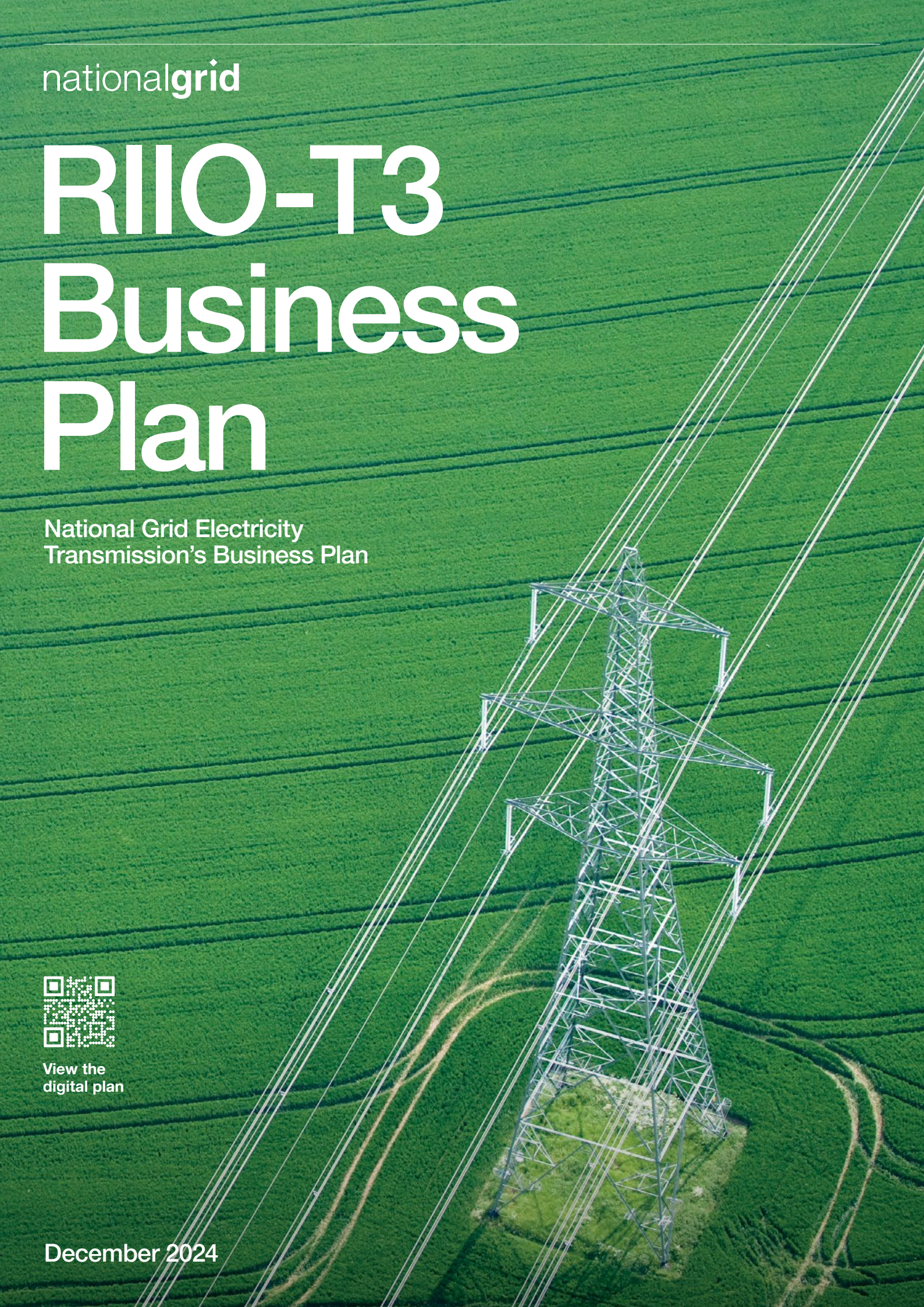
nationalgrid

RIIO-T3 Business Plan

National Grid Electricity Transmission's Business Plan

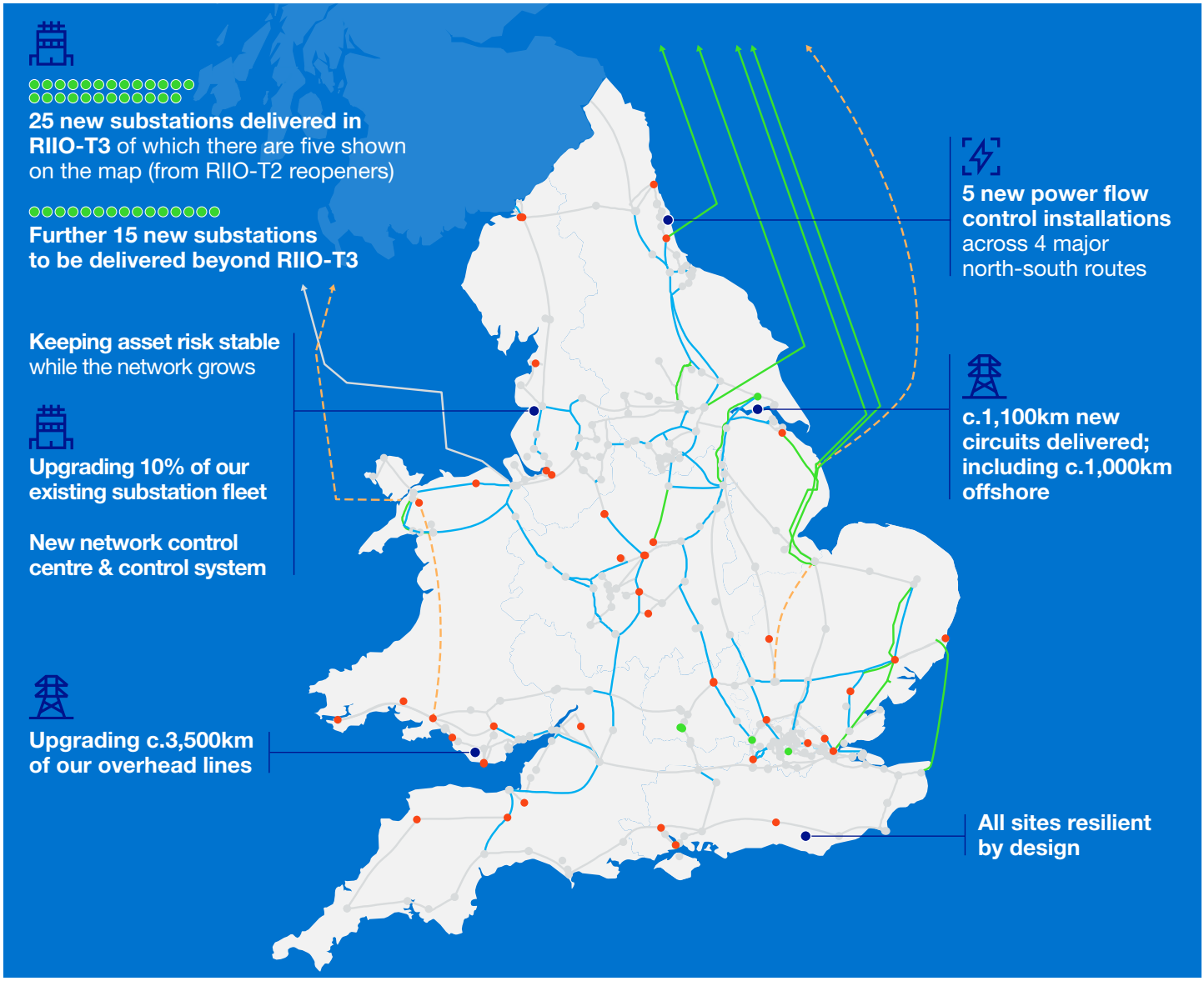
View the digital plan

December 2024



Highlights of our RIIO-T3 plan

What we are delivering on the network



Map is illustrative. New build and some upgrades are at various stages of development and planning. The lines shown here should therefore not be regarded as defined or proposed routes but reflective of various required reinforcements published by NESO. Includes baseline and pipeline projects.

Major site strategy includes existing substations where we plan a rebuild or significant extension (> £20m). Does not include new tCSNP2 circuits onshore and offshore which are subject to the outcome of NESO's tCSNP2 refresh.

Outcomes for customers, consumers & communities

- **Nearly doubling** the power that can flow across the country
- Avoiding **c.£12bn** of constraint costs, equivalent to £40 per year for consumers
- Connecting **35 GW** generation and **19 GVA** demand
- Supporting **growth of British businesses** and **decarbonisation** of our economy
- Keeping the lights on, with **99.9999% reliability**

How we are delivering responsibly

- **0.7% efficiency year-on-year**
- **50% reduction in our own emissions**
- **Leaving a legacy of community and regional benefits**
- **Grow workforce by c.50% and improve diversity to better reflect our communities**
- **Biodiversity net gain for equivalent of >8,000 acres of land, 7x impact vs. RIIO-T2**

Throughout this document we refer to power generation and storage in GW (one billion watts) and power supply in GVA (one billion volt-amperes)

Section 1.1

A message from our Chair

I very often say to our teams that we have always had the extraordinary responsibility of ***keeping the lights on*** but now we must do that through a period of enormous change. Electricity Transmission can be an economic engine, powering the country through one of the biggest societal transitions we have known, with the emergence of new technologies, and the shift to a cleaner economy.

During RIIO-T2 we will have more than doubled the rate at which we connect new customers. Through this plan we will double it again. We are nearly doubling the amount of power we can flow across the country, delivering the world's longest offshore domestic transmission link, and increasing our overall network length by 1,100km, or nearly 10 per cent. We are deploying cutting edge technology which we have successfully demonstrated and developed in recent years. We will do all this while maintaining the reliability and resilience we enjoy today.

We are still in the midst of an energy crisis and many are struggling with the cost of living. By increasing the overall capacity of our network, and connecting more renewable generation, our plan will help provide resilience against price shocks, and avoid wider bill costs. We are also committed to ongoing efficiency at the top-end of externally benchmarked rates. We are making extensive commitments in relation to how we deliver this investment, from reducing our own emissions by 50 per cent to investing in a diverse and skilled workforce. It is so important to us that we rise to the challenge ahead in a responsible and considered way.

As I write, the government is preparing its Clean Power 2030 plan, and as an industry we are driving forward with fundamental reform to how customers connect to our networks. These changes to how we plan the energy system are significant and have been the backdrop to developing our Business Plan. With our accountability for delivery, and responsibility for long term consumer value in mind, we have planned holistically, engineered for the future, and created optionality. It has been a significant undertaking, with many tensions, trade-offs and options to consider. We have used the flexibility provided in Ofgem's framework to maintain our progress in the first year of RIIO-T3, and we will need to work together to remain responsive to the changing context.

The decisions we make in the next five years will shape the energy system and our society for generations to come. It is our collective responsibility to ensure that is done with long term consumer value as its foundation. It has never been so important that we work together, as one industry, to deliver for this country. In fact, one of the most rewarding aspects of building this plan has been that sense of working together and the extraordinary commitment of our customers and stakeholders in shaping it. Our engagement programme across eight regions reached more than 12,000 people and over 1,000 organisations. This process informed our regional blueprints, which formed the basis of all our investment considerations and gives us a baseline to iterate from as society's needs continue to evolve.

Given the importance of this plan and its sheer scale and complexity, the challenge of deliverability and investability has been a focus throughout its development. It has been the most rigorous and detailed planning process we have ever undertaken. It is a daunting plan but we are confident that we have understood the constraints and have strategies to overcome them. We are ready to deliver on our part and work with others on theirs.

The pages that follow explore all this and more in further detail. It has been a dynamic and fascinating period in which to produce this Business Plan. We feel the weight of responsibility and the anticipation of rising to the challenge every day. I hope you see that reflected in the plan we are proposing, and I am incredibly grateful to everyone who has been so generous with their time and knowledge throughout its development. The result is a plan that lives up to our vision: to be at the heart of a clean, fair and affordable energy future.

Alice Delahunty
Chair of the NGET Board
President of Electricity Transmission

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Section 1.2

Who we are and what we do: We are National Grid Electricity Transmission

We are **part of National Grid plc**. As a Group we pool our expertise, sharing insight and innovation across our UK and US businesses to best serve our customers. In the UK, we own and operate an electricity distribution network and an interconnectors business, as well as electricity transmission.

The transmission system that NGET owns and operates in England and Wales is the backbone of GB's energy system. It enables an efficient wholesale market, so that households and businesses in all regions can access and benefit from the cheapest and cleanest electricity wherever it is across the country.

We have a responsibility to consumers, customers and stakeholders:

- **To deliver value for electricity consumers** 25 million households, small and large businesses, who ultimately pay for the work we do.
- **To deliver a service to our 96 directly connected customers** across six different sectors (power generation, distribution network operators, rail, industry, steel and data centres) who rely on us to transmit the electricity they generate or use.
- **To work with stakeholders and communities that host our infrastructure**

Our impact on consumer bills:

Average annual household electricity bill	
Transmission (of which NGET)	£36 (£25)
Distribution	£120
Grid Operation	£37
Wholesale Energy	£339
Policy	£136
Other	£254

Indicative for 2024, based on annual average Ofgem cap for an average houshold

NGET represents a relatively small part of the total electricity bill, currently **c.£25 a year**.

The work we do reduces the **cost of constraints** on the system, part of grid operation. Upgrading the network allows more energy to flow across the country during peak generation periods.

We also impact the **wholesale energy** part of the bill. By connecting more cheaper sources of clean power onto the system we reduce reliance on imported fossil fuels which are subject to global market price volatility.

59 GW connected to our network today

39%
Clean Power

61%
Fossil Fuel

3,000 colleagues

Across 350 sites in England & Wales

51% female

Representation on our leadership team

99.9999% reliability on our network

Our customers can access electricity 24/7

Safety of our staff and the wider public is our top priority. We are proud of our record today, but will always challenge ourselves to continue to improve.

Awards/Benchmarks

Asset Management Excellence 2023
Eason Award for Digital Innovation

Equileap
Second in the UK and fourth globally for gender equality

Human Rights Campaign Foundation
Leader in LGBTQ+ workplace inclusion 2023/24. 100% score for 5th year running

Construction News Awards
Project Team Of The Year, 2023 for our London Power Tunnels project

RateMyPlacement
Best 100 Student Employers 2023/24

ISO certification:
Asset Management System (ISO 55001)
Integrated Management System across Quality (ISO 9001), Environmental (ISO 14001), Occupational Health and Safety (ISO 45001)

Section 1.3
Executive Summary

Our role

At National Grid, our vision is to be at the heart of a clean, fair and affordable energy future. We own and operate the high voltage electricity transmission network in England and Wales, transporting electricity from where it is generated and stored to where it is used.

Our Strategic Infrastructure business unit was established on 1 April 2023 to deliver major UK transmission infrastructure projects through the Accelerated Strategic Transmission Investment (ASTI) framework.

Our Business Plan for 2026-2031 will deliver a transformation of our network. We will nearly double the amount of power we can transfer across the country, and more than double the rate of connecting our customers. We do not underestimate the size of this challenge. An unprecedented number of stakeholders and consumers have been involved in developing our plan, not just in terms of what we do but how we deliver it, to maximise value and minimise risks to those impacted.

GB energy system

The UK Government is accelerating the transition to a net zero economy, to make Britain a **clean energy superpower**. This ambition is driven both by the need to deliver on our international commitment to reduce global warming, and other national priorities including security of energy supply, improving the cost of living and growing the economy, renewing the UK's industrial base and providing skills and jobs.

We have a critical role to play in achieving these ambitions. Our RIIO-T3 business plan commits us to rising to that challenge. This is by far our most ambitious plan to date, requiring us to deliver a **step change in workload** and invest up to £35bn between 2026 and 2031, around two and a half times our investment in RIIO-T2.

For customers who want to connect to our network it has been a **frustrating period**, with an oversubscribed pipeline driving very long lead times. Despite the steps we have taken in collaboration with the National Energy System Operator (NESO) to release additional capacity on our system, accelerating connection times for some customers, we are clear that the more fundamental reform underway is required.

At the same time, new sectors are emerging and growing rapidly, in particular data centres, which for the first time is the single biggest driver of new demand connections. It is essential that as the industry reforms we are able to provide **timely connections**, for the new energy sources, the decarbonisation of the wider economy and growth sectors. **This plan underpins that ambition**.

Long term value for consumers

Decarbonising our power system will bring more clean energy to consumers and reduce the UK's dependence on fossil fuels, which are subject to global price volatility. This will lead to **more stable bills**, avoiding the kind of energy price shocks seen in 2022 and keeping bills lower in the longer term. The new infrastructure we are building will also move this clean power across the country, and reduce the costs to consumers of constraining renewables, realising **billions of pounds of consumer value**. We expect our element of consumer bills to rise during the period from c.£23 in 2026, to c.£44 in 2031. We also expect that c. £12bn of additional constraint costs on the system can be avoided over the RIIO-T3 period, equating to c.£40 on average per year per consumer.

We have a responsibility to consumers to deliver efficiently. This requires innovation and grid enhancing technologies to avoid the need to build more new network. It also means prudent anticipatory investment, and optimised final designs leveraging our commercial relationships to deliver best value. We will minimise our contribution to energy bills, committing to **ongoing efficiency at the top end of the benchmarked range**. We believe the greatest impact we can have on supporting consumers in vulnerable situations will be through our network investment, working to reduce constraint costs, and through our work directly in communities. We are committed to this role, to deliver tangible value aligned to specific communities' needs.

Evolving societal needs

The government has targets to achieve clean power by 2030 and a net zero economy by 2050. Given Clean Power 2030 is a recent development, this plan is based on NESO's 2024 Future Energy Scenario 'Holistic Transition', in line with Ofgem's business plan guidance. However it has the **scope to meet the accelerated timetable** and create the foundation for continued expansion in future decades, as the decarbonisation of heat and industry ramps up. We can adapt the plan to align with the ambition set out in NESO's Clean Power 2030 study, but we are clear that success will be dependent on Government and Ofgem taking bold action on community acceptance and planning consent, reform of customer connections and development of supply chain skills.

We expect NESO to confirm which system background we should be working to in 2025, so we can deliver the investments required on the network. See chart on following page.

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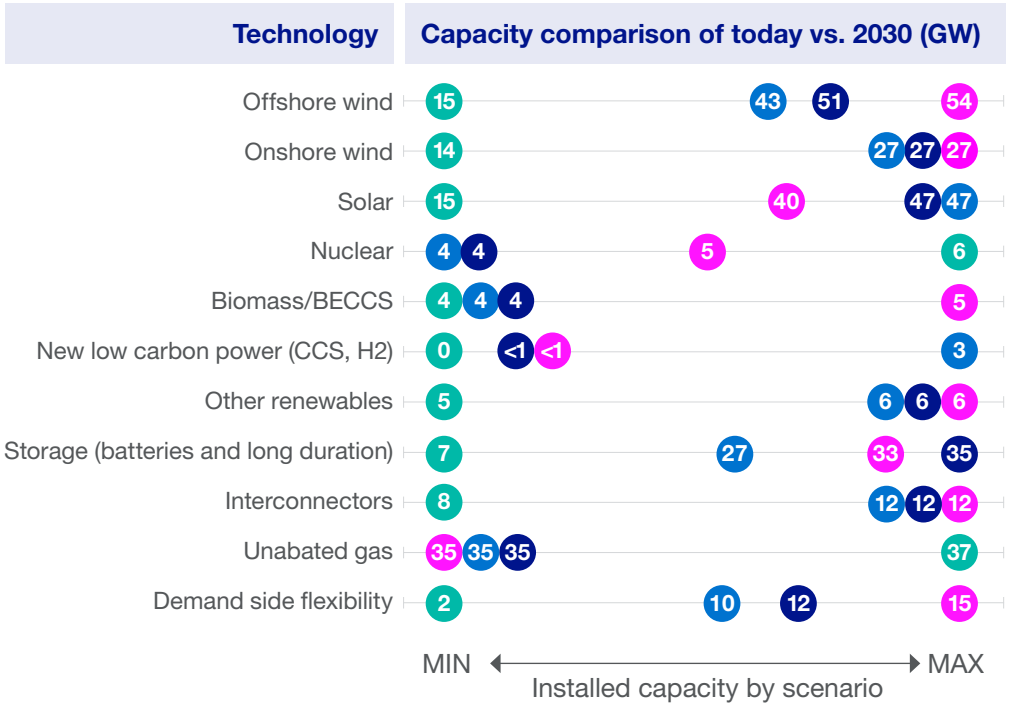
Executive Summary

Comparison of capacities across NESO's Future Energy Scenario (FES24) and Clean Power Scenarios.



Scenario key

- **Today**
- **NESO FES24 Holistic Transition** *(scenario for our RIIO-T3 plan)*
- **NESO Clean Power** *New dispatch*
- **NESO Clean Power** *Further flex and renewables*

New generation, storage and demand

Our plan will give consumers access to the **new renewable energy and storage** required for a clean and resilient power system, and provide connections for **new demand** equivalent to nearly a third of overall GB peak demand in 2024. This majority of this growth in demand is being driven by new industries such as giga factories and data centres. The inward investment unlocked by our work is significant.

Investment

The large majority (85 per cent) of our plan is directly focused on developing our physical network. This is to meet three main drivers: increasing the capacity of the network to support the increased flow of renewable generation, connecting dozens of new customers as quickly as possible to our network, and maintaining network reliability and resilience while we deliver this system-wide transformation. We will be investing:

- **up to c.£19bn for increasing network capacity**, the majority of which is part of the ASTI regime which Ofgem created in 2023. This increase in network capacity is time critical. Consumers are bearing billions of pounds of constraint costs because the network to transport energy is not available yet. Delivery is already well underway.
- **up to £7bn for connecting new customers at substations:** 35 GW for new generation and 19 GVA for demand customers, as well as creating a further 26 GW of future connection options. NESO has made recommendations for reform of how we prioritise customer connections, aligned to Government's Clean Power 2030 ambition. We are expecting that these will be taken forward early next year. This will change the scope and scheduling of connections for some projects.
- **up to £5bn on maintaining the health of the network, and a further £1.7bn on ensuring its resilience**, including against cyber attacks. National Grid is a responsible steward of assets, delivering better than 99.9999 per cent reliability of supply over the last 10 years. We have a mature asset management system aligned to international standards, which uses best practice to prioritise investment according to risk. We have learnt from RIIO-T2 that attempting to disaggregate asset health drivers from growth drivers creates challenges, and so are taking are more holistic view across drivers.

In addition to our physical network, we are also investing in mitigating our own environmental impacts, supporting the communities hosting our infrastructure, and working with community organisations to deliver support to consumers in vulnerable situations. And, as our top priority in everything we do, our investment plan will include investments to ensure we **keep our colleagues and the public safe** as we ramp up the scale and pace of delivery.

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Executive Summary

The final group of investments will enhance our capabilities and transform our operations so we are able to deliver an investment plan of this scale. Overall, we will be growing our workforce by over 50 per cent, with more than 1,100 trainees, apprentices and graduates onboarded by the end of RIIO-T3.

The future net zero power system, with greater decentralisation, more customers and two-way power flows, will create additional complexities for us to manage. **We are investing in our network development capabilities**, including increasing our power system modelling expertise, to allow us to plan the network regionally taking into the account the growing interdependencies between individual projects. This capability will help us support NESO with the new strategically planned approach to the network.

We are also investing in how we operate the network, with a focus on new digital capabilities to capture and process decisions with less manual intervention. This is supported by our programme to implement a new **Supervisory Control and Data Acquisition (SCADA)** system and upgrade our Optel fibre network.

This plan has been built on the foundations of NESO's analysis of **consumer value**, is **aligned to government's ambitions**, and is **informed by consumer research** and deep stakeholder engagement.

RIIO-T3 marks a fundamental change in circumstances from the last 30 years. **We will be investing at significant pace, already demonstrated by the ASTI projects.** This trajectory will continue across the sector beyond the next five years, as we expect electricity demand to double between now and 2050.

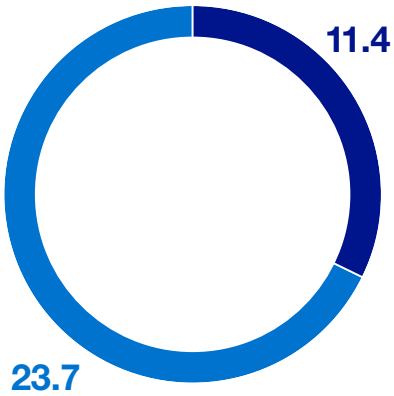
In Annex A12: Finance, we set out our analysis and conclusions on what is required to attract financing in the context of a highly competitive international market for capital.

Ofgem formally classifies projects as baseline (more certain) or pipeline (less certain). **We have included in our baseline all projects where we have certainty on both the need for the project and its cost.** The pipeline contains projects where we expect the need, cost or both to become clearer over time. For example, three of our ASTI construction projects are fully confirmed and included in the baseline. For the remaining 14, we have included development costs in the baseline, but placed main construction costs in the pipeline, as while needs have been confirmed, cost has not been finalised yet.

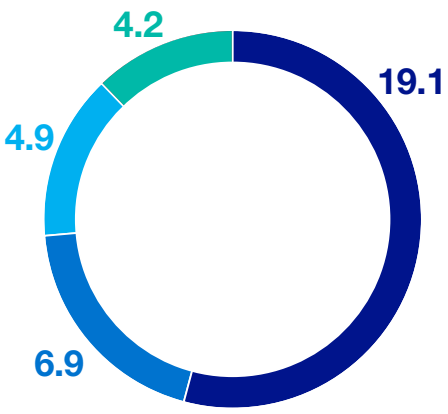
Connections reform, in line with Clean Power 2030, will be the primary driver for getting clarity on those projects placed in the pipeline because the need is less certain. It should provide an opportunity to further optimise the pipeline investments to align with the outcomes of Clean Power 2030.

NGET RIIO-T3 investment (£bn)

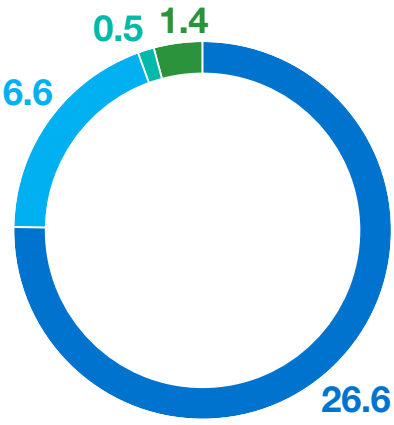
By funding type



By network investment type



By customer outcome



Section 1.3
Executive Summary

Our ambitions for the RIIO-T3 period

Our consumer research and stakeholder engagement has shaped our **three ambitions for the RIIO-T3 period,** and the 51 commitments we are making to support these. Our ambitions are to:

- **Deliver the grid of tomorrow, today**
- **Do the right thing for consumers, communities and stakeholders**
- **Transform the way we work.**

These ambitions and commitments have **informed the decisions we have taken** as we built this plan. For example, our proposal to use the highest rated conductor when we build or replace overhead lines, to provide capacity for more demand when it arrives in the future, reflects the feedback from 87 per cent of surveyed stakeholders who believe we should develop our network based on future needs.

Approach to development and deliverability

Our approach to developing and engineering this plan has been rigorous and detailed. We have carried out a comprehensive assessment of the deliverability of this plan. We have identified the **interdependencies and trade-offs** we will need to make, and thoroughly tested our assumptions. We focused on the four largest constraints: streamlining the planning permission process, securing the required supply chain capacity, building a workforce with the right skills and agreeing outages to the electricity system so we can access it to complete our work.

In building the plan we have assessed the full set of drivers for investment on each site and circuit. We have then **bundled work together to both deliver more efficiently**, and make better use of outages. This approach has reduced our system access requirements by 40 per cent.

Ramping up for year one

We have already taken steps to ensure there will be no delay or slowdown in year one of RIIO-T3. We have established the Great Grid Partnership, a £14.5bn delivery enterprise. We have set up an HVDC framework for up to £9bn, and are signing over £1.4bn in contracts for projects starting next year across 21 major schemes. We have submitted reopeners to Ofgem for approvals exceeding £1bn for connecting new customers to substations early in RIIO-T3. With insights from our new strategic workforce plan, we have scaled up recruitment, and by April 2026 we will have increased our workforce by 43 per cent to c.4,350.

Collective endeavour

Collaboration and cooperation will be critical to our collective success over the coming years. We are confident that there is a pathway to deliver, if we work together across industry, Government, Ofgem and NESO.

Through the ASTI framework, Ofgem has already set a regulatory structure that enables a programmatic approach to delivery. Extending the **principles of flexibility and managing future uncertainty**, across the RIIO-T3 framework will be important to delivering at the pace required, particularly in responding to Clean Power 2030 and connections reform.

Ensuring **community acceptance** of major developments, especially for communities that have not hosted our infrastructure before, or who are being asked to host more, is a significant delivery challenge. We are engaging early with communities, getting their views on how we design our investments to minimise the impact. Through the Great Grid Upgrade we have met with 23,000 community residents in our consultations to date. In parallel, we are also working closely with Government on the reform of the current planning and community benefits arrangements.

We will continue to work with NESO and the other GB Transmission Owners (TOs), to implement the recommendations in the **Transmission Acceleration Action Plan**, in particular to develop new approaches to managing system access. This collective endeavour reflects the importance of delivering transmission infrastructure in the next five years.

Navigating this document

In the next section of the document, we set out our plan region-by-region, and explain the process we have gone through to develop these Regional Future Network Blueprints.

We have held Ofgem's four consumer outcomes front of mind as we developed the plan: **infrastructure fit for a low-cost transition to net zero, ensuring secure and resilient supplies, high quality of service** and **long-term value for money**.

In Sections Two to Five, we present our commitments, specific investments and **plans to deliver against each of these outcomes**. In practice, many of our investments support multiple outcomes, which we explain throughout the document.

Finally, in Section Six, we set out a **summary of the cost** of this plan and our view on the **regulatory framework** necessary for us to be able to attract the investment needed to deliver on this plan for consumers and our stakeholders.

Section 1.4
Our regionally-focused RIIO-T3 plan

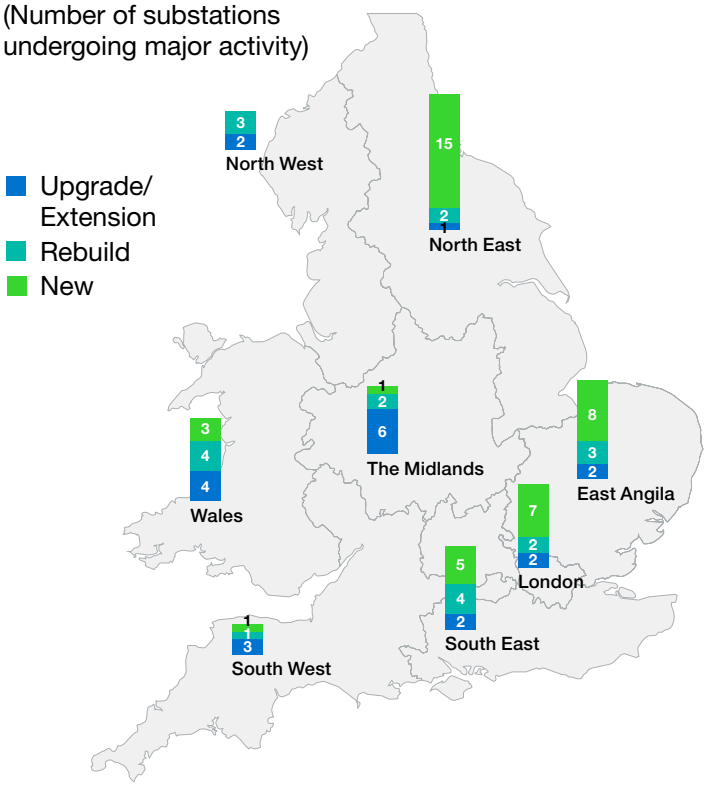
During 2023 we built up our plan region by region. We convened regionally focused workshops, bringing together local organisations, councils and businesses, alongside other network companies and NESO. We gathered perspectives and co-created our network plans.

Our Regional Future Network Blueprints will be published in detail on our website, showing stakeholder input, vision, network plans, trade-offs and decisions.

We will continue to work with our stakeholders on these throughout the next five years. This work is an intrinsic part of our 'whole systems' strategy, published on our website. Our aim is to engage with others across the energy sector and far more broadly into other sectors like technology, communications, transport and water, to identify the right solutions, and deliver value to the UK economy.

We recognise that these 'regions' do not fully reflect the geographic or administrative borders that one might expect to see. This is because in defining these regions we have also had to consider electrical factors such as power transfers and access for planned outages. However we have aligned to DNO and Local Authority boundaries where feasible to do so.

Substation investment by region
(Number of substations undergoing major activity)



1. North East

15% 60%

Regional Workshop Attendance
Stakeholders Surveyed **1,978**
DNO Workshops **NGED, NPG**

2. North West

40% 34%

Regional Workshop Attendance
Stakeholders Surveyed **1,158**
DNO Workshops **ENWL, SPEN**

3. Midlands

29% 46%

Regional Workshop Attendance
Stakeholders Surveyed **878**
DNO Workshops **NGED**

4. Wales

63% 16%

Regional Workshop Attendance
Stakeholders Surveyed **486**
DNO Workshops **NGED, SPEN**

5. South West

14% 58%

Regional Workshop Attendance
Stakeholders Surveyed **919**
DNO Workshops **NGED, SSEN**

6. South East

24% 54%

Regional Workshop Attendance
Stakeholders Surveyed **1,445**
DNO Workshops **SSEN, UKPN**

7. East Anglia

31% 44%

Regional Workshop Attendance
Stakeholders Surveyed **956**
DNO Workshops **UKPN**

8. London

33% 33% 20%

Regional Workshop Attendance
Stakeholders Surveyed **1,394**
DNO Workshops **UKPN, SSEN**

Energy Industry | Infrastructure | Interest groups | Local Government | Major Energy User | Other

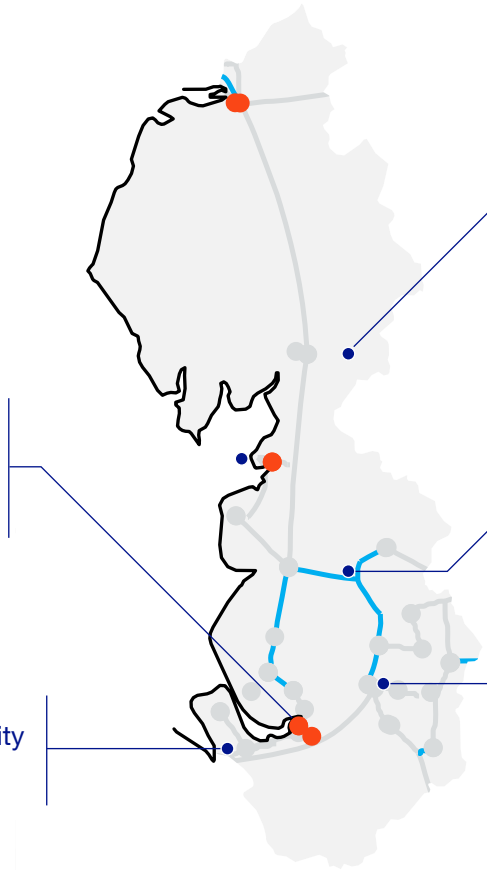
Section 1.4
Our regionally-focused RIIO-T3 plan

North West

£1.3bn of investment to maintain, upgrade and develop our network

5 **major substation interventions across the region,** including an extension at Ince and a rebuild at Capenhurst

Connecting **1.6 GVA of demand for rail services** (c.170 MVA) and capacity for **distribution networks** and their customers (1.4 GVA)



2.6 GW of new low carbon electricity generation is expected to connect, including 2.1 GW of battery storage and 450 MW of offshore wind

Reconductoring 326 km of overhead line (OHL) – 19% of total OHL in the region

Six new supergrid transformers to support demand connections and maintain network reliability, including at Penwortham and Carrington.

We are extending our Middleton substation to connect new clean power sources and support growth in demand and generation on Electricity North West's distribution network. This will provide the site with capacity to connect customers more quickly in the future.

Map is illustrative. New build and some upgrades are at various stages of development and planning. The lines shown here should therefore not be regarded as defined or proposed routes but reflective of various required reinforcements published by NESO. Includes baseline and pipeline projects. Major site strategy includes existing substations where we plan a rebuild or significant extension (> £20m). Does not include new tCSNP2 circuits onshore and offshore which are subject to the outcome of NESO's tCSNP2 refresh.

Overview of this network region

This network region reflects the geographical area of the North West, but includes some network from parts of neighbouring regions.

The North West of England boasts a rich and diverse energy portfolio that spans nuclear power, offshore wind, natural gas, and emerging renewable technologies.

The region's nuclear energy assets, including Heysham power station, continue to be a significant contributor to the UK's low carbon electricity supply. The North West's universities and research institutions help drive innovation in renewable energy, carbon capture and storage (CCS) and hydrogen production.

As the third most populated UK region, its energy needs are significant. Net zero ambitions from both the Greater Manchester and Liverpool combined authorities are anticipated to be achieved through growth in local renewable energy and reduced transport emissions, as well as through the flagship HyNet North West project which aims to unlock a low carbon economy in the region.

As energy demands increase in the North West, our major site strategies and upgrades to existing overhead line circuits will boost network capacity and support the region's clean electricity targets.

Section 1.4
Our regionally-focused RIIO-T3 plan

North East

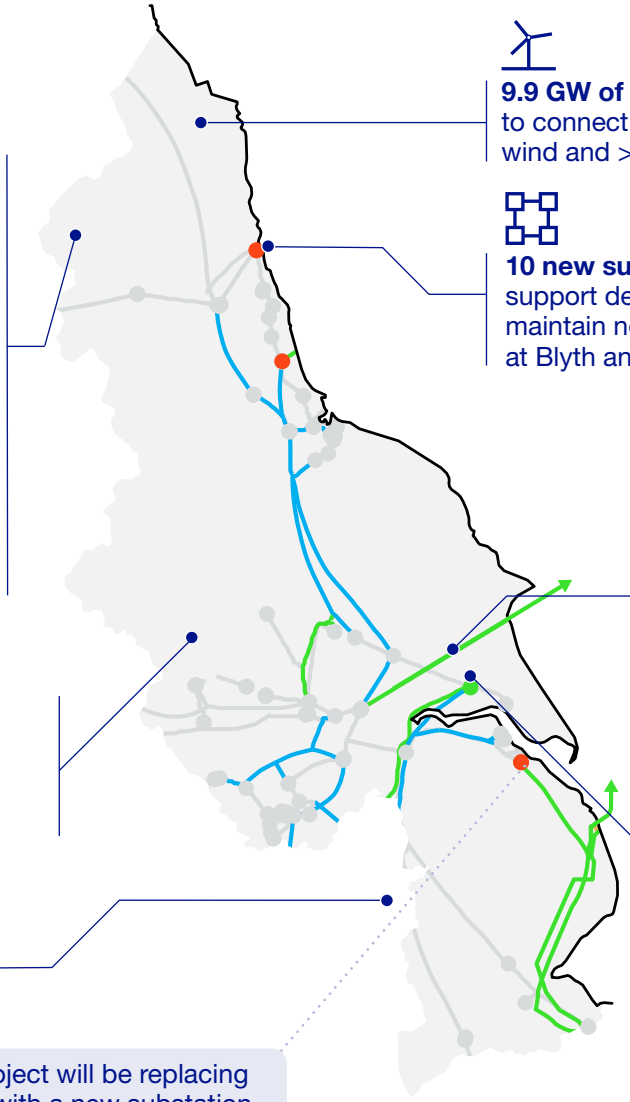
£8.6bn of investment to maintain, upgrade and develop our network

Five new power flow control installations across four major routes to boost north-south power transfer, maximising the potential of our existing infrastructure

Reconductoring 831 km of overhead line (OHL) – 25 per cent of total OHL in the region

Connecting 1.6 GVA of demand for data centres (>900 MVA), gigafactories (>500 MVA) and capacity for distribution networks and their customers (180 MVA)

3 **major substation interventions** across the region



9.9 GW of new generation is expected to connect, including c.5 GW of offshore wind and >1 GW of battery storage

10 new supergrid transformers to support demand connections and help maintain network reliability and including at Blyth and Lackenby

Our Grid Great Upgrade projects Yorkshire GREEN, Grimsby to Walpole, North Humber to High Marnham, and Eastern Green Links 1, 2 3 and 4 will help connect new low carbon projects, boost energy security and power the region with clean, more affordable electricity

15 **new substations,** including at Wanlass Beck and Monk Fryston

Our Grimsby to Walpole project will be replacing the existing Grimsby West with a new substation. The work will connect new generation, add capacity to support growth in Northern Powergrid's distribution network and boost the reliability and resilience of electricity supply in the region.

Map is illustrative. New build and some upgrades are at various stages of development and planning. The lines shown here should therefore not be regarded as defined or proposed routes but reflective of various required reinforcements published by NESO. Includes baseline and pipeline projects. Major site strategy includes existing substations where we plan a rebuild or significant extension (> £20m). Does not include new tCSNP2 circuits onshore and offshore which are subject to the outcome of NESO's tCSNP2 refresh.

Overview of this network region

This network region reflects the geographical area of the North East, but includes some network from parts of neighbouring regions.

The North East is an industrial heartland and home to vital manufacturing sectors including the chemical, pharmaceutical and steel sectors. Sunderland is well known for its car manufacturing plant, which has been producing electric vehicles for over a decade.

With initiatives like Humber Zero, the region is positioning itself as key to the UK's hydrogen strategy, which aims for 10 GW of low carbon hydrogen by 2030.

The region is also at the forefront of the UK's rapidly growing carbon capture industry, including the East Coast Cluster which aims to remove 50 per cent of the UK's industrial cluster CO_2 emissions.

These developments, plus offshore wind connections such as Hornsea and Dogger Bank, mean upgrades to the network are required to transport clean, renewable electricity to homes and businesses.

Section 1.4
Our regionally-focused RIIO-T3 plan

Wales

8 major substation interventions across the region

£3.2bn of investment to maintain, upgrade and develop our network

Our **Pentir to Trawsfynydd project,** part of our **Great Grid Upgrade,** will upgrade the existing network in North Wales. We will also **develop design** for a new circuit between North and South Wales, and between North Wales and Scotland, as recommended in NESO's Holistic Network Design (HND)

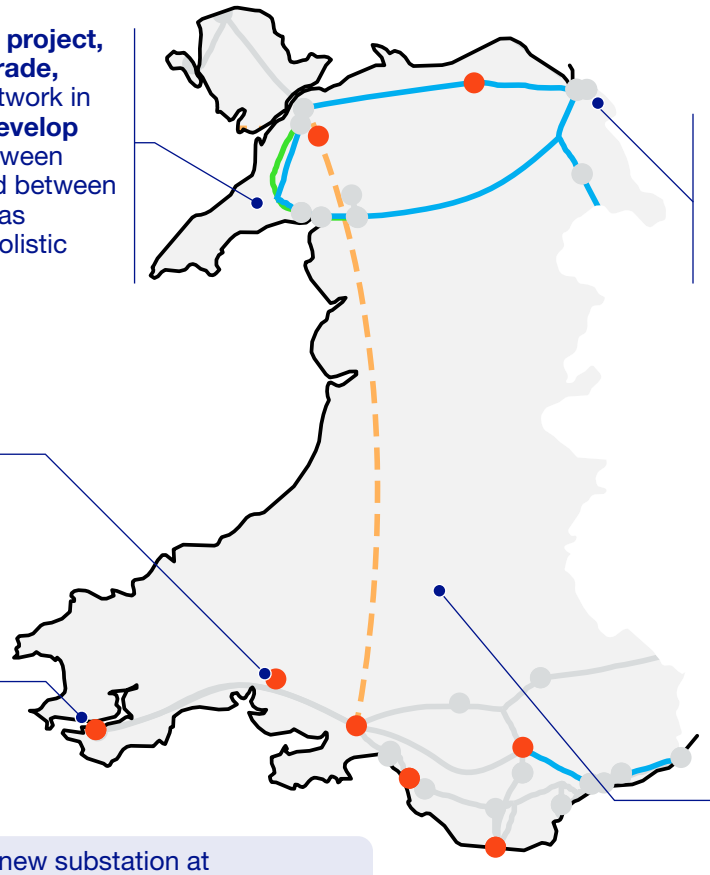
3.1 GW of new low carbon electricity generation is expected to connect, including 2.4 GW of offshore wind, >300 MW of onshore wind and 60 MW of tidal power

3 new substations, including at Llandyfaelog (see case study below)

Reconductoring **387 km of overhead line (OHL)** – 24% of total OHL in the region*

14 new supergrid transformers to support demand connections and help maintain network reliability, including at Margam and Pembroke

3 GVA of demand for connections including electric arc furnaces, data centres and electrolysis



We are proposing a new substation at Llandyfaelog to provide a grid supply point and wind power connection. We are working with National Grid Electricity Distribution to understand capacity constraints in South Wales and future-proofing capacity for demand increase and clean power in the region.

Map is illustrative. New build and some upgrades are at various stages of development and planning. The lines shown here should therefore not be regarded as defined or proposed routes but reflective of various required reinforcements published by NESO. Includes baseline and pipeline projects. Major site strategy includes existing substations where we plan a rebuild or significant extension (> £20m). Does not include new tCSNP2 circuits onshore and offshore which are subject to the outcome of NESO's tCSNP2 refresh.

**Some km already completed where projects started in RIIO-T2*

Overview of the Wales network area

This network region reflects the geographical area of the country of Wales, but with some network included and excluded from parts of neighbouring regions.

The Welsh Government has set a target for Wales to meet 100 per cent of its electricity needs from renewable sources by 2035 and achieve net zero carbon emissions by 2050, ambitions which signal a significant energy transition for the country. With abundant wind and marine resources, and scope for future nuclear development at Wylfa, North Wales aims to become a net exporter of low carbon electricity, while a new generation of floating offshore wind farms are proposed off the South Wales coast.

Wales's diverse economy and growing population are driving energy demand growth as industry, heat and transport look to decarbonise. These decarbonisation efforts have been particularly challenging in mid Wales owing to the lack of electricity transmission infrastructure in the region.

The ability to transfer power efficiently and securely between the north and south of the country, and across the UK, has been identified by NESO as essential to meet Britain's 2030 offshore wind targets, and will be crucial for supporting Wales's net zero ambitions.

As more projects seek a connection in Wales, our plans support these ambitions by upgrading existing networks and expanding capacity for the transfer of clean power to where it is needed.

Section 1.4
Our regionally-focused RIIO-T3 plan

Midlands

£1.7bn of investment to maintain, upgrade and develop our network

Installing 492 MW of demand to connect rail services (252 MW) and capacity for distribution networks and their customers (240 MW)

1 new substation proposed in the region

Reconductor c. 400 km of overhead line (OHL) – 22% of total OHL in the region

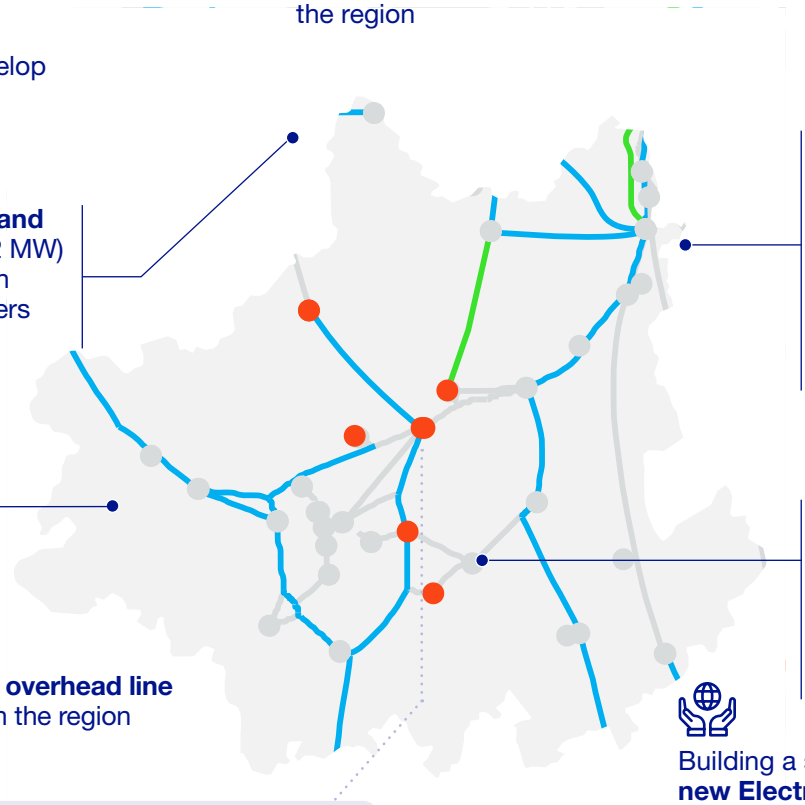
8 major substation interventions across the region

900 MW of battery storage is expected to connect

Includes our **Chesterfield to Willington project – part of our Great Grid Upgrade** – to help connect new low carbon projects, boost energy security and power the region with clean, more affordable electricity

Five new supergrid transformers to support demand connections and help maintain network reliability, including at Coventry and Berkswell

Building a state-of-the-art, resilient **new Electricity Transmission Control Centre** in the region



We are extending our existing Willington substation as part of our Chesterfield to Willington project, improving power flows from the North of England to homes and businesses in the Midlands, while creating capacity for a pipeline of connections that will support the transition to net zero for both the region and the country.

Map is illustrative. New build and some upgrades are at various stages of development and planning. The lines shown here should therefore not be regarded as defined or proposed routes but reflective of various required reinforcements published by NESO. Includes baseline and pipeline projects. Major site strategy includes existing substations where we plan a rebuild or significant extension (> £20m). Does not include new tCSNP2 circuits onshore and offshore which are subject to the outcome of NESO's tCSNP2 refresh.

Overview of this network region

This network region reflects the geographical area of the central Midlands, combining parts of the west and east Midlands.

The Midlands network is a vital link between the northern and southern parts of the UK grid, and is essential for the overall stability and balance of the national electricity system. It also serves as a hub for electricity flows to and from Wales and the East of England.

Major urban centres such as Birmingham and Nottingham, and their neighbouring cities, rely on our infrastructure for stable and well-balanced electricity supply, and to support their sustainability strategies.

As a major demand centre, the West Midlands is focusing on decarbonising its urban environment, including its diverse industrial sectors, as part of the UK's move towards a smarter, net zero energy system. Likewise the East Midlands is increasingly contributing to the country's renewable energy mix with its growing portfolio of onshore wind, solar and biomass facilities. The region's open, flat terrains are noted as being ideal for such projects.

Our network is crucial to both sub regions' transition, reliably transferring clean electricity to where it is needed for industrial processes, connecting proposed new gigafactories, and integrating new technologies like electrified transport and industrial heat pumps.

Section 1.4
Our regionally-focused RIIO-T3 plan

East Anglia

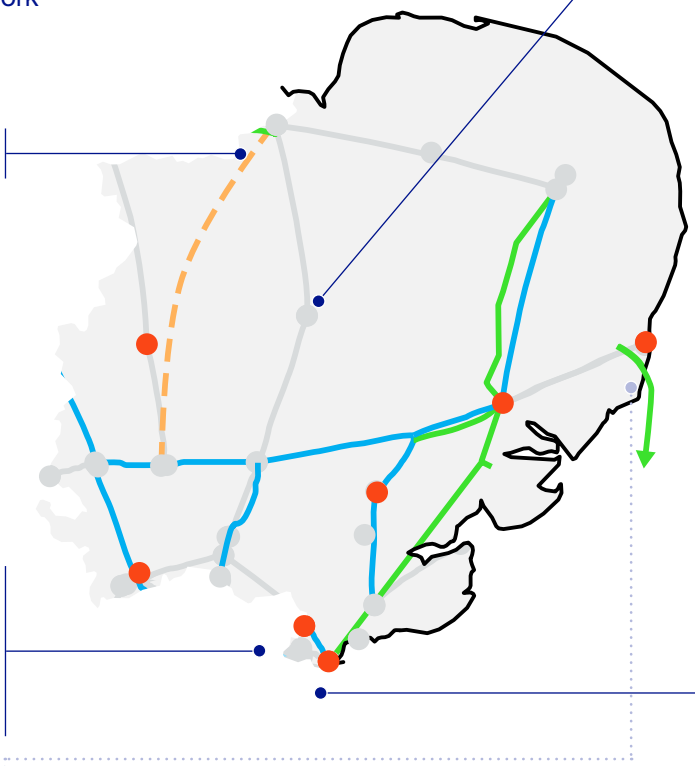
£9.6bn of investment to maintain, upgrade and develop our network

8 new substations, including at Bramford and Walpole

12.6 GW of new low carbon electricity generation is expected to connect, including c. 10 GW of offshore wind, 1.2 GW of hybrid battery projects and 1.1 GW of battery storage

Reconductoring 340 km of overhead line (OHL) – 24% of total OHL in the region*

5 major substation interventions across the region



Two new supergrid transformers to support demand connections and help maintain network reliability, including at Burwell and Sundon

Includes our **Great Grid Upgrade projects Norwich to Tilbury, Bramford to Twinstead, Grimsby to Walpole, Eastern Green Links 3 and 4 and Sea Link** to help connect new low carbon projects, boost energy security and power the region with clean, more affordable electricity

Expecting to install **240 MVA of demand** for distribution networks and their customers

Our planned rebuild of Sizewell substation with an SF_6-free solution will support the connection of the proposed Sizewell C nuclear power station, improve the reliability and resilience of the network, and reduce greenhouse gas emissions.

Map is illustrative. New build and some upgrades are at various stages of development and planning. The lines shown here should therefore not be regarded as defined or proposed routes but reflective of various required reinforcements published by NESO. Includes baseline and pipeline projects. Major site strategy includes existing substations where we plan a rebuild or significant extension (> £20m). Does not include new tCSNP2 circuits onshore and offshore which are subject to the outcome of NESO's tCSNP2 refresh.

**Includes 99 km for BRRE which has already been completed in RIIO-T2*

Overview of this network region

This network region reflects the geographical area of East Anglia combined with parts of the East Midlands, with some network included from neighbouring regions.

Home to some of the UK's fastest-growing cities and local economies, the East of England is a region with high levels of economic ambition, supporting technology hubs surrounding Cambridge and Norwich, and growing manufacturing and agricultural businesses across the region.

This ambition will mean a growing demand for clean, reliable energy from both homes and businesses in addition to the new requirements presented by zero-carbon heating and transport.

The region's geography, including extensive plains, coastline and shallow waters, are giving rise to a growth in onshore and offshore renewable energy, with notable projects such as the East Anglia Array requiring a connection to the grid. Existing and new nuclear sites at Sizewell also contribute to the region's zero carbon credentials, with further possible interconnection with countries across the North Sea.

Until now, the existing high voltage electricity network has been sufficient to meet demand. However, as electricity needs grow, the capacity of the electricity transmission network will also need to increase.

Section 1.4
Our regionally-focused RIIO-T3 plan

South West

£1.1bn of investment to maintain, upgrade and develop our network

4.2 GW of new low carbon electricity generation is expected to connect, including >3 GW of nuclear and >570 MW of hybrid battery projects

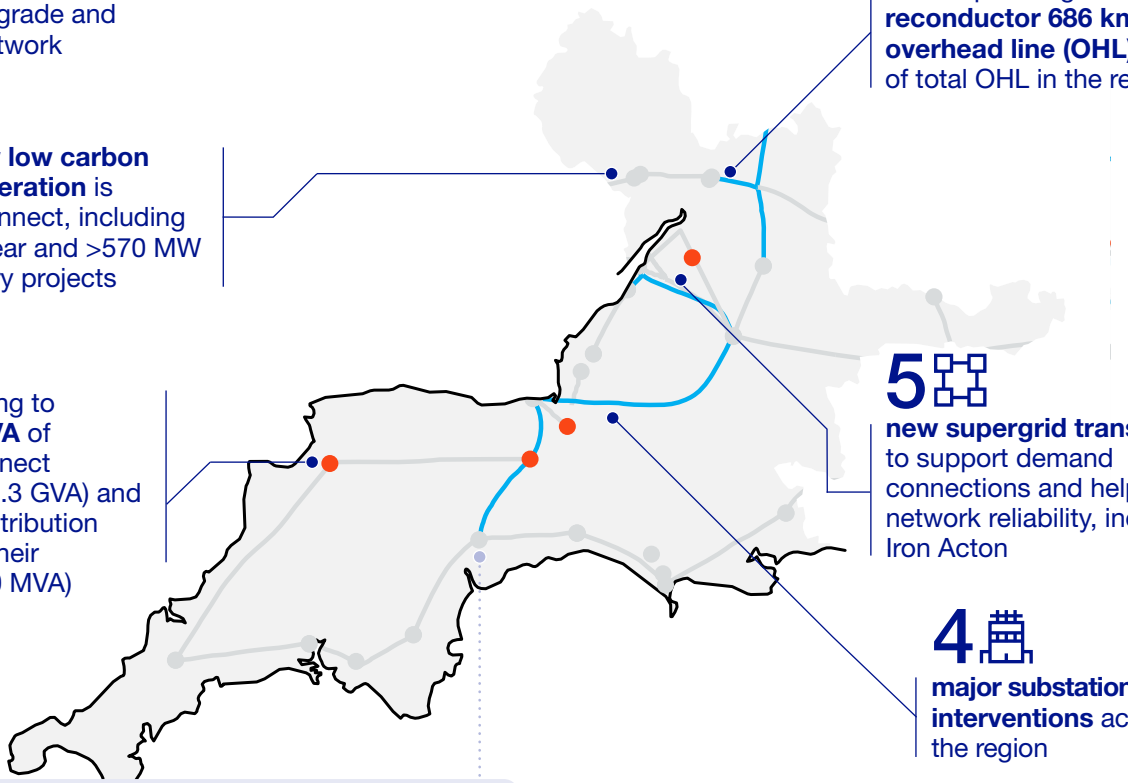
We are expecting to connect **1.8 GVA** of demand to connect gigafactories (1.3 GVA) and capacity for distribution networks and their customers (480 MVA)

1 **new substation** proposed in the region

We are planning to **reconductor 686 km of overhead line (OHL)** – 39% of total OHL in the region

5 **new supergrid transformers** to support demand connections and help maintain network reliability, including at Iron Acton

4 **major substation interventions** across the region



Our planned Exeter-Taunton-Shurton overhead line uprating project will help equip our network to handle projected increases in power flows in the region without the need for new infrastructure, minimising impact on communities while relieving local grid capacity constraints.

Map is illustrative. New build and some upgrades are at various stages of development and planning. The lines shown here should therefore not be regarded as defined or proposed routes but reflective of various required reinforcements published by NESO. Includes baseline and pipeline projects. Major site strategy includes existing substations where we plan a rebuild or significant extension (> £20m). Does not include new tCSNP2 circuits onshore and offshore which are subject to the outcome of NESO's tCSNP2 refresh.

Overview of this network region

This network region includes the geographical area of the South West combined with parts of the West Midlands, and a route corridor East through to London.

The south west region is undergoing a significant shift in its energy landscape. Large volumes of clean generation are looking to connect in the area, with further demands on the network emerging as part of the region's decarbonisation targets and larger industrial requirements such as Hinkley Point C, Tata Group's gigafactory and new data centres.

The anticipated connection of Hinkley Point C also means the region is in transition from net importer to net exporter of electricity. These power flows will be enabled by our recent reinforcement of the network through the Hinkley Connection Project.

Alongside offshore wind resource, the area is notable for having some of the best solar irradiance in the UK. Somerset's Net Zero Pathway expects that this will help local renewable generation, mostly solar, to meet the equivalent of almost half the county's future electricity demand.

As this new clean power connects in greater volumes, collaborative approaches with the distribution network will be crucial. We will also need to ensure that more isolated coastal regions have the infrastructure to support growing demand.

Section 1.4
Our regionally-focused RIIO-T3 plan

South East

£2.7bn of investment to maintain, upgrade and develop our network

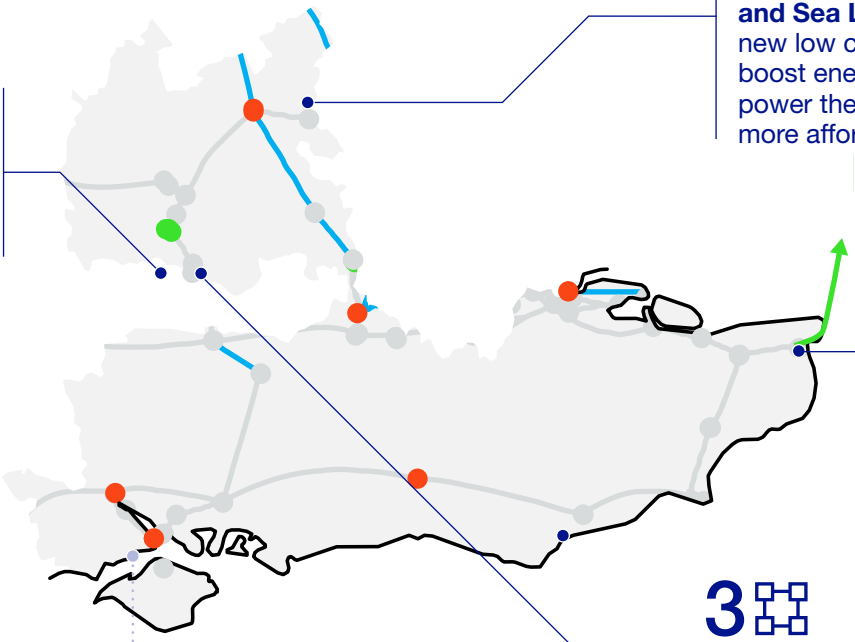
1.7 GW of new low carbon electricity generation is expected to connect, including 1.4 GW of interconnectors and 300 MW of battery storage

Reconductoring **319km of overhead line (OHL)** – 17% of total OHL in the region

Expecting to connect **1.6 GVA** of demand for data centres (1.4 GVA) and rail services (c. 250 MVA)

6 **major substation interventions** across the region

Includes our **Great Grid Upgrade projects Tilbury to Grain, Tilbury to Kingsnorth and Sea Link** to help connect new low carbon projects, boost energy security and power the region with clean, more affordable electricity



5 **new substations** including at Minster

3 **new supergrid transformers** to support demand connections and help maintain network reliability, including at Didcot

We are working with local network SSEN on a joint solution at our Fawley site to boost grid capacity on the south coast – improving security and reliability of supplies as demand rises and potentially unlocking land to support local regeneration and economic growth.

Map is illustrative. New build and some upgrades are at various stages of development and planning. The lines shown here should therefore not be regarded as defined or proposed routes but reflective of various required reinforcements published by NESO. Includes baseline and pipeline projects. Major site strategy includes existing substations where we plan a rebuild or significant extension (> £20m). Does not include new tCSNP2 circuits onshore and offshore which are subject to the outcome of NESO's tCSNP2 refresh.

Overview of this network region

This network region reflects the geographical area of the South East, excluding the route corridor into London covered in the South West network. It does not include Greater London.

The transmission network in the South East is characterised by heavy power demands, with high commercial loads often seeing peak demand during summer heatwaves exceed those in winter. This load was previously supplied by fossil fuels and nuclear, with a more recent transition to renewables as these technologies connect in greater volumes.

The transition towards higher wind and solar generation often results in natural power flows through England and Wales to the south east, which can be exported through interconnectors to Europe. The interconnectors in this region create dynamic network challenges. Depending on power flows to and from neighbouring countries, the region can act as both an importer and exporter of electricity.

This means we need transmission infrastructure that can manage large power flows in both directions. Projects such as Grain to Tilbury will reinforce the network in the region to help move this clean power and maintain a secure and reliable network.

Section 1.4
Our regionally-focused RIIO-T3 plan

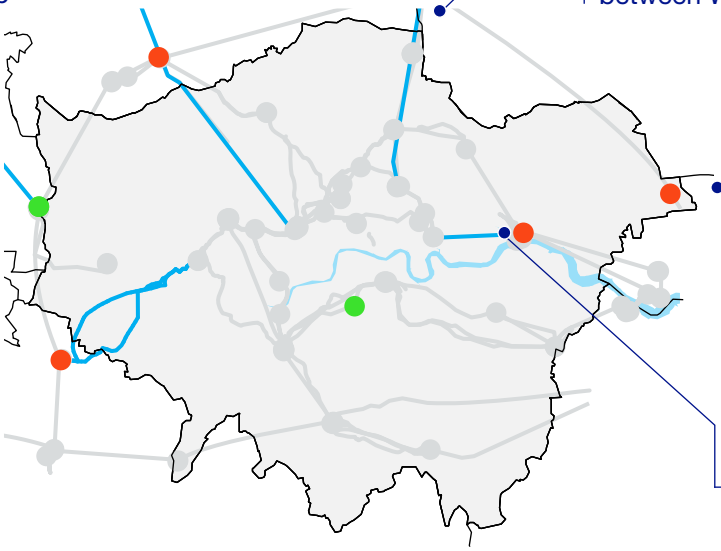
London

£2.8bn of investment to maintain, upgrade and develop our network

We are expecting to connect **8.2 GVA** of demand for data centres, rail services and capacity for distribution networks and their customers

65km of underground cable replacement projects – 16% of total cable in the region

7 **new substations** including Bengeworth Road and Uxbridge Moor



Includes our **North London Reinforcement Project – part of our Great Grid Upgrade** – to upgrade the existing network to a higher voltage between Waltham Cross to Hackney

33 **new supergrid transformers** to support demand connections and help maintain network reliability, including at Warley and Elstree

Reconductoring 213km of overhead line (OHL) – 29% of total OHL in the region

4 **major substation interventions** across the region

Over 100 MW of new battery storage is expected to connect

Working with the local council, we are proposing to upgrade and re-size our Barking substation to protect land earmarked for local redevelopment plans, whilst providing the additional network capacity to support those plans.

Map is illustrative. New build and some upgrades are at various stages of development and planning. The lines shown here should therefore not be regarded as defined or proposed routes but reflective of various required reinforcements published by NESO. Includes baseline and pipeline projects. Major site strategy includes existing substations where we plan a rebuild or significant extension (> £20m). Does not include new tCSNP2 circuits onshore and offshore which are subject to the outcome of NESO's tCSNP2 refresh.

Overview of this network region

This network region reflects the geographical area of London, but may diverge from traditional boundaries or transpose network in parts of neighbouring regions.

Demand for energy in London is significant due to its growing population and the increasing decarbonisation of heat and transport, as well as its vast commercial sector, and critical infrastructure, including transport networks and public services.

The Greater London Authority aims for a zero carbon city by 2030, tackling air pollution and ensuring the region benefits from the clean tech sectors of the future such as data centres, whilst also hitting targets for new housing developments.

As a densely populated urban area, the city does not have the space for large-scale renewable electricity generation projects. Instead, it needs a robust electricity network to meet its energy needs, with new infrastructure or upgrades to the existing network to meet the needs of the future.

Just as people move across the city below surface level, much of London's electricity is also transported deep underground. The second phase of our London Power Tunnels project is currently being built, connecting more of the city, and giving new life to the old network.

Section 1.5

Our ambitions: shaped by consumers and our stakeholders

In building our RIIO-T3 plan, we have sought to understand the different perspectives of those who will be impacted by the decisions we make.

Since 2022, we have listened to the views of **10,000 consumers**, including households, small businesses and large industry, triangulating with available papers, publications and research. Through bilaterals, focus groups, workshops, summits, webinars and regional forums, we have gathered insights from **more than 2,000 stakeholders**. We have supplemented this with market research. As part of the Great Grid Upgrade, we have met with **more than 23,300 community members** in the areas where we are already expanding our network.

In this section we describe **what we heard and learned from this research and engagement**, how we have taken **a new regional approach to building up our RIIO-T3 plan**, and how that will continue through the coming five years.

We lay out our **three overarching ambitions for RIIO-T3** that were shaped by consumers and our stakeholders, and that inform the decisions and investments we have made throughout our plan.

10,000 consumers

2,000+ stakeholders

23,300+ community members

as part of The Great Grid Upgrade

Our research

Study 1.
Prioritisation of outcomes: surveyed consumers and impacted stakeholders continue to prioritise reliability

In autumn 2023, we partnered with market research experts Yonder Consulting to understand the priority energy transition outcomes of domestic and business energy consumers and impacted stakeholders (industry and regional partners and other sectors directly impacted by the timing and design of our investment programme).

We tested 12 outcomes relating to the energy transition. Despite the research being done during the cost of living crisis, households and small businesses across all sociodemographic and income groups consider a reliable supply marginally more important than minimising costs. The importance of reliability of supply is consistent with third-party research findings.

This study also revealed strong support in principle for investment in clean energy and protection, and improvement of nature and environment. Again, this was consistent with third-party research findings.

In terms of how we should focus benefits on impacted communities, consumers prioritised members of the community in long term vulnerable situations (e.g. those eligible for the Priority Services Register, who have extra communication, access or safety needs), closely followed by those affected by deprivation (food bank users etc.).

Priority energy transition outcomes

Nov 23
Yonder Consulting

3,302
General public

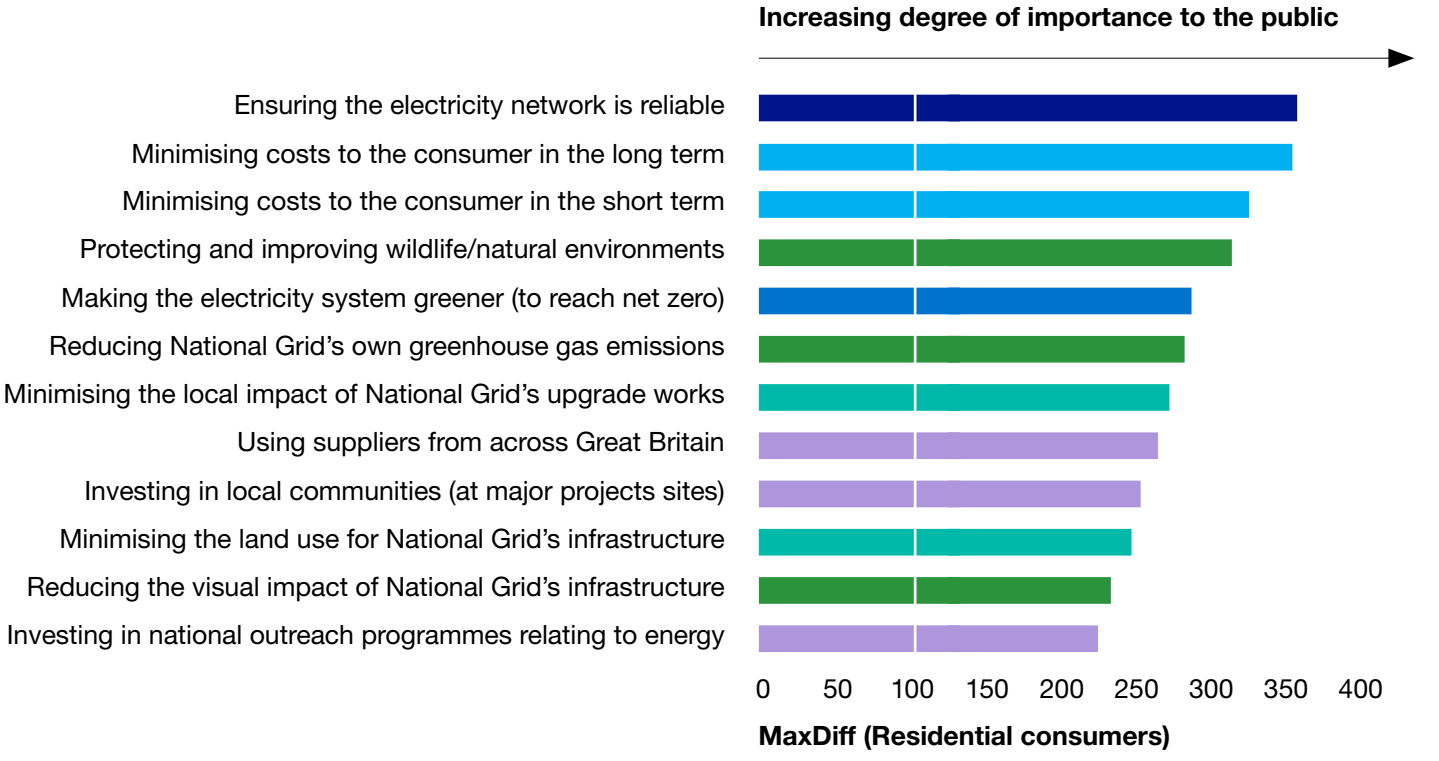
280
Impacted stakeholders

1,098
Small and medium sized enterprises (SMEs)
(see appendix 2)

Consumer Environmentalism attitudes

Mar 24
Mintel Consulting

2,000
Consumer sample size
+300 Great Grid Upgrade additional
(see appendix 3)



Study 2.
Consumer attitudes on network upgrade works: the vast majority of people surveyed see the works as important

In spring 2024, we partnered with market research experts Mintel Consulting on a survey of 2,000 consumers. The aim was to understand consumer attitudes across four themes linked to our network upgrade: environmental impact, net zero, the role of National Grid, and the presence of current and new infrastructure. The goals that respondents highlighted as important included:

- Preventing electricity bills from getting too high
- Reducing the UK's reliance on imported gas and oil
- Enabling us to generate more electricity in the UK.

It echoes wider research, which also highlights meeting increased electricity demand as a top driver for investment. This sentiment from survey respondents was consistent across regions, including where network upgrade works have already begun.

Studies 3 and 4.
Affordability of upgrading the network: the majority of consumers want to move faster with upgrades to the grid, but stress the need to look after those who cannot afford to pay more for it

In summer 2024, think-tank Sustainability First and Yonder Consulting undertook a study on our behalf. The aim was to provide insight on preferences on network upgrade based on the impact to the energy bill over time.

The study included a rapid review of more than 150 sources of information, including academic and industry research, policy reports, and media insights. A set of whole day deliberative workshops were held in England, Scotland and Wales with household and small business consumers. Finally, an online quantitative survey was carried out, using video to provide context.

Our research used two hypothetical scenarios, and examined the short term and long term impact each had on the total energy bill:

- 'Front loaded': delivering the transmission upgrade faster and providing more stable bills in the long term
- 'Back loaded': delaying the upgrade and limiting short term bill increases.

A clear preference for earlier investment emerged from both the workshops and survey, across all sociodemographic and income groups. A majority supported 'front loading' on the basis that it would cost less overall and deliver Great Britain's energy priorities sooner.

People also expressed a sentiment to 'get the necessary work done' rather than delaying and allowing the country to fall behind on the investment needed.

There was a significant minority who favoured a back loaded scenario. This was primarily because they could not afford any increase in energy bills, or they were worried that businesses or others would not be able to afford it. This concern was also noted by many of those who favoured early investment. There was general support for innovation, but those who favoured a back loaded scenario often cited a desire to let technologies mature to avoid investing in those that may become obsolete in the future.

Study 5.
Stakeholder priorities and perceptions of National Grid: our strategic stakeholders are clear we need to transform

In spring 2024, we commissioned a series of interviews with 44 senior representatives across Government, Ofgem, supply chain partners, and other stakeholder groups. We wanted to build on the regular feedback we get from these organisations through our intensive business as usual engagement.

While we are trusted to keep the lights on, these organisations are clear that we need to change to deliver the future performance that is needed.

Rapid review/gap analysis on affordability drivers

Jul 24

Sustainability First

150+

Sources of available research (see appendix 4)

Affordability (of the network upgrade)

Jul 24

Sustainability First and Yonder Consulting

England, Scotland and Wales

76

Whole day workshops with household and business consumers

3,500

Online quant survey (see appendix 5)

These stakeholders recognise our good intentions but need to see this translate to action. Examples include the need for dynamic, flexible innovation across all aspects of the net zero transition driving cost efficiency; an unflinching commitment to building the capacity required; proactive leadership on key issues; and a collaborative and transparent approach to long term planning.

"Sustainability First is happy to work with NGET. The company puts a strong focus on independent research and continuous improvement. They have taken the lead in engaging consumers on the difficult question of how and when we pay for the energy transition, ensuring their voice is heard. We look forward to supporting NGET, as it takes this work forwards."

David Murray,
Executive Director,
Sustainability First

Our regional engagement

As described in Section 1.4, we have built up our plan region by region. Through our engagement, we have heard from local and combined authorities, regional development bodies, distribution networks, and other customers.

They have provided insights on key economic and sociodemographic changes and objectives for their communities. We also asked about their frustrations. For example, 79 per cent of 267 polled stakeholders reported negative impacts from the connections queue.

We brought this insight together with our consumer research, and site level and network engineering expertise to co-create regional Future Network Blueprints. These are the plans for how we will develop the network to address the needs of customers, consumers and impacted stakeholders, specific to each region. These blueprints are a live tool for us to use with our stakeholders on an ongoing basis. They will evolve, reflecting the dynamic, changing context within which we are operating.

Based on this work, we now have a long term strategic plan for each of our 288 sites. These have influenced our proposed investments.

For example, where possible, we adopt a 'touch once' strategy where we look across all the investment drivers at a site and look to coordinate the work to improve efficiency. We also explored where we can build in optionality to more easily accommodate additional customer capacity in the future, where this would deliver long-term value to consumers. We describe this in more detail in *Annex A08: ET Load Strategy*.

Our Regional Future Network Blueprints can be found on our website, and we look forward to continuing this engagement throughout RIIO-T3.

"Over the last two years, we have created a really strong channel for dialogue with NGET and industry partners, to start to advertise our development priorities and how electricity is a key enabler. The ability to have the right people in the room to educate us on the Grid, and how it will change, and when is critical to our net zero mission. We are in a strong position to have better conversations over 2025 and be ready to contribute maturely to the Regional Energy Strategic Plan (RESP) in 2026."

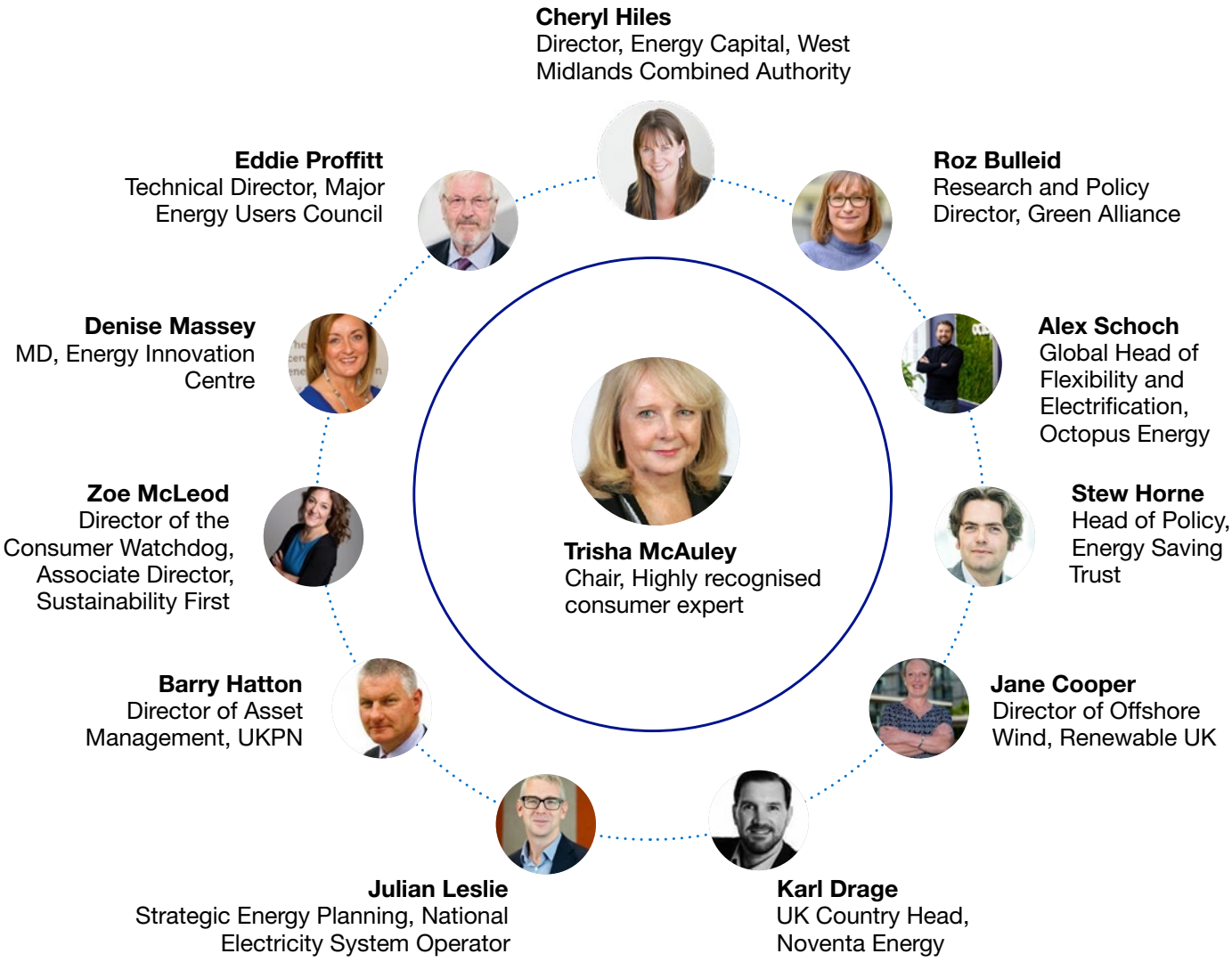
Martin Land
Clean Energy Lead at Liverpool City Region Combined Authority

Tensions and trade-offs

Sometimes different stakeholders' views have come into tension and we have had to make difficult trade-offs. For example, one of the biggest trade offs we face is how we manage the needs of society as a whole versus those of individual communities.

Similarly, some consumers see a tension between delivering infrastructure to support net zero and protecting wildlife and nature in their area, while environmental groups tend to see tackling climate change as essential to tackle the biodiversity crisis. Importantly, we also have to balance concerns about those struggling to afford their energy bills today, with speed of delivery and resultant investment costs, and the impact of affordability longer term.

Our Independent Stakeholder Group (ISG) has challenged us and informed our plan



We took the decision in 2019 to retain an external stakeholder challenge group. This has now become our Independent Stakeholder Group (ISG), a set of experienced industry professionals.

Earlier this year, we expanded the ISG membership to give an even stronger regional perspective by bringing in an energy expert from a combined local authority.

This has been particularly helpful as we shift to a more regional approach.

We have shared and tested our plans with the ISG regularly and involved members directly in our engagement programme and events. Through more than 11 sessions and more than 70 hours of face-to-face discussions, we have worked through over 145 specific challenges for us to consider as we developed the investments in this plan. Information about their challenges and our response is available on their website. The ISG Chair has prepared an independent statement outlining the role of the group, the role of stakeholders in our plan, and our compliance with the guidance provided by Ofgem relating to ISGs.

The ISG continue to provide challenge and guidance, and they will respond to Ofgem's call for evidence in the coming months.

"It hasn't always been easy to hear the challenges from the ISG for us to go further or to think differently, but it has always been useful to help us understand what consumers expect of us. I've used their challenges to help us focus our plan on what matters for the people we serve"

Rob Salter-Church
Director of Regulation – Electricity Transmission

Our RIIO-T3 ambitions

We have used our understanding of consumer and stakeholder expectations to define three overarching ambitions, and 12 objectives for our RIIO-T3 plan. These have guided the investments we propose, and frame how we will deliver a plan that meets the essential requirements set out by Ofgem and the Government.

These ambitions and objectives map across Ofgem's consumer priorities; infrastructure fit for a low-cost transition to net zero, secure and resilient supplies, high quality of service from regulated firms, and long-term value for money.

Ambition A

Deliver the grid of tomorrow, today

Deliver with urgency the Transmission Network needed for Great Britain's future growth and decarbonisation

A1: Maintain world class levels of network performance and resilience, ensuring that the new network we build is designed to reflect future security and climate challenges

A2: Deliver the capacity our customers need now, looking holistically across multiple investment drivers to deliver at the pace and scale required to support the Government's ambition on growth and decarbonisation

A3: Future-proof our network with strategic capacity and flexibility for the longer term, using the network modeling capabilities we developed in RIIO-T2 to surface insights and inform strategic decisions

A4: Invest in the next generation of innovative technologies to make sure that we are planning and building a network that is ready for tomorrow

Ambition B

Do the right thing for consumers, communities and the environment

How we deliver is as important as what we deliver

B1: Maximise the value we create by controlling our costs as our network grows, seek opportunities to create additional value for consumers

B2: Play a leading role in accelerating a net zero, nature positive future, including by reducing our own emissions and environmental impact

B3: Support vulnerable consumers and have a positive impact in our communities through our operations and construction, leaving a lasting legacy

B4: Represent the diverse communities we serve by maintaining our sector-leading record on workforce diversity and inclusion

Ambition C

Transform the way we work

Transform our capabilities to deliver for consumers

C1: Transform our asset management, network development, and network operation capabilities to ensure we can deliver the step-up in work required during this period, and manage a larger, more complex, decarbonised network

C2: Grow our workforce capability by positioning National Grid as the best place to work in the electricity sector

C3: Put into practice new supply chain strategies to secure the long-term capacity we need

C4: Leverage digital and data capabilities to transform how we work with our stakeholders to maintain and operate our network

Section 1.6
How we have approached deliverability and our RIIO-T2 track record

Successful delivery of our RIIO-T3 plan will require a new approach, with changes to ways of working both within National Grid and across our industry.

This section covers the work we have carried out to assess and mitigate delivery risks associated with developing our physical network.

Our plans to deliver our other objectives, for example the build of our system modelling and customer experience capabilities, are covered in the following chapters of this document, and also in the annexes.

We are realistic about the challenges we face today. We are already working at the limits of what the supply chain can provide, and we are experiencing the effects of inflation. We are also reaching the limits of when we can access the system to conduct work. The ripple effects of small, unexpected changes, such as faults on the network, or a change in weather conditions, can mean that an outage is cancelled with knock-on effects across multiple projects.

In that context, it was essential that we carried out an assessment of deliverability risk for RIIO-T3. It has helped us to understand what will be needed to deliver the portfolio of work. We have carried out this analysis on an iterative basis over the last 12 months and created mitigation strategies that increase our confidence in being able to deliver. External assurance on our deliverability analysis has confirmed that we have robustly identified and assessed the risks.

We have considered four types of delivery constraints:

- System access
- Supply chain
- Workforce and skills
- Community acceptance

For each of these areas, we will need changes from the Government, Ofgem and NESO to enable delivery of the plan. As recognised in the Transmission Acceleration Action Plan (TAAP), there needs to be systemic shifts in policy and regulation, including for community benefits, planning and consenting, system access, customer connections, and supply chain and skills.

Preparing for Year 1 of RIIO-T3

We have taken steps to ensure there will be no delay or slowdown in year one of RIIO-T3.

We have established the Great Grid Partnership, a £14.5 billion delivery enterprise. We have set up a HVDC framework for up to £9bn, and are signing over £1.4 billion in contracts for projects starting next year across 21 major schemes. We have submitted reopeners to Ofgem for approvals exceeding £1 billion to connect new customers to substations early in RIIO-T3. With insights from our new Strategic workforce plan, we have scaled up recruitment, and by April 2026 we will have increased our workforce by 43 per cent to c.4,350. In addition, we are increasing strategic spares for targeted equipment types to reduce impact of faults on planned outages, and our new Strategic Planning team has progressed a detailed plan for the first three years of RIIO-T3.

Further detail on how we plan to deliver is covered in each of the coming sections and the supporting annexes.

Section 1.6
How we have approached deliverability and our RIIO-T2 track record

Delivery Constraint 1: System Access

Context

Our plan will require significantly more system access than we have used before, and for major programmes this will be in complex sequences.

There are groups of circuits on the network, which we call boundaries, down which power flows together, similar to a set of parallel waterfalls. There are some boundaries which are particularly prone to bottlenecks, and so we can only switch out a limited number of circuits at any one time. For example, the boundary around London, called LE1, manages large power flows between wind farms and interconnectors, and so it becomes a challenge to take these circuits out of service to carry out our work.

Action we are taking

We are improving our ability to **forecast and manage our need** for system access, which allows us to model the number of days of system access we require to carry out the work in our plan. We can then compare this to what we expect the limits will be, and so where there may be constraints.

We are also taking steps to **minimise our need** for system access, and to use it more efficiently:

- We will **bundle work together** across network upgrades and asset health. This will allow us to combine system access windows for major schemes with the opportunity to undertake maintenance, and reduce our overall system access requirement by c.40 per cent.
- We have established **a new Strategic Planning Team to actively manage and optimise** our portfolio of work. Some work can require more than 100 operations across multiple locations, so tight coordination is critical to avoid disruption to the careful choreography of system access through the year.
- To deliver more work without the need for outages, we are **expanding our Uncrewed Aerial Systems capability**, to carry out live line work while keeping our people safe.
- During RIIO-T3 we will be **deploying our new system for Supervisory Control and Data Acquisition** (SCADA), which will help us to make more efficient use of system access.

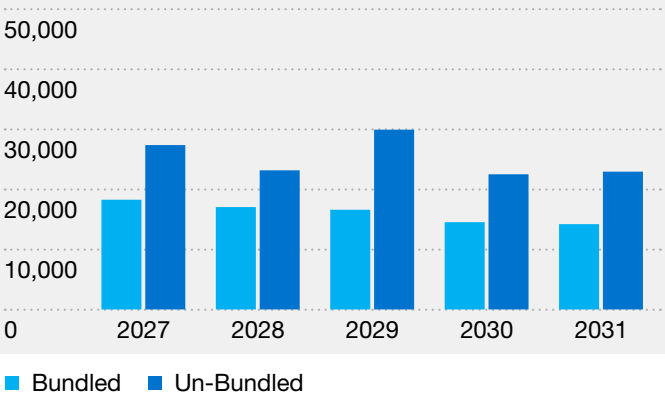
Support we need from others

With these actions, we have reduced the severity of the constraint. However our system access requirements will still be in excess of historic levels. Managing system access is a cross-sector issue, and for the plan to be successful we will need to work together.

- NESO makes the final decision on whether or not to grant system access, and has to manage a number of important considerations. It is critical that NESO's **decision-making frameworks** reflect the consumer value unlocked through transmission owners' plans, with a balance of near- and long-term objectives. Greater agility is also required to respond to unplanned network events, to minimise the disruption to delivery of the overall outcomes.
- We will need other networks and customers to play their part. We will use data and digital technology to improve coordination and communication across organisations, and **encourage all parties to share data** to improve alignment of whole-system plans.
- In line with the Clean Power 2030 recommendation of a 'first ready and needed, first-served' approach, we will not be able to guarantee when a new opportunity may re-emerge should a customer's planned outage not be taken. **It is important that outages are honoured** to minimise disruption to the collective system access plan.
- Finally, **connections reform is needed as a priority**. We can use this opportunity to streamline our plans, and potentially reduce the amount of work that needs to be delivered. This would also help address other constraints, beyond system access.

We provide more detail on system access, along with our mitigations, in Annex A08: ET Load Strategy, and connection reform is discussed in Section 2.2 of this document.

Outage Days Required



Section 1.6
How we have approached deliverability and our RIIO-T2 track record

Delivery Constraint 2: Supply Chain

Context

Over the last three years the market for transmission network equipment and services has changed profoundly. Many countries are upgrading their grids to connect more renewable energy, creating supply chain constraints. In some parts of the market we have seen this result in a shift to a seller's market. For example, with HVDC marine cables and convertors, there has been significant price inflation and in some cases market failure.

In addition to this strategic shift in the market, there is now considerable evidence in favour of long-term supplier relationships for major infrastructure. The added value and cost reductions achieved outweigh the short term price leverage achieved through spot competition. The Government Commercial Function provided guidance to this effect in 2022.

Action we are taking

We are taking a fresh approach to supply chain management. In this plan, we propose using competition more strategically to establish frameworks with price benchmarks to protect consumers. We will then use these frameworks to allocate work to suppliers on a programme and regional basis.

We have already established a new arrangement with suppliers in the Great Grid Partnership, using the flexibilities created within the ASTI framework. It will deliver multiple benefits to consumers:

- A focus on timely delivery, reflecting our regulatory outcomes in the commercial terms.
- A clear, long-term view of the pipeline which allows suppliers to invest in expanding capacity.
- Optimisation of suppliers across the programme, reducing downtime and making best use of scarce skills.
- Manufacturing and installation considered early to 'design out' cost.
- Digitised, standardised, repeatable processes.
- Strong collaboration in delivering work due to shared incentives.

This is already having a positive impact. For example, our partner Murphy has made a £30 million investment in a new state-of-the-art OHL, high voltage cable installation, and high voltage substation training facility in Ollerton, Nottinghamshire, which will be operational in early 2027.

Ofgem assessed the procurement process we used for this contract, and the commercial terms we implemented to secure consumer value. The conclusion was that it was possible **to demonstrate value for money** using this type of longer-term arrangement.

We are now **running competitive processes to create frameworks for supply of equipment and services**. For equipment, we will allocate orders to framework suppliers on a programme basis, and for services we will allocate to an appointed regional supplier.

Support we need from others

As described above, Ofgem has already acted to provide some of the tools we need to deal with supply chain constraints. For example, the access to Early Construction Funding for ASTI schemes. In the case of HVDC orders, this has resulted in our supply chain partners investing in a new factory, a new ship and a significant expansion of a UK facility on the back of the long-term order book certainty we have given them.

We also welcome Ofgem's proposals for an Advanced Procurement Mechanism which will allow us to secure equipment and installation services on a programme basis some years in advance of current arrangements.

We will be asking Ofgem for its support to build on our new approach with comparable agreements going forward.

We provide more detail on supply chain constraints in Annex A03: Workforce and Supply Chain Resilience Strategy.

Section 1.6
How we have approached deliverability and our RIIO-T2 track record

Delivery Constraint 3: Workforce and Skills

Context

Analysis by Energy and Utility Skills concludes that the workforce involved in the electricity sector will need to grow from 160,000 to 290,000 by 2030 – an 80 per cent increase. The Infrastructure and Projects Authority estimates that if planned infrastructure work in the UK is undertaken in the traditional way, the civil engineering workforce will need to increase by 500,000.

This presents a delivery risk, but also an opportunity to deliver community benefits and wider economic growth.

Action we are taking

We have a comprehensive strategy to attract, train and retain the diverse and skilled workforce our business will need in the coming years. By April 2026 we will have increased our workforce by 43 per cent to c.4,350. We will offer an environment that is world class in terms of diversity, equity and inclusion.

Increasing our own workforce capacity and skills mix is a significant step forward. However, those actions alone will not be enough to ensure that the rest of the supply chain can access the skilled workforce it needs. We are working to agree an industry-wide commitment to integrated training, standards, transferability and a talent attraction plan.

Support we need from others

While industry can make a positive contribution, there is also a need for a fundamental change in Government policy and priorities within the education and skills sector.

The goal should be to improve the development of foundational skills in schools and reorient the further and higher education sectors towards training the future workforce. Reforms to apprenticeships should place more emphasis on practical skills and allow flexible application of funding.

We provide more detail on workforce and skills constraints in Annex A03: Workforce and Supply Chain Resilience Strategy.

Delivery Constraint 4: Community acceptance

Context

The scale of network reinforcement we are undertaking requires early and constructive engagement with planning and consenting authorities. We have to deliver the highest standards of public consultations and community relations so we can develop infrastructure proposals which are shaped by local input and create a greater level of community acceptance.

Action we are taking

- We are consulting and communicating with communities early in the planning process. We have put in place platforms which enable residents to raise their concerns and suggestions. We make changes to our proposals where possible and if we cannot, we explain why. All our early Great Grid Upgrade planning submissions have passed the ‘adequacy of public consultation’ test.
- We launched the Great Grid Upgrade campaign to raise awareness of the important role that transmission plays in the energy transition. The need for new infrastructure is becoming more readily understood, providing a basis for discussion on how we can deliver it.
- We are deploying digital tools, like 3D visualisations, to make it easier for people to engage with the developments we are proposing for their communities. This is helping in some cases to assuage concerns.
- We are evolving our Community Grant Programme to respond to the needs of communities, and to address feedback from our stakeholders.

Support we need from others

We agree with the Government that communities hosting transmission infrastructure should see benefits from doing so. We would welcome the Government publishing guidance on community benefit at the earliest opportunity. This would provide a firmer foundation for us to deliver legacy benefits which would be supported and welcomed by communities.

Government has acknowledged that the existing planning system for infrastructure needs to be streamlined, with decisions made in a timely and efficient way. We are discussing with them how this could be achieved for critical transmission network projects.

We provide more detail on our engagement with communities in Sections 4.2 and 4.4.

Section 1.6
How we have approached deliverability and our RIIO-T2 track record

Our RIIO-T2 Track Record

Our RIIO-T3 plans build on a strong track record of delivery in RIIO-T2. We have overcome challenges with global supply chain disruption to deliver for customers. The flexibility in Ofgem's framework ensured we could respond to the volatile operating environment. This experience informed our deliverability assessment and the plans for delivery outlined in each of the investment sections that follow.

Safety: Our Lost Time Injury Frequency Rate (LTIFR) for employees and contractors increased as we came out of the pandemic. We have worked with our teams and supply chain partners to understand the root causes and address them. In 2023/24, our overall LTIFR was 0.14 and we are aiming for 0.1 in 2024/25.

Reliability: Throughout RIIO-T2, we have achieved world-class levels of network reliability, consistently above 99.9999%. We achieve this though our risk-based approach to managing the health of our assets, operational rigour and preparing for our response to network events.

Resilience: Our network has proven to be resilient through storms and floods due to our risk-based strategies and mitigations. We have achieved compliance with the relevant cyber resilience standards and enhanced our capability further through investment in training.

Environment: We are forecasting to meet or exceed all our targets agreed with Ofgem in the RIIO-T2 period. We have reduced our scope one and two carbon emissions by 16.9 per cent from a 2018/19 baseline, including by signing a 100 per cent renewable power purchase agreement in October 2023.

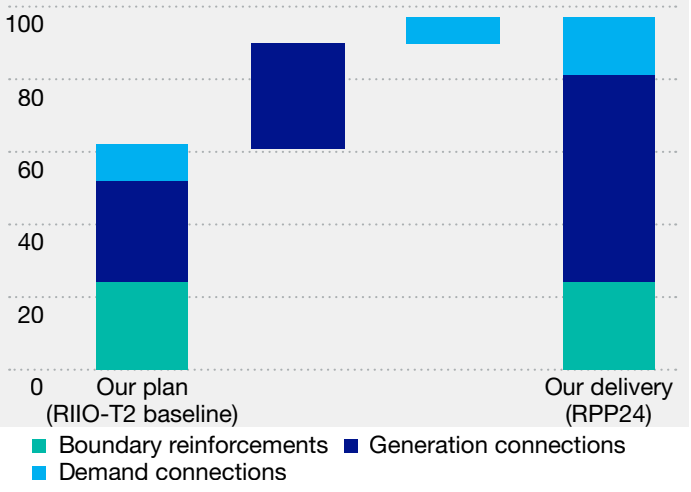
Constraint savings: We have saved consumers almost £175m in constraint cost savings in the last three years by proactively recommending projects to NESO and delivering them together.

Customer satisfaction: Our customer satisfaction score has decreased as the number of applications has increased, from 7.8 at the start of the period to 7.2 last year. This reflects the frustration with the connections and offer process which we are committed to addressing through this plan and our work with NESO. Scores in delivery and operational phases of connections remain consistently high.

Investment delivery: We have delivered significantly more work than was envisaged in the RIIO-T2 final determination in response to the need to expand the overall size of the electricity system:

- We have added over 9 GW of new transfer capacity over the first three years of RIIO-T2. This is approximately one-third more than the capacity added per year in RIIO-T1. Timely and early delivery of overhead line reconductoring and the installation of new smart valve technology is the primary driver of this performance.
- We have also increased the new connections delivered through the early years of RIIO-T2, delivering on average 2.8 GW per annum, compared to 1.4 GW per annum in RIIO-T1. This is an increase to the baseline set by Ofgem at the start of the period in response to the growing number of customer connection applications. An innovation we call 'Grid Parks' has allowed us to more quickly and efficiently connect clusters of small customers, and provide strategic investment by creating options for future customers. Our forecast indicates that we will deliver 16.2 GW of generation connections and 5.5 GVA of demand connections exceeding the baseline levels by Ofgem by +21 per cent and +104 per cent respectively.
- Our major projects, such as Hinkley Connection Project, London Power Tunnels and Dinorwig-Pentir, are progressing to time.
- We have established our Strategic Infrastructure unit to deliver the ASTI projects, with all six wave one projects expected to be in construction by the end of this financial year
- Since the start of RIIO-T1 our overall trend is to increase our annual asset health delivery. delivery. Last year, we delivered more asset health interventions than ever before. The interventions we have delivered differ from those set out at the start of the period due to interactions with the customer driven plan. The regulatory framework automatically adjusts allowances to ensure that consumers are protected as plans change. In section 5.5 we set out recommendations for a regulatory framework that continues to strike this balance.

Our delivery performance in RIIO-T2 (No. projects)



Section 1.6
Plan assurance

The Board of NGET has been fully involved in developing this business plan and assurance approach to ensure that the plan is of a high quality. The Board has been actively involved in defining the nature and approach of the assurance carried out and in reviewing the findings of the assurance programme.

In designing the assurance programme, we performed a top-down risk assessment to identify the programme level risks, then a bottom-up assessment to identify the risks present when building our plan. We created an assurance plan to mitigate these risks using the three lines of defence model. Assurance activities were then mapped to our assurance statements to ensure that sufficient work had been performed to allow the statements to be made. This assessment was reviewed and challenged by the Board prior to approval.

We have undertaken an external review of the design and implementation of our assurance activities which concluded that our process is in line with best practice.

We have taken a comprehensive approach to the assurance programme, building on the approach from previous price controls. As part of this we have engaged with external consultants to ensure we have developed a business plan which demonstrates clear benefits to our customers and is well justified. We have ensured detailed involvement of the NGET executive team throughout the process; an example is the detailed reviews of Engineering Justifications by our executive team. The NGET executive team has proactively engaged with Ofgem to understand and clarify the requirements of the business plan and assurance over it.

Our assurance statements
The following assurance statements are made by the Board with reference to NGET's business plan, including this document, supporting annexes and data tables as submitted to Ofgem on 11 December 2024:

The Board are satisfied that the business plan and the associated proposed costs and financial package have been appropriately challenged for accuracy, ambition, efficiency, customer interest and that we have assessed our plan for deliverability risks.


Alice Delahunty


Chris Bennett


Jeremy Mavor


Carl Trowell


Alex Lewis


Jeremy Long


Cathryn Ross


Sandip Thakrar


Phil Sheppard

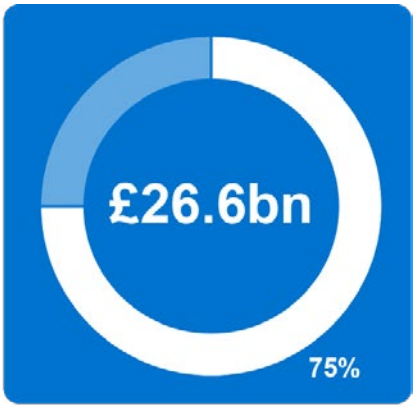
- **Accuracy** is defined as being supported by sound rationale, assumptions and evidence with no material issues. This has been confirmed through multiple levels of internal and external review of the submission documents.
- **Ambition** is defined as a business plan that delivers our commitments as set out on pages 97 to 99, which go above and beyond our commitments in RIIO-T2. This has been confirmed through external challenge and a comparison of what our business plan delivers to our RIIO-T2 Business Plan.
- **Efficiency** is defined as the delivery of our business plan to meet the scenario specified by Ofgem in the Business Plan Guidance with costs in line with internal historical comparators or external market information. This has been confirmed through cost benchmarking.
- **Customer interest** is defined as providing a high quality of service, ensuring secure and reliable supplies of energy with long-term value for money to consumers and building infrastructure for a low-cost transition to net zero. This has been confirmed through our investment decision pack assessments. The plan has been designed to meet consumers' and stakeholders' requirements, informed by a two-year long engagement programme and has been challenged by the ISG.
- **Assessing our plan for deliverability risks** is defined as assessing our business plan for deliverability risks and defining mitigation actions where the risks identified are above a reasonable risk appetite. There continues to be external dependencies which could affect the implementation of the business plan. The approach has been subjected to an external assurance review.

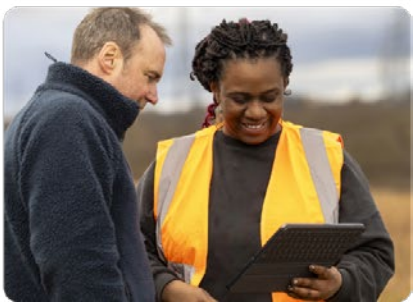
The Board can provide the required assurance that, in its opinion, NGET's business plan is financeable (as defined in Annex A11: Assurance Statement) on both a notional and actual capital structure basis based on the regulatory assumptions that NGET propose in our business plan submission. Importantly, our proposed regulatory assumptions are within the ranges and options that Ofgem allow for within its Sector Specific Methodology Decision for the financial framework. We are satisfied that these regulatory assumptions and conclusions are duly supported by evidence and are clearly in consumers' interests.

In contrast, the Board has identified financeability challenges using Ofgem's working assumptions in the Business Plan Financial Model (issued on 30 September 2024). As a result, the Board has been unable to satisfy itself that NGET's business plan is financeable using such working assumptions – on either a notional or an actual capital structure basis – as credit metric thresholds are not achieved in the RIIO-T3 period, and cross checks on the cost of equity show it is not sufficient. We provide details of these financeability challenges, together with the management efforts and mitigating actions that have or could reasonably be taken to address them, and the regulatory measures – comprising the updated regulatory assumptions proposed in NGET's business plan – that NGET considers are necessary to achieve financeability.

For full details of the financeability statement and definitions see Annex A11: Assurance Statement.

Infrastructure fit for a low-cost transition to net zero





In this section, we outline the commitments and investments that support the first of Ofgem's four Consumer Outcomes: infrastructure fit for a low-cost transition to net zero.

This is by far the largest part of our plan. £26.5bn of our proposed investments relate to this Consumer Outcome; to expand the capacity of our existing network and extend it to connect new clean sources of power. Our network needs to support demand that is forecast to double by 2050 as heat, transport and industry continue to electrify. Growth in technologies like artificial intelligence means larger scale, energy-intensive computing infrastructure, and the decarbonisation of traditional industries.

The task is similar to that of the 1950s when our predecessors embarked on a decade-long programme to build a supergrid with the capacity to support future innovations. We plan to do the same. We are working to design and deliver the strategic upgrades needed, through the Great Grid Upgrade and Accelerated Strategic Transmission Investment (ASTI).

Our plan allows the electricity from 50 GW of offshore wind to flow across the country, and provides capacity for 35 GW of generation and 19 GVA of demand customers to connect. We have developed our investments with an eye to the future, creating a further 26 GW of options that can connect new customers quickly.

We will need to stay flexible to the implementation of Clean Power 2030 through connections reform. When there is greater clarity, we will need to review our plan and assess the impact on timing and projects, and potentially seek funding through agreed mechanisms.

As we deliver our plan, we must also cut our carbon emissions, reduce our broader environmental impacts and protect nature.

We will cover the following topics:

2.1 Increasing the capacity of the system

2.2 How we will accelerate connections for our customers

2.3 Protecting and improving the environment

Associated annexes:
Annex A01 - Environmental Action Plan
Annex A03 - Workforce and Supply-Chain Resilience Strategy
Annex A08 - ET Load Strategy

2.1 Increasing the capacity of the system

Baseline £4.23bn Pipeline £14.82bn

Our RIIO-T3 objective:

We will deliver the capacity our customers need now, by looking holistically across multiple investment drivers to deliver at the pace and scale required to support Government's ambition on growth and decarbonisation

Views from stakeholders and customers

- Consumers value lower and more stable energy costs. This will come from by removing dependency from imported fossil fuels, which requires us to increase the capacity of the system and extend it to connect renewables
- Our research shows the majority of the public support us getting on with delivering necessary network upgrades
- Ofgem has been instrumental in enabling progress, for example enabling access to early funding
- We are collaborating with National Energy System Operator (NESO) to define priorities and develop the network
- We are engaging proactively with Government around the reforms required to further accelerate delivery

Our commitments:		Success measure / target
A2.3	Develop and deliver major new network expansion projects identified by NESO	• 21 projects delivered • 35 projects developed/in development, this includes in construction, with a number having high potential to accelerate and deliver in RIIO-T3
A2.4	Replace overhead line conductors to meet load and non-load needs of our customers	• Reconductor 8% of our overhead line network (215 circuit km per year) with pipeline planning for an additional 13% of the network (365 circuit km per year)

"I joined National Grid in 2023 to establish an entirely new business unit to deliver major grid enhancement projects including the Accelerated Strategic Transmission Infrastructure. Since then I have assumed responsibility for procurement, which means we can align our supply-chain strategy more closely with delivery "

Carl Trowell
President Strategic Infrastructure

The development of the electricity system will be increasingly strategically planned to provide a low-cost net zero transition in line with Government ambitions, under the guidance of NESO.

Our plan involves new infrastructure and major upgrades that meet the requirements of three of our key stakeholders:

- **Government** has set the strategic direction for decarbonisation
- **Ofgem** has set the decarbonisation scenario against which our plan is built and has already put in place changes to the regulatory framework to help delivery
- **NESO** advises both parties on how the energy system needs to evolve to meet their respective objectives

Our plan will deliver some of the biggest electricity network infrastructure projects ever delivered, alongside a number of smaller but essential works to provide the required increase in network capacity. Delivering at pace will reduce the constraint costs paid to generators when there is not enough network capacity to transport electricity from where it is generated to where it is needed. We estimate that our plan will reduce these costs by £12bn during RIIO-T3, representing £40 on average per year for every household, as shown in section 5.1.

Four categories of projects increase the capacity of the system:

Accelerated Strategic Transmission Investment (ASTI): We are responsible for delivering 17 of the 25 ASTI projects confirmed by Ofgem in September 2023. Four are joint ventures with the Scottish Transmission Owners. Once delivered, these projects will enable us to flow generation from 50 GW of offshore windfarms across our network, including those connecting in Scotland. The programme is already well under way.

Projects identified in NESO's transitional Central Strategic Network Plan (tCSNP): These are newer projects, having been set out in NESO's Beyond 2030 report in March 2024 and enable the generation from a further 21 GW of offshore wind.

Supporting works: These are projects confirmed by NESO as necessary to unlock the benefits of ASTI and tCSNP and to allow power to flow across the country from generation to consumers.

NESO-triggered works: Wider works to increase capacity across boundaries.

How we built our plan to increase the capacity of the system

Accelerated Strategic Transmission Investment

17 major projects identified by NESO with the key objective of reinforcing the network to accelerate the provision of up to 50 GW of offshore wind by 2030.

- **Projects with mature delivery plans**. Three projects, Eastern Green Link 1 and 2 and Yorkshire GREEN, are well advanced. Allowances have been agreed with Ofgem, contracts signed and construction has begun. There is a high degree of certainty they will be delivered well within RIIO-T3. These projects are included our baseline plan.
- **Opportunities that will deliver in the RIIO-T3 period but where allowances are not yet agreed**. A further 11 projects will be delivered in the period but have not yet reached the stage where costs have been agreed, so development costs have been included in the baseline and construction costs are shown in the pipeline. Three of these schemes (Sea Link and the two schemes linking Norwich to Tilbury) have been highlighted in Clean Power 2030 as potential targets for acceleration, and we may reprofile these following the Government response to Clean Power 2030.
- **Projects where we will make significant progress during RIIO-T3 but further work will be needed.** Three projects, Eastern Green Link 3 and 4 and the Lincolnshire upgrade, have evolved to meet significant increase in customer connections; an increase from 4.6 GW in 2019/20 to 7.6 GW in March 2023 to ~18 GW today. As a consequence we have evolved the design of these projects to adopt a new solution. During RIIO-T3, there will be significant progress but completion will be after this timeframe. Development costs for these projects are included in the baseline, with some of the construction cost in the pipeline but the majority of construction cost expected in RIIO-T4.

5 major offshore projects

Building two of the longest offshore High Voltage Direct Current (HVDC) cables in the UK and providing enough **electricity to power 4 million** UK homes.

Beginning construction on **two additional offshore cables** that stretch over 500 km to bring clean energy from Scotland to Lincolnshire.

130 km of offshore cable to connect Suffolk to Kent, enabling a two-way flow of renewable power depending on where renewable energy is being generated at that time and where in the country it is needed.

12 major onshore projects

In East Anglia, over **200 km of new electricity transmission reinforcement** in the form of overhead lines and underground cabling.

In Lincolnshire, a reconfigured design to connect the two offshore schemes to new substations. This will reinforce the network to enable ~18 GW of customer connection capacity in the region (an increase from 4.6 GW in 2021) and mitigate the risk of constraint costs in the region.

Complex projects in the south east that require extensive planning to avoid disrupting the power supply to the region and also local communities and businesses.

Beyond 2030 / tCSNP projects

A combination of projects that together facilitate connection of an additional 21 GW of offshore wind. These projects enhance onshore networks for bulk electricity transmission and improve offshore coordination through 'marine grids'. These are offshore projects that involve at-sea platforms and new technologies to minimise network build and support NESO's operation of the electricity system.

- **Four large onshore and offshore projects identified by Ofgem as potential ASTI projects.** A small number of high-value projects with current estimated costs totalling over £12bn, £1.9bn of which is in RIIO-T3. This is a combination of development and construction spend.
- **Beyond 2030 projects.** We will progress robust development of the 35 projects identified in NESO's report. Given the current low maturity of the tCSNP2 projects, specific funding mechanisms have yet to be identified for each project. Given the need to continue to develop these projects further, all forecast costs have been included in the pipeline plan.

We are working closely with Ofgem and NESO to develop these projects in line with the planned refresh of NESO's strategic network plans and outputs from Clean Power 2030. We will support Ofgem to finalise the regulatory and funding mechanisms for these projects. We will apply the same successful principles of the ASTI framework.

Supporting works

These are critical works for unlocking the benefit of the other identified projects. They are works at substations such as Friston, which is a key enabler for the Sea Link project, which has been identified in Clean Power 2030 as a potential scheme for acceleration. We have considered appropriate funding mechanisms for each of these projects in our investment plans based on certainty and project-specific characteristics.

NESO-triggered works

NESO-initiated wider works network activities to address the requirements for increased capacity across network boundaries to meet a range of Future Energy Scenarios.

Our RIIO-T3 investments to increase the capacity of the network

Investment	Description	Baseline	Pipeline
Increasing the capacity of the system		£4.23bn	£14.82bn
ASTI	Baseline: Construction works for Yorkshire GREEN and Eastern Green Links 1 & 2. Pre-construction works for 10 projects. Pipeline: Construction works for 14 ASTI projects that are not yet in construction	[redacted]	[redacted]
Beyond 2030 / tCSNP	Pipeline: Development costs for four potential ASTI projects and 35 Beyond 2030 projects	[redacted]	[redacted]
Supporting works	Baseline: Works at Friston and Pelham Pipeline: Construction costs on four enabling routes	[redacted]	[redacted]
NESO-triggered Works	Baseline & Pipeline: Overhead line & cable reinforcements triggered by NESO	[redacted]	[redacted]

Our plan to deliver the increased capacity of the system

We have put the delivery foundations in place. Support from Ofgem and progressive regulatory frameworks have given us the right foundations to meet our goals.

Last year, we established our Strategic Infrastructure business under our NGET licence. Its purpose is to provide a clear focus on developing and delivering major network projects to the high-voltage electricity transmission network in England and Wales. It works hand-in-hand with our Electricity Transmission business, which will ultimately receive the infrastructure to operate and maintain.

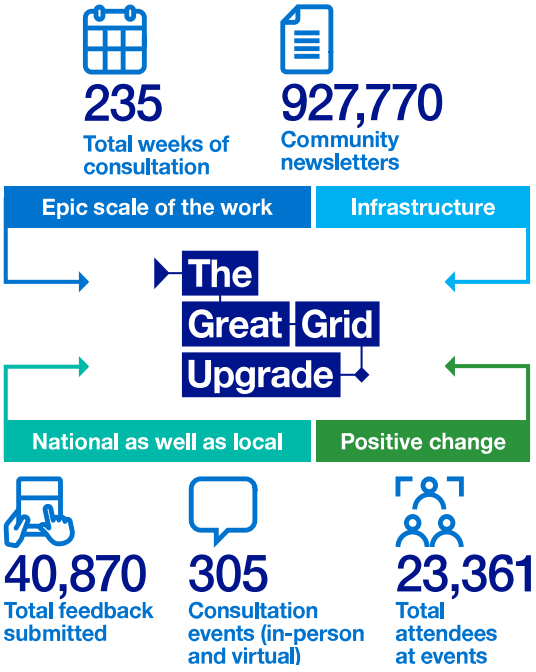
Our major project delivery experts and dedicated leadership teams will build on the momentum we have established already. We will harness the strategic partnerships we have forged and the mechanisms available to us under ASTI to continue the delivery pace through RIIO-T3.

This progress is evidenced by a number of key achievements. Our approach to setting up the delivery of these major network upgrades through a longer-term, partnership model with our supply chain is a core part of how we are mitigating the delivery risks in the global supply chain. We provide further detail in Annex A03: Workforce and Supply Chain Resilience Strategy.

Supply chain constraints are an ongoing risk. We will need to work closely with Ofgem to secure access to Early Construction Funding and make the required commitments to maintain delivery pace and confidence in dates. This includes the co-development of the Advanced Procurement Mechanism (APM) that will enable us to make larger, and longer commitments. This approach should help to build capacity as well secure the required equipment and skills.

Our research, outlined in section 1.5 shows the public support for green energy infrastructure is high, and as a responsible business we need to strike an appropriate balance between national and local interests.

We have already made a step change in our community engagement as part of the Great Grid Upgrade. Over the course of RIIO-T2, we will have increased our community engagement team six-fold so we can run a more extensive engagement programme with our affected local stakeholders. We have also adopted new technologies including virtual reality to help improve the quality of engagement so people can better foresee the potential impact of our infrastructure on them from their doorstep or favourite place.



Hearing about what matters to communities

We aim to deliver the highest standards of public consultations and community relations so we can develop infrastructure proposals that are shaped by local input and create a greater level of community acceptance.

We try to make it convenient and easy for local communities to find out about our planned network upgrades and to tell us what matters to them.

Online webinars, community update newsletters, social media advertising, consultation documents and information in local libraries, briefings for parish councils and elected members, one-to-one stakeholder briefings, telephone call-backs and language translation where necessary, really help ensure we reach as many people as possible in the local community.

Establishing the Great Grid Partnership

Contracts signed with **seven partners** in a framework worth up to **£14.5bn** allowing us to rapidly mobilise the supply chain to secure capacity and enable project acceleration. Work package allocation has begun with plans to scale up ahead of and during RIIO-T3.

HVDC Frameworks

£9bn HVDC frameworks to help us invest on an unprecedented scale across NGET and the National Grid Group. This includes **procuring over 14,000 km of cable**, a third of global market capacity, creating long-term strategic contractual relationships and a mechanism to secure not only our existing requirements but also for anticipated capacity should it be needed.

Milestones achieved

Multi-billion pound **contracts signed** on Eastern Green Link 1 and 2, Hackney to Waltham and Yorkshire GREEN

First two **Development Consent Orders (DCO) awarded** to NGET for Yorkshire GREEN and Bramford to Twinstead

305 consultation events with strong stakeholder engagement including six consultations run in parallel.

2.2 How we will accelerate connections for our customers

Baseline £0.79bn Pipeline £6.18bn

Our RIIO-T3 objectives:

- We will deliver the capacity our customers need now, by looking holistically across multiple investment drivers to deliver at the pace and scale required to support Government's ambition on growth and decarbonisation
- We will future-proof our network with strategic capacity and flexibility for the longer term, using the network modelling capabilities we developed in RIIO-T2 to surface insights and inform strategic decisions

Views from stakeholders and customers

- Customers, industry partners, regional representatives and other sectors expect us to enable easier, faster connections. Their concerns with the current situation are well documented in the media and by Government.
- A majority, across all socio-demographic groups, believe we should develop the network now for future needs.
- The Government's new industrial strategy identifies the need to accelerate connections to the electricity system.

Our commitments:		Success measure / target
A2.1	Enable the connection of new generation to the electricity transmission system	• 35 GW connected
A2.2	Enable the connection of new demand customers to the electricity transmission system, including to support the Government's new Growth Driving Sectors	• 19 GVA connected
A3.1	Develop and deliver strategic investments which include optionality for the future	• Options created for 26 GW (through future-proofing approach to investment)

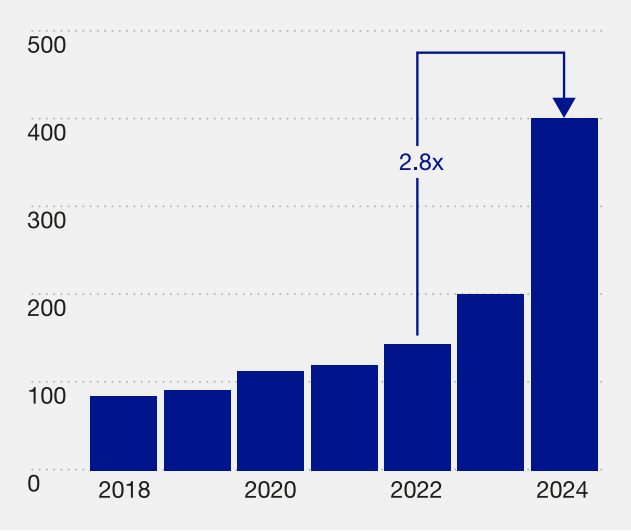
We have seen exponential growth in the number of customers wanting to connect to the electricity transmission system in recent years, as shown below.

There is a clear imperative to deliver infrastructure quickly to achieve broader societal goals, including net zero. As we do, we need to stay flexible to respond to Clean Power 2030 and connections reform. We will invest in the network to provide the capacity required by NESO's 2024 Future Energy Scenarios Holistic Transition pathway.

Our customers are telling us that they want us to reduce connection timescales, this is a key issue impacting customer satisfaction feedback with the process today. National and local governments expect us to support their economic growth objectives. We have also seen a number of important demand customers seeking connection and capacity to the network, including steelworks, battery 'gigafactories' and data centres, each with a drive for pace to secure investment into the UK and jobs for the communities around them.

We have designed our plan to be adaptable to changes that will arise from the Clean Power 2030 plan and connections reform, and to support the new Growth Driving Sectors identified in Government's 2024 Industrial Strategy: digital and technologies; and industrial decarbonisation.

Figure 1: Generation customer connection pipeline (GW)



"In the last year I have been involved in initiatives which aimed to accelerate projects. As good as these have been they lack the systematic change our customers require. That's why I am proud of this investment plan and the potential it has to truly deliver infrastructure at a quicker pace than ever before."

John Twomey
Director of Customer Connections

How we have built our plan for connections

We have taken a structured approach to prioritise our connections investments. This allows us to navigate uncertainty and develop a pipeline of investments aligned to the required planning scenario.

The pipeline of customers looking to connect to our network almost trebled over the last two years. There is significant uncertainty about which of these projects will proceed and will be ready to connect. Today, our connection pipeline is 415 GW, which compares with 59 GW connected today. The pipeline is far larger than would be required by 2050 in all plausible decarbonisation scenarios. This creates complexity around which new connections and local enabling works we should provide for in our business plan.

The connections pipeline does not represent a cost-optimised scenario to decarbonise the electricity network. Therefore, we have included connections and connections options in our RIIO-T3 plan that are consistent with the Holistic Transition pathway. The pathway meets net zero through a mix of electrification and hydrogen. It also incorporates demand shifting from smart homes and electric vehicles.

We established and applied a consistent and repeatable methodology to assess the relative likelihood that each customer connection will proceed. We have applied this methodology systematically to generation, demand, and embedded generation to guide our investment decisions. The methodology assesses project-specific and overall technology factors (i.e. the volumes compared to the Future Energy Scenario). Our assessment does not guarantee that a project will or will not connect. It does provide a balanced and objective assessment of what could happen as the basis for planning our investment. We describe this methodology in further detail in Annex A08: ET Load Strategy.

We have used our assessment of readiness to inform the detailed design of our plan at a regional and site level. While we have an informed view of possible projects, there is still uncertainty about which and how many will proceed and require a connection. We are dealing with this uncertainty by adopting a twin-track approach:

- **Delivering connections for specific-customers**. We opt for standalone connections where a site-scale intervention is not justified by the current and anticipated contracted background, but we have high confidence in the readiness of a specific customers to connect to our network.

  We opt for site-scale investments where it is justified by the number of customers and the confidence we have in them. These investments typically have a mix of connections and multiple drivers including, for example, asset health.
- **Strategic investment ahead of need to create connection options**. This approach adds the potential for 26GW in the future.

Figure 2: Number of connections projects

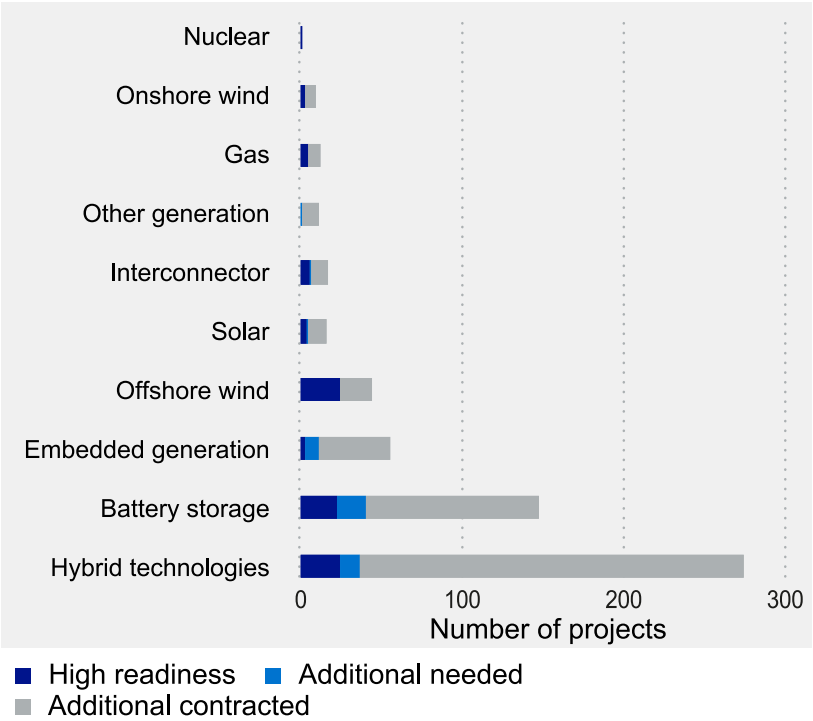


Figure 3 on the following page shows the difference in drivers which we are meeting through our programme of site strategies for customer connections.

While there is **uncertainty because of the Clean Power 2030 plan and connections reform, there is overlap between the Holistic Transition and Clean Power 2030 scenarios in the early years of RIIO-T3.**

The framework provides us with flexibility through uncertainty mechanisms for the later years of the period, once the implications of these external factors becomes clear during 2025.

Our RIIO-T3 connections investments

Our investments to provide connections and connection options are included in both our baseline and our pipeline funding requests.

Our investment plan delivers **35 GW** of new generation connections, 32GW of which is low carbon, and **19 GVA** of new demand connections.

The need for the investments in our plan is clear and is supported by our customer confidence analysis. However, in a rapidly changing environment we do not have full clarity on the precise design of all customer connection investments during the next five years.

Where we have high confidence in the maturity of the design (i.e. the specific scope) which enables us to obtain high confidence in costs, e.g. as a result of a tender exercise, these projects are included in the baseline. Otherwise, we have included them in the pipeline.

In this way, we are reducing the risks for consumers due to the volatile supply chain environment.

Our investment plan in this area is broken down into these elements:

- **Full project costs** for investments that began in RIIO-T2 and will be completed during RIIO-T3 where the scope is known and there is limited cost risk; alongside standalone connection projects are in the baseline.
- **Pre-construction costs** for site strategy investments where we are confident in the need, have shortlisted options, but do not have sufficient confidence in construction costs are included in the baseline. Consequently, estimated construction costs are included in our pipeline.
- **Early development funding** for our least mature site strategy investments, which we expect to deliver during the later years of the price control period is included in the baseline. Detailed development and construction costs for these projects are included in our pipeline.

Our baseline request includes a proposed allowance for the Use It or Lose It Fund included within the RIIO-T3 load-related funding framework.

Investments	Description	Baseline	Pipeline
Connecting customers to our network		£0.79bn	£6.18bn
Generation connections	Investments that deliver sole-use and local enabling works for generation customers	[redacted]	[redacted]
Demand connections	Investments that deliver sole-use and local enabling works for demand customers.	[redacted]	[redacted]
Multi-driver strategic projects	Site strategies needed to connect multiple customers and create options for future connections.	[redacted]	[redacted]
Opex	Operating costs of related teams	[redacted]	[redacted]
Strategic access to land	Securing access to strategic parcels of land to proactively resolve land constraints to enable the pace of connections and network growth needed	[redacted]	[redacted]

Our plans to deliver connections

We are taking an approach to delivery that uses the regulatory flexibility.

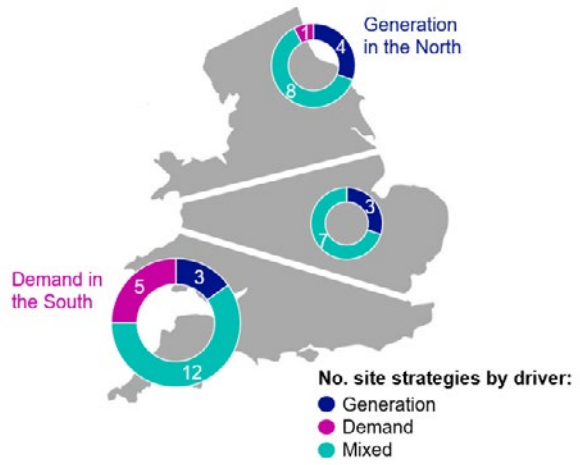
We have detailed planning for the first three years of RIIO-T3. This means there will be no hiatus in the speed at which we are delivering investments.

We have signed more than £1.4bn worth of contracts to the supply chain for projects starting delivery next year across 21 major schemes. To support this work, we have agreed with Ofgem how we can expedite the RIIO-T2 reopener processes to support us to deliver at pace.

We are adopting longer-term supply chain strategies, designed to create the certainty required for suppliers to invest in increasing the overall available capacity

We will use competition to drive efficiency and support consumer value, selecting our partners using a more collaborative, partnership approach. We are adopting a regional supply chain model for connections. This approach will use competition to assure value through long term strategic frameworks allocated on a regional basis to give supply chain partners a long-term order book. This will encourage suppliers to grow capacity and enable deeper collaboration with our construction partners to focus on efficiency and supply chain productivity – vital for our plans to connect customers. The rationale and further detail of this approach is set out in the Annex A03: Workforce and Supply Chain Resilience Strategy.

Figure 3: Drivers of our connections site strategies



A programmatic-based 'convoy' model

We are developing national or regional 'convoy' models to deliver our work, both for long-distance reconductoring projects and substations.

A convoy model enables a sequential approach to project delivery. Projects in each bundle are organised and executed by suppliers in a coordinated way.

We are also exploring how a programmatic approach can help to condense the time it takes for us to add new connections capacity to the system. Key enablers for this approach are:

- **Securing early approvals for a programme of projects** from Ofgem, similar to the ASTI programme approved by Ofgem in September 2023. Streamlining of the scrutiny process which Ofgem must undertake, including greater use of up-front principles and policies on substation design, to remove the need for repeated lengthy reviews for each site.
- A **more standardised approach** to substation design
- **Regional supply chain partnerships** for capability to build substations, combined with securing long-term equipment capacity through the Advanced Procurement Mechanism
- **Anticipatory purchases of land** in areas likely to be needed based on strategic network plans
- **Collaboration with NESO on outage planning** as part of a strategic programme.

We believe this could reduce by up to three years the average seven years it takes now to develop a new substation.

We will secure strategic access to land

Strategic investment in land before full scope of engineering works are defined, reduces risks associated with land acquisition. It will avoid potential delays to customer connections. It also improves resilience to programme changes and reduces costs compared with having to acquire land through other means at a later stage.

Our preferred approach is to use land that we already own. If that is not sufficient, we use voluntary acquisition, where possible securing options over the land, rather than purchasing land straight away. Options are less expensive and as such present less risk for consumers if secured on an anticipatory basis. In situations where we have a high degree of confidence in future network development, immediate purchase may be the best option. We are developing a new approach and governance process for strategic investment in land access. This will involve specialists to consider community engagement, fairness, the likelihood of land being required, location risks, engineering risks, consents risk and to ensure that the purchase represents a fair price and good value for money for the consumer.

We have taken the risk of delays in securing planning consent or securing additional land when optioneering our projects

We have taken a holistic approach to the design of projects and choice of technology, such as whether to use air- or gas-insulated switchgear. While the former has technical advantages, it requires a larger footprint and greater impacts on visual amenity. In some projects, where pace or ecological factors are particularly important, we have placed additional weight on this when selecting our proposed technology.

We will give customers a clearer picture of the impacts of changes to our plan and the effects of any third-party delays

As we discuss in more detail in section 4.1, one key challenge is how changes to the plan could have knock-on impacts because of the volume of work we are delivering.

As discussed in section 5.3, our digital investments will improve the visibility of changes for customers. This will help to mitigate the impacts and encourage customers to meet their own delivery timescales, which is a key dependency affecting this part of our plan.

2.3 Protecting and improving the environment

Baseline £0.50bn Pipeline £0.03bn

Our RIIO-T3 objectives:
Play a leading role in accelerating net zero and driving a nature positive future, including by reducing our own emissions and environmental impact

Net zero

Views from stakeholders and customers

- There is a diverse range of views amongst our stakeholders on environmental priorities, which is reflected in the number and detail of our commitments which goes further than just decarbonising our own activities.
- Our research showed protecting and improving wildlife and natural environments is valued by consumers.
- Feedback from our carbon neutral construction consultation supported us reducing construction emissions.
- Our approach to compensating residual emissions was well received with a stakeholder clear preference for UK projects with local benefits. Government has signalled their support for communities hosting clean infrastructure to benefit from doing so.

Our commitments:		Success measure / target
B4.1	Reduce our own carbon emissions: Deliver Scope 1, 2 and 3 emissions reductions in line with a 1.5-degree Science Based Target (SBT)	• 50% reduction in Scope 1 and 2 emissions from a 2018/19 baseline • Contribute to the National Grid Group Scope 3 emissions reduction target of 37.5% from 2018/19 baseline by 2033
B4.2	Ensure that 80% of our supply chain have formally committed to the same SBT as us	• 80% of our supply chain partners (by emissions) committed to a Science-Based emission reduction target by 2031
B4.3	Drive sustainable operations through reduction of SF6 emissions, energy use in our operational estate, and fleet vehicle emissions	• 50% reduction in SF6 emissions by 2030 from a 2018/19 baseline • 20% reduction in substation energy use by 2031 • 100% zero emission fleet purchases for light duty vehicles by 2031
B4.4	Deliver our construction projects at as low carbon intensity as possible, as set out in our Low Carbon Infrastructure Roadmap and invest in carbon compensation projects, that also deliver social and/or nature benefits from constructing our infrastructure	• 50% low-emission concrete by 2030 • 50% low-emission steel by 2030 • Phase out of diesel generators by 2028 and work towards electrification plan by 2035
B4.5	Reduce emissions across our corporate property office estate in pursuit of our net zero ambition	• Net zero offices as per the UK Green Building Council (UKGBC pathway)

Nature positive

Views from stakeholders and customers

- Views across our stakeholders are mixed. Some said 10% Biodiversity Net Gain (BNG) was not enough and wanted at least 20% for all developments.
- Stakeholders said 10% BNG should not be seen as a cap, with opportunities to deliver a higher BNG percentage alongside wider benefits taken where possible.
- But there is consensus that focusing on wider outcomes in parallel to BNG percentage would ensure richer and more beneficial outcomes for nature and communities.
- The ISG encouraged us to consider delivering large-scale actions aligned with national strategies and to collaborate with others, such as windfarm developers, in a joined-up approach.

Our commitments:		Success measure / target
B4.7	Deliver BNG (Net Biodiversity Benefit in Wales) alongside wider environmental and societal benefits	• 10% or greater BNG alongside wider environmental and societal benefits for all developments requiring formal planning or consenting • 10% Biodiversity enhancement for voluntary non-statutory construction projects plus wider environmental and societal benefits
B4.8	Seek to deliver marine improvements for projects impacting the marine environment and work with grantors to deliver nature connectivity	• Develop a marine enhancement and restoration strategy • Enablement of Local Nature Recovery Strategies (LNRS)
B4.9	Disclose our nature-related risks and opportunities, and work with other Transmission Owners and common supply chain to manage nature and ecological risks	• Work with supply chain to set reduction targets • Annual Report on progress

One Planet Living

Views from stakeholders and customers

- Our Environmental Action Plan consultation confirmed stakeholders wanted a greater focus from us on oil management and water stewardship
- Our engagement through the Sustainability Leaders Forum highlighted strong agreement on moving away from the focus on waste towards resource and materials used

Our commitments:		Success measure / target
B4.6	Improve our circular economy maturity levels, reduce waste and recycle/reuse more content in construction	• Achieve ‘engaged’ level in BS8001 • Zero avoidable waste in construction by 2030 • 10% recycled / reused content in major construction projects by 2031
B4.10	Assess our water footprint and work with industry and our supply chain to identify opportunities to improve water use and minimise wastewater generation	• Improved understanding of m^3 footprint across the value chain
B4.11	Build on our certified environmental management system to reduce oil contamination risk through improved asset management and using alternatives to oil-filled installations where viable	• Certified ISO 14001 Management System

"We have developed a plan that places the environment at the heart of what we do without compromising the pace of how we need to do it. Nature-based solutions are a key part of this to address the biodiversity crisis we face in this country while also helping to deliver on our climate change commitments."

Ciara Taberner
Director of Safety, Health, Environment and Communities

Our stakeholders expect us to support decarbonisation of the economy and help them to meet their net zero ambitions while managing our environmental impact responsibly, improving the environment where we can.

As we build and maintain our assets we can impact on the environment. We have a responsibility, demanded and expected by our stakeholders, to protect against species loss, ecosystem collapse and to prevent unintended consequences from our efforts to accelerate the transition, including reducing our own carbon emissions.

We have a strong track record on environmental sustainability. We have had an environmental management system certified to ISO14001 for many years. In our current regulatory period, this has helped us reduce our scope one and two emissions by 17 per cent from 2018/19 (excluding losses) and the carbon intensity of our construction projects. At the same time, We have delivered 10% biodiversity net gain three years prior to legislation and achieved zero waste to landfill in construction.

Last year, we set a world record for the largest pour of Earth Friendly Concrete as part our London Power Tunnels project, reducing emissions by 64 per cent. We are among the first to install 400 kV SF6-free switch gear and our work with our Stakeholder Advisory Group in BNG and targeted conservation actions has been recognised by Sir David Attenborough.

In this plan we make further environmental commitments across three key areas; Net Zero, Nature Positive and One Planet Living.

Our plan for environmental sustainability builds on our strong environmental performance during RIIO-T2. It reflects our stakeholders' priorities and is realistic in the context of the growth and transformation required to accelerate the connection of renewable energy. It is aligned to international action and ambitions by reflecting the United Nations Sustainable Development Goals. We will review our plan every year, as we have in the last five years. We will continue to refine and improve our strategy if there are new policy changes, or if the science tells us we need to act faster, aligned with our core purpose of building the future net zero network.

How we have built our environment plan

We have taken a rigorous approach to establish our environmental and sustainability proposals for RIIO-T3.

Over the past year we have:

- reviewed the environmental impacts created by our network
- learned from best practice across sectors
- carried out widespread engagement
- reviewed our track record to understand what we can realistically achieve in RIIO-T3
- set targets based on robust target optioneering
- embedded our commitments and targets in our Environmental Management System so we have the right procedures and trained staff to achieve them
- adopted recognised environmental and sustainability frameworks and standards (including e.g. SBTi, UN SDGs, ISO)
- conducted cross-sector benchmarking to ensure our plan is ambitious.

Full details of our analysis and approach are set out in Annex A01: Environmental Action Plan.

Net zero

We are supporting long-term, national decarbonisation goals, while continuing to manage our business and supply chain emissions responsibly.

To decarbonise our own operations, we have set a Science-Based Target (SBT) in line with keeping global warming to 1.5 degrees. Without intervention during RIIO-T3, we would expect emissions to increase as our construction portfolio is growing.

Alongside decarbonising our direct operations, we will work ever more closely with our supply chain. By setting standards and goals, we can directly influence how manufacturers, suppliers, constructors, and service providers respond and make changes to their operations. Our desire to influence the supply chain for a more sustainable future is evidenced by our RIIO-T3 target to have 80 per cent of our supply chain partners (by emissions) committed to a Science-Based emission reduction target by 2031. We will also use our scale and role at the heart of the energy industry to influence the development and uptake of low-carbon alternatives to construction resources such as concrete, steel and diesel. Transmission losses are included within our Scope 2 emissions, and so are included in our RIIO-T3 commitment. Our losses strategy efficiently manages losses on our network over the long-term, for example how transmission losses are factored into equipment specifications and procurement processes for cables, overhead lines and

transformers. We will report on the progress of the losses strategy and associated performance measures, as well as contribute to the evidence base on the proportion of losses that we can influence or control.

Nature positive

To respond to the global biodiversity crisis, we are taking a proactive approach to preserve, restore and enhance the natural environment.

BNG can contribute to halting and reversing biodiversity loss by leaving the natural environment in a measurably better state than before.

We will use our mandatory 10 per cent BNG requirements as a catalyst to deliver wider environmental and societal benefits, working with strategic partners and communities to deliver large-scale actions supporting nature recovery strategies. BNG is our chosen route to working with strategic partners to facilitate investment in nature that will deliver long-term sustainable benefits for biodiversity and communities. 10 per cent is not seen as a specific target or cap and we will work with our partners to deliver more than 10 per cent where viable.

We will work with our grantors and contractors to implement new ways of managing our assets that deliver benefits for biodiversity and ecosystems and contribute to wider UK nature strategies and targets.

There is increasing need for to restore the marine environment in the face of a continued decline in marine biodiversity. This is important for us in RIIO-T3 as we will be increasing our offshore grid four-fold.

In the next five years, we will look at marine enhancement and restoration as a new priority. Our aim will be to protect species and habitats and to allow natural recovery where a feature has been lost or damaged before active restoration is considered.

One Planet Living

To contribute to limiting pollution and better managing the use of Earth's finite resources, we are altering our approach to the consumption of resources.

According to the International Energy Agency, the low carbon transition will exponentially increase demand for critical raw materials. Of the materials required through to 2050 for the transition, 95 per cent of the weight is accounted for by steel, aluminium, and copper. Current electricity transmission construction practices involve large amounts of steel, concrete and copper conductor.

Replacing these traditional materials with more sustainable choices and embedding circular design principles at design and in procurement strategies can help deliver a more resource-efficient future. We will continue to fund innovative new technologies such as new composite conductors which are less affected by sagging and can reduce the number of steel pylons we need to build on new transmission lines.

We have built a strong foundation. We have two asset refurbishment centres and two oil management units that reduce waste and enable reuse. We will continue to explore further opportunities for circularity and build on this deep in-house capability.

The water environment must also be protected from harmful pollutants such as oil and sewage which can seriously damage fragile ecosystems and impact drinking water. In response to stakeholder feedback, we will improve our understanding of our water usage footprint through this period.

As well as managing our environmental impact, we will take actions to reduce the potential for risk. For example:

- Evolving our approach to landfill diversion and recycling targets to focus on eliminating avoidable waste, material management and circular economy
- Turning to cleaner alternatives to oil where available and using reconditioning innovations.

Balancing trade-offs with other areas of our plan

We have balanced trade-offs between our environmental goals and other critical elements of our RIIO-T3 plan. Our stakeholder engagement and understanding of priorities has informed our target-setting and optioneering.

Examples of the key trade-offs we have sought to balance:

- We decided not to follow accelerated removal of SF_6 from our network as this would prevent us being able to expand the grid to help decarbonise the economy. This is essentially a sequencing choice as we remain committed to 2050 targets. We will increase our use of other fluorinated gases (F gases), that have excellent electrical insulation capabilities, but substantially lower global warming potential than SF_6.
- Supply chain availability can make it harder to prioritise or incentivise our suppliers on sustainability performance. More sustainable construction materials may exist, but these may be restricted in available volume, therefore adding to project duration. We will not stop work if these restrictions exist. We have qualified our commitments 'where commercially, technologically and timely available' to reflect this.
- Sourcing low-carbon materials such as low-carbon steel may deliver further emissions reductions. However, there will be instances where these materials will need to be sourced outside the UK.
- Some low-carbon technology and engineering solutions are less established and therefore we are asking for more funding to take advantage of low-carbon alternatives which might be more costly, but stay within an acceptable balance when considering affordability priorities.
- Our Nature Positive commitments must represent consumer value and costs associated with BNG commitments must be balanced with the wider benefits that can be realised.

Our RIIO-T3 environmental investments

Investment	Description	Baseline	Pipeline
Reducing the environmental impacts of our network		£0.50bn	£0.03bn
SF6 emissions reduction	The funding is to deliver physical intervention on existing and forecasted / anticipated (palliative) SF6 leaks at sites with the highest risk of SF6 emissions. **Carbon benefit 162,000 tCO_2e**	[redacted]	[redacted]
Substation energy efficiency	Capital investment across 82 sites including upgrades to heating and control systems, solar PV installations etc. Also behaviour change programme to reduce energy use in our sites. Capital expenditure will be deployed. **Carbon benefit: 16,535 tCO_2e**	[redacted]	[redacted]
Commercial fleet replacement	The funding to continue the Commercial Fleet Zero Emission Vehicles (ZEV) Replacement programme. By the end of RIIO-T3, we will be at approximately 100% ZEVs (where technology availability and delivery timescales allow) compared to 60% planned at the end of RIIO-T3. **Carbon benefit: 2,928 tCO_2e**	[redacted]	[redacted]
Biodiversity Net Gain (BNG)	We have developed a strategy to deliver BNG plus wider benefits in a sustainable and scalable way which is realistic and achievable.	[redacted]	
Carbon reduction and compensation in construction	Low-carbon materials: Investment targeting primary carbon hotspots of the construction portfolio including aluminium, cables, concrete, diesel and steel. **Carbon benefit: 10-15% reduction across the portfolio** Emerging opportunities: Investment targeting materials where there is less certainty of cost and availability, such as copper and cable. **Carbon benefit: 25-35% reduction** Compensation: Our strategy is grounded in best practice principles, including additionality, monitoring and permanence, underpinned by investing in projects that deliver social and nature benefits, supporting our environment and communities in the UK, such as woodland creation projects and supporting energy retrofits of low-income housing. **Carbon benefit: 730 - 2,500 $ktCO_2e$**	[redacted] [redacted] [redacted]	[redacted] [redacted] [redacted]

Our plans to deliver environmental benefits

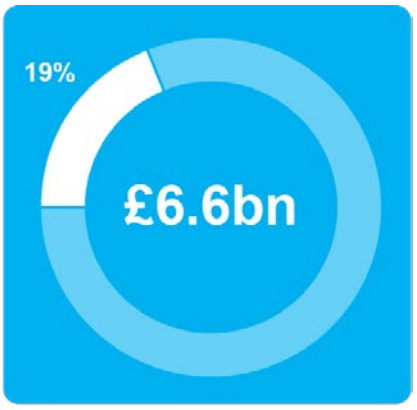
We will actively manage delivery and mitigate delivery risks throughout RIIO-T3. We will adopt effective practices including:

- setting standards and stretching goals to influence how manufacturers, suppliers, constructors, and service providers respond
- full control and visibility of trade-offs between decarbonising the grid at pace and reducing our environmental impact via a deviation process and sustainability governance
- using proven and repeatable non-outage repair techniques, automated real-time monitoring of SF6 leakage, [redacted]

[redacted]

- undertaking feasibility assessments and pilots to inform delivery of our 'Nature Positive' approach. We have proposed a flexible nature reopener that can support the delivery of collaborative projects for nature once this work has been completed in the next 18 months
- becoming members of external working groups such as Concrete-Zero and Steel-Zero to help send strong signals to the supply chain to mitigate risk of restricted supply of low-carbon / more sustainable alternatives
- reporting transparently on our progress through our Annual Environmental Report.

Secure and resilient supplies



In this section, we outline the commitments and investments that support Ofgem's second consumer outcome: Secure and resilient supplies.

Maintaining and operating a network that delivers secure and resilient supplies is the core of our business. This section includes: how we maintain and renew our assets, design the network to be resilient to threats, operate it now and in the future, and how we ensure we have the people and capabilities we need.

Our operating environment is changing: from the increasing risks of climate change to ever-evolving cyber threats. The energy system itself is changing to become more flexible with the connection of more intermittent generation and increased demand-side flexibility. Our plan makes our assets and systems more resilient to the risks we face and therefore more reliable for consumers.

Ensuring a reliable electricity supply remains a top priority for consumers. We have a strong track record: last year network reliability was 99.999998 per cent. Over the last decade, we have been increasing our annual asset health delivery. Last year, we delivered more asset health interventions than ever before. Over the next five years we will ensure that the overall level of network risk is at the same level in 2031 as it will be in 2026.

We are prepared for the changing climate. We are implementing flood defences at more than 130 sites most vulnerable to flooding and are now developing 'resilient by design' standards.

To make our supply chain more resilient we are adopting longer-term strategies that give suppliers the incentives and confidence to expand. This is a deliberate shift towards using competition to establish strategic relationships.

We are taking a similarly long-term approach to our workforce resilience. Our Strategic Workforce Plan sets out a 10-year view of the people we need and new strategies to attract and retain them.

We cover the following topics:

3.1 Maintaining our assets during a growth phase

3.2 Ensuring network resilience

3.3 Transforming our operations to manage a net zero power system

3.4 Ensuring the resilience of our supply chain

3.5 Ensuring the resilience of our workforce

Associated annexes:
Annex A10 – Network Asset Management Strategy
Annex A02 – Climate Resilience Strategy
Annex A03 – Workforce and Supply Chain Resilience Strategy

3.1 Maintaining our assets during a growth phase

Baseline £2.88bn Pipeline £2.02bn

Our RIIO-T3 objective:
Maintain world class levels of network performance and resilience, and ensure that the new network we build is designed to reflect future security and climate challenges

Views from stakeholders and customers

- Ensuring the electricity network is and remains reliable is a consistent top priority across all stakeholder groups
- NESO relies on our assets operating reliably to flow power across the country every minute of the day
- Ofgem has told us that Network Asset Risk Management (NARM) is important for them so they can compare risks across networks

Our commitments:		Success measure / target
A1.1	Ensure our assets continue to provide a resilient network, delivering high quality and reliable electricity to consumers	• 99.9999% network reliability • <135 MWh per year Energy Not Supplied
A1.2	Not allow the overall risk of our network to increase, as we deliver across multiple drivers (network growth, safety, resilience and environment)	• Maintain asset risk at RIIO-T2 levels whilst the network grows more than in previous periods
A2.4	Replace overhead line conductors to meet load and non-load needs of our customers	• Reconductor 8% of our overhead line network (215 circuit km per year) with pipeline planning for an additional 13% of the network (365 circuit km per year)
A3.2	Create long-term strategies for major underground network upgrades	• Three cabling strategies (Leeds, Severn Crossing, West London)
C1.1	Transform our asset management capabilities to efficiently manage a larger, more complex, network going forward	• New enterprise asset management system rolled out • Work with other networks to align asset risk methodologies • New framework developed for critical infrastructure assurance

"As we embark on an exciting period of network growth, it is imperative we continue to deliver the service our consumers value. We will maintain asset risk at RIIO-T2 levels while the network grows."

Kate Grant
Director of Asset Operations

Consumers and customers consistently tell us that the reliability of our network is their top priority for us.

Providing a reliable supply of electricity requires us to proactively manage the condition of the assets that make up our network.

The task of maintaining a safe and reliable network in RIIO-T3 alongside the significant load plan will be more complex than ever before. There will be greater competition for system access, alongside supply chain, personnel and equipment challenges.

However, there are also opportunities ahead. As we expand network capacity, we can also reduce risk by removing older assets reaching the end of their lives.

Annex A10: Network Asset Management Strategy sets out our approach to ensure best in class asset stewardship. It describes how we will continue to manage risk on the network and ensure that we use asset condition information and full lifecycle costs of building and operating to make well-justified and transparent decisions. Our Network Asset Management Strategy delivers these outcomes in four areas:

- **Safety:** This is our number one priority, and we are committed to our target of <0.1 Lost Time Injury Frequency Rate (LTIFR). This is a measure of the number of lost time injuries occurring per hundred thousand hours worked. We are also committed to zero public safety events in RIIO-T3, across new installation activities and by addressing all assets that, without intervention, could pose a risk to staff, contractors, or the public.
- **Reliability:** While our network growth in RIIO-T3 will be at its highest level in decades, we will proactively identify, manage, and address asset failure risk. This will ensure reliability across our network is maintained better than 99.9999 per cent.
- **Environment:** We will seek to maximise environmental benefits by identifying and installing new assets with lower emissions and replacing assets that contribute to environmental harm.
- **Cost:** Implement cost-effective practices that ensure the optimal use of financial and physical resources.

Figure 4: impact of our investment plan on asset risk

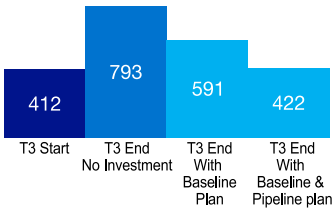
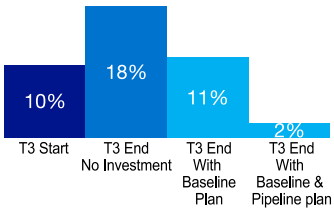
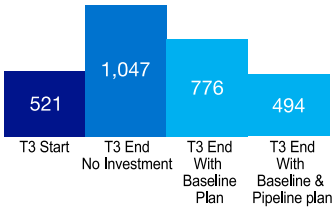
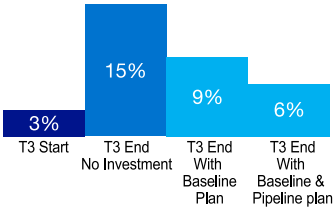
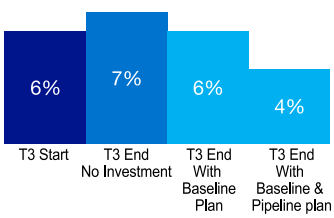
	Monetised Risk Impact (R£m)	Discrete Risk Impact Percentage of all assets categorised as "Very High" or "High" risk	RIIO-T3 Cost & Long-term Risk Benefit (LTRB) of baseline investments
Substation Assets			Total cost (£m): 285 LTRB (R£m): 20,212
Linear Assets			Total cost (£m): 397 LTRB (R£m): 5,409
Non-lead assets (Risk Based)	Not Applicable		Total cost (£m): 215 Note: this includes Protection and Control Assets

Figure 4 shows the risk change and cost for assets in our data-driven portfolio Engineering Justification Papers. Further non-load interventions are justified in project-specific EJPs.

How we have built our plan to maintain assets

Our approach to managing asset health and long-term operational resilience.

Last year, we provided around 209 TWh of power to consumers, failing to supply just over 4 MWh. This equated to 99.999998 per cent reliability – a world leading performance despite 13 named storms.

To maintain this level of service, we use leading measures of asset health to predict failure risk, to provide insights and support us in prioritising the refurbishment and replacement of assets as required. These capital interventions are delivered alongside a complementary regime of inspections and maintenance. This work is timed to prevent failures from becoming 'unplanned' events that might endanger people, harm the environment or disrupt network service. Since 2010, because of our management of network risk, we have seen unplanned system unavailability remain below 1.5 per cent.

We have used best practice methodologies to assess asset health and asset risk over time to inform our RIIO-T3 investment decisions

We plan work on our assets at the right time to maximise asset performance (in terms of safety, system and environment), manage the risk of failure, and minimise cost to the consumer.

Asset health provides an estimate of the risk of failure as an asset approaches 'end of life'. 'End of life' means it is no longer technically feasible or economically favourable to manage the asset's failure modes with maintenance and/or repairs. Interventions to extend asset life can delay 'end of life', if they make sense economically.

Asset risk is closely related to asset health. It takes into consideration not only the probability of asset failure due to age and condition but also the impact of that failure. For critical assets, essential for safety and reliability, asset risk is highest. We have several approaches to categorising and determining asset risk. They provide a toolkit from which to derive asset risk relating to end-of-life failure, at both asset group and individual asset level:

- **Network Asset Risk Methodology** (NARM): For lead assets, calculating asset risk as defined in the NARM methodology. It allows for calculation of monetised risk based on a set of failure modes. Currently NARM is linked to lead assets only. We support Ofgem's intention to extend it to non-lead assets during RIIO-T3 and are ready to support this process.
- **Asset Health / Likelihood:** Takes a more exacting approach, using observations on asset health to estimate end of life. This takes into consideration age, condition, obsolescence and any actions taken to extend an asset life, to calculate the probability of failure. Asset health is calculated at asset level.
- **Common Risk Classification:** Developed in RIIO-T1 and refined through RIIO-T2, our method used across both lead and non-lead assets assigns each asset to a discrete risk category based on its asset health and criticality. This uses the same principles for calculating asset risk as for NARM but is applied at an asset level.
- **Time based:** This is the simplest approach, based on the age of an asset and its expected probability of failure based on the end-of-life distribution for an asset.

We have applied this combination of approaches to identify the best interventions to apply to our asset base during RIIO-T3.

We have optimised our load and non-load plans to ensure best value for consumers.

When managing asset risk, we need to consider load-related interventions and their impact on the network, and how this could impact the scope and timing of our interventions. For example, a large load-related intervention might require the upgrading of multiple substations to facilitate new connections.

Aligning these upgrades to any asset replacement or refurbishment plans allows us to co-optimise our load and non-load plans. This ensures better overall value for money for consumers.

Our Regional and Site Strategies approach considers multiple drivers for investments and interventions, including: customer, infrastructure upgrade, asset failure risk and SF_6 emissions. This process has identified substations that:

- **Will be rebuilt or decommissioned in RIIO-T3:** In this case, our plans have been adjusted to remove any in-situ asset refurbishment and replacement works where a substation is planned to be removed or decommissioned in RIIO-T3.
- **Are likely to be rebuild / decommission candidates in RIIO-T4 or T5:** In this case our plans have been adjusted to place in-situ asset refurbishment and replacement into the pipeline log because of the uncertainty that won't be addressed until these substations have gone through our full options selection process (scope and timing).

Asset interventions have been included in our baseline plan where there is a clearer need to act in RIIO-T3. This could be to address individual condition concerns or obsolescence, which pose unacceptable safety or network operational risks.

We have also balanced our proposed baseline and pipeline investments to manage uncertainty.

We have built our plan based on the asset health and high confidence load-related investments that we know of today. We have combined this with a forecast of how risk may change over time, prioritising investments that will maintain our level of network risk.

For RIIO-T3, to best manage the uncertainty, we have split our plan into baseline and pipeline investments:

- Our proposed baseline funding is focused on intervening on our highest risk assets where we have a high-level of confidence in the need for the intervention, as well as the cost and deliverability of the proposed solution, aligned to our load-related plans. We have confidence in our baseline plan because this includes the assets that we know carry the highest risk. Irrespective of what our load-related plan delivers, these assets will require interventions as we are clear on the needs of the network, and it is supported by our asset health and condition data.
- Our proposed pipeline relates to less certain asset replacement/refurbishment interventions that could be delayed to better align to other activities and help reduce costs, provided the risk of failure remains acceptable.

To maintain asset risk at RIIO-T2 levels, we will need to complete the works within both our baseline and pipeline.

Over the last decade, we have been increasing our annual asset health delivery. Last year, we delivered more asset health interventions than ever before.

We have a proven track record in responding to events, by ensuring that our network recovers quickly and is prepared for winter and storms. As we deliver an increasing number of interventions, we are maintaining our policy of reducing planned outages during winter. This increases the resilience of the network for consumers by making the network as available as possible.

It is essential that we manage our network in this way over winter because there is a greater reliance on electricity (heating and lighting requirements) and the system can experience more stress (e.g. from storms and ice loading). Increasing network availability means we can handle unplanned events while minimising the impact on overall reliability.

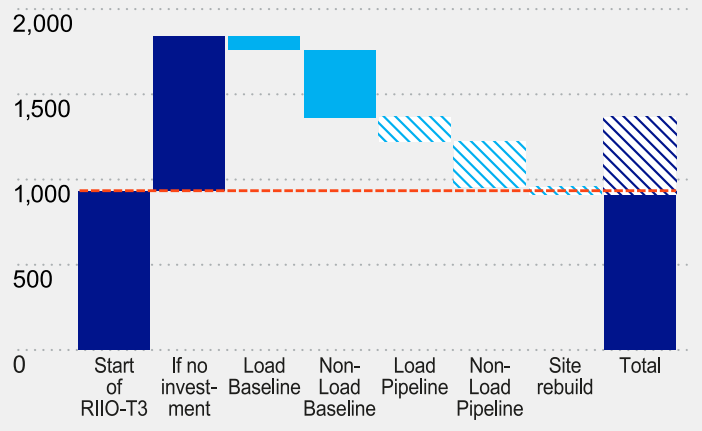
As the way we use our assets evolves, we will implement new ways to manage our diverse asset base. This approach will further mitigate against failures and increase our capability to deliver the necessary network development. It will also reduce constraint costs and maintain network integrity.

The chart below shows a comparison of the volumes planned for delivery in the RIIO-T3 period compared to the volumes we forecast to have delivered in the RIIO-T2 period. Most of our baseline plan volumes (and in some cases the pipeline plan volumes) are well within the volumes that we are delivering in RIIO-T2 which supports our confidence in delivery. Narrative covering the volume differences between the RIIO-T2 and RIIO-T3 periods for key asset groups is provided in annex A10: Network Asset Management Strategy.

Figure 5 Percent of asset base we are intervening on in RIIO-T3 versus RIIO-T2

Our RIIO-T3 investments to maintain assets

Figure 6 Monetised asset risk (R£m)



Across RIIO-T3, our NARM model demonstrates that without intervention our lead asset groups would see a 97 per cent increase in monetised risk.

We have assessed the impact of all plan elements that deliver interventions on existing assets for both non load-related and load-related investments in both the baseline and pipeline elements of the plan. With all elements of the plan combined, these actions collectively stabilise the risk at the levels expected at the start of RIIO-T3 in line with our business plan commitment.

We have taken a structured approach to balancing our planned interventions between baseline and pipeline. In all cases, the need has been clearly defined. Our pipeline investments include a mix of new approaches with some uncertainty in cost and optimisation opportunities with our load-related investments.

Initiative	Description	Baseline	Pipeline
Maintaining our assets during a growth phase		£2.88bn	£2.02bn
Maintaining our assets	Baseline: £[redacted]bn of network asset investments, £[redacted]bn of non-network capex, £[redacted]bn of operating expenditure Pipeline: £[redacted]bn of network asset investments	[redacted]	[redacted]
Strategic spares	Maintaining stock levels of critical assets to assure rapid response to asset failure and protect against supply chain issues. Upgrade of strategic spares logistics [redacted]	[redacted]	[redacted]

Our plan to deliver asset maintenance

We are continuously improving our asset management insight and capabilities.

Our ambition is to have complete and accurate asset information that underpins our Network Asset Management Strategy. During RIIO-T2 we carried out an inspection regime which has enabled us to materially improve our understanding of the condition of our assets to inform our RIIO-T3 business plan.

By the end of RIIO-T2, we will have replaced our Enterprise Asset Management System (Ellipse) which has reached end of life. Further enhancement of our new system (Maximo Application Suite) during RIIO-T3 will enhance our future enterprise asset management. We will leverage Artificial Intelligence (AI) and predictive analytics to optimise network maintenance, maximise asset availability, reduce catastrophic failures and downtime, and extend the overall asset lifespan (See section 5.3 for more information on our digital investments).

Our Workforce and Supply Chain Resilience Strategy (see Annex A03) includes plans to ensure we continue to attract and develop leading asset management personnel and skills both in-house and through our supply chain that will be critical to delivery of our plan.

We are also increasing our holding of strategic spares and related logistics capabilities to reduce the impact on planned outages and network operation from faults and failures.

To minimise the system access requirements to deliver our asset health work, as described in the Network Asset Management Strategy, we have bundled work together to run alongside other projects, such as load-driven increases to the capacity of the system. We have profiled our work based on our detailed deliverability assessment, described in section 1.

During RIIO-T3 we will continue to work with Ofgem and other Transmission Owners (TOs) to drive consistency between the transmission companies and all asset health and risk scoring methodologies.

3.2 Ensuring network resilience

Baseline £0.32bn Pipeline £0.45bn

Our RIIO-T3 objective:
Maintain world class levels of network performance and resilience, maintaining and upgrading the existing network, and ensuring that the new network we build is designed to reflect future security and climate challenges

Views from stakeholders and customers

- Ensuring the electricity network is and remains reliable is a consistent top priority across all stakeholder groups
- Our experience in climate resilience has shown collaboration and innovation benefits everyone
- We have collaborated with industry partners including the Energy Networks Association (ENA), the Met Office, and local and regional partners on climate resilience best practice and emergency preparedness
- We are actively involved supporting NESO and Ofgem across industry working groups to define the requirements of the Electricity System Restoration Standard

Our commitments:		Success measure / target
A1.3	Build upon delivery of climate resilience mitigations already developed with new and innovative modelling capability and refreshed standards	• All new sites resilient by design • New resilience modelling approach implemented and Climate Adaptation Strategy published by 2026
A1.4	Prepare against an evolving cyber landscape by delivering cyber resilience requirements ahead of deadline and maturing our approach to manage new threats	• Network and Information Systems (NIS) requirements delivered ahead of the 2027 deadline

Given our rapidly changing operating environment, we work to make sure that our assets and systems are resilient against a range of risks, and that we can respond rapidly when situations occur. Our network resilience approach covers five specific areas:

- **Operational resilience:** We will maintain a stable and secure power system under various outage conditions and system disturbances.
- **Physical security:** We will build and operate a network that is resilient to physical security threats.
- **Cyber resilience:** We will build and operate a network that is resilient to cyber security threats.
- **Climate resilience:** We will build and operate a network that is resilient to the greater risks posed by climate change.
- **Emergency System Restoration:** We will invest so that we can restore electricity supplies faster in the unlikely event of a national power outage.

How we have built our plan to ensure network resilience

Operational resilience

Network operational resilience means making sure that we can keep the power system stable and secure under a range of conditions and disturbances.

To maintain operational resilience, we will invest in several technologies to support the management of the increasingly dynamic voltage changes on the network. These include capacitors and reactors that are both static and dynamic in their operation, circuits that can be switched in and out to manage voltage, [redacted]

The primary driver for these investments is pursuing long-term and continued ability to operate the future network, meeting the requirements established in Security and Quality of Supply Standards and the SO:TO Code. Moreover, the investments are needed to deliver a network that allows the connection of renewable resources.

Physical security

Our Integrated Security Solutions (ISS) programme is a long-standing project to deliver the physical security upgrades needed at our sites to meet the standards required by the Government. These upgrades will deter, detect, and delay any hostile actors.

Our protection from physical threats activity falls into three categories:

- Investments due to changes in the Integrated Security Solutions thresholds: a recent Government review resulting in [redacted] new sites falling into higher categories of criticality and therefore needing greater protection
- Refreshing assets at existing sites: replacing hardware that has reached the end of its life
- Service and support functions for all security incident management.

Cyber resilience

Enhancing cyber resilience means protecting and defending our network against cyber attacks, and preparing to minimise the impact if they do occur. During RIIO-T2 we achieved the first stage of Government requirements to manage cyber risks.

During RIIO-T3 we will sustain and enhance our cyber security resilience against the backdrop of an evolving threat landscape. Ofgem has set a target for the sector of December 2027 utilising the Enhanced Profile as the accepted measurement. We are committed to achieving this, as well as being a leading voice in the sector-wide effort to mitigate risk.

For security reasons, we do not go into detail here about our cyber resilience work. Our proposals are set out within a confidential submission to Ofgem (Annex A04: NIS-R Cyber Resilience Business Plan).

Climate resilience

Our climate resilience strategy is underpinned by the resilience we have already delivered. Looking forward, the network investment plan will be delivered against the latest standards, making us inherently more resilient by design. We are also investing in forecasting capability to ensure we use the latest research to mitigate long term risks as efficiently as possible.

All energy infrastructure is at risk from weather events such as changing temperatures, high winds, lightning, and flooding. Models show that as the climate changes, extreme weather events will become more frequent. The most significant risks we foresee are more frequent flooding, higher temperatures, and the effects of coastal erosion.

As of summer 2024, a total of 94 sites are protected from flooding and we aim to complete our planned programme of installing defences that comply with the cross-industry standard (ETR138) at more than 130 of our sites most vulnerable to flooding.

We have embedded our climate adaptation projections into the specifications against which we have designed all our investments in this business plan. For example, our overhead lines would still operate normally if the maximum ambient air temperature in the UK increased from 40C to 50C (the highest temperature recorded in the UK was 40.3C in 2022). In addition, as part of our property upgrade programme, we will ensure our buildings have heating and ventilation systems that are resilient to increasing temperatures.

Emergency System Restoration

We played our part in defining a new standard for restoring supplies more quickly to consumers across England and Wales in the unlikely event of a national power outage. The new standard takes effect early in the RIIO-T3 period.

This involves preparing a greater number of plans to restore the system. Those plans will be more dynamic than today, so that the network overall is more resilient for consumers.

We will invest so that we are compliant with the standard when it is implemented at the end of 2026. We need to invest through the RIIO-T3 period to remain compliant against the backdrop of an evolving power system and to provide critical operational flexibility during a national power outage.

"From my experience, when it comes to resilience this isn't something one party can solve on their own. We must come together as a sector to set consistent standards that will ensure continuity of service for consumers into the future

Jon Davies
Director of Network Operations and Intelligence

Case Study
Project ICECREAM

We are assessing the risks of future increases in sea level, shoreline erosion, coastal storm activity and salt marsh encroachment. This innovation project is undertaken together with the University of Liverpool and flooding experts Previsico.

The project supports our regional investment strategies so that we have a greater understanding of long-term climate challenges.

Our RIIO-T3 investments to ensure network resilience

Initiative	Description	Baseline	Pipeline
Enhance the resilience of our network		£0.32bn	£0.45bn
Operational resilience	Pipeline: Investments in network operability (voltage control circuit investments, dynamic reactive power compensation with STATCOMs, active harmonic filters) and reactive compensation (shunt reactors and mechanically switched capacitors)	[redacted]	[redacted]
Physical security	Baseline: £[redacted]bn to enhance and maintain the physical security of Government mandated sites. £[redacted]bn to operate the Security Control Centre. Pipeline: £[redacted]bn is the estimated cost for completion of enhanced security works at [redacted] existing sites under the Integrated Security Solutions (ISS) programme	[redacted]	[redacted]
Climate	Climate resilience works are included within the project costs for new sites and sites where major reworks are taking place	[redacted]	
Cyber	Programme of cyber investments to achieve and maintain suitable cyber resilience	[redacted]	[redacted]
Emergency Restoration	Investment in low voltage alternating current (LVAC) supplies at [redacted] identified sites to meet restoration standards on an ongoing basis	[redacted]	[redacted]

Our plan to deliver network resilience

Operational resilience

Operability investments rely on a precise understanding of a range of elements including customer connection volumes, technology types and locations and precise technical characteristics of network upgrades. This means decisions around operability investments must be made nearer to real time when this information is available.

Physical security

We will phase the delivery of our physical security upgrades across the RIIO-T3 and RIIO-T4 periods. Our run-rate from RIIO-T1 and RIIO-T2 informed our assumptions of achievable and realistic rates so that we achieve the agreement in place with the Department of Energy Security and Net Zero (DESNZ) to deliver the required enhancements by 2035.

Cyber resilience

Delivery plans are outlined in our confidential submission to Ofgem. In these plans we set out our intent to continue our lead role in the sector. In delivering these plans, we will work closely with Government, National Cyber Security Centre and Ofgem on the evolution of cyber security regulations and guidance, as well as the increasing threat landscape. In addition, we will work closely with our supply chain partners who will play a critical role in scaling to meet the future need. Finally, we will build our internal capability, focused on role specific skills as well as broader security culture across the business.

Climate resilience

During RIIO-T3, we will continue to work closely with academia and other research organisations that are at the forefront of climate science. This insight will then be utilised in the development of our digital tools which bridge between incident management support tools today, and forward-looking risk mitigations of the future. The insight will be used in a continual learning cycle across the organisation, affecting policy where appropriate and mobilising new risk mitigation activities.

Emergency System Restoration

Our emergency restoration investments are at a small number of known locations. This work is being planned through the period alongside our broader programme of back-up generation and LVAC investments.

3.3 Transforming our operations to manage a net zero power system

Baseline £0.21bn Pipeline £0.18bn

Our RIIO-T3 objective:
Transform our asset management, network development, network operation and telecoms capabilities to ensure we can deliver the step-up in work required during this period, and manage a larger, more complex, decarbonised network

Views from stakeholders and customers

- We have collaborated with Electric Power Research Institute (EPRI) to benchmark our new control centre build to ensure we are delivering a world class outcome
- Network operation is not an area where we have had detailed discussions with stakeholders, however our consumer and broader stakeholder research is clear that network reliability is paramount

Our commitments:		Success measure / target
B1.2	Collaborate with NESO to reduce constraint costs	• Develop a constraint reduction strategy to identify future additional and innovative actions to reduce constraint costs and realise benefit under the SO:TO incentive
C1.2	Enhance our network development and planning capabilities through enhanced power system and economic analysis, scenario testing and visualisations	• Develop new probabilistic power system engineering and economic analysis tools to enable enhanced scenario analysis at a greater level of detail and agility • Develop enhanced capabilities to visualise the impact of differing scenarios, enabling greater input and engagement
C1.3	Transition to new Electricity Transmission Control Centre and SCADA system for secure and efficient network operation capability – independent of NESO	• Operating on new systems and new facilities by the end of the regulatory period • Connection of our network insight into the asset management system to better understand asset base demand

As a Transmission Owner, we manage the safe, secure and efficient operation of the network. This includes switching our assets in and out of service, working to commission new assets onto the network, responding to faults and monitoring alarms. As the energy system evolves, we are investing in new capabilities so we can continue to operate what will be an increasingly complex network efficiently and effectively.

The changing nature of the UK's energy mix requires a new approach to the way we control and manage our network and assets. The scale of network expansion, the vast increase in the number of customers connected to our network, the change in technologies connected, and the more dynamic and changing flows between transmission and distribution all increase the complexity of controlling the network. We will need the capability for faster, more sophisticated, automated and intelligent control of our network.

We are designing our network to be 'digitally native'. This means a network that is capable of capturing and processing the required level of asset and operational data needed to make smart decisions without manual intervention. That might relate to the condition of our assets, incoming weather conditions, power quality trends, or other data to support customers. Realising the benefits of this requires us to upgrade our network control systems.

Since 2019, we have operated separately from what is now NESO (but until October 2024 was National Grid ESO, part of the group). However, there was and continues to be services provided between both parties, in particular for the operation of the network. These services are managed through a contractual agreement today, which will continue now that NESO is formally established under public ownership. During RIIO-T3, as we evolve our operations, these transitional services will fall away and we will operate separately and independent of NESO.

[redacted]

How we have built our transforming operations plan

Our RIIO-T3 plan focuses on three areas to transform network operation and control:

- **Network control separation and upgrade:** We are establishing independent control facilities that ensure we no longer rely on NESO for contingency arrangements. We will also continue our programme to implement a new Supervisory Control and Data Acquisition (SCADA) system to prepare for managing a decarbonised power system in future.
- **Network insights and performance:** We are investing in new capabilities to exploit rich data sources and provide new insights to improve network status and forecasting. These will better inform decision-making for network operation and development, and enhance communications and real-time resource management.
- **Telecommunications network:** [redacted]

Network control separation and upgrade

We are undertaking two major projects during RIIO-T3: building a new Electricity Transmission Control Centre and replacing our network control platform.

These projects will enable independence from NESO and enhance our ability to manage a larger, more complex network with increasing renewables and changing demand patterns. The need for both projects was agreed during RIIO-T2. Delivery will continue and will be completed in the RIIO-T3 period.

Our new network control systems will enable dynamic and adaptive delivery by providing real-time visibility and control over our assets, allowing us to respond quickly to changing network conditions and customer needs. [redacted] The new infrastructure features software-designed architecture enabling automated management, scalability, and increased cyber security.

[redacted]

This is a vital and complex project, which requires careful management. Originally, we expected to complete it in the RIIO-T2 period, [redacted] as we have replanned the programme in response to programme risks manifesting. This will ensure we deliver the programme safely and realise the benefits.

Network insights and performance

As our network expands and customer needs change, we will use digital tools and data to improve operations, adaptability, and strategic decisions.

Building on the rollout of new sensor technology and monitoring equipment in RIIO-T2, our digital strategy for RIIO-T3 includes investments across 'Operational Management', 'Enterprise Delivery Management' and 'Digital Twin'. These investments will deliver new capabilities to enhance our operational effectiveness so we can continue to provide safe and reliable network access while delivering the required growth in RIIO-T3.

Examples include:

- Integration of insight from monitoring solutions with our asset management system to improve forecasting and provide real-time information for decision-making.
- Combination of IoT data into a common platform to rationalise data management and improve visibility / insight generation.
- Improved communications and interface between systems and operatives to drive efficiency and productivity.
- Digital substation trials that will test the latest technology to enhance the efficiency of protection and control, and commissioning.

These investments in new digital capabilities are discussed further in Section 5.3.

Telecommunications network

We maintain a 24/7 operational telecommunications network. We need to expand it to enable new operational approaches as the backbone of our network control and monitoring activities.

During RIIO-T3, we will expand the fibre optic network capacity and implement solutions to improve reliability and reduce downtime. This enables existing and enhanced operational capability deployment. These include the digitalisation of the setting to work process, which is the way in which our control engineers and site engineers will engage digitally to commence work on site. Another example is the usage of IoT data that we will be increasingly gathering at site, which, once connected to our data fabric, will enable the seamless digitalisation of our asset management capability.

Our RIIO-T3 transforming operations investments

Initiative	Description	Baseline	Pipeline
Transforming our operations to manage a net zero power system		£0.21bn	£0.18bn
Network Control	Baseline: £[redacted]bn relating to opex for network control £[redacted]bn to cover the life extension to Integrated Energy Management System (IEMS) and investment in a new SCADA system Pipeline: costs relating to ETCC	[redacted]	[redacted]
Separation from NESO	Costs resulting from the dis-synergy of separating NESO from the National Grid Group. Since there is uncertainty over the extent to which these costs can be mitigated, we propose that the costs be recovered through an Uncertainty Mechanism.	[redacted]	[redacted]
Optel	Various investments to refresh and upgrade operating telecoms systems	[redacted]	[redacted]
Network insights and performance	Investments in digital twin, operational management, and enterprise delivery management. Please see Annex A05: Digitalisation Strategy and Action Plan (DSAP) for more detail.	[redacted]	

Our plan to deliver transformed operations

Network control separation and upgrade

Our programmes to replace SCADA and to develop a new control centre are already in flight. We have secured Ofgem's approval for the projects and for the majority of the costs for SCADA. Significant progress will be made on these projects during the remainder of the RIIO-T2 period. [redacted]

We are managing these projects as part of a portfolio of transformation activities. This is because they need to be integrated into everything we do. For example, taking data feeds from Maximo, our new asset management system to deliver automated updates. New optel technology will enable us to manage workforce tasks and support people to work digitally.

To manage these interactions, we have established an organisation-wide business transformation forum. It will preserve a coherent enterprise design and manage the dependencies between the programmes. This includes the relationship through our transitional service agreements with NESO and the transition away from our legacy services. As well as the physical infrastructure for our fully independent and state-of-the-art network control function, we have reflected the new people and skills requirements in our Strategic Workforce Plan. We have capability building plans in place.

Network insights and performance

We have adopted a product-based approach to developing our new network management capabilities. This is enabled by our digital operating model and the embedded product directors in our network operation and intelligence function. This approach aligns the right people, including business users and digital expertise, across all parts of our organisation to work together to develop new capabilities. Examples of the products we are currently developing which will provide the foundations for RIIO-T3 include data sharing, network control and work planning and management.

Telecommunications network

Our optel replacement programme is in progress, having been agreed with Ofgem during the RIIO-T2 period. [redacted]

[redacted]

This will ensure we have the capabilities in place to operate and support the new network. In Annex A13: IT and Telecoms Strategy, we explain our digital operating model in more detail and how we are overseeing the development and deployment of new infrastructure, [redacted]

3.4 Ensuring the resilience of our supply chain

Baseline £0.02bn Pipeline -

Our RIIO-T3 objective:
Deploy new strategies that give our supply chain long-term signals to invest, so we can secure the equipment and skills needed

Views from stakeholders and customers

- From our engagement with the supply chain we have clear evidence (through reduced appetite to participate in spot tenders and increasing prices and lead times) that new, more strategic relationships are needed
- Ofgem and the Government have recognised the need for making longer-term commitments to improve confidence in the supply chain to invest to expand capacity

Our commitments:		Success measure / target
C3.1	Implement new 'Signature Strategies' based on a portfolio and regional approach, to provide long-term access to supply chain capacity and efficient prices	• Three new strategies (substations, tunnelling and cabling, and overhead lines) implemented during RIIO-T3
C3.2	Deliver our ASTI and other major projects through our new collaborative and integrated High Voltage Direct Current (HVDC) Framework and Enterprise Delivery Model	• Secure supply chain capacity through our new framework to deliver critical ASTI projects and other major projects

The supply chain environment has changed profoundly over the last five years. We need to be adaptive and flexible in how we approach our procurement and contracting, not only to secure the equipment and services we need to deliver on time for customers, but to do so at best value for consumers.

Global supply chain disruptions have collided with decarbonisation-driven investment in electricity grids. This has driven up equipment costs and lead times. It has also exacerbated skilled-labour shortages. [redacted]

Our supplier market has shifted dramatically and is firmly a sellers' market.

We have already responded to these shifts and are collaborating more closely than ever with our supply chain. We have established long-term relationships through the Great Grid Partnership for onshore projects and the HVDC Framework for offshore projects. For customer connections, we are adopting national and regional 'convoy' models.

We collaborate with other industry and Government bodies to develop UK supply chain capabilities. Working with the trade body Energy and Utility Skills, we have identified opportunities to build the supply of skilled workers for the industry. We are working together with the other Transmission Owners to develop a strategy for supply chain expansion through reducing barriers to entry, for example, as well as how procurement for projects required after 2030 could be accelerated. We have established working groups through the Energy Networks Association (ENA) on equipment standardisation to make procurement more streamlined and support GB competitiveness.

We discuss the changing supply chain environment and our response in Annex A03: Workforce and Supply Chain Resilience Strategy.

Figure 7: Increase in lead times over the last two years

[redacted]

Our RIIO-T3 supply chain investments

Initiative	Description	Baseline	Pipeline
Supply chain resilience		£0.02bn	-
Supply chain resilience	These costs relate to the operating costs of our Procurement team	[redacted]	[redacted]

Our plan to deliver supply chain resilience

We will continue to implement new supply chain strategies to secure the long-term capacity we need. They embed three core principles.

- Long term commitments
- Earlier market engagement
- Collaborative commercial structures

We have already put in place new supply chain strategies for the Great Grid Upgrade. For our other investments, we have developed our 'signature strategies' approach.

We developed these approaches using in-depth analysis of our investment plan (and associated required equipment) and the supply chain market. For each strategy, and reflecting specifics of the market for that asset, we considered four key aspects to define the strategy:

- the financial and contractual structure of projects, including payment methods, risk sharing, and performance incentives
- how work is distributed between us and contractors, and the sequencing and design of project scopes to best deliver our projects
- the process to award contracts, e.g. a spot tender, mini-tender, direct allocation, two-stage early contractor involvement (ECI)
- whether work should be allocated by type of work, region or project size

We have also heard from our supply chain that they need visibility to help build confidence to invest in future capacity. To address this need, we have visibility of our long-term workbook. For the first time, suppliers now have sight of [redacted] for projects across asset categories and regions.

As part of our Data and Digital strategy (explained in Section 5.3), we intend to track how constraints are impacting our portfolio management. This will enable us to anticipate and address challenges more effectively.

We are implementing four strategic changes to our procurement model. We will flex the extent and nature of these changes based on their suitability for each asset class:

- Regional partnerships: Shifting away from project-based mini-tenders to a regional model, aligning construction partners with regional management of the network to deepen collaboration.
- Early contractor involvement: Co-creation between designers and contractors to incorporate delivery expertise early.
- Deploying an engineering, procurement and construction management model: As part of our new supply chain strategies, to give us improved access to the market we intend to adopt a more flexible approach [redacted]
- Long-term volume commitments: Shifting to strategic procurement on a programmatic basis, rather than project-by-project purchases. We have worked with Ofgem to enable this via a regulatory framework called the Advanced Procurement Mechanism. This mechanism will give us access to early funding which we can use to make financial commitments with supply chain partners to secure capacity in their 'order books'. It will ensure that we can secure the equipment we need at the right times to deliver our plan.

To move at pace in the near-term, we have [redacted] to lay the foundations for a longer-term shift to innovative delivery models.

As part of our commitment to be transparent in our approach to competitive processes and reporting on our progress, we will share information with Ofgem for regulatory monitoring purposes and wider stakeholders via our website.

Our supply chain strategy is set out in more detail in Annex A03: Workforce and Supply Chain Resilience Strategy.

"We are using the opportunity of constructing two of the largest offshore HVDC cable links in the world to have a positive impact in generating social value in areas close to our developments. We did this by first researching the market to understand whether firms were taking steps to support local communities. We then used our procurement processes to understand the activities of potential suppliers on employment, skills, training, health and wellbeing and how they were measuring their impact."

Zac Richardson
Offshore Delivery Director

Case Study
Ensuring social value and long-term resilience through our supply chain practices

We are pioneering a new approach to generating social value during construction of our two joint venture projects, Eastern Green Links 1 and 2. This approach will help bolster the long-term resilience of the UK economy and energy sector by developing the local workforce, sustaining local businesses, and protecting the natural environment.

In our tender, we required information from prospective supply chain partners in four areas:

- Support for local businesses
- Environmental stewardship
- Local employment
- Impact monitoring and reporting

We required tenderers to complete a social return on investment survey and a Social Value Delivery Method Statement. This enables us to gather information on their proposed social outcomes, delivery and associated costs.

The tender process is now complete, with social value creation embedded in our contracts with partners. Our partners have committed to supporting local businesses, employment, and environmental stewardship, with clear processes in place for impact monitoring and reporting.

Case Study
Great Grid Partnership: Tackling the skills gap

One of the key benefits of creating the Great Grid Partnership (GGP) is the collective capacity, skills and knowledge it has established. The commitment and foresight of future work that GGP has given to the supply chain has given partners the confidence to invest, or increase investment, in their training facilities.

Murphy is creating a £30m new state-of-the-art overhead line, cable installation and substation training facility in Ollerton, Nottinghamshire, to be operational early in 2027. **Omexom Taylor Woodrow (OTW)** has invested in a new institute in Castleford, West Yorkshire offering an indoor substation, training towers, and a virtual reality suite. **Morrison Energy Services** is building on existing overhead line training facilities to create a brand-new training line at its National Distribution Centre at Newton near Nottingham. This investment will increase capacity to develop and train overhead line skills and competencies.

GGP has created the environment where these organisations, and their training facilities, will be combined in a joint endeavour. These activities are estimated to have created an additional 400 training places each year.

3.5 Ensuring the resilience of our workforce

Baseline £0.52bn | Pipeline -

Our RIIO-T3 objective:
Grow our workforce capability by positioning National Grid as the best place to work in the electricity sector

Views from stakeholders and customers

- Our customers, consumers and public sector stakeholders have urged us to step up to the challenge our industry faces by thinking innovatively, and creating the capacity needed to enable the energy transition
- Regional representatives have highlighted that we need to consider how we can bring potential benefits to the communities who are hosting our infrastructure, and how we support them with their own growth objectives

Our commitments:		Success measure / target
B3.1	Continue our focused efforts on diversity, inclusion and community impact to ensure we understand and represent our communities	Further improvements in gender and ethnic diversity of workforce: • Ethnic diversity of 21.4% of workforce by end of 2026/27 • Gender diversity of 25.4% of workforce by end of 2026/27
C2.1	Strengthen our workforce resilience, applying industry best practice frameworks	• Achieve top quartile performance in the National Skills Academy for Power (NSAP) resilience framework (once set in period)
C2.2	Grow our workforce capability, targeting a wider talent pool to ensure we are able to attract, retain and engage the highest quality talent from a diverse range of backgrounds	• 53% increase in workforce output by the end of RIIO-T3 • More than 1,100 trainees, apprentices and graduates onboarded by the end of RIIO-T3 • Reward and career frameworks that remain competitive
C2.3	Expand our training capacity and collaborate with industry to accelerate routes to competency	• 62% increase in training hours delivered in RIIO-T3 • Increased collaboration and use of technology • Advance safer by design working practices
C2.4	Provide access to modern and inclusive workplaces	• All our people have access to fair, equitable, inclusive and modern workspaces where they can perform at their best
C2.5	Continue to build a high-performance safety culture that prioritises the health, safety and wellbeing of our workforce and our supply chain	• Maintaining upper-quartile Wellbeing Index Score

How we have built our workforce plan

Over the last five years, the labour market and the workplace as a whole have undergone radical change. We need to build the capabilities and capacity of our people at a time of global competition for skills.

In the UK, there is a skills shortage in the energy sector, particularly within specialised technical competencies. This creates challenges in attracting and retaining talent.

We have developed a data-driven Strategic Workforce Plan (SWP) that provides a 10-year forecast of the team we need to build. The SWP is grounded in our current organisation and takes into consideration roughly 2,200 roles, attrition/retirement levels, and productivity. Our SWP is built to estimate our workforce down to the role level based on our investment plan.

We will increase our workforce by 53 per cent by the end of the RIIO-T3 period (compared to workforce as of June 2024). To grow our workforce capability at this rate, we must position National Grid as the best place to work in the electricity sector.

Our RIIO-T3 plans are a step-change in how we invest in our people and plan our workforce.

To deliver our commitments, we will:

- Attract those we need to expand our overall workforce and keep our experienced workforce
- Upskill our people with the skills needed for the energy sector of tomorrow
- Continue to build a high-performance safety culture
- Create a diverse and inclusive culture where our colleagues can thrive in a company that represents, reflects and celebrates the cultures and communities we serve.

Our RIIO-T3 workforce investments

Initiative	Description	Baseline	Pipeline
Workforce resilience		£0.52bn	-
Training	We will expand our Eakring training facility to accommodate expected growth in our workforce and subsequent training requirements; including ensuring the site is inclusive for all, and meets the accommodation needs of a diverse workforce	[redacted]	[redacted]
Workforce resilience	Operating costs relating to operational training and non-operational training	[redacted]	[redacted]
Safety	Operational safety costs	[redacted]	[redacted]
Operational estate upgrade	A programme of refurbishments of our operational estate and office properties to create a fair, equitable, inclusive and modern workspace	[redacted]	[redacted]
Future of office estate		[redacted]	[redacted]

The pace of change and technological advancements associated with the transition to net zero require a continual review of our approach to skills development. We believe a mechanism that affords us flexible funding to quickly adjust our workforce planning and training efforts in response to the changing external environment will be crucial to delivering a decarbonised grid.

We welcome Ofgem's proposed resilience re-opener. We do, however, urge Ofgem to reconsider the proposed scope and triggers which are limited to changing landscape surrounding government or NESO resilience requirements. The specific scope and the limited triggers risk leaving out of scope a broad range of potential investments that could bolster our workforce resilience, with a broad range of triggers.

As discussed in Section 5.1, we request that Ofgem consider how changing costs for scarce specialist resources are funded as part of the approach to Real Price Effects.

Our plan to deliver workforce resilience

Attract and retain staff

We are focused on attracting people to work in our business at all levels, from apprentices and interns right through to experienced leaders in the field.

We are building our brand as a fantastic place to work through our 'Super powered' campaign, emphasising the unparalleled opportunity we provide to contribute to the energy transition at a company that values employees for who they are and the diversity they bring.

We are fostering a pipeline of new talent by expanding our apprenticeship and graduate programmes and are using our 'Grid for Good' and volunteering initiatives to attract students into STEM subjects.

As well as our midlands offices, we aim to attract more talent from around the country by developing co-location hubs at some of our operational sites.

Alongside talent attraction and development, we are focusing on keeping our experienced workforce engaged and satisfied. We ensure our employees are competitively compensated, [redacted] We are also implementing career development initiatives to motivate our employees with opportunities to stretch their capabilities and grow.

However, in specific areas, we have more work to do: voluntary attrition is higher for Power Systems Engineers and Connections Engineers. We are taking measures to improve retention in key areas by providing access to modern and inclusive workplaces, expanding training opportunities, and building a culture that prioritises the health, safety, and wellbeing of our team.

Upskill our workforce

The skills our people need to thrive in the energy sector of the future are changing. With the boom in AI and advanced data analytics, we must equip our workforce to harness these tools. This will enable us to improve grid management and operational efficiency, ultimately adding value for our customers and consumers.

The expansion of offshore projects in line with Government's offshore wind ambitions means growing our offshore-specific operational skillset. And as malicious actors become more sophisticated in their cyber capabilities, we must empower our employees with the skills to safeguard our infrastructure.

To build tomorrow's workforce today, we are:

- Investing in new and emerging capabilities such as AI and data, cybersecurity and marine operation skills
- Investing to increase our training capacity e.g. by extending the number of courses offered for our substation and overhead line engineers
- Investing to leverage technology to modernise our training delivery e.g. by using virtual reality and augmented reality
- Simplifying our authorisations requirements so that our engineers can reach competence more quickly
- Investing £150m in innovation
- Building skills across the supply chain by being a cross-industry leader
- As part of our 'Grid for Good' programme, exposing underrepresented groups to the benefits of a career in the energy sector and pursuing a STEM career.

Andrew Bankole
Substation Higher Apprentice

"You get so much out of an apprenticeship. There are so many skills I've learnt, from electrical wiring and time management to on-site experience, arranging your work area, learning to switch the equipment on and off safely, learning how to be in charge of jobs and protect both the equipment and my own personal safety."

Jade Kimpton
Substation Higher Apprentice

"Throughout my engineering apprenticeship at National Grid, I have had the opportunity to work on various exciting projects. I've worked alongside fantastic engineers who have supported and encouraged me throughout my apprenticeship. It's great to see more women joining the apprenticeship schemes and working on site. I'm excited for my future at National Grid"

We won the Talent Acquisition Strategy of the Year Award at the British Recruitment Awards 2024.

We were finalists in the Training Provision category in the Energy and Utility Skills Awards 2024 – for our new look Graduate programme.

Continue to build a high-performance safety culture

Safety, health, and wellbeing remains our number one priority.

We prioritise eliminating harm arising from six fatal safety risks through enhanced hazard perception, robust engineering controls and targeted risk monitoring.

We are committed to building a high-performance safety culture, where individuals feel empowered to make safe choices and challenge unsafe practices.

We are working with our supply chain to ensure the safety of anyone who works for us, not just those directly employed in our workforce. This includes developing new British Standards for mental health and wellbeing in the workplace, and working in conjunction with our contractors to reduce suicide in construction.

We are building a multi-faceted, multi-year Culture Development Programme to equip our workforce with the knowledge, skills, attitudes, behaviour and tools to work to the highest safety standards. We are also improving our use of data to identify trends in overall safety performance, with a focus on anticipating risks and understanding root causes.

We are working closely with our supply chain and technical training teams to ensure we build a sustainable pipeline of skilled workers who can uphold our high safety standards. Our training programmes are being enhanced (including leveraging technology) to ensure that they are aligned with the operational challenges in the field and that they are effective in retaining staff as well as preparing new hires and individuals transitioning into new roles.

Alongside our directly employed workforce, we are working with our supply chain, running campaigns, exchanging information on best practice and implementing targeted risk monitoring for drivers, how people interact with plant and machinery, lifting, and falls from height.

We aspire to learn from supply chain and industry exemplars by investing to give our leaders and supervisors industry leading development in essential high performance people skills, culture development, and safety leadership. Onboarding programmes will need to include behaviour safety and human factors training, which has proven to be effective in safety performance improvement.

Our strategy is captured in our ‘Thriving Together’ approach as set out below.

Thriving Together		
Me	**My organisation**	**My team**
Positive mental outlook	Data-led strategy	Compassionate management
Healthy lifestyle	Inclusivity and belonging	Supportive culture

We thrive together when our colleagues feel engaged and empowered to prioritise their health, wellbeing and performance. Our ‘Thriving Together’ strategy shows how we all play a part in creating an optimal health and wellbeing culture.

We take a proactive approach of focusing on high-risk issues such as mental health and musculoskeletal health, ensuring colleagues with health concerns feel cared for and included, and setting a broader culture of health and wellbeing support.

In 2024, our Wellbeing Index score is 81 per cent, reflecting improvement from 75 per cent in 2023. This index measures the overall wellbeing of our workforce and demonstrates our commitment to employee health and wellbeing.

"One year into my tenure at National Grid, I have been overwhelmed by the authenticity and connections people have to the purpose of why we exist. It always feels like an organisation that has its people at the heart of it, where we can all be our true selves in an environment which does its utmost to set us up for success. That's why, for me personally, this is truly a great place to work."

Sandip Thakrar
Chief Finance Officer, NGET and Co Executive Sponsor, UK Ethnic Diversity Employee Resource Group

Create a diverse and inclusive culture

Not only do we want to lead the way towards a clean energy future for the nation, we also aim to develop a workforce that better represents the communities we serve.

Diversity, Equity and Inclusion (DEI) is a vital element of delivering our work and not a 'nice to have'. We need to attract, hire and retain people from diverse backgrounds who bring different experiences and fresh perspectives.

In 2021, we launched our DEI ambition: to be among the most diverse, equitable and inclusive companies of the 21st century. Our strategy to realise this ambition is underpinned by five DEI priorities:

- **Creating DEI impact externally:** We are active pioneers within the sector: driving best practice, enabled through intentional strategic partnerships.
- **Speaking boldly:** Driving accountability through how we communicate: 'DEI is everyone's business, but it starts with me'.
- **Ensuring our processes and policies are equitable for all:** Refreshing our policies and practices so they drive DEI.
- **Model inclusion:** Creating an inclusive culture via awareness and education.
- **Elevating our Employee Resource Groups (ERGs):** Investing in and raising the profile of our ERGs so colleagues have a meaningful voice, and can play an active role in shaping solutions.

We propose an upgrade programme of our operational sites. We understand that some of our older sites do not meet modern workplace requirements and need to be upgraded to be fit for the future.

Expectations of a growing, more diverse workforce require spaces to meet these needs, including adaptions for disabilities, neurodiversity, religious requirements, and an increasing gender mix.

We have already achieved a sector-leading record on workforce diversity and inclusion. In the last five years, we have increased our ethnic diversity by 6.9 percentage points and our gender diversity by 6.8 percentage points.

We are pleased to have been recognised for our progress so far, with highlights in the last few years such as:

- Inclusion in The Times Top 50 Employers for Gender Equality
- Finalists in the British Recruitment Awards for diversity and inclusion
- Advanced Employer status in the Investing in Ethnicity maturity matrix
- Placed 42nd in the Top 75 Employers Social Mobility Index.

However, we are constantly looking at ways to improve in DEI. To inform our future strategy and priorities, we are currently carrying out an independent external assessment of all our DEI practices, policies and data. What we learn from this in-depth assessment will shape our initiatives and focus areas for RIIO-T3. We already know that we will focus particularly on entry-level positions as we grow – continuing to review and renew our targets within the price control period.

We have developed a set of metrics that will enable us to track our progress over time and ensure that we deliver on our plans.

Over the past three years we have collaborated with TOs, DNOs and the National Skills Academy for Power (NSAP) to agree 17 metrics of workforce resilience for the electricity network sector. This cross-industry approach will help create consistency and comparability. If the UK is to realise its ambitions to decarbonise and grow the economy, then we need to work together on a joined-up approach to improve the resilience of the workforce.

The NSAP metrics cover various aspects of workforce resilience and will form the basis of our reporting in the coming years. They cover workforce capabilities, strengths and areas for improvement. Three broad areas have been identified as contributing towards workforce resilience: attraction, skills development and retention.

Over the coming years, we will track our progress against these metrics and benchmark our performance against industry peers, with a view to continuously enhancing our workforce strategies.

High quality of service from regulated firms

In this section, we outline the commitments and investments to support Ofgem's third Consumer Outcome: high quality of service from regulated firms.

The headline investment in this area – 1 per cent of the total – does not represent the scale of our ambition. Delivering a high-quality of service is integrated across everything we do.

More organisations than ever before are applying to connect to our network. We need to manage this growing volume and complexity of interactions to ensure all customers and stakeholders receive the best possible experience throughout the process, with their needs consistently captured and addressed throughout.

We are committed to making a positive contribution to the communities that host our infrastructure. We understand some consumers are struggling to pay their energy bills. As a national provider in the energy sector, our biggest contribution to supporting consumers in vulnerable situations will come through community level action and partnerships.

We engage with communities to take account of their requirements and preferences in how we design our infrastructure. This is more than just the right thing to do. Maintaining public acceptability for the expansion of the electricity system and securing the required planning consents is one of the biggest delivery risks we are managing.

We are committing to developing and adopting innovative technologies to improve the service we deliver and reduce the overall costs of the electricity system. We will embed the technologies we pioneered in RIIO-T2, which will enable us to increase network capacity, reduce constraint costs, more quickly resolve SF_6 leaks and protect the environment. We will fund 10 per cent of our innovation funding ourselves.

We will cover the following topics:

4.1 Improving the experience for our customers connecting to our network

4.2 Making a positive contribution to our communities and supporting consumers in vulnerable situations

4.3 Mitigating the visual impacts of our network

4.4 Investing in and deploying innovation

Associated annexes:
Annex A09 – Innovation Annex

4.1 Improving the experience for customers connecting to our network

Baseline -
Pipeline -

Our RIIO-T3 objective:
Deliver the capacity our customers need now, by looking holistically across multiple investment drivers to deliver at the pace and scale required to support Government's ambition on growth and decarbonisation

Views from stakeholders and customers

- As well as faster connection times, customers need and expect more data transparency, real-time updates, self-serve access to information, and collaborative planning support. This information came from more than 800 customer survey responses and the feedback through the listening phase of our engagement

Our commitments:		Success measure / target
A2.5	Improve our customers' experience of the connection process	• Increase customer satisfaction rating from 7.2 to above 7.7 in the Quality of Connections Survey • Provide increased transparency throughout the connections process, from application through to energisation • Provide additional support to customers, in particular as the new connections process are applied to the existing pipeline of customers

Our customers expect us to always provide a high quality of service and to be responsive to their changing needs.

Over the past three years, we have experienced a **significant and rapid change in our interactions with customers**. More organisations than ever before are applying to connect to our network: last year the number of connection requests more than doubled to 1,375. While we have been successful in responding with connection offers, we understand that the connections experience for our customers does not meet their requirements or expectations. With more than six times as much capacity in our pipeline than will be needed to decarbonise the power sector in the 2030s, customers are being offered dates much later than they would like.

We are working closely with NESO, Ofgem and Government on reforming the connections process. In the meantime, we continue working with NESO to accelerate customers under the current rules. We have enabled battery storage projects with a combined capacity of 10 GW to expedite their connections by an average of four years. This is 90 per cent of the battery storage required in the NESO Future Energy Scenarios (FES) 24 Holistic Transition pathway.

Taking **a strategic approach to the development of the network and prioritising capacity for those customers who are ready and aligned to national plans** will help accelerate the net zero transition. It also provides an opportunity for us to streamline our investment programme and deliver efficiently for consumers.

However, it will affect our customers in different ways. For many, reduced connection times will be welcome but for those not being accelerated, it will be difficult. We will collaborate with NESO, Ofgem and Government on the implementation of connections reform and play our role in making the process as smooth and transparent as it can be for our customers.

Along with the introduction of a more strategic approach to developing the network, including the development of a Strategic Spatial Energy Plan and the creation of the Regional Energy System Planning function within NESO, the desire for more information on our network such as available connection capacity will only increase. This demand will come from broader stakeholders who are undertaking their own planning, as well as customers seeking to connect to the network.

We need to manage this growing volume and complexity of interactions to ensure all customers and stakeholders receive the best possible experience throughout the process, with their needs consistently captured and addressed throughout.

How we are changing

Our plan aligns with our regional approach to developing our network and anticipates increased engagement and collaboration with local authorities, regional development bodies, and customers. The plan also incorporates feedback received through customer surveys.

The shift to a more spatially and strategically planned network includes creating optionality for future customers. To do this in an efficient and enduring way, we need new analytics and forecasting capabilities, as well as secure and structured data from diverse customer datasets. We will use this deeper understanding of customer behaviours, needs and trends to inform decision making. We will also make this data available to consumers where appropriate.

We are adopting a digital-led approach and developing the capabilities and tools we need to respond to the increase in demand for information on our network in general and to improve the customer journey for those connecting to our network.

To improve the customer experience, we are also expanding the size and remit of our customer teams, to provide continuity and consistency of experience through the lifecycle of a project, as well as work with NESO on joint issue management and policy development.

Our digitally enhanced customer journey

Ahead of the offer phase

Improve customer experience through the Research Assistant portal creating a real-time and future network connection capacity map. Enabling customers to see future capacity opportunities to inform investment decisions.

In the offer process

Establish a real-time digital solution with NESO so that live information on the creation of offers can be seen, providing enhancements to customers on the status of the offer process and early access to content decisions.

In the development phase

Enable customers to track their portfolio of signed contracts through the connection lifecycle. Enabling real-time information on the progress, enabling customers to get richer information for key decision points.

In the delivery phase

Create site specific digital set up arrangements where customers can see daily progress along with progress linked to digital construction and commissioning plans.

Our RIIO-T3 investments to improve customer experience

Investment	Description	Baseline	Pipeline
Customer and stakeholder experience management	Advanced Customer Relationship Management and Stakeholder Relationship Management capabilities to better manage interactions, support contract creation and generate insights for improved connection information and consultation activity.	Included as part of data and digital investments.	

Our plan to deliver improved customer experience

New customer account management team: we will expand the dedicated customer account management team we have created, to provide our customers with easy-to-access, single point of contact for all connections queries.

Digital investments: we will invest in our digital capabilities to share data and enable self-serve in line with customer feedback. This is discussed further in section 5.3.

Joint working with NESO: customers told us they find the connections process difficult as they have to manage relationships with both NESO and the Transmission Owner. We have already agreed with the senior leadership in NESO to develop a joint complaint handling process and for greater sharing of information and insights.

We support Ofgem's proposals for a new connections incentive which rewards transmission companies where they provide additional capacity that could support the acceleration of customer connection dates.

We have proposed a new common incentive to incentivise Transmission Owners to stretch themselves across their entire portfolio – which would include the volume of connections we can provide. This is discussed further in section 5.5.

4.2 Making a positive contribution to our communities and supporting consumers in vulnerable situations

Baseline £0.01bn

Pipeline -

Our RIIO-T3 objective:

Build social value and support consumers in vulnerable situations to have a lasting positive impact in our communities

Represent the diverse communities we serve by maintaining our sector-leading record on workforce diversity and inclusion

Views from stakeholders and customers

- Local and national stakeholders expect us to make a positive contribution to society and communities as a core part of how we deliver our work, especially where they host our infrastructure
- Our research shows the public advocate support for vulnerable groups (and those most affected by hardship) and our focus should be on alleviating fuel poverty and those with financial vulnerabilities should be the top priority
- Regional partners and community stakeholders want us to work with the wider industry to have more impact, avoid duplicated effort and improve efficiency. We must be ambitious in how we benefit communities, going beyond our local grant programmes, driving better coordination and creating greater legacy benefits

Our commitments:		Success measure / target
B2.1	Make the most of opportunities to accelerate social mobility through generating new or improved skills and employment opportunities to local communities and identified disadvantaged groups	• Contribute to National Grid 2020, 10-year commitment to develop skills for the future for 45,000 people in our communities (from 2020) • Contribute to National Grid 2020, 10-year commitment to deliver 500,000 employee volunteering hours in our communities (from 2020) • Enhanced measurement and reporting for local employment and training opportunities with a focus on disadvantaged groups (e.g. percentage local employment, work experience placements, paid training positions)
B2.2	Support communities impacted by new transmission infrastructure projects and evolve our community-led grant scheme for communities impacted by our maintenance and operational activity	• Deliver both local community benefits and regional socioeconomic legacy benefits • Investment in community benefit in line with Government guidance, with transparent reporting on benefits delivered • Enhanced and targeted social value improvement through flexible, discretionary fund
B2.3	Drive sector collaboration with stronger focus and consistency on delivering social value	• Consistent metrics, tools and methodologies agreed with other Transmission Owners for measuring social value, and actions taken to share best practice
B2.4	Support and encourage our supply chain to maximise social value delivered	• Ask all suppliers to sign up to our Supplier Code of Conduct (and re-affirm annually) which encourages them to understand the impact and value-add of their activities in the local area and wider community • Work with our supply chain to make positive contributions and investments as appropriate. For example, by providing local employment opportunities, skills development, and workforce volunteering • Promote diversity, equity and inclusion in our supply chain and increasing sourcing opportunities to encourage wider participation, including with small and diverse suppliers

B3.1	Continue our focused efforts on diversity, inclusion and community impact to ensure we understand and represent our communities	Further improvements in gender and ethnic diversity of workforce: • Ethnic diversity of 21.4% of workforce by end of 2026/27 • Gender diversity of 25.4% of workforce by end of 2026/27

We have a responsibility to help consumers in vulnerable situations. We know that in a cost-of-living crisis, there are some who are struggling to pay their energy bills. Because we do not have a direct relationship with consumers, we make our biggest contribution through our work in communities.

As the scale and pace of the energy transition accelerates, it requires a change in how we work with the communities that host energy infrastructure. To ensure the transition happens in a fair and affordable way, it is important that host communities receive tangible and enduring social value for their contribution.

The impact of infrastructure on each community will be different. Support needs to be flexible, with targeted initiatives that deliver the most value locally, aligned to specific local needs.

Through our RIIO-T3 research programme, consumers have told us that prioritising affordability and supporting vulnerable groups is important when considering community benefits. Through our network investment, we are working to reduce constraint costs, and we are developing a range of initiatives that offer targeted support to the most vulnerable in society.

How we have built our plan to make a positive contribution to communities

The Government is considering how communities should benefit from hosting new transmission infrastructure. At the time of writing, there remains uncertainty around this position. We have therefore used the framework set out in the previous Government's 'minded to' position, published last year, to develop our approach. We have continued to engage Government, Ofgem and the other Transmission Owners on this topic.

We have applied this framework for RIIO-T3 projects where we have a high degree of certainty that they would be in scope of the Government guidance, and we are clear on the scope of work. We have proposed a £4.8m 'Use It Or Lose It' (UIOLI) allowance for this baseline funding. We have not applied the framework to projects where there is uncertainty over whether they would be in scope of the Government's proposals, or where the scope of work is uncertain. We would seek a reopener to account for future changes in policy or guidance.

While Government considers the position for communities that are hosting new transmission infrastructure projects, we recognise the need to deliver fair and proportionate benefits for all communities affected by our works. We propose continuing to offer a £6m flexible and discretionary fund for communities impacted by works to our existing infrastructure, such as maintenance and operational projects. We have extrapolated historic use of community benefit programmes to maintain the proportionality of the programme as our network investment programme increases.

As well as supporting local communities, to manage the risks to us being able to deliver this investment plan we also need to engage with them to build their understanding of the need and support for, new transmission infrastructure. In 2023, we launched the Great Grid Upgrade campaign to raise awareness of the important role it plays in the energy transition. As discussed further in Section 4.4, we are investing in expanding our community engagement capability and are deploying innovative digital tools to make it easier for people to engage with, and give us their views on, the developments we are proposing for their communities.

" Every day, National Energy Action finds people who should have been at the heart of the energy crisis response but who were missed out. National Grid funding has transformed our response – not only to the crisis but enabling us to reach the most vulnerable and marginalised communities."

" With the generous support of National Grid, we have been able to provide help to at least 345,700 people living in fuel crisis across England, Scotland and Wales. At least 134,800 of those were children."

Our RIIO-T3 investments to make a positive contribution to communities

We are seeking funding to support our community benefit framework in the next five years. The estimated costs are shown below. As the Government's position on community benefit is still uncertain, we propose a 'Use It Or Lose It' (UIOLI) allowance. This will give us the flexibility to adapt to any changes in policy or guidance.

Initiative	Description	Baseline	Pipeline
Community Benefit	For new infrastructure projects that are anticipated to be in scope of Government guidance and within our baseline funding	[redacted]	[redacted]
Community Grant Programme	For infrastructure projects that are not anticipated to be in scope of Government guidance, but for which we want to continue supporting communities in partnership with local groups	[redacted]	[redacted]

"Consultation with communities is vital as we develop our proposals. We will engage with community groups and stakeholders to understand their priorities and aim to deliver community benefit initiatives that respond to their needs. There is no one-size-fits-all; aspirations will differ between communities. Our approach will be flexible, ensuring we deliver genuine legacy benefits across the regions hosting our infrastructure."

Alex Kaufman
Director of Land, Planning and External Affairs – Strategic Infrastructure

Our plan to deliver a positive contribution to communities

Our community benefit activities will be tailored to the socio-economic needs of the regions impacted by our major projects

Both locally and regionally, we run a comprehensive programme of engagement and consultation for our major projects. It gives us the chance to hear and respond to the views of communities as we develop our proposals. On our major infrastructure projects, we have held 305 in-person consultation events and webinars attended by more than 23,300 people, over a combined 235 weeks of consultation. We will continue this approach throughout RIIO-T3.

Community engagement will also play a vital role in the development of our community benefit programmes. We will work with all communities and stakeholders affected by our work, particularly those closest to our infrastructure. The goal is to understand what matters most to them and to deliver flexible programmes responding to their needs.

Since 2021, we have awarded more than £2.5m of grants to support local community projects, delivering a wide range of environmental, social and economic benefits. Going forward, we will adapt our community grant programme to ensure it can respond to the changing nature of our investment, and the different requirements of our communities.

Acting on stakeholder feedback, in areas where we are proposing major new infrastructure, we aim to go further. We will develop partnerships and programmes that deliver long-lasting socio-economic benefits across the region.

We will work with partners and peers to develop community benefit initiatives which respond to the needs of communities and stakeholders, driving long-lasting benefits across host regions and communities.

Case study:

Adding value to communities through our Hinkley Connection Project

Our Hinkley Connection Project delivered more than £1.5 million in community benefit. We worked with the community on more than 100 diverse projects. The project won Community Programme of the Year at the UK Social Mobility Awards. The award recognised the STEM education delivered to more than 500,000 local school pupils (20 per cent from disadvantaged backgrounds). We also worked with a local charity to help isolated residents access services, connect with their communities and reduce loneliness.

“ Community groups are the heartbeat of their local areas and provide vital services that help keep residents safe, healthy and in touch with each other.”

Steve Haskayne
Project Director Hinkley Connection

Case study:

Grid for Good

Grid for Good is our flagship programme supporting disadvantaged people aged 16-25. We work with five charities to identify people in need, offering them training and job opportunities. Recently, we started working with other energy sector partners on the scheme. So far, National Grid has helped 3,000 young people, with more than 1,000 of our colleagues volunteering to help.

Leo Headley first came across National Grid via ‘Grid for Good’, when a ‘masterclass’ session was held at his university offering employability and interview skills.

“ I didn’t have many examples of people close to me that could provide me with guidance on how to start a career. Through the support of Grid for Good, I learned that it was my personal characteristics and strengths that would later help me secure my current position. The most important thing I have realised is that apprenticeships can be for anyone and that everyone has value.”

Leo Headley
Power Systems Engineer
Higher Apprentice

Case study

London Power Tunnels

In partnership with social enterprise, Connectr, our London Power Tunnels Programme worked with secondary schools to address social mobility by promoting green skills and career opportunities in the energy industry.

To date, we have supported more than 100,000 young people, helping to reduce the likelihood of participants falling out of education, employment, or training between the ages of 16 and 18.

This initiative won the Utility Week 2024 Environmental, Social & Governance Initiative of the Year Award.

“ The enriching week I undertook with National Grid opened my eyes to the sustainability and energy sectors. It has made me much more interested in exploring a career in these fields.”

Work experience placement student

4.3 Mitigating the visual impacts of our network

Baseline £0.33bn | Pipeline -

Our RIIO-T3 objective:
Play a leading role in accelerating a net zero, nature positive future, including by reducing our own emissions and environmental impact

Views from stakeholders and customers

- We have agreed the three Visual Impact Provision projects to complete during the RIIO-T3 period with the Stakeholder Advisory Group. The group strongly supports the continuation of funding for LEI projects.
- Our local community engagement continues to highlight opportunities for visual improvement, which is considered for each new build project to protect natural beauty as far as reasonably possible.

Our commitments:		Success measure / target
B4.12	Honour our commitment to visual improvement and invest in preserving natural beauty where new infrastructure is needed	• Deliver three ongoing VIP projects by 2031 (Eryri, the Cotswolds and North Wessex Downs) • Invest in preserving natural beauty where new infrastructure is needed

Visual Impact Provision (VIP)

Ofgem put in place a VIP provision across Great Britain to carry out work which will help to reduce the impact of existing electricity transmission lines in English and Welsh AONBs and National Parks.

We have completed major landscape transformation projects in Dorset and the Peak District removing a total of 29 pylons and undergrounding 10.3 km of overhead line to restore the natural beauty of these areas.

We have followed Ofgem's recommendation not to initiate any new VIP projects during RIIO-T3 as it would limit our work elsewhere. Instead, we expect to complete the three in-flight projects that have been agreed by the VIP Stakeholder Advisory Group since these initiatives deliver improved visual impact and upgraded capacity needed for the connection of renewable generation.

Landscape Enhancement Initiative (LEI)

The LEI makes a positive contribution to natural beauty, wildlife and biodiversity, cultural heritage, and public enjoyment by carrying out improvements that shift emphasis away from the impact of existing transmission infrastructure, such as tree planting, changes to public access (cycleways, footpaths, etc.) and enhance historic features.

We have invested around £9m for improvement projects, including a new accessible boardwalk at RSPB Minsmere in the Suffolk Coast and Heaths National Landscape that won an Accessible & Inclusive Tourism Award and farmer-led initiatives in the Clwydian Range and Dee Valley AONB.

Our RIIO-T3 investments

Investments	Description	Baseline	Pipeline
Mitigating the visual impacts of our network		£0.33bn	-
Eryri	Remove 3 km of overhead line and 10 pylons	[redacted]	[redacted]
North Wessex Downs	Replace 4.6 km of overhead and 13 pylons	[redacted]	[redacted]
Cotswolds	Remove 7 km of OHL near the Cotswold Way National Trail	[redacted]	[redacted]
LEI	Local improvements for positive contributions to natural beauty, biodiversity, cultural heritage, and public enjoyment	[redacted]	[redacted]

4.4 Investing in and deploying innovation

Baseline £0.15bn | Pipeline -

Our RIIO-T3 objective:
Invest in the next generation of innovative technologies to make sure that we are planning and building a network that is ready for tomorrow

Views from stakeholders and customers

- Through our engagements stakeholders highlighted the need to incorporate themes of supply chain, communities, and vulnerable consumers, leading us to add specific outcomes addressing these areas
- We have collaborated with Innovate UK, Ofgem, Carbon Trust and networks on the Energy Innovation Needs Assessment, which has informed our innovation programme for RIIO-T3
- Our focus our innovation culture, reflects the priorities set out in a collaborative report from our stakeholders including UK Research and Innovation, on changing culture to enable the net zero transition
- We have forged new partnerships with water companies and local authorities in response to feedback from stakeholders for more 'whole system' thinking

Our commitments:		Success measure / target
A4.1	Embed successful innovation projects into our operations to reduce system costs for consumers and improve environmental outcomes	• 30 planned innovation projects will be integrated into day-to-day operations (both stimulus funded and through our business-wide approach to innovation) • Maintain benefits ratio for innovation investment in excess of industry benchmark of 4:1
A4.2	Increase investment in the next generation of innovative technologies and maintain innovation spending in line with overall network growth	• Approximately £150m invested in innovation projects • 10% of innovation spending NGET-funded • Additional £46m per annum shareholder funded innovation via National Grid Partners

We know that the transition to net zero means we have to innovate; we cannot do things the way we always have.

In early 2024, innovation teams across National Grid came together to complete a comprehensive review of how we innovate. We identified the areas of most potential value for our customers and stakeholders.

Our business-as-usual innovation (i.e. innovation without recourse to specific innovation stimulus funding) is enhanced through collaboration and support across the National Grid Group. This provides access to additional funding via our shareholders, collaboration and learning from different geographies, and research into emerging technology and advanced approaches. National Grid Partners, the group investment and innovation arm, have invested over £360m (since 2018) in energy focused startups, emerging technologies and research that is helping to make our networks safer, cleaner and smarter, and will continue similarly through RIIO-T3.

Alongside shareholder funded work, we have so far in RIIO-T2 invested £30m of stimulus funding from the RIIO framework across 67 projects, working with 66 project partners. Across this portfolio, **for every £1 spent on innovation work, we expect to create £52 of benefit for consumers. This far exceeds the industry benchmark benefit ratio of 4:1.**

Our previous innovations funded by the Network Innovation Allowance and deployed into business-as-usual include:

- Our **Smartwires** technology, trialled initially through innovation funding, has delivered 2 GW of additional north-to-south capacity within the UK already
- An **SF6 leak-sealing solution** has been rolled out across our business and saved 7,500 tonnes of CO_2e leaking into the atmosphere since deployment – equivalent to removing 2,000 cars from the road. We have shared the learning from this project with other network companies and one other network has adopted this approach.
- We have developed a **weather-based dynamic-line rating system** that typically results in up to 4 per cent additional capacity. We have delivered consumer savings of £150m through our innovations in dynamic line-ratings.

How we built our innovation plan

In early 2024, innovation teams across the National Grid Group came together to complete a comprehensive review of how we innovate. and to develop our first group-wide innovation strategy. We then identified the key focus areas for innovation within NGET. We have identified a list of projects in which we have high confidence and we would look to undertake within RIIO-T3, many of which also align to the Energy Innovation Needs Assessment (EINA). EINA is a collaboration between Innovate UK, Ofgem, Carbon Trust and network companies which has identified high priority focus areas for achieving net zero. Given the benefits ratio from our previous innovation projects, we propose to maintain the same level of innovation funding as a proportion of our capital investment. We have updated our innovation strategy and re-defined our innovation priorities into four focus areas.

Build the future network

- Maximise the capacity of our current infrastructure
- Deliver significant new onshore and offshore network infrastructure
- Reduce supply chain constraints
- Enhance the intelligence of our network infrastructure

Focus on innovations such as how to integrate **superconductor cables** in a cost effective manner and how **ultra-high voltage** could play a part in the network in future

Accelerate customer connections

- New ways of connecting the growing number of customers in our network
- Maintain system operability and stability as the network decarbonises
- Facilitate system access as the energy system decarbonises

Focus **dynamic system rating** to squeeze more potential from the existing network and **understanding the impacts** of having more data centre customers as part of our network

Enhance sustainability

- Eliminate emissions across our operations, construction activities and from our supply chain
- Ensure our infrastructure benefits communities and environment

Focus on environmental issues, for example continuing our innovation in **greener alternatives to conventional concrete** production and new technology to **seal SF6 leaks**. Also continuing innovation to support customers in a vulnerable situation

Improve resilience

- Maintain the reliability of our asset base efficiently and economically
- Improve our resilience against a changing external threat landscape, including from natural climate events and cyber events

Focus on mitigating the engineering effects of **AI-driven approaches** to cyber attacks, **grid stability issues** from high renewable penetration, and understanding the likelihood and impact of weather events due to **climate change**

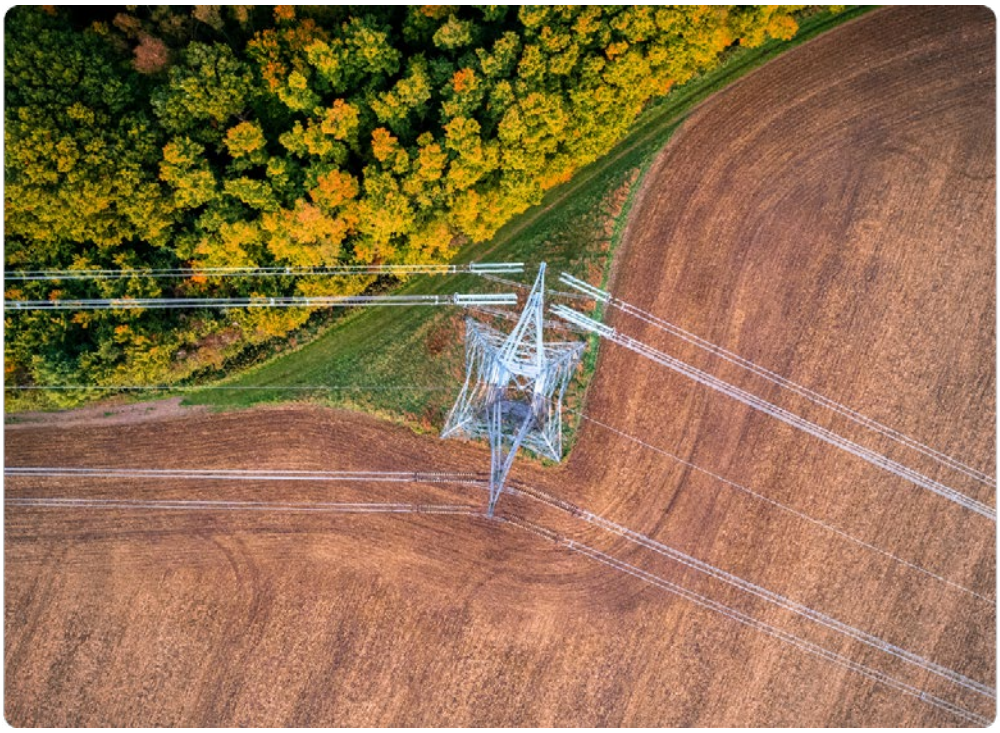
With the pace of change only increasing, the time is now right to take a step back and set out an ambitious vision of the network for 2050 and beyond – a future-ready net zero grid built for the next 50 years.

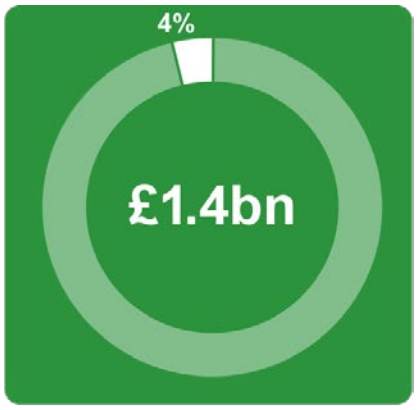
Our projects on embracing ultra-high voltage solutions together with SSEN and SPEN investigate compact pylon design, cable sections and the strategic location of ultra-high voltage circuits.

Our RIIO-T3 innovation investments

Initiative	Description	Baseline	Pipeline
Innovation	Funding for £150m of Network Innovation Allowance, of which we will fund 10%	£0.15bn	-

Long-term value for money





Our contribution to delivering Ofgem's fourth Consumer Outcome: long-term value for money.

We have a responsibility to deliver our plan as efficiently as we can for existing and future consumers. In this section, we show the comprehensive benchmarking process that has informed our cost estimates to ensure we are efficient. We have also made a commitment to an ongoing efficiency target at the very top of what evidence suggests is achievable.

We recognise our plan to expand the network significantly will increase the amount consumers pay for electricity transmission. We estimate this would be an increase from £23 per year in 2026 to about £44 per year by 2031 for the average household. However, if we did not invest, bills would be £40 per year higher on average over the RIIO-T3 period due to constraint costs where network capacity is insufficient.

The value we generate for consumers is far greater than the direct impact on the bill. We generate value by powering economic growth and supporting new jobs and investment, enabling decarbonisation across power, heat and transport. In this section, we describe our impact on economic growth, including how our plan supports more jobs by 2030.

The investments included in this section align with our ambition to become an Intelligent, Connected Digital Utility by developing our data and digital capabilities, based on stakeholder insights.

We also set out our proposals for how the regulatory framework should be set to maximise consumer value. There is an important role for output delivery incentives in the regulatory framework, to ensure that we and other parties such as NESO are focused on going above and beyond for consumers, such as reducing constraint costs or releasing new system access. We set our proposals for two additional common incentives.

We will cover the following topics:

Associated annexes:
Annex A05: Digitalisation Strategy and Action Plan (DSAP)
Annex A13: IT & Telecoms Strategy
Annex A14: Cost Assessment and Benchmarking Approach

5.1 Ensuring our costs are efficient

Baseline £0.56bn | Pipeline -

Our RIIO-T3 objective:
Maximise the value we create by controlling our costs as our network grows and seek opportunities to create additional value for consumers

Views from stakeholders and customers

- Consumers expect us to be efficient. Our research shows minimising costs both in the short and long-term are high priorities.

Our commitments:		Success measure / target
B1.1	Control our cost base as our network grows	• Commit to a 0.7% ongoing efficiency challenge at the top end of range supported by market data

Cost assessment and benchmarking

We have used industry benchmarking and historical cost reviews to ensure that our costs are efficient. We have set ourselves a challenging ongoing efficiency for the benefit of consumers.

We have grouped our costs in accordance with Ofgem's defined cost categories. Across all categories, we have provided Ofgem with supporting information on cost forecasts and drivers. This shows that the allowances we request are based on efficient cost and volumes.

We describe and provide the supporting evidence for our approach in Annex A14: Cost Assessment and Benchmarking Approach.

Load and non-load capex: Our Capital Expenditure (capex) requirements for load and non-load projects reflect the specialist electricity transmission equipment that we install to grow the capacity of the network (load) and to maintain the performance of the network (non-load). This includes overhead lines, cables, transformers and circuit breakers.

Our costs are based on contracted rates, detailed bottom-up estimates, or built up from our internal market-based intelligence cost book so that our costs are efficient:

- For early phase projects, we estimate costs using a 'building block' approach in calculating the cost of assets and services we will combine to deliver our projects.
- For more mature projects, we prepare a detailed, project-specific cost estimate based on the latest framework agreement, contracts, or market rates using the specific engineering requirements of the project.

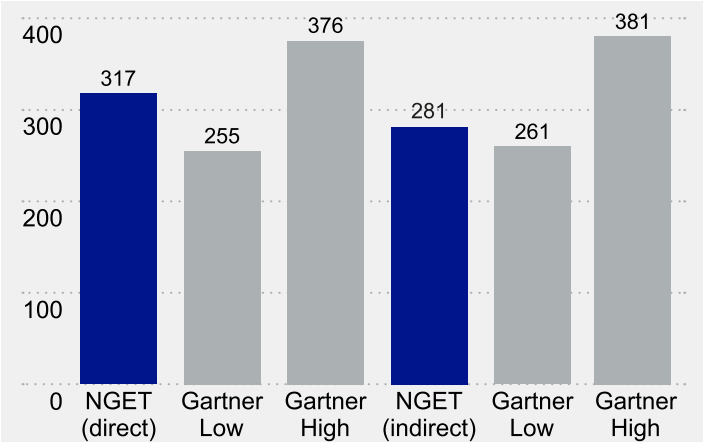
Non-operational capex: The cost category of non-operational capex includes IT and telecoms (IT&T), land and property, and fleet, with IT&T costs being the largest category.

In estimating investment costs for IT&T investment, we used a Technology Business Management framework which provides a standard taxonomy to describe cost sources, technologies, IT resources and solutions. We engaged Gartner to conduct a detailed, independent, 'line by line' review of our investment plan. Gartner found that our proposed investments were within the expected market range, demonstrating that our investment plan is efficient.

Our proposed costs are in line with the most recent International Transmission Operational Maintenance Study's (ITOMS) assessment of efficient operating costs considering the unique features of our network (see Annex A14: Cost Assessment and Benchmarking Approach, section 2.4).

IT opex: This category covers operating costs for our IT and telecommunications activities.

Figure 8: Our Digital Investment Benchmarked (£m)



McKinsey estimates that IT opex is [redacted] per cent of total revenue for the notional peer median company, and so our cost of [redacted] per cent is equivalent to £78m below the peer median benchmark, placing us in the upper quartile.

Closely Associated Indirects: This category includes a variety of activities needed to support our operations such as managing projects, network plan development, and activities to promote and maintain the health and safety of our employees and the public.

We engaged Korn Ferry, an international organisational consulting firm, to conduct a comparison of our pay levels

with a comparator group of UK organisations. [redacted]

Business Support Costs: This cost category ensures we have administrative support, access to IT systems, regulatory compliance support and high-quality customer service operations.

We engaged The Hackett Group to assess these costs. The assessment found that our HR, Procurement and Land sub-categories were within benchmarked levels but Finance, Audit, and Regulation, CEO and Group Management and Property were not. To ensure our plan is efficient, we have reduced any costs above the benchmark down to the benchmark level.

Others: This category covers primarily physical and cyber security costs.

Cyber costs are not covered here for security reasons. To ensure physical security costs are efficient, we use existing quotes and competitive market tenders within our cost calculations.

Our investments not captured elsewhere

Investments	Description	Baseline	Pipeline
Other	Expenditure and investments not covered elsewhere in this document	£0.56bn	-
Business Support Costs	Operating costs relating to the support costs of running our business efficiently	[redacted]	
Other	Other costs	[redacted]	

Ongoing efficiency

We have a duty to minimise the impact of our plans on consumer bills. At the same time, we must deliver an unprecedented transformation of the electricity system. We are committed to pursuing ongoing efficiency at the top end of externally benchmarked rates to benefit our customers, consumers and stakeholders.

As we enter the RIIO-T3 period, we face a challenging environment for efficiency gains. Our operational productivity is partly determined by external forces beyond our control, including macroeconomic trends, supply chain constraints, and broader UK productivity challenges.

Under these conditions, we have adopted an integrated approach across our Asset Policy, Strategic Workforce Plan, Innovation Strategy and Transformation Initiatives to maximise ongoing efficiency from activities we can control. To form our target, we have combined the predicted benefits from this approach with an assessment of recent productivity in comparator sectors, learnings from RIIO-T2 efficiency outcomes, and innovation gains.

We are committing to an ongoing efficiency challenge of 0.7 per cent on both operating and capital expenditure. This equates to savings for consumers of £355m on our baseline plan

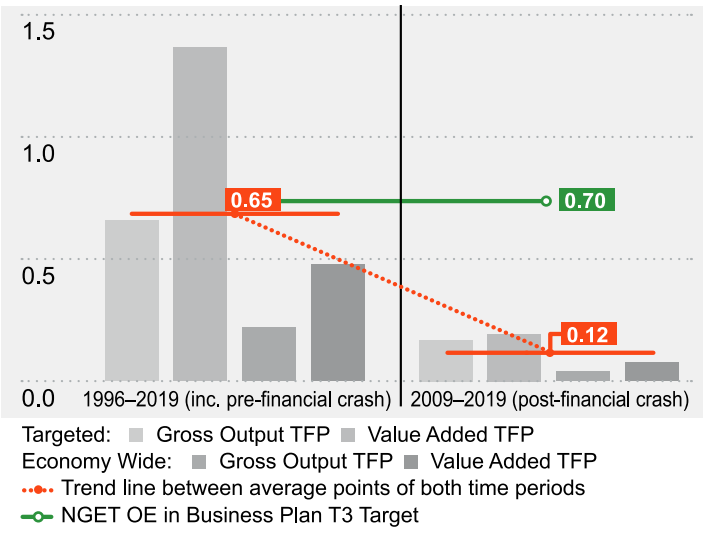
This commitment is well above the Bank of England's 0.5 per cent forecast for total factor productivity (TFP).

It is at the very top of the 0.1 per cent to 0.7 per cent range we derived from external benchmarking for comparator sectors. We commissioned Frontier Economics to examine other sectors using the latest data from EU-KLEMs, an industry-level growth and productivity research project that has underpinned ongoing efficiency recommendations in recent price controls across various utilities.

There has been a marked decline in total factor productivity since the financial crisis as shown in the chart below. Average productivity growth has fallen from 0.65 per cent a year on average from 1996 to 2019 to just 0.12 per cent a year on average from 2009 to 2019.

Our commitment of 0.7 per cent is the long-term average total factor productivity across these sectors from 1996 to 2019 and significantly above what has been achieved more recently. Considering the unprecedented scale of our delivery ambition, and that our ongoing efficiency assumption will compound each year to the end of RIIO-T3, meeting **0.7 per cent is a challenging and bold commitment**.

Figure 9: Total factor productivity %



Real Price Effects (RPEs)

During any price control period, the costs of delivering our investments will change, in the same way that prices change across the entire economy. The regulatory framework includes a mechanism, Real Price Effects, to ensure that our allowances keep pace with the most appropriate industry benchmarks.

RPEs identify price inflation of the specific basket of goods and services relevant to a business, which may not accurately reflect the broader Consumer Prices Index including owner occupiers' housing costs (CPIH) index. We think it is right that where we can, we set our allowances based on an assessment of the cost changes we will experience, rather than a general economy-wide measure. Doing this reduces the risk that we are over or under funded for the work we need to deliver.

The labour and material indices used to benchmark the cost of goods and services we buy have diverged from CPIH in recent years, signalling that the using CPIH will likely not reflect the actual costs of delivery under RIIO-T3. This exposes us to price risk which is beyond our control.

We have included more detail on what we consider to be an appropriate set of indices in Annex A14: Cost Assessment and Benchmarking Approach.

As part of our proposal, which reflects the level of uncertainty in costs and the divergence between CPIH and our own cost base, we recommend:

- An annual indexation where RPE allowances are subject to mechanical adjustments to ensure the coverage of the indices is a sufficiently accurate representation of the costs we incurred
- For reopeners over £138m, project-specific Price Adjustment Mechanisms (PAMs) are used to avoid excessive risk exposure. PAMs apply in the Accelerated Strategic Transmission Investment (ASTI) framework. The limit has been proposed based on the smallest of our 17 ASTI projects
- For reopeners below £138m, the standard RPE approach is applied to ensure the regulatory framework remains streamlined
- We propose a re-assessment or true up of the weightings on indices and on expenditure categories.

It has not been possible to identify an index which can take account of the inflationary pressure we are seeing in our people costs, in particular for certain specialist fields. We have developed potential solutions that we would welcome the opportunity to discuss with Ofgem as part of a comprehensive attraction and retention strategy within our Strategic Workforce Plan.

Impact on bills and affordability

Our plan will create significant long-term value for consumers and the UK more broadly. It will increase energy security and stabilise energy prices by enabling more clean power onto the system. This will reduce the reliance on imported fossil fuels. It also supports economic growth in emerging and traditional sectors. However, we recognise that our plan will increase the costs of electricity transmission.

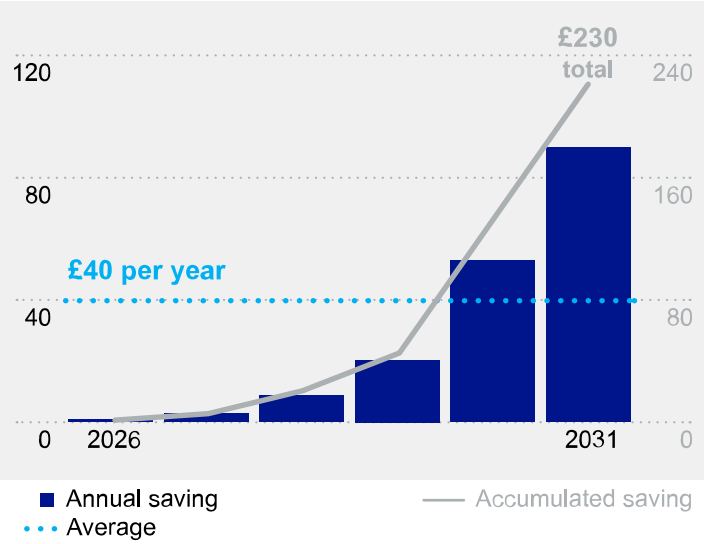
Transmission represents a relatively small fraction of the total electricity bill. Analysis suggests that, of the total electricity bill for the average household customer, the transmission element will increase from c.£23 p.a. in 2026 to c.£44 per year in 2031 based on our proposed assumptions. The difference between the Ofgem placeholder working assumptions and our proposed assumptions is c.£5 per year. Of this, only £1 relates to the proposed increase in cost of equity, with the remaining c.£4 relating to costs that consumers will need to pay for in any case, but would be brought forward to help with financeabilty.

However, while we forecast an increase in transmission costs, we expect these costs to be more than offset by reductions in the costs of managing the electricity. Our modelling shows a £12bn saving in constraint costs during the RIIO-T3 period representing a c. £40 average annual saving for the typical consumer. These consumer benefits rely directly on a financial package that is investable and can attract the investment required to deliver the future energy system.

Our analysis uses the latest information available from NESO, which is based on the Leading the Way 2023 scenario and not the 2024 Holistic Transition pathway.

Having reviewed the underlying generation mix in these scenarios, we are confident in drawing the same conclusion on how our plan will reduce constraint costs.

Figure 10 Consumer bill savings (£)



Our consumer research shows that across all socio-economic groups there is support for the proactive approach we are taking. However, the same research shows that there are some consumers who cannot bear any increase in energy bills. We will continue to play our role, alongside Ofgem and the Government in supporting consumers in vulnerable situations, as outlined in Section 4.2.

5.2 Our contribution to supporting economic growth

Delivering our business plan will support the Government's growth agenda and Ofgem's Growth Duty

Ofgem has had a Statutory Growth Duty since May 2024. We strongly support this new duty, given the importance of energy to the country's economy. Securing the highest sustained growth in the G7 with good jobs and productivity growth in every part of the country is one of the new Government's five missions.

As energy is a primary input to all economic activity, the electricity transmission system can be one of the engines of sustainable economic growth. It can deliver clean, reliable and affordable energy to homes, businesses, and the public sector. As we decarbonise heat and transport, its importance will only increase. Our network will support the decarbonisation of existing sectors and the growth of new sectors such as data centres that support greater use of AI and the economic benefits that can bring.

Our plan builds on the strong foundations laid in RIIO-T2:

- Driving reform of connections to reduce the time it takes for clean generation and storage to connect
- Progressing work now using uncertainty mechanisms to accelerate connections for large new connections worth more than £1bn, for example the JLR battery gigafactory in Somerset, new data centres at Didcot and West London and offshore wind at Wanless Beck in the North East
- Investing shareholders' money in innovative new grid enhancing technologies (Dynamic Line Ratings and next generation conductors) that can help reduce the costs of running the transmission system and make the UK a world leader in their adoption. We are proposing a nation-wide approach to deploying these technologies where there is a clear consumer case, collaborating with NESO and other Transmission Owners.

Supporting economic growth was a major focus for us as we developed our business plan. We have engaged our stakeholders, including metro mayors and local authorities to understand their growth plans. This has helped shape our regional plans for the network. We have also assessed our contribution to economic growth against the key drivers identified by Government in its statutory guidance.

Innovation, efficiency and productivity

Innovation is one of the most important drivers of productivity and economic growth. We plan to deploy new grid-enhancing technologies to expand the capacity of our existing grid and to embed 11 major innovations that were trialled and funded under RIIO-T2 as set out in Section 4.4.

The scale and pace of the investments we will make in our network work hand-in hand with changes in how we contract, drive innovation and productivity gains in our supply chain and delivery partners. As many of our delivery partners typically work across other sectors too, this will have much wider benefits to the economy.

Data and digital investments sit at the core of our plan to transform our operations. This will improve the service we offer to our customers, supporting their business objectives and enabling us to deliver the step change in work envisaged in our plan. It will also improve our own efficiency. Annex A05: Digitalisation Strategy and Action Plan provides the details.

We explain in Section 5.1 that we have committed to a challenging ongoing efficiency target of 0.7 per cent on top of the £0.5bn of efficiencies we will deliver in RIIO-T2.

Infrastructure and investment

Our plan provides 19 GVA of connection capacity for new demand. This will help **decarbonise existing industries** (for example: electric furnaces to decarbonise steel manufacturing); in transport, **gigafactories** to produce batteries for electric vehicles in domestic car production; and **data centres** that will harness the power of AI and the digitalisation of the economy driving productivity and growth. We will **enable electricity distribution networks** to support distributed generation and expansion in demand.

Skills

Our plan will deliver highly skilled, well-paid jobs:

- Overall, we will be growing our workforce by greater than 50 per cent, with more than 1,100 trainees, apprentices and graduates onboarded by the end of RIIO-T3
- National Grid plc's overall investment supports 55,000 more jobs by 2030
- We are increasing the number of training days by 60 per cent for our people, including developing skills, such as AI and digital technologies
- Through our Social Impact programme, Grid for Good, in 2020 we made a 10-year commitment to develop skills for the future of 45,000 people in our communities and we are on track to reach our goal.

Our commitment to job creation and skills is in Annex A03: Workforce and Supply Chain Resilience Strategy.

Competition and trade

Delivering our plans will substantially increase the capacity to transfer electricity around the network. This will boost trade directly as we are deeply interconnected with neighbouring electricity grids; helping the Government realise its ambition to make the UK a significant exporter of green power. It will benefit trade indirectly by allowing new large loads (such as gigafactories and data centres) to connect to the grid creating new export opportunities.

Environmental sustainability

Our commitments to net zero, nature positive and One Planet Living set out in our Annex A01: Environmental Action Plan (and summarised in Section 2.3) will ensure that as a responsible business we are leading the way in supporting sustainable economic growth.

5.3 Our digitalisation and data strategy

Baseline £0.38bn | Pipeline -

Our RIIO-T3 objective:
We will leverage digital and data capabilities to transform how we work with our stakeholders to maintain and operate our network

"In RIIO-T3 we plan to exceed Ofgem's data best practice principles and to plug into the industry-wide data sharing infrastructure. This will mean joined-up decision making across the industry and much better whole systems outcomes."

Simon Johnston,
Interim Chief Information and Digital Officer

In an increasingly interconnected and digital world, efficient planning, operation and maintenance of our national infrastructure requires data and digital innovation.

Our Digital Strategy & Action Plan (DSAP) sets out an integrated portfolio of digital investments to transform how we will maintain and operate our assets, accelerate the connection of clean energy and improve customer and stakeholder experience.

When combined with investment in our underlying IT and Telecoms infrastructure, we will improve efficiency, enhance our capabilities and support the transition to a decarbonised energy system. These investments underpin our ambition to be an Intelligent Connected Digital Utility.

High-quality and reliable data that allows robust and timely decision making is foundational. Our data strategy is designed to encourage innovation, implement new operational methods, and harness the transformative potential of artificial intelligence.

In RIIO-T2, we established a digital operating model, promoting a 'digital-first' approach to transforming processes. We updated our Digitalisation Roadmap based on stakeholder input and in response to the rapid changes happening in our sector.

Through the period we deployed new digital products. We enhanced our digital channels to improve customer experience by providing more information through the connections process. For our ASTI projects, we are using state-of-the-art 3D models and virtual reality headsets to show the public how proposals could look in the local landscape (shown below).

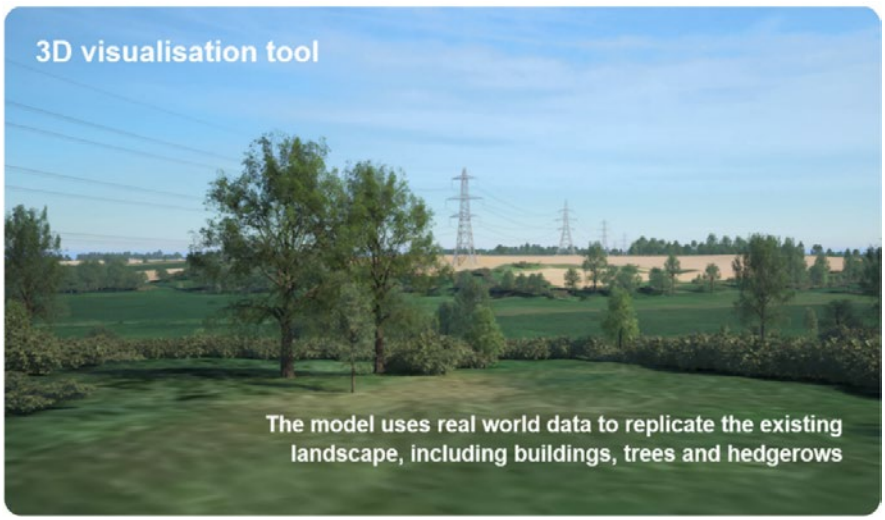
In RIIO-T3, we will work towards a digitally enabled future where digital twin technology optimises where and when we undertake our maintenance, Artificial Intelligence (AI) predicts safety incidents in advance, and a Data Sharing Infrastructure (DSI) supports collaboration and decision making across our sector and beyond.

In developing our digital objectives, we have engaged extensively with a wide variety of customers and stakeholders to understand their needs and the value we provide. This engagement has directly informed the digital products and enhancements we will be delivering.

Annex A05: Digitalisation Strategy and Action Plan (DSAP) sets out our strategic digital investments to speed up delivery and improve safety, consumer value, network reliability, and environmental impact. It builds upon and updates the DSAP published in March 2024 to set the vision for the next five years and is shared on our website.

We have five key objectives for our DSAP, based on our customer and stakeholder priorities. The following five sub-sections set out the highlights and digital investments to meet each objective.

- The Great Grid Upgrade: Construction and work delivery
- Delivering for customers and stakeholders
- Intelligent asset and network
- Building trust through data transparency
- Digital culture



The Great Grid Upgrade and operations: construction and work delivery

Views from stakeholders and customers

- A survey of key stakeholders across Government, Ofgem and the supply chain confirmed we are trusted to keep the lights on, but need to change how we work to meet future expectations
- Our industry and regional partners, including customers and supply chain, emphasise the need to align plans, and work collaboratively. They have asked for access to real-time network data so they can make informed decisions.

Our commitments:		Success measure / target
C4.1	Take a digital approach to enable real-time collaboration, provide predictive analytics across our delivery portfolio, improve supply chain visibility, and contribute to lower energy bills for consumers in the long term	• Reduce costs caused from changes to in-flight projects, including a saving of 2.5% of such costs over five years in our largest projects designed to increase the capacity of the network

Construction optimisation

With our work volume set to more than double in RIIO-T3 compared with RIIO-T2, we must use digital tools to help streamline our construction projects. We plan enhancements to give access to more data at the right time for those planning our projects, to manage complex work with improved status reporting. Better visibility of location and condition of construction materials will support more accurate work plans. Scheduling risks will be reduced through data-driven probabilistic analysis.

Transforming our Enterprise Delivery Management

Building on RIIO-T2 foundations, we are building a portfolio management tool that will consider all infrastructure construction and operational maintenance so that we can consider the financial, engineering and timing implications of our decisions. We can then plan better resource availability, site access and work better with our supply chain to get what is needed to the right place at the right time.

Delivering for customers and stakeholders

Views from stakeholders and customers

- Feedback from our surveys show customers want better access to data, including to self-serve and real-time data
- Most community, other sector and industry representatives attending our regional ‘pathway to net zero’ workshops cited data access and simplification as key to collaboration and more whole systems thinking

Our commitments:		Success measure / target
C4.2	Keep stakeholders central to our planning by collaborating with local authorities, regional development bodies, customers, and our staff team to deliver an integrated platform that provides seamless, personalised engagement across all touchpoints	• Provide real-time visibility of project milestones and progress updates to stakeholders, improving informational flows and connection arrangements

The better we understand our customers and stakeholders, the more effectively and efficiently we can serve them.

We will enhance our customer and stakeholder management so that we collect data better, handle queries faster and more efficiently. Digitalisation here will help us to analyse data so that we understand our customers better and will help operational teams to create events and campaigns that are targeted and more helpful to our customers.

We will develop high-quality self-serve capabilities.

Further details on how these investments will enhance the customer service for those connecting to our network are provided in section 4.1.

Intelligent asset and network

Views from stakeholders and customers

- Most community, other sector, and industry representatives attending our regional 'pathway to net zero' workshops cited data access and simplification as key to make the planning process more transparent. Collaboration, whole system thinking and increased engagement to align plans are the best ways to achieve this.
- The ISG has challenged us to think innovatively and step up to industry challenges, given our role at the centre of the sector. A fundamental digital transformation is needed across the sector to meet these needs.

Our commitments:		Success measure / target
A3.3	Expand our approach to whole systems through new modelling approaches and industry collaboration	• Work closely with DNOs to identify the optimum investments across transmission and distribution networks • Provide better insight and visibility of options for ourselves, DNO partners and broader stakeholders through use of the modelling tools developed in RIIO-T2 (Neptune, Triton)
C4.3	Deliver a digitally enhanced and data-led infrastructure to optimise our operations and ensure a reliable network for consumers	• Reduce unplanned outage resolution time through improved predictive monitoring and early intervention, improving resiliency and efficiency • More detailed insights on the operation of our network in all timescales, including on constraint costs, enabled through increased automation and use of AI in power system studies

We use digital tools and data to operate, monitor, and control our network. Our plan to develop this is called our Intelligent Asset and Network approach, where advanced technology meets infrastructure to create a more responsive grid.

This transformation is built on two pillars: Operational Management and Digital Twins and Power Systems. These capabilities enable us to respond to network demands with greater agility and precision, ensuring reliability and efficiency for customers and consumers.

Operational Management: This pillar includes investments in: Digital Substations where we will test, for example, a virtual protection and control system; and *Internet of Things* (IoT) where sensors will transfer data to support predictive maintenance – for example a circuit breaker indicating when performance is not as expected.

Digital Twins and Power Systems: This pillar covers the creation of a digital space, or 'sandbox', to model more dynamic and complex scenarios. We see an opportunity to improve our power network modelling capabilities so we can provide richer assessment of the network into NESO strategic network planning initiatives, such as CSNP and similar whole-system cross-sector collaboration (as discussed in section 1.4). We will do this by assessing more scenarios in more detail, and by developing advanced simulation tools such probabilistic modelling and quantum simulation. When planning our future network, this will help us, and others, make the right decisions for consumers.

Building Information Management (BIM) will be rolled out across our ASTI construction programme to allow digital rehearsals of construction to spot problems in the virtual world before they happen on a live construction site. Digital twins of the assets can then be used during their operating lifetime, in determining when maintenance is needed.

Imagine a world where…

Stakeholders experience a lifelike representation of the build variants from any location

You can walk on site without setting foot or before the first pylon has been installed.

Improved relationship with communities – easing friction in consenting

Intelligent planning and synchronisation of workforce, transport, plant and materials with adaptation as necessary

An inclusive construction where people of all abilities can fully participate and carry out their daily work safely and unencumbered.

Reduction in wasted time means meeting our deadlines

Building trust through data transparency

Views from stakeholders and customers
• Feedback from DNOs, NESO and customers is that it is crucial for them to have access to open and accurate data and greater transparency around the connection process and pipeline to inform planning and decision making • Customers and stakeholders told us at our pathway to net zero events they need data from all industry players, and data needs to be more accessible, and once published, the datasets must be accurate for practical use

Our commitments:		Success measure / target
C4.4	Unlock the full value of our data assets across the business and develop our Data Sharing Infrastructure to foster increased whole-system collaboration	• Achieve seamless data flow between NGET, Ofgem, and the wider energy sector through integration of the Data Fabric with the DSI by the end of second year of RIIO-T3

As the energy sector helps to decarbonise the wider economy, there are opportunities to share our data that would help other stakeholders in their decisions, and for us to use data from others in ours.

We will support establishing processes that govern the data that is shared, so that it is accurate, secure, and used responsibly. We will support a glossary of cross industry terms so that the data products we produce can be used and understood by others.

We will evaluate our performance against Ofgem's Data Best Practice (DBP) guidelines and the recommendations made by the Energy Data Taskforce to ensure continuous compliance. Adhering to DBP, which is a licence condition, will facilitate enhanced connectivity, understanding, and insights derived from our data. Our DSAP outlines our strategy for integrating DBP.

Digital culture

Views from stakeholders and customers
• Stakeholders want us to think innovatively to step up to industry challenges and our Independent Stakeholder Group expects us to play a leadership role on digital across the energy sector

Our commitments:		Success measure / target
C4.5	Continue to build our digital skills and capabilities to actively make the cultural shift towards a 'Digital Business', attracting the best digital talent	• 80% of relevant employees complete training course on data concepts, terminology, and best practices within first year of RIIO-T3

We aim for our workforce to think digitally and use digital tools to solve business challenges. The first step in creating a digital culture is leadership support. Our executive team includes clear data measures in leadership scorecards to monitor and improve data quality, building trust in the data that supports digitalisation.

Hackathons and forums for our teams to share ideas and showcase their projects will show what can be achieved with new digital tools and will encourage innovation and experimentation across the organisation.

In collaboration with Udacity, we intend to offer our employees short-term "nano-degree" programmes focused on emerging digital technologies such as generative AI, machine learning, and blockchain. We will initiate a pilot programme with our customer connections team, aiming to facilitate the roll-out of a structured programme. These steps are part of our practical approach to providing learning and development opportunities to upskill the entire organisation.

How we have built our data and digital plan

The digital plan development followed a structured investment methodology. It consists of three key phases: gathering inputs, collation and analysis, and prioritisation and recommendations. This approach has been formulated with input from customers, stakeholders, and staff to align investments with strategic objectives. It aims to address both immediate and long-term priorities while delivering cost-effective solutions for stakeholders.

Our RIIO-T3 data and digital investments

We are making strategic digital investments to deliver on our ambitious commitments for the RIIO-T3 period. These eight digitalisation initiatives will enable us to power GB's net zero future.

Investments	Description	Baseline	Pipeline
Digital and data		£0.38bn	-
Digital Twins & Power Systems	Uses digital models of buildings and infrastructure to study grid performance by simulating real-world scenarios and identifying opportunities	[redacted]	[redacted]
Construction Optimisation	Optimises project planning, risk management and cost tracking using digital tools, cloud-based environments, and predictive risk analytics to drive project success	[redacted]	[redacted]
Enterprise Delivery Management	Enables real-time scenario modelling, skills gap analysis, advanced forecasting, to optimise workforce allocation and project outcomes	[redacted]	[redacted]
Customer & Stakeholder Experience Management	Advances CRM and SRM capabilities to better manage customer and stakeholder interactions, support contract creation, generate insights, and enhance experience management tools	[redacted]	[redacted]
Operational Management	Improves efficiency and optimises activities across the asset lifecycle, from strategic asset management, asset design and planning, asset build and management, to the operation and maintenance of assets	[redacted]	[redacted]
Business Fundamentals: Safety & Compliance	Improves field safety, risk assessment, strengthens data accessibility through investments across land and property management, performance management, health and safety management, contract management, and knowledge management	[redacted]	[redacted]
Business Fundamentals: Common Platforms	Essential to our day-to-day operations. Consists of three capabilities that cut across all our business functions: Geo-spatial Information System (GIS), Enterprise Platform, Enterprise Content Management	[redacted]	[redacted]
Enabling Data	Transforms how we manage both internal and shared data, to lead in digital twins, power systems innovation, and provide new data capabilities to	[redacted]	[redacted]
Opex	Operating costs	[redacted]	[redacted]

Our plan to deliver our data and digital strategy

After identifying our proposed investments, we reviewed them with stakeholders to ensure they met requirements. We also examined external case studies and best practices from other industries that have undergone digital transformation. We considered dependencies between capabilities to deliver an integrated digital transformation across our business, avoiding ad hoc solutions.

Building on our RIIO-T2 investments, we have systematically prioritised digital investments for RIIO-T3 to ensure system efficiency for consumers in the shortest time frame. We have formulated our proposed investments using a capability model framework. This framework delineates the core capabilities required by an organisation to achieve its strategic objectives, providing a structured representation of the organisation's abilities, skills, and resources. All of this has been integrated into our delivery plan.

5.4 Our information technology and telecommunications investments

Baseline £0.49bn | Pipeline -

Our RIIO-T3 objective:
We will transform our asset management, network development, network operation and telecoms capabilities to ensure we can deliver the step-up in work required during this period, and manage a larger, more complex, decarbonised network

Views from stakeholders and customers

- Our consumer research identified reliability of the network system is a top priority for all our stakeholder groups, which is dependent on our technology and communications platforms

Our commitments:		Success measure / target
C1.4	Modernise and secure essential network connectivity, communications systems, and operational control technologies to maintain resilience in our 24/7 operational telecoms network	• Upgrade Optel fibre network to maintain 24/7 operation • Deployed new SCADA infrastructure enabling automated management and scalability enabling network growth

Our Information Technology and Telecommunications (IT&T) strategy is part of our comprehensive overarching strategy across digital, data, technology and telecommunications, that aligns to our business plan commitments. It includes improving existing capabilities and developing new infrastructure to meet future needs.

Our digital specialists collaborated on this IT&T Strategy, so that it aligns our business plan commitments with our digital, data, technology, and telecommunications investments. This includes improving existing capabilities and developing new infrastructure to meet future needs.

Our IT&T plans for RIIO-T3 builds on the work completed in RIIO-T2, where we maintained the viability of our Critical National Infrastructure while building the platforms and capabilities for our digital and data future. IT&T is foundational to our entire digital and data strategy, across five strategic areas:

1. **Maintaining a 24/7 operational telecoms network:** Our 24/7 operational telecoms network equipment refresh, and satellite telephony contingency investments will ensure the availability of our communications capability between our substations and control rooms for reliable operation of the electricity transmission network
2. [redacted]
3. **Strengthening telecommunications network resiliency**: Enhancing communications network resiliency through investments in Optel and monitoring our underlying fibre optic cable performance to ensure that our growing infrastructure remains protected and reliable as we expand to meet increasing electricity demand.
4. **Robust, reliable, secure ET network control:** Our network control systems, enhanced by SCADA improvements, will provide real-time visibility and control of our assets, allowing us to respond quickly to changing network conditions and customer needs.
5. **Enabling our digital strategy:** By maintaining robust and reliable core IT capabilities, including our data network delivered through Optel, we provide the underpinning infrastructure and services that support the fundamental digitalisation investments outlined in the DSAP.

Our RIIO-T3 IT and telecommunications investments

Our investments in IT&T are essential to achieving our commitments and fulfilling the DSAP objectives. To meet our consumers' expectations and avoid system failures, these technology foundations need to be resilient and high-performing.

By modernising our core IT services, we will boost reliability, resilience, and ultimately provide long-term value for money.

Investments	Description	Baseline	Pipeline
IT & Telco		£0.49bn	-
Critical National Infrastructure (CNI)	[redacted]	[redacted]	[redacted]
General Counsel	Legal technology investments focused on AI-enhanced platforms for crisis management and resiliency, risk management, and legal capabilities. We will improve worker safety through the deployment of a centralised tool. An accessible reporting platform will enable improved ethics and compliance efforts, and immersive technologies will progress our technical training.	[redacted]	[redacted]
Corporate Strategy & External Affairs	Implementation of a centralised web content management platform with cloud migration to reduce technical debt. ESG reporting and how we coordinate and manage work across our portfolio will be improved, and stakeholder engagement will be streamlined.	[redacted]	[redacted]
Digital Platforms and Infrastructure Technology	These investments include IT Delivery, IT Digital Workplace Services, IT Infrastructure, and IT Platforms. It encompasses enterprise-wide IT operations, client computing and collaboration infrastructure, cloud and network management, and upgraded core application services. Our platforms will leverage DevOps, AI automation, and unified enterprise architecture tools.	[redacted]	[redacted]
People Services	Maintains core HR platforms while implementing AI-enhanced recruitment tools and personalised development systems. Optimising operations through advanced technologies and employee engagement solutions.	[redacted]	[redacted]
Finance Systems	We focus on keeping the enterprise finance platforms, including Treasury, Tax, Financial Consolidation, and Statutory Reporting, up-to-date and secure, while extending their operational life and ensuring consistent, accurate financial reporting. We will optimise processes and reduce technical debt with continuous improvement of the core ERP system, ultimately delivering cost savings for customers.	[redacted]	[redacted]
Procurement	Optimising spend and supplier engagement for procurement operations with AI-powered tools and system upgrades. The platform integrates purchasing with accounts payable to support strategic infrastructure investments.	[redacted]	[redacted]
Opex	Operating expenditure	[redacted]	[redacted]

5.5 Setting the regulatory framework to support long-term value for money

Regulatory outputs – Licence obligations, Price Control Deliverables and Output Delivery Incentives (ODIs)

We believe that incentive-based regulation is an important principle for consumers and that as part of the framework network companies should be incentivised to deliver additional value. Where they do so, network companies should receive a share of the benefits enjoyed by consumers for going above and beyond.

Licence obligations

These are the minimum requirements, which alongside other legal requirements, we will always adhere to.

Licence obligations should be used where they are necessary to support Ofgem in delivering its statutory duties and principal objective. These obligations include requirements to provide access to our network to convey electricity, to operate our networks safely and efficiently and to comply with codes governing the operation of the electricity system.

Price Control Deliverables

We will commit to, through inclusion in the licence, a suite of Price Control Deliverables (PCDs), holding us to account for delivery of specified projects that provide value to our stakeholders and consumers.

Given the uncertainties in our operating environment, we see benefit in the targeted use of PCDs to protect consumers. They ensure that if changes in external circumstances affect the outcome a baseline investment was designed to meet, or is no longer needed, or cannot be delivered, then funding is returned to consumers. As a monopoly provider of an essential public service, it is important we only earn a return when we have delivered value for consumers.

In selecting which investments should be covered by PCDs we have followed these principles:

- they should be material in value (>£15m)
- they are not covered by other regulatory mechanisms which will protect consumers, e.g. ASTI projects already have licence obligations and ODIs
- there is a measurable deliverable attached to the investment, e.g. completion of an asset installation
- late or no delivery of the output has consumer detriment, e.g. a delay increases constraint costs, or higher greenhouse gas emissions
- in line with Ofgem's intent to streamline the regulatory framework, we have suggested Common PCDs where aligned with the approach in RIIO-T2 and limited our proposals for Bespoke PCDs.

From applying this approach, 95% of our business plan would be covered by PCDs or equivalent regulatory mechanisms that protect consumers. The remainder is more operational activity which does not have the same defined capital delivery that the PCD was designed around.

We have included the outcome from our PCD assessment in every Engineering Justification Paper (EJP) supporting this plan and in Annex A14: Cost Assessment and Benchmarking Approach we provide a list of the Bespoke PCDs that we are proposing.

Output Delivery Incentives (ODIs)

Incentives are a core element of the regulatory framework. They provide value to consumers by incentivising companies to go above and beyond business as usual (BAU) delivery. We see a package of financial and reputational ODIs having a key role to play in driving value to consumers during the energy transition. We believe there is scope for higher powered incentives than in RIIO-T2.

Our proposals for ODIs build either on the existing incentives in RIIO-T2 (e.g. SO:TO optimisation), incentives developed during RIIO-T2 or incentives that are currently being consulted on (e.g. connection incentives as part of the end-to-end connection review). The common theme is to incentivise Transmission Owners beyond what would be BAU delivery in areas where there is clear consumer value (e.g. in reducing constraint costs or accelerating delivery of investments). We consider these areas briefly below.

A full list of proposed ODIs, including those retained from RIIO-T2, those amended, and our proposals for new ODIs are set out in section 8 of Annex A14: Cost Assessment and Benchmarking Approach.

Constraint management

NESO is forecasting high and rising constraint costs as we look to deliver the network reinforcements during RIIO-T3. This represents a significant cost to consumers (£12bn of constraints equates to £230 on each domestic household bill). It is therefore important that Transmission Owners (TOs) are fully incentivised to work with NESO to find innovative ways to manage these constraint costs. As part of developing the ASTI framework TOs are now fully incentivised to accelerate delivery of the ASTI projects. We believe there is scope for the framework to be expanded to cover other major network capacity projects identified by NESO, where the consumer value case of delivering early exists.

The SO:TO optimisation incentive in RIIO-T2 has also delivered significant value for consumers. There is a strong case to broaden it in RIIO-T3 to ensure TOs are fully incentivised to find any new avenues to reduce constraints to consumers. Examples include increasing existing capacity by accelerating the use of Dynamic Line Ratings and exploring opportunities to reduce system access downtime on major boundaries while delivering the RIIO-T3 investment programme. The design of an appropriate incentive framework needs to be co-developed with NESO and Ofgem. We believe it should be a priority in parallel with the connection capacity incentive covered below.

Connection capacity

As outlined in the Sector Specific Methodology Decision (SSMD), Ofgem is proposing to remove the existing Quality of Connections and Timely Connections (ODI-Fs) and introduce a new approach for connections incentive for RIIO-T3. In November 2024, Ofgem launched a consultation seeking inputs on the design of a new incentive for the timely connection of customers by TOs.

We support the objective because where capacity is delivered on time ahead of a date target, it would support earlier connections for our customers. This in turn has wider consumer benefits by allowing low carbon generation or customer demand projects that support economic growth to connect more quickly than would otherwise be the case.

We are considering which of the options proposed by Ofgem would provide the best incentives for TOs to generate additional value for consumers.

Two additional common ODI proposals

In addition to adapting the incentives described above, we have also proposed two new common ODI proposals; one relating to incentivising new innovative ways of delivering major infrastructure (an innovative delivery incentive) and one relating to the entire portfolio of delivery across RIIO-T3 (a stretching outcome attainment incentive).

We believe there is consumer value in both these new incentives which are summarised in the table below and we look forward to engaging with Ofgem in 2025.

Overall, we strongly believe that the right incentive package can accelerate progress in delivering the energy transition and drive substantial consumer value. We propose close collaboration with Ofgem and NESO in these areas between now and Draft Determinations in summer 2025.

Proposed ODI	Type	Consumer value case
Innovative Delivery Incentive	ODI-F	Innovating from the outset of project design can deliver value through cost savings and/or efficiency in delivery and can be supported through a targeted incentive which also shares knowledge across the sector. This incentive would demonstrate the value of investing to 'go the extra mile' in taking novel approaches that might otherwise not be identified.
Stretching Outcome Attainment Incentive	ODI-F	Facilitate a step change in the transition to low carbon electricity by incentivising going beyond business as usual across the entire portfolio of transition related activities. Incentivising TOs to take on additional risks can payoff in the short term – delivering more, sooner – and will also deliver long term value by setting new standards for what can be delivered which will be factored into future regulatory assessments.

Uncertainty Mechanisms

Over the course of the next five years, we will be navigating an uncertain and changing environment. This includes managing evolving plans to meet Government's Clean Power 2030 target and to respond to the implications of connections reform on our investment plan.

The regulatory framework should recognise the scale of this uncertainty and provide the flexibility for networks and Ofgem to respond to changing events. This is critical if together we are going to deliver the investments which consumers and stakeholders expect of TOs.

To manage this, Ofgem implemented uncertainty mechanisms in the RIIO regulatory framework. These help protect customers and consumers from paying for activities that may not be required. They also help TOs to reduce the risk from factors outside of their immediate control. The mechanisms allow changes to allowed revenues and outputs to be made during the price control period to reflect the latest view. There are three different types of uncertainty mechanisms in the framework: reopeners, volume drivers, and use-it or lose-it (UIOLI) allowances. Indexation mechanisms and pass-through costs also help to manage risks that are not within our control.

The existence of uncertainty mechanisms reduces the level of risk we face. It creates opportunities for us to improve the efficiency of our work and ultimately it leads to lower costs to consumers, including a positive impact on the cost of financing investment.

Our approach to uncertainty mechanisms:

- We have included investment in our baseline only where we can justify that delivery is in consumers' interests (the need for the investment is clear) and that the cost justification meets Ofgem's requirements
- We have considered materiality by only requesting an uncertainty mechanism where the potential change in expenditure is material and uncertain
- Where relevant, the uncertainty mechanism chosen can both increase and reduce allowances

We support the inclusion of all uncertainty mechanisms outlined in Ofgem's methodology document, noting that the design of these remains under development and may need changing, e.g. increased flexibility in the triggers for the workforce resilience reopener.

In addition, **we are proposing the following uncertainty mechanisms** that we believe are in consumers' interests to include as part of the regulatory framework. We will continue to engage with Ofgem and the other TOs to explore and develop these proposals in more detail over the coming months. We provide further information in the relevant annexes.

Uncertainty Mechanism	Type of Mechanism	Rationale
Non-load Driven Works	Reopener	We aim to take a strategic approach to work on our assets, so if there is one reason to be on site we maximise the work that can be carried out at the same time. Mirroring the uncertainty mechanisms available for load work would support this, realising efficiencies and reducing planned outages. It will allow us to update our non-load work to respond to changes which will happen in our load plan as we take account of the conclusions of Clean Power 2030.
	UIOLI	
	Volume Driver	
Closely Associated Indirect (CAI) Costs and Business Support Costs (BSC)	Volume Driver	Ofgem introduced the Opex Escalator in RIIO-T2 to ensure networks were funded through an automatic mechanism for varying operational costs associated with investments that were delivered through uncertainty mechanisms. A mechanism that fully allows CAI and BSCs to scale in line with capital investment is required.
Centralised Strategic Network Plan (CSNP) input development activity	Reopener	The results of the CSNP cannot be known at this stage, so we propose that a reopener is the most appropriate way to manage this uncertainty.
NESO Separation Costs	Reopener *(Bespoke)*	We have included in our pipeline an estimate of uncertain costs that result from the dis-synergy of NESO leaving the National Grid Group. The timing and magnitude of the costs are unknown at this stage, so a reopener is the most appropriate mechanism to respond.
Physical Security Upgrade (PSUP)	Reopener	Due to the evolving requirements and scope to deliver the PSUP, we are proposing to direct funding requests through a reopener.
Innovation Deployment	Reopener	This would support the deployment of RIIO-T2 innovation projects in RIIO-T3. At this stage, we do not have cost certainty or cost timing certainty for their deployment as the projects are not completed.

Competition for onshore transmission

Through the Energy Act 2023, Government introduced the potential for competition within the onshore electricity transmission sector. We support competition where it delivers benefits for consumers.

In line with the Business Plan Guidance, we have reviewed our baseline and pipeline investments which are above £50m for early and £100m for late competition to form a 'best view' on which those which meet the criteria for competition.

We have identified nine projects with a collective estimated cost of c. £2bn that could be eligible for early competition. Eight of these could also be eligible for late competition.

This assessment has been conducted based on the best available guidance from NESO and Ofgem at the time of writing. The criteria we have applied to the projects meeting the value thresholds are: new and separable. This reflects the Early Competition Update published by NESO in February 2024, guidance from NESO, and the Business Plan Guidance. Our assessment of early competition is based on Ofgem's consultation on a competition pilot, which relies on the project being sufficiently mature to have a preferred option. As such, for some of our pipeline projects it is not possible to determine now that if they meet the criteria.

As part of our assessment, we have considered whether any projects that do not meet the criterion to be 'separable' from the rest of the network could be re-scoped to create a project that is separable. There are complexities in determining separability given the inevitable interactions with the existing network. We have not split larger projects into multiple smaller projects to avoid the value criterion.

A full list of the projects we assessed for eligibility for either early or late competition can be found in Annex A08: ET Load Strategy.

We have included information on the competition assessment in each of the EJPs which are above the value threshold.

Cost and financeability

In this section we set out the overall cost of our plan and the financial framework for RIIO-T3. This would allow us to attract the capital that is required to deliver the consumer and societal benefits of the energy transition.

Attracting capital to deliver what is needed by 2030 is only the beginning of the process of delivering the energy transition in the UK – we expect electricity demand to double between now and 2050 as we electrify heat and transport and therefore the sector will need to be able to attract significant levels of capital to invest over the next 25 years.

In this section, we summarise our overall investment plan using the standard categories specified by Ofgem. We also explain our approach to ensuring we are able to finance our business, our evidence for the regulatory framework and rate of return necessary to attract investment. We will cover the following topics:

6.1 Overview of our investment plan

6.2 Financing our business plan

Associated annexes:
Annex A12 – Finance Annex

6.1 Overview of our investment plan

Our investments deliver consumer outcomes efficiently.

Throughout this document, we have set out the investments that deliver the grid of tomorrow, aligned to Ofgem's consumer outcomes: infrastructure fit for a low-cost transition to net zero, secure and resilient supplies, high quality of service from regulated firms and long-term value for money.

We have included investment in our baseline only where we can justify that delivery is in consumers' interests (the need for the investment is clear) and that the cost justification meets Ofgem's requirements.

During RIIO-T3, we will use uncertainty mechanisms to bring forward further investment cases when we can present a case to Ofgem to show they are in the best interests of consumers.

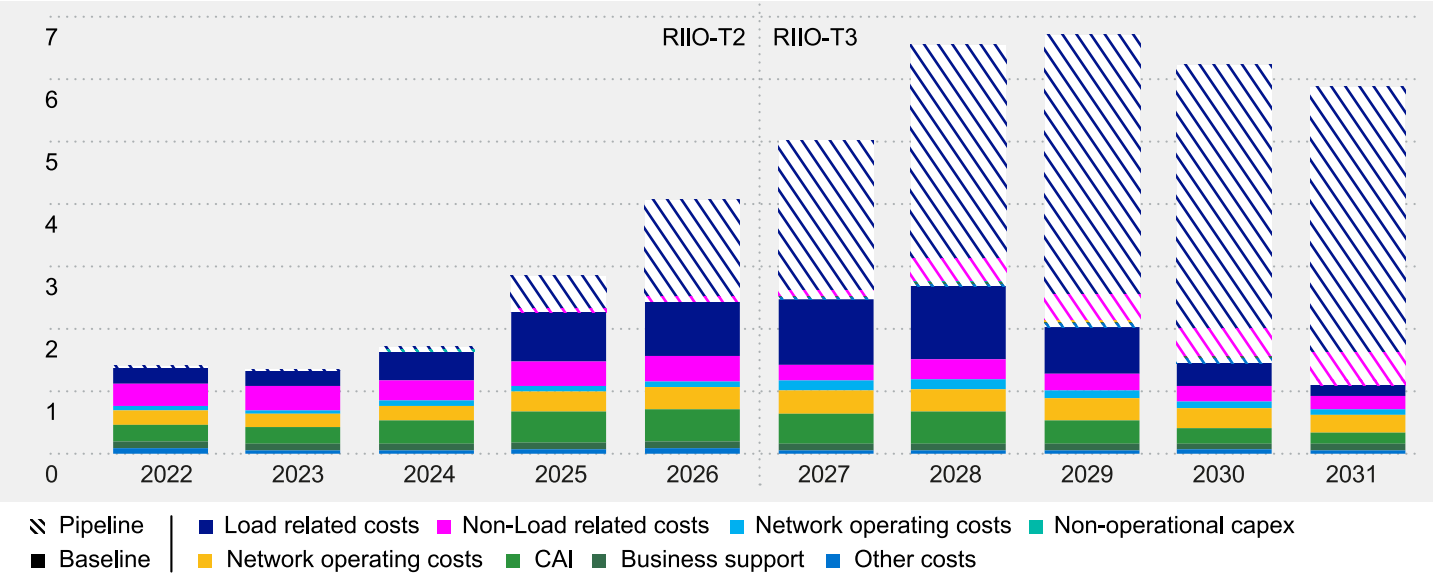
This plan contains much greater use of uncertainty mechanisms than RIIO-T2. This allows us to respond to evolving requirements, for example relating to the Clean Power 2030 plan, connections reform, and other changes we do not know about today.

Cost category (£bn 23/24 Prices)	RIIO-T2	RIIO-T3	+ / -	% change		% change Commentary
Load-Related Costs	3.0	4.1	1.1	▲	35%	Higher costs due to increased network capacity and customer connections driven by transition to net zero network
Non-Load-Related Costs	2.2	1.5	(0.7)	▼	32%	Lower costs due to London Power Tunnels 2 predominantly completed in RIIO-T2
Non-Operational Capex	0.5	0.7	0.3	▲	62%	Higher costs due to building our digital capabilities to enable us to transform to deliver the ambitious work programme and to become more efficient
Network Operating Costs	1.6	2.0	0.4	▲	26%	Higher costs to deliver a property portfolio fit for a modern and diverse workforce
Closely Associated Indirects	2.2	2.1	(0.1)	▼	7%	In line with RIIO-T2
Business Support	0.6	0.6	0.0	▲	2%	In line with RIIO-T2
Other Costs	0.4	0.3	(0.1)	▼	26%	Costs in line with RIIO-T2 in absolute terms. The changes reflect security investments completed in RIIO-T2 that provide enduring benefit.
Total Costs within Price Control	**10.4**	**11.2**	**0.8**	▲	**8%**	
Pipeline Log	2.6	23.7	21.1	▲	799%	Higher costs due to ASTI, tCSNP capacity increases along with less developed customer connections.
Total Costs inc. Pipeline Log	**13.0**	**34.9**	**21.9**	▲	**167%**	
Innovation	0.1	0.2	0.1	▲	130%	
Total Plan Costs	**13.1**	**35.1**	**21.9**	▲	**167%**	

The table above shows our plan as it will appear in the Business Plan Data Tables submitted alongside this document.

Those elements funded through Uncertainty Mechanisms are shown in the Pipeline Log section, with the remaining lines covering our investment in connecting new customers, increasing network capacity, maintaining our existing assets, and running our business.

Fig 11 Annual cost profile over RIIO-T2 and RIIO-T3 (£bn)



The chart above illustrates the annual cost profile over the RIIO-T2 and RIIO-T3 periods. The chart shows a marked increase in Load-Related Costs beginning in 2024 due to the start of several ASTI projects outlined in section 2.1, notably Eastern Green Links 1 and 2 and Yorkshire GREEN. Load- Related Costs are further increased due to the customer connections programme outlined in section 2.2. The Pipeline Log grows considerably from 2025 to 2029 largely driven by the portfolio of ASTI projects and the projects identified in the 'tCSNP'/'Beyond 2030' report.

Cost category (£bn 23/24 Prices)	BPDT Table	RIIO-T3	Infrastructure fit for a low-cost transition to net zero	Secure and resilient supplies	High quality of service from regulated firm	Long-term value for money
Load Related Costs	*6.1*	4.1	4.0	0.0	-	0.1
Non-Load Related Costs	*7.1*	1.5	0.1	1.4	-	-
Non-Operational Capex	*9.1*	0.7	0.0	0.2	0.0	0.5
Network Operating Costs	*8*	2.0	0.1	1.3	0.3	0.3
Closely Associated Indirects	*9.4*	2.1	1.3	0.7	-	0.0
Business Support	*9.5*	0.6	-	0.1	0.0	0.5
Other Costs	*9*	0.3	-	0.3	-	-
Total costs within Price Control		**11.2**	**5.5**	**3.9**	**0.3**	**1.4**
Pipeline Log	*10.5*	23.7	21.0	2.6	-	-
Total costs including Pipeline Log		**34.9**	**26.6**	**6.6**	**0.3**	**1.4**
Innovation	*9.11*	0.2	-	-	0.2	-
Total Plan Costs		**35.1**	**26.6**	**6.6**	**0.5**	**1.4**

The table above sets out the investments that are described throughout this document. It shows how the costs break down into the cost category structure that Ofgem uses within the Business Plan Data Tables.

6.2 Financing our business plan

Our RIIO-T3 objective:
Maximise the value we create by controlling our costs as our network grows and seek opportunities to create additional value for consumers

Views from stakeholders and customers
• Transmission investment is a trade-off between benefits and costs. Most consumers prefer a reliable network and minimised long term costs, and support our proactive approach to investments • Investors have told us that they require a fair return that is reflective of risk and market conditions, and earnings and cashflow growth that match asset growth to support a strong overall investor proposition when choosing between potential investment opportunities

Our commitments:		Success measure / target
B1.3	Attract and retain the equity and debt required to fund our RIIO-T3 investment plan to support the UK transition and unlock the consumer and societal benefits associated with net zero	• An equity return that fairly rewards investors for the risk they are taking

It is essential that UK networks are seen as an attractive opportunity for investors

The financial framework for RIIO-T3 needs to enable us to attract the capital required to deliver the consumer and societal benefits of the energy transition. Our plan includes a total of up to £35bn of baseline and pipeline investment. In order to deliver this investment, it will require £9-10bn of fresh equity in the NGET notional company during the next price control. Together with substantial debt financing, this unprecedented level of financing will be required to deliver our contribution to building a clean, fair, and affordable energy system for the future.

There has been a great deal of change since the framework for RIIO-2 was concluded:

The macro environment has moved to a 'higher for longer' versus 'lower for longer' interest rate environment.

The scale of investment is unprecedented. The investment required for the 17 ASTI projects alone is significantly more than our RIIO-T2 allowances.

There is fierce international competition for capital to deliver net zero and other global infrastructure projects with governments and regulators taking action.

Our forward risk profile is increasing with the scale of investment, new technology and both supply chain and labour constraints. These include downside impacts of new ASTI ODI, and licence breach risk.

RIIO-T3 represents a fundamental change in circumstances from the last 30-years, and we will be investing at a significant pace including for the ASTI projects, several of which have already broken ground. Attracting capital to deliver what is needed by 2030 is only the beginning of the process of delivering the energy transition in the UK. We expect electricity demand to double between now and 2050 as we electrify heat and transport, and therefore the sector will need to be able to attract significant levels of capital to invest over the next 25 years. The question of financeability and investability, in particular the need to maintain investment grade credit ratings for debt and the theoretical capital asset pricing model (CAPM) approach to calculating equity returns, needs to be considered through a lens of attracting new debt and equity finance in a highly competitive international market for capital. The decisions made here for transmission will have implications for the entire sector, and for future price controls. Investors require both returns that are commensurate with the risk to which they are exposed, and evidence of regulation that is supportive of new capital being deployed. For example, regulatory frameworks that deliver growth in cashflow and earnings aligned with the growth in assets and investment required.

Ofgem has introduced the concept of investability due to the potential challenges that the sector could face in attracting the required capital in this and future price controls. Ofgem recognises the value of a suite of market cross checks; we agree that this is important to ensure we do not focus solely on traditional backward-looking methodologies. For example, an exclusive reliance on CAPM to determine returns would be at odds with international regimes we are competing with for capital, which weight results from various methods to ensure an

appropriate return. There is also precedent for utility regulators choosing a point estimate for cost of equity in the upper half of the range to incentivise investment, and the evidence we present in this plan supports a similar conclusion.

The financial framework, and overall regulatory framework must be attractive to investors and reflect the following:

- The cost of equity must be set at a level that reflects investor requirements under current market conditions to enable us to attract significant levels of new equity. Evidence indicates a base return at the top of Ofgem's Sector Specific Methodology Decision (SSMD) range.
- Earnings growth should match asset growth and support acceptable dividend yields for investors when compared with other potential investment opportunities.
- NGET must achieve credit metrics consistent with Baa1/BBB+ credit ratings from Moody's/S&P, in line with RIIO-T2 and regulatory precedent, given the need to raise significant levels of new debt.
- There should be a fair opportunity for efficient high performing companies to outperform through the design of the incentive framework, creating value for investors and consumers.

An investment grade credit rating that achieves Baa1/BBB+ thresholds is essential to ensure strong access to debt capital, including at times of high market stress, and to ensure costs are kept low for consumers. This gains additional importance at this time of heightened investment to maintain strong financial resilience, and to send a positive signal to equity investors by maintaining credit worthiness.

The meaning of financeability has not been set out in detail by Ofgem. For these purposes, and solely focusing on the RIIO-T3 period, we have set out our definition of financeability in this section:

- Generating sufficient cashflow to maintain more than one investment grade credit rating and achieve Baa1/BBB+ thresholds for debt metrics during the RIIO-T3 period.
- The ability of the notional company to maintain a dividend of 3 per cent.
- The cost of equity set at a level that reflects investor requirements under current market conditions to enable us to attract the significant new equity required.

This is designed to ensure robust access to both debt and equity markets during the RIIO-T3 period. We have included further information to support this section of our business plan in Annex A12: Finance Annex.

Our assessment of Ofgem's working assumptions for the financial framework

The RIIO-T3 controls need to support the unprecedented scale of capital expenditure that NGET is tasked with carrying out in the next five years. Ofgem asked all companies to use placeholder working assumptions in their business plans to assess financeability in the first instance. In Annex A12: Finance Annex, we demonstrate how these placeholder working assumptions do not result in a financeable outcome.

We can achieve a financeable plan if we use the flexibility Ofgem has allowed itself within the broad SSMD framework.

We set out the details of our financeability challenges under Ofgem's placeholder working assumptions alongside our proposed approach to mitigate these challenges in the sections below.

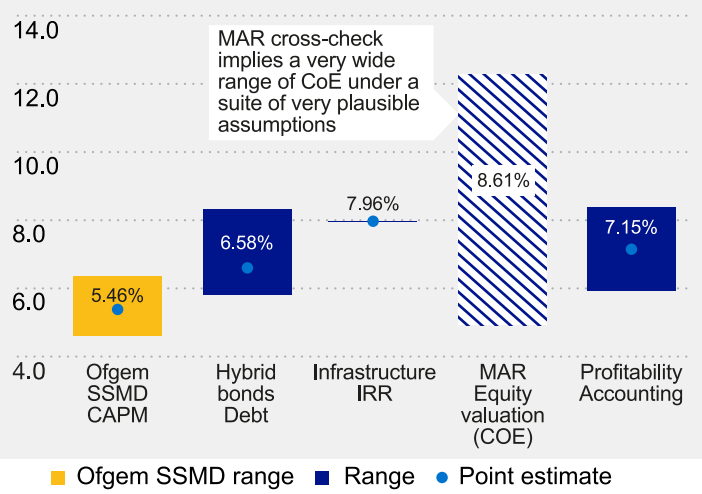
Requirement 1: Details of financeability challenges with placeholder assumptions

The results of our assessment demonstrate financeability challenges with the Ofgem placeholder assumptions, as Baa1/BBB+ credit metrics are not achieved for the period. In addition, our assessment of the current market evidence and cross checks demonstrate that Ofgem's working assumption for cost of equity is not sufficient to provide a financeable outcome and attract the new equity that is required in the notional company. A fair equity return is an essential requirement in the assessment of the financial framework, in particular as equity injections are required in the notional company to maintain gearing at close to 55 per cent.

In relation to equity financing, the evidence on market cross checks supports a cost of equity above Ofgem's working assumption (5.0 per cent CPIH real at 55 per cent gearing) to provide an attractive and investable proposition that can compete with the international demands for capital. Equity must offer a return that compensates for the additional risk taken by equity providers over debt providers. A simple look at the current returns available for debt such as gilt yields, alongside analysis of debt-based market cross checks like hybrid bonds, imply a higher cost of equity is needed. As of September 2024, nominal yields on 20-year UK Government bonds were c.4.6 per cent, on long-dated sterling A corporate bonds were c.5.4 per cent, and on long-dated sterling BBB corporate bonds were c.5.9 per cent. Ofgem's range results in only a small risk premium for equity after adjusting for inflation. The market cross checks used by Ofgem in the previous price control also point toward a requirement for a higher level of return.

For the debt metrics, there are two key factors that are affecting the outcome, both relating to the size of the capital programme. Firstly, S&P funds from operations (FFO) to net debt, and Moody's FFO and retained cash flow (RCF) to net debt cash metrics both fall under the required thresholds impacting the overall Moody's scorecard. This is due to the large capital programme increasing net debt, and cashflow not growing as quickly as debt under Ofgem's working assumptions. Although the addition of the nominal allowance for fixed rate debt has provided additional cash to support financeability, it does not solve the overall cash requirements to meet credit rating targets due to the size of the capital plan. We set out solutions to this, supported by economic principles, later in this section. Secondly, the Moody's scorecard is heavily affected by the scale and complexity of the capital

Fig 12 Market cross checks



Sources: Ofgem, Frontier Economics. Presented at 60 per cent gearing

programme metric. The average investment as a percentage of regulated asset base is forecast to be 22 per cent in RIIO-T3, roughly double the expectation for RIIO-T2 and this has a large impact on the outcome. This will require further strengthening of the other financial metrics in the Moody's assessment to offset its impact on the overall scorecard.

The combination of an equity return that is not sufficient, and cash that does not facilitate attractive earnings growth, is resulting in a financial framework that would not provide acceptable returns to equity investors when compared with other investment opportunities, and would put at risk the benefits being sought for consumers.

Requirement 2: Management efforts or mitigating actions

Our plan is built to support the Future Energy Scenarios (FES) 2024 Holistic Transition pathway. The baseline and pipeline expenditure included in this plan meets the requirements needed to deliver net zero and is suitably efficient and ambitious. We have confidence the investments in this plan are needed because, as well as delivering on the Government's ambitions, the plan is built on the foundations of the NESO analysis of consumer value and is informed by deep engagement.

As part of our responsibility to consumers to deliver a business plan with efficient costs, we have considered:

- How we can use innovation and grid enhancing technologies to avoid the need for build.
- How we can deliver prudent anticipatory investment.
- How we can ensure final designs are optimised, and leverage our commercial relationships to deliver best value.

In the section below, we also describe how we have first selected regulatory measures that minimise consumer impacts (for example, equity issuance timing) and those that promote intergenerational fairness.

Requirement 3: Regulatory measures which should be taken alongside the management efforts or mitigating actions

We are proposing a financial framework package that complies with Ofgem's SSMD framework, and we believe would be both financeable and investable. The framework and initial ranges Ofgem have set out in the SSMD can be implemented in a way that will achieve this, but Ofgem will need to use the flexibility it has afforded itself. In coming to our proposals, we have considered the elements of the framework that Ofgem has set out (for example, regulatory asset lives, capitalisation rates and dividend levels).

In the table on the following page, we set out our proposed assumptions and how they meet the SSMD framework.

Parameter evidence suggests a cost of equity of 5.83% (CPIH real) at 55% gearing (6.31% CPIH real at 60% gearing). This is supported by market cross checks.

We have assessed cost of equity using admissible methodologies and evidence for the component parts of the calculations. Our proposed range is 5.06-6.60% (CPIH real, 55% gearing). Our mid-point estimate of required returns is 5.83% (CPIH real, stated at 55% gearing). This is equivalent to 6.31% at 60% gearing, which sits within the SSMD range.

Our proposed range considers the following evidence on the cost of equity parameters:

- **Risk Free Rate (RFR):** Evidence recognises the need to consider the specialness of Government bonds and the convenience premium attached to them by investors.
- **Total Market Return (TMR):** Evidence suggests the historical long-term average TMR is c.7.0%. The current high interest rate environment means investors need higher returns, and demonstrates the need for a point estimate above the long-term average.
- **Beta:** Evidence demonstrates that forward looking risk has increased, and therefore it is justified for beta to increase in RIIO-T3 from RIIO-T2. We agree with Ofgem that a point estimate in the upper half of the SSMD range is required. This follows our review of beta for UK and European comparators, alongside evidence of the relative risk of GB ET networks versus comparators such as gas, water, nuclear and offshore wind.

	NGET proposed assumptions	Justification of how this meets the SSMD broad framework
Return on equity (real CPIH stripped at 55% gearing)*	5.83% (6.31% at 60% gearing)	6.31% at 60% gearing is within the Ofgem SSMD range of 4.57-6.35% and supported by our parameter evidence
Equity Issuance Timing	Equity to be issued at the end of each period, instead of the start of the next	Permissible under the broad framework of SSMD
Asset lives	40 years straight line for new additions Acceleration of the Regulated Asset Value (RAV) differential over 10 years from the start of RIIO-T3	SSMD allows for adjusting cash levers where there is new evidence or to solve for financeability challenges. We present evidence based on economic principle and to support financeability
Capitalisation rate	Annual natural rate for baseline. Natural for pipeline spend +6% fast money adjustment	
Index linked debt (ILD) assumption	Index linked debt assumption of 20%	SSMD included a 30% assumption but recognised that company-specific debt structures would be reviewed
Return on debt	RAV weighted trailing average mechanism with 25bps of additional borrowing costs. Nominal allowance on fixed rate debt	In line with SSMD, and Ofgem's working assumptions
Dividend yield	3%	
Gearing	55%	

* Ofgem quote cost of equity in SSMD at 60% gearing, however Ofgem propose 55% gearing for electricity Transmission Owners in line with RIIO-T2

While the 2023 UK Regulators Network (UKRN) guidance recommends setting the cost of equity at the mid-point of the range, it does not rule out setting a cost of equity above a reasonable mid-point where there is justification to do so. There is broad agreement that, in the presence of uncertainty about the 'true' cost of capital, setting returns too low is more detrimental to consumers than setting returns too high. The indirect consequences of delaying or deferring strategic projects due to investor reticence to allocate capital to transmission investments far outweigh the direct effects of setting bills a little higher.

An alternative view of our proposals, therefore, is that Ofgem can set an appropriate return by setting a cost of equity at the top of its SSMD range, recognising that some of its proposed calculations might be producing unduly low estimates of required returns in current market conditions. This approach is consistent with the need for caution and for ensuring that the RIIO-T3 control does not unintentionally pose an obstacle to essential investment.

This unlocks significant benefits to consumers by enabling the attraction and retention of the equity financing that is essential to deliver the energy transition.

Where we propose alternatives to Ofgem working assumptions, these are within the SSMD framework and are supported by evidence that includes technical and consumer rationale for the change.

- **Equity issuance in the notional company moved to the end of each period:** We adopt the credit rating agency approach of modelling equity injections at the end of a period, not the start of the next period. This adjustment increases the equity required and makes a significant improvement to financeability at a low cost to consumers. This means further additional measures above those supported by economic and intergenerational fairness principles are not required.
- **A reduction in the assumption for index linked debt from 30% to 20%:** The size of the GBP inflation linked debt market (c.£440m p.a.) is not large enough for NGET to maintain 30% of its debt portfolio as index linked (c.£650m p.a. requirement). This is important as this shows that 30% is not credible for NGET, therefore we have provided for a 20:80 real to nominal return on debt.
- **A reduction in asset lives to 40 years for new additions:** The evolving technological landscape will cause a transition towards a shorter lifespan for more transmission assets over the coming decade, for example 'intelligent' substations with increased reliance on electronic and digital components, not traditional mechanical installations. Our investments in the ASTI projects changes our asset mix, such as more HVDC submarine cables. Overall we expect a reduction in average economic useful lives from the current c.45 years to close to 40 years and the regulatory mechanism should adjust accordingly for intergenerational fairness.
- **Acceleration of the RAV differential to 10 years from the start of RIIO-T3:** Expenditure associated with assets built between 1991 and 2011 (post-privatisation) will be recovered until 2061 under current arrangements. Most of the RAV differential balance is from the 1990s and this results in an actual economic life well beyond 45 years. Correcting this with a 10-year recovery from the start of RIIO-T3 would improve intergenerational fairness. We set out further detail in Annex A12: Finance Annex.
- **+6% fast money for uncertainty mechanisms:** Our proposed capitalisation rate for Uncertainty Mechanisms is 93%, and reflects the rate needed to meet financeability requirements based on our current business plan. This includes a 6% fast money adjustment that is broadly consistent with the difference between our natural capitalisation rate for Uncertainty Mechanisms in RIIO-T2 and the RIIO-T2 capitalisation rate 2 of 85%.

There must be a fair opportunity to outperform the base cost of equity by delivering additional value to consumers through the design of the incentive framework (ODIs, cost, and the business plan incentive), creating value for investors and consumers.

As there is intense global competition for capital, the opportunity to provide overall nominal returns for efficient, high performing networks in line with those available in US utilities is critical for attracting the equity financing required. The US is a particularly important comparison given the sheer size of the US energy investment requirement and the higher returns of offer. See section 5.5 for details of our proposals on incentives.

Assessment of our proposed package
The regulatory assumptions that we propose based on market evidence, economic principles and considering fairness to consumers meet the requirements for a financeable outcome in the notional company when combined with our investment plan (c.£35bn over RIIO-T3). The results for the notional company are aligned with the overall assessment outcomes for the actual company.

Quantitative metrics	RIIO-T2	RIIO-T3					
	25/26	26/27	27/28	28/29	29/30	30/31	Average
S&P: FFO/net debt	**BBB+**	**BBB+**	**BBB+**	**BBB+**	**BBB+**	**BBB+**	**BBB+**
Moody's: Scale/Complexity of capital programme	*Baa*	*B*	*B*	*B*	*B*	*B*	*B*
Moody's: AICR	*2.15*	*2.00*	*1.97*	*1.95*	*1.90*	*1.87*	*1.94*
Moody's: Net debt/RAV	*53%*	*55%*	*55%*	*55%*	*55%*	*55%*	*55%*
Moody's: FFO/Net debt	*15%*	*14%*	*14%*	*13%*	*13%*	*13%*	*13%*
Moody's: RCF/Net debt	*13%*	*12%*	*11%*	*11%*	*10%*	*10%*	*11%*
Indicated Moody's rating*	**A3**	**Baa1**	**Baa1**	**Baa1**	**Baa1**	**Baa1**	**Baa1**

**Key metrics shown for Moody's that reflect outcomes on financial metrics. Full scorecard available in the BPFM.*

Our proposal meets the requirements for an investable outcome for equity investors, with a cost of equity that is competitive against other investment opportunities (evidenced by market cross checks) and earnings growth that matches asset growth to support a strong overall investor proposition when compared with other potential investment opportunities. In Ofgem's working assumptions, earnings growth is lagging asset growth by around 10% over the five-year period. It is important that earnings growth keeps up with asset growth to allow acceptable dividends during the period of high growth. Our package closes this gap to ensure that growth remains attractive to investors considering the significant equity required. This approach makes us financeable at an extra cost versus Ofgem's working assumptions of £5 p.a. on the average household customer bill. Only c. £1 of this relates to the proposed increase in cost of equity, with the remaining c.£4 relating to consumer cost neutral assumptions over the long term. The transmission element of the bill for the average household will increase from c.£23 p.a. in 2026 to c.£44 p.a. in 2031 based on NGET's proposed assumptions. We expect these costs are likely to be more than offset by reductions in the costs of managing the energy system. These consumer savings are estimated at £94 per annum by 2031. More details is included in section 5.1.

Stress testing of our proposed package
The stress test analysis demonstrates that scenarios including increased expenditure, and downside impacts of potential incentive penalties, including the new ODI and licence breach conditions in the ASTI framework, would result in our plan not being financeable. In Annex A12: Finance Annex, we set out further details on the outcome of these tests. A fair balance in the package between affordability for consumers and providing an investable outcome for investors must be achieved. This will require further engagement with Ofgem as it considers the evidence we set out in this business plan submission.

Requirement 4: Consideration of other applicable measures to aid financeability

We set out in Annex A12: Finance Annex the rationale for not selecting alternative measures. These include changes to gearing levels and a further reduction in the notional dividend assumption that do not support investability given the level of equity financing required in this plan.

We have selected our proposed assumptions primarily based on economic principles, and available evidence. This also ensures financeability challenges are resolved mainly by resolving the source issues with the placeholder regulatory assumptions that Ofgem provided to companies.

Requirement 5: Statements and conclusions are supported by evidence and justification

The Board can provide the required assurance that, in its opinion, NGET's RIIO-T3 business plan is financeable (as defined earlier in the section) on both a notional and actual capital structure basis based on the regulatory assumptions that NGET propose in our RIIO-T3 Business Plan submission. Further details of the evidence and justification for our proposals are set out in Annex A12: Finance Annex.

Our ambitions, objectives, and commitments

Ambition A
Deliver the grid of tomorrow, today

Deliver with urgency the Transmission Network needed for Great Britain's future growth and decarbonisation

Objectives of Our Plan

A1: Maintain world class levels of network performance and resilience, and ensure that the new network we build is designed to reflect future security and climate challenges

Our Commitments: We will:	Success Measure/Target
A1.1: Ensure our assets continue to provide a resilient network, delivering high quality and reliable electricity to consumers	• 99.9999% network reliability • <135MWh per year Energy Not Served
A1.2: Not allow the overall risk of our network to increase, as we deliver across multiple drivers (network growth, safety, resilience and environment)	• Maintain asset risk at T2 levels whilst the network grows more than in previous periods
A1.3: Build upon delivery of climate resilience mitigations already developed with new and innovative modelling capability and refreshed standards	• All new sites resilient by design • New resilience modelling approach implemented and Climate Adaptation Strategy published by 2026
A1.4: Prepare against an evolving cyber landscape by delivering Cyber Resilience requirements ahead of deadline and maturing our approach to manage new threats	• NIS requirements delivered ahead of the 2027 deadline

A2: Deliver the capacity our customers need now, by looking holistically across multiple investment drivers to deliver at the pace and scale required to support Government's ambition on growth and decarbonisation

A2.1: Enable the connection of new generation to the electricity transmission system	• 35 GW connected
A2.2: Enable the connection of new demand customers to the electricity transmission system, including to support the Government's new Growth Driving Sectors	• 19 GVA connected
A2.3: Develop and deliver major new network expansion projects identified by NESO	• 21 projects delivered • 35 projects developed/in development, this includes in construction, with a number having high potential to accelerate and deliver in RIIO-T3
A2.4: Replace overhead line conductors to meet load and non-load needs of our customers	• Reconductor 8% of our overhead line network (215 circuit km per year) with pipeline planning for an additional 13% of the network (365 circuit km per year)
A2.5: Improve our customers' experience of the connection process	• Increase customer satisfaction rating from 7.2 to above 7.7 in the Quality of Connections Survey • Provide increased transparency throughout the connections process, from application through to energisation • Provide additional support to customers, in particular as the new connections process are applied to the existing pipeline of customers

A3: Future-proof our network with strategic capacity and flexibility for the longer term, using the network modelling capabilities we developed in T2 to surface insights and inform strategic decisions.

A3.1: Develop and deliver strategic investments which include optionality for the future	• Options created for 26 GW (through future proofing approach to investment)
A3.2: Create long-term strategies for major underground network upgrades	• Three cabling strategies (Leeds, Severn Crossing, West London)
A3.3: Expand our approach to whole systems through new modelling approaches and industry collaboration	• Work closely with DNOs to identify the optimum investments across transmission and distribution networks • Provide better insight and visibility of options for ourselves, DNO partners and broader stakeholders through use of the modelling tools developed in T2 (Neptune, Triton)
A3.4: Improve our access to strategically important land which could help support decarbonisation of our network over the next five years and beyond	• Updated land acquisition strategy operational by the start of the RIIO-T3 period • At least 10% of wayleaves converted to easements • Updated stakeholder engagement strategy for Grantors

A4: Invest in the next generation of innovative technologies to make sure that we are planning and building a network that is ready for tomorrow

A4.1: Embed successful innovation projects into our operations to reduce system costs for consumers and improve environmental outcomes	• 30 planned innovation projects will be integrated into day-to-day operations (both stimulus funded and through our business-wide approach to innovation) • Maintain benefits ratio for innovation investment in excess of industry benchmark of 4:1
A4.2: Increase investment in the next generation of innovative technologies and maintain innovation spending in line with overall network growth	• Approximately £150M invested in innovation projects • 10% of innovation spending NGET-funded • Additional £46M per annum shareholder funded innovation via National Grid Partners

Ambition B

Do the right thing for customers, communities and the environment

How we deliver is as important as what we deliver

Objectives of Our Plan

Our Commitments: We will:	Success Measure/Target
B1: Maximise the value we create by controlling our costs as our network grows and seek opportunities to create additional value for consumers	
B1.1: Control our cost base as our network grows	• Commit to a 0.7% ongoing efficiency challenge at the top end of range supported by market data
B1.2: Collaborate with the NESO to reduce constraint costs	• Develop a constraint reduction strategy to identify future additional and innovative actions to reduce constraint costs and realise benefit under the SO:TO incentive
B1.3: Attract and retain the equity and debt required to fund our T3 investment plan to support the UK transition and unlock the consumer and societal benefits associated with net zero	• An equity return that fairly rewards investors for the risk they are taking
B2: Build social value and support consumers in vulnerable situations to have a lasting positive impact in our communities	
B2.1 Make the most of opportunities to accelerate social mobility through generating new or improved skills and employment opportunities to local communities and identified disadvantaged groups	• Contribute to National Grid 2020, 10-year commitment to develop skills for the future for 45,000 people in our communities (from 2020) • Contribute to National Grid 2020, 10-year commitment to deliver 500,000 employee volunteering hours in our communities (from 2020) • Enhanced measurement and reporting for local employment and training opportunities with a focus on disadvantaged groups (e.g. percentage local employment, work experience placements, paid training positions)
B2.2: Support communities impacted by new transmission infrastructure projects and evolve our community-led grant scheme for communities impacted by our maintenance and operational activity	• Deliver both local community benefits and regional socioeconomic legacy benefits • Investment in community benefit in line with government guidance, with transparent reporting on benefits delivered • Enhanced and targeted social value improvement through flexible, discretionary fund
B2.3: Drive sector collaboration with improved focus and consistency on delivering social value	• Consistent metrics, tools and methodologies agreed with other Transmission Operators for measuring social value, and actions taken to share best practice
B2.4: Support for local and diverse providers in our supply chain	• Ask all suppliers to sign up to our Supplier Code of Conduct (and re-affirm annually) which encourages them to understand the impact and value-add of their activities in the local area and wider community • Work with our supply chain to make positive contributions and investments where appropriate, for example, by providing local employment opportunities, skills development, and workforce volunteering • Promote diversity, equity and inclusion in our supply chain and increasing sourcing opportunities to encourage wider participation, including with small & diverse suppliers
B3: Represent the diverse communities we serve by maintaining our sector-leading record on workforce diversity and inclusion communities	
B3.1: Continue our focused efforts on diversity, inclusion and community impact to ensure we understand and represent our communities	• Further improvements in gender and ethnic diversity of workforce: • Ethnic diversity of 21.4% of workforce by end of 2026/27 • Gender diversity of 25.4% of workforce by end of 2026/27
B4: Play a leading role in accelerating net zero and driving a nature positive future, including by reducing our own emissions and environmental impact	
B4.1: Reduce our own carbon emissions: Deliver scope 1, 2 and 3 emissions reductions in line with a 1.5-degree Science Based Target (SBT)	• 50% reduction in scope 1 and 2 emissions from a 2018/19 baseline • Contribute to the National Grid Group Scope 3 emissions reduction target of 37.5% from 2018/19 baseline by 2033
B4.2: Ensure that 80% of our supply chain have formally committed to the same SBT as us	• 80% of our supply chain partners committed to a Science-Based emission reduction target by 2031
B4.3: Drive sustainable operations through reduction of SF6 emissions, energy use in our operational estate, and fleet vehicle emissions	• 50% reduction in SF_6 emissions by 2030 from a 2018/19 baseline • 20% reduction in energy use across substations by 2031 • 100% zero emission fleet purchases for light duty vehicles by 2031
B4.4: Deliver our construction projects as low carbon intensity as possible, as set out in our Low Carbon Infrastructure Roadmap and Invest in carbon compensation projects, that also deliver social and/or nature benefits from constructing our infrastructure	• 50% low-emission concrete by 2030 • 50% low emission steel by 2030 • Phase out of diesel generators by 2028 and work towards electrification plan by 2035
B4.5: Reduce emissions across our corporate property office estate in pursuit of our net zero ambition	• Net zero offices as per the UK Green Building Council (UKGBC pathway)
B4.6: Improve our circular economy maturity levels, reduce waste and recycle/ re-use more content in construction	• Achieve “engaged” level in BS8001 • Zero avoidable waste in construction by 2030 • 10% recycled/reused content in major construction projects by 2031
B4.7: Deliver Biodiversity Net Gain (Net Biodiversity Benefit in Wales) alongside wider environmental and societal benefits	• 10% or greater Biodiversity Net Gain alongside wider environmental and societal benefits for all developments requiring formal planning or consenting • 10% or greater Biodiversity enhancement for voluntary non-statutory construction projects plus wider environmental and societal benefits.
B4.8: Seek to deliver marine improvements for projects impacting the marine environment and work with grantors to deliver nature connectivity.	• Develop a marine enhancement and restoration strategy • Enablement of Local Nature Recovery Strategies (LNRS)
B4.9: Disclose our nature-related risks and opportunities, and work with other transmission owners and common supply chain to manage nature and ecological risks	• Annual Report on progress • Work with supply chain to set reduction targets
B4.10: Assess our water footprint and work with industry and our supply chain to identify opportunities to improve water use and minimise wastewater generation	• Improved understanding of m3 footprint across the value chain
B4.11: Build on our certified environmental management system to reduce oil contamination risk through improved asset management and using alternatives to oil filled installations where viable	• Certified ISO 14001 Management System
B4.12: Honour our commitment to visual improvement and invest in preserving natural beauty where new infrastructure is needed	• Deliver three ongoing visual improvement projects completed by 2031 (Eryri, the Cotswolds and North Wessex Downs) • Invest in preserving natural beauty where new infrastructure is needed

Ambition C

Transform the way we work

Transform our capabilities to deliver for consumers

Objectives of Our Plan

C1: Transform our asset management, network development, network operation and telecoms capabilities to ensure we can deliver the step-up in work required during this period, and manage a larger, more complex, decarbonised network

Our Commitments: We will:	Success Measure/Target
C1.1: Transform our asset management capabilities to efficiently manage a larger, more complex, network going forward	• Enhance our enterprise asset management suite of applications making best use of leading systems • Work with other networks to align asset risk methodologies • New framework developed for critical infrastructure assurance
C1.2: Enhance our network development and planning capabilities through enhanced power system and economic analysis, scenario testing and visualisations	• Develop new probabilistic power system engineering and economic analysis tools to enable enhanced scenario analysis at a greater level of detail and agility • Develop enhanced capabilities to visualise the impact of differing scenarios, enabling greater stakeholder input and engagement
C1.3: Transition to new Electricity Transmission Control Centre and SCADA system for secure and efficient network operation capability – independent of NESO	• Operating on new systems and new facilities by the end of the regulatory period • Connection of our network insight into the asset management system to better understand asset base demand
C1.4: Modernise and secure essential network connectivity, communications systems, and operational control technologies to maintain resilience in our 24/7 operational telecoms network	• Upgrade Optel fibre network to maintain 24/7 operation • Deployed new SCADA infrastructure enabling automated management and scalability enabling network growth
C2: Grow our workforce capability by positioning National Grid as the best place to work in the electricity sector	
C2.1: Strengthen our workforce resilience applying industry best practice frameworks	• Achieve top quartile performance in the National Skills Academy for Power (NSAP) resilience framework (once set in period).
C2.2: Grow our workforce capability, targeting a wider talent pool to ensure we are able to attract, retain and engage the highest quality talent from a diverse range of backgrounds	• 53% increase in workforce output by the end of RIIO-T3 • More than 1,100, apprentices and graduates onboarded by the end of RIIO-T3 • Reward and career frameworks that remain competitive
C2.3: Expand our training capacity and collaborate with industry to accelerate routes to competency	• 62% increase in training hours delivered in RIIO-T3 • Increased collaboration and use of technology • Advance safer by design working practices
C2.4: Provide access to modern and inclusive workplaces	• All our people have access to fair, equitable, inclusive and modern workspaces where they can perform at their best
C2.5: Continue to build a high-performance safety culture that prioritises the health, safety and wellbeing of our workforce and our supply chain.	• Maintaining upper-quartile Wellbeing Index Score
C3: Deploy new strategies that give our supply chain long-term signals to invest, so we can secure the equipment and skills needed	
C3.1: Implement new 'Signature Strategies' based on a portfolio and regional approach to provide long-term access to supply chain capacity and efficient prices	• Three new strategies (substations, tunnelling and cabling, and overhead lines) implemented during RIIO-T3
C3.2: Deliver our ASTI and other major projects through our new collaborative and integrated High Voltage Direct Current (HVDC) framework and Enterprise Delivery Model	• Secure supply chain capacity through our new framework to deliver critical ASTI projects and other major projects.
C4: Leverage digital and data capabilities to transform how we work with our stakeholders, maintain and operate our network	
C4.1: Take a digital approach to enable real-time collaboration, provide predictive analytics across our delivery portfolio, improved supply chain visibility, and contribute to lower energy bills for consumers in the long term.	• Reduce costs caused from changes to in-flight projects, including a saving of 2.5% of such costs over five years in our largest projects designed to increase the capacity of the network
C4.2: Keep stakeholders central to our planning by collaborating with local authorities, regional development bodies, customers, and our staff team to deliver an integrated platform that provides seamless, personalised engagement across all touchpoints	• Provide real-time visibility of project milestones and progress updates to stakeholders, improving informational flows and connection arrangements.
C4.3: Deliver a digitally enhanced and data-led infrastructure to optimise our operations and ensure a reliable network for consumers	• Reduce unplanned outage resolution time through improved predictive monitoring and early intervention, improving resiliency and efficiency • More detailed insights on the operation of our network in all timescales, including on constraint costs, enabled through increased automation and use of AI in power system studies
C4.4: Unlock the full value of our data assets across the business and develop our Data Sharing Infrastructure (DSI) to foster increased whole-systems collaboration	• Achieve seamless data flow between NGET, Ofgem, and the wider energy sector through integration of the Data Fabric with the Data Sharing Infrastructure (DSI) by the end of second year of RIIO-T3.
C4.5: Continue to build our digital skills and capabilities to actively make the cultural shift towards a 'Digital Business', attracting the best digital talent.	• 80% of relevant stakeholders complete training course on data concepts, terminology, and best practices within first year of RIIO-T3.

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