Transmission Annual Performance Report

2015/16

Scottish & Southern Electricity Networks

Contents

Get in touch

If you have a question about our performance, or feedback about how the information in this publication is presented, we'd be happy to hear from you.

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Executive summary

David Gardner
Director of Transmission

A message from our Director

I'm pleased to bring you Scottish Hydro Electric Transmission's Annual Performance Report 2015/16. This update presents our progress over the last year in ensuring the transmission network in the north of Scotland functions efficiently as we facilitate the growth of the low carbon economy.

One of the first things that probably struck you about this publication is that we've changed our brand to Scottish and Southern Electricity Networks (SSEN).

Our decision to bring together SSE plc's three electricity network businesses – Scottish Hydro Electric Transmission, Scottish Hydro Electric Power Distribution and Southern Electric Power Distribution – under a new brand reflects both external feedback and an internal desire to improve awareness of who we are and what we do and become more responsive to the changing needs of our customers and stakeholders.

While our name and logo may have changed, the commitments that underpin our transmission business and what we're trying to achieve remains the same, and that is to provide a safe, reliable and sustainable electricity network.

Achieving that vision requires a substantial amount of investment up to 2021 to build new assets and reinforce existing ones so that we meet the demands of energy consumers and generators now and in the future. In fact, since the start of the current price control period in April 2013, our capital investment is around £1.4bn.

That investment has started to deliver tangible results in 2015/16 with the successful completion and energisation of four strategic projects, on time and on budget.

The largest of these, the 220km 400kV Beauly–Denny line, has already enabled the connection of 80 additional wind, hydro and solar generation developments in the north of Scotland. Together, these projects have increased the resilience of electricity supply, both locally and nationally, for decades to come.

Our ongoing major capital investment programme is set to continue over the next few years, not least the £1.1bn Caithness–Moray subsea link, SSE plc's largest capital investment project to date and the largest living wage contract in the UK.

Electricity transmission, indeed the energy sector in general, is heavily scrutinised and subject to frequent and significant change. The decision by Ofgem to extend the use of competition in onshore electricity transmission presents challenges as well as opportunities for our company. We're working constructively with Ofgem, the UK and Scottish governments, and other key stakeholders to shape how this will work in practice while maintaining value for money for end consumers.

This report provides an overview of our performance against the core outputs of our regulatory licence, highlighting the aspects of our performance where we've done well, but equally and perhaps more importantly, telling us where we can improve in future years.

To do that, we've already started planning for what happens next after 2021, RIIO-T2, and we'll shortly be commencing an extensive programme of external engagement. This will ensure that our customers and stakeholders are actively involved in developing the contents of our business plan so that we understand what service our customers and stakeholders expect from us.

Key statistics

88
the number of connections offers made during 2015/16

£2.2bn
The value of our assets, up £555m in 2015/16.

£435.7m
Our total expenditure in 2015/16

Key priorities

1. Operate safely and meet all compliance requirements
2. Provide an excellent service to all customers who rely on our networks
3. Deliver outputs while maintaining tight controls over expenditure
4. Deliver every customer connection to quoted cost, time and budget
5. Develop and maintain effective stakeholder relationships

Performance Snapshot

	RIIO target	Reward or penalty in 2015/16	Trend over time
Stakeholder engagement Annual discretionary incentive to encourage TOs to engage with stakeholders and include them in decision making	5/10	+£677,374	Score out of 10 2013/14: 5.4 2014/15: 6.0 2015/16: 6.0
Stakeholder satisfaction survey Annual survey of stakeholders to rate their overall satisfaction with us	5/10	Ofgem has taken the decision to switch off this element of the Stakeholder Satisfaction incentive for the first three years of RIIO-T1	Average score out of 10 2013/14: 6.5 2014/15: 7.7 2015/16: 8.2
Stakeholder satisfaction KPIs Our KPIs are the measure by which stakeholders are able to monitor the quality of service that we provide	50%	Ofgem has taken the decision to switch off this element of the Stakeholder Satisfaction incentive for the first three years of RIIO-T1	% 2013/14: 91% 2014/15: 86% 2015/16: 76%
External assurance Each year our stakeholder engagement activities undergo an external audit to make sure we are delivering our commitments	Compliance	TBC	2013/14 Compliance 2014/15 Exceeded compliance 2015/16 Compliance

Network availability

Network access Keeping planned outages to a minimum while we upgrade parts of the network	Implement the Network Access Policy (NAP) to ensure better planning of outages over RIIO T1 period	N/A	Our Network Access Policy clarifies how we will attempt to maximise availability of the transmission network

Safety and reliability

Energy not supplied The volume of energy to customers that is lost (not supplied) as a result of faults or failures on our network	<120MWh	+£1.46m	MWh 2013/14: 35.6 2014/15: 106.1 2015/16: 0
Safety To comply with the legal safety obligations as set and monitored by the HSE as safety regulator	Compliance	N/A	2013/14 Compliance 2014/15 Compliance 2015/16 Compliance

Connections

RIIO target | Reward or penalty in 2015/16 | Trend over time

Timely connections

Financial incentive based on the number of connections offers we provide within 60 days of receiving a full application

Connections offers within 60 days

£0
(The incentive penalises poor performance)

2013–2016

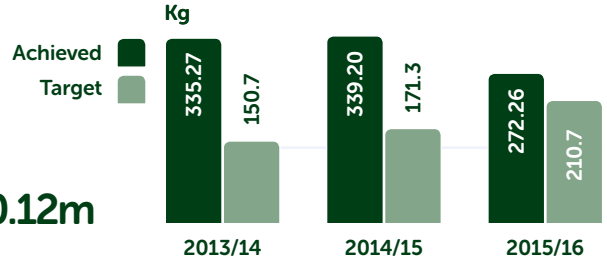
Environment

Sulphur hexafluoride (SF_6) leakage

As part of our regulatory framework, we are financially rewarded, or penalised, each year based on how much SF_6 is leaked from our equipment

<210.7kg

-£0.12m

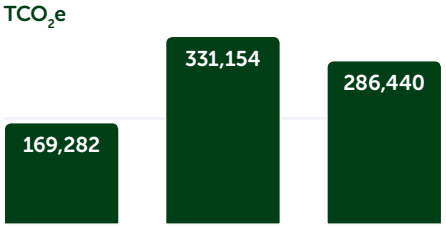


Electrical losses

The amount of electricity 'lost' from our network

A requirement to report annually on our contribution to fewer losses

N/A

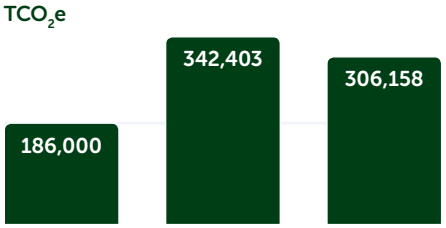


Business Carbon Footprint (BCF)

The impact of our business activities on the climate

A requirement to report annually on BCF at a business level

N/A



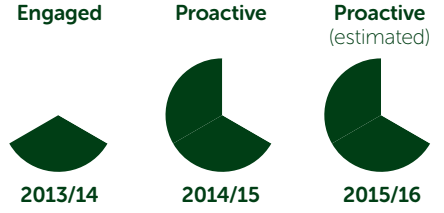
Environmental Discretionary Reward (EDR)

The EDR encourages TOs to support the decarbonisation of electricity and minimise the harm of operational and business activities on the environment

Performance is categorised as 'engaged', 'proactive', or 'leadership'. Only TOs scored in the 'leadership' category receive a financial reward.

75%

The Ofgem panel is due to meet in October 2016. We expect to have improved on last year's score but believe our overall rating will remain in the 'proactive' category



Visual amenity

Reducing the impact of existing electricity infrastructure on the visual amenity of nationally designated landscape

To demonstrate an ongoing commitment to use a range of mitigation measures during RIIO-T1

N/A

Ofgem has now accepted our visual amenity policy, produced in conjunction with stakeholders, on the basis it will help ensure transparency and that projects offer benefits and value for money for consumers

About us

We are Scottish and Southern Electricity Networks, part of SSE plc, responsible for maintaining and operating the electricity transmission network in the north of Scotland and electricity distribution networks in the north of Scotland and central southern England. Together these networks deliver electricity to over 3.7 million homes and businesses.

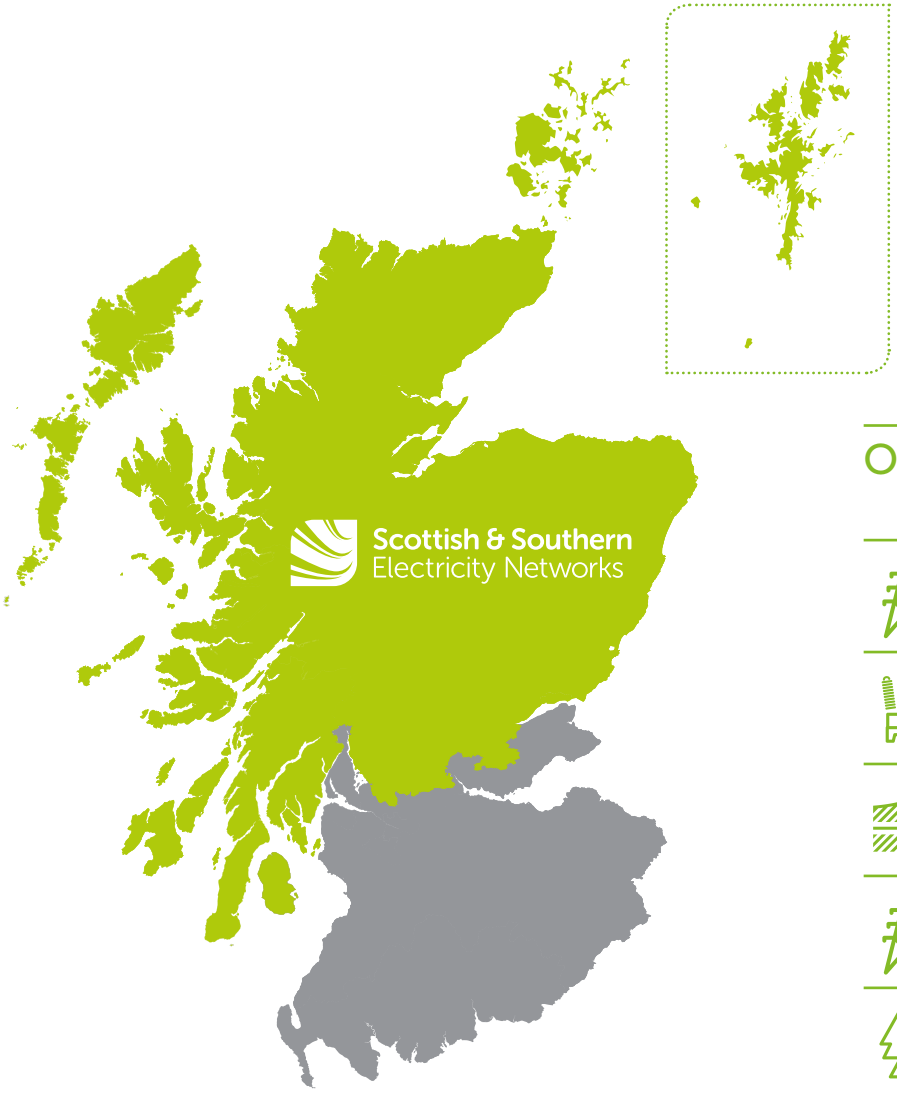
As the Transmission Owner (TO) for the north of Scotland, we own and maintain the 132kV, 275kV and 400kV electricity transmission network in the north of Scotland. Our network is made up of underground cables and overhead lines, steel towers and electricity substations covering some of Great Britain's (GB) most challenging terrain.

We transmit large volumes of electricity over long distances from generators such as onshore wind farms and hydro power stations to areas of demand around homes and businesses.

Our first priority is to provide a safe and reliable supply of electricity to our communities. We do this by making sure our employees and contractors work safely while ensuring the network is able to function properly and meet electricity demand now and in the future.

Working closely with the GB transmission System Operator (SO), National Grid, we also provide connections to the transmission network to electricity generators, allowing this electricity to be transported to areas of demand across GB.

As a natural monopoly we are closely regulated by the GB energy regulator, Ofgem, who determines the charges levied on users to cover the costs of maintaining and investing in our network. As the costs of maintaining the transmission network are ultimately paid for by GB energy consumers via their energy bills our licence requires us to ensure our investments are both economical and driven by a necessary and evidenced need.



Our network

4800km
of overhead lines

120
substations

200km+
of underground cables

8000+
electricity pylons

70%
of the land mass of Scotland

Our new brand

Scottish and Southern Electricity Networks (SSEN) is our new operating name that replaces our old brand, Scottish and Southern Energy Power Distribution (SSEPD).

SSEN is a rapidly changing business with a genuine commitment to becoming more customer focused. Engagement with our customers, our stakeholders and our employees told our old brand was confusing, with a high percentage of people not knowing what we do or how to contact us, and even mistaking us with other parts of the SSE group.

In response, we launched SSEN to simplify things for stakeholders, making it easier to identify us and to understand what we do. Our new brand aligns all of our Networks businesses under one unified identity.

Our brand values

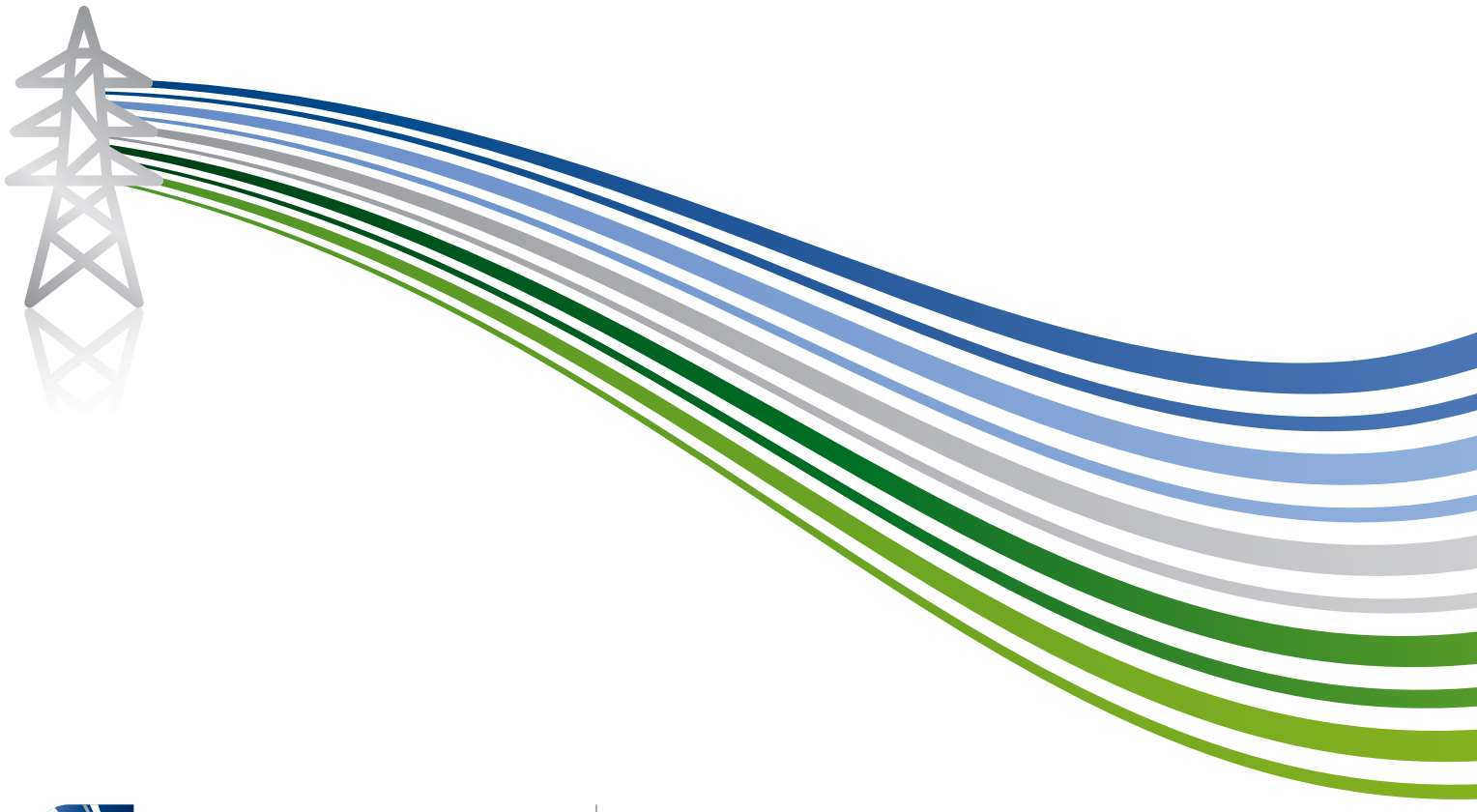
Reliable
People and communities can depend on us completely; we do what we say

Professional
We work hard, and our standards are second to none

Dedicated
We have shown time and again, we stop at nothing to get the job done safely and well

Open
We're honest, and always there when you need us

Passionate
We love what we do, we're enthusiastic, we're proud to 'power our community'



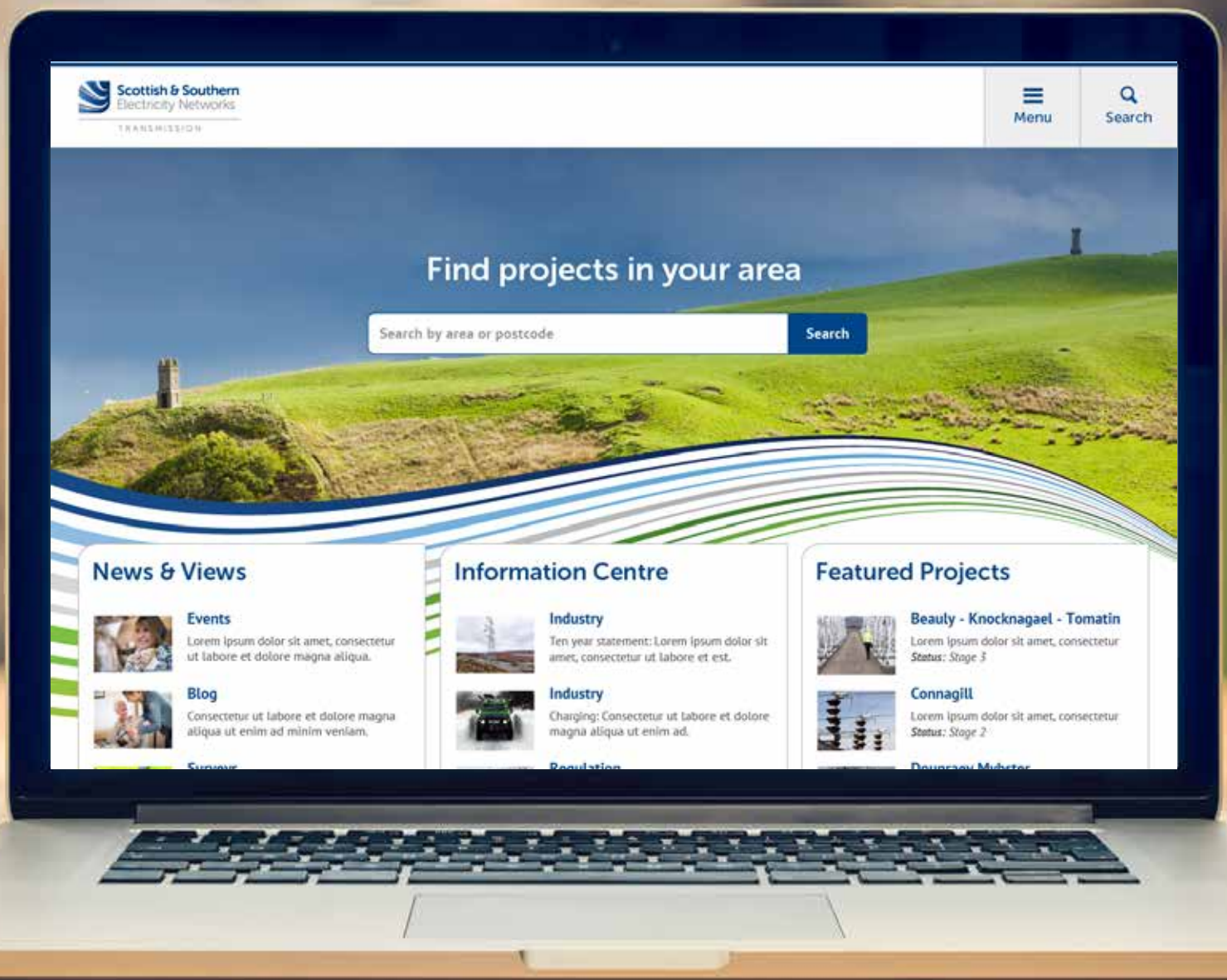
Scottish & Southern Electricity Networks | Powering our community

Our new website

Our new Transmission website has been re-designed to incorporate our new branding, and it's also been completely re-developed with our customers and stakeholders in mind, making it easier to navigate around and find the information you are looking for.

To view our new site please click on the following link:

ssen-transmission.co.uk



Reporting on our performance

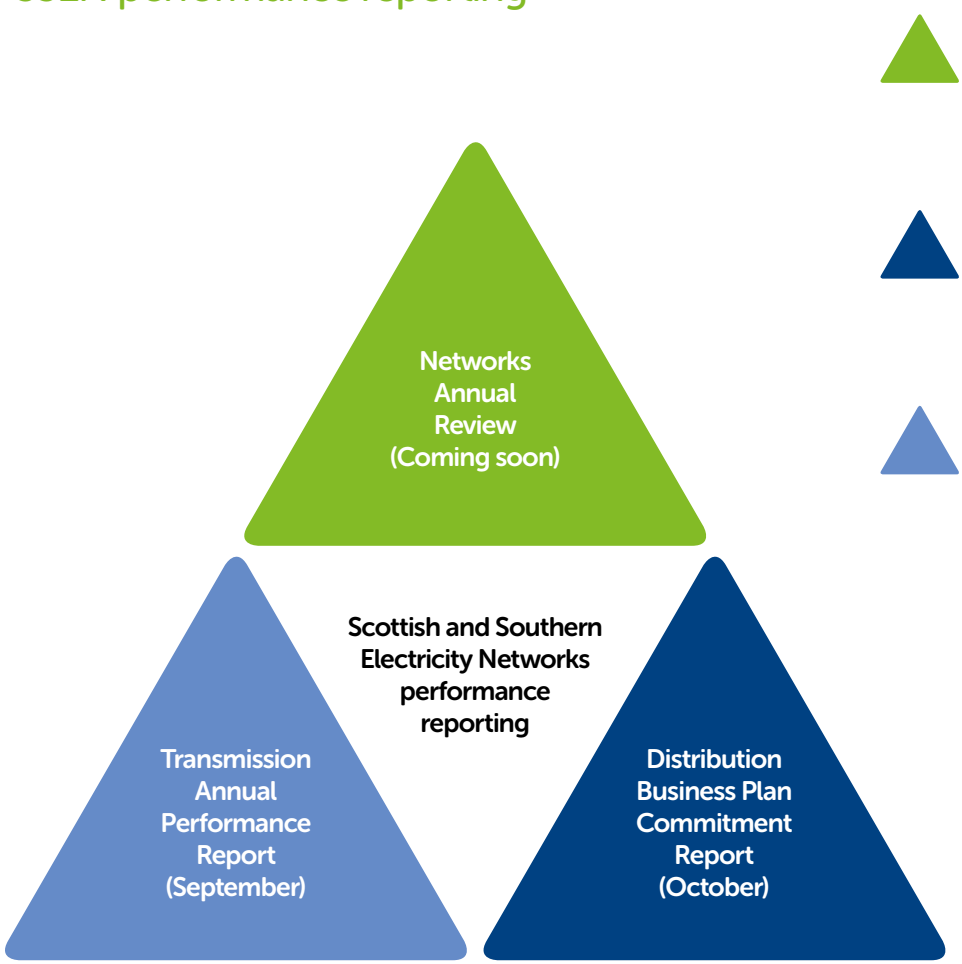
Electricity is an essential ingredient of modern day life in GB. It's not something we simply want, it's something that's vital to our society and economy.

Making sure our network is fit for purpose requires a significant amount of ongoing investment to keep the lights on. While this expenditure supports economic growth, our activities have a direct impact on consumers' energy bills.

As a result, we have a duty to report on our performance in an accessible and transparent manner, allowing you to assess the quality of service we provide and compare us with the other TOs in GB.

We publish this report at the end of September on an annual basis so that stakeholders can monitor our progress year-on-year.

SSEN performance reporting



We intend to publish a new Networks Annual Review so that stakeholders can monitor our progress year-on-year.

As part of RIIO-ED1, our distribution business will report annually on the delivery of its business plan commitments.

Published in September each year, this report details our performance against some of the main outputs we are expected to deliver in RIIO-T1.

Connecting renewable energy

As the global effort to tackle climate change continues, the UK Government has committed to reduce the carbon emissions of the country by at least 80% by 2050.

The power sector is at the forefront of these efforts and has seen a dramatic increase in electricity generated from renewable sources since 2006. With some of the greatest renewable resources in Europe located in Scotland, particularly in the north of Scotland where our Transmission network is located, there has been an increasing demand on existing infrastructure to facilitate the rapid growth in renewables over recent years.

Under our licence to operate, we must ensure that electricity generators can connect to our network.

It is our job, working closely with the GB SO, National Grid, to ensure the Transmission network is ready and capable of connecting new forms of generation in an efficient and timely manner.

For this reason, we have a major programme of investment underway which involves upgrading and reinforcing the network and fundamentally changing its historic role. Traditionally the transmission grid accommodated a small number of very large electricity generators whereas the transition to a low carbon economy has meant a large number of small generators spread across the north of Scotland, the vast majority of which are renewably sourced, are now connected or seeking to connect.

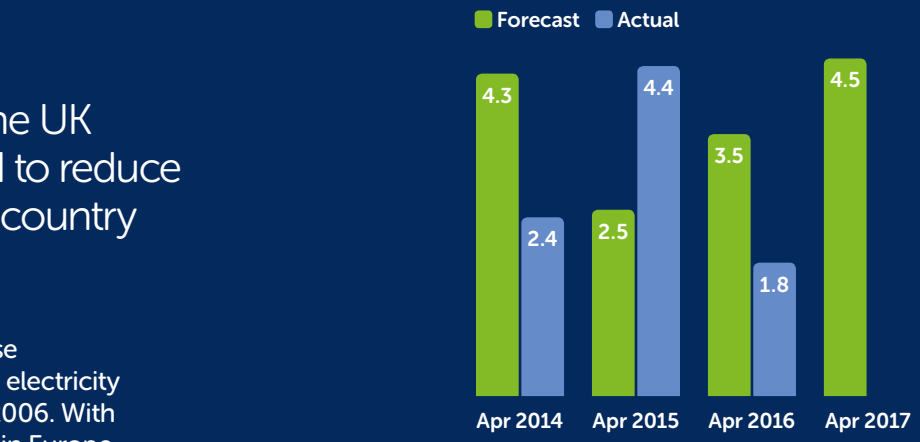
Future development of our network will depend on a number of factors, not least the level of renewable generation looking to connect onto our network. Uncertainty surrounding future subsidy funding levels for renewable generation has led to new challenges in planning the longer term development of our network. Notwithstanding this, we expect the level of renewable generation connected onto our network to reach around 5GW within the next 18 months.

Renewable generation

Actual and forecast to April 2017

2013–2021

Connected generation MW



Timely connections

It is important that we deliver new connections in a timely way so that new sources of generation can begin operating to strengthen security of supply and achieve wider environmental objectives.

We have a licence obligation to provide connection offers within two months of any competent applications received from National Grid. National Grid then has up to one month to provide its connection offer to the developer/user. Failure to provide a connection offer to National Grid within the two month timeframe will result in our revenue being adjusted downwards.

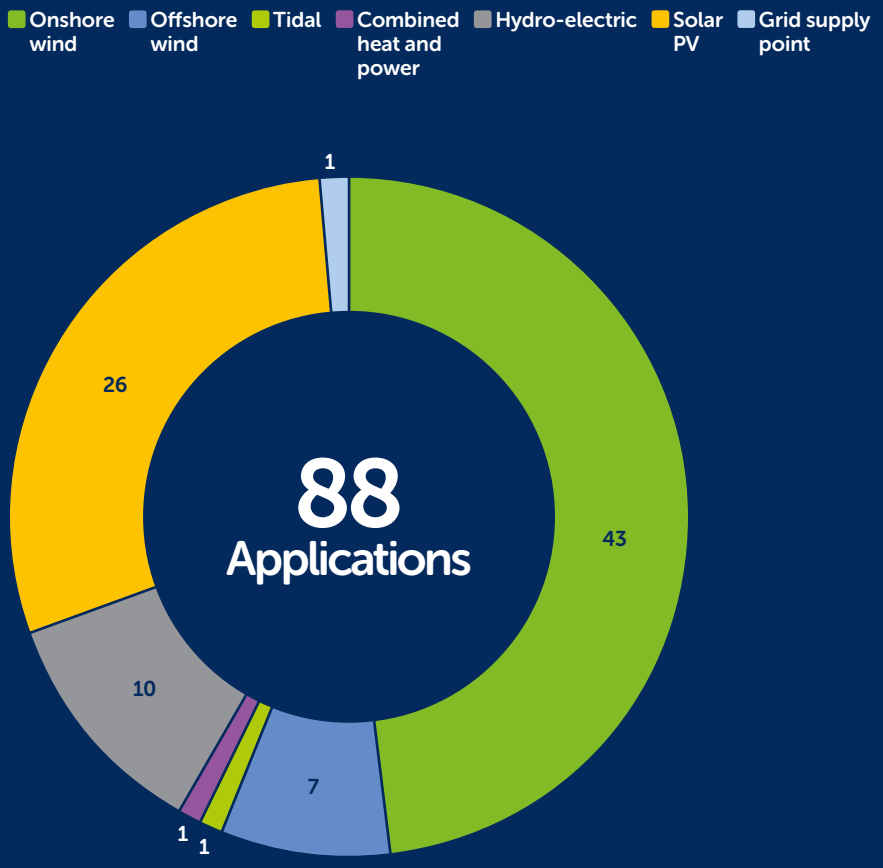
In 2015/16 a total of 88 applications were submitted from developers/users of low carbon generation, via National Grid, seeking to connect to our network, all of which were delivered on time.

The 88 connection offers represent a 10% decrease from last year. This reduction is likely to be attributed to changes in government policy for certain types of renewable generation.

Of the 88 connection offers we provided, 48% were for onshore wind and 28% for solar PV. The remaining 24% were made up of hydro-electric, offshore wind, tidal, combined heat and power, and grid supply point.

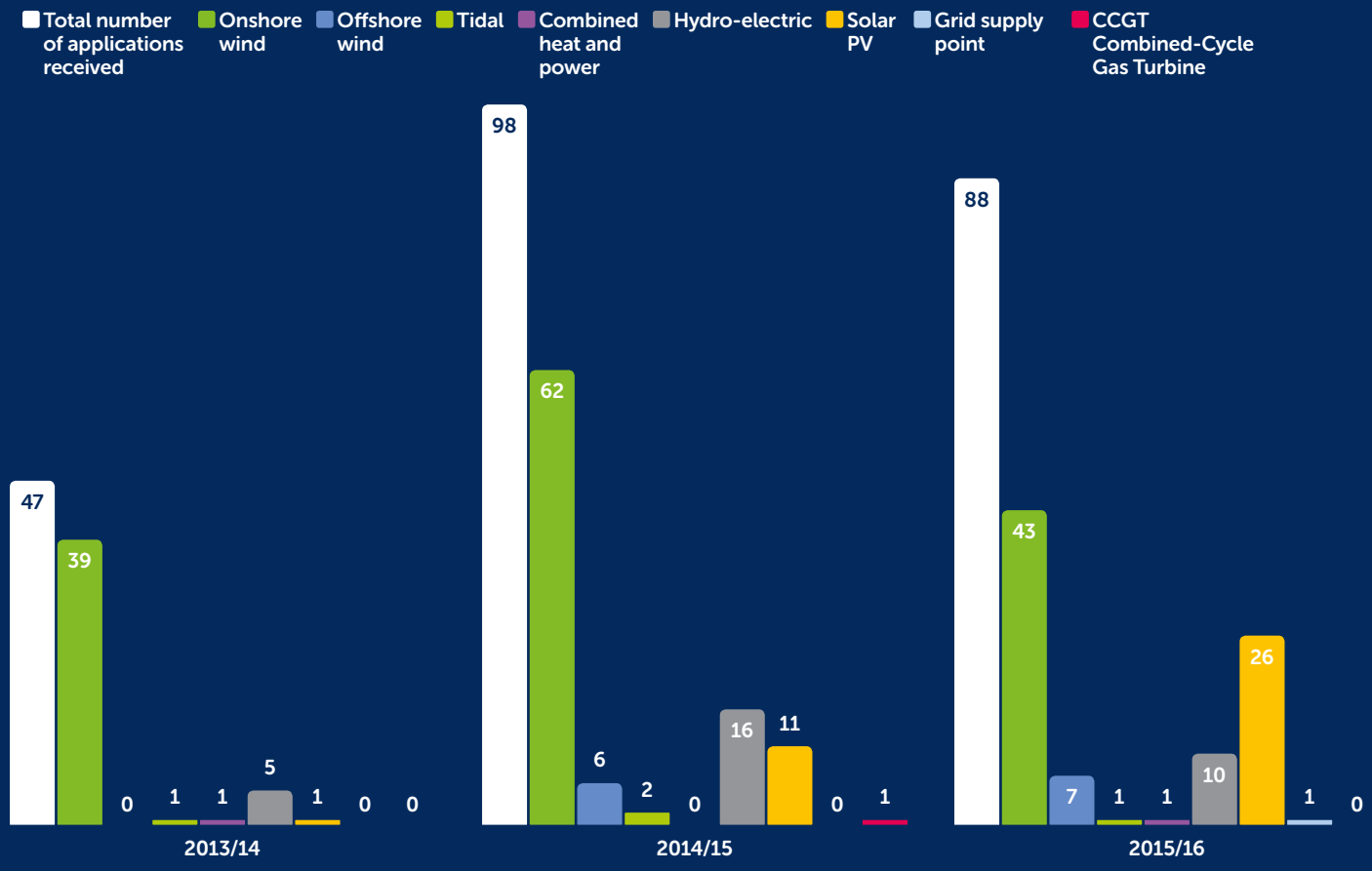
Connection applications by generation type

2015/2016



Connection Applications in RIIO-T1

2013–2016



Smart investment

As part of our responsibilities to connect electricity demand and generation customers, we regularly assess the capability of our network to ensure secure and economic access for all customers. If any network upgrades are required then these are fully justified in accordance with the need and developed in an economic, efficient and co-ordinated manner.

These assessments ensure we take the most appropriate investment decisions at an acceptable cost to consumers while ensuring our network is developed and operated securely to meet everyday demands.

Due to the large quantity of renewable generation applications in recent years we have already invested heavily in the transmission network to increase its capability to transfer the power from generation sources to demand centres. Further transmission reinforcements are in construction and future upgrades may also be required depending on the level of connection activity.

However, we do not and will not (indeed, industry rules don't allow us to) invest speculatively in our network. All our large reinforcement plans are underpinned by strong needs cases based around a variety of future generation and demand scenarios to ensure they are robust. They also undergo rigorous scrutiny by the electricity regulator, Ofgem, to ensure the plans are economically sound, efficient and co-ordinated.

To make sure the infrastructures we build are definitely going to be used, National Grid in its role as the SO requires developers to provide financial security, underwriting major investment projects – that is, they need to guarantee that they are going to build their development and use the new infrastructure to export their energy. If they don't then any abortive costs which we may incur will be borne by the developer alone, which protects consumers from unnecessary costs and makes sure that we don't waste time, or resources, building assets that aren't needed.

Our major projects

Strategic Wider Works (SWW) is the mechanism through which TOs can apply for additional funding to support major construction projects that were not factored in to the original price control settlement. This allows TOs to adapt to changing market conditions and demand for extra capacity from electricity generation developers.

Work on two of our three major projects approved under the SWW mechanism completed on time and under the Ofgem allowance in 2015/16: the Beauly–Mossford and Kintyre–Hunterston projects.

The third SWW project, Caithness–Moray, is progressing on time and to budget. This project is the largest single capital investment made by SSE plc to date.

We have learnt from taking these three projects through the SWW process with Ofgem and we have changed our processes for future project development. Going forward, we believe that we are now better placed than ever to successfully deliver large capital projects.

Network investment

Routine network assessments typically take the following factors into consideration.

Generation outlook

Changes in the amount of generation looking to connect. New wind farm developments can request a connection or existing developments can modify their capacity or even withdraw completely

Government subsidies

Government initiatives and subsidies, most relevantly for renewable schemes, can change, affecting the plans of developers

Cost benefit analysis

A Cost Benefit Analysis (CBA) which compares the costs of developing and implementing the project, with the benefits this would provide to system capacity, and reduced operating costs. This ensures that consumers (who pay for this expenditure) are getting value for money

2–5 years

The typical amount of time it takes us to build a new transmission connection

Major projects completed in 2015/16

During 2015/16 we completed a number of Critical Investments in our transmission network in the north of Scotland. Critical Investments are upgrades and reinforcements to our networks that are designed to facilitate the transition to a low carbon economy.

Beauly–Denny

The 400kV replacement overhead line was developed jointly with Scottish Power Energy Networks (SPEN) and will serve the entire country's energy needs for around the next 60 years.

There are 615 steel towers in total, replacing over 800 pre-existing 132kV towers that were built in the early 1950s. The renewal of the north–south spine of Scotland's electricity network has supported over 2,000 jobs over a seven year period, contributing more than £100m to the Scottish economy in the process.

At 220km, it is the longest transmission line to be built anywhere in GB in recent times.

As a direct result of the Beauly–Denny project, 80 additional wind, hydro and solar developments across the north of Scotland have progressed to completion, totalling over 700MW of new renewable generation.

Total costs are expected to be in the region of £670m.

Beauly–Blackhillock–Kintore

The £94m project to refurbish and replace the 275kV overhead line from Beauly via Blackhillock to Kintore was approved by Ofgem in 2010, with work starting soon after.

A significant increase in renewable generation looking to connect to our network required consideration of different reinforcement options to increase system capacity and accommodate increased power flows. Within our north west area the continued increase in connected and contracted generation resulted in a need to further increase the boundary transfer capability beyond that provided by the Beauly–Denny project.

The 157km line was originally constructed in the early 1960s, spanning 476 transmission towers across the Highland, Moray and Aberdeenshire local authority areas. With yet more renewable energy generation expected in the Highland area, the completion of this project has provided an additional 500MW of transfer capacity across our north west boundary, allowing more generation to connect.

Beauly–Mossford

The £54m project from Beauly to a new substation at Corriemoillie was completed in November 2015 on time and on budget.

Construction work on the project to complete the new power line – including overhead line, underground cables and works on Beauly substation – began in March 2013 as the old overhead line was replaced with new, higher capacity conductors to allow a greater export of generation in the Strathconon area while improving the reliability of the electricity supply to customers in the north west of Scotland.

At the peak of the works, 105 people worked on the programme which sought to reduce the visual impact of the line by removing 188 old overhead lines towers and replacing them with just 97 new towers and 3km of undergrounded cable.

Kintyre–Hunterston

At 41km, our biggest and longest subsea cables project to date was successfully energised in February 2016 on time and on budget.

The £200m connection was a project to reinforce the 132kV transmission network on Kintyre by providing a new 132kV connection between the Kintyre Peninsula in Argyll to the existing mainland transmission network at Hunterston in North Ayrshire. This was via a new 16km 132kV overhead line tower; a 132kV/220kV substation at Crossaig; and 41km of 220kV subsea cable.

The project will help improve the security of supply to the Kintyre Peninsula as well as giving renewable energy developers the opportunity to connect to the network.

The project was located predominantly in our licensed area; however 3.5km of land cable and associated substation works were conducted in collaboration with SPEN.

Powering our community

Electricity is needed to keep Scotland's businesses, hospitals and schools running; heat and power our homes; and to transport goods and people. It also plays a vital role in supporting Scotland's economy.

Did you know?

In 2013, we became the first and only TO in GB to offer compensation to customers affected by a power cut caused by a fault on the transmission network lasting more than six hours.

Our job is to keep the electricity network in a good state of repair throughout its life. To do this we try to balance the cost, risk and performance of maintenance work to deliver an electricity network fit for the north of Scotland at an acceptable cost to bill payers.

Network reliability

Network reliability over the last financial year showed a significant improvement with the number of faults almost halving from the previous year, 182 in 2014/15 compared to 92 in 2015/16.

This was due to a focus on tree cutting, protection and control, and improved maintenance, all of which helped us to achieve our lowest number of faults since the start of the current price control.

Because the transmission network is interconnected, there are alternative paths for electricity to take in the event of faults on the network, and we would normally not expect to have customers off supply for a single transmission fault.

Notwithstanding three winter storms, overall the mild weather in 2015/16 has contributed to a reduction of faults from 2014/15. There were no days when more than two incidents occurred throughout the entire year.

Measuring our performance – Energy Not Supplied

Energy Not Supplied is the volume of energy to customers that is lost (not supplied) as a result of faults or failures on our network. Each TO has annual targets calculated in megawatt hours (MWh) and receives either a financial reward if the volume of unsupplied energy is below the target volume, or a financial penalty if the volume is above the target.

In 2015/16, we delivered our best ever performance in relation to Energy Not Supplied, not having a single incentivised loss of supply event. This returned a volume of 0MWh against the current target of 120MWh.

The improvement from 2014/15 was driven by multiple factors inside and outside the company. Internally, we've continued our focus on improving our performance and reducing the number of incidents. The majority of the 106.1MWh lost in 2014/15 was due to a single incident. No similar incidents occurred in 2015/16. Externally, the lack of any Exceptional Events (events beyond our reasonable control, such as extreme weather conditions) also contributed to the improvement in our performance.

Energy Not Supplied

Our target is <120MWh

Looking after our network

As we expand our network, we need to provide the same high levels of network availability to meet consumer demand as efficiently as possible. We do this by maintaining our assets, such as overhead power lines, electricity towers and substations, and replacing them when they reach the end of their operational life.

How we do it

There are five key activities that we perform:

1 **Assessment**
Determine what our stakeholders require from the electricity grid from ongoing stakeholder engagement

2 **Identify issue**
Review network performance and assess the need to replace or upgrade the network

3 **Planning**
Create maintenance, replacement and reinforcement work schedules to meet customer demands

4 **Delivery**
Complete the project in an efficient and cost-effective manner

5 **Feedback**
Review performance to improve future activity

We are developing a Network Output Methodology to ensure we manage our existing assets in a safe and efficient manner. This means that we can invest consumers' money wisely and avoid unnecessary costs in the future. Network Output Measures allow us to determine the 'health' of our assets and their relative importance to ensure that we can prioritise our work, manage our network effectively, and consequently serve our customers.

During 2015/16, various improvements to our assets were made, including the refurbishment of over 46km of overhead line between Tealing and Arbroath in Angus and the replacement of 190km of overhead line fittings between Shin and Mybster in the Highlands.

We are on track to meet the Network Output Measures targets set by Ofgem for the RIIO-T1 price control.


ELECTRICITY

Network access

UK and Scottish government targets on renewable energy have resulted in a significant growth in renewable energy projects across our network. To transport this energy across the GB network as efficiently as possible, we're undertaking an extensive construction programme, installing new infrastructure and upgrading existing assets. This work is required whilst we also replace some of our ageing network and we carry out maintenance to ensure the safe and reliable operation of our transmission system.

In order to perform these works, it is necessary to switch off parts of the transmission network to ensure the work is carried out safely. This is known as an outage.

Our Network Access Policy, developed in conjunction with SP Energy Networks, Ofgem and National Grid, and following extensive engagement with stakeholders, is designed to ensure all necessary outages are carried out in the most efficient manner resulting in the minimum overall cost to the consumer, whilst maintaining security of supply.

To achieve this, National Grid in its role as SO, works with us as well as the other TOs and affected users of the transmission network, to construct annual outage plans that balance the cost of construction, asset replacement/upgrades and maintenance outages, against the costs National Grid incurs while operating the system.

If you'd like to know more about our Network Access Policy, you can find it here:

https://www.ssepd.co.uk/WorkArea/DownloadAsset.aspx?id=6131

Investing for a low carbon economy

Our price control settlement with Ofgem determines the maximum amount of annual revenue we are allowed to earn for constructing, maintaining and renovating the transmission network in the north of Scotland. These costs are shared between all those using the transmission system, from generation developers through to domestic consumers.

Total Expenditure (Totex) in 2015/16

In 2015/16, our total expenditure amounted to £435.7m compared to an allowance of £674.3m, resulting in an underspend of £238.6m.

The difference largely reflects lower than anticipated customer connection requests due to the delay or cancellation of schemes in development and lower than anticipated expenditure on Strategic Wider Works schemes during 2015/16 because of phasing adjustments in project expenditure profiles.

Uncertainty mechanisms

Uncertainty over the timing and location of new generation means it is not possible to set out an accurate timetable for network development.

We forecast at the start of RIIO-T1 how much new generation we expected to connect in the initial part of RIIO-T1 (1,168 MW and 1,006 MVA) and the funding we would need to cover the costs of developing the new infrastructure needed to connect generation customers.

However, we also devised a scheme to recover costs should the volume of generation seeking connection during the RIIO-T1 period exceed these thresholds. The main mechanism for doing so is the Generation Connections Volume Driver which increases our allowed revenue in response to the amount of extra capacity delivered.

During 2015/16, we have continued to develop projects to be funded under this mechanism, therefore we forecast we will deliver an additional 641MW and 2310MVA of capacity over our baseline threshold during the RIIO-T1 period and our allowance will be increased to fund this work.

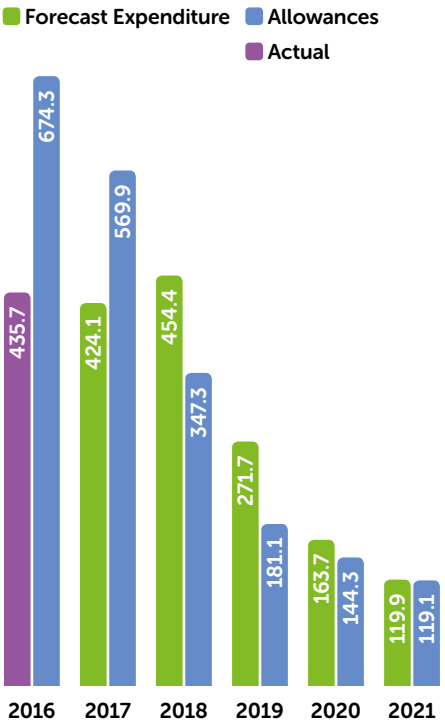
Totex for RIIO-T1

We have reduced our forecast expenditure for the RIIO-T1 period (2013-2021) and now anticipate our actual Totex will amount to £2.303bn, as opposed to our allowance which is £2.559bn. This is mainly due to reduced generation forecasts resulting from the uncertainty surrounding government subsidies announced in July 2015 and changes to the anticipated timetable for island connections.

RIIO-T1 expenditure and allowances

2016–2021

£m



Total expenditure

£435.7m

Our total expenditure in 2015/16

£870m

Total expenditure since the start of RIIO-T1 in April 2013

* All figures quoted above are in 2009/10 prices

Working responsibly

The transition to a low carbon economy and society in Scotland relies upon the long-term, sustainable expansion and operation of the transmission network in the north of Scotland, home to a significant proportion of Scotland's renewable energy capabilities.

By connecting new renewable energy sources onto the grid, SSEN has an important role to play in helping to decarbonise energy production. However, as part of one of the biggest companies in the UK, we recognise our own responsibility to do the right thing by our customers and stakeholders, the environment, and the society in which we operate.

Living wage

In September 2013, our parent company, SSE plc, became a Living Wage accredited employer.

Since April 2014 all new service and works contracts tendered by SSEN included an obligation to ensure all employees who work regularly on our sites are guaranteed the Living Wage – even though they are not directly employed by us.

In 2015 KPMG researched the 'ripple effect' of paying the Living Wage to the supply chain. It found that by April 2016, approximately 400 full-time equivalent employees within SSE's supply chain would have received a pay rise because of SSE's Living Wage commitment.

SSE plc's largest ever capital project is the Caithness-Moray subsea cable. It's also one of the most significant investments in Scotland's infrastructure over the past 10 years.

Not only is it the biggest fully Living Wage compliant project in the UK, £643.5m will also be contributed to the UK economy, including £265.6m of value going directly to Scotland.

1 SSE plc became the first energy company to achieve Living Wage accreditation in September 2013

2 From April 2014, we extended that requirement to our supply chain, so everyone working on our projects receives at least a Living Wage

3 In December 2014, the largest ever Living Wage contract was awarded – worth £460m – to ABB Limited. The contract is part of the Caithness–Moray Transmission Project, Scotland's largest ever Living Wage contract to date

Supporting economic growth
Caithness–Moray

Our flagship project, Caithness–Moray, is being built to provide the capacity needed for around 1.2GW of renewable generation to connect.

It's centred on a 100-mile underground and subsea cable running beneath the Moray Firth, using High Voltage Direct Current (HVDC) technology. The subsea cable manufacture is on course for completion by the end of 2016. Subsea activities will commence in the first quarter of 2017, with the whole project becoming operational by the end of 2018.

At approximately £1.1bn, construction of the cable, together with the associated reinforcement of the existing onshore transmission network, is the largest investment in the north of Scotland's energy infrastructure since the hydro development era of the 1950s.

A study of the project's economic impact on the UK and Scottish economies has found that it is supporting the equivalent of over 10,000 years of employment in the UK, around half of which are in Scotland.

It will also add approximately £643m of value to UK GDP, of which at least £265m will be contributed to the Scottish economy.

The project is responsible for awarding what is currently the largest ever Living Wage contract, worth £460m, to engineering firm ABB Limited for the manufacture and installation of the submarine cable. The Living Wage clause means that all contractors ABB employ to work regularly on SSE sites will be guaranteed a wage they can live on, not simply survive on.

Key economic facts

£1.1bn
investment

£643.5m
will be spent with UK-based suppliers and contractors

£265.5m
in Gross Value Added will be contributed to the Scottish economy

10,971 years
of employment in the UK supported by the project, of which 4,975 are in Scotland

Environmental Discretionary Reward
We continue to recognise our role as a TO in the UK's goal to lower carbon emissions and manage the wider environmental impacts connected with the transmission of electricity. Through the annual Environmental Discretionary Reward, Ofgem incentivises TOs to demonstrate their approach and commitment to this.

Across the north of Scotland we continue to work to meet the demand for renewable energy while protecting our natural heritage and reducing harmful emissions of carbon and other greenhouse gases into the environment. Ofgem encourages us to look beyond the conventional and we've responded with an extensive programme of stakeholder consultation to implement their thinking in our future plans and provide innovative solutions to challenges faced by the whole electricity system.

Our aim remains to operate the network in the north of Scotland in the most sustainable, secure and reliable way. The results of our submission under this scheme will be published following Ofgem's assessment later in the year.

Our Business Carbon Footprint

We recognise that as well as assisting others to achieve their low carbon objectives, there are also measures that we can implement ourselves to minimise our carbon footprint and the possible impacts of greenhouse gases on society.

Our Business Carbon Footprint (BCF) measures the impact of our business activities on the climate in terms of the total amount of greenhouse gases produced (measured in units of carbon dioxide). Most organisations will have both direct and indirect impacts.

Direct emissions

Are those stemming immediately from our organisation or first tier contractors. This includes our buildings, vehicles, and network (specifically Sulphur Hexafluoride (SF_6) emissions and electrical losses).

Indirect emissions

Covers the goods and services from our suppliers, their subsequent supply chain, and our own electricity usage.

Continued demand from electricity generators to connect to our network requires further reinforcement and expansion, and therefore our substantial construction programme is likely to keep our BCF figures up over the next few years, after which we anticipate they will steadily decrease thereafter as investment in our network is expected to slow down.

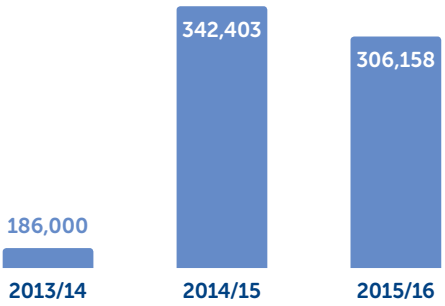
As well as our own footprint, since much of construction programme is carried out by contractors, we also report on the combined total of their activities, to give a more accurate indication of how we're performing each year.

At 306,158 tonnes of CO_2 equivalent (tCO_2e), our BCF is 12% less than last year. This decrease owes much to the fact that our transmission losses on the network have drastically reduced. Please see page 28 for more information or our losses strategy here:

https://www.ssepd.co.uk/WorkArea/DownloadAsset.aspx?id=6726

Total BCF

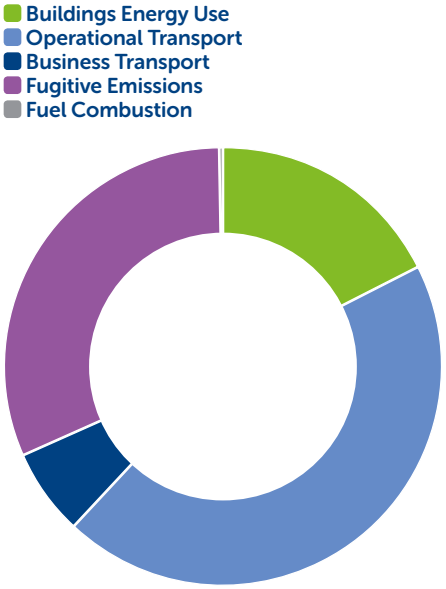
Tonnes of CO_2 equivalent (tCO_2e)



When losses are excluded, the carbon footprint from our key business activities is 19,718 tCO_2e, a 14% increase on the prior year value of 17,357 tCO_2e. The changes across the different emissions categories are explained further in the chart below:

Breakdown of BCF*

*Excluding Losses



Buildings Energy Use
Our site emissions accounted for 3,504 tCO_2e. This was compared to 2,965 tCO_2e emitted in 2014/15 and represents an 18% increase. 172 tCO_2e (5%) of the total building energy use can be attributed to our contractors.

Operational Transport
8,744 tCO_2e were emitted, a 67% increase on the previous year. Our contractors accounted for 95% (8,274 tCO_2e) of the total.

Business Transport
We saw a 26% increase in emissions from business travel in 2015/16, at 1,261 tCO_2e compared to 1,000 tCO_2e in 2014/15. 32% of this was generated by contractors.

Fugitive Emissions
There has been a 24% reduction in fugitive emissions from 2014/15, and is entirely accounted for in a fall in SF_6 emissions, going from 8,119 tCO_2e (2014/15) to 6,208 tCO_2e (2015/16).

Fuel Combustion
Our fuel combustion has fallen 95% between 2014/15 and 2015/16, from 34 tCO_2e to 1.6 tCO_2e.

Electrical losses

On the transmission network, electricity is transported from the source of generation, such as onshore wind farms, to the distribution network that directly connects to homes and businesses. Due to the geographical nature of our network in the north of Scotland, electricity is often transported over long distances from where it is produced to where it consumed, such as significant centres of demand located in the central belt of Scotland and in England.

During this transmission, some energy is 'lost' from the transmission system, usually in the form of heat. This lost energy is known as transmission losses. High voltage transmission lines improve efficiency by reducing the current passing through power lines. Nevertheless, losses still do occur when energy is transported from electricity generators to centres of demand.

Losses also vary depending on fluctuations in the amount of energy generated and energy demand from domestic and commercial customers. In 2015/16, our losses equated to 286,440 tCO_2e, a decrease of 13% compared to 2014/15.

We are currently working with Ofgem to assess the reasons for the increase in transmission losses noted in last year's Annual Report. You can read more about our losses performance and strategy here:

https://www.ssepd.co.uk/WorkAreaDownloadAsset.aspx?id=5385

Sulphur Hexafluoride (SF_6)

For around 20 years, electricity network companies have used SF_6 technology to insulate high and medium voltage circuit breakers and other equipment used in electricity transmission and distribution. Despite it being a highly effective electrical insulator it is also a greenhouse gas, approximately 23,000 times more potent than CO_2.

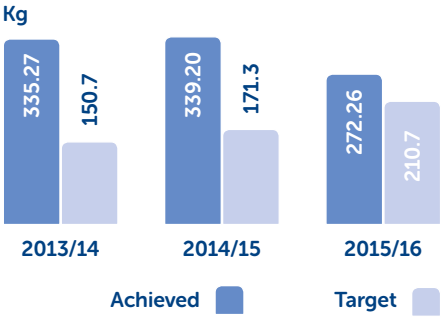
We are financially rewarded, or penalised, each year based on how we perform in terms of our leakage against a target that was set by Ofgem. A small amount of leakage per asset is expected, but each year we work towards a set target, taking into account the specific characteristics of our network.

Our SF_6 leakage for 2015/16 was 272.26kg, 61.56kg above the Ofgem agreed baseline target figure of 210.7kg. However, when compared to last year, when the loss figure was 339.2kg, this is a substantial decrease and represents a step in the right direction, particularly considering the expansion of our network and the increasing number of assets that use SF_6 as an insulator.

Over the course of the past year, we've worked hard to improve the accuracy of our reporting practices after a comprehensive review of our SF_6 reporting requirements indicated some errors in our allocation processes.

We are currently assessing potential alternatives to SF_6 with a number of suppliers, and are hopeful that we can find other viable options within this price control period.

SF_6 leakage



Case study
Project VISTA

Ofgem has provided an opportunity to apply for funding of up to £500m (2013–21) for TOs to reduce the visual impact of existing infrastructure in national parks, areas of outstanding natural beauty and national scenic areas.

Together with our stakeholders we have identified sections of our network which jar with the natural landscape; and developed ways to remove, reduce and divert attention from the infrastructure in these designated landscapes.

This learning has led to the creation of our policy and methodology to ensure selection of best value projects that will improve visual improvement amenity in sensitive areas.

Ofgem has now accepted our policy on the basis it will 'help ensure transparency' and make sure that 'projects under the scheme offer benefits and value for money for consumers'.

We are now undertaking further analysis and stakeholder consultation to develop and refine proposals.

For more information please visit the project's dedicated web page:

http://www.ssen-transmission.co.uk/information-centre/sustainability-and-environment/vista/


Scottish & Southern
Electricity
Powerin
commu
EMERGENCY LINE
0800 300 999
ssen.co.uk

Keeping people safe

Our vision is to continuously deliver safe outcomes for our people, our customers and the environment.

We passionately believe that all accidents are preventable, but that comes down to individual mindsets and the culture we put in place as an organisation is such that we can all talk openly about safety issues without assigning blame, managing risks and getting everyone involved across the board.

Safety starts with our Chief Executive and extends throughout and beyond our own company, to our contractors, and to the communities we work in. We all have a responsibility for keeping our colleagues, contractors and customers out of harm's way.

Every person who works on our behalf is empowered to stop if they believe something isn't safe, or they are not sure how to progress in a safe manner.

Case study
Outreach for engagement on safety

In 2014/15, the reported injury rates of our contractors were a cause for concern as it was marginally higher than that of our own staff.

To address this, our Safety Performance Manager visited several of our construction sites, inviting people to speak freely about safety and suggest how we could improve. The feedback from site workers suggested our approach to site safety focussed too heavily on identifying problems, rather than working constructively with contractors to find solutions.

We conducted an extensive research and engagement programme with contractors working on our largest capital project, the Caithness–Moray project, to consider, discuss and suggest solutions to a range of safety issues and challenges.

To consolidate the findings, we hosted an event with over 70 representatives from our contractors.

40% believed that sometimes health and safety rules are not really practical

30% said that due to adverse weather they have taken risks on the road just to get to site

83% found the event format useful in having their say

100% agreed the event was an effective way for SHE Transmission to engage with stakeholders

To take forward some of the suggestions provided by our contractors, we've committed to establishing a joint working group with all of our principal contractors, which include ABB, Balfour Beatty and Siemens. Collaboratively the group will develop and deliver a strategy based on the top recommendations put forward by our stakeholders in an effort to reduce the number of onsite injuries.

Our safety performance

It's not enough to follow systems and processes. Safety performance is determined by how we actually 'live' and 'act' these out.

Our Safety, Health and Environment Commitments

Policy

1. We promote effective communications, joint consultation and co-operation on Safety, Health and Environmental matters to give all employees, their representatives and contractors the opportunity to positively influence the way we work
2. All employees and contractors understand their responsibilities and the role they must play in delivering safe outcomes for our people, our customers and the environment

People

3. Direction, training, supervision and, where appropriate, specialist support is provided to employees and contractors to enable them to discharge their duty to work responsibly and with due consideration for Safety, Health and the Environment
4. Contractors, working on our behalf are competent to do so and have systems to comply with all relevant legislation, standards and procedures
5. Human factors are considered in the management of our operations

Processes

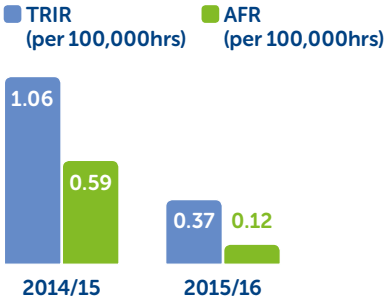
6. All Safety, Health and Environmental hazards are systematically identified
7. Safe systems of work are followed so that people are equipped to manage Safety, Health and Environmental risks and obligations
8. Controls for the safe operation of processes are applied

Our safety performance

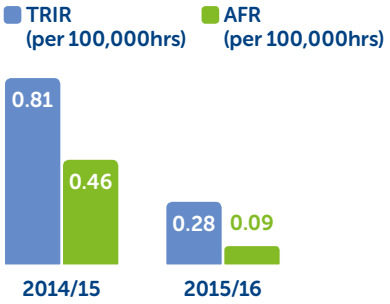
Major construction projects can pose particular health and safety risks which is why we have robust processes and procedures that our employees and contractors must follow. Due to a rise in contractor safety incidents, during 2015/16 we focussed on how we could improve, resulting in an injury free year on major transmission projects in the north of Scotland.

Our safety performance is measured using our Total Recordable Injury Rate (TRIR) and Accident Frequency Rate (AFR). TRIR is calculated by dividing the number of recordable injuries per every 100,000 hours worked. AFR takes into account the number of loss-times accidents divided by every 100,000 hours worked.

Contractors



Combined workforce of transmission employees in SSEN and contractors



Our safety target is

zero

incidents. We believe all accidents are preventable, so we do everything safely and responsibly, or not at all.

Case study Contractor Safety Forums

So that we achieve our objective of delivering a sustained improvement in Safety, Health and Environmental performance, Contractor Safety Forums have been established with some of our main contractors. The forums will meet on a quarterly basis to ensure specific Safety, Health and Environmental issues are regularly identified and monitored with contractors so that we can work together to resolve these issues in a constructive manner and contribute to the reduction of the TRIR of our contractors.

Recognising the difference in safety practices and procedures relating to the installation and maintenance of certain transmission infrastructure, the forums have been split into three distinct asset groups: high voltage transmission line (33kV to 400 kV), high voltage cable (33kV to 275kV) and substation (33kV to 400 kV).

The remit of the groups is to:

- work together to share best practice, safety innovations, intelligence sharing and lessons learned
- review and share approaches to managing common risks including safe working at height, slips trips and falls, plant and people segregation, working with electricity

Working together

Under the RIIO price controls all network operators are incentivised to become more responsive to the needs of customers and stakeholders and to engage effectively with them to help inform how they plan and run their businesses. We recognise that this requirement is key to ensuring we are accountable and responsive to the communities we serve.

Since the start of RIIO-T1, we've been making a number of changes that allow our stakeholders' views to be heard and acted upon at all levels within our business, and you can see how we've performed in our end of year submissions to Ofgem:

https://www.ssepd.co.uk/Library/stakeholderEngagementPublications/

This year we've continued with our three-tiered approach, focussing on the key issues affecting our stakeholder groups on an **operational**, **organisational** and **strategic** basis. We've engaged extensively with contractors to improve our approach to working safely on our construction sites; worked constructively with a range of organisations to help mitigate the visual impact of some of our assets; and improved our communications offering with the introduction of our award winning quarterly newsletter, OpenLines.

+/-0.5%

of annual allowed revenue – the maximum financial reward, or fine, we can make each year from the stakeholder engagement reward

£200,000+

the amount of money we'll be giving back to stakeholders from our 2015/16 performance

Giving back to stakeholders

We believe that the value of stakeholder engagement extends far beyond the rewards available from the Stakeholder Engagement Reward. We also know that investing directly in the communities we serve – beyond our commitments to invest in our networks – is hugely beneficial both for the people we serve and for our organisation, not least in relation to building trust.

Considering these matters, we have decided to donate a third of our income from the Transmission Stakeholder Incentives to our communities, through SSEN's existing and well respected Community Resilience Funds.

The funds are available across all our network regions and are designed to support our communities, particularly vulnerable or isolated people, to help them prepare for extreme weather events.

The third of our income from our Transmission Stakeholder Engagement Reward will be donated to the fund that supports our north of Scotland customers.

Our incentive performance

	How we did 2013/14	How we did 2014/15	How we did 2015/16
Stakeholder engagement reward The annual stakeholder engagement incentive involves the submission of two written documents – an overview of our strategy and a summary of the activities and outcomes we've achieved as a result. Both are then assessed, firstly by Ofgem, and then by an independent stakeholder panel, who assess the quality of our engagement.	5.4/10	6.0/10	6.0/10
Stakeholder satisfaction The stakeholder satisfaction incentive encourages TOs to be more outwardly focused and responsive to changing stakeholder needs. The incentive is made up of three different elements.			
Stakeholder satisfaction survey Our annual survey invites stakeholders to let us know how we are performing across a range of measures, as well as asking stakeholders to rate their overall satisfaction with us.	6.5/10	7.7/10	8.2/10
Stakeholder key performance indicators Our KPIs are the measure by which customers and other stakeholders, including Ofgem, are able to understand and monitor the quality of service that we provide. These targets are intended to challenge the way we operate to continually improve our service.	91%	86%	76%
Stakeholder external assurance Each year our stakeholder engagement activities undergo an external audit to make sure we are delivering the commitments we make in our engagement strategy and implementation plan. Our performance is assessed as noncompliant, compliant or exceeding compliance.	0.5 (compliant)	1 (Exceeded compliance)	0.5 (compliant)

Increasing diversity on our Board

In the past, people with engineering and financial backgrounds have dominated the make-up of our Board. To make our top-level decision makers more representative of the communities we serve, we've appointed SSE plc's Director of Sustainability to sit alongside our existing non-executive directors and help ensure we deliver a consumer focused, socially responsible and sustainable energy service.

Establishing a Stakeholder Advisory Panel

In April 2016, a revolutionary change to the way SSEN engages with its stakeholders was approved by our Board, allowing for the establishment of a Stakeholder Advisory Panel during the 2016/2017 business year.

The panel will be made up of individuals from outside the company whose diverse range of skills and experience will allow for the views of a wide range of stakeholders to be considered at the highest level of decision making within the business.

Following its inception, the panel will provide regular feedback to our Board on its performance in relation to delivering its publicly stated business plan commitments. It will then provide an annual report to the Board, setting out its views on how effectively SSEN has delivered on its business plan commitments for each year.

Once established later in 2016, the Advisory Panel will become a vital check on our activities, helping to review and monitor our performance year-on-year.

Redefining our service value

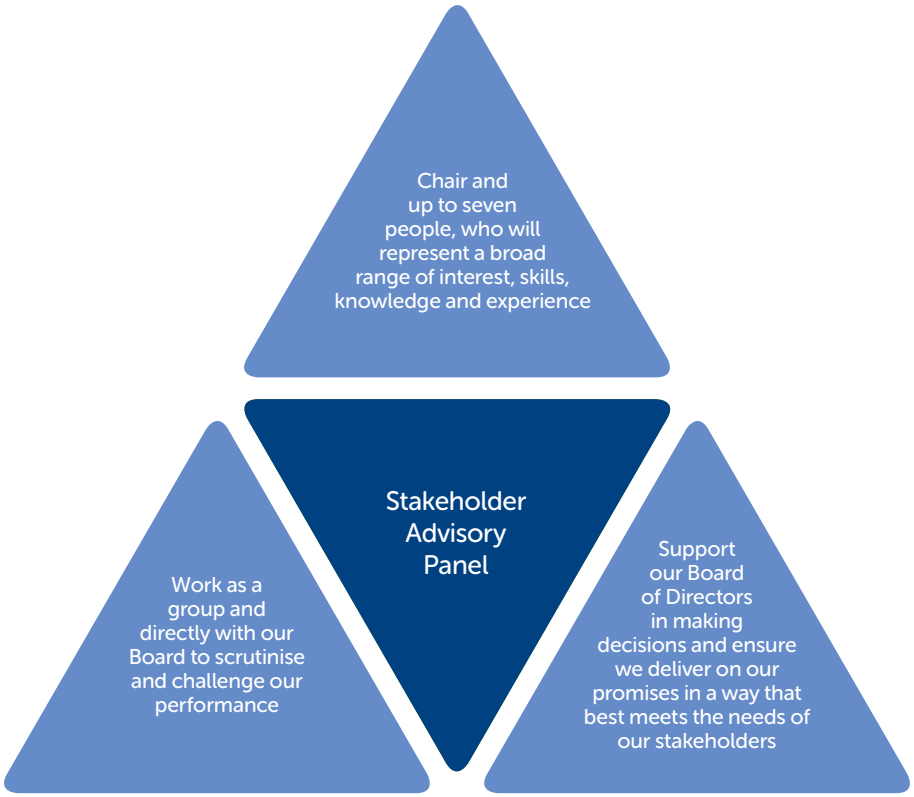
Engagement with stakeholders is undertaken in line with a set of six Engagement Values based on the SSE SET values of Safety, Service, Efficiency, Sustainability, Excellent and Teamwork. SSE's Service value was publicly redefined in October 2015 to emphasise that: "We put the current and future needs of customers at the heart of everything we do."

By defining this value, keeping it clear and simply-stated, SSEN ensures that customers are an integral part of our business.

"Over the last three years, the SSE group has been re-shaped. Our Networks businesses are much more explicitly centred on customers.

"The new definition is clear and simply-stated, and puts the onus on all of us in SSE to make sure the current and future needs of customers are at the centre of our business."

Chief Executive, SSE plc
Alistair Phillips-Davies



Approach to engagement

When it comes to engagement our three level methodology makes sure our activities address the biggest issues our business faces – like how we keep bills as low as possible – as well as local issues that affect our customers' everyday lives.
By doing that we will make sure that we deliver on our RIIO-T1 Business Plan commitments in a way that is responsive to the changing needs of our stakeholders.

Strategic
Concentrating on engagement with Scottish and UK governments and with the European Parliament. Outcomes are typically effected via changes to primary or secondary legislation or via licence changes.

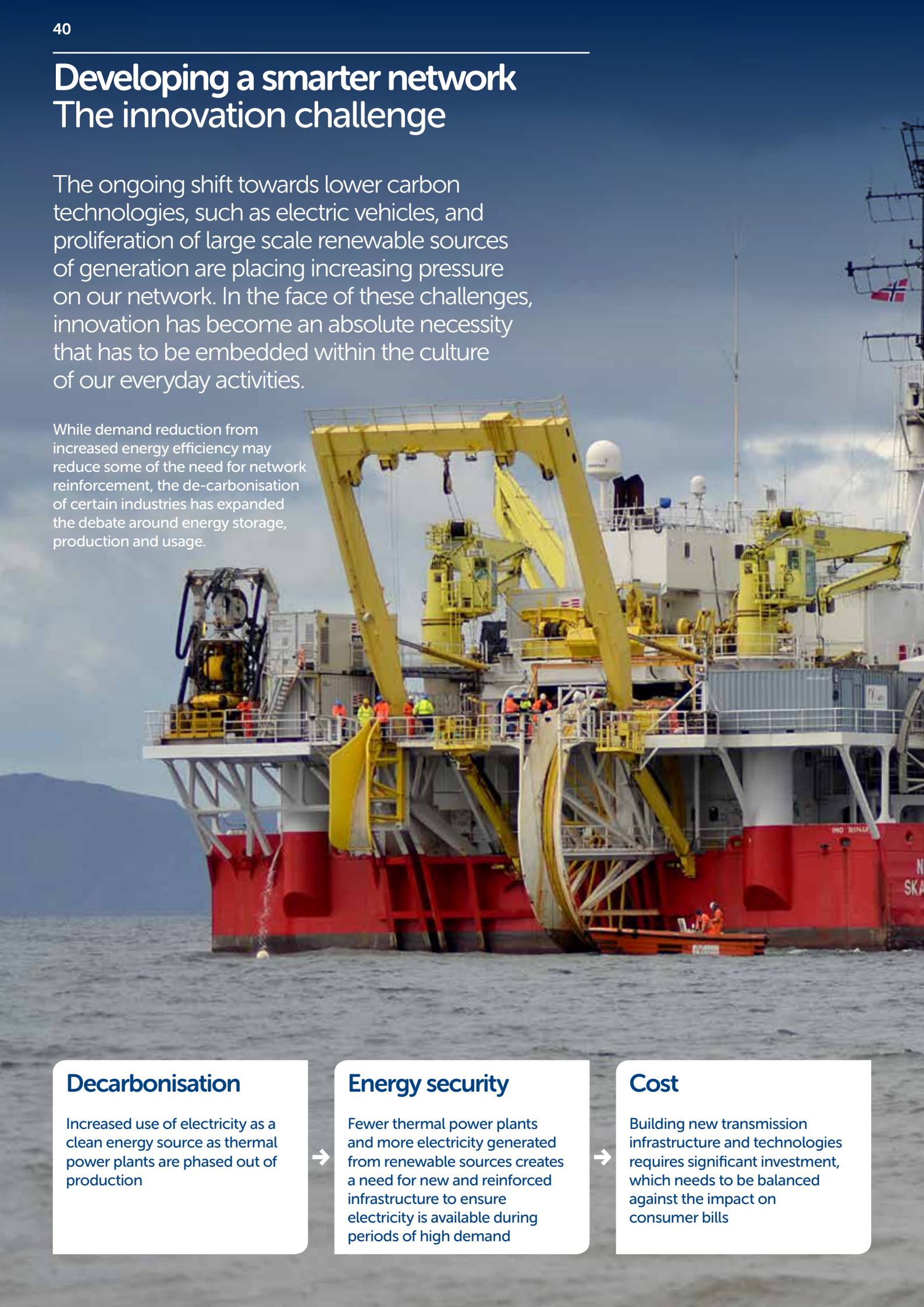
Organisational
Focusing on national organisations and regional bodies such as local authorities, and with outcomes typically delivered via new working practices, policies or procedures.

Operational
Encompassing a wide range of stakeholders with a strong focus on communities, customers and contractors, these activities will often have outcomes that affect how we deliver services and work with communities.

Developing a smarter network
The innovation challenge

The ongoing shift towards lower carbon technologies, such as electric vehicles, and proliferation of large scale renewable sources of generation are placing increasing pressure on our network. In the face of these challenges, innovation has become an absolute necessity that has to be embedded within the culture of our everyday activities.

While demand reduction from increased energy efficiency may reduce some of the need for network reinforcement, the de-carbonisation of certain industries has expanded the debate around energy storage, production and usage.



Decarbonisation

Increased use of electricity as a clean energy source as thermal power plants are phased out of production

→

Energy security

Fewer thermal power plants and more electricity generated from renewable sources creates a need for new and reinforced infrastructure to ensure electricity is available during periods of high demand

→

Cost

Building new transmission infrastructure and technologies requires significant investment, which needs to be balanced against the impact on consumer bills

Our innovation strategy

£81m

The amount of annual funding available to TOs as part of the Network Innovation Competition – innovation projects which help all network operators understand what they need to do to provide environmental benefits, cost reductions and security of supply.

Some of our key innovation projects

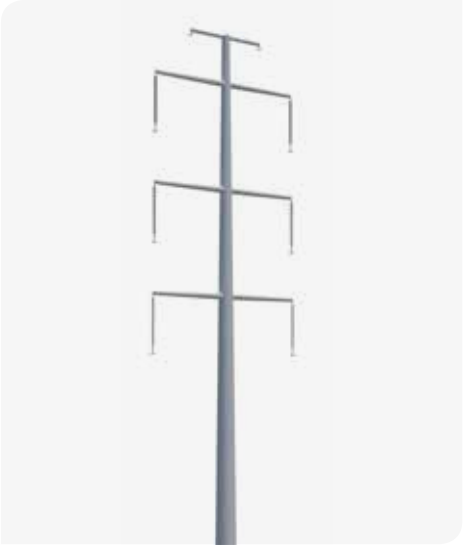
New Suite of Transmission Structures (NeSTS)

The increase in renewable generation is driving the need for new overhead transmission lines, often in remote areas with limited infrastructure and challenging construction and operational conditions.

Transmission structure design in GB has not changed significantly over the past 85 years, despite a number of innovations which could reduce the visual and construction impacts of overhead lines on the environment.

We're pleased to have been awarded more than £6.6m from Ofgem for our NeSTS project, to develop a new range of structure designs in collaboration with our stakeholders which are better for the environment.

£174m potential savings for customers by 2050



The National HVDC Centre

High Voltage Direct Current (HVDC) is the most efficient way to transport electricity over very long distances; however it's a complex technology requiring in depth study to test its compatibility with the GB grid.

In response to growing numbers of subsea cables using this technology, as well as an increase in interconnectors linking GB to the electricity markets on the European continent, we are building the world-leading state-of-the-art National HVDC Centre in Cumbernauld to support, de-risk and train engineers on HVDC operation.

Opening in 2017, it will be an invaluable tool for system planners, asset owners and operators for the study of HVDC Transmission in GB for decades to come.

Reduce the cost, increase the efficiency and de-risk GB's investment in HVDC systems

High temperature, low sag conductors

As part of the overhead line works on our Bhlariadh–Beinneun scheme, we're currently installing the first high temperature, low sag, composite conductor on our HV network. The ACCC Monte Carlo will allow us to carry twice the capacity of the existing overhead line.

Although the existing 132kV overhead line was built in 1954, because of its high strength carbon core, the new conductor will allow us to reutilise the existing towers, with minimum steel strengthening required for the increase in circuit capacity.

The conductor and line hardware has gone through a full type test programme to determine its suitability for the Bhlariadh–Beinneun project. A successful technical approval process will also allow the conductor to be used more widely across our network on similar overhead line projects.

Up to twice the current of conventional steel reinforced conductors

Reduction in line losses by 30-40%

Media enquiries should be directed
to SSE's Press Office on
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Investor enquiries should be emailed to
ir@sse.com

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Scottish & Southern
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