

Electricity  
Transmission

# Our Performance 2022/23



nationalgrid

# Alice Delahunty welcome message

## – Executive summary



**Welcome to this, the second annual performance report for the RIIO-T2 price control period which began in April 2021 and runs through to March 2026. The work we do maintains a safe and reliable electricity transmission network whilst also strengthening it to allow new customers to connect, including low carbon generation to support the UK's move towards net zero. In this report, we will focus on what we have delivered in the second year of this price control and look forward to the rest of RIIO-T2.**

Today we stand at a critical point in the UK's energy transition. All three points of the energy trilemma – security of supply, affordability, and de-carbonisation – are now in sharp and unrelenting focus. As the backbone of the UK's energy system, we play a crucial role in facilitating and driving forward the transition to a clean, fair and affordable energy future. I know our work will be

pivotal to the sector and making this future a reality. As we embed the strategy in our business and how we work, this will transform our approach and the network that we deliver for our customers and stakeholders.

This is a critical and incredibly exciting juncture in the road to net zero. This is our opportunity to deliver something extraordinary, on a scale we haven't seen since the grid was built. We have to do all of this ensuring everyone benefits from the energy transition, that bills are not a burden for individuals or families, and that no one gets left behind.

As I wrote last year, our original RIIO-T2 business plans were developed following our largest ever engagement exercise to date, with customers, industry stakeholders, businesses, and household bill payers across the country. As part of the process, the Independent User Group (IUG) was established to provide challenge on our business plan process and represent the interests of consumers, environmental and public interest groups, as well as large-scale and small-scale customers and distribution networks. It is chaired by Trisha McAuley OBE, an expert in consumer affairs, whose feedback you can read later in this report.

We are now forecasting to spend over £7.5bn during RIIO-T2 versus baseline Final Determination (FD) allowances of £5.6bn. We have already agreed additional funding via re-openers for Visual Amenity, SF<sub>6</sub> reduction, steelwork and foundations, cyber security and IT improvements and large new infrastructure investments. We also expect to make more re-opener submissions for other new projects to further strengthen and extend the network as we move towards net

zero. These additional works are forecast to trigger a total of £1.8bn in additional RIIO-T2 allowances, meaning that our adjusted allowance of £7.4bn is £0.1bn less than our forecast total spend.

I am proud to report that our Electricity Transmission business has continued to perform well for our customers and ultimately for end consumers by delivering safe, efficient, and reliable transmission services in 2022/23. Our performance in the areas that matter to you includes:

- **Safety** – this is our number one focus and something we are always striving to improve. During 2022/23, we have seen our overall injury frequency rate (IFR) decrease from 0.15 to 0.13 events per million hours worked. The reduction of all incidents, especially those with potential to harm, is a key value in Electricity Transmission and we have created an initiative called 'Stand up for Safety' to align everyone behind our new company-wide safety principles and the behaviours we want to see in colleagues' everyday actions.
- **Reliability** – Maintaining a resilient network is vitally important to our stakeholders and customers and we are proud to report continued strong performance in this area. We achieved an average network reliability of 99.999997%, with just one instance of customers being disconnected from the network.
- **Customer Connections** – This is where we work with customers who need to connect to our network. In 2022/23, we sent 635 connection offers, a 55% increase on the prior year, which was itself 50% higher than the busiest year in RIIO-T1.

- **Quality of Connections** – This covers the customer experience from pre-application through to commissioning the customers' assets onto the network. This year, we didn't meet the target (of 7.7 out of 10) and achieved a score of 7.2. We are disappointed in this outcome and are working hard to deliver our customers the service they deserve and enabling this through a series of reforms to how we connect customers.
- **Environment** – We are incentivised to further reduce our carbon emissions, improve the natural environment and reduce our resource use to meet our business targets for net zero. The Environmental Scorecard measures our efforts against these criteria, and we are very pleased to report that we have outperformed on all elements of the scorecard this year. We continue to look to further reduce our environmental impact.

This reporting year has also been pivotal as the UK moves towards net zero, along the way achieving the UK Government's stated aim of connecting 50GW of offshore wind by 2030. In December 2022, Ofgem published its recommendations for the Accelerated Strategic Transmission Investment (ASTI) framework. We are delighted to be delivering, sometimes in joint ventures with the Scottish TOs, 17 large projects that will strengthen the electricity network and support the transition to low carbon generation (such as offshore wind, new nuclear and interconnectors with Europe) over the coming years. Significant network investment will be required to achieve this, and we will need to work closely with you in the communities affected by these works. We will spend time sharing information with you on the drivers for the infrastructure and proposed solutions, asking you to shape the final solution.

Below is an update on a variety of projects progressing in 2022/23.

- We have made strong progress with our Yorkshire Green project, which is one of the ASTI projects that will support power flow for new offshore wind developments. Ofgem support the needs case and proposed technical solution to deliver onshore enablement works to connect low carbon energy to the electricity transmission network in the east of England.
- We have increased the customer-related outputs we are delivering compared to RIIO-T2 Final Determinations in order to meet the challenge of the future connections required to reach the Government's net zero targets by 2050. Many smaller low-carbon generation customers are connecting, with projects like solar farms and battery storage projects. This means that we have changed our investment plans accordingly and the RIIO arrangements recognise this, automatically adjusting allowances.
- Over the past year, our Hinkley project to connect the new nuclear power station reached a major milestone with successful commissioning of the Sandford substation. This means that the new 400kV substation, 8.5km of cable through the Mendip Hills Area of Outstanding Natural Beauty and a 12.8km stretch of new T-pylons are now energised and operational (with the remaining T-Pylons being energised in 2024). The project will also, in total, remove 249 existing pylons from the local DNO network. This project strengthens and builds resilience on the system and connects enough low carbon energy from the new Hinkley Point C nuclear power station to power six million homes and businesses.

- We are also pleased to have removed over 10km of overhead line from an Area of Outstanding Natural Beauty (AONB) and a National Park. This marks the culmination of the first two projects from the Visual Impact Provision, which was established to reduce the visual impact of existing transmission infrastructure in designated landscapes. The project in Dorset revealed extensive archaeological finds, while environmental sustainability was a strong focus in the Peak District. We are really proud that the Peak East project achieved an 18% Biodiversity Net Gain (BNG), which exceeded our commitment to deliver 10% BNG.
- More locally, through targeted repair and replacement, we have seen in excess of 20% reduction in the amount of SF<sub>6</sub> gas leaked from our assets compared to the baseline target. This gas is a great insulator of electricity, but it is a damaging greenhouse gas, and we're working with our supply chain to deliver SF<sub>6</sub>-free alternatives.

In the coming year, we will be working closely with stakeholders as we begin to build our business plan for the next regulatory price control period starting in April 2026, so we can deliver investments that are important to you and help drive towards a clean, fair, and affordable energy future.

I hope you find this report informative and welcome your feedback on how we can improve our reporting in the future.



**Alice Delahunty**

President  
National Grid Electricity  
Transmission

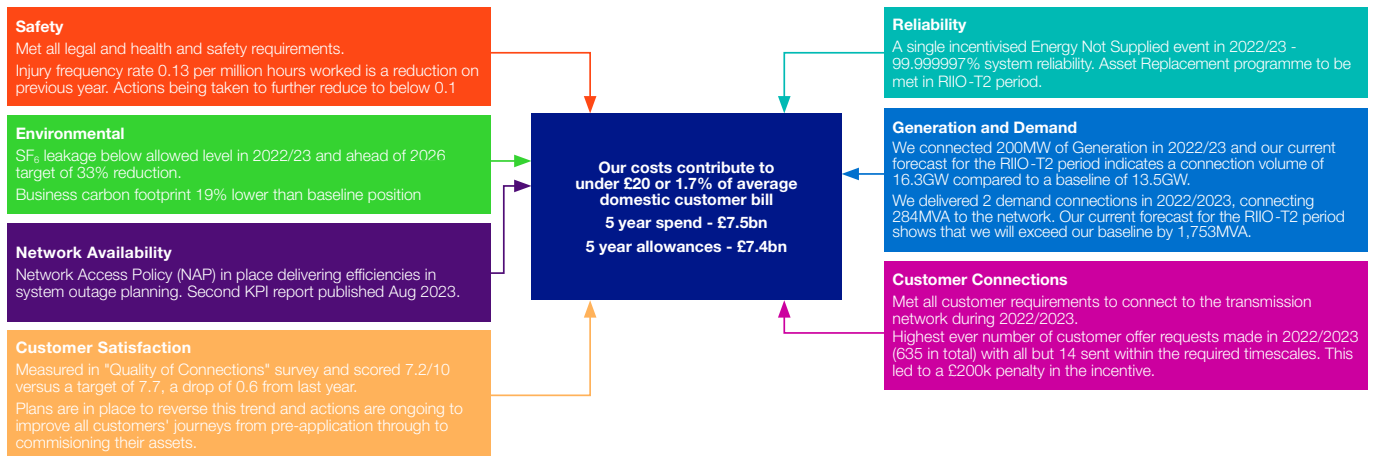


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## Performance infographic

How we have performed compared to the primary outputs in the RIIO-T1 framework.



This infographic shows our headline performance in areas that you told us are important to you,

- meeting the needs of consumers and network users
- maintain a safe and reliable network
- deliver an environmentally sustainable network

We have had a good year as we transform our business to help support the drive toward Net Zero whilst minimising the impact on consumers' bills.

# An overview of year two and forecast RIIO-T2 performance

## Five-year expenditure is broadly in line with adjusted allowances

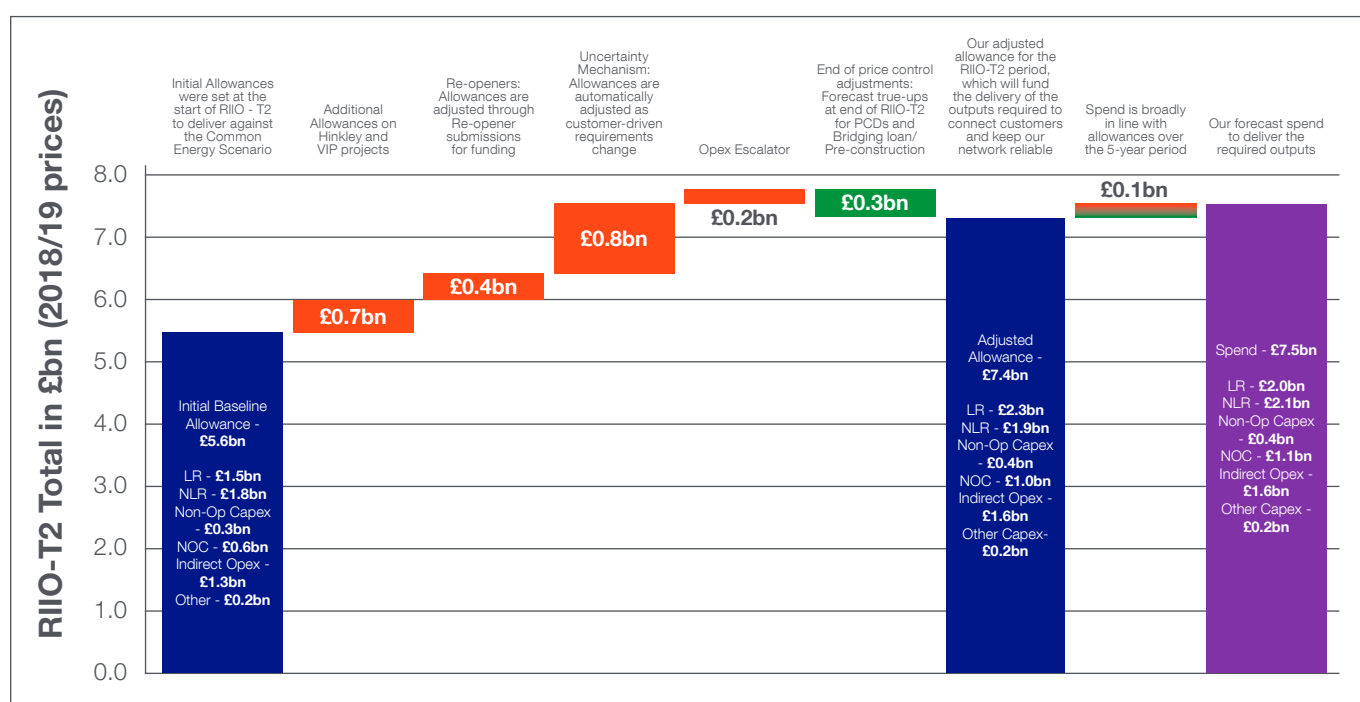
The forecast expenditure for the whole of RIIO-T2 is £7.5bn against Final Determination Allowances of £5.4bn – a difference of £2.1bn. Since Final Determinations, there have been

updates to allowances to reflect changes in the Load-Related plan, re-openers submitted and adjustments for investment no longer required, as well as anticipated adjustments which will be enacted at the end of the price control through the relevant mechanisms. To understand our underlying performance, these

updates have been included, adding a further £1.9bn of allowances over the price control period. This results in a reported difference between spend and allowance of £0.1bn for the RIIO-T2 period. The following table reports these adjustments and resulting performance by RIIO category.

	Final Determinations	Adjustments to Allowances	Adjusted Allowances	Forecast Spent	Regulatory Performance
Load Related	1.5	0.9	2.3	2.0	0.3
Asset Replacement	1.8	0.1	1.9	2.1	-0.2
Non Operational Capex	0.3	0.1	0.4	0.4	0.0
Network Operating Costs	0.6	0.3	1.0	1.1	-0.1
Indirect Costs	1.3	0.2	1.6	1.6	0.0
Other Costs	0.2	0.0	0.2	0.2	-0.1
Reopener Pipeline Log	0.0	0.0	0.0	0.0	0.0
<b>National Grid Total (£bn)</b>	<b>5.6</b>	<b>1.7</b>	<b>7.4</b>	<b>7.5</b>	<b>-0.1</b>

The following graphic shows the five-year forecast and demonstrates how the price control mechanisms operate to adjust allowances from Final Determinations as requirements change. The graphic also demonstrates the corresponding impact on the overall difference between spend and allowance.



The overall performance that is reported in our Regulatory Financial Performance Report (RFPR) represents a different performance view and shows forecast costs to be below adjusted allowances by £1.3bn. There are several factors driving this divergence between the performance observed from that reported directly to Ofgem in the Regulatory Reporting Pack. The differences are summarised in the table below:

£bn 2018/19 prices	National Grid Total	Load Related	Asset Replacement	Non Operational Capex	Network Operating Costs	Indirect Costs	Other Costs
Regulatory overspend per cost and volumes	0.1	-0.3	0.2	0.0	0.1	0.0	0.1
Phasing of allowances	-0.3	-0.3	0.0	0.0	0.0	0.0	0.0
Edge Effects	-0.5	0.0	-0.4	0.0	0.0	0.0	-0.1
Adjusted spend vs allowances	-0.7	-0.6	-0.2	0.0	0.1	0.0	0.0
Ongoing efficiency ambition	-0.4				-0.4		
Other	-0.3				-0.3		
Reopener Pipeline Actual Spend	0.0				0.0		
<b>National Grid underspend against allowances</b>	<b>-1.3</b>				<b>-1.3</b>		

The categories of adjustment embedded into the RFPR position are:

- Adjustments to reflect timing of spend (phasing allowances and edge effects in the table above) of £0.8bn (please see below)
- Ongoing efficiency ambition not embedded at project level of £0.4bn (please see below)
- Other adjustments totalling £0.3bn. This is a mix of output delivery incentive (ODI) performance and the effect of profits for the unlicensed work that we carry out for the benefit of our customers.

**Adjustments to reflect timing of spend:** when considering our performance against allowances, we have adjusted the phasing of allowances to match the phasing of output delivery. This is in line with the reversal of enduring value adjustments we made during the RIIO-T1 period with allowances adjusted from the RIIO-T1 period falling into two categories:

- **Phasing of allowances:** allowances relating to Load-Related projects initiated in

RIIO-T1 but completing in the first two years of RIIO-T2 (known as RIIO-T1+2) have been re-profiled for financial reporting purposes to recognise the performance when the output is delivered. This has resulted in an additional £331m of allowance being recognised in the RIIO-T2 period.

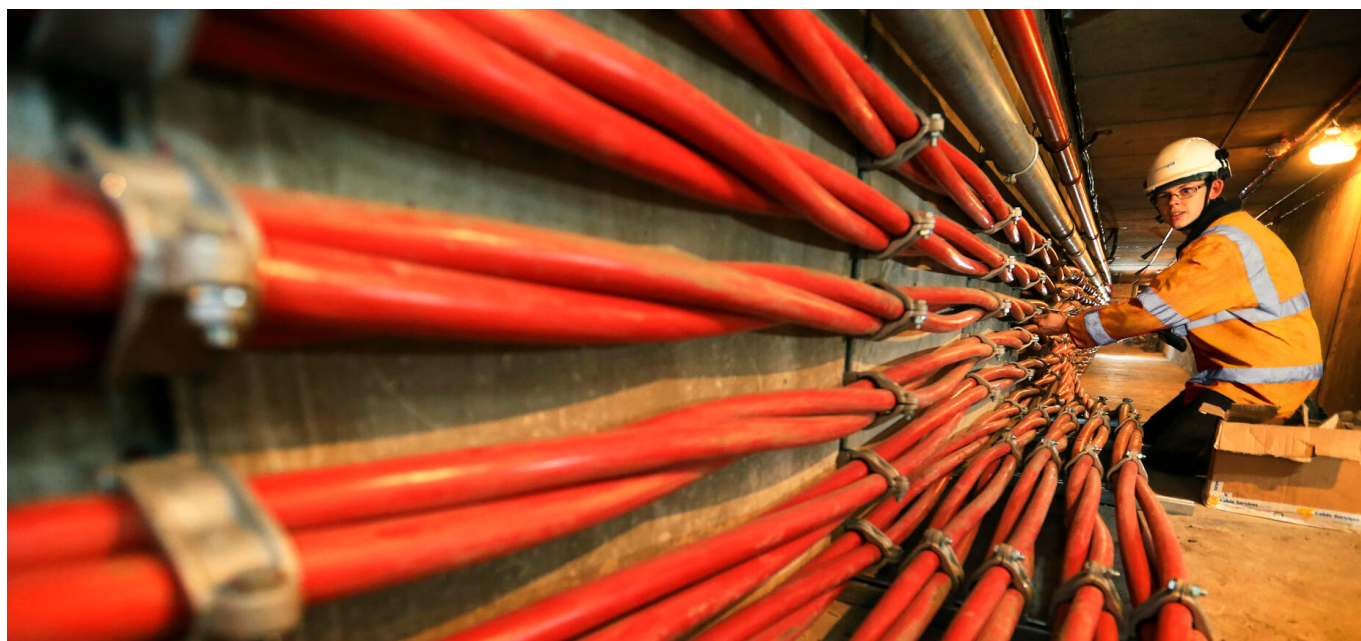
- **Edge Effects:** this refers to the impact on performance of projects crossing price control periods and shows an apparent over or under spend in one price control period which is offset in the other price control period. The impact of edge effects has been exacerbated in 2022/23 due to the challenges imposed by Covid-19 in the RIIO-T1 period, which delayed some interventions into RIIO-T2. We plan to undertake these replacements during the RIIO-T2 period in addition to delivering the commitments made as part of the RIIO-T2 contract. Financial reporting has re-profiled allowances to reflect this with additional allowances of £444m being reported in the RIIO-T2 period.

### Our ongoing efficiency ambition:

NGET has stated its ambition to continue to seek additional efficiency through improving and innovating its approach to maintaining, replacing and extending its transmission network. There are a number of initiatives currently being developed and implemented which are not yet factored into our project-level forecasts and so cannot be included in the RRP costs and volumes tables as currently formulated. £370m has been included at a high level in our financial forecasts and is included in the Price Control Financial Model to ensure the forecast benefit is passed to consumers in a timely manner.

### Load-Related 5-year view

The Load-Related plan, that is the work to connect customers to the network and make wider network reinforcements, is forecast to deliver the outputs required to meet customer needs for £2.03bn of direct capital expenditure, £580m more than baseline allowances of £1.45bn and £294m less than adjusted allowances of £2.33bn. The adjusted allowance



position represents an increase of £880m from Final Determinations, driven by:

- Increase to allowances of £1.2bn, resulting from the application of volume drivers for generation, demand and wider works reflecting the increased need for investment in response to changing customer needs and the application of the expected outcome of the close-out of RIIO-T1.
- Decrease to allowances of £326m reflecting anticipated future adjustments for bridging allowances provided for the delivery of outputs beyond the

second year of RIIO-T3 and adjustments relating to pre-construction funding through the Price Control Deliverable mechanism.

In the Load-Related portfolio, we have analysed the differences between spend and allowance in order to categorise it as either:

- Efficiency or inefficiency - includes projects with specific examples where costs increased or decreased as a direct result of our action.
- External factors outside of our control - will include projects where changes have resulted

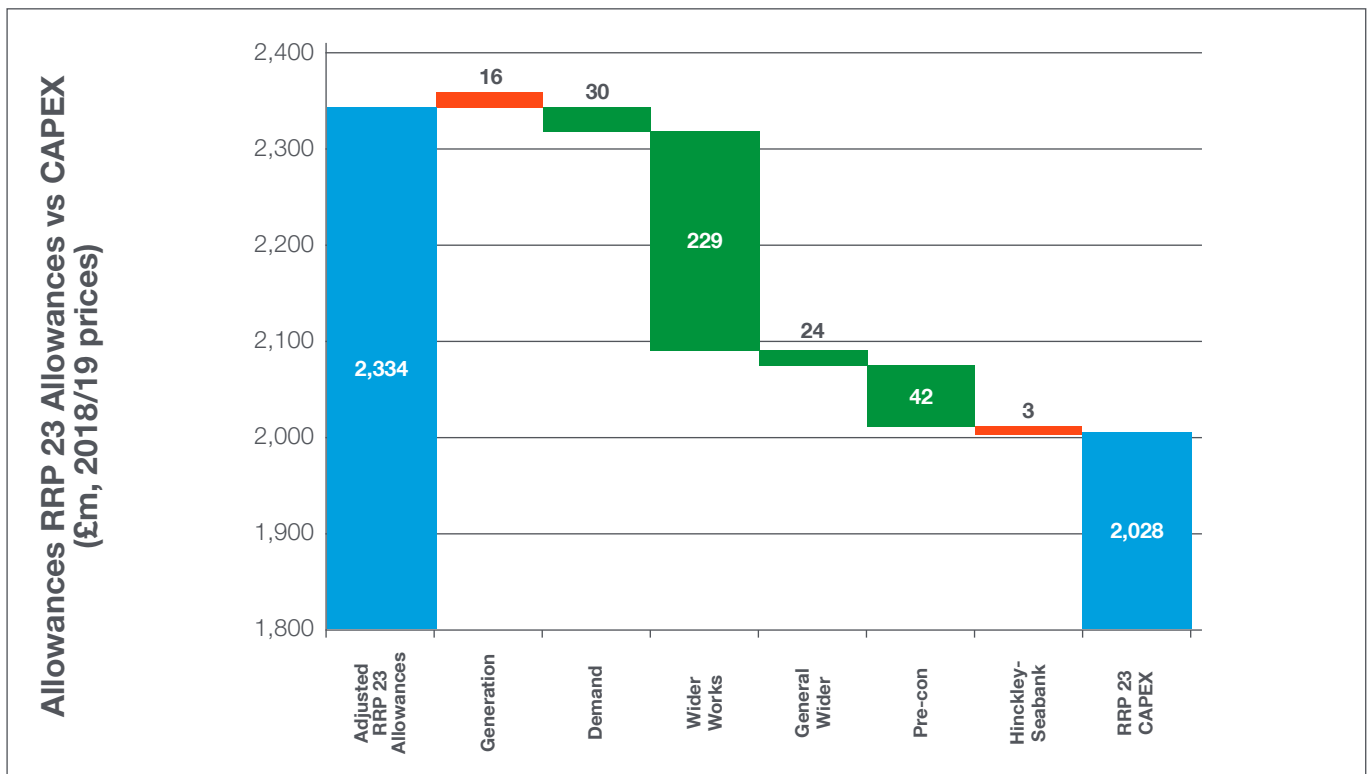
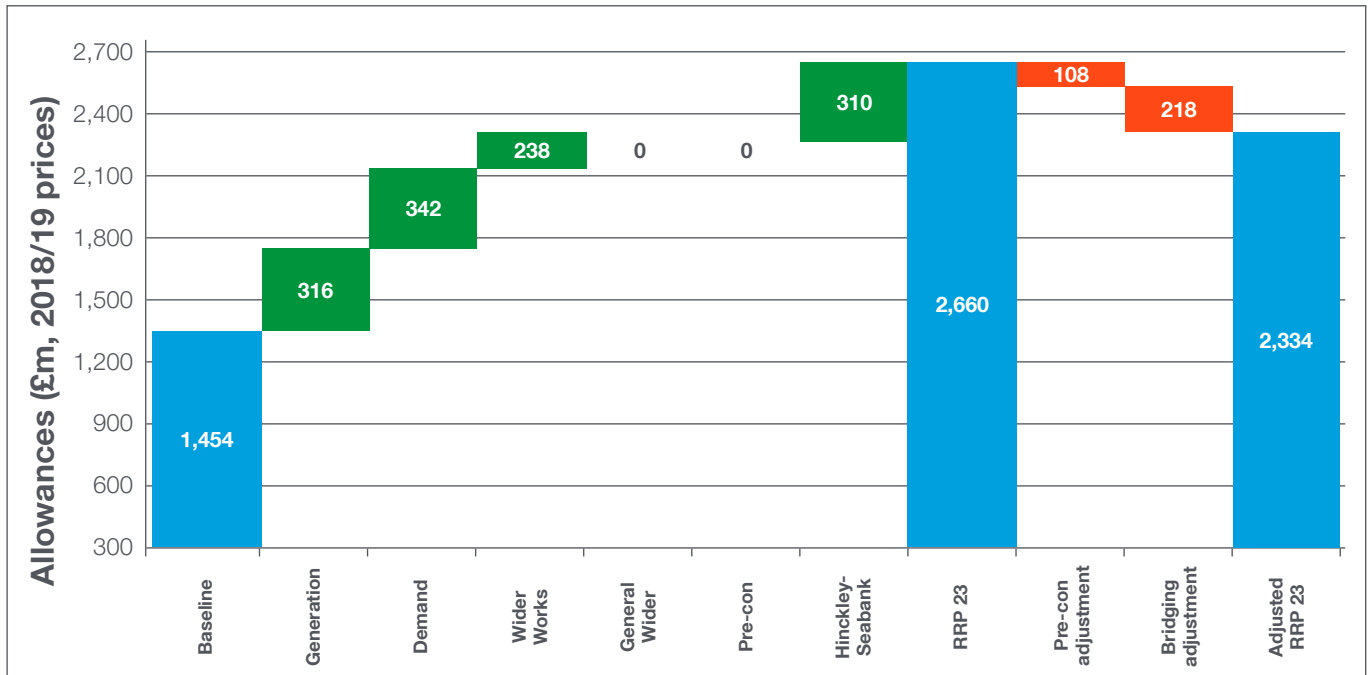
due to changing customer or ESO requirements

- Assumptions made within the price control settlement that have varied against the actual position - will include cost changes resulting from changes in scope that has not been subject to a change in customer or ESO requirements, or where the allowance mechanism has changed

Based on the above methodology, the £294m difference between cost and allowances has been allocated in the following manner (where a positive number is an underspend):

Investment Category	Efficiency	External Factors	Change in Assumptions	Total
Demand	20.3	1.5	8.1	29.9
Generation	0.0	-62.5	46.4	-16.1
General Wider Works	0.0	20.0	3.9	24.1
Wider Works	5.7	189.5	22.8	218.0
Pre-Construction	46.9	-0.2	-4.6	42.0
Hinkley	0.0	-3.5	0.0	-3.5
<b>Total</b>	<b>72.9</b>	<b>144.9</b>	<b>76.6</b>	<b>294.4</b>

The first waterfall below shows the changes in the allowances across different Load-Related portfolios from Final Determinations through to our adjusted allowance position. The second waterfall shows the comparison of adjusted allowance and under/overspend in the different Load-Related portfolios.



**Load-Related 2022/23 Performance**

In 2022/23, direct capital expenditure on the Load-Related portfolio was £278m which was £259m less than adjusted allowances of £537m. In addition to the performance factors over

the 5-year period, for 2022/23 there is an additional factor for volume-driven (uncertainty mechanism) projects which is the result of misalignment between the generic phasing of allowances compared to a project-specific view of spend

across the RIIO-T2 period. This affects some projects with shorter or longer lead times than the assumed 4-year period allowances are profiled over.

There are also additional drivers in the categories not subject



to the uncertainty mechanism, ranging from re-phasing of projects in General Wider Works, impact of efficiencies for pre-construction and re-phasing of spend for Hinkley-Seabank as the project matures.



### Asset Health 5-year view

The 2022/23 asset health related plan, which is work to replace or refurbish existing equipment on the transmission network, shows a forecast spend of £2.1bn over the RIIO-T2 period, which is £310m more than the Final Determination baseline allowances of £1.8bn, and £187m more than adjusted allowances of £1.9bn. The allowance adjustments reflect reductions for work not now forecast to be completed, balanced with additional allowances agreed through re-openers.

The net £187m overspend has been predominantly driven by:

- Spend on delivery of outputs outside the RIIO-T2 submission. These are not RIIO-T2

regulatory outputs and have no baseline allowances and therefore appear as overspend.

- Increased RIIO-T2 spend on delivery of certain outputs due to timing of spend. This is mainly occurring in the circuit breaker category and London Power Tunnel phase 2 (LPT2) project.
- Offset by the efficiencies attained and forecast in delivering Price Control Deliverable outputs

For the Asset Health portfolio, we have also assessed the differences between spend and allowance. Based on the above methodology, the £187m forecast overspend vs allowances has been allocated in the following manner:

Asset Health	Efficiency / Inefficiency	External Factors	Change in Assumptions	Total
Baseline (substation cable, condition monitoring, tower painting, spares, tunnels, through wall bushings)	-£8m	£0m	£0m	-£8m
NARM (Transformers, Reactors, Switchgear, Overhead line fittings and Cable replacements)	-£10m	-£33m	-£52m	-£94m
London Power Tunnels	£0m	£0m	-£19m	-£19m
Price Control Deliverables (Bay assets, Instrument Transformers, Overhead line conductors Protection & Control, SF <sub>6</sub> Interventions)	£83m	£30m	£6m	£119m
Re-Opener	£1m	£0m	£0m	£1m
Costs Outside Submission (completion of interventions from RIIO-T1)	£0m	£0m	-£186m	-£186m
<b>Total</b>	<b>£67m</b>	<b>-£3m</b>	<b>-£251m</b>	<b>-£187m</b>

### Asset Health 2022/23 Performance

In 2022/23, direct capex expenditure on the Asset Health Related portfolio was £381m which is £86m less than adjusted allowances of £467m. This difference between spend and allowance is predominantly driven by the following:

- Phasing of allowance adjustments: these occur at the end of the price control period and are not phased across the period so allowances in an individual year are not fully reflective of the adjusted allowance position
- Difficulties with contractor availability which started in

2021/22 and continued into 2022/23

- Equipment supply delays, due to increasing lead-times in a globally-constrained market
- The evolving nature of customer projects impacting on system access for asset health interventions

### Non-operational Capex 5-year and 2022/23 view

Our Non-Operational capex is spend on IT, Property and Fleet. The current expectation is that total Non-Operational Capex in the RIIO-T2 period will be broadly in line with the post-re-opener allowances at £395m.

IT investment forms the majority of this spend, alongside a focus on developing EV charging capability for the NGET operational estate. The latter will provide an integrated charger network with the capability to provide management data and real-time engineering support to electric vehicle drivers.

Our Non-Operational capex spend on IT, Property and Fleet in 2022/23 was £56.2m which is £23.1m lower than adjusted allowances. This reflects lower IT expenditure, which has largely been driven by re-phasing into future years. The remaining variance is made up of Property investment being lower than allowances, offset by higher vehicle purchases and EV charging investment.

### Network Operating and Indirect Costs 5-year and 2022/23 view

Network Operating Costs (NOC) are the total spend on visual amenity, faults, inspections, repairs and maintenance, vegetation management and legal and safety. It is forecast to be £1.1bn, which is £159m higher than the adjusted allowance position of £951m for the RIIO-T2 period. For NOC categories excluding visual amenity, spend is forecast to be £780m, which is £135m higher than the adjusted allowance position of £645m for the RIIO-T2 period. The £135m overspend has been driven predominantly by above-inflationary costs on own-use electricity (currently forecast as £109m compared to 5-year baseline allowances of £32m).

In 2022/23, the total spend was £137m which was £9m more than allowances; this was mainly due to the increase in own-use electricity costs at substations offset by spend on the 'Repairs' category (a being £8m less than allowances).

For the visual amenity projects, our forecast is to spend

£330m during RIIO-T2, a £24m overspend compared to adjusted allowances of £306m. This overspend is due to the phasing of costs and allowances crossing RIIO-T1 and this price control period; total spend is in line with total allowances across the two price control periods.

### Costs and outputs in the next price control

There are a number of projects whose spend starts during this price control and continue beyond it. Some of these complete their outputs by March 2028, referred to as 'RIIO-T2+2', and there are often frameworks in place to trigger allowances. For Non-Load Related projects, we have reduced our forecast costs on two projects, but the allowances don't reflect this reduction. The ASTI schemes may complete their construction in even longer timescales (sometimes into the 2030s) and often allowances are unconfirmed at present. The table below shows the split of costs and forecast allowances for these schemes that straddle price control periods.

Investment type	Direct costs in T2+2 (£m)	Direct costs beyond 2028 (£m)	Total costs (£m)	Forecast allowances (£m)
Non-Load Related	175	12	187	606
Load related	579	782	1,361	194
ASTI	3,003	5,707	8,710	8,710
Other re-openers	304	172	476	476
<b>Total</b>	<b>4,061</b>	<b>6,673</b>	<b>10,734</b>	<b>9,986</b>

### Return on regulated equity (RoRE)

The Return on Regulatory Equity (RoRE) figure is a key measure by which Ofgem compares operational and financing performance across Network Operators. This encompasses the costs and allowances associated

with a regulated business, including totex, financing, tax, incentive performance and company-funded innovation costs. A key concept in the RoRE calculation is enduring value.

RoRE aims to show the full value earned by the regulated company during the price control period.

This is based on the enduring value, being the true value of the regulated business over the course of the price control. The enduring value of the business factors in the financial impact of any decisions or future events which have yet to be reflected in Revenue and RAV but are known at the time of

estimation. Where possible forecasting is utilised to give a view of the true value of the regulated business, however, it does not accommodate all required adjustments. Therefore, several adjustments have been applied since the completion of last year's report.

These adjustments rephase allowances in line with spend to ensure performance is recognised when outputs are delivered. The enduring value adjustments impact on the network's return and RAV and ultimately RoRE. Please note that the biggest factor in the

in-year RoRE value is the large increase in financing, from 3.6% last year to 6.3% this year, due to the impacts of inflationary pressures.

RoRE for 2022/23 and the RIIO-T2 period comprise the following components:

	2022/23	RIIO-T2 average
<b>Allowed Return</b>	4.3%	4.7%
<b>Totex performance</b>	0.9%	1.2%
<b>Business plan incentive</b>	(0.2%)	(0.2%)
<b>Non-totex incentives and innovation</b>	0.1%	0.0%
<b>RoRE – operational performance</b>	5.0%	5.7%
<b>Financing</b>	6.3%	1.6%
<b>Tax</b>	0%	0%
<b>RoRE including financing</b>	11.3%	7.3%

### Impact on consumer bills

Our revenues are recovered through the ESO charging our customers for the services we provide. Network costs for both transmission and distribution are reported to make up around 23% of the domestic electricity bill. Of this total bill, £19.76 is attributable to National Grid's TO costs which equates to 1.7% of the average annual domestic electricity bill.

Ofgem's RIIO-T2 framework ensures that two-thirds of any efficiency savings that we have delivered are passed onto customers resulting in lower network charges, and therefore lower electricity bills for the end consumer. For RIIO-T2, we estimated that the bill impact would be £20 at the start of the period reducing to £19 by 2025/26 and therefore our current costs are in line with the forecast.

### Looking forward

The government has set an ambitious target to decarbonise the power system by 2035, and the next price control period will be a critical period in ensuring we deliver the investment required, supported by the right framework.

NGET recognises the role we have in the UK's goal to decarbonise the power system by 2035, and ultimately achieve net zero by 2050. Electricity networks will be a crucial role in this transition, investing significantly to ensure a cleaner, more affordable and secure energy system, with networks that are able to meet the increasing demand for electricity.

To plan our work for the next price control and beyond, we are combining a bottom-up

and top-down approach. We are undertaking a detailed assessment of investment required at our existing sites and routes, in combination with a scenario-based approach to plan asset upgrades and expansion aimed at meeting 2035 targets.

Our ambition is for electricity transmission network plans to have better visibility of our stakeholder's requirements, ensuring we are able to co-ordinate and prioritise large infrastructure build nationally. As part of building our submission, we will seek to refresh our understanding of evolving stakeholder priorities and objectives and how these translate into network requirements, so we are able to choose the right options and co-create the right plan of work for 2035.

# The Independent User Group



## There are three key focus areas of the Independent User Group (IUG), which are to:

- scrutinise and challenge the periodic Business Plans;
- monitor, interrogate and help the business to enhance transparency of performance against commitments; and
- act as a critical friend for strategy, culture and processes in key areas such as stakeholder engagement, innovation, customers, consumers and responsible business.

## Regular reporting and being transparent

We have continued to work closely with the IUG and they have been instrumental, as a critical friend, in shaping our approach in a number of areas including Customer Connections, Future Network Blueprint and a number of re-openers e.g. the ET Control Centre and SF6

In September we reported our performance against all business plan commitments to them. We told them that FY23 was a pivotal year for the green energy transition in this country after the UK Government asked NGET to deliver 17 projects under the Accelerated Strategic Transmission Investment (ASTI)

framework. We explained that this was a vital part of achieving the Government's ambition of connecting 50GW of offshore wind by 2030 representing the largest transmission growth the UK has seen for 50 years. We shared with them the setting up of a new business unit, Strategic Infrastructure (SI), to deliver this scale of work, which will be focused on overcoming the key challenges of planning, consenting and supply chain in order to ensure we are able to deliver the infrastructure required for the transition to net zero.

## Sharing our challenges and successes

We also shared the challenges experienced in the delivery of RIIO-T2 PCD asset interventions. We explained that, whilst we were behind target, we have embarked on a 'Good to Great' campaign in Asset Operations to ensure we continue to maintain a world-class safe and reliable network. As part of our resilience plan, we are also working hard to ensure that the network is secure from flooding, physical or cyber threats.

Another challenge we shared with the IUG related to safety. Whilst our employee Lost Time Injuries Frequency Rate (LTI) in FY23 was world-class (0.02), a persistent injury rate amongst our contractors has resulted in us exceeding our 0.1 target overall. We took them through the targeted actions we have taken which includes a focus on the severity of incidents and the launch of a behavioural safety programme.

The IUG asked to be regularly updated on how we are managing network challenges and system access, and also on how we are addressing the challenges with delivering the asset health volumes of work.

We also updated on how we have submitted over £1bn of

reopener proposals to date, with a further pipeline of reopeners to follow and spoke of the fact that we anticipate further ASTI funding submissions over the remaining three years of RIIO-T2 and the subsequent price control.

The IUG were very interested to hear about developments with addressing the challenges with the connections pipeline. We shared that requests for new transmission connections are at a record high, with 734 applications for new connections (635) and modifications (99) for projects already in the pipeline during FY23. Current market arrangements, coupled with the existing regulatory and industry frameworks, means it takes too long to connect new customers. We, therefore, shared some of the actions being taken to both rationalise the connections pipeline and drive industry reforms. The IUG recommended that we clearly define the problem we are trying to resolve with connections in our engagement with stakeholders, as well as explain clearly which and why a solution is necessary.

We shared our success with SF6 emissions which were below the science-based target flightpath to reducing SF6 emissions from our operations by 33% by 2026. We also had a positive response from the IUG on our endeavours to operate as a responsible business, caring for our communities and the environment.

## Looking forward

We are currently in the process of developing our business plan for the next price control period. Albeit the role of IUG has not been defined yet, as part of the Ofgem consultation, we look forward to their continued support in helping us to effectively engage with stakeholders in order to produce a business plan that sets us up to deliver the energy network of the future.



# Our output commitments

When we built our RIIO-T2 business plan, all of the work we wanted to deliver needed to meet the needs of end consumers and our stakeholders and the following section shows how we are meeting these outputs in the works that we are carrying out.

## Price control deliverables in asset health

Key to both consumers and stakeholders is a safe and reliable network. We have baseline funding to deliver 5,102 units in total across the price control across a defined group of asset types such as Overhead lines, Bay assets, Instrument Transformers and Protection and Control.

After year two, our delivery volume remains less than the baseline plan (1,092 vs 1,810 interventions). This is the result of a number of factors:

- our plan was reduced based on the uncertainty of Ofgem's Draft Determination and had insufficient time to ramp back up again once we received the Final Determination,
- challenges experienced with contractor availability combined with enduring impacts due to slow start in year one.

We have, however, re-optimised the plan and aim to deliver almost the same overall total of interventions by the end of the RIIO-T2 period (4,869 vs 5,102). Under-delivery of these volumes would trigger a mechanistic (unit cost x volume) downward adjustment of £64m to our PCD allowances at the end of the RIIO-T2 period.

## Building for the future

We are constructing the energy system of the future; in 2022/23 we added over 2,700MW of boundary capacity with a total of 20GW of further network

improvements planned by the end of this price control period.

We connected 200MW of Generation in 2022/23 and our current forecast for the full RIIO-T2 period indicates a higher than planned connection volume at 16.3GW compared to our baseline of 13.5GW.

We delivered two demand connections in 2022/23, connecting 284MVA of demand to the network. Our current forecast for the full 5-year RIIO-T2 period shows that we will exceed our baseline by 1,753MVA, with 30 connections delivering 9,500MVA of additional demand capacity by the end of March 2028.

## Keeping our network safe and secure

We plan to complete the agreed amount of sites for flooding resilience and physical security. These actions to improve our sites' security against attack and help to keep the network safe. The construction plan to improve flood defences at vulnerable sites will also keep the electricity flowing to homes and businesses even if there are 1 in a 100-year flooding events.

Whilst we cannot give specific details of our cyber delivery plans, we have regular dialogue with the Ofgem Cyber Team on delivery progress and are required to submit confidential annual reporting. We also have regular engagement sessions with National Cyber Security Council (NCSC) and the department for Department for Energy Security and Net Zero (DESNZ).

## Reopeners mean more certainty on cost and output

There are a number of areas where outputs and funding did not get resolved in the RIIO-T2 price control review and reopeners are therefore required



during the current price control period. We have agreed funding for Bengeworth Road of c.£90m, £4m for Steelwork, £140m for Dinorwig-Pentir and £26m for Civils now that costs, scope and output are more certain. Upcoming submissions during 2023 and 2024 to gain certainty of outputs and allowances during RIIO-T2 include:

- The Harker substation rebuild to replace ageing assets and expand the substation to facilitate new connections
- The Cotswolds Visual Improvement Project where a 7km of section of overhead line will be removed from the Cotswolds Plateau
- Non-op Capex – Data best practice project. Report in development for an Autumn 2023 submission.
- ETCC – A new transmission control centre. A submission to agree funding with Ofgem will be made in Autumn 2023 with a plan for construction to be complete in 2026 with the transfer of teams to the new facilities to start from mid-2026.
- Cyber – Given this is a relatively new area of investment, we made a submission and agreed funding in FY22 and made a further submission in April 2023 to fund other initiatives to keep our systems and sites secure. Requirements continue to develop with the potential for a further submission in 2024.

# Incentive performance

The first I in RIIO is for Incentives. This part of the framework rewards or penalises us in areas that you, our stakeholders, have told us that matter to you. In the following section, we write about what the incentive is, what is being measured, how we performed in the second year, and some information about future years' forecasts.

**Safety** – This continues to be our number one priority and although our overall Injury Frequency Rate (IFR) has reduced since last year to 0.13 it is unfortunately not at the levels we strive for. Similar to last year, the Lost Time Injuries (LTI) were suffered within the contractor workforce and none of our field or office-based employees suffered an LTI during 2022/23. We have employed a full time SHE Behavioural Development Leader to focus on our goal of achieving zero workplace injuries and delivering our Safety, Health and Wellbeing Strategic

Improvement plan which sets out the key actions we have identified to move us towards this goal. The reduction of all incidents, especially those with potential to harm, remains a key driver in Electricity Transmission.

**Reliability** – We are committed to delivering a reliable network and have continued our record of strong performance exceeding our reliability target for another year, with only 5.2MWh of 'Energy Not Supplied'<sup>1</sup> in 2022/23 against an incentive neutral point of 147MWh. This equates to an average network reliability of 99.999997%, which our stakeholders tell us continues to be so important to them. We have continued to invest in the network for the benefit of future consumers and customers, managing network risk and maintaining longer-term system reliability.

**Customer Connections** – During 2022/23, 635 connection offers were made. This is the

most we have ever made in a year, representing a 59% increase in offers sent to customers compared to last year. However, of these, 14 offers were made outside the expected timescales which will result in a financial penalty of £0.2m. Across virtually all technology types, there is now sufficient capacity contracted to meet or exceed various pathways to hit net zero. Against this background, the industry is embarking on reforms to ensure 'shovel-ready' projects can connect as quickly as possible.

**Quality of Connections** – This new incentive for RIIO-T2 covers the customer experience throughout the connections journey. Performance for 2022/23 was slightly below target (7.7) with a score of 7.2. We have worked hard in this area, however, there have been a combination of challenges this year. The year-on-year trend of increasing numbers of customer connection applications and



<sup>1</sup> This figure is Incentivised Energy Not Supplied, calculated in accordance with special condition 4.2 of the RIIO-T2 licence.





complex interactive issues with market design has unfortunately led to longer wait times than we would want and ultimately resulted in some lower scores. To improve this situation, we have successfully lobbied for connection reform to mitigate this with a planned consultation in Summer 2023 on the proposed options for change and implementation strategy.

**SO:TO Optimisation** – This incentive is designed to encourage collaboration with the Electricity System Operator (ESO) to identify and provide additional solutions beyond business-as-usual activities to help reduce constraint costs for consumers. We are proud to report that in 2022/23 we delivered 29 enhanced services solutions

successfully, which has resulted in over £95.6m 'actual'<sup>2</sup> constraint savings. Our provision of enhanced services was especially invaluable this year as the war in Ukraine prompted a significant rise in constraint costs driven by the increase in wholesale energy prices. We are really pleased that this trial incentive has been extended for the remainder of RIIO-T2 and we are continuing to seek broader and more innovative ways to provide enhanced services to the ESO to deliver additional constraint cost savings and further benefit to consumers.

**Environment** – The Environmental Scorecard is designed to encourage us to further reduce our carbon emissions, improve the natural environment and reduce our

resource use for the benefit of current and future consumers. We are financially incentivised against six elements of our Environmental Action Plan. We are very pleased to report that we have outperformed on all elements of the scorecard this year. We continue to look at ways to further reduce our environmental impact and our aim is to exceed our 10% environmental enhancement target by the end of the RIIO-T2 period.

**Insulation and Interruption Gas (IIG) emissions** – Sulphur hexafluoride (SF<sub>6</sub>) is a potent Greenhouse Gas (GHG) with a global warming potential approximately 23,000 times that of carbon dioxide. It is a key contributor towards Group GHG emissions so minimising leakage is integral to meeting our emissions target. We are pleased to report that our IIG emissions continue to be below the incentive neutral point required to achieve the 33% reduction in annual emissions by 2026 from the 2018/19 baseline. We continue to identify the highest leaking assets to prioritise both repair and replacement activities. This targeted plan continues to contribute to the significant improvements we have seen in overall leakage rates over the last few years.



<sup>2</sup> 'Actual' constraint savings are calculated by the ESO by updating the initial estimate of constraint savings opportunity with actual variables once these are known post-event.

# Innovation summary

In RIIO-T2, there are two innovation stimuli that encourage us to do more than business as usual when it comes to finding a better, cheaper, smarter or more agile way of doing things.

The first way that we are funded is via the Network Innovation Allowance (NIA). This is an allowance to network licensees to fund research, development and demonstration trials that meet six specific eligibility requirements. Each must:

1. Facilitate energy system transition and/or benefit consumers in vulnerable situations
2. Have the potential to deliver a net benefit to consumers
3. Involve research, development or demonstration
4. Develop new learning
5. Be innovative
6. Not lead to unnecessary duplication.

There's no maximum or minimum spend criteria for projects, and each should carry a risk profile. Network licensees need to demonstrate why they cannot fund such a project as part of their business-as-usual activities. During RIIO-T2, we'll receive £49.3m of NIA funding – a 35% increase over the first RIIO regulatory period. This funding covers 90% of the cost of our projects; the remaining 10% comes from NGET. In 2022/23 we spent over £5.6m, almost double what we spent in the first year of RIIO-T2, showing our

increased focus on finding more quality innovation projects to take forward. 19 new projects have been registered this year, bringing the total number of NIA projects delivered to date in RIIO-T2 to 38.

Currently around half of the innovation ideas that are brought forward are approved to be registered as NIA projects, with an almost 50/50 split between internal and external ideas.

For larger schemes, the second type of innovation funding is the Strategic Innovation Funding (SIF) framework, with £450m available for GB networks over the five-year regulatory period. We have secured funding for six projects already in this price control that are at the early phases of their life cycle. We have stopped two as non-viable for delivering the initially expected benefits and spent over £500k continuing the development of a third. The remaining three are new projects in the Discovery stage of development as they secured funding in April 2023.

Below are the details of some projects that started in RIIO-T1 and received funding via the Network Innovation Competition (the precursor to SIF) framework:

## The Deeside NIC project

The Offgrid Substation Environment for the Acceleration of Innovation Technologies (OSEAIT) NIC project (also known as The Deeside Project) started in December 2015. The project aims to research, deliver and demonstrate a platform that allows the acceleration of the development of new, innovative technologies and concepts into business as usual. This increase in speed will deliver benefits to consumers faster and allow the de-risking of more complex, disruptive innovations. The project modifies an existing

400kV substation into an easily reconfigurable facility capable of replicating a live substation environment to overcome operational barriers. The project is managed through a technical advisory board, which comprises industry stakeholders.

The project is progressing to finalise the high voltage construction works by the end of 2023. Some mechanical or non-HV electrical innovation projects have commenced at Deeside, which has enabled work to take place that could drive consumer benefits.

## The RICA NIC project

The Retrofit Insulated Cross Arms (RICA) NIC project is a 5-year project that started in December 2020 and is to be finished in March 2026. The project aims to develop a novel method of upgrading Overhead Lines (OHLs), accelerating the low carbon energy transition by allowing quicker removal of network constraints, resulting in earlier connection of renewable generation. RICA also provides the potential for cost savings and better visual amenity compared with conventional investment options.

We continue to progress the project and the forecast spend is within the project budget. All contracts relating to RICA have now been finalised and signed by all parties and the project is being delivered. We have identified opportunities to accelerate works to recover some of the programme delays encountered during contract negotiation to ensure the project is completed by March 2026.

You can read more about these projects and our other innovation initiatives, including relaunching our strategy at the dedicated pages on our website





# Who we are and what we do

National Grid Electricity Transmission plc (National Grid Electricity Transmission, NGET) is a subsidiary of National Grid plc (National Grid), based in the United Kingdom (UK). We own and maintain the regulated electricity transmission network in England and Wales. We do not own the Scottish networks. Our network comprises over 7,000 kilometres of overhead line and more than 300 substations. We play a vital role in connecting millions of people safely, reliably and efficiently to the energy they use.

## Our purpose, vision, values and strategy

We work within the purpose, vision, strategy, values and priorities of National Grid to ensure we are well positioned to respond to changes in the operating environment. We have evolved our strategy in order to better reflect our purpose and in response to our business environment. The evolved strategy reflects a belief that we have a responsibility to ensure that the energy future we help to shape is one where everyone shares its benefits. We will continue to connect people to the energy they



need for the lives they lead, safely, reliably and securely.

### Our purpose

Having a clear sense of what we stand for as a company and what it is that binds us all together is vitally important. This is what we call our purpose. In simple terms it is what drives our desire to serve our customers and it's that thing that makes us proud about the work we do. **Our purpose is**

**to bring energy to life**, providing the heat, light and power people and businesses rely on and supporting local communities to prosper.

### Our vision

National Grid stands for more than profit. The company is committed to making a positive contribution to society, whether that's helping the young people of today to become the energy problem-solvers of tomorrow, supporting customers to use energy more efficiently, or tackling climate change. That's why the company's vision is **to be at the heart of a clean, fair and affordable energy future**, ensuring everyone benefits from the energy transition, that bills are not a burden for individuals or families, and that no one gets left behind.

### Our values

Every day we do the right thing, find a better way and make it happen. These values guide our actions and behaviours as a responsible business and help us create a culture where colleagues become less cautious and take greater ownership. At National Grid Electricity Transmission, we expect our leaders to be



role-models and engage all colleagues to demonstrate our values: **Doing the right thing** means we act safely, inclusively and with integrity, we support and care for each other, and ensure it is safe for colleagues to speak up. **Finding a better way** is all about working as a team to find solutions, embracing learning and new ideas. **Making it happen** means being bold and acting with passion and purpose, taking ownership to deliver for customers and focusing on progress over perfection.

**Our strategy**

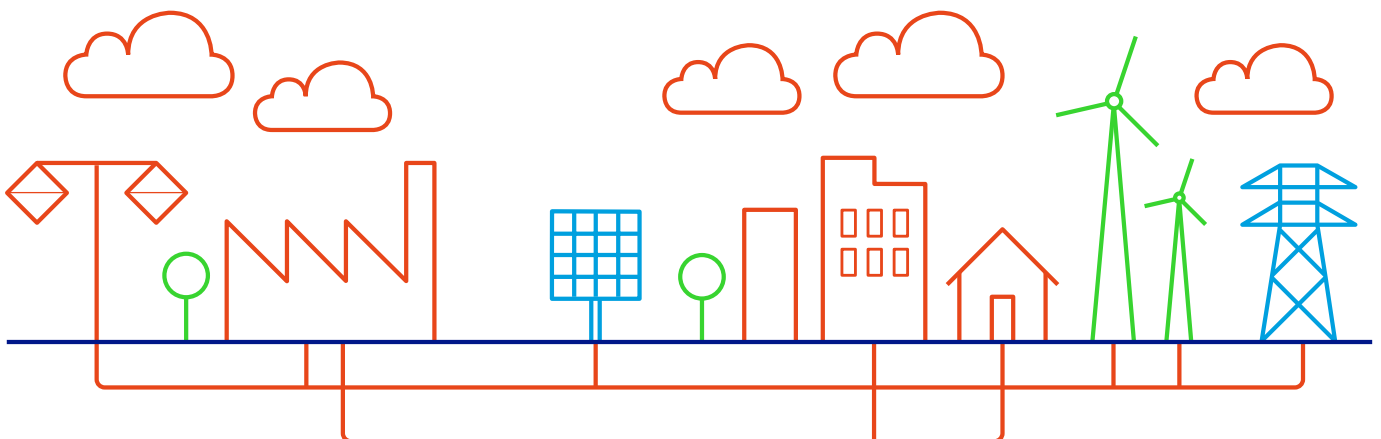
National Grid Group’s strategy is to build, own and operate large-scale, long-life energy assets primarily in networks and renewables that deliver fair returns and high societal value. The Group’s portfolio of high-quality, low-risk assets in stable geographies is underpinned by a strong and efficient balance sheet. This strategy sets the bounds of NGET's business and will ensure it is set up to play a leading role in the energy future. It will be delivered through four priorities.

1) Enable the energy transition for all. Fully decarbonising the electricity grid through modernisation, increased flexibility and by connecting renewables quickly and efficiently. Decarbonising transport by building electricity network flexibility and supporting charging infrastructure.

2) Deliver for customers efficiently. Providing safe, reliable and affordable energy for customers around the clock, ensuring operational excellence and fiscal discipline in everything National Grid does, building productive partnerships with regulators and policymakers, and unlocking real value for customers and the communities they live and work in.

3) Grow organisational capability. Anticipating and adapting to changes in the energy sector in faster and smarter ways, remaining at the cutting edge of engineering and asset management, and innovating more sustainable energy solutions.

4) Empower colleagues for great performance. Building diverse and inclusive teams that reflect the communities the company serves, attracting the best talent, prioritising learning and developing the skills needed now and, in the future, to accelerate the energy transition.





# The RIIO framework

## RIIO price controls

The building blocks of the RIIO price control are broadly similar to the price controls historically used in the UK. There are, however, some significant differences in the mechanics of the calculations.

Under RIIO, the outputs we deliver are explicitly articulated and our allowed revenues are linked to their delivery, although some outputs and deliverables have only a reputational impact or are linked to legislation. These outputs reflect what our stakeholders have told us they want us to deliver and were determined through an extensive consultation process, which gave stakeholders a greater opportunity to influence the decisions.

## RIIO-T2 built on the learning of RIIO-T1

The RIIO-T2 price control started on 1 April 2021 and builds on the framework established for RIIO-T1. For example, it introduces a range of new mechanisms to facilitate the transition to net zero, continues support for innovation, incentivises us to deliver outputs and service quality with ambitious targets aligned to our customer and stakeholders requirements and increases the opportunity to secure new funding within the price control period.

The Independent User Group (IUG) includes a cross-section of the energy industry and represents the interests of consumers, environmental and public interest groups, as well as large-scale and small-scale customers. It was established in July 2018 to ensure stakeholders are at the heart of our decision-making processes and our plan is fully reflective of customers', consumers' and other stakeholders' requirements. The IUG has an enduring role in RIIO-T2 with three key focus areas:

- scrutinise and challenge the periodic Business Plans;
- monitor, interrogate and help the business to enhance transparency of performance against commitments; and
- act as a 'critical friend' for strategy, culture and processes in key areas such as stakeholder engagement, innovation, customers, consumers and responsible business.

## Our plans are scrutinised

Using information we have submitted, along with independent assessments including for RIIO-T2 an independent user group report, Ofgem determines the efficient level of expected costs necessary for these deliverables to be achieved. Under RIIO this is known as 'totex', which is a component of total allowable expenditure and is broadly the sum of what was defined in previous price controls as operating expenditure (opex) and capital expenditure (capex).

A number of assumptions are necessary in setting allowances for the outputs that we will deliver, including the volumes of work that will be needed and the price of the various external inputs required to achieve them. Consequently, there are a number of uncertainty mechanisms within the RIIO framework designed to protect consumers and network companies by avoiding the need to set allowances when future needs and costs are uncertain.

## Risks and benefits shared with customers

Where we under- or over-spend the allowance, there is a 'sharing' factor. This means we share the under- or over-spend with customers through an adjustment to allowed revenues in future

years. This sharing factor provides an incentive for us to provide the outputs efficiently, as we are able to keep a portion of savings we make, with the remainder benefitting our customers. Likewise, it provides a level of protection for us if we need to spend more than allowances. Alongside this, there are several specific areas where companies can submit further claims for new allowances within the period, for instance to enable net zero.

Allowed revenue to fund totex costs is split between RIIO 'fast' and 'slow' money categories using specified ratios that are fixed for the duration of the price control. Fast money represents the amount of totex we are able to recover in the year of expenditure. Slow money is added to our Regulatory Asset Value (RAV) – effectively the regulatory IOU.

In addition to fast money, each year we are allowed to recover regulatory depreciation, i.e. a portion of the RAV, and a return on the outstanding RAV balance. The RAV is also indexed to a measure of inflation, using CPIH in RIIO-T2. For RIIO-T2, regulatory depreciation for ET continues on a straight line depreciation methodology over 45 years. We are also allowed to collect additional revenues related to non-controllable costs and incentives. In addition to totex sharing, RIIO incentive mechanisms can increase or decrease our allowed revenue to reflect our performance against various other measures related to our outputs. For example, in RIIO-T2 there are rewards and penalties for performance against incentives. These incentive payments are a function of allowed revenue and could result in potential upsides for electricity transmission (ET) of up to £15 million and downsides in the region of £47 million, therefore incentivising us to deliver the agreed outputs.

# How to contact us and other useful links

## Legal disclaimer

This document contains certain statements that are neither reported financial results nor other historical information. These statements are forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. These statements include information with respect to National Grid plc's financial condition, its results of operations and businesses, strategy, plans and objectives. Words such as 'anticipates', 'expects', 'should', 'intends', 'plans', 'believes', 'outlook', 'seeks', 'estimates',

'targets', 'may', 'will', 'continue', 'project' and similar expressions, as well as statements in the future tense, identify forward-looking statements. Furthermore, this document, which is provided for information only, does not constitute summary financial statements and does not contain sufficient information to allow for as full an understanding of the results and state of affairs of National Grid plc and its subsidiaries, including the principal risks and uncertainties facing National Grid plc, as would be provided by the full Annual Report and Accounts, including in particular the Strategic Report section and

the 'Risk factors' in National Grid plc's latest Annual Report and Accounts. Copies of the most recent Annual Report and Accounts are available online at

[nationalgrid.com](#) or from Capita Registrars. Except as may be required by law or regulation, National Grid plc undertakes no obligation to update any of its forward-looking statements, which speak only as of the date of this document. The content of any website references herein does not form part of this document.

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