State of the market report

Energy infrastructure markets highlights

27 January 2026

ofgem

Making a positive difference
for energy consumers

In this report we present findings from our most recent data on Energy Infrastructure Markets. Our analysis covers key metrics, emerging trends, and insights aligned to the outcomes as set out in Ofgem's Consumer Interest Framework. We aim to publish this report annually.

Key findings

Fair Prices

Wholesale and network costs remain the largest components of consumer energy bills, together accounting for around 60% of total charges, with system management costs adding a further 3%. Wholesale energy prices have been highly volatile over the past five years due to global market disruptions, and while they have fallen from their 2022 peaks, they remain above pre-crisis levels. Consumer network costs have risen from £239 to £339 over the past 5 years, driven by inflation and rising investment requirements. Balancing and system operation costs have also increased as transmission constraints have grown and renewable generation has expanded ahead of network reinforcement. Looking ahead, network expenditure will rise substantially under RIIO-3, particularly in electricity transmission (**ET**), where investment could reach £70bn over five years, with costs recovered gradually to limit near-term bill impacts. This accelerated transmission investment is intended to reduce future constraint costs as renewable capacity continues to grow. Network company profitability, measured through Ofgem's Return on Regulated Equity (**RoRE**), has decreased in RIIO-2 compared with RIIO-1, reflecting lower baseline returns and tighter performance incentives, although higher-than-expected inflation has increased financing outperformance for some companies.

Quality & Standards

Network service quality remains high under RIIO-2, with good customer service scores seen across the majority of network companies. Gas sector performance has been particularly strong, with all transmission and distribution companies achieving their targets throughout RIIO-2. Electricity performance has been mostly good, though 1 transmission and 3 distribution companies have missed targets in the past 2 years. The National Energy System Operator (NESO) is rated as generally meeting stakeholder expectations, though 66% rated its performance on Connections Reform as below expectations. This reflects the lengthening of the connections queue to 750GW, with average wait times approaching 6 years by late 2024/early 2025. NESO's reforms to the process, approved by Ofgem in April 2025, are now prioritising the queue based on system needs and project viability, removing up to 2/3 of the total oversubscribed queue and securing timelier connections for those that remain. Alongside this, Ofgem is seeking to introduce new financial measures ensuring networks are held to account over connection delays to incentivise delivery of that new, slimmed down queue.

Resilience

Across the RIIO periods, the transmission and distribution networks have continued to demonstrate very high levels of reliability. Although the North Hyde substation fire in March 2025 resulted in ET targets on Energy Not Supplied (**ENS**) being breached, overall availability still exceeded 99.99% over the course of 2024–25. Gas transmission (GT) has also remained highly reliable, with capacity-constraint targets exceeded every year since 2013. At the distribution level, ED networks have largely outperformed interruption-frequency targets and have significantly improved restoration times following severe weather events. GD performance has generally remained strong, though one company has consistently underperformed in RIIO-2. Electricity Interconnector capacity has more than doubled since 2020, reaching 10.3GW. The offshore network has also expanded, delivering 13.5 GW of generating capacity in 2024–25. The gas system continues to meet demand, although supply margins are narrowing due to declining United Kingdom Continental Shelf (**UKCS**) output and reduced storage capacity. Electricity balancing is becoming more complex with the rapid growth of intermittent renewable generation, though the system continues to comfortably meet its obligations on the capacity margin and Loss of Load Expectations. Transmission constraints have been the principal driver of a rise in balancing costs**.** Looking ahead, we will support Government in the development of its Energy System Resilience Strategy, which aims to strengthen preparedness for exceptional events and improve cross-system oversight.

Low-Cost Transition

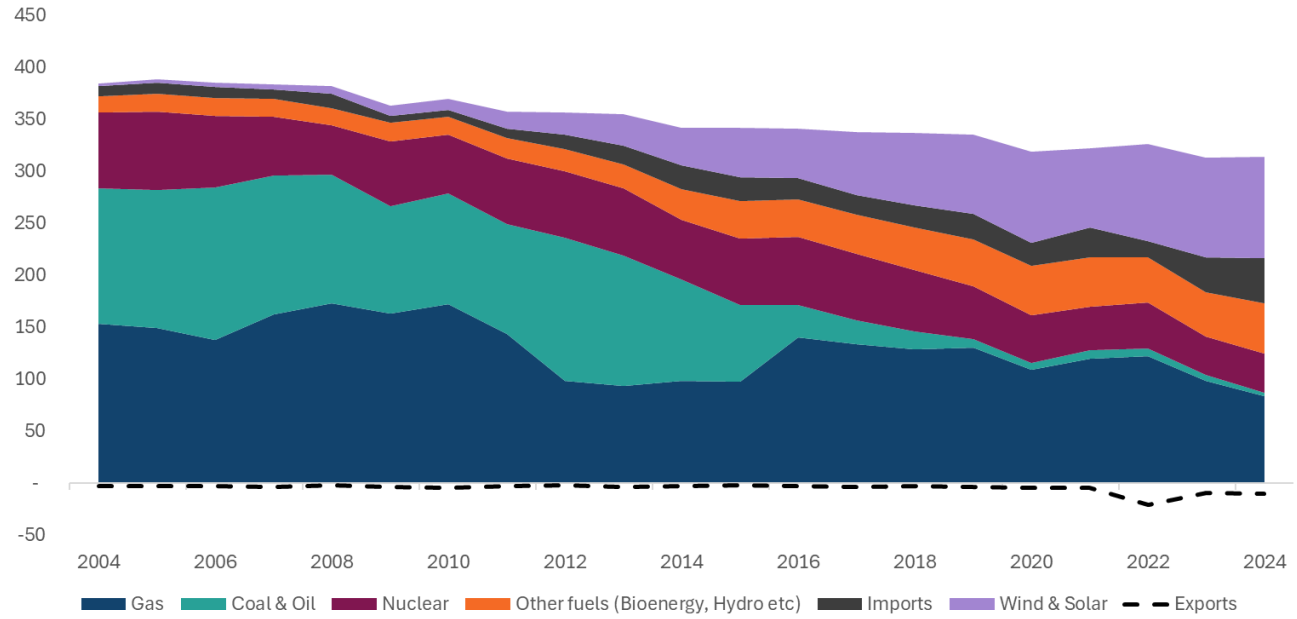
Decarbonising the energy system is critical to delivering a cost-effective energy transition and meeting Clean Power 2030 (**CP2030**) targets. Replacing coal with renewables has reduced UK electricity-related carbon emissions by around 60% over the past 15 years, but meeting CP2030's grid carbon-intensity target of below 50 gCO_2/kWh remains a challenge. Infrastructure planning is now led by **NESO**, with three frameworks in development to co-ordinate planning at national and regional levels. Ofgem's Accelerated Strategic Transmission Investment (**ASTI**) framework, introduced in 2022, is streamlining delivery of 26 critical projects to enable 50GW of offshore generation by 2030. As of December 2025, three projects have completed formal assessment, with a further three currently undergoing review. We also introduced the Advanced Procurement Mechanism (**APM**) in June 2025 to mitigate current and future supply chain constraints which might otherwise delay project delivery or increase project costs. Progress on low-carbon technologies - including nuclear, Carbon Capture Usage and Storage (**CCUS**), hydrogen, and storage - is advancing, with major investments and policy frameworks in place to deliver CP2030 goals. Network companies are reducing environmental impacts, with GD emissions - mainly methane leakage - down 16% over five years through pipe replacement. National Gas Transmission continues to outperform methane reduction targets, while electricity system emissions have fallen by ca. 60% over 15 years. In electricity, SF_6, - an extremely potent greenhouse gas - has seen a significant decline in emissions since 2021, despite a slight uptick in 2024.

Introduction

The energy system is critical to Great Britain (**GB**), delivering the electricity and gas that households and businesses rely on daily. Energy is generated from a range of sources and delivered to end users via transmission and distribution networks, which are regulated by Ofgem under the RIIO[1] price control framework. These networks operate on the principle that supply and demand must be balanced in real time. Balancing is a complex task, particularly in electricity, where any imbalance, whether from generation exceeding demand or vice versa, can cause frequency deviations, risking equipment damage and potential blackouts. NESO is responsible not only for maintaining this real-time balance, but also for long-term strategic planning and ensuring the security of supply.

The **electricity system has been undergoing rapid transformation in recent years, driven by the growing share of renewable energy**. This shift is set to accelerate under the Government's Clean Power 2030 (**CP2030**) mission, which aims to deliver a system capable of generating as much clean power as the UK consumes by 2030. With the closure of Ratcliffe-on-Soar in 2024, the UK became the first major economy to fully phase out coal-powered generation. Nuclear output has halved since 2005, as older plants have retired and new capacity is not yet complete. However, these declines have been offset by the **rapid growth in renewables, with the share of generation from wind and solar growing from 1% in 2004 to 34% in 2024**, supplemented by biomass, hydro and other technologies. Additional contributions have come from bioenergy and rising electricity imports from Europe via interconnectors.

UK Electricity by Source (TWh)



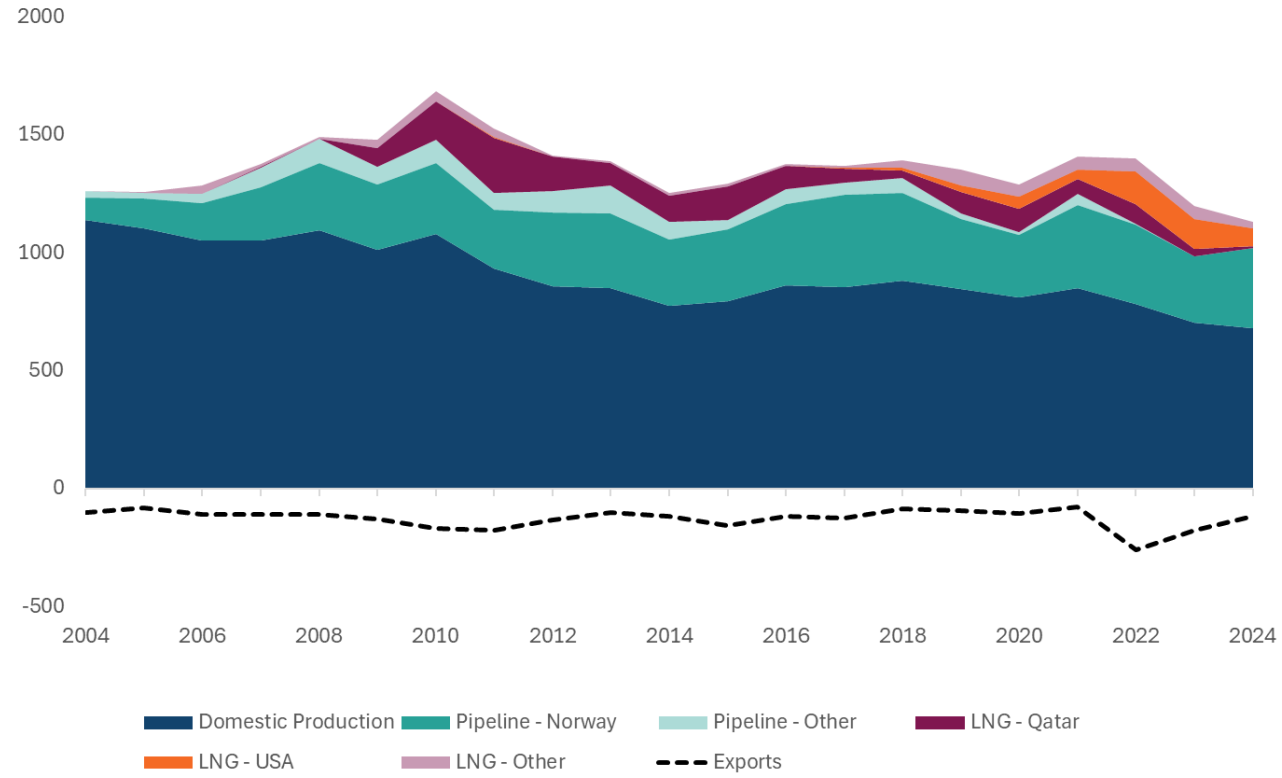
Source: Ofgem analysis of DESNZ Energy Trends: UK electricity data

[1] Revenue = Incentives + Innovation + Outputs

Alongside this transformation in electricity, the gas system is also facing its own changes. **While the UK's North Sea fields remain the main source for gas, falling production levels mean that almost half of the country's gas is now imported**. Norway is the largest source of supply, but its production is now forecast to have peaked. At the same time, demand for North Sea gas from continental Europe has increased due to the loss of Russian supplies since 2022, creating more competition for Norwegian gas.

As a result, imports of Liquefied Natural Gas (**LNG**) are playing an increasingly important role in balancing supply and demand, and this is expected to grow further throughout the late 2020s. Gas interconnectors play an important role in balancing supply and demand over the year, allowing for LNG to be re-exported into Europe during the summer, to help fill up European storage, and then allowing the UK to access European supplies during the winter to compensate for the lack of domestic storage facilities.

UK Natural Gas Supply by Source (TWh)



Source: Ofgem analysis of DESNZ Digest of UK Energy Statistics (DUKES): natural gas data

Fair Prices

The costs of running the energy system all feed into the energy bills paid by consumers. Each part of the energy system, including transmission, distribution, and balancing charges, contributes differently to the final price we see.

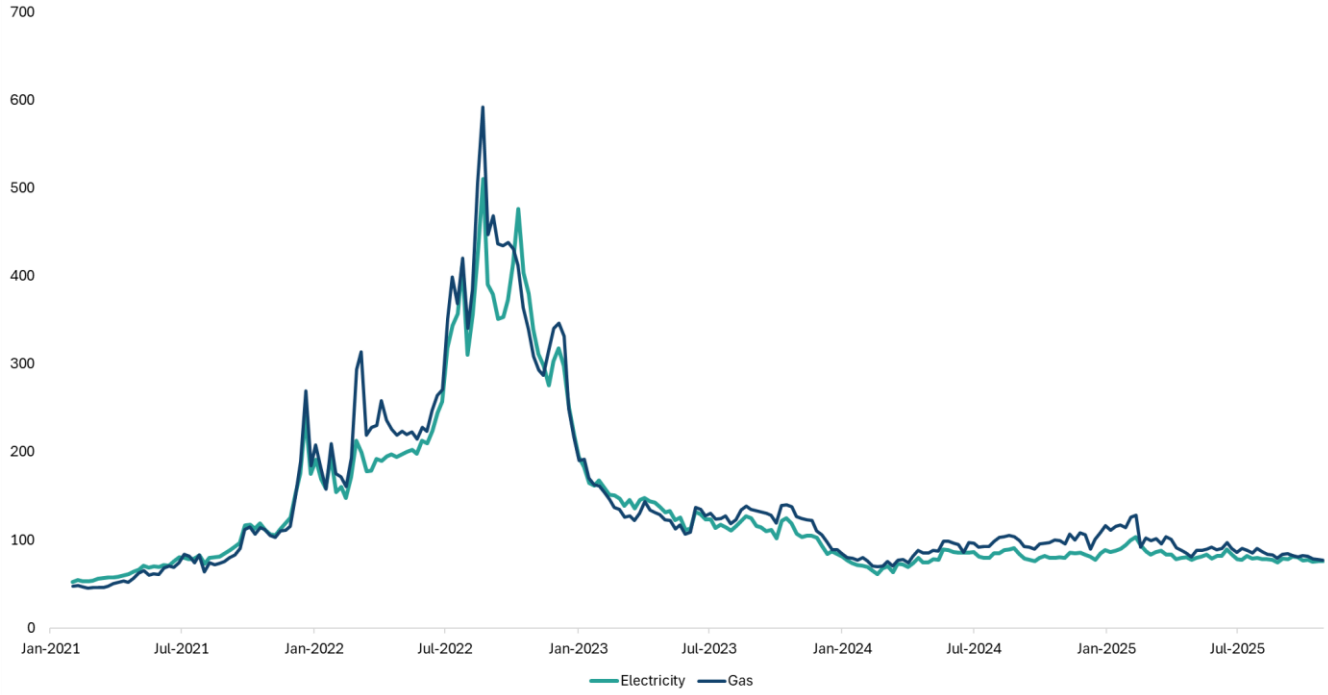
As highlighted in the State of the Market Report – Retail Highlights, wholesale and network costs continue to account for the majority of a typical energy bill, together making up around 60% of total charges. System management costs, including balancing services required to maintain real-time system stability, contribute 3% to overall bills.

Wholesale costs

The wholesale cost of energy makes up the largest single element of customer bills. GB wholesale gas and electricity prices are closely linked, due to our reliance on gas-fired generation to meet electricity demand most of the time. **Over the past five years, gas and electricity wholesale prices have been highly volatile, driven largely by global market disruptions**. Events such as the pandemic, the war in Ukraine, tensions in the Middle East, and other international factors have caused sharp price spikes. In addition, the UK's growing reliance on LNG means that domestic gas prices now track international trends more closely than in the past.

Both power and gas prices have fallen from their 2022 peaks and remain higher in nominal terms when compared to pre-crisis values. However, taking into account inflation, wholesale prices are comparable to pre-crisis levels, albeit being towards the top end of historical ranges, reflecting ongoing uncertainty in global energy markets.

Gas and Electricity Wholesale Prices – Forward Delivery contracts[2]



Source: Wholesale market indicators | Ofgem

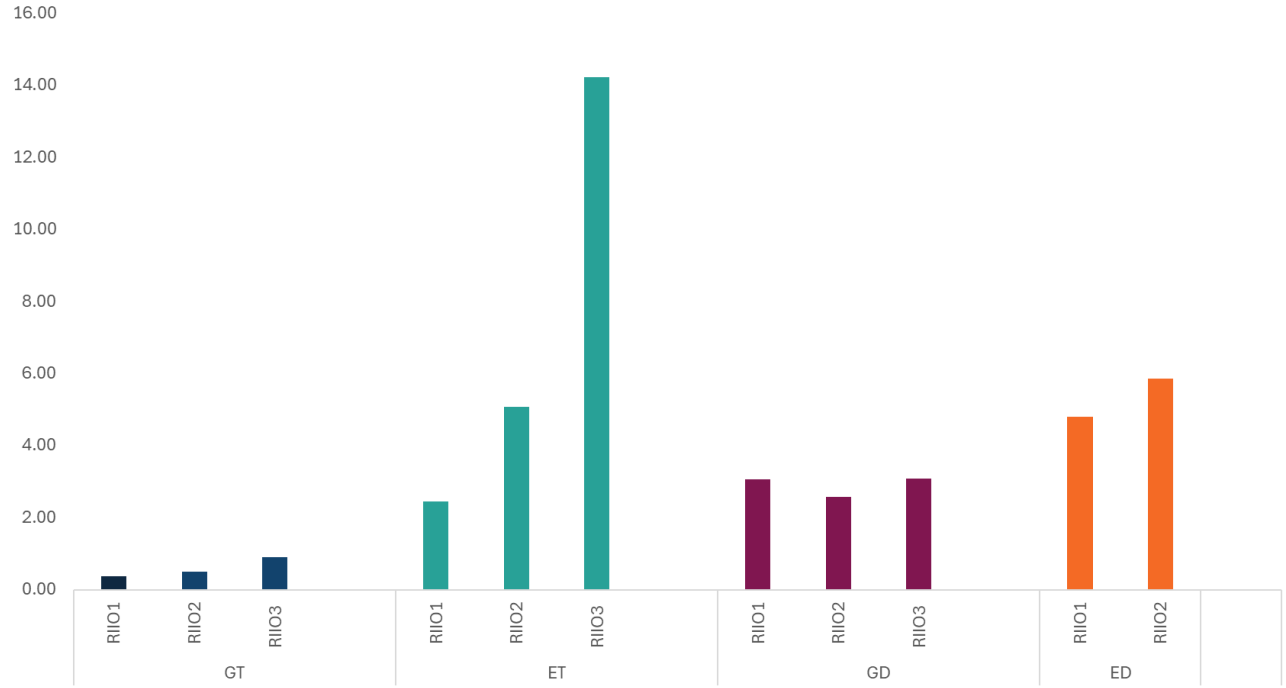
Network Spending Levels

One of Ofgem's core responsibilities is to determine the level of spending required on the energy networks. We are currently at a crucial stage, where the planned expansion in renewable power, carbon capture and energy storage, along with the need to reduce GB's exposure to high and volatile international gas prices, will require an unprecedented level of investment in the electricity networks. While gas consumption will start to reduce over time to meet the Net Zero targets, the gas network will continue to be of enduring importance during the transition, and will require investment to ensure it can operate safely and reliably during this period.

The next set of price controls (**RIIO-3**) will begin in April 2026 for GD, GT, and ET, and in April 2028 for ED (ED3). Ofgem published allowances for the former three sectors in its Final Determinations on December 4th 2025. **For the gas networks, this control will be broadly similar in scale and nature to RIIO-2, with £17.8bn of spending approved, but the level of change required in ET has necessitated changes in RIIO to match it. Over the 5 years, total investment could reach £70bn, in comparison to £26bn during RIIO-2**, but since many of the projects are not yet advanced enough for us to assess their cost, a large majority of these costs will need to be approved in-period rather than upfront. The chart below compares the approved spending levels by sector across the three RIIO price controls. Since RIIO-1 was an 8-year price control, whereas the others cover 5 years, the figures are presented on an annualised basis.

[2] Forward Delivery refers to contracts for the delivery of gas at a fixed point in the future, which is a less volatile measure of price than daily spot prices.

Annualised approved spending in RIIO by sector, £bn

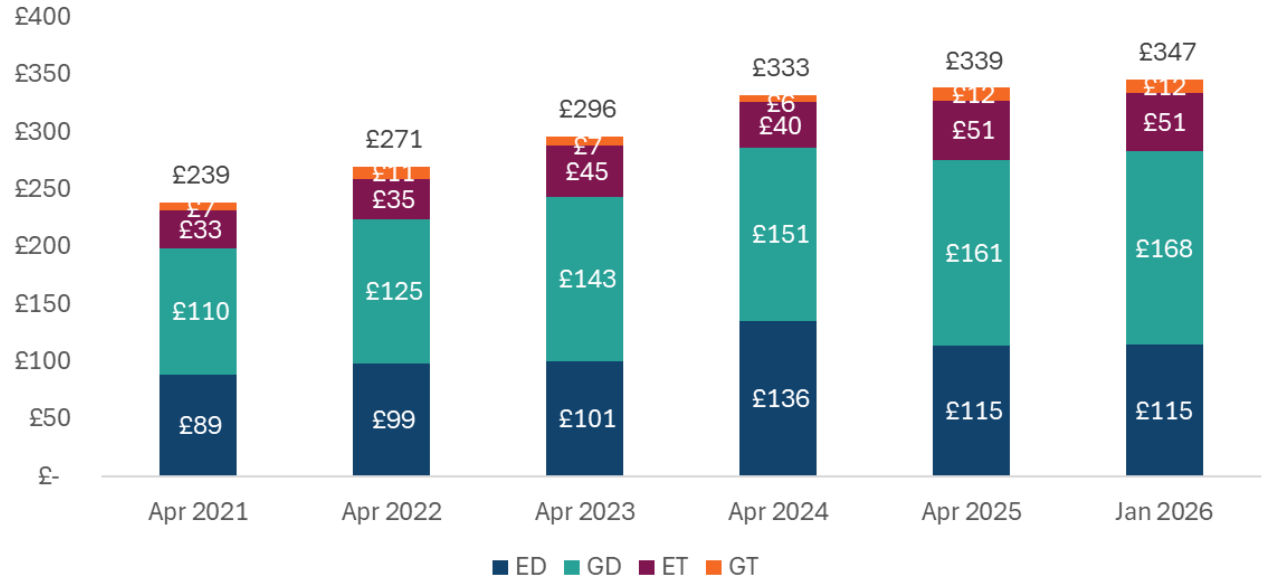


Source: Ofgem RIIO-3 Final Determinations and Ofgem analysis of company reporting

Network Costs

Network costs are paid by suppliers and then passed on to consumers, with Ofgem ensuring that the price cap contains an accurate reflection of the charges that relate to individual consumers. **Over the past 5 years, the cost to the average consumer has increased from £239 to £339, which is largely due to the impacts of inflation over this period. From April 2026, costs will rise as a result of the RIIO-3 accelerated investment in electricity transmission, as well as funding for various low carbon technologies (LCTs)**, but the nature of the RIIO model means that the consumer costs will be spread over a period of 45 years, with only a small fraction of them being passed on by the companies during the RIIO-3 control.

GB average network charges for a TDCV duel-fuel single-meter household, GBP (nominal), 2021-2026



Source: Ofgem analysis of price cap data. Note: "Dual fuel" refers to a household supplied with both electricity and gas (single electricity meter and single gas meter). TDCV refers to Typical Domestic Consumption Value, values are presented on a TDCV basis for consistency across time. From January 2026 onwards, benchmark consumption is aligned with TDCV following the benchmark review decision, so no TDCV conversion is applied from that point forward. The chart excludes balancing and SoLR costs. These cost are reported separately.

Network profitability

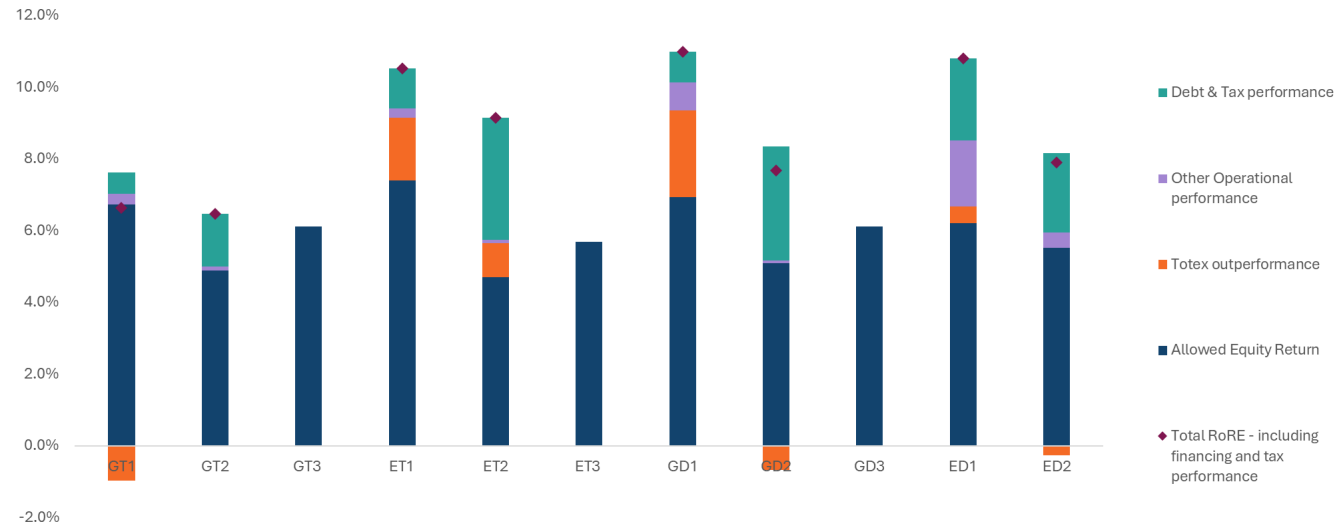
Network companies recover the money they spend building and maintaining the energy networks through the revenues they are allowed to collect. Their profits depend on how efficiently and how well they run their networks. In compensation for funding the upfront cost of investments in the network, the companies receive an annual return, which has two main parts: a recovery of the initial investment, typically spread over a 45-year period, and an allowed return on the value of assets used to provide network services, alongside incentive mechanisms that can increase or reduce companies' returns. RoRE is Ofgem's measure of the financial return achieved by shareholders from a licensee during a price control period. A company's total RoRE is made up of four components:

- A baseline cost of equity, reflecting the opportunity cost of the amount invested.
- Totex[3] performance, reflecting the company's efficiency: if they deliver the required outputs for less than the allowed costs, they retain a portion of this as additional profit, and vice versa.
- Other operational performance, reflecting how well the company has done on the financial incentives relating to outputs such as minimising interruptions and delivering good customer service.
- Financial/tax performance, reflecting whether the impacts of financing costs, taxation and inflation were in line with what Ofgem allowed for.

[3] 'Totex' is short for 'total expenditure'. Ofgem determines a revenue allowance for each company to cover costs that have been justified.

The RIIO methodology also includes a Return Adjustment Mechanism (**RAM**), which safeguards against unforeseen developments if companies' overall returns move significantly above or below the baseline set at the start of the price control. The RAM sets thresholds and sharing rates to smooth out extreme outcomes, to protect both consumers and investors. To date, the thresholds have not been reached, so the mechanism has not been triggered. The chart below sets out the composition of the actual or forecast RoRE earned by each sector in RIIO-1 and RIIO-2, as well as the equity return that has been set for RIIO-3[4].

RoRE Composition by Sector (notional basis) Across RIIO-1 to RIIO-3



Source: Based on latest networks submissions of RIIO-1 and RIIO-2 (2024/25 data) regulatory financial performance reports (RFPR)

Under the RIIO-2 price controls, Ofgem reduced the allowed equity return and set toughter targets fro companies' spending (totex) and perfromance incentives. This means that the overall RoRE decreased compared to RIIO-1. However, companies' cost allowances are adjusted for inflation, and inflation has significantly exceeded the assumptions made at the start of RIIO-2. In practice, though, some companies' actual costs have not increased as quickly as inflation. As a result, these companies have earned a higher RoRE under RIIO-2. Ofegm has recognised this issue and consulted on it in August 2023, looking at possible policy options. In RIIO-3 Final Determinations for GD and ET, published on 4 December 2025, we therefore decided to change the methodology to address this problem and we plan to apply the same changes for RIIO-3 ED.

It is also important to note that regulated returns cannot be compared with network companies' operating margins. These accounting margins do not reflect the substantial capital invested in energy networks and may include non-regulated activities, overseas operations, accounting adjustments, timing effects, and group-level financing or tax arrangements, all of which can distort statutory margins relative to the regulated business. For this reason, Ofgem uses RoRE to assess company profitability, RoRE focuses only on returns earned from the

[4] At this point, only the equity return for RIIO-3 can be provided, but the outturn RoRE will include adjustments for performance on totex, operational incentives and financing, as in the previous controls.

regulated asset base under the RIIO framework, giving the most accurate and transparent benchmark for assessing network performance.

The charts below compare two elements:

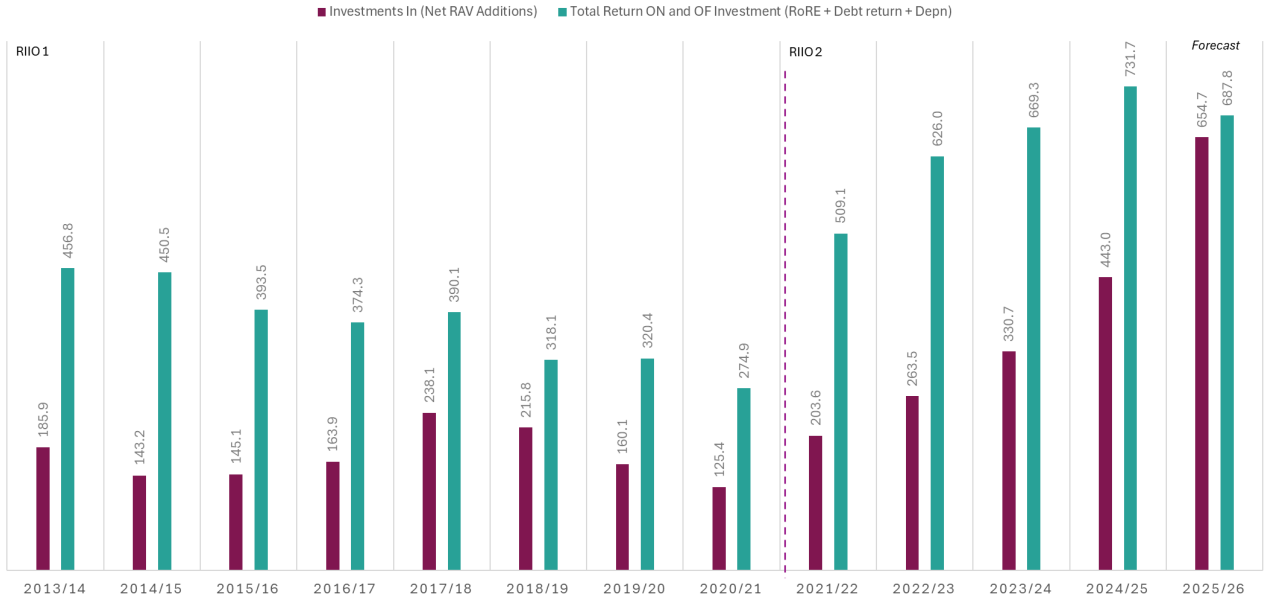
- **The annual level of new investment** that the companies have put into the networks (on notional basis and in real terms). Investment is measured as net additions to Regulatory Asset Value (**RAV**), which is effectively the running total of how much companies have invested in their infrastructure over time. and
- **the amounts what companies have taken out or received funding for on all new and past investments** through allowed revenue. This includes the equity and debt funding, plus depreciation (the return of their original investment), their RORE, and their return on debt – all measured from the start of RIIO-1.

For electricity, the final two years of RIIO-2 highlight how the framework enables the sharp rise in investment needed for CP2030, while spreading costs over 45 years to keep bills fair and affordable. Gas networks, by contrast, are mainly focused on the maintenance of existing assets.

Electricity Transmission - Investments In vs Returns (nominal £m)

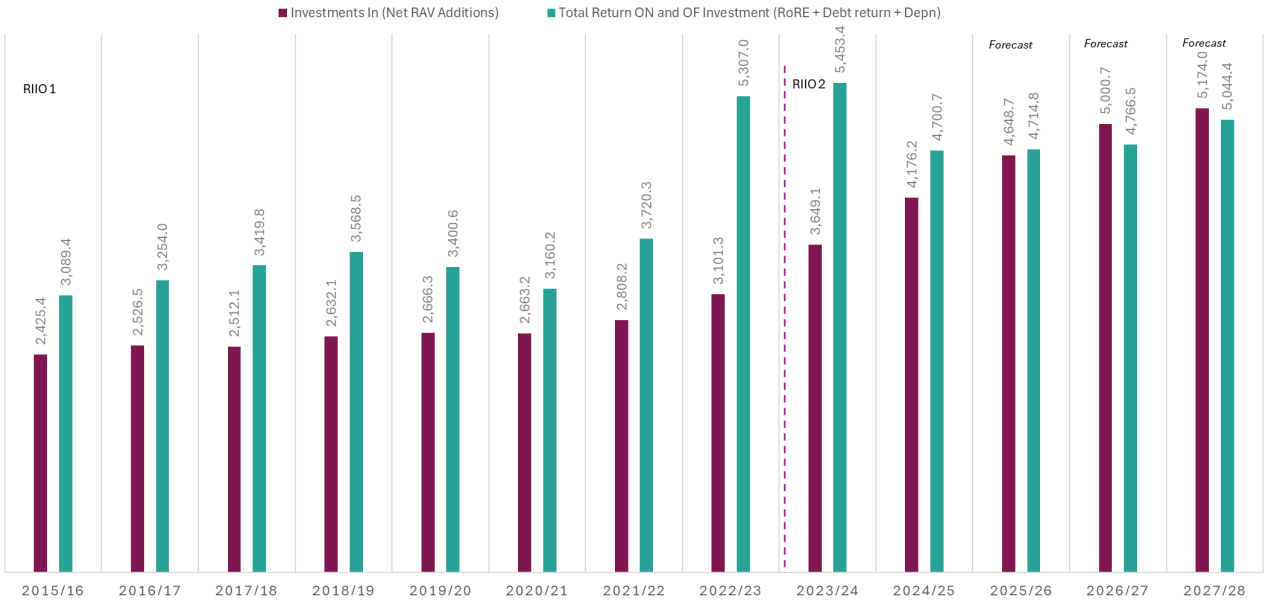
Source: Based on latest networks submissions of RIIO-1 and RIIO-2 (2024/25 data) regulatory financial performance reports (RFPR)

Gas Transmission - Investments In vs Returns (nominal £m)



Source: Based on latest networks submissions of RIIO-1 and RIIO-2 (2024/25 data) regulatory financial performance reports (RFPR)

Electricity Distribution - Investments In vs Returns (nominal £m)



Source: Based on latest networks submissions of RIIO-1 and RIIO-2 (2024/25 data) regulatory financial performance reports (RFPR)

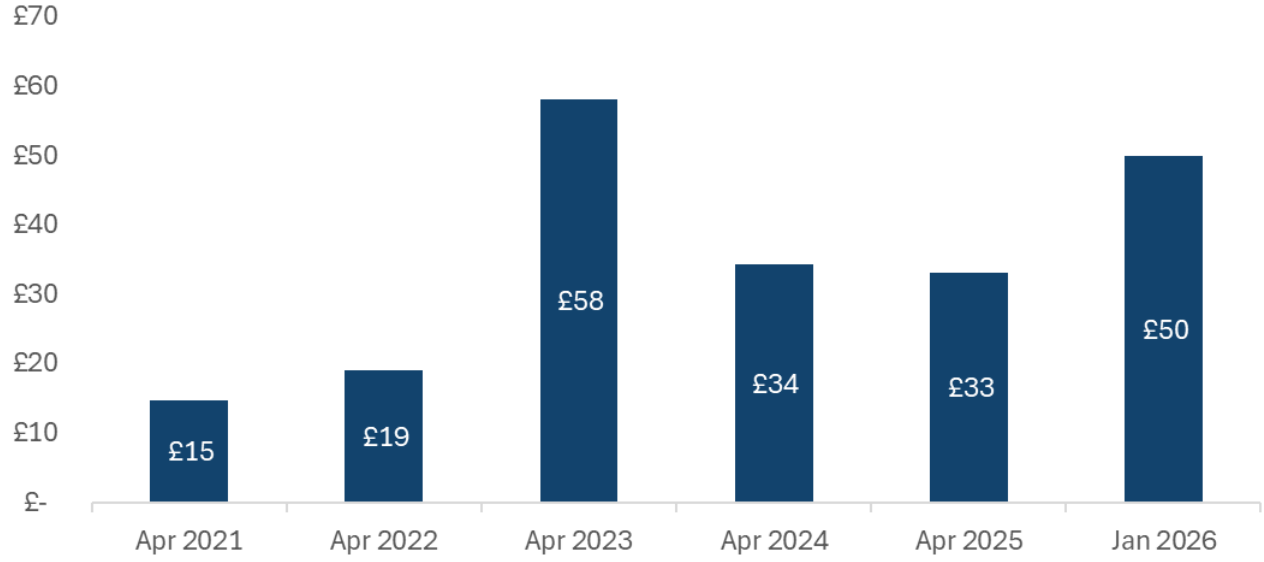
Gas Distribution - Investments In vs Returns (nominal £m)

Source: Based on latest networks submissions of RIIO-1 and RIIO-2 (2024/25 data) regulatory financial performance reports (RFPR)

Balancing and System Operator Costs

System-related costs principally relate to the Balancing Mechanism (**BM**) run by NESO to ensure that electricity supply and demand remain in balance at all times**.** BM is one part of the overall wholesale market, which meant that BM prices spiked in the wake of the energy crisis in 2021-2023. Balancing costs have also been rising over time predominantly due to NESO having to manage increasing transmission capacity constraints caused by the change in the energy mix. Much of the new renewable generation capacity, particularly from wind farms in Scotland, is located in different areas to before, meaning that the existing transmission network was not built to have the capacity needed to carry these loads at peak output**.** In addition, the GB connections regime allows generators to connect in advance of transmission reinforcement work being carried out. This has enabled the rapid increase in renewable generation capacity, but has also resulted in it outstripping the capacity of the transmission network. With the volume of new renewable generation capacity expected to rise further, this has necessitated accelerated investment in transmission capacity to reduce constraints costs in the future.

Balancing and system operator costs in the price cap, £



Source: Ofgem analysis of price cap data.

Quality & Standards

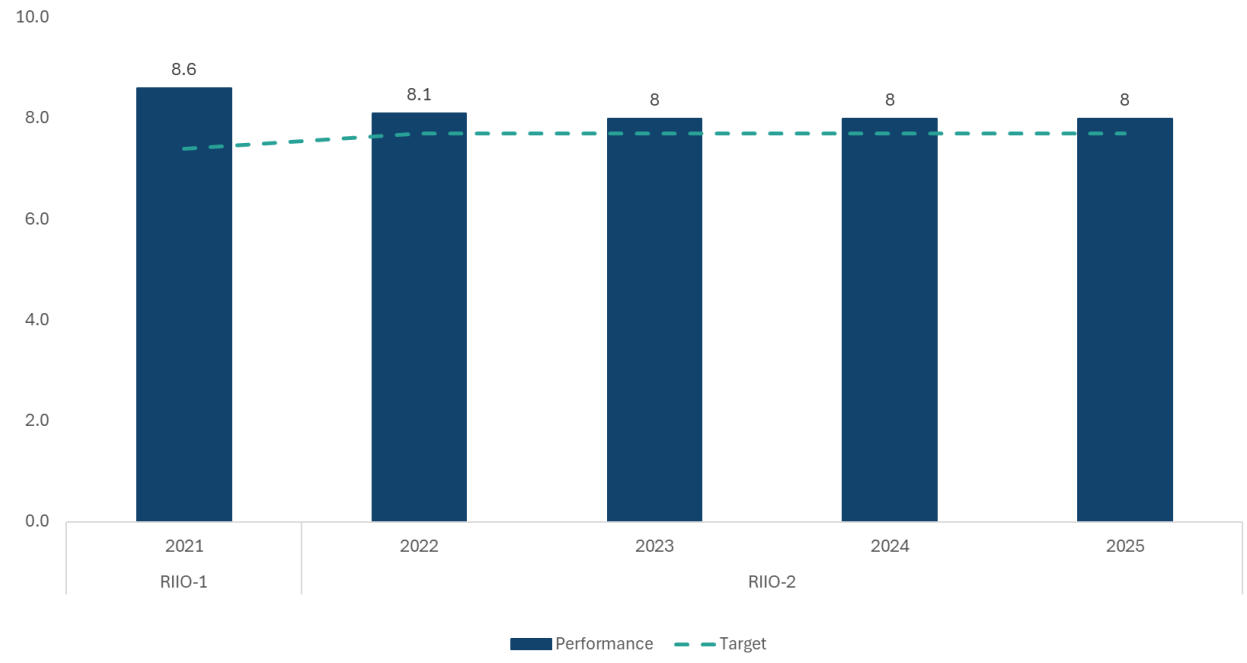
The transmission and distribution networks are responsible for delivering energy to consumers. Under the Quality & Standards theme of Ofgem's Consumer Interest Framework, consumers have the right to expect that networks handle service requests and complaints effectively and in a timely manner. Through the RIIO framework, Ofgem sets targets for network companies on key quality measures. In this chapter, we provide a summary of sector-level performance against the most important quality metrics. Detailed information on individual companies, as well as the full range of network performance measures, is available in our RIIO annual reports for each sector.

Satisfaction scores and quality standards

Transmission Networks

For ET, under RIIO-2, Ofgem introduced an incentive to improve the transmission operators' (TOs') quality of service for connections customers. Performance is assessed through the Quality of Connections Satisfaction Survey, which produces a mean score out of 10. This score is then compared to the target (7.4 in RIIO-1, tightened to 7.7 in RIIO-2). Companies scoring above the target receive an increase in allowed revenue, while those below see a reduction. **Sector performance has remained close to the target overall**. Scottish Hydro Electric Transmission and Scottish Power Transmission have exceeded the target, while National Grid Electricity Transmission has underperformed in 2023, 2024, and 2025. In Ofgem's RIIO-3 Final Determinations, the Quality of Connections Satisfaction Survey has been removed as a financial incentive.

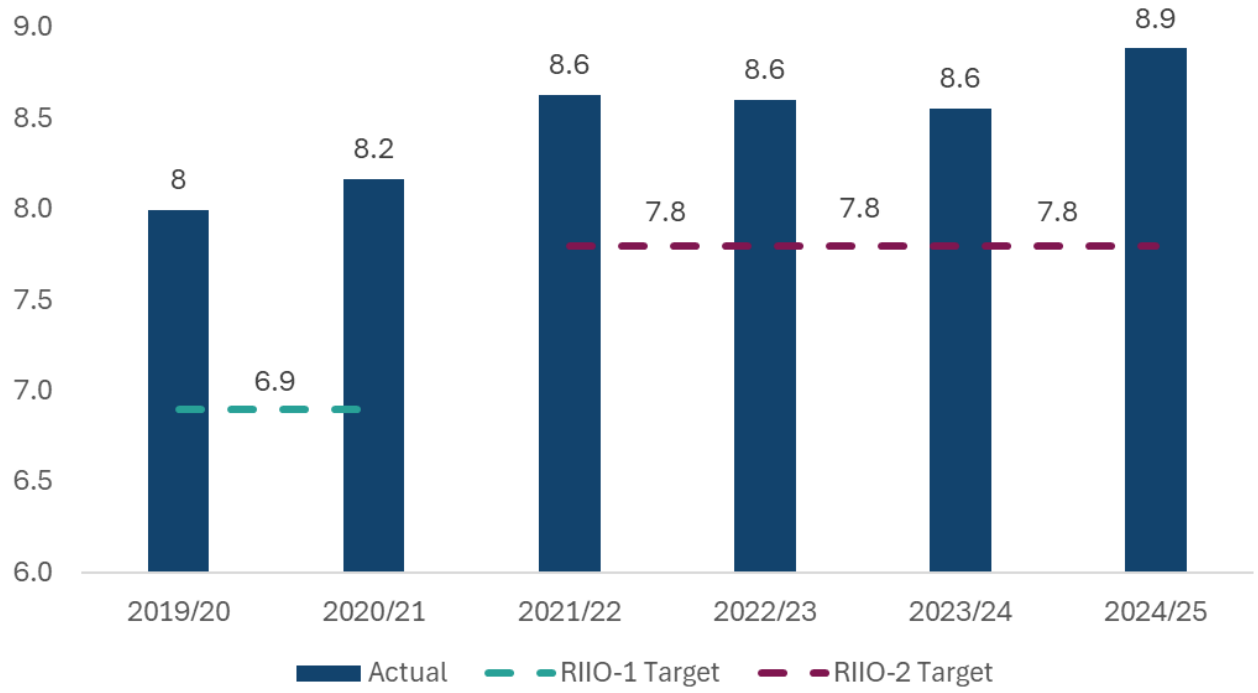
Electricity Transmission: Quality of Connections Satisfaction Survey, Mean Score



Source: Ofgem analysis of network company reporting submission data
Note: Chart depicts average of transmission operators scores; individual transmission operators performance varies.

For GT, under RIIO-2, Ofgem introduced an incentive to encourage National Gas Transmission to deliver high levels of customer satisfaction. Performance is assessed using the annual average of scores from customer satisfaction surveys, which measure how well National Gas Transmission meets customer expectations throughout the price control period. RIIO-2 set a higher performance target compared to RIIO-1. In the final two years of RIIO-1 (2020 and 2021), National Gas Transmission exceeded its target. **Under RIIO-2, National Gas Transmission continued to improve, achieving scores above the higher target and demonstrating sustained progress in customer satisfaction**.

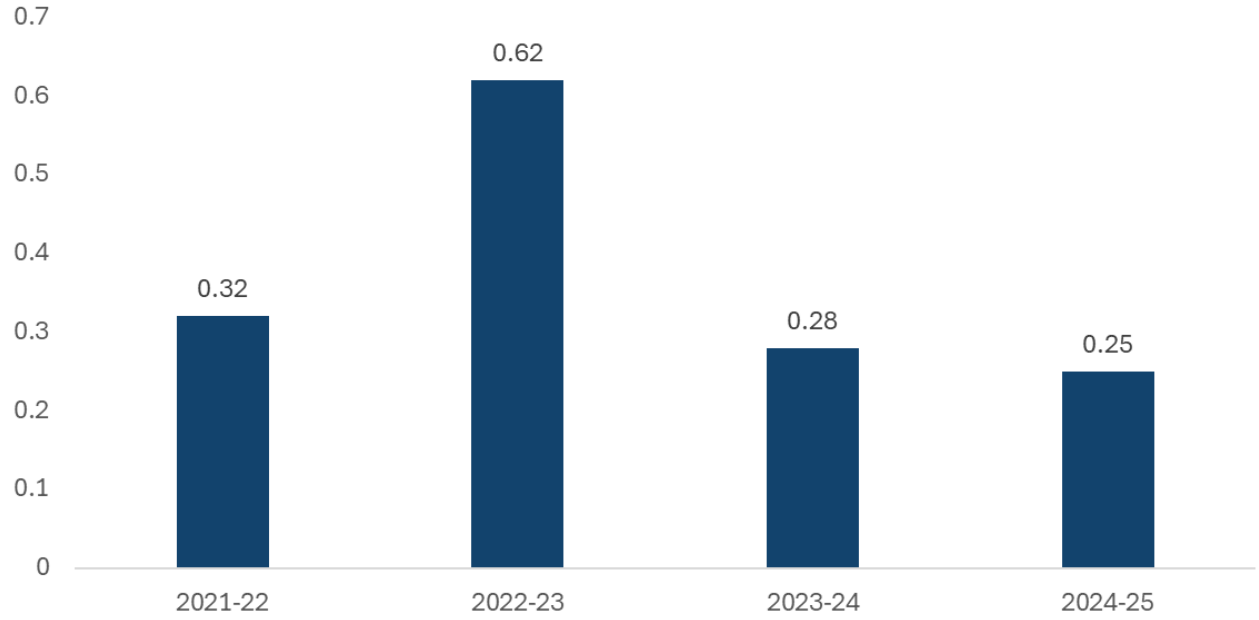
National Gas Transmission Customer Satisfaction Survey, Mean Score



Source: Ofgem analysis of company reports: RIIO-2 Gas Transmission: annual report 2024 to 2025 | Ofgem

Alongside customer satisfaction, another important measure of network quality is gas shrinkage. Gas shrinkage represents the energy consumed, lost, or otherwise unaccounted for during the operation of the gas networks. Within the National Transmission System, it includes compressor fuel use, calorific value adjustments, and unaccounted-for gas. Shrinkage is an important measure of network efficiency and environmental performance because higher levels increase operational costs, which ultimately feed into consumer bills, and contribute to emissions that challenge Net Zero targets. Gas shrinkage volumes peaked in 2022–23, before falling back to 0.28 billions of cubic metres (BCM) in 2023–24 and 0.25 BCM in 2024–25.

Gas Transmission: gas shrinkage (BCM)

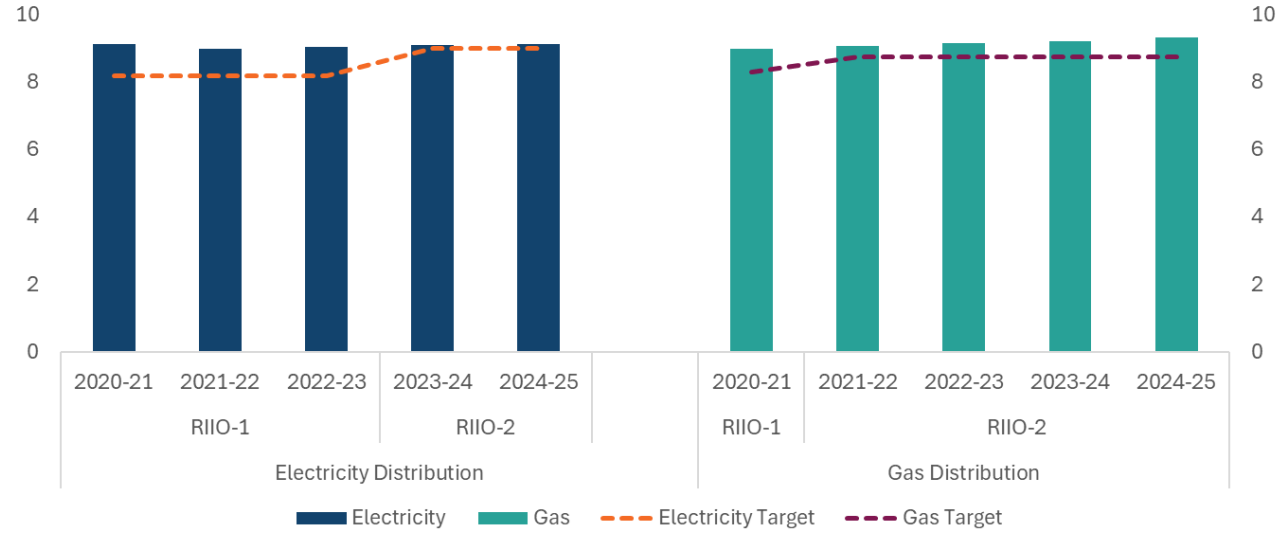


Source: Ofgem analysis of company reports: RIIO-2 Gas Transmission: annual report 2024 to 2025 | Ofgem

Distribution Networks

We measure the quality of the distribution networks' service levels through a survey of customers' satisfaction with their handling of a range of activities, including connection requests, planned and unplanned interruptions, and general enquiries. **Both the electricity and gas sectors have reported high levels of customer satisfaction with their performance**. In electricity, the stricter standard for RIIO-2 meant that 5 of the 14 networks did not reach the target score of 9.01 over the first two years of ED2, even though the sector average remained above this. We expect these companies to work on improving performance over the remainder of its duration. In gas, all 8 networks have achieved the target throughout RIIO-2, with significant improvements from the networks that had previously lagged the others.

Electricity and Gas Distribution consumer satisfaction

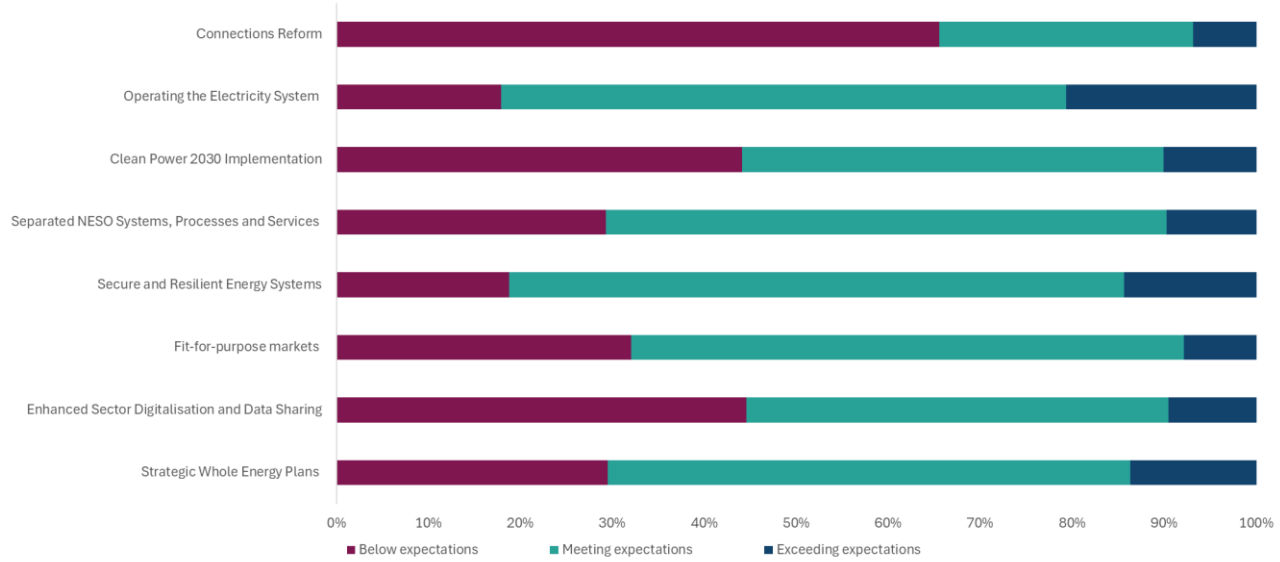


Source: Ofgem analysis of company reports: RIIO-2 Electricity Distribution: annual report 2024 to 2025 | Ofgem and RIIO-2 Gas Distribution: annual report 2024 to 2025 | Ofgem

System Operator

The electricity system is managed by NESO. Formerly part of National Grid, NESO became an independent body in 2024 to address the growing complexity of the energy system and accelerate the transition to Net Zero. As the independent operator, NESO is responsible for making sure there is enough supply to meet consumer demand, designing an energy system that meets future electricity infrastructure needs, and planning and coordinating the design of electricity networks. NESO is owned by the Department for Energy Security and Net Zero (DESNZ) but is set up to have operational independence. For the period April 2025 to March 2026, NESO is assessed against eight performance objectives. **According to NESO's stakeholder survey, stakeholders' views differ across the eight performance objectives.**

NESO stakeholder satisfaction by performance objective, 2025

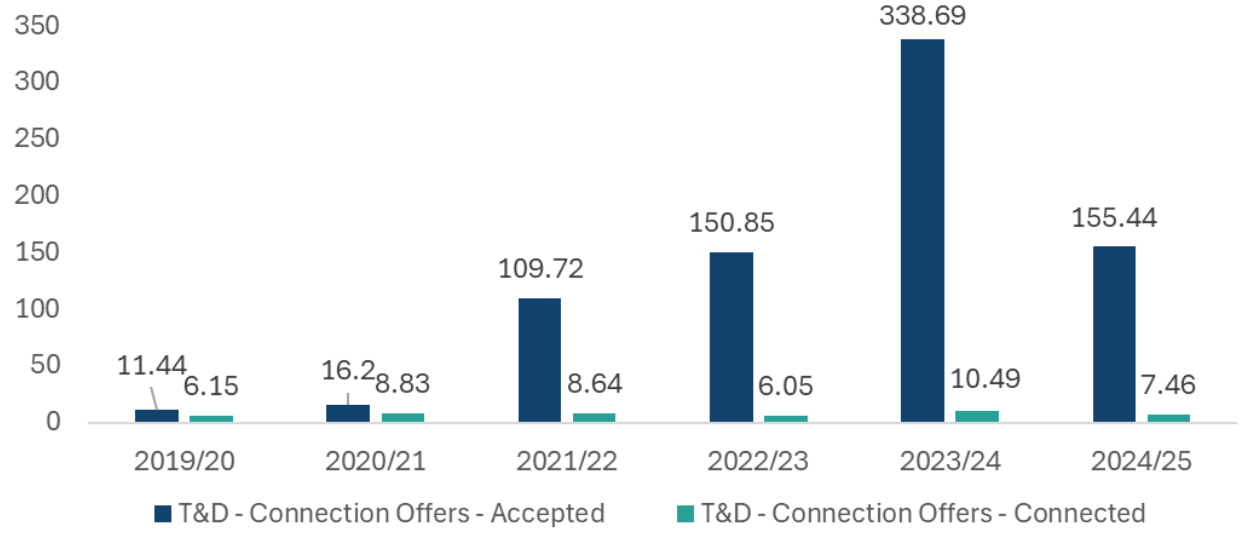


Source: Ofgem analysis of NESO's Stakeholder Survey in NESO September 2025 Mid-Year Reporting

Connections

Connecting new generation to the grid requires infrastructure upgrades, such as installing new substations and reinforcing the network, which limit connection rates and require advance capacity booking. Historically, queue positions were simply awarded on a first-come, first-served basis, with no regard to system needs or project viability. The expansion of renewables has led to a sharp rise in applications for connections, many for speculative projects, with queue growth far outpacing the actual connections rate.

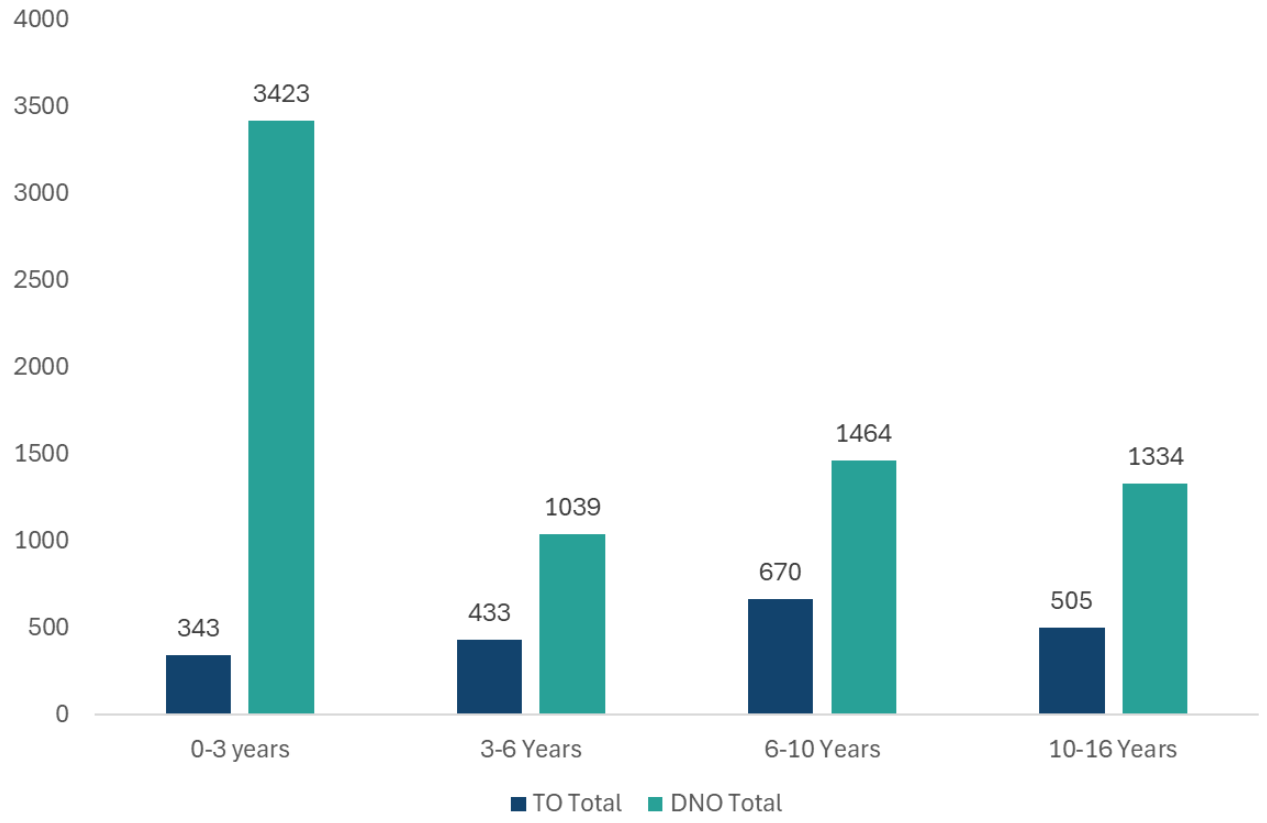
Offers accepted into queue vs connections made under the previous first-come-first-served regime, Transmission and Distribution (GW)



Source: Ofgem analysis of industry records

By February 2025, the queue had reached over 750GW (and continued to increase over the course of 2025), with far more generation capacity than was required to achieve Clean Power by 2030 and Net Zero by 2050, and new applicants facing an average wait of almost 6 years. In addition, the connection rate was 2-3 times slower than the rate needed to connect the permitted capacities in the CP2030 Action Plan and five times slower than the rate required to connect all projects in the old connections queue to 2030, in line with their connection dates at that time. For distribution network operators (DNOs), most projects are expected to connect within 0–3 years, whereas for TOs, a significant proportion of projects now face waits of greater than 6 years.

Project Connection Queue Lengths by Waiting Time Band under the previous first-come-first-served regime, 2024 (Number of Projects)



Source: Ofgem analysis based on company records

To address this, Ofgem approved NESO's reform proposals in April 2025 to prioritise the existing queue based on system needs and project viability, and to deprioritise a significant number of stalled or speculative projects, which will enable the delivery of the projects needed for Clean Power 2030. Future applications will also be prioritised in the same way. On 8 December 2025 NESO published the new connections queue, comprising 283GW (excluding transmission connected demand), with more than 300GW from the existing queue being deprioritised. The connection offers are due to start being issued this year, with all due to be issued by the end of 2026.

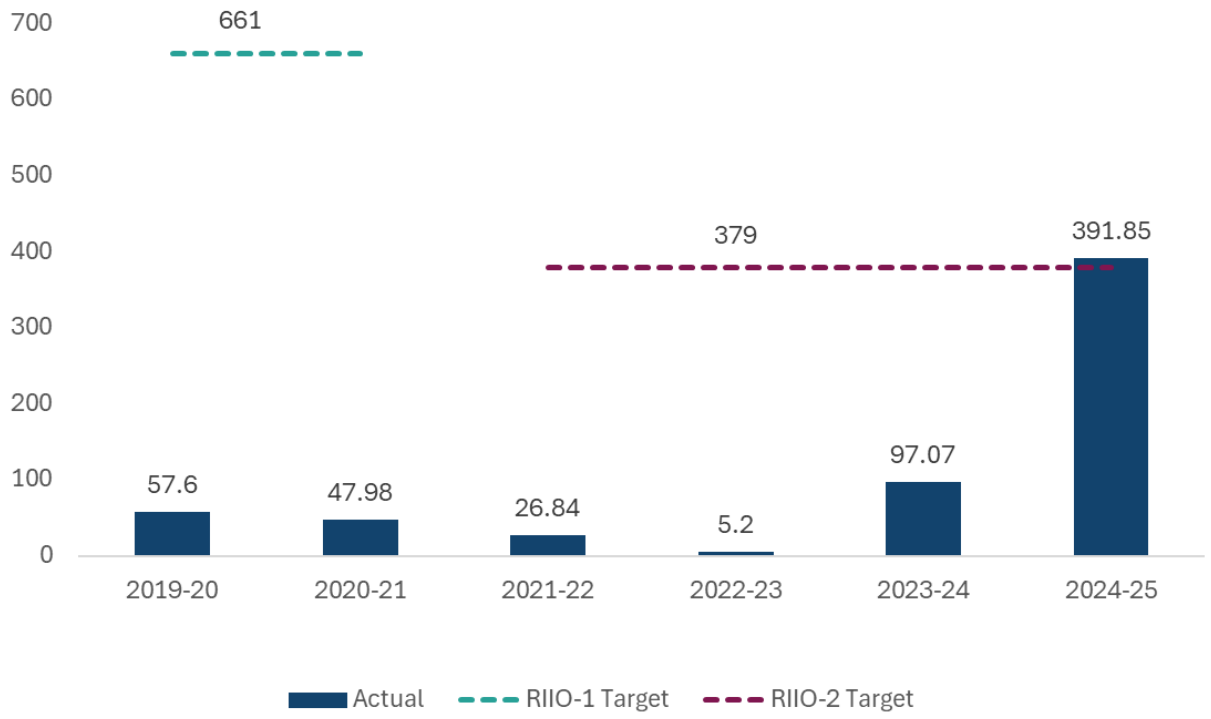
Resilience

A resilient energy system is critical to ensuring that consumers receive a reliable supply of gas and electricity. Delivering resilience requires three core elements: adequate supply to meet demand, continuous balancing so that energy entering the system aligns with real-time consumption, and a robust system that remains secure in the physical and financial domains to deliver energy reliably.

Reliability of Transmission Networks

In ET, supply interruptions are measured by the volume of Energy Not Supplied (**ENS**). **Across the RIIO periods, ET networks consistently performed well ahead of target**. **However, ENS performance in 2024–25 was impacted by the North Hyde substation fire in March 2025,** which caused the power outage at Heathrow Airport.[5] Although this incident pushed annual ENS above the allowed target, overall electricity availability across the year remained extremely high at more than 99.99%.

Electricity Transmission Energy Not Supplied (MWh)



Source: Ofgem analysis of company reporting: RIIO-2 Electricity Transmission: annual report 2024 to 2025 | Ofgem

[5] At the request of DESNZ and Ofgem, NESO carried out a full review of the circumstances leading to the failure, and provided recommendations on improving the resilience of critical national infrastructure, which DESNZ and Ofgem have committed to implementing.

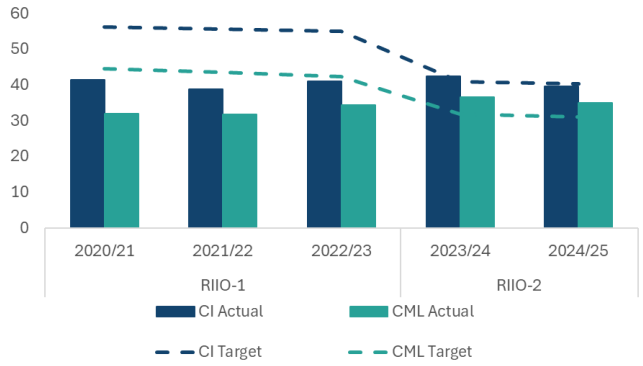
In GT, asset failures do occur, but the network generally has sufficient resilience to prevent major outages. While there is no single metric that captures GT network resilience, a useful proxy is the number and impact of capacity constraints, which National Gas Transmission is incentivised to minimise.[6] **National Gas Transmission has exceeded its targets every year since 2013, with no major system outages during this period**.

Reliability of Distribution Networks

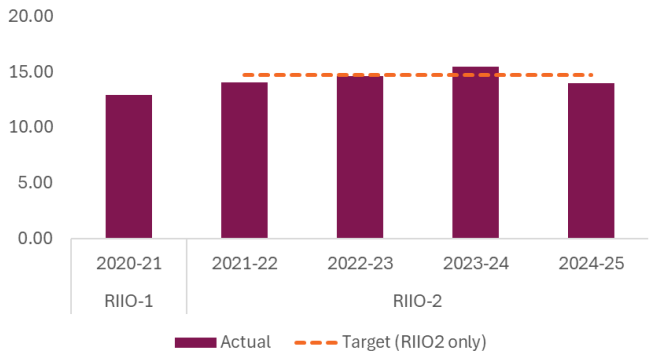
At the distribution level, resilience is assessed using two key measures: the frequency of interruptions, expressed as Customer Interruptions (**CI**), and the average duration of interruptions, expressed as Customer Minutes Lost (**CML**). For gas distribution (**GD**), where interruptions are less frequent but more complex to restore, the focus is on the average duration of interruptions. While performance and targets are set at the individual company level, this report presents aggregated sector-level data.

Targets for ED were tightened under RIIO-2, requiring several networks to improve, particularly on the CML measure. For CI, overall sector performance has consistently exceeded targets, with only a slight underperformance in 2023/24. For CML, the sector met RIIO-1 targets but has underperformed relative to RIIO-2 targets. Explicit targets for gas distribution were introduced under RIIO-2. In **GD, overall sector performance has declined since 2020–21, driven primarily by one company** that incurred the maximum penalty; all other networks have maintained or improved upon strong performance under RIIO-2. Cadent London is excluded from this analysis due to historic challenges in restoring supply to high-rise buildings, which previously led to enforcement action and a performance improvement plan during RIIO-1. Since then, Cadent London has significantly improved and consistently met its RIIO-2 targets.

Electricity Distribution, Customer Interruptions (number per 100 customers) and Customer Minutes Lost (minutes per interruption)



Gas Distribution Unplanned Interruptions Average Duration (hours)

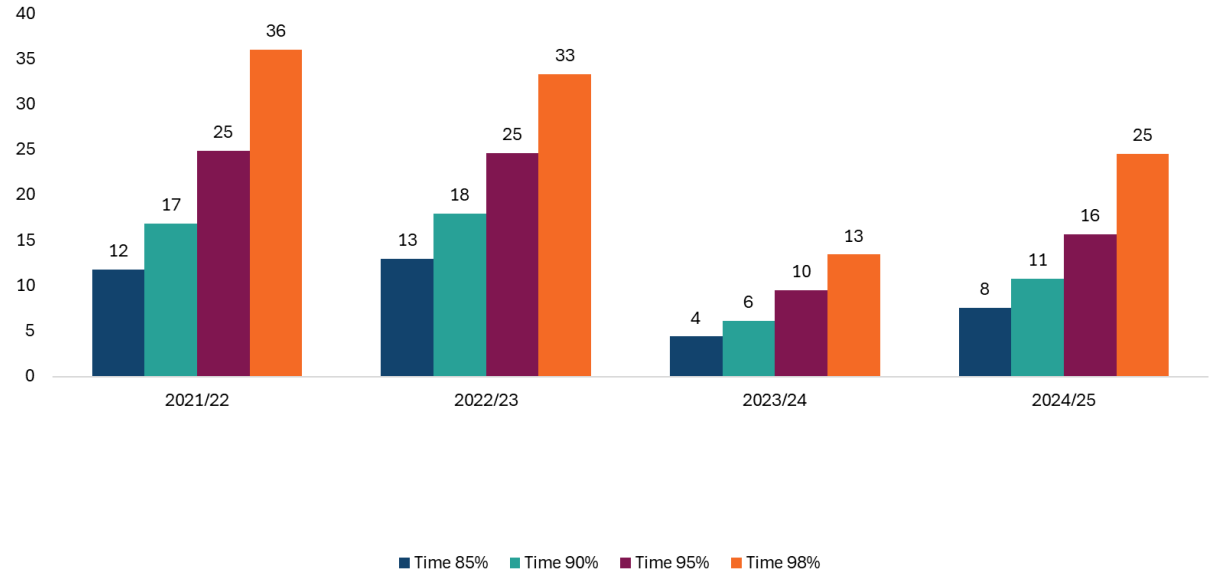


Source: Ofgem analysis of company reports: RIIO-2 Electricity Distribution: annual report 2024 to 2025 | Ofgem and RIIO-2 Gas Distribution: annual report 2024 to 2025 | Ofgem.
Note: Data excludes Cadent London due to comparability issues. RIIO-1 targets not included as not based on average duration.

[6] Capacity constraints can occur for reasons aside from asset failure; however, these instances are very rare and limited to specific system entry point.

Storm performance provides an additional indicator of how distribution networks respond under extreme conditions. It reflects how quickly DNOs restore power following severe weather events. The **time taken by all DNOs to restore power following severe weather events has generally reduced since Storm Arwen in 2021**. In 2021/22, 98% of customers were restored in around 36 hours, compared to under 20 hours by 2023/24. While 2024/25 shows a slight increase for the final milestone, restoration time remains lower than in earlier years. However, like-for-like comparisons across events should be treated with caution. Each extreme weather event brings unique challenges, making comparisons across storms or over time difficult.

DNO storm performance: Annual Change in Time to Restore Milestones of Customers (hrs)



Source: Ofgem analysis of company reporting

Asset resilience

As part of our network regulation function, Ofgem agrees the allowance that companies need to maintain the resilience of their physical assets. We then monitor whether they are spending this money effectively, to ensure that they can provide safe, secure, reliable and efficient services to consumers. Our primary tool for assessing this is the Network Asset Risk Metric (**NARM**), which quantifies the level of risk from each network asset. This metric combines the probability of asset failure and the consequence of failure to produce a monetised risk value. This enables companies to make efficient decisions about whether to refurbish or replace assets at risk of failure. Under the RIIO framework, we set targets for the network companies around the aggregate level of risk reduction they must achieve over the course of the price control.

Financial resilience

The network regulatory framework includes a robust set of licence-based safeguards that help protect consumers from the risks associated with financial distress in network companies. These measures include requirements for companies to maintain investment-grade credit ratings, annual board certifications confirming the availability of financial resources, and enhanced transparency through Regulatory Financial Performance Reporting (**RFPR**) alongside oversight of group-level financing structures. Together these measures ensure that companies have sufficient financial safeguards or headroom so that they can avoid and/or manage the risk of financial distress or failure if there is a downside shock.

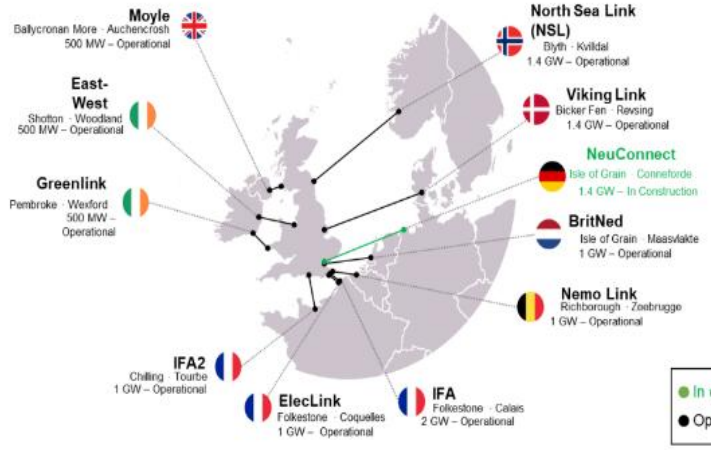
Building on this foundation, Ofgem's RIIO-3 Final Determinations introduced a suite of enhancements to further strengthen financial resilience. These include mandating more than one investment-grade credit rating, introducing a dividend lock-up mechanism triggered by high gearing or credit rating downgrades, and extending board certifications to cover the full price control period for a minimum of three years. These measures aim to reinforce the financial robustness of network companies and maintain confidence in their ability to deliver essential services.

In addition, Ofgem launched a review of the regulatory ringfence arrangements for energy networks to ensure these protections remain fit for purpose in a changing financial and operational landscape, supporting the long-term resilience and safeguarding consumer interests.

Interconnectors

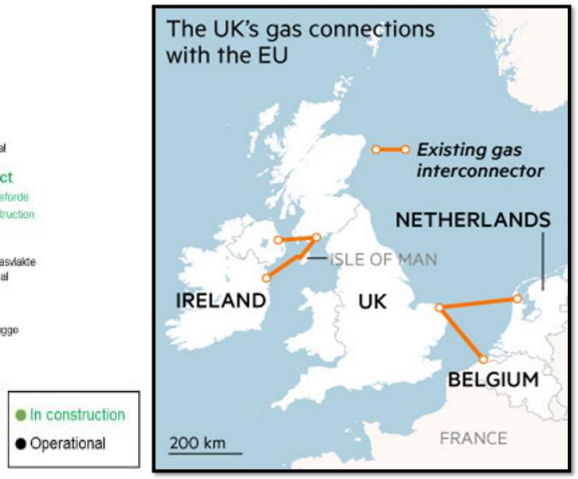
Interconnectors provide essential flexibility and resilience for an energy system. Gas interconnectors are large pipelines, mainly undersea, that transport gas between countries. Electricity interconnectors are transmission cables that transfer electricity across borders. These interconnectors help balance supply and demand.

Map of operational and in-construction electricity interconnectors to GB



Source: Clean flexibility roadmap - GOV.UK

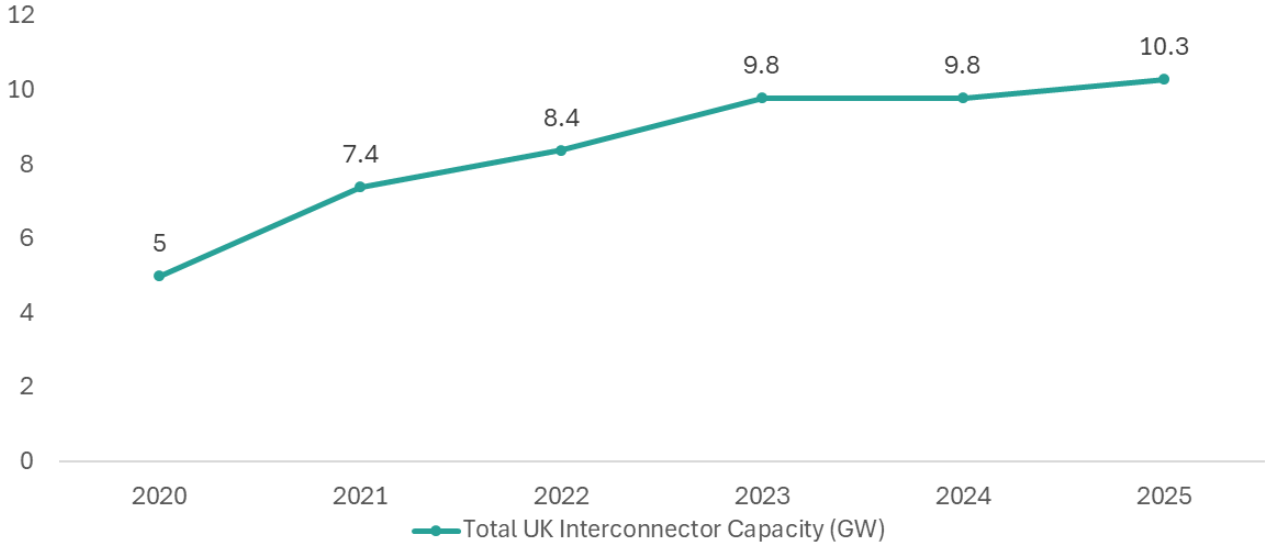
Map of operational gas interconnectors to GB



Source: UK plans to cut pipelines to EU if Russia gas crisis intensifies

Electricity interconnectors provide essential flexibility and resilience for an electricity system that is increasingly reliant on renewables. By linking GB to the European grid, interconnectors help balance supply and demand by importing or exporting electricity based on market signals. Ofgem operates a 'cap and floor' regime to facilitate investment in new electricity interconnectors, providing a guaranteed level of revenue while also capping any excess profits. Following the most recent application window, Ofgem approved investment in three new electricity interconnectors in December 2024, with a combined capacity of 2.85GW. **Another 4.05GW of capacity from previous windows is in the process of development, to add to the current total interconnector capacity of 10.3GW.** However, actual available interconnector capacity is typically lower than total installed capacity due to planned and unplanned outages and other operational constraints.

Total UK Electricity Interconnector Capacity (GW)

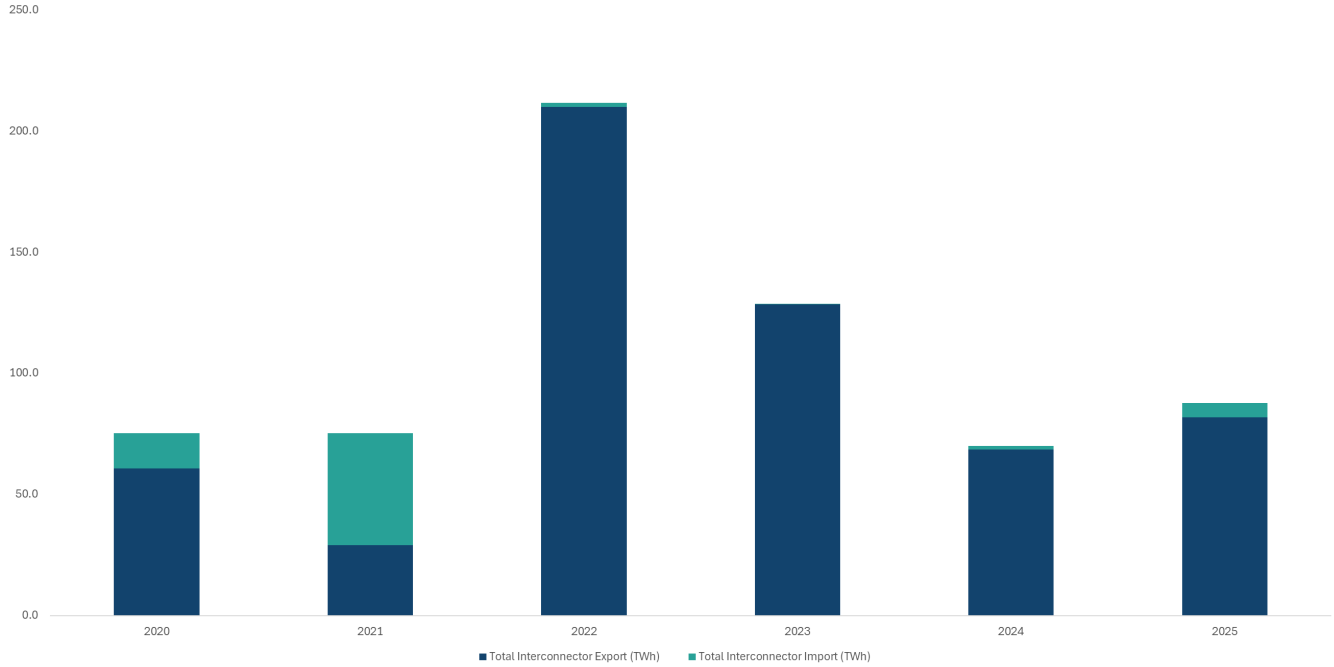


Source: Ofgem analysis using publicly available documents from National Grid, NESO, Ofgem, EirGrid, and written evidence submitted to house of lords.

Gas interconnectors provide flexibility, resilience, and security of supply, ensuring our gas network can meet demand. They operate at the behest of market signals and flow according to price spreads. During summer, gas interconnectors typically export gas from GB to Europe to help fill European storage and then import gas during winter when GB is more dependent on gas imports. Gas interconnectors are important in supporting both GB and Europe during periods of stress or extreme events. There are two bi-directional gas interconnectors connecting GB to Belgium and Netherlands which have a total capacity of 95mcm/d (equivalent to 1.03TWh/d).[7]

[7] There is a uni-directional interconnector from Great Britain to Northern Ireland, the Republic of Ireland, and the Isle of Man.

Total Bi-directional Gas Interconnector Flows (TWH)

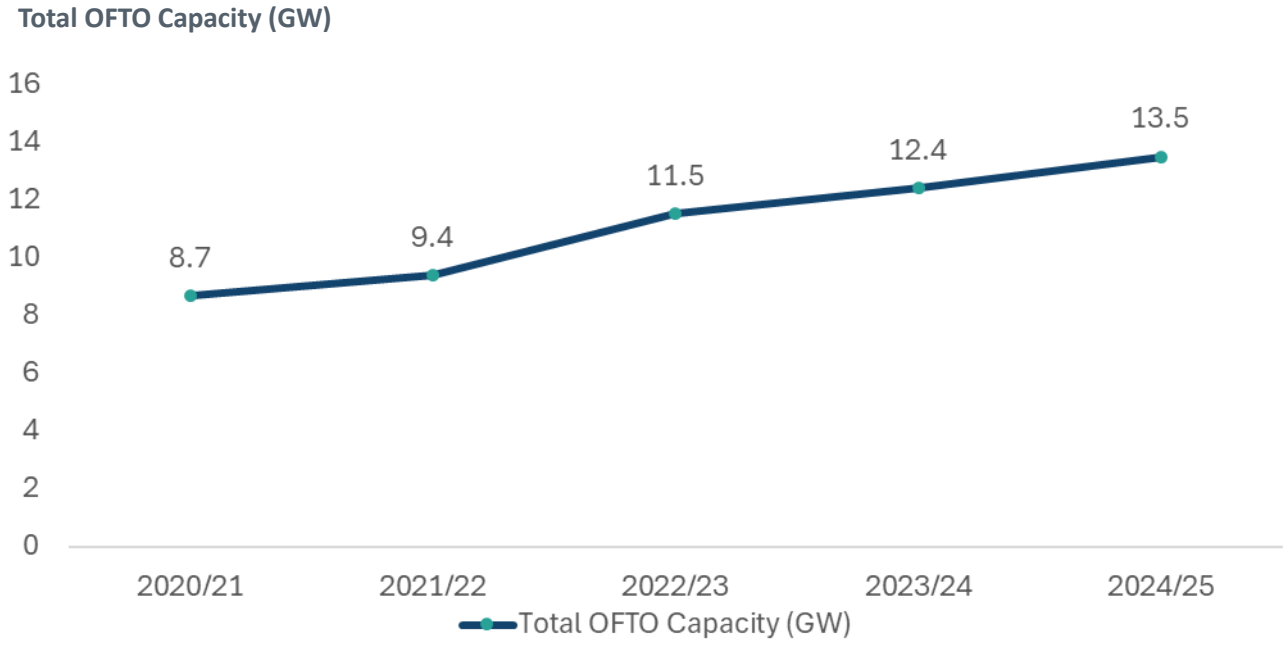


Source: National Gas Transmission Data Portal

Offshore transmission

Offshore electricity transmission systems connect offshore windfarms to the onshore transmission network. Offshore wind power plays a major role in supporting a low-cost transition and enhancing energy security. **As of 2024/25, the offshore network consists of 28 Offshore Transmission Owners (OFTOs), totalling 13.5GW of generating capacity.** This is an increase from 8.7GW in 2020/21, and it is expected to grow in the coming years. The annual system availability of offshore networks for 2024/25 was 98.20%.[8]

[8] National Electricity Transmission System Performance Report, 2024-25



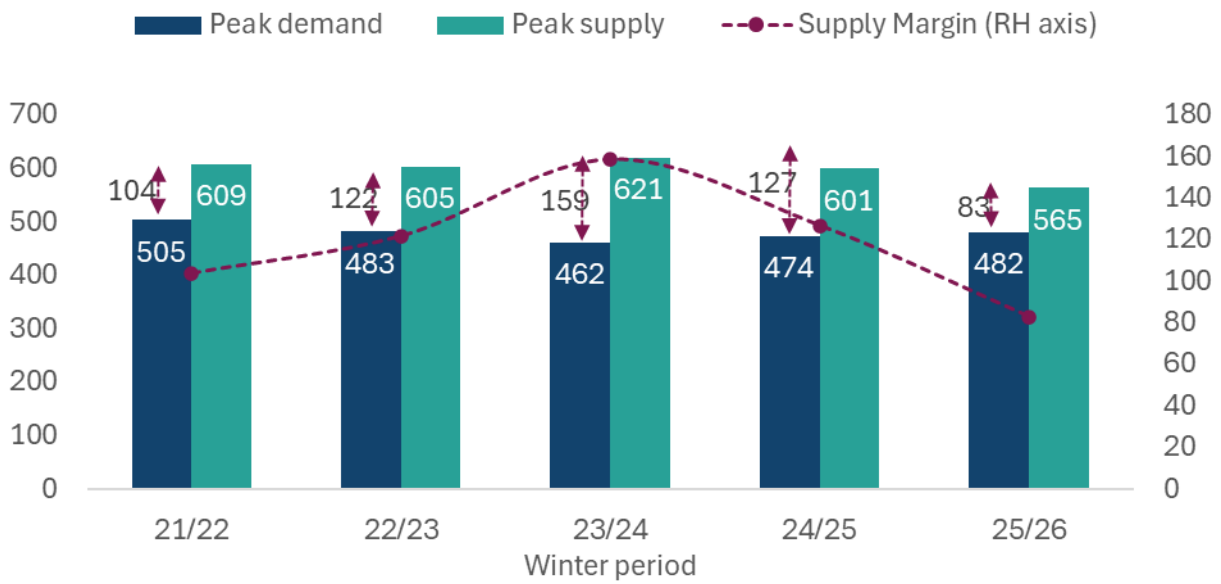
Source: National Electricity Transmission System Performance Report 2024-2025.pdf

Balancing supply and demand

Gas

Gas demand is highly seasonal, with winter consumption often more than twice that of summer. Historically, the UK has managed this variability primarily through flexible import routes rather than through long-term storage. National Gas Transmission is responsible for ensuring gas supply security, meaning it must guarantee that the system is capable of delivering enough gas to meet demand on the coldest day expected once every 20 years (the "1 in 20" condition). Prior to each winter, National Gas Transmission must publish a forecast showing the peak supply it can make available, compared to the 1 in 20 demand level. **National Gas Transmission has consistently confirmed that the 'intact' gas system can meet the "1 in 20" condition by a substantial margin**. However, this margin has reduced over the past 2 winters, primarily due to the reduction in United Kingdom Continental Shelf production, and this, combined with commercially-driven closures of some underground storage and pipeline import capacity reductions, is expected to tighten the margin further over time.

Peak Day Gas Demand and Supply (mcm/d)



Source: National Gas, Winter Outlook reports 2021-25

Electricity

The difficulty of storing electricity at scale makes system balancing much more complicated than in gas. NESO has the responsibilty of matching supply and demand, and keeping the network at the required frequency, on a second by second basis. Prior to each winter, NESO assesses the available supply capacity in their Winter Outlook to determine the expected margin of safety above the peak demand forecasts (the **derated margin**[9]) as well as the Loss of Load Expectation (**LoLE**), which reflects the statistically expected number of hours per year under all scenarios in which NESO will need to take additional actions to ensure that supply meets demand.[10] LoLE is set by DESNZ within the GB Reliability Standard at 3 hours per year, but the actual figure has been consistently kept significantly lower than this.

NESO matches supply and demand by means of the Balancing Mechanism (**BM**). Through the BM, generators and large consumers bid the price at which they're willing to vary their supply or demand on a half-hourly basis, and NESO then selects the most efficient combination of options to maintain system security. The change in the energy mix, including the retirement of coal generation and the rise in intermittent[11] generation sources

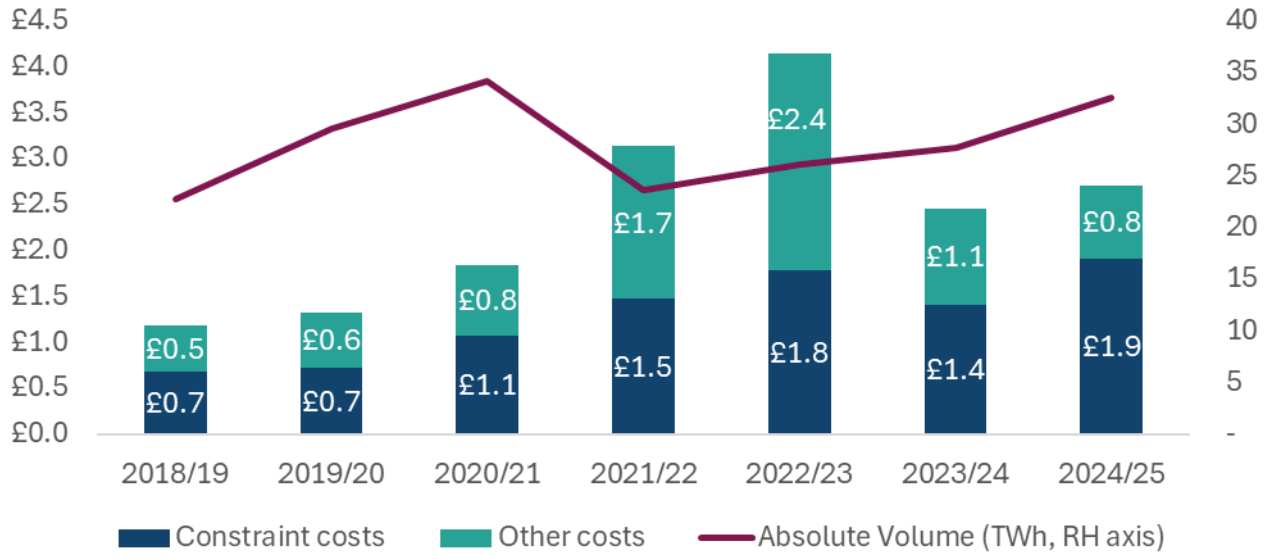
[9] The derated margin reflects the sum of de-rated supply sources considered available during the time of peak demand plus support from interconnection, minus the expected demand at that time and basic reserve requirement. Derated outputs are those expected to be reliably available based on the technology type, historical reliability and other factors such as weather dependency.

[10] It should be noted that the LoLE figure does not reflect an expectation that supplies will be limited for this length of time; and actions taken by NESO can normally be managed operationally without consumer impact.

[11] **Intermittent generation** refers to electricity generation from sources that are not continuously available due to natural variability. This typically includes renewable energy sources like wind and solar, which depend on weather conditions and daylight hours. Unlike intermittent sources, firm generation is not dependent on weather or time of day**. Firm generation** is consistently available and can be relied upon to meet demand at any given time. It includes technologies such as gas, nuclear, and biomass.

like wind and solar, has led to increased system management actions by NESO to keep supply and demand in balance when generation and demand is more variable. In addition, higher peaks in generation and increased distance between generation locations (e.g. offshore) and sources of demand are straining grid capacity, leading to bottlenecks as transmission network expansion has been outpaced by new generation build. The constraint costs that result from the volume of actions needed to manage these imbalances are making up an increasingly large share of the overall BM costs.

Balancing Mechanism Costs (£bn) versus Volumes (TWh)



Source: NESO

Looking ahead on system resilience

We are working on strengthening system resilience. At present, there are no specific metrics or indicators of wider system resilience, which includes, but is not limited to generation, supply, and networks. DESNZ has recently announced the development of a new Energy System Resilience Strategy, aimed at strengthening prevention and preparedness for exceptional events and reducing the likelihood and impact of disruption. Ofgem is actively contributing to this work through the Energy Resilience Leadership Group (**ERLG**) and the newly established Ministerial Taskforce. As this strategy progresses, new frameworks and metrics may be introduced to monitor wider system resilience.

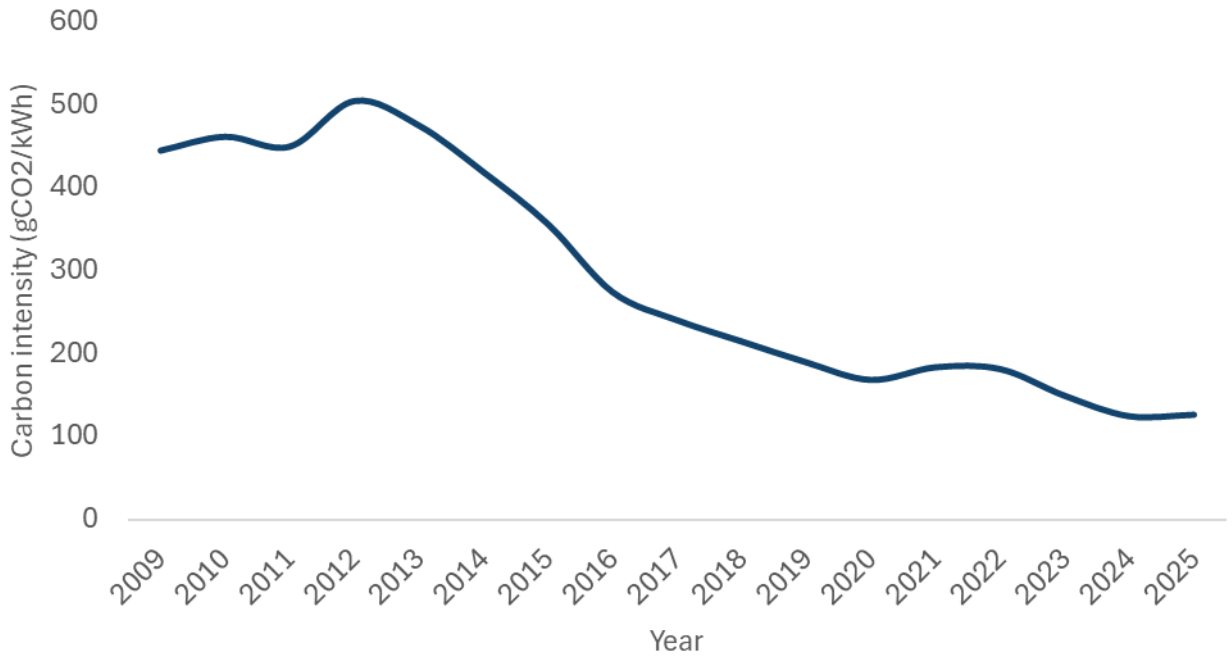
Strengthening system resilience is also linked to enabling digitalisation of the system to enable efficient coordination and optimisation. Ofgem is developing the policies and regulations needed to deliver this by improving data access and standards, ensuring different systems can work together, strengthening trust and security in data sharing, and boosting digital skills across the sector. Building on the 2021 Energy Digitalisation Strategy from DESNZ, IUK and Ofgem, as well as the findings from the Energy Data Taskforce and the Energy Digitalisation Taskforce, Ofgem and DESNZ are working together to design the policies and rules needed to meet these challenges.

Low-Cost Transition

Reducing carbon emissions from transmission and distribution networks is essential for delivering a cost-effective energy transition. Decarbonising these critical systems lowers environmental impact, enhances network efficiency, and supports a cleaner, more resilient energy system. By prioritising low-emission solutions, we ensure progress remains aligned with CP2030.

Replacing coal with renewables has reduced the UK's electricity-related carbon emissions by around 60% over the past 15 years. While CP2030 allows up to 5% of electricity consumption to come from gas power stations without carbon capture, setting a 2030 grid intensity target below 50gCO_2/kWh, meeting this still poses a major challenge given the scale of change required.

Average Carbon Intensity of Electricity by year (gCO2/kWh)



Source: NESO

Infrastructure planning

To move towards a smart, flexible, low-cost, and low-carbon energy system, expanding the electricity grid is essential. Delivering the scale of change required for the energy transition has demanded changes in infrastructure planning. Instead of each network company producing its own plan, NESO now leads a single, strategic planning process for GB to optimise infrastructure delivery and accelerate investment. Three interlinked planning frameworks are being developed:

- **Strategic Spatial Energy Plan** (**SSEP**): Sets out a 25-year pathway for deploying generation and storage, identifying optimal locations and timings to maximise efficiency and support Net Zero. NESO published the approved SSEP methodology in May 2025, with the first plan due in 2027.
- **Centralised Strategic Network Plan** (**CSNP**): Determines transmission investments needed to support the assets identified in the SSEP. NESO consulted on its CSNP methodology in summer 2025, with the first plan due in 2028. A transitional CSNP has been in place since 2022 to provide early certainty on

key transmission requirements, with a second one due in mid-2026 to provide further clarity for transmission network build required in the mid-2030s.

- **Regional Energy Strategic Plans** (**RESPs**): Identify local energy needs through detailed modelling and stakeholder engagement. These feed into the SSEP and guide distribution infrastructure planning. Ofgem published the RESP policy framework in April 2025, with the first plan due in 2028. NESO is now developing transitional RESPs for publication in 2026, to inform the next electricity distribution price control.

Transmission infrastructure

ASTI

In 2022, Ofgem introduced the Accelerated Strategic Transmission Investment (**ASTI**) framework to streamline the regulatory assessment process for critical transmission projects identified by the transitional CSNP as being required to allow 50GW of offshore generation to connect by 2030. The framework aims to minimise upfront delays through early confirmation of need and access to initial funding to secure the supply chain sooner, while also setting incentives that reward or penalise TOs based on whether the project is delivered on time or late. **An initial list of 26 projects were identified**, including those necessary for easing capacity constraints between Scotland and England. As of December 2025, Ofgem has commenced reviews on enabling funding for all 26 ASTI projects. All submissions for pre-construction or early construction funding from this financial year have been either approved or are currently being consulted on with decisions expected in early 2026. **Three projects have already completed formal project assessment, and three more projects are currently undergoing project assessment**. We are also working closely with DESNZ and the TOs to help accelerate projects where possible.

APM

In 2025, Ofgem introduced the Advanced Procurement Mechanism (**APM**) to mitigate current and future supply chain constraints which might otherwise delay project delivery or increase project costs, supporting the clean energy by 2030 target**.** The mechanism provides the TOs with up to 20% of procurement costs to place early commitments with the supply chain, without needing to have achieved a confirmed needs case or cost assessment for the project. This mechanism was introduced as Ofgem considered that a material risk of consumer detriment exists if the TOs are unable to deliver planned network build out due to supply chain constraints that result in extended lead times for critical components.

Low carbon technologies

Achieving CP2030 will also require a large expansion of low-carbon technologies. In electricity generation, this includes low-carbon gas, nuclear power, carbon capture and storage, and long-duration storage. On the demand side, technologies that electrify heating and transport or enable more flexible consumption will play a major role.

Nuclear

Background: Nuclear will be an important part of GB's future energy mix, since it provides firm low carbon generation to complement intermittent renewables. As 4 out of the 5 operating nuclear plants are scheduled for closure by 2030, new build will first replace existing capacity and then expand it further. Hinkley Point C will be the UK's first new reactor since 1995 and is currently expected to commence generation in 2030.

New developments: In July 2025, DESNZ confirmed the Final Investment Decision for Sizewell C. This is the first nuclear power station funded through the Regulated Asset Base model, regulated by Ofgem, which uses both public investment and private capital. In June 2025, government selected Rolls Royce as the preferred bidder to develop and construct the first Small Modular Reactors (**SMRs**), which aim to reduce costs and accelerate construction times by using a factory-built, modular approach. Great British Energy - Nuclear confirmed in November 2025 that the first 3 SMRs, which are intended to be connected to the grid by the mid-2030s, will be located at Wylfa on Anglesey.

Carbon Capture Usage & Storage (CCUS)

Background: CCUS is a technology that captures the carbon emitted in gas-fired power stations and other industrial processes and stores it beneath the seabed, preventing it from reaching the atmosphere. This enables gas to continue providing flexible generation and provides a means of decarbonising certain energy-intensive industries. However, to realise this potential, the cost of capturing carbon must come down, and the infrastructure to transport and store the captured carbon must be put in place.

New developments: The Government has identified two industrial clusters, on Teesside (**ECC**) and Merseyside (**HyNet**), for the initial deployment of CCUS in the UK, and in October 2024 it committed £21.7bn over 25 years to support these. The Transport and Storage Networks in both locations reached Financial Close in 2024-25. Ofgem is the economic regulator of these networks. In June 2025, the Government allocated a further £9.4bn in funding for CCUS, covering the build out of the first two clusters and development funding for two further clusters.

Long Duration Electricity Storage (LDES)

Background: LDES refers to electricity storage technologies capable of providing power output for over 8 hours, allowing renewable generation to be stored up for periods of peak demand. As such, it is an essential element of the CP2030 roadmap, which estimates that the UK's installed capacity will need to increase from 3GW to 5 -8 GW. The UK's existing capacity is almost entirely made up of pumped hydro, but new LDES technologies are being developed, including new batteries, compressed air, and liquefied air alongside use of existing Li-Ion battery technology in new configurations.

New developments: In October 2024, DESNZ launched a cap and floor scheme to support the development of LDES, guaranteeing a minimum revenue to producers, while also capping any excess profits. Ofgem opened its first application window for the LDES cap and floor regime in April 2025, with the aim of securing sufficient capacity for CP2030. Ofgem aims to confirm the final list of qualifying projects in Summer 2026.

Battery Storage

Background: In this context, Battery Storage refers specifically to shorter-term storage systems that do not meet the LDES criteria. These help both with helping to balance supply and demand and with maintaining grid frequency levels. The rapidly falling costs of batteries means that capacity is increasing rapidly without the need for subsidies. Grid battery storage has grown from 0.1GW in 2017, to 6.8GW in 2025, and the CP2030 plan calls for 23-27GW by 2030.

New developments: The primary obstacle to achieving the CP2030 target is the length of the connections queue discussed previously. The total capacity of battery storage applications in the queue in theory exceeds the 2030 target, but the current review will identify and prioritise those applications that are genuinely viable and ready to connect.

NESO are also undertaking work which aims to address the issue of 'skip rates'[12] in the Balancing Mechanism. This comes from industry concerns that NESO frequently skips over batteries even when they would provide a cheaper method of balancing the system. NESO has identified a set of improvements aimed at addressing skips in the Balancing Mechanism and have been tasked by Ofgem to deliver these improvements to substantially reduce skip rates and ensure there is parity across all technology types.[13]

Hydrogen

Background: Hydrogen contributes to decarbonisation by providing a clean fuel for industries that are difficult to electrify, such as steel, chemicals and heavy transport. Low-carbon hydrogen can be produced either via electrolysis using renewable electricity (green hydrogen) or from natural gas with CCUS (blue hydrogen), meaning that the development of CCUS is essential to the delivery of hydrogen CP2030 goals. In addition to production, facilities for storing and transporting hydrogen must also be developed. The Government is funding hydrogen production through the Hydrogen Production Business Model, with projects selected through successive Hydrogen Allocation Rounds (**HAR**).

New developments: A shortlist of projects for the second HAR was published in April 2025. Ofgem is advising DESNZ on the development of the Regulated Asset base model for hydrogen transport, the hydrogen market framework and licensing, and in March 2025 approved £71m in funding for GDN engineering design studies on developing hydrogen networks in North-East England.

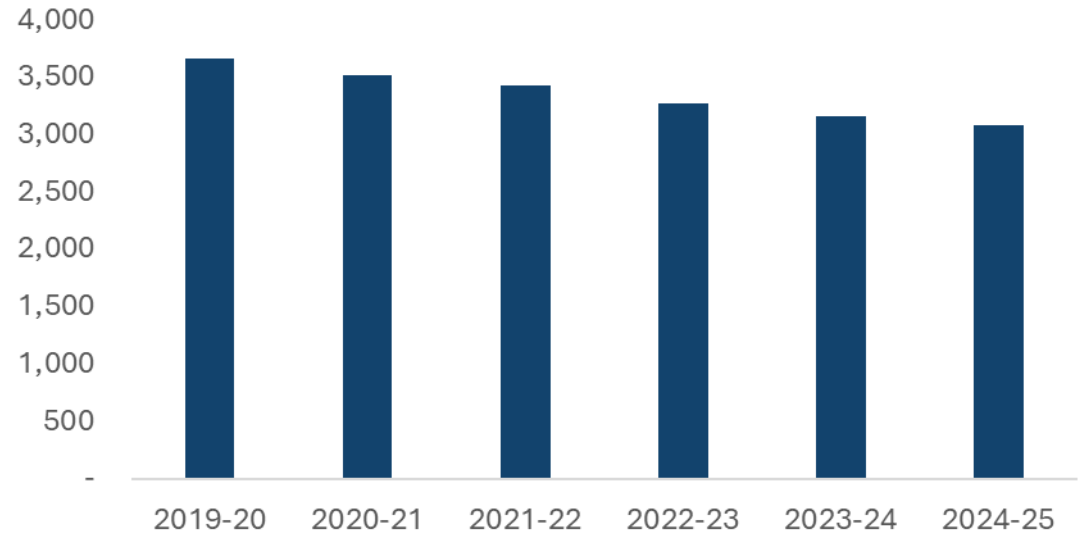
[12] A 'skip' occurs when NESO uses a more expensive unit to balance the system, therefore 'skipping' over a cheaper action in the merit order. Skip rate is therefore the frequency of the occurrence of skips.
[13] Business Plan 3 Final Determinations – National Energy System Operator

Environmental impact of networks

Gas

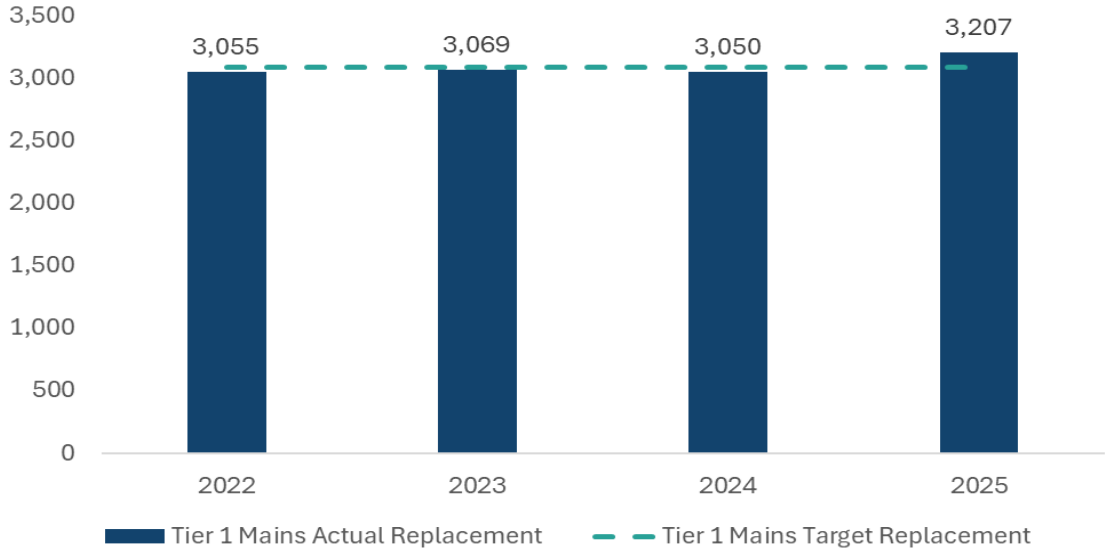
Almost all of GD's environmental impact comes from methane leakage during transport. Although the overall shrinkage level is less than 1% of the total gas transported, reducing educing it is important because methane is a potent greenhouse gas. This is mainly achieved by replacing old metal pipes with plastic ones, and we fund the GDNs to replace around 3,000 km of pipes each year. As a result, **shrinkage emissions have fallen by 16% over the past five years.**

Gas Distribution: GDN Shrinkage Emissions (000s, tCO2e[14])



Source: Ofgem analysis of company reports: RIIO-2 Gas Distribution: annual report 2024 to 2025 | Ofgem

Gas Distribution: Tier 1 Mains Replacement Volumes (KM)



[14] tCO_2e stands for "tonnes of carbon dioxide equivalent." It is a standard unit used to measure the climate impact of different greenhouse gases.

Source: Ofgem analysis of company reports: RIIO-2 Gas Distribution: annual report 2024 to 2025 | Ofgem.

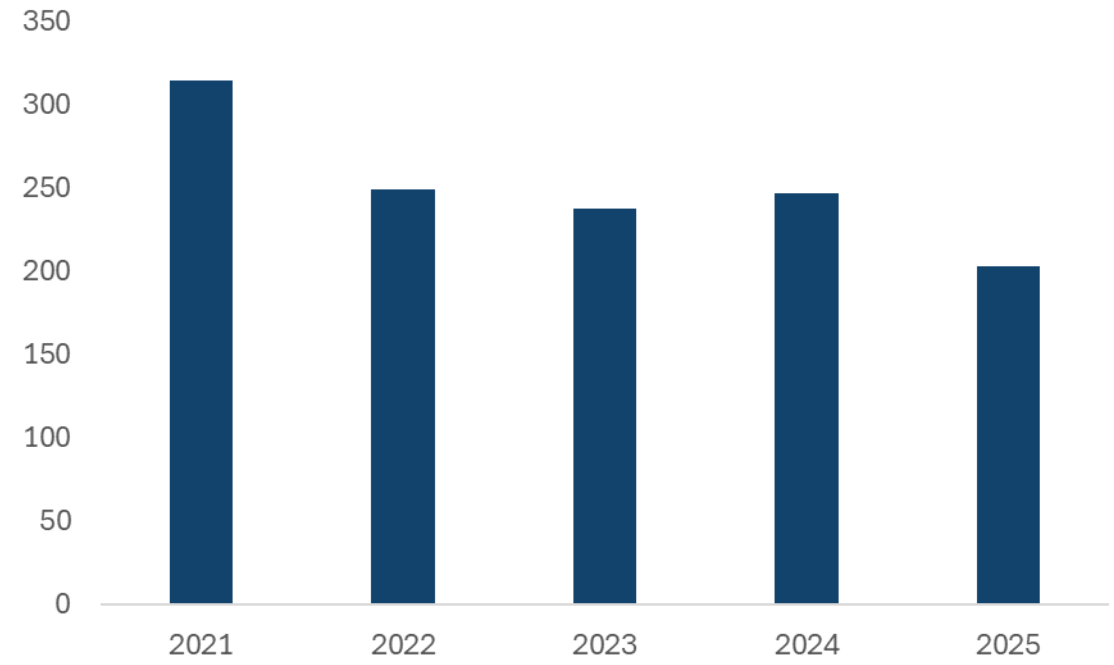
In GT, methane emissions come from compression stations.[15] Since the start of RIIO-1, National Gas Transmission have been incentivised to reduce the volume of methane emissions through operational decision making. This has been largely successful, with performance exceeding the target for each of the last 5 years. The Greenhouse Gas Compressor Emissions incentive will continue into RIIO-3, with the addition of Greenhouse Gas Pipeline Emissions and Greenhouse Gas Fugitive Emissions incentives expected to further reduce National Gas Transmission's environmental impact.

Electricity

Insulation and Interruption Gases (**IIG**) are gases with a global warming potential greater than zero, used within high-voltage equipment either as an insulator to prevent electrical discharge or as an interruption aid to stop current flow during planned or unplanned switching. **Over the 2020-21 to 2024-25 period, TOs have generally reduced IIG emissions relative to their targets. Although emissions increased in some individual years, the overall trend since 2021 shows a net reduction**.

The most common IIG is Sulphur Hexafluoride (**SF_6**), widely used in high-voltage switchgear due to its excellent insulating properties. However, SF_6 is an extremely potent greenhouse gas, and reducing SF_6 leakage is critical to achieving Net Zero targets. **Since 2021, SF_6 leakage emissions have declined from 314,712 tCO_2e to 203,058 tCO_2e in 2025, although there was a slight uptick in 2024.**

SF_6 Shrinkage Emissions (000s, tCO2e)



Source: Ofgem analysis of network company reporting submission data

[15] GT assets are designed to release gas during their commissioning, operation, maintenance, and decommissioning lifecycle phases. Gas leakage also occurs through compressor shaft seals during compressor operation or pressurised standby.