Electricity Transmission

Delivering our environmental future

Our sustainability strategy

nationalgrid

March 2019

About us

We are National Grid Electricity Transmission (NGET). We own and maintain the high-voltage electricity transmission network in England and Wales. That includes around 7,200 kilometres of overhead line, about 650 kilometres of underground cable and 346 substations.

We move electricity from where it's generated, down the 'motorway' of the electricity system, to our direct customers and to the distribution companies who deliver that power to homes and businesses. We play a vital role in connecting millions of people to the energy they use, safely, reliably and efficiently.

Our environmental strategy

The transition to a low-carbon economy is one of the defining issues of the 21st century. Rapid progress towards clean, low-carbon energy is needed to meet the global ambition to limit warming to just below two degrees, and pursue efforts to limit global warming to 1.5C above pre-industrial levels. In 2018, the Intergovernmental Panel on Climate Change (IPCC) clearly laid out the case for limiting warming further to avoid the worst effects of climate change.

National Grid Electricity Transmission is at the heart of decarbonisation. The energy sector has been fundamental in helping the UK to achieve the carbon reductions made to date, with 75% of emission reductions since 2012 coming from the power sector. Britain has produced record amounts of renewably-generated electricity and National Grid Electricity Transmission has been instrumental in connecting these new sources of low-carbon generation to the network. Today, the UK is a world leader in the adoption of low carbon energy, with renewables accounting for around 35% of installed generation.

There is a need for unprecedented change. In Electricity Transmission, we have already started on this journey. From a baseline of 2012/13, we have reduced our controllable carbon footprint by 15%. In 2016/17 we were the first transmission network in Europe to trial an innovative alternative to SF_6: Green Gas for Grid in our Sellindge substation in Kent. This new gas mixture reduces the Global warming Potential (GWP) ratio from 22,800 to 345. In 2017/18, we worked with key industry players to develop a proposal for a strategic EV charging network across England and Wales. This would cover 99% of the strategic road network over 54 sites. We have also undertaken a comprehensive programme to improve our customer application process. We recognise the importance of delivering low carbon energy connections as quickly as possible.

I'm extremely proud of our delivery track record. These are only a few of our achievements to date, but it highlights our ambition and commitment to be a sustainable energy network for our customers and consumers, and lead the way to achieve the decarbonisation of energy.

Looking to the future, the continuing move towards decarbonising the UK economy is creating a more prominent role for electricity networks. Given this, our stakeholders have told us this is a priority and want to see clarity on ET's contribution to decarbonisation. We have therefore published our own environmental strategy, with clear targets, so that stakeholders visibly recognise Electricity Transmission's commitment and contribution to climate change and decarbonisation objectives. This is in addition to those targets set by National Grid's group sustainability strategy, Our Contribution.

Our business is serious about advancing a low-carbon future. We will deliver on this pledge by committing to an environmental sustainability strategy with three key pillars: Our planet; Our future; Our energy. Within them, there are focus areas including: reducing our carbon footprint by 20%, innovating to find new solutions for a low-carbon future and increasing developer's visibility to network capacity. We will review these targets regularly, and annually report on them so stakeholders can regularly monitor our progress.

We have made great progress to support the decarbonisation of society in the last few years. I'm really excited about what we can achieve in the next three and beyond. We don't have all the answers yet, there is still a way to go. This is the latest step on our journey for chartering a course for how we, as National Grid Electricity Transmission, will make our contribution to advancing the low-carbon transition.

David Wright,
Director of Electricity Transmission and Group Electricity Engineer

What have we achieved so far?

Our planet

15%

reduction in controllable carbon (from a **2012/13** baseline)

37%

reduction in the carbon intensity of our construction design (from a **2015/16** baseline)

100%

In 2017, we committed to convert 100% of our commercial fleet with Alternative Fuel Vehicles **by 2030**

95%

of our **operational waste** is currently being diverted from landfill

21

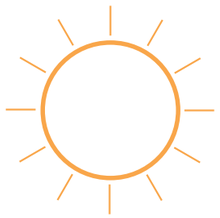
sites (out of <300) in electricity transmission land have been enhanced with a natural capital approach (since 2015/16)

2017

In 2017, we committed to **drive net gain** in environmental value on major infrastructure projects by 2020

Four

protected landscapes have been selected by the **VIP Stakeholder Advisory Group** for visual enhancement work



Our future

We were the first transmission system operator to trial an innovative alternative to SF_6:

Green Gas for Grid

in 2016/17

Since 2015 we've been working on

The Deeside Project

which aims to be the first facility in Europe where we can research and develop unconventional technologies and practices

In **2017/18**, we mapped

54

motorway sites close to existing infrastructure that could allow for the establishment of **rapid-recharge stations** for electric vehicles.

In 2017, we committed to implement

Carbon Pricing

on all major investment decisions by 2020

Since 2015 we've been using a

5%

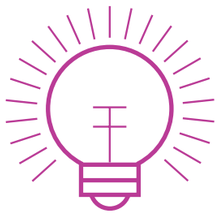
carbon weighting on our major infrastructure projects procurement tenders

In 2017/18 we achieved a customer satisfaction score of

7.7

and stakeholder satisfaction score of

7.8



Our energy

We actively participate in the

Energy Networks Association Open Networks Project

Working Groups to produce whole system outcomes

We have provided

10 out of 12

DNOs with a materiality headroom and an understanding of further capacity in the system

In 2017/18 we've developed the Grid Supply Point Embedded

Generation Capacity Heat Map

for developers to understand where there are capability constraints in the network

We've improved our customer application process, reducing the average time to produce a connection offer from **89 days** to

60 days

in 2017/18

To ensure we can continue to operate the system in the future, **economically and efficiently**, our

Network Development Strategy

considers a variety of generation mixes and a future energy pathways

Performance statistics above relate to the period up to the financial year 2017/18

External context

The transition to a low-carbon economy is gathering pace. The Paris Agreement, the plunging cost of renewables, the rise of batteries and electric vehicles, and widespread policy action across the globe are all contributing to this acceleration.

These landscape changes are affecting the way energy is generated, transported and consumed. This can be summarised by five focal trends:

Decarbonisation

Climate change is recognised as the most serious and threatening global environmental problem. There is a pressing need for the UK to increase the pace of decarbonisation to reduce or remove greenhouse gas emissions. Since 2012, 75% of emission reductions in the UK have come from the power sector.

Decentralisation

Advances in technology for smaller forms of generation such as solar have driven significant changes in supply and demand patterns. Larger amounts of electricity are being connected to Distribution Networks.

Digitalisation

The world is becoming increasingly connected. This is empowering consumers and disrupting traditional business models across almost every sector. New technologies and business models have the potential to transform how we consume electricity. In energy, we are seeing new businesses capitalising on everything from smart meters to the use of sensors, data collection and analytics (otherwise known as the ‘internet of things’).

Democratisation

There is a surge of bottom-up initiatives by local communities to own their energy. Millions of people can now generate their own electricity, courtesy of the rapid development of small-scale renewable technologies. However, access to land, raising capital and obtaining planning permission continue to be barriers to community renewable energy projects in England and Wales.

Electrification

Looking to the future, there is considerable role for the electricity system in decarbonising transport and potentially heat. However, exactly how that will happen, and the speed at which it will occur, remain uncertain.

Our sustainability house

National Grid Electricity Transmission is owned by National Grid Group PLC. National Grid Group drives the group's sustainability agenda and has overall responsibility for our sustainability performance. This is embedded through our purpose and vision: bringing energy to life, and via the Group's Sustainability Strategy: Our Contribution.

The **Group Safety, Environment and Health (SEH) Committee** is the key governance body for sustainability at Group level. It has direct responsibility for the company's operations on the environment, including carbon emissions, and how the company adapts its business in light of climate change.

The **UK Safety, Health and Environment Committee (UK SHE)** is responsible for reviewing the strategies, policies, initiatives, risk and exposure, targets and performance of the UK businesses, and where appropriate, suppliers and contractors.

Each business unit management team is responsible for contributing to the Group-wide targets, while also tailoring their actions to their own specific needs. This decentralised approach enables business units to take further action to enhance sustainability.

National Grid Electricity Transmission has a separate Board, separate sub-committees and management committees. Under this structure, the Director of Electricity Transmission has responsibility for implementing the sustainability strategy within Electricity Transmission.

The **ET Safety, Health and Environment Committee (ET SHE)** is responsible for overseeing the delivery of National Grid's Group and Electricity Transmission sustainability strategy, and ensuring high levels of environmental management in ET are maintained.

The **Central Safety, Health and Sustainability Team** are responsible for defining, implementing and communicating a Group and UK Environment and Sustainability Strategy. They also support business units in driving continual improvement in environmental and sustainability performance, providing expert advice and support.

To make National Grid an environmentally sustainable organisation, we need the engagement, support and passion of employees from across the business. The **Network of Sustainability Champions** are responsible for circulating key messages and communications locally (including Electricity Transmission), by sending information to their wider team and supporting wider campaigns.

Overall, we believe that everyone is responsible for good environmental performance and embedding sustainable business practices. Every employee in National Grid is responsible for ensuring that our actions and behaviours prevent harm, seek to enhance the environment and drive sustainable business practices from our operations – this is set by our Corporate Environment Policy.

Defining our environmental priorities

Biggest risks and opportunities

We're in the middle of an energy revolution driven by climate change, new technologies and more empowered and better connected consumers. We can see these changes as a challenge, but also as a significant opportunity. We want to develop a sustainable electricity network, in which low-carbon, low-cost solutions can be easily, efficiently and quickly deployed.

We face the challenge of adapting our networks to meet new customer-driven sustainability demands. For us this involves acting on feedback, but also means acting on opportunities early. The energy transition is inevitable, so we see 'today' as the time to act and to develop low-carbon solutions for present and future consumers.

In addition, we will continue embedding sustainability ourselves. We see the value in operating in an environmentally responsible way. We know that we can save money, do the right thing for society and help combat climate change by reducing our own greenhouse gas emissions. Being a sustainable business provides the essential foundation to create a resilient business that will make possible the energy systems of tomorrow.

UN Sustainable Development Goals

We have also chosen key areas of focus which align with our skills and impact, using the UN Sustainable Development Goals (SDGS) as the blueprint to achieve a better and more sustainable future.

In 2016 the United Nation's 17 Sustainable Development Goals (SDGs) to 'transform our world' officially came into force. These goals promote prosperity while protecting the planet.

All of these goals are vitally important to the future social and environmental wellbeing of people and of the planet. However, there are a number that we, as National Grid Electricity Transmission, have a very direct positive impact on and they are aligned to our purpose and/or areas of materiality, namely;

United Nation's Sustainable Development Goals

Goal 7
Ensure access to affordable, reliable, sustainable and modern energy for all

Goal 8
Promote inclusive and sustainable economic growth, employment and decent work for all

Goal 9
Build resilient infrastructure, promote sustainable industrialisation and foster innovation

Goal 12
Ensure sustainable consumption and production patterns

Goal 13
Take urgent action to combat climate change and its impacts

Goal 15
Sustainably manage forests, combat desertification, halt and reverse land degradation, halt biodiversity loss

The importance of stakeholder engagement

We have defined Electricity Transmission's environmental priorities by considering the issues that are important to stakeholders. Dialogue with stakeholders is fundamental to understanding which sustainability themes need addressing. Our stakeholders fully expect National Grid to operate sustainably and they want us to lead the way in facilitating the decarbonisation of energy.

Since 2017, we have carried our regular engagement activities, including environmental themed workshops, consultations and business as usual discussions with stakeholders to feed into our roadmap for positive change.

As part of this engagement, 11 consumer and stakeholder priorities have been identified:

"I want a sustainable energy system"

"I want you to enable the ongoing transition towards the energy system of the future"

"I want you to care for communities and the environment"

are three of eleven Electricity Transmission customer and stakeholder driven priorities.

This environmental strategy aims to start building a sustainable future and delivering on what is important to them.

Consumer priorities

I want an affordable energy bill	I want to use energy as and when I want it	I want a sustainable energy system

Stakeholder priorities

I want you to provide a safe and reliable network, so that electricity is there whenever I want it	I want you to make it easy for me to connect to and use the electricity network	I want you to be transparent	I want you to enable the on-going transition towards the energy system of the future
I want your network to be protected from external threats	I want you to care for communities and the environment	I want you to be innovative	I want you to provide value for money

Our areas of focus up to 2021

Our strategic vision is to build a sustainable electricity network which makes a positive contribution to the environment and which makes possible the energy systems of the future.

To this end, we have developed an integrated strategy based on three fundamental pillars:

Our planet; Our future; Our energy.

We'll continuously review, improve and develop our processes to meet our industry's many different challenges and targets. We will implement projects that will make a positive environmental impact, make our business 'future-proof' by embedding sustainability into our decision making and ways of working, and deliver projects that contribute to the attainment of low-carbon energy. These are set by nine key focus areas and three important foundations:

Our planet

We will make a positive contribution to the environment. We are going to:

- Reduce our controllable carbon footprint
- Safeguard responsible resource use
- Care for the natural environment

Our future

We will prepare our network to be fit for a low-carbon future. We are going to:

- Innovate to find sustainable solutions
- Consider the changing needs of our customers and stakeholders in the future of energy
- Include sustainability early in our decision-making

Our energy

We will enable the decarbonisation of the electricity system. We will actively play a role in:

- Facilitating whole system outcomes
- Connecting low-carbon generation
- Considering alternatives to traditional network development

We will:

- Consistently maintain outstanding levels of environmental management
- Continuously exceed the expectation of our customers, stakeholders and communities
- Prepare for a low-carbon future in the most cost-efficient way

Our planet:
We will make a positive contribution to the environment.

The natural world is facing great challenges. Human-induced environmental change is occurring at an unprecedented scale. Some of the challenges include the irreversible impacts of climate change, using more resources in a year than the world can replenish, and the degradation of the natural environment.

As an electricity network, we have the potential to have an impact on the environment in a number of ways. This is directly through our day-to-day operations and our construction work. Our goal is to operate our business in a responsible manner and respond to these global challenges in a way that reduces costs, minimises risk and continues to deliver the service our customers rely on.

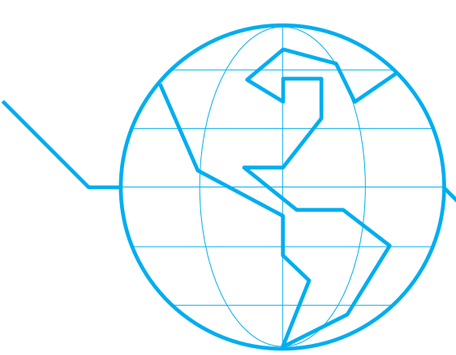
We are going to:

Reduce our controllable carbon footprint: We will reduce the greenhouse gas emissions from our processes, operations and offices. We've been examining the end-to-end construction of our assets to see where we can reduce greenhouse gas emissions. Within our own operations, we're pushing ahead with new trials, such as low-emissions alternative to insulating gas SF_6 (other than G^3) and moving our fleet to Alternative Fuel Vehicles (AFVs).

Safeguard responsible resource use: To build and maintain energy networks that perform safely and reliably, we need to use finite – or non-renewable resources, such as steel for pylons, aluminium for overhead line conductors and copper in transformers. We will continue to divert as much of our waste from landfill as it's economically feasible. We are also finding new ways to reuse and recycle recovered assets, as well as reducing the resources we use and the waste we generate.

Care for the natural environment: We own approximately 5,000 hectares of land, including more than 300 substations and the non-operational land that surrounds them. This gives us a great opportunity to use this land in a positive way for the environment and for the communities where we work. It's important that we manage the land we own in ways that deliver the greatest value to us and our stakeholders, and to the wider environment in which we operate. By taking a collaborative approach, we will deliver significant benefits, including improved biodiversity and habitats.

Consistently maintain outstanding levels of environmental management: Our aim is to be a leader in the development and operation of safe, reliable and sustainable energy systems to meet the needs of our customers, and communities.



Our 2021 planet ambition

Reduce our controllable business carbon footprint

20%

from a **2012/13** baseline (excluding losses)

Reduce the **carbon intensity** of our construction design by

50%

from a **2015/16** baseline

Deploy

30

electric vans in ET's commercial fleet (100% replacement by 2030)

Maintain a **landfill diversion** rate of

95%

from our operational waste

Enhance the **value of our natural assets** on more than

30 sites

Drive net gain

in environmental value (including biodiversity) on major construction projects

Begin work to reduce the

visual impact

of **existing transmission assets** in at least one AONB/ National park

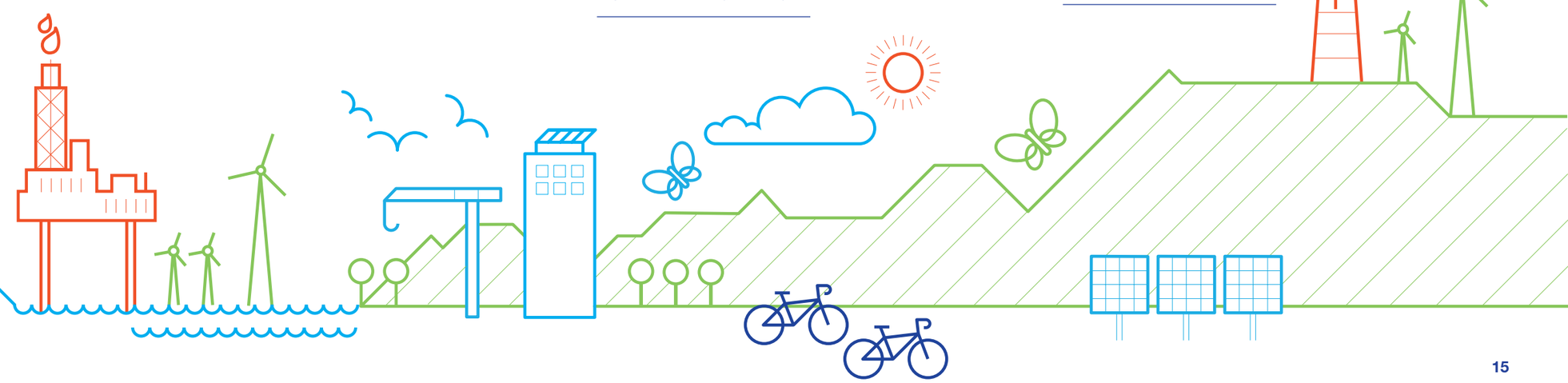
Maintain certification

to ISO 14001:2015 **Environmental Management Standard**

Protect communities and sensitive areas by ensuring

100%

of **our assets**, on our land, are adequately risk-assessed



Our future:
We will prepare our network to be fit for a low-carbon future.

We need to make a shift to a low-carbon economy and recognise business needs to lead the way. We share a collective responsibility to review our own operations and customer base, and consider how these are going to change.

Because the life-span of our projects can be up to 40 years, the future impact of our current investment decisions need to be considered. The decisions we make today are going to shape the infrastructure we have as a country up to and beyond 2050. We have an obligation to embed sustainability systematically within our business.

Radical changes are also occurring across the whole economy due to efforts to reduce emissions. Innovations such as electric vehicles are no longer confined to research centres. It is essential for us to understand how transport and other sectors are changing so that we can support them and accelerate the deployment of new solutions to deliver positive social and environmental outcomes.

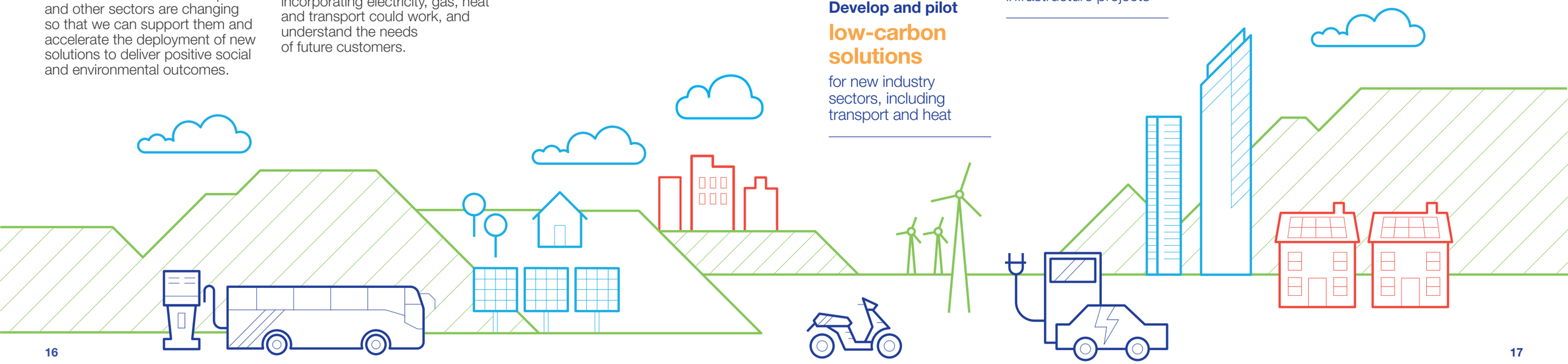
We are going to:

Innovate to find new solutions for a low-carbon future: Delivering a clean energy future means exploring new, innovative engineering solutions. We believe this can only be done by working collaboratively with stakeholders, researches and small to medium size businesses to accelerate the implementation of new environmental and low-carbon technologies.

Consider the changing needs of our customers and stakeholders in the future of energy: Our customers increasingly want low-cost solutions that can be easily, efficiently and quickly deployed, and are modular and can cope with changing needs. As the energy system becomes more interdependent, we will critically consider how an integrated energy network incorporating electricity, gas, heat and transport could work, and understand the needs of future customers.

Include sustainability in our decision-making: As a business, we make decisions daily. We are continually investing in the maintenance and modernisation of our network. To ensure we continually build a sustainable network, we will put sustainability at the heart of our decision making.

Continuously exceed the expectation of our customers, stakeholders and communities: We will strive to deliver high value, quality products and services that meet exceed the expectations of our customer and stakeholders.



Our 2021 future ambition

Investigate and **trial alternatives to gases** (i.e SF_6) with a lower **Global Warming Potential** and share progress for transmission applications with industry

Work collaboratively with research partners to **accelerate the implementation** of new environmental and low-carbon technologies

Develop and pilot low-carbon solutions for new industry sectors, including transport and heat

As new sectors seek electrification of processes to **achieve decarbonisation,** work closely with industry to obtain an **improved understanding** of the needs of future customers

Include **carbon and environmental considerations,** as part of the **evaluation criteria** in our procurement tenders (where material) beyond just major infrastructure projects

Ensure **environmental risk** and consequences, along with other factors, are considered in **our decision-making** for load-related asset health interventions

Continuously **improve customer and stakeholder satisfaction**

Implement **carbon pricing** on all **major decisions**

Our energy:
We will enable the decarbonisation of the electricity system.

Energy matters. Energy drives our economy and sustains our society. But for too long, energy production and use has been the largest source of global greenhouse-gas (GHG) emissions.

We are at the heart of one of the greatest challenges facing our society – delivering clean energy to support our world long into the future. We are working to meet ambitious low-carbon energy targets and connect new sources of energy to the people who use them.

Over the next decade, we will lose existing generation capacity as old or more polluting plants closes. Our responsibility is to accommodate increasing levels of renewables and other generation by expanding electricity network capacity at an optimal cost for consumers.

We will support the UK's move to a decarbonised economy and provide sustainable energy to empower people, businesses and societies, helping to the unleash their potential without having to worry about harming the planet.

We will actively play a role in:

Facilitating whole system outcomes: The way we generate and use electricity is changing. We will work with all stakeholders to facilitate whole system outcomes. We need a whole system approach with our stakeholders to deliver services efficiently and effectively and in a way, that drive the most value to consumers.

Connecting low-carbon generation: Renewable energy resources – solar, wind, hydro are growing at an increasing rate. Expanding and upgrading the electricity transmission network is needed to ensure more of this clean energy can have access to market. We will support our customers in the connection of new cleaner forms of energy, and deliver new processes which make it easier to deliver sustainable and climate-friendly energy supply.

Considering alternatives to network development: To mitigate potentially long lead times for expanding transmission capacity, we will develop a flexible electricity grid to take full advantage of large amounts of existing infrastructure. We will also introduce advanced technological solutions, to reduce the need for carbon and time intensive built options.

Preparing for a low-carbon future in the most cost-efficient way: To achieve low-carbon ambitions, significant investment in energy networks is needed. These reinforcements will only be developed in such a manner to ensure that options for future development are maintained at minimum whole-life cost.

Our 2021 energy ambition

Reduce **transmission related constraints** by continuing to **work closely** with stakeholders on establishing Appendix G trials (development of materiality limits) as an industry code

Increase network **capacity visibility** through the development of our **network capacity heatmap**

Use our **non-operational land** and existing assets to **facilitate new connections** including renewables, storage assets and community energy connections

Deliver **system flexibility** by deploying **new 'non-built' alternatives** alongside conventional reinforcement into our network

Provide connections that are faster, by **reducing the average time** to develop a customer offer from **90 to 55 days**

When we invest to strengthen the **capacity of our network**, do so at a minimum whole-life cost for the **benefit of consumers**

Measuring progress

To update stakeholders on our performance, we will be reporting on our progress, successes and insights via our 'Delivering our environmental future' annual statement which will be published in July every year up until 2021.

Updates will also be provided along the way via our website:
https://www.nationalgridet.com/working-together/our-environmental-future

Our priorities	Areas of focus	Metrics
Our planet: we will make a positive contribution to the environment	**1.** Reduction in controllable carbon footprint by 20% **2.** Reduction in carbon intensity of construction design by 50% **3.** Deployment of 30 Alternative Fuel Vehicles **4.** Landfill diversion rate of 95% **5.** Enhancing the value of natural assets in more than 30 sites **6.** Net environmental gain on construction **7.** Reducing the visual impact of our transmission assets in at least one AONB/national park **8.** Maintaining certification to ISO 14001:2015 **9.** Risk assessment of 100% of our assets, on our land	**1.** (% reduction) in tonnes of CO_2e **2.** (% reduction) in CO_2e/£m **3.** # of AFVs trialled **4.** % of waste diverted from landfill (in tonnes of waste) **5.** # of sites enhanced **6.** Units of net gain achieved **7.** # of AONB/national parks that have begun construction work **8.** Certification to ISO14001:2015 **9.** % of assets risk assessed
Our future: we will prepare our network to be fit for a low-carbon future	**10.** Investigating and trailing alternatives to gases (i.e SF_6) **11.** Implementation of new environmental and low-carbon technologies **12.** Pilot low-carbon solutions for new industry sectors **13.** Work closely with industry to obtain an improved understanding of the needs of future customers **14.** Implement carbon pricing on all major investment decisions **15.** Include carbon and environmental considerations as part of the evaluation criteria in our procurement tenders **16.** Embed environmental risk and consequences in load related asset health interventions **17.** Continuously improve customer and stakeholder satisfaction score	**10.** Status of SF_6 alternatives trial **11.** Status of collaborative projects with research partners **12.** # of pilots **13.** # of conversations with industry **14.** 100% compliance on projects >£7.5m by 2020 **15.** # of tenders (outside of major infrastructure tenders) **16.** Decision making framework established **17.** Incremental improvement, dependent on year on year performance (score out of ten)
Our energy: we will enable the decarbonisation of the electricity system	**18.** Reduce transmission related constraints by continuing to work closely with Distribution Network Operators on the development of materiality limits **19.** Increase network capacity visibility via our Network Capacity Heatmap **20.** Reduce the average time to develop a customer connection offer from 89 to 55 days **21.** Use our non-operational land and existing assets to facilitate new connections **22.** Deliver system flexibility by deploying new 'non-built' alternatives **23.** Invest to strengthen the capacity of our network, at a minimum whole-life cost	**18.** Status of Appendix G trials **19.** Increased functionality (# of new functions/ updates to the map) **20.** # of average days to develop a customer connection offer **21.** Status of use of non-operational land **22.** # of 'non-built' alternatives deployed **23.** Investment report (from Transmission reinforcements tested against a range of energy scenarios)

Contact us

We'd really like to hear from you – our communities, consumers, customers, employees, investors and stakeholders.

CDP DISCLOSURE INSIGHT ACTION A LIST 2018 CLIMATE CHANGE

We are a Living Wage Employer

We want to make sure we're focusing on the right areas and delivering the right results. We've specially like to receive your views on these four questions:

- Do you think the areas of focus outlined in our strategy are the right areas?
- Is there an environmental priority that you think should be included in our strategy?
- Are there any areas of focus/ priorities that eyou think is missing from this strategy?
- Is there anything else you would like to comment or share with us?

We invite you to get in touch via e-mail:
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