisation

The challenge

Decentralisation means energy being produced, and increasingly stored, close to where it will be used. This includes both 'off grid' local energy systems (not connected to the GB interconnected grid) and local small-scale generation with peer-to-peer trading. Rapid technological development is making decentralisation possible and increasingly viable, through distributed generation and storage solutions, including renewable and battery technologies.

The scale of decentralisation is evidenced through the 6.2GW of installed capacity under the Feed in Tariff (FiT) scheme, covering nearly 850,000 installations across GB (Figure 2.5). In the north of Scotland, around 0.5GW of capacity is installed at nearly 30,000 locations¹¹.

Action needed

The Scottish Government has already exceeded their target of 500MW of community owned and locally owned renewable energy capacity operating in Scotland by 2020. New targets aspire to 1GW of operational capacity by 2020, and 2GW by 2030. It aims to ensure that, by 2020, at least half of newly consented renewable energy projects will have an element of shared ownership.





Impact on the north of Scotland transmission network

Energy networks must develop to provide access to these new entrants, while continuing to support local electricity security of supply.

One consequence of decentralisation in the north of Scotland is significant over production (at times) compared to local use. Already, over 40% of the generation connected to the north of Scotland transmission network is indirectly connected via the local voltage distribution network. Yet the power that is generated flows onto the transmission system.

New industry arrangements are required to manage this flow of power to ensure it reaches the homes and businesses that need it. Industry reform projects must be undertaken for the whole of GB, for example the Energy Networks Association (ENA) Open Networks¹³ project.



The Open Networks Project is a major energy industry initiative that will transform the way our energy networks work, underpinning the delivery of the smart grid.

This project brings together nine of the UK and Ireland's electricity grid owners and operators, respected academics, non government organisations, Government departments and the energy regulator Ofgem.

The significant increase in the number and type of distribution connected generation and their changing network requirements will require new customer services for providing connections and network access.

System operations are also changing to accommodate decentralisation. With fewer large thermal plants to provide services to the Electricity System Operator (ESO), distributed energy resources will increasingly need to be enabled to provide services to support system operation. Whole system planning must also adapt to consider whole system implications of changes at the distribution level. This will ensure the optimum solution is identified, whether this requires investment on the transmission system, distribution system, or the provision of services from flexibility markets.

www.ssen-transmission.co.uk

 ¹¹Feed in tariff statistics (BEIS, 2013) available at www.gov.uk/government/collections/feed-in-tariff-statistics
 ¹²Monthly Central Feed-in Tariff register statistics (BEIS, May 2019) available at: https://www.gov.uk/government/statistical-data-sets/monthly-central-feed-in-tariff-register-statistics
 ¹³ENA open Networks project available at: www.energynetworks.org/electricity/futures/open-networks-project

Digitisation

The challenge

Digitisation means the use of new Information and Communications Technology (ICT) and analytical tools to improve the performance - in particular, the reliability and productivity - of electricity networks. Digitisation is an enabler for a more dynamic and intelligent energy system delivering improvements in efficiency and resilience.

Technology is developing rapidly and value appraisal is required to maintain cost-effective outcomes for consumers and the resilience of the network to cyber threats.

The World Economic Forum estimates that \$1.3 trillion¹⁴ could be generated by digitising the electricity sector worldwide between 2016 and 2025. It highlights five high-impact initiatives:



D Integration of alternative energy solutions.

This conclusion was reinforced in June 2019 by the report of the Energy Data Taskforce, commissioned by Government, Ofgem, and Innovate UK. The taskforce¹⁵ describes the benefits of data and digitisation to asset management, operations and market development. However, it also identifies the prerequisite for accurate, real-time data and effective data management systems.

Action needed

As the UK Government set out in the Smart Systems and Flexibility Plan¹⁶, data availability and digitisation are essential in maximising the benefits of a smart, flexible energy system. The plan recognised that in the future, the energy system will need more skills in the area of data and digitisation and to address this, the Government is incorporating digital transformation into the developing skills pillar of their Industrial Strategy. Digitisation for energy networks is most commonly proposed in four areas:



Applying sensors and big data analytics



Utilising new technologies and



Digitisation/automation of processes.

Digitisation can require potentially significant upfront costs and careful assessment is required to ensure improved productivity can make these investments worthwhile when both capital and operations costs are considered on a whole life basis. Such assessment needs to account for the behaviour of others not least threat vectors and the consequences of taking no action.

Impact on the north of Scotland transmission network

Digitisation has an important role in the adaption of the north of Scotland transmission network to address the challenges of the energy system transition, in particular decarbonisation and decentralisation.

Asset life cycle management encompasses the technology solutions that enable real-time, remote control or predictive maintenance for extending the life cycle or operating efficiency of assets. Operational recommendations can be generated in real time by using data captured from connected devices, plant equipment and sensors, and applying algorithms to this data. Plant managers can immediately identify actions that decrease maintenance costs and can predict and prevent unplanned downtime. Engineers can be more productive by making betterinformed decisions; this can eventually lead to a more diverse and specialised workforce.

Grid optimisation is made possible through real-time load balancing and network controls, enabled by connected devices and advanced monitoring capability. Real time network controls enable real-time adjustment to changing loads. Such adjustments can also be made to increases or decreases in generation and to failure conditions of the network.

Digital initiatives can target resilience, enabling higher levels of integration of renewables with less difficulties and at scale, helping networks play their part in meeting challenging mandates on the reduction of emissions.

¹⁴Digital Transformation Initiative (World economic forum, 2019)

¹⁵Energy Data Taskforce makes five key recommendations (Catapult, 2019) available at:

¹⁶Upgrading our energy system: smart systems and flexibility plan (BEIS,2017) available at:

https://www.gov.uk/government/publications/upgrading-our-energy-system-smart-systems-and-flexibility-planeling-our-energy-system-smart-systems-and-flexibility-planeling-our-energy-system-smart-systems-and-flexibility-planeling-our-energy-system-smart-systems-and-flexibility-planeling-our-energy-system-smart-systems-and-flexibility-planeling-our-energy-system-smart-systems-and-flexibility-planeling-our-energy-system-smart-systems-and-flexibility-planeling-our-energy-system-smart-systems-and-flexibility-planeling-our-energy-system-smart-systems-and-flexibility-planeling-our-energy-system-smart-systems-and-flexibility-planeling-our-energy-system-smart-systems-and-flexibility-planeling-our-energy-system-smart-systems-and-flexibility-planeling-our-energy-systems-and-flexibility-planeling-our-energy-system-smart-systems-and-flexibility-planeling-our-energy-system-smart-systems-and-flexibility-planeling-our-energy-system-smart-systems-and-flexibility-planeling-our-energy-system-smart-systems-and-flexibility-planeling-our-energy-system-smart-systems-and-flexibility-planeling-our-energy-system-smart-systems-and-flexibility-planeling-our-energy-system-smart-systems-and-flexibility-planeling-our-energy-system-smart-systems-and-flexibility-planeling-our-energy-system-smart-systems-and-flexibility-planeling-our-energy-system-smart-systems-and-flexibility-planeling-our-energy-system-smart-systems-and-flexibility-planeling-our-energy-system-smart-systems-and-flexibility-planeling-our-energy-system-smart-systems-and-flexibility-planeling-our-energy-system-smart-systems-and-flexibility-spart-system-smart-systems-and-flexibility-spart-system-smart-system-smart-systems-and-flexibility-spart-system-smart-syste

 $www.reports.we for um.org/digital-transformation/electricity-an-industry-ready-for-digitization/?doing_wp_cron=1560770332.2543120384216308593750$

https://es.catapult.org.uk/news/energy-data-taskforce-makes-five-key-recommendations/

Democratisation

The challenge

Energy democratisation means involving customers and stakeholders from across GB in the way that the industry is changing; evidencing that the interests of consumers are at the heart of decision making.

The scope of democratisation is as wide as stakeholders' interests. Broadly, there are three areas:

- **1** Democratisation of information: about priorities, plans and performance
- 2 Democratisation of investment: in the planning and decision making

3 Democratisation of intent: that the decisions being made are in the interests of all, including vulnerable customers and communities.

In addition, democratisation in participation can be achieved through demand side management and demand side response to new models such as peer-to-peer trading. For this to be democratic there should not be material barriers to entry.

Action needed

The Scottish Government's Energy Strategy responds to the challenge of democratisation through public engagement. It sets out core objectives to: raise awareness, encourage a greater sense of ownership and find better ways to share ideas. The Climate Conversations initiative encourages a discussion about how we can reduce the emissions that cause climate change, and prepare for a changing climate.

At GB-level, the UK Government's Smart Systems and Flexibility Plan focuses on actions to increase participation of new technologies and parties in the energy sector, including reforming the regulatory regime for storage and the access framework for demand side response.

Impact on the north of Scotland transmission network

The democratisation of energy is a broad concept, extending from individuals and communities that want to actively participate, to others just wanting to know what is going on. The range of potential impacts on the north of Scotland transmission network is equally broad. We focus on two impacts:

1. Transparency

There is evidence of societal distrust in the energy sector¹⁷. Customers and stakeholders must have ready access to clear information about the priorities, targets and outcomes. Decision making (and its costs and benefits), must be visible and meaningful to all stakeholders. Individual industry participants, regulators and governments all have a role to play in making the energy sector transparent.

2. Co-creation

Non-industry experts can have ideas and innovations to make our energy system better, or provide a different perspective on the challenges we face and solutions we propose. We must establish networks, be available to share those ideas and work together to co-create solutions.

The future of the energy industry

Research conducted by the UK Energy Research Centre¹⁸ shows that, while there has been broad and diverse public engagement on energy, engagement tends to focus on specific parts of the energy system. The figure below shows the issues identified from systematic mapping of UK public engagement with energy between 2010-2015. The researchers recommend a broader whole systems approach to engage society in low carbon transition discussions by strengthening our understanding and use of diverse forms of public engagement.



Source Public engagement with energy: broadening evidence, policy and practice, UKERC briefing note, October 2017

Our role in the future of energy

Our role today

As the owner of the high voltage electricity network in the north of Scotland we are responsible, through legislation and our operating licence, for the economic and efficient development and operation of the transmission network.

In our day-to-day activities, we work closely with Scottish Hydro Electric Power Distribution (SHEPD), the owner of the contiguous low voltage distribution network, Scottish Power Energy Networks (SPEN) the owner of the electricity networks in the south of Scotland and Wales and with National Grid the Electricity System Operator (ESO) of the GB transmission network.

By working collaboratively, we can identify and deliver the most efficient whole system, whole life solutions.

The north of Scotland is, in many ways, a challenging operating environment for energy networks. The communities that require a reliable supply of power are geographically dispersed across mountainous terrain and islands. The weather and climate mean heat and light are essential for habitation, but the associated cost of high energy consumption can place undue pressure on vulnerable households and communities.

We understand the needs of the customers and communities that work and live in the north of Scotland – never forgetting the need to keep the lights on and the cost of energy down.

Electrical infrastructure can be considered intrusive or damaging to the natural environment. These challenges present opportunities too. Renewable energy is endemic, in the form of hydro, wind and, potentially, marine. Community engagement in the energy transition is high, with over 1,000 community-owned renewable projects¹⁹.

The north of Scotland has the renewable energy to make a big contribution to GB decarbonisation. While this is important, so is managing the impact on the local environment and affected community.

Technological innovations, such as active network management and modular composite structures, have had their first GB deployment to meet the needs of customers in the north of Scotland. Likewise, commercial innovation, for example our Orkney Alternative Approach²⁰, has been driven by the needs of local generators.

Thoughtful and targeted innovation can result in better outcomes for our customers and stakeholders.

Leading the way ahead

We have an important and ongoing role in enabling the clean energy transition:

- To provide the necessary network infrastructure and policies for the cost-effective connection of renewable generation. While the power sector in Scotland has significantly decarbonised, the sector is expected to expand to facilitate reductions in other areas through electrification and export to the rest of GB.
- To participate in and support the industry changes necessary for decentralisation through locally owned and operated energy systems. This will require whole system approaches with SHEPD, the ESO and other stakeholders.
- To engage with our north of Scotland electricity consumers, network users and wider stakeholders to ensure their needs are fully expressed and addressed in the national clean energy transition.

Our draft Business Plan sets out our proposals to achieve this during the RIIO-T2 period.

Our performance

A network for renewable energy

The north of Scotland electricity network was historically designed to bring power to communities in the highlands and islands; a geographically vast area with physically challenging terrain, it encompasses one third of the UK landmass, with dispersed pockets of remote and sparse population. The network was originally sized and designed to meet that relatively low demand and located to connect the hydro electric power stations within those remote communities. It was principally constructed from the late 1940s through to the 1970s (Figure 2.6).

The potential for renewable generation in the north of Scotland is exceptional. A second phase of renewable energy development began in the early 2000s with the Renewables Obligation (RO)²¹. The RO placed an obligation on electricity suppliers to source a proportion of electricity from renewable sources. The proportion increased each year, so promoting investment in renewable generation capacity.

However, prior to 2010, the north of Scotland transmission network was effectively 'full' meaning it was not possible to connect further generation. This constraint was resolved, in part, by the introduction of the Connect and Manage access reforms²². These reforms allowed generators to connect before network reinforcement.

In 2010, around 3.5GW of generation was connected to the north of Scotland electricity network. Over 10GW had applied for connection. Two Government-chaired forums²³ – the Renewable Energy Transmission System (RETS) study in 2002 and Electricity Networks Strategy Group (ENSG) vision in 2009 – defined a programme of network reinforcement across GB to accommodate this growth in renewable generation.

The Beauly Denny reinforcement project was granted consent in 2010, marking the first major milestone in transforming our network and enabling the connection of large volumes of renewable generation in the north of Scotland.

Over the last decade, we have invested nearly £3 billion in the growth of the network, including over £2 billion on large strategic upgrades such as Beauly-Denny, the Caithness-Moray High Voltage Direct Current (HVDC) link and the Kintyre-Hunterston 220kV subsea cable. In addition, we have made significant investment to provide local connection infrastructure for the new generation sites.

This has been achieved in a relatively short time period, in remote and challenging working environments, while being sensitive to the unique natural environment of the north of Scotland. All of our strategic capital investments have been delivered on time and under budget. Innovation and close working relations with all our stakeholders has enabled this achievement.

Renewable energy for everyone in GB

The impact on the GB energy industry as a direct result of the significant demand from renewable generation for connection in the north of Scotland has been profound.

Since 2010, the capacity of renewable generation connected in the north of Scotland has more than doubled. This encompasses all technologies at all scales from local community energy schemes to large offshore wind farms. Our insights analysis demonstrates the potential for this to double again by 2026.

The consequence of connecting large volumes of renewable generation has been a major shift in power transfer trends in GB. Historical dominant power flows from south to north have been reversed. The north of Scotland is now a renewable energy powerhouse to the benefit of all GB consumers and is making a substantial contribution to the national climate change targets.



Figure 2.6 Hydro electric generation and the pre-2010 north of Scotland transmission system

www.ssen-transmission.co.uk

²²Electricity network delivery and access (BEIS,2016) available at: www.gov.uk/guidance/electricity-network-delivery-and-access

²³Electricity Networks Strategy Group (BEIS,2017) available at: www.gov.uk/government/groups/electricity-networks-strategy-group

²¹Ofgem RO (Ofgem,2019) available at: www.ofgem.gov.uk/environmental-programmes/ro/about-ro

An exceptional track record

As the (CCC) reports²⁴: "Scotland is leading the UK on renewable electricity" contributing 33% of the GB renewable generation in 2018. This would not have been possible without the £3 billion investment that we have made since 2010 in upgrading and growing the network in the north of Scotland.

This contribution to national climate change objectives has been achieved without compromising the safety, reliability and availability of the north of Scotland transmission system, or the service that we provide to our customers and stakeholders. The energy industry regulator Ofgem assesses us to have "performed well"²⁵. It uses four measures, which it calls primary outputs, to measure the performance of electricity transmission network owners. These are: reliability, connections, environment and customer satisfaction.

Given the importance of providing connections for new renewable generation, Ofgem also reports on progress in providing new network capacity.

Table 2.1²⁶ shows our performance against these measures for the five full years of the RIIO-T1 price control period completed to date. More information about our performance can be found in our annual reports.

Safe and reliable

The health and safety of our employees, contractors and members of the public remains our number one priority. Our aspiration continues to be for everyone involved in our activities to go home safe each and every day.

We measure our safety outcomes using the Total Recordable Incident Rate (TRIR), the total number of recordable incidents for employees and contractors per 100,000 hours worked. During the RIIO-T1 period, our TRIR has been between 0.23-0.90.

In 2016 we empowered our workforce to feel more confident intervening where they had safety concerns through the introduction of a safety licence: "if it's not safe, we don't do it". This has been supported by bespoke training for all of our employees and contractors.

The reliability of the north of Scotland transmission system is measured using Energy Not Supplied (ENS). ENS is the estimated volume of electricity that has not reached homes and businesses due to an incident that interrupts the flow of power on the transmission system.

For the five full years of the RIIO-T1 price control period completed to date, there have been 73 incidents resulting in a loss of supply. This equates to an overall system reliability in excess of 99.999%.

More information about the reliability and availability of the GB transmission system can be found in the ESO annual reports²⁷.

Primary Output	Metric	Annual target	Outcome
Reliability	Energy Not Supplied	Less than 120MWh	Five-year average 34MWh
Connections	Timely Connection Offers	100% on time	Achieved target in all years
Environment	SF6 LeakageLess than 151kgEnvironmental Discretionary RewardScore >50% is proactive		Five-year average 305kg Five-year average 57%
Stakeholder Satisfaction	Stakeholder Satisfaction Survey Key Performance Indicators	Score of 7.4 out of 10 89% of weighted KPIs	Five-year average 7.8 Five-year average 80%
	Stakenoluer Engagement incentive	30012 01 4 001 01 10	Five-year average 5.22
Connection Works	Metric	Eight year target	Outcome
Connection Works Connections Infrastructure	Metric New MW connected	Eight year target Baseline 1,168MW	Outcome Forecast 1,572MW
Connection Works Connections Infrastructure Shared Infrastructure	Metric New MW connected New MVA installed	Eight year target Baseline 1,168MW Baseline 1,006MVA	Outcome Forecast 1,572MW Forecast 4,096MVA
Connection Works Connections Infrastructure Shared Infrastructure Boundary Increase (or equivalent) Shared Infrastructure	Metric New MW connected New MVA installed Named projects: Beauly Blackhillock Kintore, Beauly Mossford, Kintye Hunterston, Caithness Moray	Eight year target Baseline 1,168MW Baseline 1,006MVA n/a	Outcome Forecast 1,572MW Forecast 4,096MVA All projects completed on time, under allowance

Table 2.1 Our measures of performance for the current price control period

Outcome for the five full years of the RIIO-T1 period:

Exceeds target by more than 10%

Within +/-10% of target

More than 10% below target

www.ssen-transmission.co.uk

²⁴Reducing Climate change in Scotland (CCC, 2018) available at: www.theccc.org.uk/publication/reducing-emissions-in-scotland-2018-progress-report-to-parliament/
²⁵Available at: www.ofgem.gov.uk/network-regulation-riio-model/current-network-price-controls-riio-1/network-performance-under-riio
²⁶In line with 2017/18 annual regulatory reporting for SHE Transmission

²⁷www.nationalgrideso.com/insights/transmission-performance-reports

Award winning

We have been widely acknowledged for our safe and sustainable approach to capital delivery.



Saltire Civil Engineering Award Greatest contribution to Scotland 2017: **Beauly Denny**



Network Magazine Awards Engineering Project of the Year 2018: Caithness Moray



Utility Week Star Awards Health and Safety Champion: Initiative 2018



Royal Institute of Chartered Surveyors Awards Scotland Project of the Year 2018: Caithness Moray



The Green Apple Environmental Awards **Best Environmental Practice:** Thurso Substation



BIG Biodiversity Challenge Awards Overall winner: Thurso Substation



The Beauly-Denny team collecting the Saltire Award

www.ssen-transmission.co.uk

Environment

In May 2018, following extensive customer and stakeholder consultation, we published our sector-leading Sustainability Strategy²⁸. Of the six ambitions in our strategy, three target environmental concerns:

- 1. Tackling Climate Change
- Promoting Natural Environment 2.
- 3. **Optimising Resources**

We publish an annual statement on our progress against these ambitions on our website.

There are three regulatory metrics for environmental performance during RIIO-T1:

- Leakage of SF6 gas, for which we have improved from 100% above target in 2013/14 to at target levels since 2016/17.
 - Business carbon footprint, which has fallen by two-

2

thirds over the past five years.

Ofgem's Environmental Discretionary Reward, where we were awarded Leadership status in 2017/18.

Our performance has improved year on year during the RIIO-T1 period.

Customer satisfaction and stakeholder engagement

Each year we ask an independent research company to undertake a survey of the experience of our customers and stakeholders working with us. As part of this survey, we asked respondents to rate their overall satisfaction with us on a scale from 0-10. The average rating for the five full years of the RIIO-T1 price control period completed to date is 7.8 (Table 2.1).

²⁸SSEN Transmission Suitability Strategy (SSEN Transmission, 2018) available at: www.ssen-transmission.co.uk/sustainability-and-environment/sustainability-strategy/

The responses to our stakeholder surveys highlighted that our customers believe we provide a strong service in our areas of activity (such as providing connections), but we could play a broader role in advocating for the needs of north of Scotland network customers.

In 2017, we began a fundamental review of our stakeholder engagement strategy and reporting. This has resulted in the development of new Key Performance Reporting Indicators²⁹ (KPIs) and a new Stakeholder Engagement Strategy³⁰ (currently subject to consultation ending 28 June 2019). Our new strategy is intended to meet the expectations of our stakeholders, for collaborative working to deliver benefits through customers and society.

Connections

The total generation capacity connected to the north of Scotland transmission system is forecast to be 8GW by 31 March 2021 (Figure 2.9). This comprises 85% renewable generation including onshore and offshore wind, hydro, solar and marine technologies.

We have made all connection offers within the timescales specified in industry codes and we work with our customers to develop and deliver the energisation of their connection to the timescales they require. This has meant introducing innovative technologies, ways of working and connection designs to facilitate accelerated connections. As a consequence, around one quarter of our connected customers have flexible connection arrangements.

Connection of this volume of additional generation has been possible due to the successful construction of the large strategic capital investments, as well as the significant local infrastructure required to connect the new generation onto our network.

Our ability to develop and construct a significant programme of high value, bespoke and complex transmission projects has been a key factor in our overall performance over the past decade. This has allowed the connection of large volumes of generation on time and under budget.

Figure 2.9 Generation connected to the north of Scotland transmission network (31 March 2021 forecast)





www.ssen-transmission.co.uk

²⁹SSEN Transmission Stakeholder Key Performance indicators (SSEN Transmission, 2018) available at: www.ssen-transmission.co.uk/information-centre/industry-andregulation/stakeholder-satisfaction-incentive-proposed-key-performance-indicators/

³⁰SSEN Transmission Stakeholder Engagement Strategy (SSEN Transmission, 2019) available at: https://www.ssen-transmission.co.uk/information-centre/industry-andregulation/stakeholder-engagement-strategy-review/

A Strategy for GB

What is a strategic objective?

Our strategic objective determines how our business operates. It provides the direction and scope of our business in the long term and how our resources will be allocated to meet the needs of customers and stakeholders.

All of our employees can draw direct links between our strategic objective and the work that they are doing. So too should customers and stakeholders be able to draw direct links between their interests and our strategic objective.

The boundaries of our strategic objective are influenced by: the needs of our customers; the scale of our ambition and the pressures of our business environment; as well as our role as a regulated owner of Critical National Infrastructure.

Our role as a regulated owner of Critical National Infrastructure

As a licenced electricity transmission network owner, the scope of our strategic objective must sit within our statutory duties and our licence obligations.

Set out in the Electricity Act of 1989, and governed by the Gas and Electricity Markets Authority, our general duties are:

- To develop and maintain an efficient, coordinated and economic transmission system; and
- To facilitate competition in electricity supply and generation

In addition, it is required that we:

- Shall have regard to preserving natural beauty, of conserving flora, fauna and protecting sites, buildings and objects of interest; and
- Shall do what we reasonably can to mitigate any effect on the natural beauty of the countryside.

Our other obligations include: safety of our system for the public; secure supply of demand; connections of generation and demand and non-discrimination; system planning and development; and making the system available to the ESO and ensuring it is fit for purpose.

Our Strategic Objective

We defined our strategic objective in 2010 and it has underpinned our activities since then.

Our Strategic Objective is to enable the transition to a low carbon economy.

Our values

Safety If it's not safe, we don't do it

Service

We are a company customers can rely on

Efficiency We focus on what matters

Sustainability

We do things responsibility to add long term value

Excellence We continually improve the way we do things

Teamwork

We work together, respect each other and make a difference

SSE has four sustainability objectives linked to the UN Sustainable Development goals. These objectives are directly linked to executive performance measures – putting sustainability right at the heart of SSE's strategy and operations.



Cut our carbon intensity by 50%



Help accommodate 10m electric vehicles



Treble renewable energy output



Champion fair tax and a real living wage

Our Strategic Objective

Reviewing our Strategic Objective

During 2017 and 2018 we reviewed our strategic objective.

This was motivated by the ongoing changes in the energy sector and questioned whether our current objective was consistent with the requirements for the transition to cleaner economic growth now and looking forward to 2026 and beyond. More broadly, we wanted to understand if customers' and stakeholders' expectations from the energy networks were changing and, if so, what they thought we should be focused on.

A stakeholder-led review

For our strategy to be meaningful and effective, it is essential that we have robust and high-quality engagement with our stakeholders on their future needs and expectations. Thus we followed a methodology for our review that was designed to gather stakeholder input from across a wide spectrum and to bring together technical and statutory requirements with customer and societal expectations.

The full findings of our review are on our website³¹.

The findings from the review highlighted both the continuity and ongoing significant changes in the energy sector:

- As has been shown in many studies, local network users (generators and consumers) emphasise the importance of network access, availability and security of supply;
- At the national scale, a key concern is the impact on bills again for generators as well as consumers;
- There is strong support for the decarbonisation of the whole energy sector and for the role of energy networks in enabling the transition to the clean energy economy; and
- However, trust in the energy industry, including network operators, is low and customers worry about 'big business' behaviours.

Customers' and stakeholders' views have reaffirmed our Strategic Objective, but we have been challenged to think about how this can be better explained to demonstrate we are aligned with the outcomes our customers and stakeholders expect.

Following this review we have retained our Strategic Objective, but also developed four strategic themes that explain how we will achieve that objective. Together these four strategic themes will drive our contribution to cleaner economic growth through decarbonisation, decentralisation, digitisation and democratisation.



Our Strategic Themes

Stakeholder-Led Strategy

Taking a whole system approach to network operation and development to meet current and future customers' needs

Energy networks are built and operated to meet the needs of current and future customers and so those customers' needs must be the drivers of all our activities.

The development of our new strategic themes confirmed that all our stakeholders want to see customer service, engagement and participation at the centre of our business and the forefront of our strategy. This expectation is not limited to any specific group. It is shared across GB by our customers, our communities, governments, our regulators, our broader stakeholder group and our employees and shareholders.

Through our strategy engagement our stakeholders advised us that delivering this will require us to be more open with our knowledge and information and more active in our advocacy of customer and consumer interests in transition aims. It will also require that we develop new approaches to engagement that increase the depth of stakeholder involvement. Collaboration and partnership are essential.

Our stakeholders advised that, building on our strong project engagement, to be truly stakeholder led in our strategy we need to increase stakeholder contributions to future focussed topics including: Future Energy Scenarios, energy policy, whole system planning and operations, innovation, connections and the DSO transition.

Adopting this across our activities requires a new engagement strategy that is formed from this stakeholder expectation. It will include new reasons for engagement, new methods of engagement and include new parties in that engagement. It must be outcomes driven to keep the focus on benefits for customers and stakeholders and have accountability built in.

You can read about our proposals to deliver on this strategic theme in the remainder of this section 2.



Using data efficiently to understand, predict and get the best network performance.

In our strategy development engagement, stakeholders told us that network reliability is essential. There is a high economic and social cost for households and businesses if their supply of electricity is interrupted. Unsurprisingly both household and business electricity users report that they would pay significant sums to avoid power cuts.

Government stakeholders reinforced the position of electricity as an essential public service, underpinned by safe and secure energy networks. The government defines Critical National Infrastructure³², such as energy networks, as assets and associated systems which if lost could result in major detrimental impact on essential services or national security. Our strategy review confirmed that planning to manage the risks we face, including business continuity following an incident, remains an essential part of what we do.

While recognising that investment over the past decade means that the reliability of the GB transmission system is now greater than 99.99%; stakeholders are concerned that that the prevailing security of supply cannot be taken for granted. Energy sector changes such as decarbonisation and decentralisation along with emerging global risks - including climate change, cyber security and physical security - could impact our network and must be managed.

Responding to these challenges, our strategic theme is focused on reliability for consumers, availability for generators and market participants, and resilience to threat.

Stakeholders recommended that this should include better use of network data and monitoring to inform our asset management and operation. They also considered risk-based approaches to be the best method of determining cost effective action.

You can read about our proposals to deliver on this strategic theme in section 3.

_) Sector Leading Efficiency

Integrated approach to whole life development and operation, using risk-based engineering to deliver value.

Energy networks must be affordable to consumers, and be open about the trade-offs when making investment decisions. This is important during RIIO-T2 as we invest for local and national benefits to achieve the clean energy transition.

Our strategic engagement confirmed that costs were a concern for household and business energy consumers at the level of their overall bill. For generation customers, transmission charges were a concern, not least due to reduction and removal of subsidies. This included the need for more transparency on costs.

Stakeholders supported energy transition aims but wanted assurance that these were being delivered efficiently and that unnecessary spend was avoided. They wanted confidence that investment decisions are not based purely on lowest capital cost but instead include the long-term whole life and whole system cost implications of operations, maintenance and replacement or decommissioning.

To this end, our strategic theme is based on an integrated approach to development and operation. This ensures that we consider whole life costs and will deliver value for current and future customers. We will be open about the trade-offs between costs in the delivery of the clean energy transition.

Stakeholders also wanted clarity on the trade-offs between local community impacts, environmental impacts and costs. Our strategic optioneering assessments and extended cost benefit analysis will be re-designed to provide this.

This strategic theme also addresses the need for efficiency in our engineering, procurement and the productivity of our business.

You can read about our proposals to deliver on this strategic theme in section 4.



Leadership in Sustainability

Trusted partners of customers and communities, realising long-term benefit for society, economy and environment.

Stakeholders strongly and consistently emphasised their desire for us to show ambition and leadership in sustainability. This is consistent with external drivers for change and the social narrative.

Societal expectations on sustainability are rising and stakeholders want companies to take broader accountability outside of their own operations. We agree. We are determined to play a leading role in the years ahead: meeting our stakeholders' expectations and helping to build a sustainable energy system.

There are major challenges to overcome around the world. The world is warming faster than we thought. Social performance and issues such as modern slavery, wages and tax are under closer scrutiny. The Paris Climate Agreement and UN's Sustainable Development Goals challenge government and businesses to act on these issues.

As a result, our customers and stakeholders are looking for organisations they can trust to offer leadership. Delivering practical business action inspiring and leading our industry to more sustainable practices is how we will contribute.

Our holistic stakeholder-led Sustainability Strategy provides a clear vision of a sustainable business. This encompasses the full range of social, environmental and economic considerations. Following our stakeholders' expectations, we have set stretching ambitions to achieve this and be at the forefront of best practice. To deliver these sustainability ambitions we are collaborating and working in partnership with our stakeholders and supply chain.

You can read about our proposals to deliver on this strategic theme in section 5.

Our Future Energy Scenarios

Uncertainty – for example in the timing and pace of the electrification of heat and transport and the timing and location of future generation technologies – clouds our view of the future need to transport electricity.

To be able to meet customers' needs in a timely manner, we must understand the range of potential outcomes and the effects that these would have on the transmission network. Our range of views of potential futures will determine the preparations we take now to be ready for investment that could be required over the next decade.

Our transmission network also impacted by uncertainties being felt first on the distribution network, such as the increasing proportion of embedded generation and growing ownership of electric vehicles. Cumulatively, these changes on the distribution network will impact the power flows on the grid.

Why we developed our own scenarios

Every year the GB ESO produces their Future Energy Scenarios (FES) which identify a range of credible energy solutions for the next 30 years and beyond. These consider how much energy GB might need and where it could come from.

At a macro level, the FES³³ is a powerful tool as it captures a range of potential national political, economic, social and technological possibilities. However, the application of the FES assumptions on a regional level is limited. As a GB model it does not have scope to accommodate targets and ambitions of devolved and local governments, or different social and economic drivers prevailing in a particular region.

In the north of Scotland, we have seen developments that have not always matched the prevailing GB trends. Examples include the continued growth in onshore wind generation, greater proportion of decentralised generation, and the slower, highly clustered uptake of electric vehicles. These and other trends were explored in our North of Scotland Energy Trends papers published in 2017 and 2018.

Our customers and stakeholders confirmed that there is significant uncertainty and regional variation in energy system developments in the north of Scotland. Working together, we determined that additional granularity, provided through localised future energy scenarios for the north of Scotland, would best meet energy users' needs.

Scenario analysis is an effective method of building an understanding of potential outcomes. This approach allowed network requirements to be modelled in detail for our north of Scotland network area to ensure we recognised the specific local and regional energy network users' needs.

How we developed our scenarios

The process of developing our north of Scotland Future Energy Scenarios started in 2016 when we ran our first business wide workshop to identify areas of uncertainty in the future of our network. This workshop identified some of the specific challenges of our network and considered that localised scenarios may be required.

We undertook an initial consultation, supported by our first north of Scotland Energy Trends paper in August 2017, to assess stakeholders' views on the merits of developing local scenarios. Support for this was universally positive and so we designed a scenario development methodology that included a series of external engagements, alongside our internal analysis. This external engagement was essential for gathering further insight, and for guiding and reviewing our internal analysis, to ensure that the scenarios we developed included the views and expectations of our customers and stakeholders.

There were four stages in our scenarios engagement approach:

- 1 Targeted interviews with customers, experts and high interest groups to: confirm the need for localised scenarios, identify issues affecting customers and stakeholders, and agree best methods for future engagement.
- 2 Broad, public research and consultations on identified areas of uncertainty with a regional element. We consulted on five papers in 2017 and 2018³⁴:
 - North of Scotland Energy Trends
 - North of Scotland Onshore Wind Repowering
 - North of Scotland Electric Vehicles
 - North of Scotland Energy Efficiency and Heat
 - North of Scotland Generation and Storage
- Reviewing consultation findings (including a range of potential outcomes) and proposed scenario development methodology with targeted expert stakeholders.
- Publication of the north of Scotland Future Energy Scenarios Report and Summary paper. The report included a summary of the feedback received through the consultations and stakeholder engagement and how this feedback was incorporated into our scenarios.

www.ssen-transmission.co.uk

³³Future Energy Scenarios (National Grid ESO, 2019) available at: www.fes.nationalgrid.com/ ³⁴All SSEN Transmission Future Energy Scenarios documents (SSEN Transmission, 2017/8) available at: www.ssen-transmission.co.uk/information-centre/industry-and-regulation/future-energy-scenarios/ Throughout the process customers and stakeholders were invited to agree or challenge the treatment of the feedback and the resulting scenario proposals. These confirmations and challenges were used in the refinement of the methodology and scenario assumptions. Some of the most fundamental changes as a result were lowering our base scenario to accommodate a view from stakeholders that current policy measures will not deliver decarbonisation aims and adjusting our high decarbonisation scenario to show what would be required on a pathway to limit climate change to 1.5 degrees in line with current climate science.

The scenarios developed were independently peer reviewed by Professor George Wright a leading scenarios expert at the University of Strathclyde.

The outcome was three different Future Energy Scenarios for the north of Scotland that captured a broad but realistic range of potential outcomes to 2030 as listed in the boxes below.



Proactive Decarbonisation

Scottish consumers are supportive of decarbonisation, increasing their use of renewables and engage in the benefits of decarbonisation and decentralisation at local levels.

The focus is on capital investment in large scale projects and policy is in place to stimulate the development of less established, low carbon energy technologies.



Local Optimisation

Scottish consumers and businesses are driven by cost reduction as well as decarbonisation, investing in decentralised, domestic micro-generation to reduce their spend on energy.

The focus is on delivering decentralisation and decarbonisation through democratisation of energy supply to deliver improved affordability for consumers and businesses.



Cost Limitation

Scottish consumers are less inclined to invest in micro-generation and renewable heating technologies, but energy efficiency continues to be a focus of national and local Government.

The focus is on delivering cost reduction in energy bills. Decarbonisation is a secondary consideration, as a result there is low uptake in domestic micro-generation and little focus on decentralisation.

Comparison with other scenarios

ESO FES

The ESO scenarios apply across all GB and present a narrower range of outcomes than the North of Scotland Future Energy Scenarios. The highest decarbonisation scenario presented by the ESO FES is consistent with a 2 degree warming pathway. The least change scenario in the ESO FES shows around 15% greater decarbonisation than our Cost Limitation scenario.

The 2019 FES will be published on 11 July 2019.

ENA 'core view'

In 2018, Ofgem and the RIIO-2 Challenge Group (CG) requested licenced network operators across transmission, distribution, gas, and electricity to agree a set of common factors and assumptions for developing a 'core view' of the future for RIIO-2. The core view is a single scenario developed using historic data and without any stakeholder engagement. It fits within the range of the North of Scotland Energy Scenarios.

The ENA core view is published on the ENA website³⁵.

Development of our draft Business Plan

Our approach

Every day, across all activities at every level of our business, we engage with people (our stakeholders) who have an interest, or are affected by what we do and how we do it. Business planning for a price control is different from this everyday engagement.

Price control reviews involve a fundamental consideration of business priorities and delivery approaches across our sector. This presents an exciting opportunity where stakeholders, and we ourselves, can influence at a strategic level; building on what has worked in the previous price control and challenging areas that are not delivering.

Price control planning spans subjects from expected changes in energy demand and supply through project planning to network operations. It also includes topics such as energy security considerations as well as the regulatory and financial mechanisms that will be used to ensure efficient delivery of outputs.

Not all stakeholders will be interested in, or affected by, every aspect of our plan. We have adopted a targeted engagement programme which focuses on the most pertinent issues for each stakeholder group.

A four-step process

We have followed a four-step process in the development of our RIIO-T2 Business Plan.

Meet our legal obligations We operate under rules set out in legislation and our licence that are overseen by regulatory bodies. We must follow these rules. Understand current and future customers' needs

Energy networks are long life, and we make decisions today that will affect customers many years into the future.

Z Identify options

Once we have identified the need to act, then we must identify all of the different options to achieve that outcome.

Preferred option

The decision on the preferred option will consider a wide range of factors including legal obligations, cost to the customer, technical solutions and environmental impacts.

We have sought to involve stakeholders in all four steps of this process. Mindful of the risk of "engagement fatigue", we have endeavoured to take a co-ordinated approach to engagement. In late 2018 we published an overview of our approach³⁶.



Some of the topics we have engaged with stakeholders on over the past two years are:

- Long term strategic goals
- North of Scotland Future Energy Scenarios
- Customer service
- Innovation and whole system thinking
- Commercial and Connections policy
- Sustainability objectives and environmental impacts
- Network resilience
- Project development and construction
- Cost and Willingness to Pay.

You can read all the reports from our engagement on our website³⁷.

www.ssen-transmission.co.uk

³⁶Stakeholder engagement: an overview of our approach (SSEN Transmission, 2019) available at: https://www.ssen-transmission.co.uk/media/3117/riio-t2-stakeholder-engagement-ssen.pdf ³⁷SSEN Website (SSEN Transmission, 2019) available at: https://www.ssen-transmission.co.uk/

Involving all stakeholders

Our stakeholder classification ensured we engaged with the full range of GB stakeholders and to date we have used 16 different methods of communication and participation.

Where we could, we have sought to be collaborative with our customers and stakeholders in planning for the RIIO-T2 period. This has been from the 'big picture' of the review of our strategic objective down to the detail of which options we should choose to meet a network investment need.

To do this, we have engaged widely with energy industry experts and interest groups. However, we know that it is essential that the interests of end consumers (bill payers) are captured in the development of our draft Business Plan. Our approach to this has included:

- Secondary research on consumer interests and priorities for energy and networks using publicly available sources;
- Interviews, discussions and consultation with consumer representative organisations such as Citizens Advice and Citizens Advice Scotland; and
- Willingness to pay research carried out with end consumers.

These consumer views have been applied in our planning alongside results of engagement with expert stakeholders that represent the consumer voice.

Throughout our draft Business Plan we explain the customer and stakeholder views that have contributed to the development of our proposals. We illustrate a small number of examples on the following pages.

We will publish a full report on our approach, findings and response to stakeholder engagement with our final Business Plan in December 2019.

User Group

In August 2018, we established an independent User Group to scrutinise our Business Plan development. The Group provides input and expert challenge to ensure stakeholders are at the heart of our future plans.

In late 2019 the User Group will prepare a technical report detailing its views on our RIIO-T2 Business Plan and the report will be made to Ofgem alongside our submission.

For more information on the User Group please visit: www.ssen-transmission.co.uk/talk-to-us/user-group/

Stakeholder Advisory Panel

Our Stakeholder Advisor Panel was established in early 2017. The Panel advises our Board on matters as these relate to customers and stakeholders. There is close engagement between the Panel and User Group.

The Panel has provided direct challenge on the development of our RIIO-T2 Business Plan, including the strategic objective, scenarios, sustainability, and customer service and stakeholder engagement.

More on our Stakeholder Advisory Panel can be found here: www.ssen.co.uk/StakeholderEngagement/Panels/

Stakeholder-Led planning for RIIO-T2

Key outcomes

The views of our customers and stakeholders have influenced all aspects of our planning for the RIIO-T2 period.

We are issuing our draft Business Plan as a consultation to test whether we have accurately captured the views and insights that have been shared with us and we welcome all further comments.

You can see the impact of our stakeholder engagement throughout our draft Business Plan, but we highlight a few key outcomes here.

Sustainability ambitions

Having initially considered action on sustainability to be a longer-term ambition, engagement with our stakeholders demonstrated that it is a critical priority now and that material sustainability issues must be addressed urgently and be central to our RIIO-T2 planning.

As part of our RIIO-T2 engagement programme, we consulted stakeholders at a workshop in November 2018, a round table in March 2019 and through consultation on our Sustainability Action Plan in February 2019. This built on previous engagement for our May 2018 Sustainability Strategy.

Overall, our stakeholders endorsed our planned actions, confirmed our proposed activities are material and will be impactful and validated our timescales as suitably ambitious.

Our stakeholders also called upon us to take action in additional areas:

- On carbon to act on climate change adaptation;
- On waste and resources to minimise waste; demonstrate resource efficiency and use sustainable materials; and
- On natural environment to act on visual amenity and wider environmental improvements.

We also had detailed discussions with our stakeholders about our role in communities and supporting vulnerable customers. While stakeholders expressed strong views that we shouldn't undertake activities best delivered by others, we still had a role to play. In light of these discussions, we are consulting in our draft Business Plan on a new ambitions for Supporting Communities.

Network resilience

In March 2019 we brought together a group of 46 customers and expert stakeholders in a workshop to gather views on cost effectiveness of different levels of ambition for safe and secure network operations.

At the workshop our business experts presented costed options across four areas: intelligent network control; managing and storing our materials; our asset replacement programme; and black start and network resilience. For each, three options were presented that required increasing levels of investment for enhanced outcomes.

Following round table discussions the attendees were first invited to vote for their preferred option before and after costs were revealed **(Table 2.2).** In two instances, the preferred option changed after costs were revealed:

Protection and Communications

Support for a Progressive Network Enabler approach (as described in the stakeholder report) increased. Stakeholders stated that the incremental cost difference between the two options was more than justified by the level of improvement provided. We have followed this direction in our draft Business Plan.

2 Black Start

Support for a Responsible Operator approach (as described in the stakeholder report) reduced. Stakeholders concluded that the major cost implications were unjustifiable at present. We have followed this direction, at a saving of £200 million.

A full report on this event and associated consultation can be found on our website³⁸.

Progressive Network Enabler	After			
Responsible Operator	Before	Before	Before / After	Before / After
Minimum Standard		After		
	Protection and Comms	Black Start	Stores	Asset Replacement

Table 2.2 Stakeholder views at operations workshop

Engaging on future network requirements

Our stakeholder-led North of Scotland Future Energy Scenarios, developed through 2017 and 2018 (see pages 26-27), developed detailed views of energy use that we could use for planning the transmission system.

One aspect of this work was to determine stakeholders' expectations for changes in electricity demand and generation at the local level caused by electrification of transport and heat, and increasing local generation.

This stakeholder insight has been applied in our assessment of requirements to upgrade Grid Supply Points (GSP), where our network connects with the distribution network, to accommodate changes in local energy use. Using the stakeholder-led scenarios, we modelled the overall impact at winter peak and summer minimum, and whether this change would cause a need for investment to upgrade our network during RIIO-T2.

The results showed that changes in generation and demand will likely lead to a requirement to upgrade GSP during the RIIO-T2 period as shown on the map below.

Figure 2.10 RIIO-T2 GSP upgrades



Project development

In September 2018 we ran a public consultation seeking stakeholder views and suggestions on the effectiveness of our engagement with communities during the development of our projects.

The feedback was generally positive on our approach, but stakeholders highlighted a key improvement would be to explore potential impacts at a programme rather than a project level. This would give a strategic view of investment plans, providing local stakeholders with better information on the overall impact of works in their area.

In response to this, we will be running regional roadshows on our RIIO-T2 investment programme:

- Aberdeen, Monday 12 August
- Inverness, Wednesday 14 August
- Perth, Friday 16 August
- Oban, Tuesday 20 August
- Glasgow, Thursday 22 August

See our website for more details.

Commercial and Connections service

From the second half of 2018 we undertook engagement and consultation on future expectations from our commercial and connections service.

The feedback from this engagement was that our proposals lacked ambition and we should be aiming to provide a whole life, tailored service that met individual customer's needs. This was tempered by a concern about the cost of connection and a desire for affordable solutions.

In light of this feedback, we fundamentally revisited our proposals. In May 2019 we again consulted on a second iteration. Majority of stakeholders reported that they were satisfied with our new policy initiatives. Greatest satisfaction (4.1/5) was for our proposals to deliver an optimal tailored connections solution.

You can read our revised Connections and Commercial Policy proposals on our website³⁹.

Audit and assurance

We take the quality and accuracy of the data and information we use and publish seriously.

We operate a 'three lines of defence' model to the management and control of risk, including in relation to the assurance of regulatory submissions such as our draft Business Plan. The three lines are:

- 1. Within our business through management controls, business assurance and individual accountability.
- 2. The independent compliance function that reports to the SSEPD Board, undertaking a risk-based approach to reviews.
- **3.** The SSE Audit Committee, supported by the independent audit and risk management functions.

All three lines of defence have been involved in the preparation of our draft Business Plan, with a specific Project Management Office established to ensure and control assurance activities.

This is a draft Business Plan. As such, the data and information presented is provisional and subject to change in the final Business Plan to be published in December 2019.

A comprehensive, but 'light touch' assurance programme has been completed for our draft Business Plan. All elements of the Plan have been subject to peer review, and lines 1, 2 and 3 assurance processes.

However, as this is a draft for consultation, the information presented here is provisional. Proposed activities, outputs and targets remain open to modification following the views of stakeholders. Forecast costs are currently at development-stage and continue to be refined.

Our final Business Plan, to be published by 9 December 2019, will be subject to assurance requirements of a 'critical' irregular submission⁴⁰.

Governance

SHE Transmission is a wholly-owned subsidiary of SSE plc. SSE adheres to the highest standards of corporate governance, in line with the UK Corporate Governance Code 2016 and as set out in its annual Corporate Governance Statement⁴¹.

"Doing the right thing" is at the heart of SSE's ethical business culture and is embodied within the agreed vision, purpose and strategy as set by the SSE Board. The SSE SET of core values underpin this approach, which seeks to go beyond compliance and ensure that the interests of all stakeholders and society are respected. It is these values which remain the guide to responsible business behaviour and decision making at every level within the organisation. Further details of the agreed principles, policies, standards and cultural initiatives which support and help employees understand what is expected of them, can be found within SSE's annual Sustainability Report⁴².

This rigorous approach to corporate governance and culture is also applied to Scottish and Southern Energy Power Distribution (SSEPD), the holding company for SHE Transmission under the trading name Scottish and Southern Electricity Networks (SSEN).

Prior to the publication of our draft Business Plan for consultation, a six week governance process was followed that sought comment and approval from: the Transmission Executive Committee, the SSEPD Board, the SSE Chief Executive Officer and the SSE plc Board. In addition, comment and guidance was sought from the RIIO-T2 User Group and the SSEN Stakeholder Advisory Panel.

On 19 June 2019, the SSEPD Board approved our draft Business Plan to be issued for consultation.

www.ssen-transmission.co.uk

⁴⁰As defined by Ofgem's Data Assurance Guidelines (Ofgem, 2016) available at: https://www.ofgem.gov.uk/publications-and-updates/data-assurance-guidance ⁴¹Director's report- corporate governance: a year of change (SSE, 2019) available at: www.sse.com/media/603178/CorporateGovernanceStatement_2019.pdf ⁴²SSE Report and Results (SSE, 2019) available at: www.sse.com/investors/reportsandresults/