ESB NETWORKS

DISTRIBUTION ANNUAL PERFORMANCE REPORT 2023

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Foreword

Welcome to ESB Networks' 2023 Distribution Annual Performance Report. The purpose of this report is to detail ESB Networks' progress and performance during 2023, delivering on the third year of plans approved by the Commission for Regulation of Utilities (CRU) under Price Review 5 (PR5). The CRU provided feedback on the 2022 Distribution Annual Performance Report and requested the inclusion of further information on climate resilience, network electricity losses, generation connections at the Distribution level and how increased demand for connections is being managed. We have included further information on these areas in this report.

At ESB Networks, we are delivering the electricity network for Ireland's clean electric future. This means developing, operating, and maintaining a network that supports the secure and affordable distribution of sustainable low-carbon electricity.

2023 has been a key year for ESB Networks with the launch of our ambitious 'Networks for Net Zero' Strategy. ESB Networks will continue to play a leading role in delivering the Government's Climate Action Plan. Our 'Networks for Net Zero' Strategy commits us to deliver on our part to achieve the targets set out for 2025 and 2030. We are developing the distribution network and supporting systems to meet the changing needs of our customers as we enable decarbonisation of the Irish economy and society. Our strategy is structured around three strategic objectives: Decarbonised Electricity, Empowered Customers, and Resilient Infrastructure.

Beyond 2030, our Strategy commits ESB Networks to continue investing to deliver a net zero ready distribution network by 2040 that will enable Ireland's achievement of net zero no later than 2050. We are pushing ahead with the transformation of the electricity system, through the connection of renewables, smart meters, flexibility, digitisation, and the refinement of our processes to improve our customer's experiences. We continue to make significant investments to accommodate increases in demand associated with population growth, new housing developments and the electrification of heat, transport and industry. All of this is being completed while ensuring we have a resilient network which our customers can rely on.

The last number of years have been turbulent both nationally and internationally, which is having knock-on impacts on the availability of and timeline for materials and resources. We have been taking appropriate measures to ensure that we can maintain the network, and design and build out to meet our targets for 2030 and beyond. The PR5 Regulatory Contract sets out challenging targets for network continuity that seek to improve the reliability of the network each year from 2021 to 2025. ESB Networks is committed to enhancing the reliability and efficiency of our networks. We continue to roll out measures to improve the continuity of the network, such as targeted network automation, prioritised investments and ongoing vegetation management. We are confident that these efforts will see an improved service for customers in the years ahead.

Following connection of the first grid-scale solar in 2022, we continued to grow grid-scale solar connections in 2023. We expect there to be strong growth in this area over the coming years. We are also continuing to see increasing levels of micro and mini generation, in addition to grid-scale battery growth on the system, all of which are helping us towards our target of 80% in 2030.

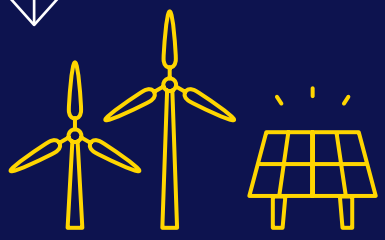
This is very positive; however, we need society-wide transformation including in transport, heating, and industry, as well as more renewables, to ensure we meet the CAP targets. The next years will be critical to ensure we are well placed come the end of the decade to meet our ambition. Progress can only be achieved through continued collaboration with our customers, stakeholders, and business partners so that we can deliver a clean electric future together. We at ESB Networks are committed to playing our role.

I hope you find the information in this report, which summarises ESB Networks' performance in 2023, both informative and useful.

Nicholas Tarrant

Nicholas Tarrant
Managing Director
ESB Networks

2023 Highlights



Renewable Generation
414 MW of utility-scale wind and solar added in 2023 (Transmission and Distribution). Total **5.793 GW** of renewables connected

Capital Investment
€477.6m invested in distribution capital programmes in 2023

New Connections
40,928 total new connections, including **35,546** domestic and **5,382** commercial

Smart Metering
464,957 additional smart meters installed. (Total installed at end of 2023 **1,567,955**)

PowerCheck
had over **2.6m** unique visitors

Customer Online Account
100,000 registrations, new services launched and **150,000** downloads of smart metering data

Beat the Peak
18,500 customers participated in the pilot

Microgeneration
33,000 applications were processed in 2023 (an increase of **92%** from 2022)

Environment
10.2% reduction in carbon footprint from our buildings

Executive Summary

ESB Networks is at the forefront of Ireland's energy transformation, striving towards a sustainable future through a low carbon electricity system. We are supporting Ireland's target of 80% of our electricity being sourced from renewable energy in 2030. This ambitious goal aligns with our commitment to the electrification of various sectors, including heat and transport, fostering the adoption of eco-friendly technologies like heat pumps and electric vehicles. Our continued enablement of mini, micro and small scale generation as well as the connection of grid scale renewables, is making a significant impact on the volume of renewable generation being produced. We will continue to support Irish homes, communities, and businesses as they transition to low carbon technologies, as Ireland strives for a net zero future.

An investment of €477.6 million capital expenditure was made in 2023 (up from €349.2 million in 2022), on the development and renewal of the distribution network. This underscores our dedication to infrastructure enhancement and service reliability. There was a further €389.7 million of operating expenditure on distribution operation and maintenance activities in 2023.

We connected 414 MW of wind and solar power in 2023. This contributed to the 5.793 GW of renewables now on the electricity network (distribution and transmission), with wind generation alone accounting for 4.814 GW.

Solar continues to grow, with 33,000 microgeneration connection applications received in 2023. This brings the total number of microgeneration connections to 78,400 by the end of 2023, providing approximately 300 MW of renewable generation capacity.

We processed 70 ECP-2.3 applications in 2023. This resulted in 40 connection offers being made from a range of sources (including wind and solar), totalling a potential 376 MW.

The demand for connection to the electricity network continues to increase year-on-year, with 2023 seeing 40,928 new demand connections, including 35,546 connections to domestic premises. This demonstrates our capacity to meet the growing energy needs in Ireland. To meet this demand and improve our customer service, we are digitising our processes, enabling more online engagement with our customers and increasing the number of people we have to carry out connections.

The smart meter programme continues at pace, with 464,957 smart meters installed in 2023. In total, 1,567,955 smart meters have been installed to date.

ESB Networks is committed to enhancing the reliability and efficiency of our networks. The focus of our continuity investment programmes is to minimise the impact of unplanned outages on our customers. We continue to roll out measures to improve the continuity of the network, such as targeted network automation, prioritised investments and ongoing vegetation management. We are confident that these efforts will see an improved service for customers in the years ahead.

Innovation remains at the forefront of our agenda, with 95 new ideas examined and over 90 external collaborations in 2023. This important programme of work will continue into 2024.

As we continue to implement our Public Safety Strategy (2021 – 2025), we reaffirm our core commitment to the safety and well-being of the communities we serve and our people.

In terms of environmental performance, we continue to actively reduce our environmental footprint, with further reductions across our fleet, buildings, and waste material while working to reduce our emissions in other areas such as sulphur hexafluoride (SF6). In 2023, 90.29 kg of SF6 was emitted due to equipment faults, representing 0.04% of the total installed inventory of SF6. This compared favourably to other European utilities. As we replace and repair our older switchgear, we see an overall downward trajectory of SF6 emissions over time.

Contents

ESB Networks DAC is the licensed Distribution System Operator (DSO) in the Republic of Ireland. The Irish distribution electricity system includes all distribution stations, overhead electricity lines, poles and underground cables that are used to bring power to almost 2.5 million domestic, commercial and industrial customers.

2023 Key Statistics

Annual Financial Performance

- Approved DUoS revenues of **€1,037.66m**
- **€477.6m** invested in distribution capital programmes in 2023
- **€389.645m** of distribution operating expenditure

Connecting more Renewable Generation

- **5.793 GW** of renewables connected to date, with **4.814 GW** of this being wind generation
- **414 MW** of utility scale wind and solar connected in 2023
- **33,000** microgeneration connection applications to the electricity network were facilitated in 2023, bringing the total number to **78,400** by the end of 2023
- **500** new mini-generation customers have installed and connected their generators, from a total of **1,780** applications received by the end of 2023
- **240** small scale generation applications with **64** connected by the end of 2023
- **70 ECP-2.3** applications processed during 2023, leading to 40 connection offers totalling 376 MW

New Connections and Growth

- **40,928** total new connections, consisting of:
  - **35,546** new domestic connections (approximately 460 MVA of contracted maximum import capacity (MIC), which results in approximately 170 MVA of additional load on the distribution system (after diversity maximum demand added))[1]
  - **5,382** new commercial connections (approximately 280 MVA of contracted MIC)
  - **6.75%** of the energy that was put into the distribution system was accounted for as losses in 2023 (similar to the 6.74% seen in 2024). We are managing this by undergoing a program to convert our 10 kV network to a 20 kV network and by choosing energy efficient designs when making network investment decisions.

Environment

- Compared to 2022, electricity usage in our buildings was down **5.9%** in 2023. Aided by a decrease in the carbon emission factor of electricity, this resulted in a **10.2%** reduction in the carbon footprint associated with our buildings
- SF6 emissions continue its downward trajectory, as we replace older switchgear. Only **90.3 kg of SF6** was emitted in 2023 due to equipment faults, representing **0.04%** of the total installed inventory

1 *The ADMD can be thought of as the average peak load per customer and is a crucial metric in the design of LV networks here in Ireland and internationally.*

Innovation

- **95** innovation ideas examined in 2023
- **28** projects currently in delivery, with seven new projects initiated and two projects completed in 2023
- **90+** external collaborations in 2023. ESB Networks is actively collaborating or partnering with over 90 organisations across a wide range of industry sectors and research organisations

Safety

- ESB Networks successfully retained its certification to the international ISO 45001 Occupational Health and Safety Management System standard
- Continued to implement our Public Safety Strategy (2021 – 2025), which is anchored in the core purpose of our business and continues to be a core strategic priority and area of focus
- During 2023, we served **141** notifications to stop work to third parties, which is up from 122 in 2022

Smart Metering

- **464,957** additional smart meters were installed in 2023
- **1,567,955** smart meters installed in total by the end of 2023

Customer Engagement

- Continued to expand the services available through our new Customer Online Account, including access to energy consumption data (including smart metering data), submit a meter reading, check MPRN, new connections, and outage information
- We added new services including our 'Time For Reward' programme and a digital application for tree cutting assessment

Distribution System Statistics

- c. **153,000** km of overhead lines
- c. **28,000** km of underground cable
- c. **566 HV** substations
- c. **24,000 MV** ground mounted substations
- c. **251,000 MV** pole mounted transformers
- c. **90.5 MW** of HV transformer capacity added
- c. **2.5 million** customer meters

Distribution network asset replacement and maintenance programmes

- **618 km MV** network converted from 10 to **20 kV**
- Continued delivery of public safety patrolling programmes
- Refurbishment across 125 substations
- Patrolling and refurbishment of MV overhead line network
- **160 MV** ring main units replaced
- **773 LV** minipillars replaced

2023 Performance Summary

Metric	2023 Target	2023 Perfor -mance	2023 Financial Incentive	2022 Perfor -mance	2021 Perfor -mance	2020 Perfor -mance	2019 Perfor -mance
Customer Minutes Lost (CML) – unplanned outages	80.8	105.592	€-10.0m	103.34	95.99	94.9	87.47
Customer Interruptions (CI) – unplanned outages	114.8	126.4	€-5.79m	127.12	1.20	1.26	1.23
Worst Served Customer	>9,000 WSC improved by over 20%	Target criteria exceeded	€6.7m	N/A	N/A	6,000 WSC improved by 20%	N/A
Customer Satisfaction (National Customer Care Centre)	90%	91.69%	€1.41m	83.58%	85.90%	90.53%	91.17%
Customer Satisfaction Survey	82%	80.10%	€-1.50m	81.82%	82.88%	82.16%	80.82%
Smart Metering Delivery	450k -500k	464,957	€0.24m	481,793	382,188 Meters	239,347	15,000 Meters
Smart Metering Functionality	Enduring Microgen	Engaged on consultation, Day/Night meter functionality delivered	€0.20m	Partially completed with some deferred	Completed	N/A	N/A
Smart Metering Customer Satisfaction	>80% Customer Satisfaction	96% net satisfied	€0.36m	95% net satisfied	97%-98% net satisfied	N/A	N/A
Stakeholder Engagement	10	7.6	€0.57m	7.63	7.54	7.2	7.5
Delivering New Connections	Process ECP offers 30 days before batch deadline	Completed	€1.03m	Completed	Completed	Completed	Completed
Outage Information	Balanced Scorecard	90%	€0.9m	100%	81%	N/A	N/A
Flexibility	Balanced Scorecard	90%	€3.00m	98%	100%	N/A	N/A

Metric	2023 Target	2023 Perfor -mance	2023 Financial Incentive	2022 Perfor -mance	2021 Perfor -mance	2020 Perfor -mance	2019 Perfor -mance
Visibility	Balanced Scorecard	84.30%	€2.53m	39%	98%	N/A	N/A
Joint DSO/TSO Coordination	Balanced Scorecard	78.30%	€2.35m	71%	59%	N/A	N/A
Independent Role of the DSO	Balanced Scorecard	56%	€3.12m	85%	82%	N/A	N/A
No. of registered vulnerable customers	N/A	87,202	N/A	70,520	66,936	52,818	48,855
Total number of outages (planned and unplanned)	N/A	44,252	N/A	45,540	42,687	52,682	38,930
New Demand Connections	N/A	40,928	N/A	38,924	29,553	29,024	30,206
Capital Expenditure	Within PR Allowance	477.6m	N/A	€349	€328m	€336m	€267m

1 Customer Service

1. Customer Service

We work hard to deliver a first-class customer experience, developing our customer service channels, touch points and offerings. We are committed to improving on our performance every year to ensure customers' needs are met.

Our Customer Charter is a set of commitments to our customers.

1. We aim to restore supply in less than four hours for 95% of fault outages.
2. We will give you at least two days' notice of an outage for planned work on the network.
3. If your main ESB Networks fuse has failed, we will call out free of charge, within three hours if you call us between 8.30am and 11.00pm, or before 11.30am the next morning if you call after 11.00pm.
4. We will install an electricity meter for you within three working days (for domestic customers, five working days for business customers).
5. We will send you a cost quotation for your new connection if you are building a new house or farm building, setting up a small business or renovating an older property, within seven working days if no site visit is required, or 15 working days if a site visit is required.
6. We will complete your new connection to your new house or premises within two weeks of receiving your 'Safe Electric Completion Certificate' if you apply and pay giving us ten weeks' notice.
7. We will contact you within ten working days if you are concerned about your supply voltage.
8. We will resolve verified voltage concerns within 12 weeks (unless major reinforcement is required).
9. If you request a visit from an ESB Networks' network technician, we will visit at an agreed time, or contact you the day before if we cannot make the agreed appointment.
10. Where we agree that you are entitled to a refund, we will make the refund within five working days.
11. If you use the CRU complaint resolution service, we will honour any financial settlement they direct within ten working days.
12. If we fail to meet a charter commitment, or (for 1 and 2) receive a valid claim, we will send you a cheque within ten working days or pay you an additional €35.

In 2023, 4,223 charter payments were made to our customers, compared to 3,631 in 2022 and 2,068 in 2021. 86% of all charter payments corresponded to the following four categories.

- **Planned supply interruptions (failing to provide the necessary 2 days notice).**
- **Connection quotation (failing to provide quotation within the SLA timeframe).**
- **New connection (failing to connect within the 2-week timeframe).**
- **Payment (failure to pay charter payment within the 10-day timeframe).**

Putting customers at the heart of what we do

Our Networks for Net Zero Strategy that launched in 2023, is focused on leading the transition to a secure, affordable low carbon future. Central to the strategy is the 'Empowered Customers' strategic objective to support customer's transition to net zero. Our customer experience programme is committed to servicing customers with connections to a resilient network and to facilitate customers to adopt low carbon technologies like electric vehicles, solar and heat pumps. Digital is a key enabler of our strategy, helping to streamline customer journeys, grow our suite of self-serve digital offerings and make interactions as simple and as convenient as possible for our customers. Some examples of our key customer initiatives are provided below.

1. **Customer Centricity.** A key objective of the customer experience programme is to embed customer centricity across ESB Networks. We developed a Key Performance Indicator (KPI) dashboard on customer satisfaction, customer operations, complaints, brand and customer touchpoints. This is shared monthly with the relevant teams. We also established a customer improvement programme which is focused on improving our core customer journeys: connections, outage management and voltage services for customers.
2. **New Connections.** Over 30,000 homes and business require a network connection per annum. Our objectives are to deliver a simpler online application process, proactive communication and an enhanced tracking service. In 2023, we continued the journey of digitisation by adding the functionality for customers who applied for their new connection online to access and sign their connection agreement digitally.
3. **Power Outage.** Proactive, accurate power outage information was previously identified as a critical area for improvement. The PowerCheck website is a key tool in this regard, which saw 2,629,662 unique visitors, with 7,600,952 page views in 2023. New features that we added resulted in an increased volume of customers using PowerCheck, which reduced calls to the Customer Contact Centre.

4. **Website.** Our website (esbnetworks.ie) evolved consistently throughout 2023, with improvements made to the user interface design and user experience design. These improvements enhanced key customer journey navigation and the self-serve options through integration of the online account. All 270 pages of our content on esbnetworks.ie have been translated into Irish and tested to ensure linguistic accuracy and cultural relevance.
5. **Customer Online Account.** Our Customer Online Account, which launched in November 2022, brings personalised digital services together to enable customers to access electricity services. The customer portal represents a step change for ESB Networks, as it creates an enduring digital relationship with our customers. We have surpassed 100,000 registrations to date with over 150,000 downloads of smart meter data recorded.
6. **Contact Centre of the Future.** This aligns with our strategy to transition simple tasks from call centre agents to customer self-serve. In 2022, a deep-dive analysis identified improvements to our service with a full-scale programme now underway.

Key Successes During 2023

More information about some of our key successes relating to the Customer Online Account, new connections and outage management is provided below.

Customer Online Account

- In November 2022, we introduced our new Customer Online Account, which is a new digital channel for our customers to self-serve. In 2023 we added new services that customers can access at a time that is convenient to them.
- The initial services offered in the Customer Online Account are to access energy consumption data (including smart metering data), submit a meter reading, check their MPRN, new connections, and outage information. Further services will be added in 2024.
- We have recently added new services including our 'Time For Reward' programme and a digital application for tree cutting assessment. Additional enhancements are being implemented in 2024.
- We have surpassed 100,000 registrations to date with over 150,000 downloads of smart meter data recorded.

New Connections

- In November 2022, we integrated the 'New Connection Online Application Portal' with the new 'Customer Portal' to consolidate ESB Networks' online services in one place with a single login for customers.
- In 2023, we continued the journey of digitisation by adding the functionality for customers who applied for their new connection online to access and sign their connection agreement digitally. We also enabled the functionality whereby non-developer customers could track their application as it progresses through the connections journey.
- New connections, domestic, commercial and development online applications saw 91% customer adoption by the end of 2023, as the move away from paper-based applications continued.
- The volume of overall applications to the new connections department continued to rise in 2023. This increase was largely driven by microgeneration applications, 99% of which were solar. However, despite this significant increase in volume, net headcount in the new connections department has remained the same throughout 2023. This was due to the automation of part of the process relating to microgeneration.

Outage Management

- In 2023, PowerCheck had 2,629,662 unique visitors, with 7,600,952 pageviews.
- Our new digital notification service 'Keep Me Updated' was launched on www.Powercheck.ie in 2023. This allows customers to request ESB Networks to keep them updated (by SMS or email), about a power outage (planned or unplanned) that they are interested in (for example, related to changes to Estimated Restoration Times (ERT) or power restored times). In 2023, 10% of visitors to PowerCheck used the 'Keep Me Updated' service.
- Outage management services are consolidated in PowerCheck ('Check My Power Status' and 'Log a Fault'). In 2023, 22% of visitors selected the 'Check My Power Status' feature and 55,668 customers completed the 'Log a Fault' feature on PowerCheck.
- It is expected that ESB Networks' vision and solution for digital outage notifications will be delivered in 2024.

How customers interact with ESB Networks

National Customer Care Centre

ESB Networks' National Customer Care Centre (NCCC) is an award-winning contact centre with 16 years of accreditation from the Contact Centre Association (CCA). The 24/7 facility is the gateway for 2.5 million electricity customers who can make queries relating to their electricity supply, faults, new connections, emergencies or general questions. Customers contact us across various channels such as phone, email, and social media applications.

The number of customer contacts handled by ESB Networks from 2019 to 2023 is outlined in the chart below. In 2023, 1,399,160 customer contacts were handled, compared to 1,429,448 in 2022.

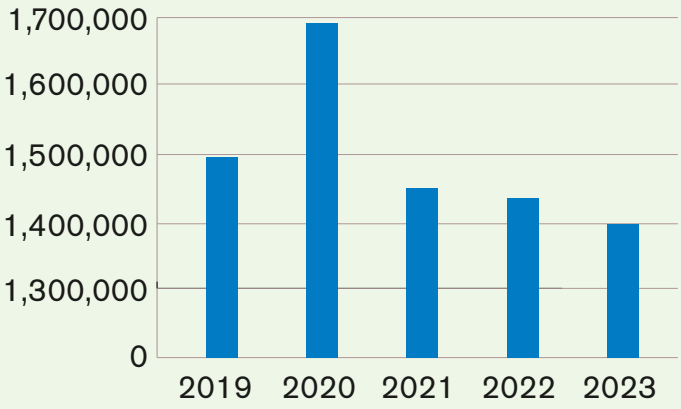
The contact breakdown for 2023 is as follows.

441,198 telephone calls

280,770 emails, meter reading, social media management

677,192 automated responses to customers on no supply, meter reading, fault logging services

Calls and Emails Answered



Performance in the Customer Contact Centre from 2019 to 2023 is provided in the table below. In 2023, we answered 91% of calls within 20 seconds which was a significant increase on recent years. Similarly, the statistic related to the percentage of calls dropped improved in 2023 relative to recent years.

National Customer Care Centre Performance

Call Handling Response	2019	2020	2021	2022	2023
Percentage of calls answered within 20 seconds[1]	90.83%	84.23%	75.44%	73.85%	91.15%
Percentage of calls dropped[2]	2.57%	4.59%	11.13%	11.98%	3.17%
Networks customer calls to the call centre[3]	429,589	451,147	401,730	443,510	441,198

Contact Centre Association standards

ESB Networks' Customer Care Centre continues to be a member of the CCA and we actively engage with members on developing contact centre trends.

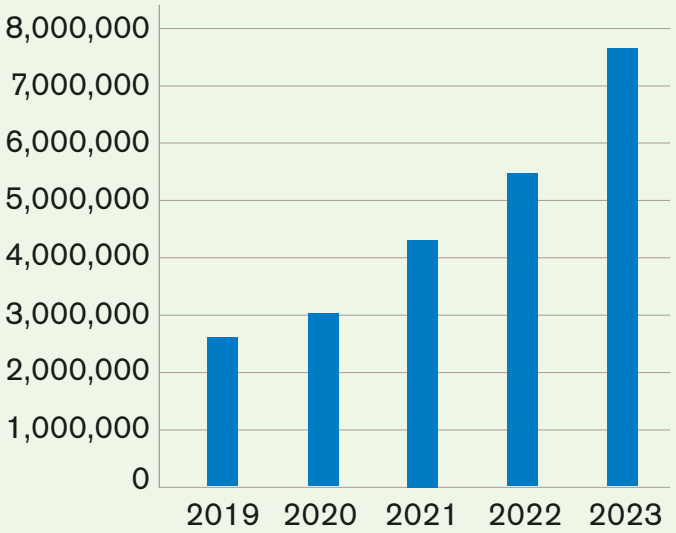
Customer Interactions During Storms

Weather-related outages or damage cause significant disruption to ESB Networks' customers. During such incidents, customers contact ESB Networks via a variety of engagement channels including telephone, Interactive Voice Response, ESB Networks' website, Powercheck.ie, email and social media. This results in varying peaks of activity across the various channels of communication. mainstream media, TV, and radio campaigns are also used to communicate and engage with customers in a timely and proactive manner. We also have a support service with an external partner that provides additional support for no supply/emergency calls, particularly during periods of severe weather and large electricity outages.

1 *Figures are inclusive of storms, which involve much higher call volumes during these events. This results in challenges regarding the call handling and percentage of calls dropped performance metrics.*
2 *Where the customer has terminated the call without waiting for a response.*
3 *Calls relating to ESB Networks excluding Interactive Voice Response.*

PowerCheck provides customers with real-time fault information on all major faults across Ireland. Customers can use PowerCheck to view what faults and fault clusters are known to our team of engineers and to view active planned outages. Engagement with PowerCheck has increased significantly from 2019 to 2023 as shown in the chart below.

PowerCheck Pageviews



Social Media

65,500 Followers on X

57.3m Impressions on X (Organic 29.3m Paid 28m)

43,000 Followers on Facebook

5,528 Followers on Instagram

132.2m Impressions on Meta Shared Platform (Organic 2.2m Paid 130m)

7.6m Page views on PowerCheck

Website and Social Media

We re-launched ESB Networks' website in 2021 with a new design centred on improving customer experience by building a mobile first user interface and improving the key customer journeys throughout the website. In 2023, ESB Networks started a programme of work to further enhance our website to meet both accessibility standards and to further enhance our customer offering for a more efficient self-service experience.

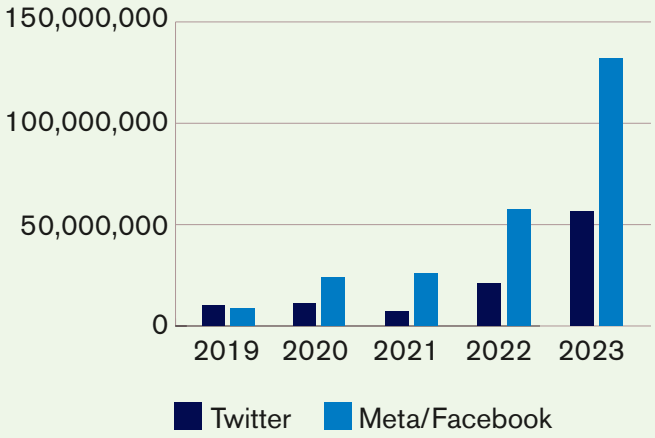
A range of measures were identified to ensure that ESB Networks is compliant with the relevant legislation and that we meet our regulatory requirements. This includes compliance with the Official Languages Act 2003 (as amended in 2021) and transitioning to a 1850 number as per the Commissions for Communications Regulation (ComReg) Decision 18/65 Review of Non-Geographic Numbers. Furthermore, it also ensures compliance with the EU Web Accessibility Directive, where all documents on our website and mobile applications are accessible to everybody, including people with disabilities.

Amongst the provisions of the Official Languages (Amendment) Act 2021, there is a new statutory obligation for public bodies in relation to advertising, general communications and commercial communications which engage with the public. ESB Networks is a 'public body' for the purposes of the Act and, as such, is required to comply with any scheme prepared in accordance with Section 15 of the Act. Our website is seen by our customers as one of the most important touchpoints, in particular the section on outages and Powercheck.ie, which gives real-time information on planned outages, faults, and ERTs.

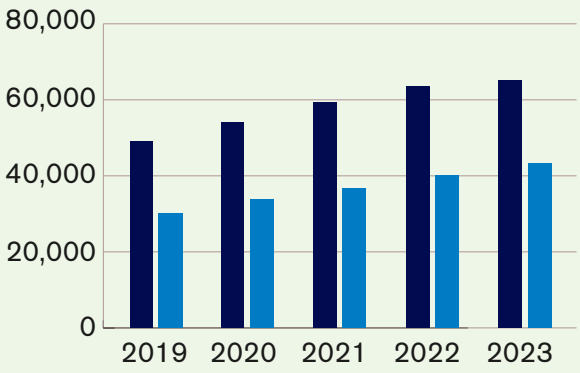
In addition to providing customers with up-to-date information and assurance, the use of social media supports our efforts to provide information to customers via channels other than direct voice contact to the NCCC during fault events. This facilitates our customer service advisors to be more accessible for handling emergency activity during major outage events. Social media channels allow us to provide a source of proactive contact to customers, with advice on storm readiness both in the home and work environments.

The ESB Networks' website and social media platforms are a significant growing touchpoint to our customers, as outlined in the figures below.

Social Media Impressions



Social Media Followers



ESB Networks has **65,500 followers on X** (formerly Twitter), **43,000 on Facebook** and **5,500 on Instagram**. Through this following, we've achieved **millions of combined impressions** across social media platforms in 2023, between paid media placements and organic content The split of 2023 impressions across platforms are as follows (these represent a 6% increase from 2022 to 2023).

- **57.3 million impressions on X (consisting of 29.3 million organic impressions and 28 million paid impressions)**
- **132.2 million impressions on Meta Shared Platform (consisting of 2.2 million organic impressions and 130 million paid impressions)**

In addition, our website is seen by our customers as one of the most important touchpoints, in particular Powercheck.ie which received 7.6 million page views in 2023.

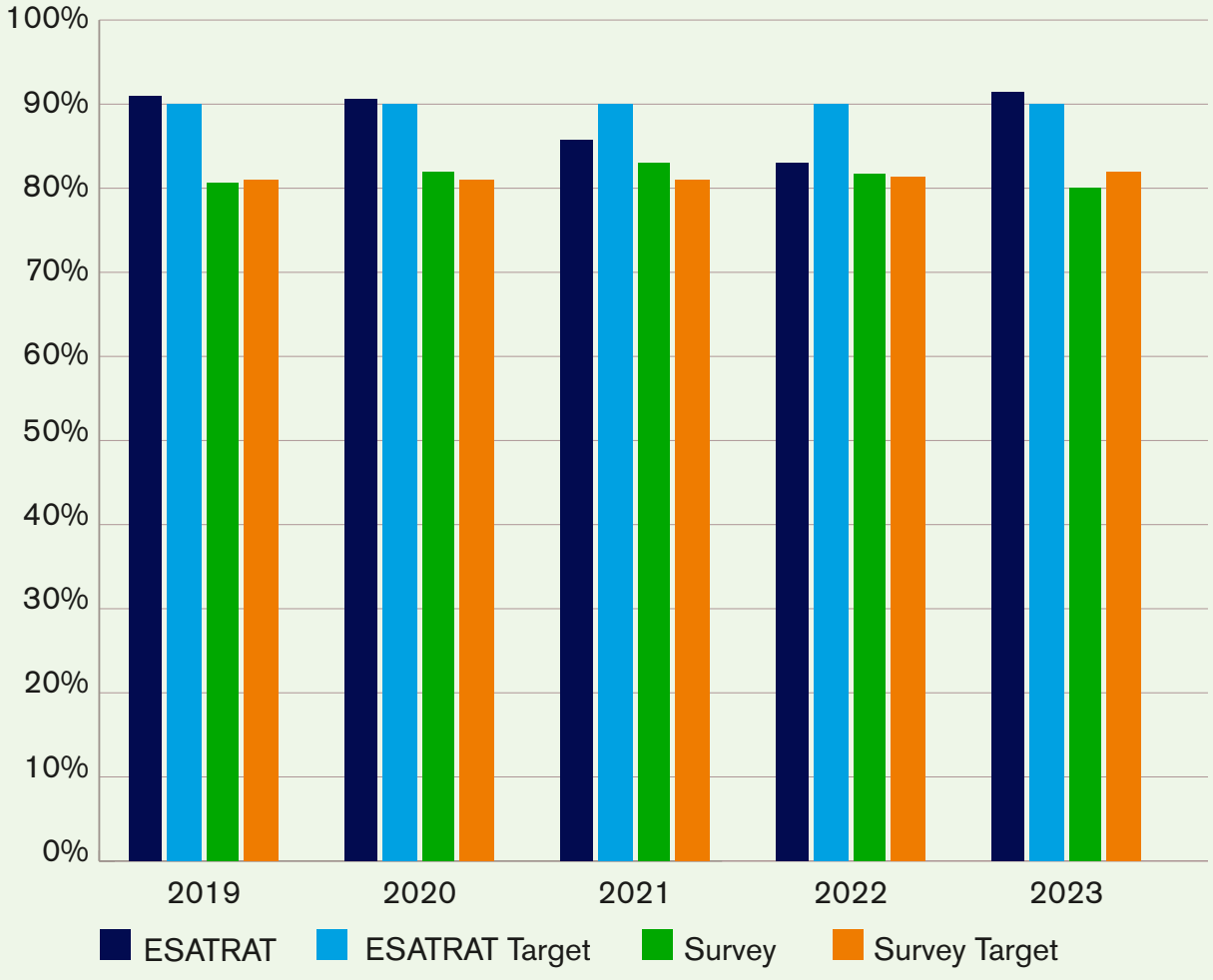
Customer satisfaction scores 2023

ESB Networks achieved the following customer satisfaction scores in 2023.

- **91.69% ESATRAT (satisfaction rating of NCCC).**
- **80.09% Behaviour and Attitudes Survey (customer satisfaction rating).**

The chart below outlines the customer satisfaction scores (target and actual) from 2019 to 2023 for both the ESATRAT and Behavioural and Attitudes Survey. More information is provided in the sections below.

Customer Satisfaction Scores



Customer Satisfaction Scores Explained

In the sections below we provide more information about the results of the ESATRAT and Behavioural and Attitudes Survey.

(1) ESATRAT NCCC

The incentivised satisfaction rating of the NCCC outturn score is derived from five KPIs.

1. **Speed of telephone response**
2. **Call abandonment rate**
3. **Customer call-back survey results**
4. **Mystery caller survey results**
5. **First contact / call referral**

The results of the ESATRAT across these five KPIs from 2019 to 2023 are outlined in the table below. In 2023, our combined incentivised outturn stood at 91.69%, compared to 83.58% in 2022. The combination of resource recruitment, training, reduction in meter reading requests and the introduction of a network enquiries options menu for digital self-serve, impacted positively on service level and abandonment rate performance throughout 2023. The engagement performance for the mystery shopper and customer call-back KPIs improved and remained stable, respectively, based on information accuracy and improved call wait times for customers.

In 2023, the ESATRAT score increased significantly as a result of the recruitment drive for customer service advisors into the Customer Contact Centre. All elements of the ESATRAT saw an improvement in particular the speed of telephone response and abandonment rate. Performance on the mystery caller and customer callback survey remained strong. Meanwhile, our customer satisfaction survey score saw further improvement, mainly driven by service improvements for 'New Connections - Scheme Builders and Voltage Complaints Rectified', but we also saw an improvement for planned electricity interruptions. The KPI was down slightly for unplanned electricity interruptions.

Breakdown of ESATRAT Incentive

	2019 Target	2019 Actual	2020 Target	2020 Actual	2021 Target	2021 Actual	2022 Target	2022 Actual	2023 Target	2023 Actual
Speed of telephone response	88%	90.80%	88%	84.23%	89%	75.40%	89%	73.85%	89%	91.15%
Call abandonment rate	4%	2.60%	4%	4.59%	4%	11.10%	4%	11.98%	4%	3.17%
Customer call-back survey results	88%	90%	88%	95.00%	89%	94.00%	89%	89.00%	89%	91.15%
Mystery caller survey results	83%	85%	83%	89.00%	84%	87.00%	84%	82.00%	84%	90%
First contact / call referral	10%	9.30%	10%	9.54%	10%	11.00%	10%	10.95%	10%	10.01%
ESATRAT (total)	90%	91.20%	90%	90.53%	90%	85.92%	90%	83.58%	90%	91.69%

The table below outlines the number and type of complaints handled by the NCCC. The volume of customer complaints has increased by 10% year-on-year and the volume of CRU complaints has increased by 10% (discussed in the following section). The six most frequently made complaints relate to the following.

- **Frequent outages (down 16% year-on-year)**
- **Communications (up 39% year-on-year)**
- **Operations delays and overruns (up 86% year-on-year)**
- **Staff performance (up 11% year-on-year)**
- **Smart metering complaints (up 132% year-on-year), as the customer base grows**

We continue to establish and analyse insights monthly to address the concerns raised by our customers through the complaints process. We endeavour to close complaints with a meaningful response within five working days.

Complaints Handled by National Customer Care Centre

Complaints Received	2019	2020	2021	2022	2023
Concerning low voltage	28	20	28	18	39
For frequent outages	1,655	1,931	1,668	1,511	1,674
Time to connect customers	33	17	48	58	59
Operation delays and overruns	186	171	167	336	289
From suppliers	0	0	0	0	0
On connection costs and budget quotations	0	0	3	0	0
On meter reading and estimated reads	247	138	321	360	444
Other	1,616	1,811	1,840	2,517	2,709
Total complaints received	3,765	4,088	4,075	4,800	5,214

(2) Behaviour and Attitudes Survey, Customer Satisfaction Rating

The incentivised National Customer Satisfaction Rating (Behaviour and Attitudes Survey) outturn score is the average of six KPIs, as shown in the table below.

The overall incentivised score was 80.09% in 2023, down slightly from 81.07% in 2022. This was driven by reduction in the KPIs for all of the journeys measured.

Customer Satisfaction Rating (Behaviour and Attitudes Survey)	Overall 2021	Overall 2022	Overall 2023
Voltage Complaint Rectified (1 year rolling due to small base size)	84.32%	72.28%	71.76%
Unplanned Electricity Interruptions	78.41%	82.42%	81.79%
Planned Electricity Interruptions	86.03%	86.84%	85.63%
New Connection - Scheme Builders	83.71%	80.16%	79.78%
New Connection - Non scheme	86.62%	89.54%	87.29%
New Connection - Business	78.18%	75.17%	74.28%
Average	82.88%	81.07%	80.09%

CRU Contacts and Complaints

In 2023 ESB Networks' customers made 837 contacts to the CRU, compared to 656 in 2023 (a 28% increase). This was largely driven by smart meters, outages, connections, customer service and microgeneration queries.

In 2023, 144 complaints were referred to the CRU, which was a 162% increase from 2022. These complaints had previously been through the ESB Networks' internal complaints process. These complaints were largely driven by smart meters (36 complaints), quality of supply/ frequent outages (23 complaints) and connection/disconnection (23 complaints).

Nearly half (67 of the 144) of the complaints logged were closed in 2023, with 22 of these upheld and 45 not upheld. The remaining 77 complaints were still pending at the end of 2023.

Vulnerable Customers

We all rely on a safe, reliable electricity supply, however, some customers are more vulnerable to loss of electricity supply. A 'vulnerable customer' is a household which is critically dependent on electrical devices, such as medical equipment, or which is particularly vulnerable to power outages during the winter months for reasons of advanced age or physical, sensory, intellectual, or mental health. Vulnerable customers receive priority attention when there is a fault on the network, and when they make contact with our Customer Contact Centre. We take care to give vulnerable customers at least three days' notice of upcoming planned outages so that they have time to make alternative arrangements.

At the end of 2023, 87,202 customers were registered as vulnerable customers, an increase of 16,682 from 2022. To register as a vulnerable customer, please contact your electricity supplier who will notify ESB Networks.

Meter Reading

ESB Networks meter reading consists of three streams, namely quarterly hour remote reading, smart metering and legacy meter reading. The focus of legacy meter reading continues to be on obtaining as many meter readings as possible each year, through email campaigns, text campaigns, and initiatives such as visiting holiday homes during summer months.

For manually read legacy sites, ESB Networks schedules four reading visits per customer each year. Where a read is not obtained due to an access issue, a meter reading card is left to alert the customer to submit a reading. If no meter reading is subsequently submitted by the customer, ESB Networks sends a letter when a customer approaches 12 months without a reading. This can also be followed with an email if there is an available customer email address.

Following the challenges presented by COVID-19 and various localised lockdowns, we resumed the manual reading activity fully in April 2021. ESB Networks expected the ongoing rollout of smart meters to impact on the performance level of traditional (legacy) meter reading.

ESB Networks' meter reading performance from 2019 to 2023 is outlined in the table below.

In 2023, ESB Networks successfully completed four scheduled visits for 96.03% of customers (up from 91.5% in 2022) and at least two scheduled visits for 98.44% of customers (down slightly from 98.60% in 2022).

ESB Networks also aim to obtain one actual meter read per year for 98% of all customers (either from our meter reading staff and contractors or from the customer). In 2023 the result achieved was 96.51%. ESB Networks have a target of 99% of customers without back-to-back meter estimates and the result delivered for 2023 was 99.14% (up from 97.7% in 2022).

Meter Reading Performance

	2019 Performance	2020 Performance	2021 Performance	2022 Performance	2023 Performance
Two scheduled reading visits per annum	99.99%	99.95%	99.68%	98.60%	98.44%
Four scheduled reading visits per annum	99.60%	55.72%	89.42%	91.50%	96.03%
One actual read per annum	97.82%	96.15%	96.77%	96.90%	96.51%
No consecutive block estimations	99.94%	81.53%	96.19%	97.70%	99.14%

ESB Networks supported billing and adjustments for 1,737,797 customer meter reads in 2023. Electricity suppliers issued 1,474,540 meter reads to ESB Networks for review and validation and a further 299,257 customer reads were received through internal systems. For legacy sites there is a high volume of traffic. This reflects the external environment at the time, as the frequency of meter readings sent in by customers likely increased due to rising energy bills.

ESB Networks' key focus is to maintain a meter reading presence across a geographical spread of 34 planner groups, to support the manual read activity. This work compliments the roll out of smart metering nationally and it ensures that our systems and processes are best positioned to deliver an exceptional customer delivery and experience.

Estimated Response Time for fault outages

The PR5 ERT accuracy incentive measures the performance of the DSO in improving ERT accuracy on fault outages across the network. This incentive focuses on the accuracy of the information provided as opposed to the speed of power restoration. This recognises the importance of customers being able to plan around the outage information provided to them.

The initial two years of PR5 (2021, 2022) focused on:

- establishing ERT monitoring, recording and data assurance processes for fault outages;
- developing an ERT pilot; and
- setting future ERT targets.

The milestones for the final years of PR5 (2023, 2024 and 2025), focus on performance against the actual ERT targets.

The table below outlines the three elements that the CRU required to be delivered in 2023[1].

Detailed ERT Balanced Scorecard Requirements and Incentive Allocations

Elements	Required Evidence
1. Delivery against preliminary target	Evidence showing 2023 preliminary target for non-storm ERT <1hrs was met.
2. Refinement of data and continual improvement	Summary of the 2022 lessons learned. Report ERTs within and outside normal working hours separately. Evidence of how new ERTs are determined from analysis of pilot areas and other areas. Reporting on changes to ERT accuracy from 2018 to 2022 and impact on 2022 baseline. Detailed commentary on 2023 actions that have led to improvement of configuration changes. A review of storm process following the 2023 storm season. Provide detailed update on work done on the inclusion of planned outages. Report on progress for extracting ERT measurements from other PR5 developments.
3. Establish year 4 target which reduces distance to 85% by 50%	Report on ERT accuracy for the non-storm ERT >1hr and <15min and storm ERT <24hr and <4hr (in addition to ERT non storm <1hr). Clear data-based evidence to substantiate targets chosen for year 4 and year 5. Evidence of how year 4 preliminary targets will be achieved, i.e., describe data analysis, additional data collection, how the data will be used, etc. • Propose forward-looking targets for year 5 for non-storm ERT >1hr, <1hr, and storm ERTs <24hr and <4hr.

1 *CRU (2023), Price Review Five: 2023 Balanced Scorecards Distribution and Transmission Information Paper, Document number: 202354. Available at www.cru.ie*

In 2023, ESB Networks delivered on the three key CRU requirements set out in the table above. Specifically, in 2023 ESB Networks completed the following.

- Data analysis for the 2023 ERT fault outage data, identified the difference between storm/non-storm ERT accuracy, as well as differences between weekend/weekday ERT accuracy and daytime/nighttime ERT accuracy.
- Collated and detailed the results of the analysis of historical ERT accuracy, including the data distributions for the years 2019 to 2023.
- Completed data assurance checks on 2022 fault outage data and documented the outcomes of these checks. Reviewed and verified randomly selected customer outages, verifying that all outages were correctly recorded and reported.
- Identified the lessons learned from 2022 and issued a public consultation on the ERT incentive to ESB Networks' stakeholders and customers.
- Expanded the ERT pilot to include nine additional areas and determined the new ERTs for the device types (e.g. capacitor, recloser, busbar, substation) in the selected ERT pilot areas.
- Identified and implemented improvement in the Network Management System configuration. This included the modification of the ERT customised software package that we developed for the ERT incentive to include planned outages.
- Completed data analysis for the 2023 ERT planned outage data and reported the results of this analysis.
- Reviewed the new storm process and identified changes required in the Outage Management System application and PowerCheck web application in advance of rolling out the new process. The Customer Experience Team commenced a project to develop a solution for the PowerCheck web application that will inform and display the required message to customers in the event of a nationwide storm.
- Completed data analysis and reported on 2023 ERT accuracy for non-storm day ERT >1hr and <15mins and storm day ERT <24hr and <4hr.
- Detailed the proposed preliminary ERT accuracy targets for 2024 and provided evidence on how these targets will be achieved.

In December 2022, ESB Networks submitted the ERT Accuracy Incentive Multi-Year Plan (2023 - 2027) to the CRU. Following this submission, the CRU issued a further breakdown of the proposed preliminary targets. These targets were detailed in Section 3 of the CRU PR5 2023 Balanced Scorecards report[1]. The tables below outline the CRU's proposed preliminary targets for both non-storm days and storm days.

CRU Proposed Preliminary ERT Accuracy Targets for Non-Storm Days

Accuracy of estimates	2022 (baseline) *	2023	2024	2025
Average	27.1%	35.2%	40.7%	50.1%
% improvement from baseline	-	30.0%	50.0%	85.0%

*The 2022 baseline is based on performance between 2019-2021 and assumes no improvement for 2022.

Proposed Preliminary ERT Accuracy Targets for Storm Days

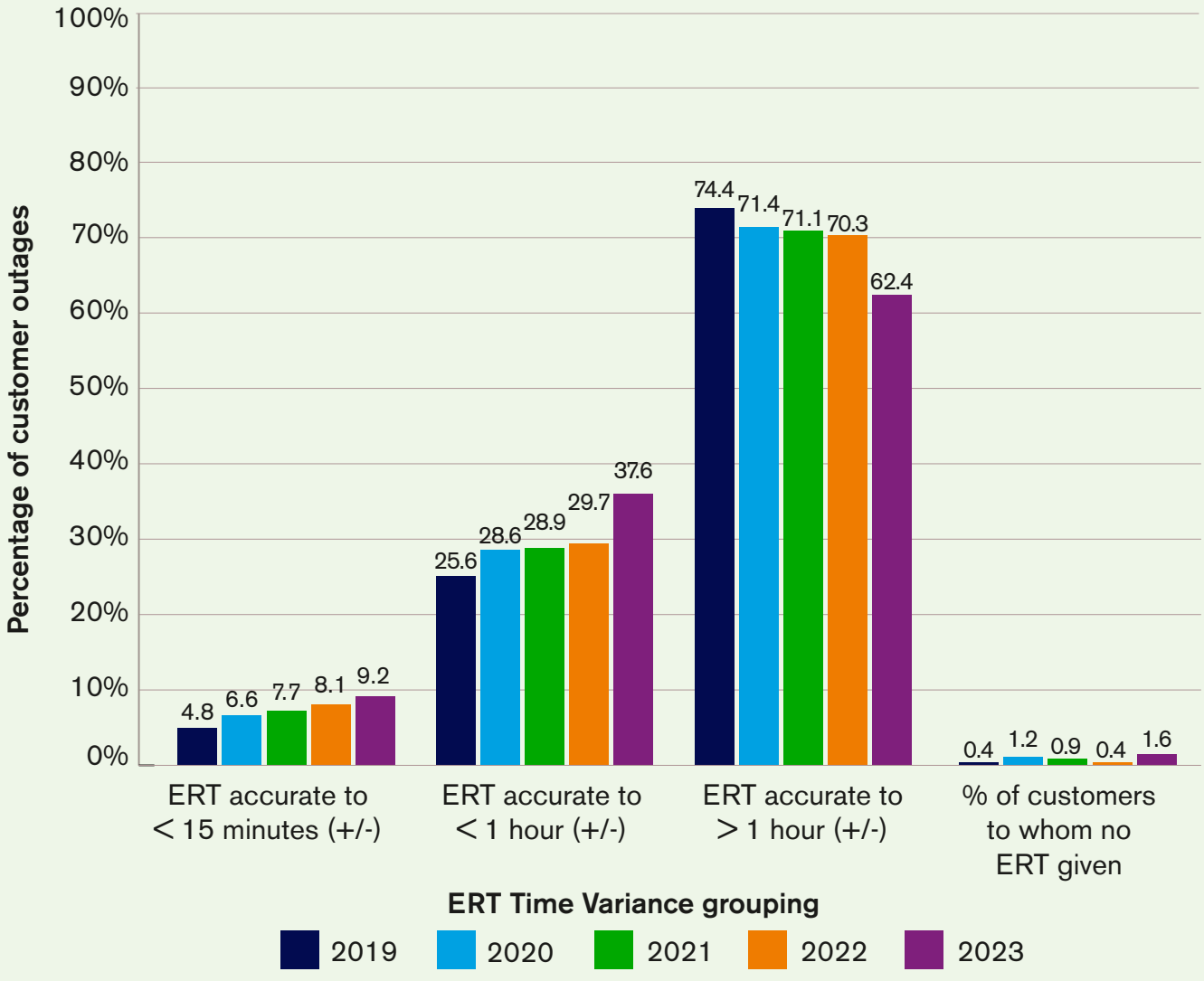
Description	2022 (baseline)
Percentage of customers restored within 4 hours of the initial ERT – storm	55%
Percentage of customers restored within 24hr of the initial ERT – storm	75%

1 *CRU (2023), Price Review Five: 2023 Balanced Scorecards Distribution and Transmission Information Paper, Document number: 202354. Available at www.cru.ie*

The chart below shows the ERT accuracy for non-storm days (as per the reporting measures specified by the CRU) from 2019 to 2023. The key findings for the 2023 non-storm day outages ERTs are as follows.

- The ERT accuracy for within 15 minutes (+/-) was 9.2% in 2023, a 1.1% increase from 8.1% in 2022. This small increase was expected, as the focus is on prioritising the ERT accuracy within the 1 hour (+/-) to provide more accurate timings for a larger percentage of customer outages.
- The ERT accuracy for the percentage of customers restored within 1 hour (+/-) of initial ERT was 37.6% in 2023, a 7.9% increase from 29.7% in 2022. This increase ensured that we exceeded the 2023 target by 2.4%.
- The ERT accuracy for >1 hour (+/-) decreased from 70.3% in 2022 to 62.4% in 2023. This is a positive result and is a direct consequence of increasing the ERT accuracy within one hour that is required under this incentive.

Percentage of Customers Outages by ERT Restore Time Variance Non-Storm Day



The table below shows the ERT accuracy for storm days (as per the reporting measures specified by the CRU) for 2022 and 2023. In 2023:

- the percentage of customers restored within 4 hours of the initial ERT was 75.9% (this significantly exceeded the 2023 target by 25.9%); and
- the percentage of customers restored within 24 hours of the initial ERT was 97.8% (this significantly exceeded the 2023 target by 22.8%).

Storm Day Analysis Summary

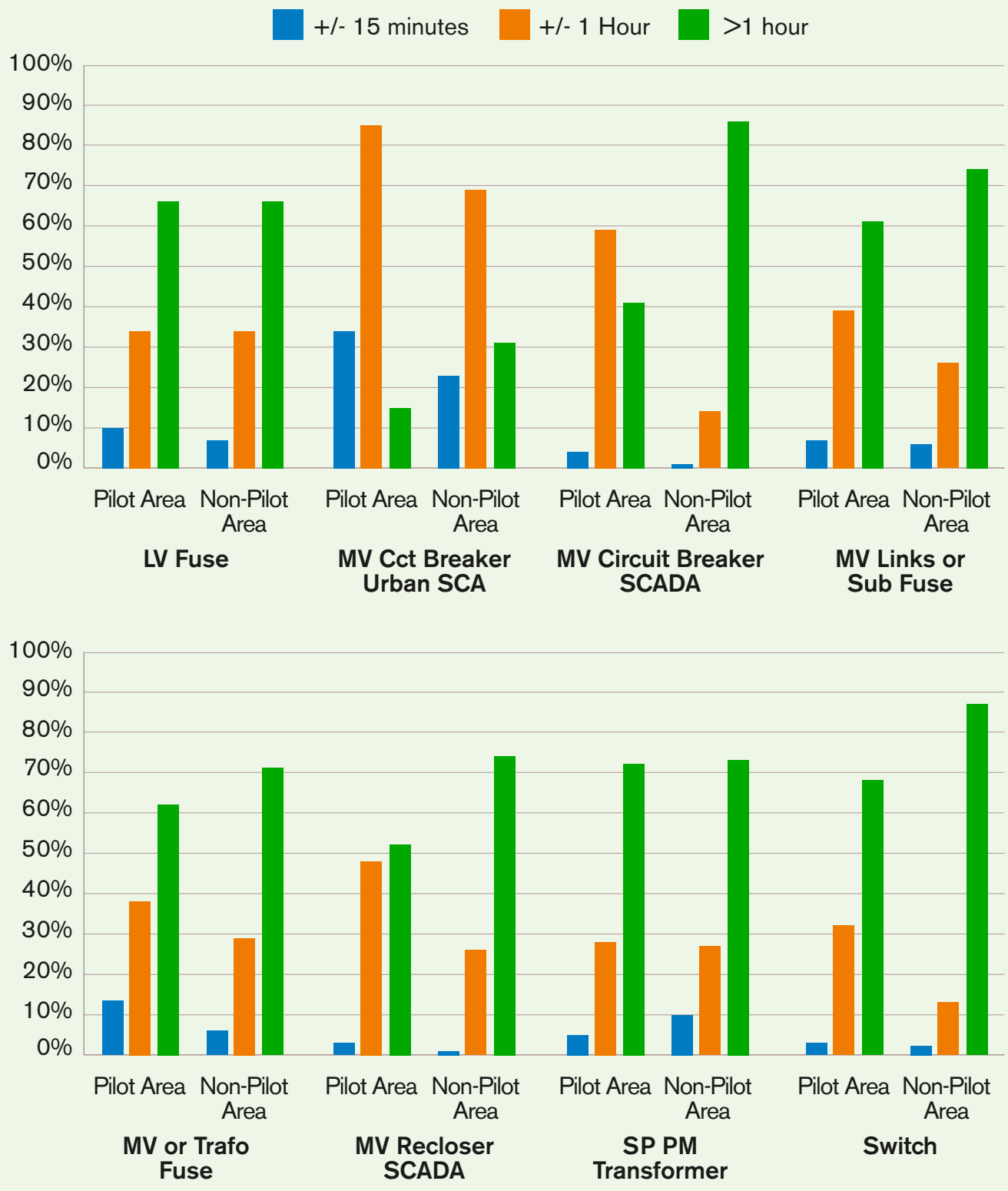
Description	2022 (Baseline)	2023
% of customers restored within 4 hours	50%	75.9%
% of customers restored within 24 hours	75%	97.8%
% of customers restored > 24 hours	10%	2.2%
No ERT issued	-	1.6

The ERT 2022 pilot was subsequently extended to include nine additional areas. Analysis of the 2023 outage datasets concluded that the accuracy targets for 2023 were exceeded. When the ERT accuracy figures for the pilot and non-pilot areas were compared, it was found that there was an increase in the percentage of customers within 15 minutes (+/-) and 1 hour (+/-) for the device types in the ERT pilot areas, when compared to the non-pilot areas. The key results of the analysis are as follows.

- The percentage of customers within 15 minutes (+/-) of the initial ERT for 6 out of 8 device types increased. For one of the device types (i.e. Switch), there was no difference between the pilot and non-pilot area, with a value of 3% for both. For the last device type, the non-pilot area performed better. The percentage of customers varied from 3% to 34%.
- There was a significant increase in the percentage of customers within 1 hour (+/-) for 7 of the 8 device types. For the remaining device type, there was no difference between the pilot and non-pilot area, with a value of 34% for both. The percentage of customers varied from 28% to 85%.
- The ERT accuracy of the > 1 hour reduced, due to the improvement in the percentage of customers within 15 minutes (+/-) and within 1 hour (+/-). This is a positive outcome as the goal of this incentive is to improve the ERT accuracy within 1 hour (+/-) of the initial ERT.

The below graphs compare the ERT accuracy for the pilot and non-pilot areas for the top eight device types that historically had the worst performance.

Graphical comparison of ERT Accuracy for the Device Types in Pilot and Non-Pilot Areas



2

Reliability and Resilience

2. Reliability and Resilience

Continuity

ESB Networks' strategy is aligned to government policy and climate action objectives in actively promoting the transition to a low carbon economy, by supporting our customers in increasingly electrified systems of heating and transport. This transition will require an ever more reliable electricity system, as homes and businesses become dependent on electricity as their main source of energy. ESB Networks needs to be able to mitigate the impact of climate change on our infrastructure, whilst providing a safer, more reliable and resilient network for all electricity customers.

The focus of the PR5 continuity investment programmes is to minimise the impact of unplanned outages through network automation, impact of wildlife activity and invasive species and prioritised investments for Worst Served Customers (WSC). These investment programmes aid better flexible operation of the system in times of unplanned outages, so that customers experience minimised disruption.

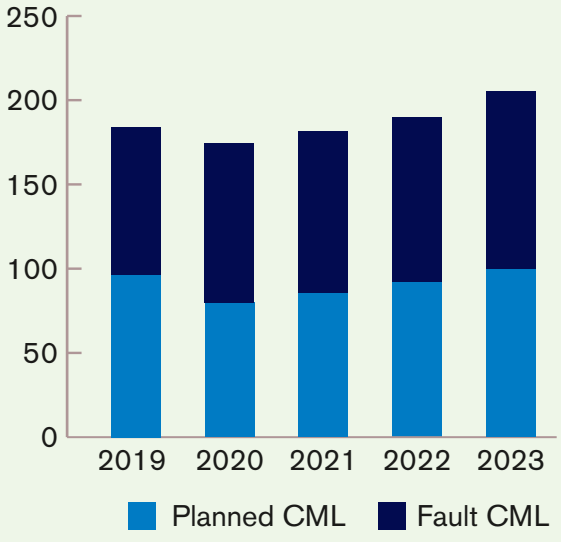
Outages

Customer Interruptions (CI) represent the number of interruptions greater than three minutes that an electricity customer has on average each year. Customer Minutes Lost (CML) is the average duration that customers spend without supply each year.

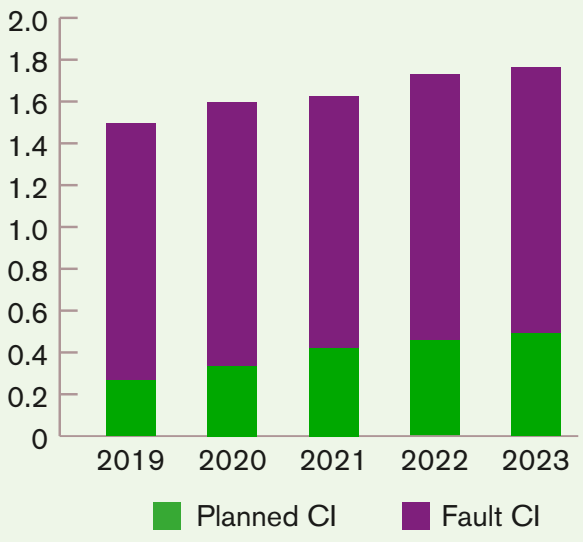
To benchmark our outage performance against other utilities, 'storm days' (the effects of severe weather) are removed for unplanned CI and CML reporting. Therefore, the analysis in this section excludes storm day outages. As outlined in the charts below, in 2023 the average Irish electricity customer:

- **was without power for 207 minutes; and**
- **experienced an outage greater than three minutes duration 176 times per 100 customers, or 1.76 times per customer.**

Annual Planned and Unplanned CML (excl. Storm Days)



Annual Planned and Unplanned CI (excl. Storm Days)

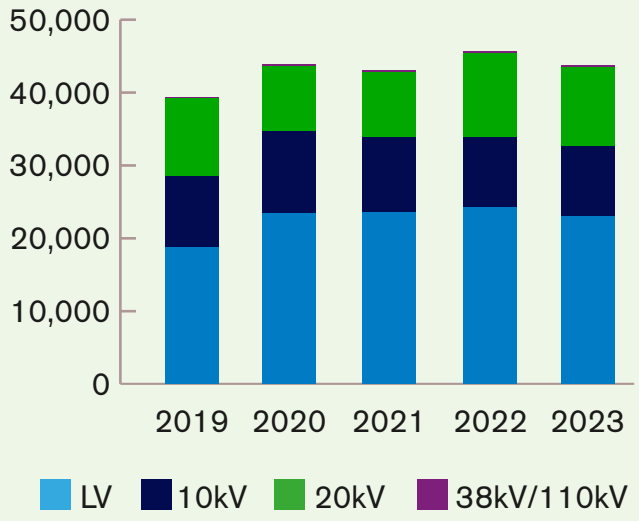


Most of our customers are connected at the Low Voltage (LV) level. The highest volume of faults occurs at the LV level and typically, a LV outage involves a single customer. Fewer faults occur at the High Voltage (HV) level as there is resilience and redundancy built into the HV system. However, when HV faults occur, they have a higher customer impact in terms of CI and CML, as large volumes of customers are affected.

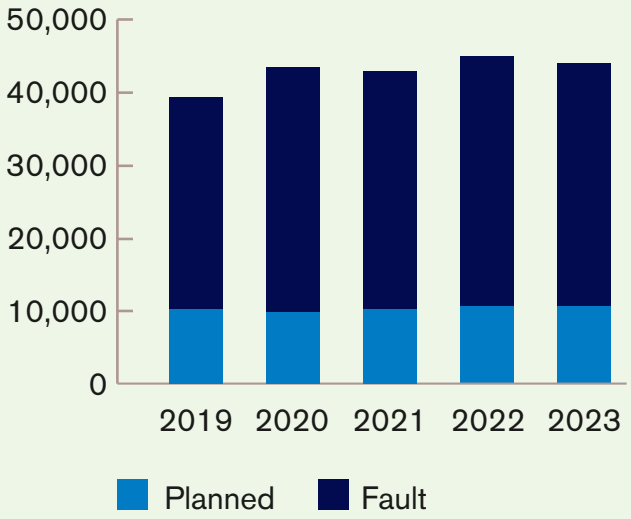
In the charts below we outline the:

- **total number of planned and unplanned outages; and**
- **outages split by voltage level in 2023.**

Total Number of Outages by Voltage



Total Number of Outages

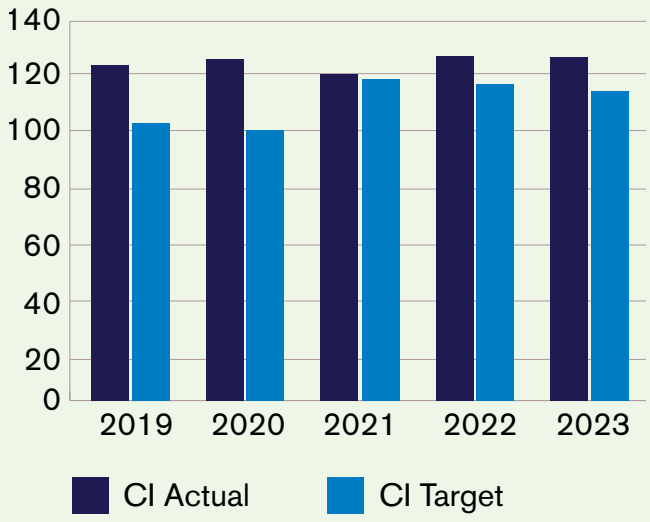


Unplanned Outage Performance

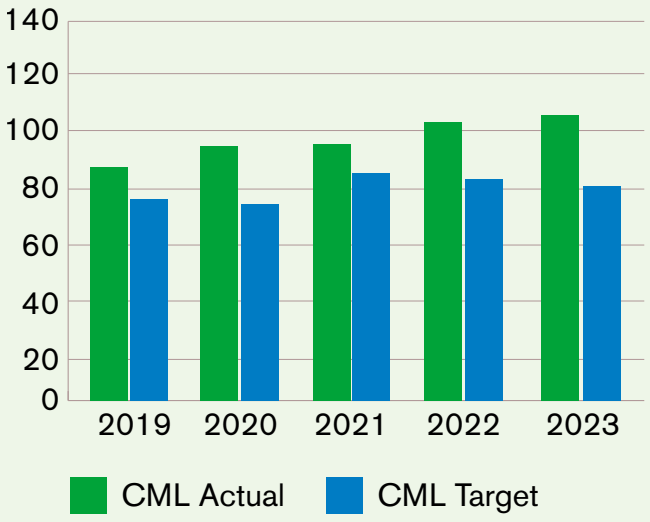
The CRU sets incentivised targets for unplanned CML and CI (which exclude storms related outages). We compare these targets to actual data for 2019 to 2023 in the charts below. In 2023, these targets were set at 80.8 CML and 114.8 CI. Our performance against these unplanned outage targets stood at 105.59 CML and 126.38 CI for 2023.

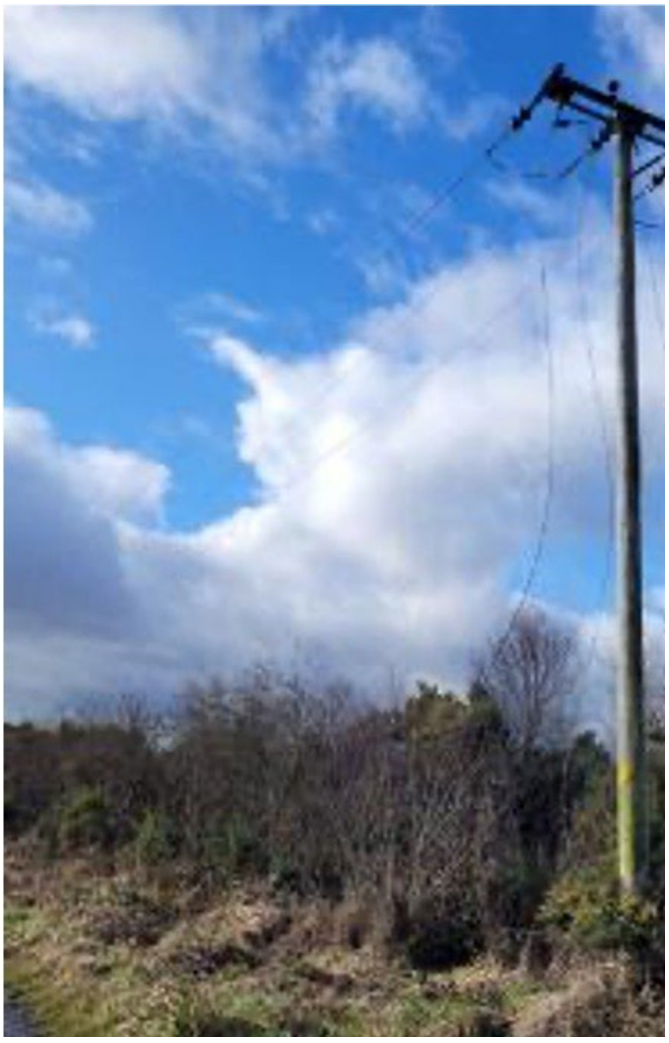
Unplanned (fault) outages inevitably occur on our network. The Irish electricity system has a high proportion of exposed overhead network relative to underground network, due to our dispersed rural population (the ratio of kilometres of overhead to underground network is 6:1). Other European utilities have a significantly lower ratio, which is typically <2:1. Reliability challenges on the overhead network include climate and environmental issues, third party interference, and low and grounded conductors.

Unplanned CI vs. CRU target



Unplanned CML vs. CRU target





Third party damage causing grounded electricity line

Tree fall in mature forestry planation corridor

Factors impacting 2023 Continuity Performance

- Timber continues to be a significant factor in continuity performance. Timber is the term used to describe any faults resulting from trees, foliage or vegetation impinging on the network. This is due to the unique layout of our network topography, where we have a significantly higher ratio of overhead lines to underground cables when compared to other European system operators. During COVID-19 we were unable to complete our timber cutting programmes. This resulted in a backlog on timber cutting, which has increased the requirements for future years. There are also further issues in getting contractor resources due to the competitive employment market. ESB Networks has determined that we will be required to double our current level of contract timber cutting resources.

- Storm activity continues to adversely impact on the electricity network. These storms, whether wind, snow and/or lightning can result in severe localised damage to the network. Lightning related faults vary year-on-year, with 1,136 faults in 2021, 3,042 faults in 2022 and 4,277 faults in 2023. Lightning storms in June 2023 resulted in a high level of severe localised damage being experienced on the network. Five named storms Antonio, Betty, Agnes, Debi and Gerritt occurred in 2023. All five caused extensive damage to the network, leading to significant numbers of customers losing power.

Measures being taken to improve continuity performance

- There was an ESB Networks reorganisation in 2022 to facilitate the ramp up of delivery to meet the ESB Networks' Strategy, which will over time, further improve reliability. To manage the scale of the undertaking there is a need for significant additional resources, including increased contractor usage which will grow over time. However, increasing contractors is currently challenging because of market conditions and utility competition.
- ESB Networks has commenced the introduction of a new Timber and Vegetation Management procurement framework. The new framework will differ from the existing framework in that it is designed to increase timber operator numbers and upskill existing timber cutting professionals. Furthermore, it will encourage contractors to continue to invest in increased mechanisation and levels of training. An increased rate of timber cutting will reduce the amount of timber hazards and the likelihood of major timber related outages.
- Sections of the network most prone to lightning related faults have been identified from analysis of recent years' events. On the Medium Voltage (MV) network, sections are being targeted for large scale lightning arrestor schemes, along with the prioritisation of three phase and single phase recloser installations.
- ESB Networks set up a 'Resilient Network Section' in 2023 to focus on the short-term (reliability) and long-term (resilience) of the electricity network. The focus of this team will be on a range of items affecting the reliability and resilience of the electricity network both now and into the future and consequently to minimise the impact to our customers. Our Networks for Net Zero Strategy has called out key strategic deliverables over the next seven years in order to meet our obligations to our customers and provide them with a pathway to net zero by 2040. The challenges facing ESB Networks (and many utility companies internationally) are:
  - climate change and its effects on:
    - *the electricity system including more frequent localised extreme weather events (flash flooding, lightning storms etc);*
    - *physical asset degradation (salt corrosion appearing on inland steelwork);*

  - capacity challenge on the assets from our journey to net zero, which can have an impact on our maintenance programmes;
  - a review of our Vegetation Management Strategy which will give clarity on the mitigations required to ensure our customers are not adversely impacted into the future;
  - making best use of ageing assets for our customers future requirements.
- The process for work programme planning and assignment was future streamlined in 2023, which further optimises the prioritisation of targeted works to improve the impact of unplanned outages and the continued delivery of wider work programmes for immediate and long-term benefits. This is augmented by continued delivery of the overall ESB Network's work programme.
- To facilitate the ramp up of delivery of automation programmes, additional commissioners were trained in 2022. These newly trained commissioners have had a very positive effect, more than doubling 2022's rate of three phase recloser installations.
- Process improvements are ongoing to improve how potential low or grounded conductors / contact with conductors (LGC's/CWC's) are managed to reduce the volume and their impact on network continuity. Training programs for call centre staff, dispatch staff and control room operators which are designed to improve interpretation of information received on CWC/LGC calls were rolled out in early 2023. In the latter half of 2023, we have had a month on month decrease in the level of interruptions experienced by our customers due to the implementation of our CWC/LGC protocol.

Network Automation

There are various types of automation on the network used for protection and operations. Automated switching and protection devices known as 'reclosers' reduce the impact of transient faults on the MV overhead network and enable smart grid options. SCADA (Supervisory Control and Data Acquisition) automated reclosers assist when fault hunting as they provide relay grade diagnostics and fault passage information to control room operators. They can be used as part of self-healing schemes or also as remotely operated sectionalising points for manual operation from the National Distribution Control Centre (NDCC). We are implementing the following PR5 automation programmes to improve network reliability and resilience:

Three Phase Reclosers
These devices reduce the impact of transient faults on MV overhead network and enable Smart Grid options. SCADA automated reclosers assist when fault hunting as they provide relay grade diagnostics and fault passage information to control room operators. They can be used as part of self-healing schemes or also as remotely operated sectionalising points for manual operation from the control room.

Single Phase Reclosers
Single phase reclosers replace spur fuses. These devices benefit customers on long spurs to limit momentary reclosing interruptions to the customers supplied from that spur (60 to 200 customers typically) e.g., only the faulted spur customers experience momentary interruptions as opposed to customers on the entire feeder (typically 1,000 customers) as per advances in the available functionality of the technology.

This solution provides an enhanced customer experience as it minimises the number of customers impacted by transient overhead faults, which account for more than 80% of all faults. This programme is aimed at single phase spurs greater than 10km in length and with more than 20 transformers.

38kV Primary Substation Automation
At 38kV when there is a line fault, on average at least 5,000 customers are impacted. The majority of 38kV outlets have circuit breakers, Automatic Changeover of Stations (ACO) and Automatic Open (OP) or Automatic Closing (CL) of breakers can be achieved by installing voltage sensing relays on these existing circuit breakers. This solution will provide for automatic supply restoration to suitable 38kV stations thus improving reliability for customers.

Voltage Regulator Automation
Many voltage regulators are in remote locations on low population density rural outlets. By adding SCADA (Supervisory Control and Data Acquisition) control to these voltage regulators, the device can be remotely operated from the NDCC. This reduces outage durations, and prevents spurious protection outages on long dispersed outlets during switching.

Remotely Controlled 38kV Switch
The automated device can be opened and closed remotely from NDCC in exposed locations with long circuit lengths. For example in rural peninsulas, 38kV manual switches will be replaced with remotely controlled 38kV switches for more efficient fault isolation and supply restoration.

MV Urban Switch Automation
Urban MV switch automation is required to be able to quickly identify MV cable faults to minimise disruption to businesses and other critical supplies such as hospitals and urban customers. It will also provide fault location information to operators. Targeted remote control of ring main switches will be provided on the urban network with relay grade fault passage information.

38kv remotely controlled switch

MV urban switch automation

Worst Served Customers

The CRU defines the objective of the WSC incentive mechanism as improving outcomes for those households and businesses who would otherwise have a sustained and materially lower standard of supply reliability. It reflects a desire to introduce a greater degree of social fairness into the outcomes that would otherwise prevail if investments to improve supply reliability were chosen based on narrow economic cost-benefit alone, across all sectors of society.

The WSC work that was completed in 2021 and 2022, resulted in 13,569 customers meeting the incentive success criteria in 2023. An important aspect of the WSC programme (and the associated incentive), is the requirement to confirm the effectiveness of the interventions in relation to improving resilience and reliability. The performance assessment takes place one year after completion of the works. This incentive rewards ESB Networks for prioritising the interventions that have maximum impact on reliability and resilience, thus improving customer service.

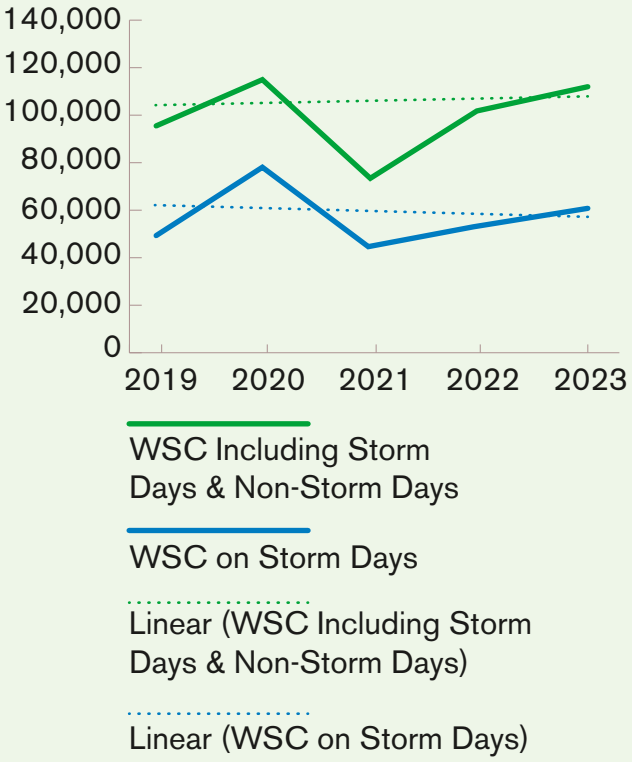
A WSC is a customer that is supplied from rural overhead networks who experiences more than or equal to:

- **five interruptions in the previous 12-month period; and**
- **15 interruptions in the previous 3 years.**

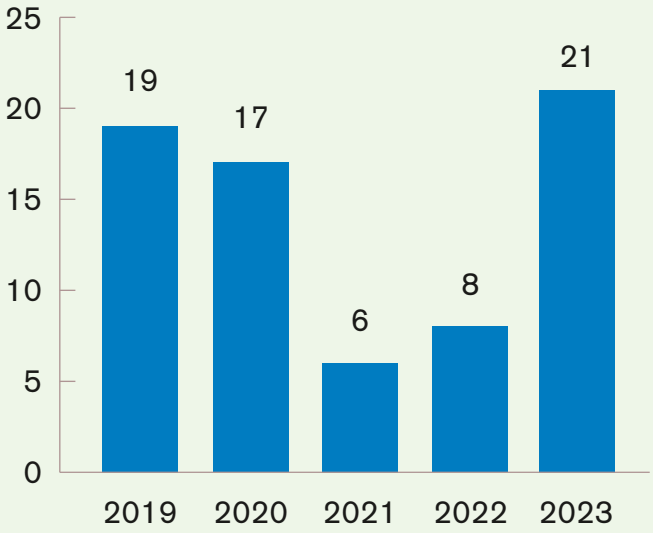
WSC performance is influenced by wind and lightning weather events, as it is based on the number of CIs per customer. This includes multiple CIs that can occur on storm days.

The chart below shows that on average from 2019 to 2023 there were 60,000 WSCs on storm days, due to an increased volume of outages. The data also shows that when the volume of storm days per annum is low, that WSC performance improves, for example in 2021.

WSC Population Trend



Declared Storm Days per Year



In PR5 we are implementing an enhanced WSC investment programme to reduce the volume of outages these customers experience, as outlined in the table below.

WSC Interventions Summary

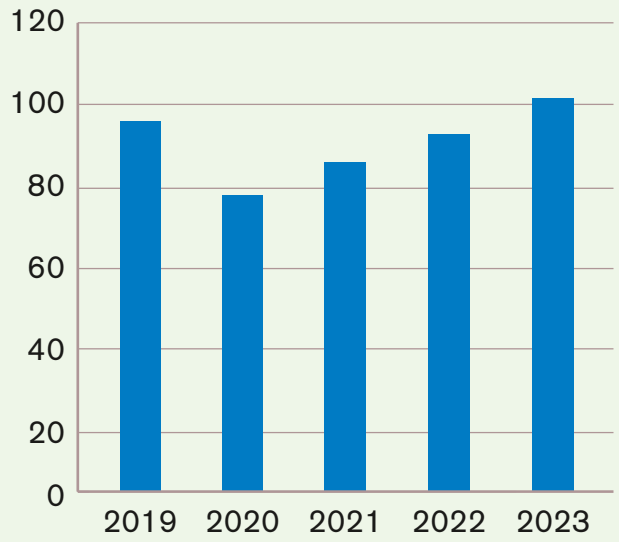
Intervention	Benefits
Single phase to three phase conversions	Less customers impacted by faults
Phase balancing	Prevents spurious tripping during switching and sectionalising for faults or planned work
Lightning arrestor installation	Reduces the impact of lightning in rocky, mountain locations and coastal locations prone to frequent lightning storms
Bird mitigation	Bird guards installed to prevent outages caused by bird strikes and swan deaths
Voltage regulator and IFT site automation	Installed in remote locations with worst served customers to prevent spurious outages during fault switching
Reducing span lengths, wider crossarms	Prevents nuisance frequent transient outages due to wires clashing together
WSC patrolling	Patrols to identify WSC interventions were completed

Planned Outage Performance

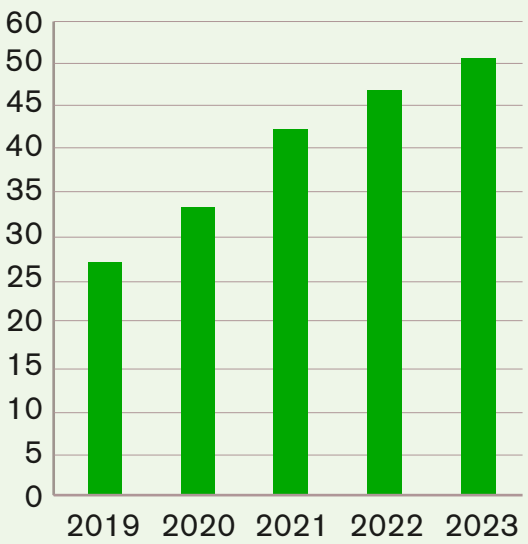
Every year ESB Networks must carry out scheduled works such as planned work programmes and new connections, which result in planned outages to customers. The outage date and duration are notified to customers in advance.

The charts below show the planned CML and CI per 100 customers from 2019 to 2023. The figures are increasing over time due to increased outages on the network due to the implementation of the work programmes in preparation for electrification and the transition to a low carbon economy. For example, in 2023 the volume of new connections increased to 40,927 and 464,957 smart meters were installed.

Planned CML per Customer



Planned CI per 100 Customers



Resilient Network

ESB Networks' Resilient Network Strategy is underpinned by our advanced asset management approach. We continue to innovate and adapt our assets to constantly improve our network performance and deliver a network which:

- **adapts to mitigate against the risk of climate change;**
- **provides a safer, more reliable and resilient network for our customers; and**
- **has the capacity to enable the transition to a clean electric future.**

ESB Networks' ISO 55001 accredited end to end asset management approach, manages our assets in a consistent way using risk and data insights to inform decisions, define interventions and deliver targeted works.

This includes the prioritised delivery of network investments to maintain the health of our assets through targeted maintenance and asset replacement programmes.

Climate Adaptation

One of the three key strategic objectives in our Networks for Net Zero Strategy is to deliver resilient infrastructure. To achieve this, we are investing in the resilience of the network, for example by adapting our infrastructure to an ever-changing climate. This is required as the "physical effects of climate change create an increased risk of damage to ESB Networks' assets and disruption to operations".

A resilient network adapts to changes in the environment and caters for the present and future needs of its customers. ESB Networks is evolving our climate adaptability framework to ensure we can address the impacts of climate change on our assets. Below we outline our progress to date on:

- **climate adaptation policy and best practice alignment;**
- **ensuring a consistent risk management process; and**
- **planning and implementing climate risk control measures.**

1. Climate Adaptation Policy and Best Practice Alignment

ESB Networks appreciate the importance of wider community goals. In 2023, we maintained engagement with national organisations, collaborated and partnered with expert international groups, and took part in long-term climate change research and its impact on electricity infrastructure.

In 2023, ESB Networks completed the following relating to climate adaption and best practice.

- We engaged with the Department of Environment, Climate and Communications (DECC) on the draft National Adaptation Framework 2024, CAP requirements, and the Climate Change Advisory Group's Adaptation Questionnaire for Climate Change Adaptation Plan for Electricity and Gas. We provided detailed feedback on all of these important issues.
- We engaged with Met Éireann on the TRANSLATE climate projections model. This included a review of the Environmental Protection Agency (EPA) Climate Ireland 'Climate Change Projection Maps', which were released in 2023. ESB Networks also attended the National Framework for Climate Services (NFCS) workshop hosted by Met Éireann in February 2024. This engagement provided broader understanding on how the NFCS can support ESB Networks in delivering a resilient network. It also provided insight on how the EPA are delivering their first National Climate Change Risk Assessment, National Adaptation Framework (NAF) section 2.2.5 by Q1 2025.
- ESB Networks participated in the Critical Entities Resilience Directive which entered into force on 16 January 2023. In particular, ESB Networks engaged with the common principles for stress tests of critical infrastructure in the energy sector.
- ESB Networks continued to explore climate risks with the wider utility community on climate adaption experience and learnings from other jurisdictions. We are a member of a European distribution network operators climate adaption working group and the UK Energy Networks Association Climate Change Resilience Working Group. Through this we are learning how other governments, environment agencies and distribution network operators are developing adaptation pathways and management processes to assess the additional physical and transitional risks associated with climate change.

ESB Networks appreciate our role in extreme weather events, as identified in the CRU Risk Preparedness Plan for Ireland[1]. This plan covers preventive and preparatory measures that aim to reduce the likelihood and improve the outcome of crisis scenarios (including extreme weather and natural disasters).

1 *CRU - Risk Preparedness Plan - May 2023*

2. ESB Networks' Risk Management Process

Climate adaptability is called out specifically in our ISO 55001 policy and it is a risk that we track and trend. It's captured in our risk register, and we have appropriate risk mitigations and work plans designed to support the adaptability of the network to climate damage. ISO auditors also review our evolving approach to climate adaptability and check how this is embedded in our standards and procedures. This ensures that we assess the risks associated with climate change and that our interventions are embedded in our work plans and long-term investment strategies. This allows us to adapt our network to new challenges and deliver a safe and resilient network for our customers.

Our risk management process tracks emerging and existing risks to ensure we have appropriate mitigation to manage all risks. We review and report our risks and the appropriate mitigation on a quarterly basis. We identify key risk indicators and ensure that any new risks are appropriately identified and that relevant actions are in place to manage them.

It is recognised that climate risk evolves over longer rather than shorter periods. We have utilised appropriate tools to identify asset vulnerabilities. For example, by working closely with the Office of Public Works (OPW) and their catchment flood fisk assessment management model, ESB Networks assessed HV substations against current and future flooding scenarios. The likelihood of a flooding scenario for a HV substation location was identified by the 'Annual Exceedance Probability', expressed in return periods of between 1 in 10 years and 1 in 1,000 years.

3. Planning and Implementing Climate Risk Control Measures

As noted above, ESB Networks' electricity infrastructure has a disproportionately high quantity of overhead network relative to underground network. The overhead network is exposed to our changing climate and the challenges it brings, from more frequent and violent windstorms to increased lightning storms and flash flooding.

In 2023, ESB Networks completed the following climate risk control activities.

- A number of measures are similar to the measures noted above in the Continuity Section of this report.
  - Vegetation management, noted in various sections of this report, is a key requirement to improve the resilience of MV and LV overhead lines, particularly in storm events. In 2023, we introduced a policy which increased the required clearance between our MV network and vegetation from 4 to 5 metres. Note in Section 8 (Innovation), we refer to the 'Unmanned Arial Vehicle Framework' for inspecting overhead lines, which includes the potential use cases of vegetation management, line patrols following storms and the identification and location of intermittent faults on the electricity network.

- Damage associated with lightning storms is primarily experienced through damaged MV/LV transformers on the distribution network, as seen through the lightning events of June 2023. During 2023, we completed the following activities.
  - *We continued to identify areas that are most prone to lightning related faults. As these locations are identified a workplan is designed and implemented to introduce lightning protection mitigations i.e. the addition of lightning arrestors to the transformer unit.*
  - *We removed older 38 kV substations. More detail is provided in the HV substation section below. This was completed as the older, fault-prone legacy equipment suffers from continuity issues, while newer indoor stations have lower exposure to wildlife/lightning strikes and other climate impacts.*
- Climate impact mitigation is also achieved through network automation (noted above), reducing the impact of transient faults, limiting momentary reclosing interruptions, assisting when fault hunting or providing self-healing schemes, and ultimately minimising the number of customers impacted by transient overhead faults.

- In addition ESB Networks are implementing the following climate change risk control activities.
  - Network operations management plan introduced for wildfire risks when the Department of Agriculture, Food and Marine (DAFM) release wildfire alerts. This minimises the risk of supply interruptions while also mitigating the risk of igniting a wildfire.
  - ESB Networks have increased coastal insulation levels to address saline pollution impact (identified as an increasing risk due to climate change). As we move towards Price Review 6 (PR6), we've identified key climate adaptation pilots and trials. Through these trails we are developing appropriate solutions to meet the challenges of our changing climate, such as composite poles which are capable of bending significantly further than equivalent wood poles without breaking, leading to less pole replacements due to storm damage. Composite poles also address rot conducive weather, woodpecker damage, and invasive species (e.g. eight toothed spruce bark beetle).

ESB Networks recognise that the impact of climate change to our network needs to be a continuously examined. Engagement with various stakeholders identified above shall be maintained to ensure that ESB Networks have the most up to date climate information and that we proactively identify our most vulnerable assets. Through our embedded risk management approach critical climate risks can be identified, allowing the necessary control measures to be planned and implemented in an optimised fashion.

Development of Asset Health Indices

Resilience network programmes are work plans that are delivered to support and ensure that the network is more resilient for the future. These include maintenance and replacement/ refurbishment of assets supported by the application of asset health metrics. This helps us to target the most unhealthy assets and intervene as appropriate to ensure the network performs as required and is resilient for the future.

ESB Networks committed to developing a data driven approach to asset management and is developing asset health indices for its DSO assets during PR5 (2021-2025). To ensure best practice, the asset health indices models were developed using a Common Network Asset Indices Methodology (CNAIM) ensuring alignment with other DSOs internationally, in particular those in the UK.

Twenty one CNAIM baseline asset health models are now delivered and being embedded in the PR6 submission to support our decisions to invest in assets and to ensure the network is more resilient. These models will support informed investment decisions and allow us to target unhealthy assets to ensure we improve overall network performance. Across the remainder of PR5 and into PR6 we will evolve our approach to asset health and improve the data inputs to maximise the value of asset health models in ensuring we invest in the right assets at the right time.

Maintaining our Assets

HV Substations

The distribution system includes 566 HV stations. This is comprised of two 220 kV stations, 140 110 kV stations and 426 38 kV stations. To provide the best service to all of our customers, each substation's reliability is of utmost importance. Strategic maintenance and replacement before deterioration or failure is key to providing uninterrupted supply to our customers, ensuring the integrity of the assets and safety for our staff and the public.

To allow effective delivery of the above programmes, there has been a particular focus on batching work during programming and execution. We have introduced a more integrated maintenance and asset replacement annual plan using our core enterprise tools and analytics to identify batching opportunities. This approach results in a range of different programmes being executed at the same time in a HV station. This approach looks to maximise the level of work delivered, through an efficient use of resources and make maximum use of network outages. This approach was rolled out in 2022, with scaled delivery occurring in 2023 to meet the wider strategic objectives of improving resilience, capacity and operational flexibility. Additional contractor delivered maintenance has increased maintenance completions in 2023.

In line with our PR5 submission focus on asset health and making data-driven decisions, there was a continued focus in 2023 on acquiring additional condition-based data for our assets. An annual risk ranked programme has been agreed with focus on continuity improvement and key PR5 asset replacement programmes.

In addition to our high-volume maintenance and asset replacement programmes above, work is also well underway with addressing major asset replacement projects. This involves the replacement of entire 38 kV stations, many of which will deploy modular (containerised) solutions that allow for standardised 38 kV, MV and control room solutions. These modules allow for faster, more consistent project delivery and commissioning timelines. Removal of these older stations will mitigate key safety and continuity issues associated with older, fault-prone legacy equipment as indoor stations have lower exposure to wildlife and lightning strikes and other climate impacts.

An increased focus has also been brought to bear on assessing stations that may have a higher flood risk in line with OPW data, to allow a more targeted approach to any longer-term flood mitigation measures for particular stations. Work is also underway in addressing stations where there is already a known flood risk via either primary measures (e.g. raising of equipment, drainage works) or secondary measures (e.g. bund retrofitting to mitigate consequences of any flood event). 17 bund retrofits were completed in 2023.

The number of HV substation asset replacement, routine maintenance and outage maintenance programmes completed from 2021 to 2023 are outlined in the table below. We observe an increase in delivery of asset replacement, routine maintenance and outage maintenance in 2023 relative to 2022.

Units completed	2021	2022	2023
Asset replacement	368	280	361
Routine maintenance (incl. inspections)	11,694	11,085	13,379
Outage maintenance	900	1,218	1,568

Overhead Network

The overhead distribution electrical infrastructure in Ireland is made up of approximately 62,000 km of LV network, 84,000 km of MV network and 6,000 km of HV network. The fundamental components of this infrastructure are support structures (poles or steel towers), conductors, insulators and electrical equipment for operational switching. The operating voltage will dictate the conductor and insulator type to be used and the support structures used are predominantly wooden poles.

Wooden poles account for over 98% of all overhead line support structures. Network technicians climb these poles to operate and maintain the system, so the strength or “health” of these poles and the material and equipment supported is of the upmost importance.

2023 saw the continuation and expansion of the asset health project in overhead lines. The asset health data models used in this project rely on data that fulfils technical requirements and skills required to analyse and present the results. Collaboration between digital mobile technology experts and overhead line specialists has ensured mobile apps will soon become available across all voltages. This will facilitate targeted mitigation, asset health scoring, recording of planned future network renewal works and overall it will help to improve our network resilience.

There was a continued focus in 2023 on delivery of safety and customer focused programmes. For example:

- **public safety hazard patrols and rectification of identified hazards across all voltages (improved digital processes allow for the identification and risk categorisation of any identified public safety hazard and facilitates clearance of highest risk first);**
- **continued delivery of the pole replacement programmes at MV and commencement at LV and targeted interventions on our worst performing outlets (WPO); and**
- **ongoing refurbishment of the 38kV overhead network.**

Network resilience in overhead lines is directly related to the delivery of the asset replacement and maintenance programmes. These programmes are targeted and integrated (where possible) based on asset condition and load data. The database for our MV rural network is at quite an advanced stage of development. In 2023, we extended the process and programmes used to develop our MV rural database to our urban network at the MV and LV levels. This management system allows us identify problems and plan to remove the asset before it fails. This is positively impacting on network resilience.

Review of internal safety and fault monitoring databases resulted in targeted inspections on sections of overhead line, with a view to reducing the likelihood of conductor failure. Training programmes have been rolled out nationally for staff to test and record conductor condition. This is facilitating evidence-based conductor replacement.

Following from the on-site trials in 2022, considerable progress has been made in the introduction of composite poles in 2023. Currently 27 composite poles are installed through trial work on the live network across LV, MV and 38kV. A significant number of additional poles are planned to be rolled out across these voltage networks. ESB Networks has developed a company standard for use of composite poles in order to support delivery and business-as-usual installations. In addition, training is being rolled out to ensure crews can complete the work safely. Composite poles will provide improved resilience in areas exposed to harsh environmental conditions and in locations prone to woodpecker damage.

Timber cutting programmes have a significant impact on the resilience of our overhead network. Data driven programmes focused on safety and customer together with continued focus on increasing delivery resources and compliance to standard is having a positive effect on network resilience.

Our worst performing outlets and locations of known accelerated asset degradation have been prioritised for targeted specialist technical patrols and follow-up remedial works programmes. This ensures resources are targeted and deployed to the locations most in need of investment.

Wildlife protection for overhead networks was also reviewed in 2023, to minimise impact on wildlife and to improve network performance. Bird diverters on overhead conductors minimise outages and damage due to bird strikes and mitigation devices fitted to transformers also prevent customer outages.

Our focus will be on network resilience over the coming years. In particular we are focusing on the current future challenges defined in our Networks for Net Zero Strategy. This will have an impact on how we manage, maintain and plan for our future overhead networks.

Underground Network

There are approximately 182,000 LV minipillars on the distribution system. ESB Networks carries out public safety hazard patrols on approximately 42,000 minipillars per annum. We previously developed a new software application to capture minipillar data from such inspections. By the end of 2021, survey data for all registered minipillars was inputted into this system, meaning we now have full asset population patrol data. This enables ESB Networks to plan asset replacement and/or corrective maintenance on this significant asset base. This resulted in the movement from paper-based patrol records to being more digital and data-driven in the lifecycle management of our LV minipillars.

There are approximately 24,000 MV substations on the distribution system. ESB Networks also carries out public safety hazard patrols on approximately 11,500 MV substations per annum. It was identified during our PR5 submission that further MV substation inspections were required, to ensure the integrity of our substation structure and the MV and LV equipment inside the substation. We now have a 10-year MV substation inspection programme in place. From 2022, we successfully rolled out an inspection patrol application, business support guidelines on processing corrective orders, network technician/patroller training and put in place the necessary framework for MV unit substation shell and door replacements (a corrective item arising regularly during the patrols).

On our MV network, we also continue to progress planned asset replacement programmes on our cast resin type MV unit substations. To replace these MV unit substations in urban environments is difficult, particularly where the space allowed for the existing substation is too small for our currently supplied standard MV unit substation. To ensure this important asset replacement programme progressed, ESB Networks secured several alternative MV unit substation types from our equipment suppliers. These slimline substation design types have been successfully deployed at sites where width, depth and height space can be limited. By the end of 2023, the cast resin type MV substation population was reduced down to approximately 1,100 units (from an original 4,500 units).

Metering Assets

Meter asset management sets the standard for meter installation, maintenance, and replacement of electricity meters across the residential and commercial network. ESB Networks owns and maintains almost 2.5 million customer meters. In 2023, 464,957 smart meters were installed as part of the smart meter programme.

ESB Networks also carried out replacements of LV meters, with 4,289 day/night meters exchanged. At the MV and HV levels, 105 and 50 meters were exchanged, respectively. Other key achievements in 2023 included the completion of 1,772 major meter tests and the installation of 1,397 'Pay as You Go' meters. In addition, meter assets have delivered 6 MV metering solutions for the modular electric vehicle substation, which included power quality metering. This is a pivotal piece of infrastructure to meet the demands of electric vehicle charging and ultimately work towards a net zero carbon future.

Network Reinforcement

Continued network reinforcement is of vital importance to the distribution system. ESB Networks has delivered and will continue to deliver large HV projects that facilitate economic growth, provide new connections and improve security of supply for customers.

The increase in 38 kV and 110 kV capacity each year from 2019 to 2023 is outlined in the table below. Important projects to improve resilience, increase capacity and strengthen the network were completed in 2023. Overall, capacity increased by 90.5 MVA, which consisted of the installation of:

- **two 110 kV transformers, which increased capacity by 79.5 MVA; and**
- **eight new 38 kV transformers, which increased capacity by 11 MVA.**

Overall, two new stations were added to the distribution network in 2023 (Ballyragget 110kV station (previously a 38kV station at this site), Abbeyleix 38 kV station).

Net Increase in 110 kV and 38 kV Transformer capacity

Year	2019	2020	2021	2022	2023
110 kV (MVA)	303.5	63.0	220.0	1.5	79.5
38.0 kV (MVA)	34.0	27.8	5.0	48.0	11.0
Total (MVA)	337.5	90.8	225.0	49.5	90.5

New Material Introduction

Traditionally ESB Networks has purchased most of our equipment and materials on medium term supplier frameworks. This has given us stability in the materials and equipment being installed on the electricity network and consistency for our construction and operation teams. To meet the required pace of expansion of our network and maintain service levels, ESB Networks now has a wider range of asset development and acquisition approaches. This includes:

- **contestability;**
- **engineering, procurement, and construction; and**
- **design and build frameworks.**

To expedite and manage the rapid introduction of new and innovative technologies safely and efficiently, we established a 'New Material Introduction' process. This brings new material for our electricity network from the research and investigation phase through to business as usual. The new process engages the key stakeholders at the correct time to expedite the introduction of materials new to us onto our electricity network.

Load Indices

ESB Networks committed to develop a load indices (LI) approach to manage and track changes in the peak loading at HV substations and to help prioritise reinforcement activities for PR5.

LIs are a network output measure to indicate substation and network utilisation, to manage and track changes in the peak loading at HV substations and to demonstrate the effectiveness of distribution reinforcement activities. This LI approach is now being used by ESB Networks, and the process applies to HV network substations (i.e., 110 kV/38 kV, 110 kV/MV and 38 kV/MV). Throughout 2023 the approach has been developed and embedded into business as usual.

LIs allow a DSO to demonstrate network investment in the appropriate areas and to ensure network reliability, effective management of risk and security of supply in the long-term. LIs give an indication of substation utilisation and can be regarded as a proxy for network utilisation at present and forecast into the future. The ability to monitor utilisation of substations going forward will be the key in managing the ability of the network to respond to rapid increases in electrification due to decarbonisation of the energy system.

Load Indices Definition

The LI measures the loading level of station HV transformers against the firm capacity of those assets, using loading levels (percentage of firm capacity) and duration (hours/year) metrics. A scale of 1 to 5 is used, with 5 representing a heavily loaded asset and 1 a lower loaded asset. Whilst LIs are typically calculated on an annual basis, tracking changes in LIs over time can also provide a useful overview of asset loading status. For example, a rising LI indicates growing load and higher loading of assets. The outcomes can be used to provide an overview of network performance and be used to assist in prioritisation of investments or targeting of specific projects for delivery.

The definition of the different categories of LIs applicable to ESB Networks are outlined in the table below.

LI ranking	Definition
LI1	Significant spare capacity
LI2	Adequate spare capacity
LI3	Highly utilised
LI4	Fully utilised, mitigation requires consideration
LI5	Fully utilised, mitigation required

Current Load Indices

The table below sets out the number of HV substations in each LI category over the past five years. Since 2022 we are monitoring load indices on a calendar year basis. A reduction across LI2-LI5 from 2022 to 2023 is a result of a number of offloading projects that were carried out over the last two years after the new substations were energised in 2021. Load transfers are usually carried out in a period up to 24 months after the initial project (such as a construction of a new substation) is completed.

Number of substations in each LI category

LI rank	2019 -20	2020-21	2021-22	2022	2023
LI1	325	277	334	310	348
LI2	102	123	100	119	110
LI3	26	37	25	26	22
LI4	46	62	48	49	34
LI5	69	68	60	67	61

The table above indicates the impact of projects planned on the LIs of existing substations. The LI report is used as an internal metric to manage and track changes in the peak loading of HV substations. A high or rising LI indicates that the network may be heavily loaded, whereas a low or falling LI suggests that extra capacity has been added to reinforce the network.

The need to reinforce substations by increasing capacity can be driven by an increase in electricity demand and renewable connections.

Further steps to enhance load indices during PR5

- ESB Networks will review the LI methodology, with the view to enhance the methodology of reporting on transformer loading (the current method is to report at a station level).
- Results from the LI report and outputs will continue to inform business plans and prioritise reinforcement projects.

3

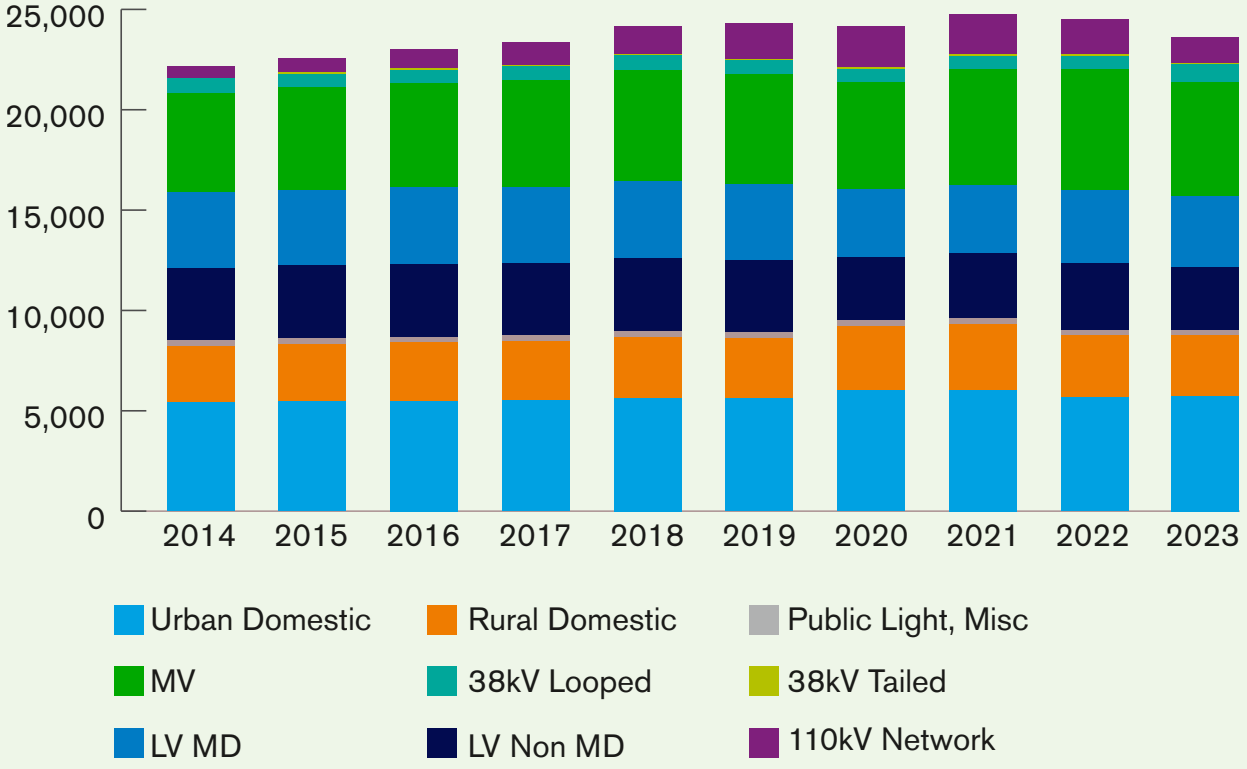
New Connections and Growth

3. New Connections and Growth

Efficient and economic connections are vital for our customers. We consistently strive to reduce the time from request to connection. Our focus is to enhance customer relationships through the design of a better experience, turning common field service challenges into customer engagement opportunities, increasing efficiencies to reduce the time from application to connection and the proactive provision of timely information to our customers.

The chart below shows electricity consumption split by customer type from 2014 to 2023. Electricity consumption has decreased slightly in 2023 compared to 2022 levels.

Electricity Consumption (GWh)



New Demand Connections

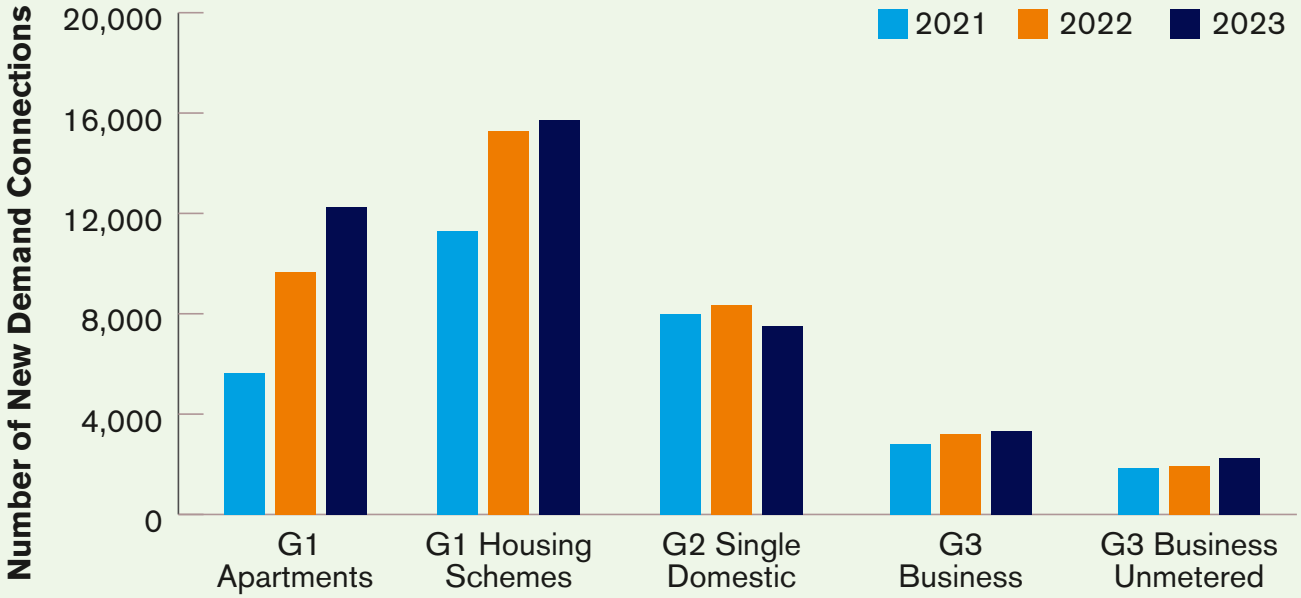
Providing new connections for demand customers involves providing a connection to the electricity network for domestic homes, housing schemes, apartment blocks, farms, businesses, and industry. Our purpose in ESB Networks has always been to connect and distribute electricity - safely, securely, and affordably. Acknowledging the central role that electricity plays in climate action, our purpose has evolved to deliver a clean electric future through the electrification of heat, transport, and industry. We continue to enable the 'Housing for All' government initiative which seeks to ensure 300,000 new social, affordable, cost rental and private homes are built by 2030. This is ensuring the sustainable social and economic development of communities and businesses while enabling Ireland's climate action response and transition to net zero.

Growth in new connections from 2021 to 2023 is outlined in the chart below. In 2023, ESB Networks completed 40,928 new demand connections. This comprised of 7,478 single domestic dwellings, 15,883 housing scheme, 12,185 apartments, 3,269 businesses and 2,113 unmetered connections.

In 2023, the volume of new connections increased overall by 5% when compared to 2022 (38% increase compared to 2021). The urban centres of Dublin, Cork and Drogheda have seen a significant increase in new connection applications, with an upward trend in apartment developments.

Completed Connections	2021	2022	2023	% Difference 2023 V 2022
G1 - Apartments	5,619	9,785	12,185	25%
G1 - Housing Schemes	11,167	15,541	15,883	2%
G2 - Single Domestic	8,082	8,489	7,478	-12%
G3 - Business	2,870	3,142	3,269	4%
G3 - Business Unmetered	1,814	1,968	2,113	7%
Total	**29,552**	**38,925**	**40,928**	**5%**

New Demand Connections by Category and Year



In particular in 2023 we:

- **exceeded the Governments "Housing for all policy", as we continue to enable the electrification heat and transport;**
- **continued the year-on-year growth of G1 and G3 connections;**
- **exceeded the forecasted delivery of G2 units;**
- **enabled the growth in apartment and housing scheme connections, with significant concentration of connections in Dublin, Drogheda and Cork.**

The number of new connections is growing year-on-year during PR5 and is expected to continue as more homes are constructed and as government targets increase. To meet this growing requirement, ESB Networks is taking a range of measures to meet customer needs and ensure that we comply with our Service Level Agreement (SLA) requirements. These measures include the following:

- ESB Networks is implementing a digital journey for all connection applications to deliver a seamless, online experience in line with customer expectations. More than 91% of customers are using the online account to apply and track their connections. The digital journey enhancements will continue through 2024 and 2025 as we execute more projects to deliver excellent customer experience and service across the new connections landscape.
- In 2023, ESB Networks continued the journey of digitisation by adding the functionality for customers who applied for their new connection online to access and sign their connection agreement digitally.
- In 2023, ESB Networks moved from a decentralised, regional resourcing model to a centralised 'New Connections Design Department'. This ensured ESB Networks were in a position to efficiently assign work and resources to meet peaks in work associated with the quotation and design of new connections. Meeting the increase in demand for new connections and delivering within our SLAs.

- The volume of overall applications to our 'New Connections Department' continued to rise through 2023. This increase was largely driven by microgeneration applications. However, due to automation of part of the process relating to microgeneration, despite this significant increase in volume, it was possible to manage the applications with existing resources.
- ESB Networks proactively and effectively continued to engage with relevant stakeholders throughout 2023. This included the Construction Industry Federation (CIF), its associated organisation and the Irish Home Builders Association. We also greatly value our relationship with Local Authority stakeholders including County Chief Executives and relevant Directors of Service. ESB Networks' area managers continued to liaise regularly with Local Authorities and businesses on any issues of collective concern. This engagement has proved effective throughout 2023 ensuring efficient delivery of new connections during the price review period.

The tables below show ESB Networks' performance on new connections 'Time to Quote' (TTQ) for single domestic, domestic scheme, business and apartment connections. Separate results are provided for Business connections where the MIC is greater than 100 kVA.

The targets for TTQ are set at:

- **15 working days for single domestic dwellings and small businesses less than or equal to 100 kVA; and**
- **90 working days for connections to larger developments or connections over 100 kVA or MV connections.**

The tables demonstrate that we are working well within our KPIs with our G2 single domestic dwellings, averaging 11 days to quote against our 15 day target, and our G1s, averaging 30 and 23 days, respectively for domestic developments and apartment complexes, which have a 90 day target. Connections to businesses less than or equal to 100 kVA are averaging 29 days to quote, while connections to larger businesses exceeding 100 kVA are averaging 44 working days, which is well inside our 90 day target.

Connection type	Average number of days to Quote
G2 Single Domestic Dwellings	11
G1 Domestic Developments	30
G1 Apartments	23

Connection type	Average number of days to Quote
G3 Business <=100 kVA	29
G3 Business > 100 kVA	44

The table below shows ESB Networks' performance on new connections 'Time to Connect' (TTC) for single domestic, domestic scheme, business and apartment connections.

The current TTC average – irrespective of the type of connection – is 9 days. The TTC report measures our performance against our new connection guarantee, which stipulates that we will complete the connection within 10 working days of confirmation of ducting to standard, registration with Supplier and receipt of the Completion Certificate, whichever is the latest. This guarantee is subject to the conditions in the letter of quotation having been met e.g. wayleaves and there being no significant network reinforcement involved. TTC transforms how we develop and deliver projects through changes such as new ways of working, closer collaboration, right first time processes, and lean methodologies.

Connection type	Average number of days to connect
G2 Single Domestic Dwellings	12
G1 Domestic Development	7
G1 Apartments	10
G3 Business	17

Information about terminations and de-energisations are outlined in the following table.

Terminations and De-energisations

	2019	2020	2021	2022	2023
Connection points terminated[1]	14,303	18,092	16,399	15,293	15,393
Connection points de-energised[2]	5,267	1,645	1,069	3,026	1,694

1 *Terminated: This includes connection points in vacant premises that have been terminated following previous de-energisation and de-registration, it also includes MPRN's associated with housing scheme quotations that have not progressed.*
2 *De-energised: for non-payment only.*

Connected Renewables and Energy Storage

ESB Networks' mission is to play a leading role in Ireland's transition to a low carbon economy and to provide secure, sustainable, reliable electricity in an affordable manner for all customers. The Irish Government's CAP has ambitious targets for increased penetration of renewable energy by 2030, therefore, ESB Networks has continued its key role of connecting renewable generation to our network to help decarbonise electricity.

Our Renewables Team performed strongly in 2023, connecting 414 MW utility scale of wind and solar to both the distribution and transmission system.

Utility Scale renewable energy (MEC) connected to the electricity distribution system in 2023

	DSO MEC (MW)	DSO number of projects	Total MEC (MW)
Wind	21	3	21
Hydro	0	0	0
Solar	24	8	24
Other	0	0	0
Total renewable	46	11	46
Energy storage	0	0	0

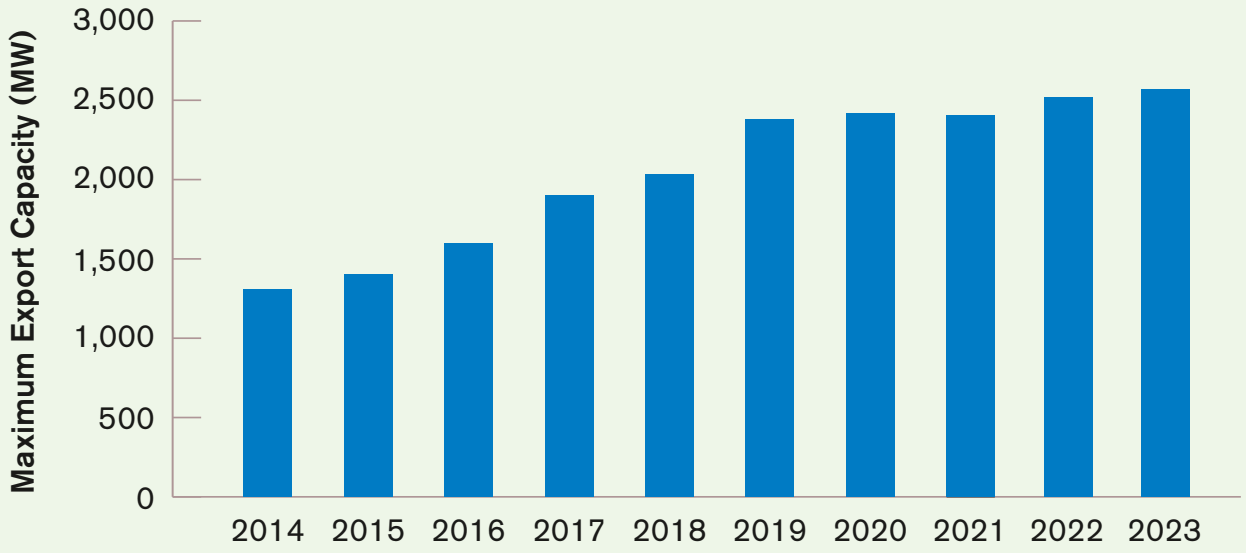
At the end of 2023, ESB Networks enabled 5,793 MW of utility scale renewable energy. This includes:

- **4,814 MW of wind energy generation;**
- **582 MW of solar; and**
- **the remaining capacity comes from other renewable sources.**

Total utility scale connected renewables at the distribution (DSO) level has grown over the last decade, as outlined in the chart below. In 2023, 2,575 MW was connected at distribution (DSO) level.

Renewable utility scale energy (MEC) connected to the electricity system (2013- 2023)

Total Connected Renewables (DSO)

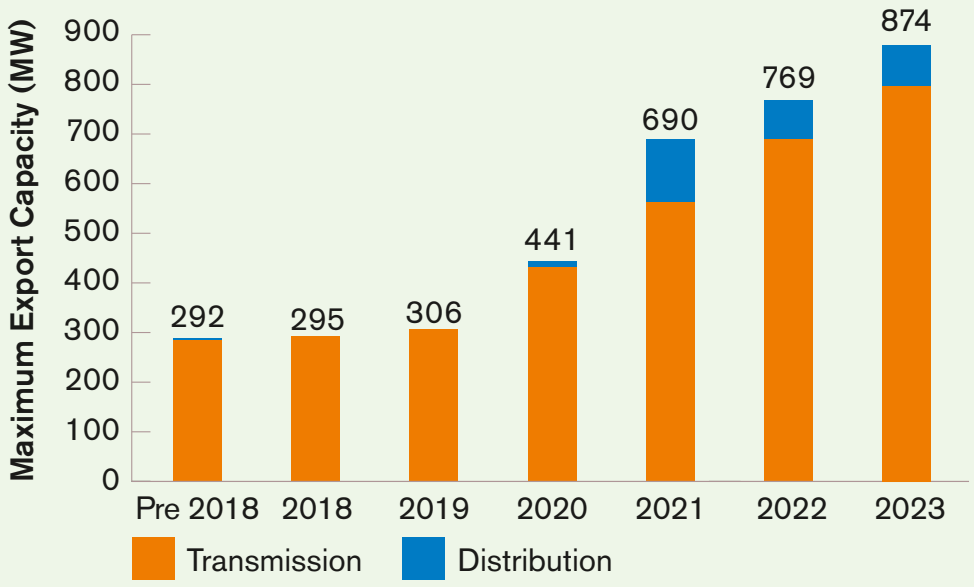


In addition to the 582 MW of grid scale solar connected in 2023, approximately 400 MW of roof top, mini-generation, microgeneration and small scale solar was connected. Resulting in a total of almost 1 GW of solar connected to the grid.

In 2023, ESB Networks also conducted scoping, design and construction works associated with the pipeline of customer projects for connection in 2023 and 2024. Many of these customer projects are participants in RESS-1, RESS-2 and RESS-3, which is the Government's renewable energy support scheme.

ESB Networks connected two large transmission system energy storage projects in 2023. These projects consisted of 105 MW which resulted in a total utility scale energy storage capacity of 874 MW (battery and pumped hydro) on the network by the end of 2023, as outlined in the chart below. Energy storage provides system support services to the electricity system operators. This enables increased renewable energy penetration on the network and it allows for renewable energy to be stored when the supplies of energy exceeds demand.

Energy Storage (MEC) connected to the electricity system



Enduring Connection Policy (ECP-2.3)

ESB Networks successfully completed the processing of 50% of the Enduring Connection Policy 2.3 (ECP-2.3) generator applications in 2023, with the remaining completed by April 2024. Renewable hubs were introduced as part of the ECP-2.3 process. This involves the advance build of substation developments, located in areas where there is a known pipeline of renewable projects. It introduced a per MVA charging methodology which reduced the upfront connection costs for customers. A 'lean process' was introduced for ECP-2.2, where projects were scoped before offers were issued and this process continued for ECP-2.3 projects. This provided greater accuracy of customer offers and reduced the overall timeframe to connect customers, however it increased the timeline for issuing offers.

The application window first opened for the ECP-2.3 batch in September 2022, and applications included a mix of wind, solar, hybrid, biogas/Anaerobic Digestion (AD), and Combined Heat and Power (CHP) projects. ESB Networks processed a total of 70 applications throughout 2023, leading to 40 offers issued in 2023 and early 2024. We also carried out extensive customer engagement across the period, with over 90 customer meetings taking place to agree the customer connection methods. As part of the ECP process, customers had the option to:

- **proceed with their full MEC and the associated network reinforcements;**
- **reduce MEC in order to avoid uprate works (where possible); or**
- **withdraw from the process for a partial application fee refund.**

The option to re-optimise available capacity proved very successful in allowing projects to remain in the process, which otherwise might have been withdrawn or requested to modify in the future.

The ECP-2.3 applications were processed in time for the upcoming RESS-4 auction qualification process which was due to take place in May and June 2024. Applications included a mix of wind, solar, hybrid, biogas/AD, and CHP applications. The aim is for these projects to proceed with a RESS-4 contract or Corporate Power Purchase Agreement and that they will start contributing to the CAP target of an 80% share of electricity generation supplied by renewable sources by 2030.

For ECP-2.3, the Stage 1 customer engagement took place between February 2023 and May 2023 in advance of the application fee balance requirement. Customer calls were scheduled for approximately 21 nodes, where significant uprates were identified. After the Stage 1 customer engagement, nine ECP-2.3 applications were withdrawn.

The Stage 2 customer engagement took place between May 2023 and March 2024, following the technical assessment of the applicant's connection method by the RES and Customer Flexibility Team.

These meetings consisted of:

- **outlining the connection method at a high level;**
- **estimating costs associated with connection;**
- **discussing whether the possibility of MEC reduction to avoid certain uprates was available; and**
- **offering the option to withdraw ECP-2.3 applications and receive a 75% application fee refund.**

There were 55 Stage 2 customer engagement meetings, with some applications requiring more than one meeting. In total, 14 applications availed of the option to withdraw their application post-Stage 2 customer engagement. For the customers who indicated that they wanted to proceed with their application, the connection offer documentation was prepared and issued to each customer.

The number of connections offers and associated MW for each technology is outlined in the table below.

ECP- 2.3 Connection Offers Profile

Technology	Connection Offers	MW
Wind	5	25
Solar	26	280
Hybrid	5	58
Biogas/AD	2	8
CHP	2	5
Total	40	376

In preparation for the opening of the ECP-2.4 application window in October 2023, ESB Networks hosted a webinar in August 2023, followed by a two day customer clinic event in September 2023. The event was open to all ECP-2 categories and provided customers with the opportunity to discuss their prospective ECP-2.4 project with ESB Networks. It gave customers a very early stage indication of the works that may be required at a particular node. In total, 18 meetings took place over the two days covering 26 projects.

Microgeneration

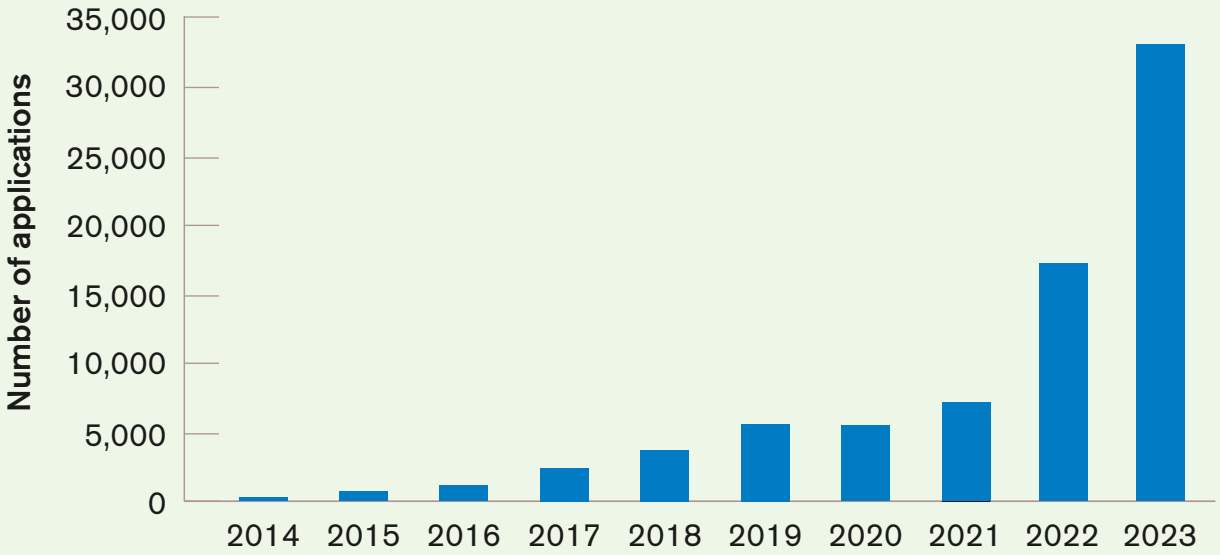
ESB Networks is committed to facilitating increasing levels of microgeneration connections to the distribution network. Customers who wish to install microgeneration and export excess electricity onto the electricity network are referred to as prosumers. As the DSO, ESB Networks have an important role to play in facilitating this transformation. We aim to support our customers along each stage of the process as they adopt small scale low carbon technologies and make the transition towards being active participants in the energy system. With the support of new robotic process automation tools, our teams are processing an ever increasing number of applications with no backlogs or delays.

Key points relating to microgeneration connections at the end of 2023 are as follows.

- **Simple 'inform and fit' process.**
- **33,000 applications were successfully processed in 2023 (an increase of 92% from 2022, as outlined in the chart below).**
- **In the second half of 2023, a weekly average of 750 applications were successfully processed.**
- **By the end of 2023, ESB Networks facilitated 78,400 microgeneration connection applications to the electricity network, providing approximately 300 MW of renewable energy.**

Customers must inform ESB Networks at least 20 days in advance of installing microgeneration through completion of an NC6 form. This enables ESB Networks to ensure compliance with the required standards and to register the connection with the customers electricity supplier. For further information, please see the microgeneration section of the ESB Networks website.

Annual Number of Microgeneration Registrations (NC6)



Mini-Generation

In December 2021, ESB Networks announced the launch of its new simplified mini-generation application process for larger customers generating up to 50 kW (e.g., farms, business properties, community buildings, etc). This equates to, for example, between 18 and 150 typical solar panels. This was completed in order to support the delivery of Ireland's 2030 CAP. The new streamlined mini-generation process ensures that it is even simpler for our customers who generate their own renewable electricity to safely connect their generator and to export their excess electricity to the local electricity network. This is allowing ESB Networks and customers to play an active role in connecting Ireland to a clean electric future.

Key points relating to mini-generation connections at the end of 2023 are as follows.

- **Streamlined connection process for customers with generators of up to 50 kW.**
- **Over 1,780 applications received by the end of 2023 (approximately 50 MW of renewable generation).**
- **In excess of 500 customers have installed and connected their generators.**
- **Over 16 MW of renewable generation already connected.**

In order to ensure the safety and resilience of the electricity network, all customers installing mini-generation must submit an NC7 application form and complete the ESB Networks' connection process prior to connecting their generator to the electricity system. For further information, please see the mini-generation section of the ESB Networks website.

Small Scale Generation

On 30th September 2022, ESB Networks launched its new simplified small scale generation application process for larger sites generating up to 200 kW. The new process was initially launched on a pilot basis in line with Ireland's 2030 CAP. Feedback and learnings from the pilot will be used to inform the enduring process.

The new streamlined process is making it easier for our customers who generate their own renewable electricity to safely connect their generator and to export their excess electricity to the local electricity network. This allows ESB Networks and customers to play a more active role in connecting Ireland to a clean electric future. This process was successfully up and running when the Irish Government introduced the new Small Scale Renewable Energy Support Scheme (SRESS) in 2023 which enables these customers to be remunerated for exporting their excess electricity.

Key points relating to small scale generation connections at the end of 2023 are as follows.

- **Streamlined process for customers exporting up to 200 kW.**
- **Over 240 applications received (approximately 27 MW of renewable generation).**
- **At the end of 2023 a total of 64 customers had installed and connected their generators.**
- **With approximately 8 MW of renewable generation already connected.**

In order to ensure the safety and resilience of the electricity network, all customers installing small scale generation must submit an NC8 (or NC5) application form and complete the ESB Networks connection process prior to connecting their generator to the electricity system. For further information, please see the small scale generation section of the ESB Networks website.

National Network, Local Connections Programme

The decarbonisation of Irish society relies on fundamental changes to how energy is generated and consumed. To enable these changes at the right pace and price, we need to make the connection between how renewable energy is generated, and how we use or store it. Every Irish home, farm, community, and business is being called on to play a part. The National Network, Local Connections (NNLC) programme was established within ESB Networks to work with, and for, customers to make this possible.

Acceleration of measures

In the three years since the programme has been established, the urgent need to introduce and scale flexible demand in Ireland has accelerated. The original national targets for flexible demand (20- 30% by 2030) set out in CAP 2021 focussed on flexible demand as a means of ensuing electricity infrastructure had the capacity to support the connection of low carbon technologies (such as electric transport, heating and distributed generation). However, the accelerated CAP 2023 target for 15-20% flexible demand by the mid-decade, acknowledged and sought to leverage the reality that the delivery of flexible demand will also accelerate carbon abatement. In addition, there is potential to increase the percentage of renewable energy consumed by shifting load from peak times to times of high renewable energy availability. This means that in addition to continuing our focus on supporting the connection of low carbon technologies, we are also targeting the use of flexible services to encourage demand to follow our indigenous supply of renewable generation.

Engagement

When the NNLC programme was created, we acknowledged that a whole of energy industry approach would be required to deliver an inclusive network that supports the people of Ireland. Engagement with our stakeholders evolved and expanded in 2023. In 2023, we attended and presented at 25 conferences, held 18 webinars and three advisory council meetings, delivered 5 roundtables, and participated in 71 bi-lateral stakeholder meetings. We continue to realise and appreciate the contribution stakeholders and customers make to inform the strategy and blueprint for the delivery of the NNLC programme. We also recognise and appreciate the stakeholder collaboration that is needed to support the rollout of new products and services across security of supply products.

Beat the Peak

The 'Beat the Peak' domestic (BTP-D) pilot ran from October 2022 to March 2023 under the external campaign 'Is This a Good Time?' pilot. This was a nationwide domestic behavioural demand response campaign. It educated registrants about how to take control of their electricity consumption during peak hours. It also promoted and rewarded customers who reduced demand during peak events. An interim campaign was delivered from April 2023 until the second phase of the 'Is This a Good Time?' campaign went live in August 2023, when we launched the latest version. This campaign built on the key learnings from the pilot. Across 2023 we aimed to continue to educate participants on how they can take control of their electricity consumption, while also introducing new carbon related topics to participants such as flexible consumption, renewable generation and carbon abatement and support demand side flexibility.

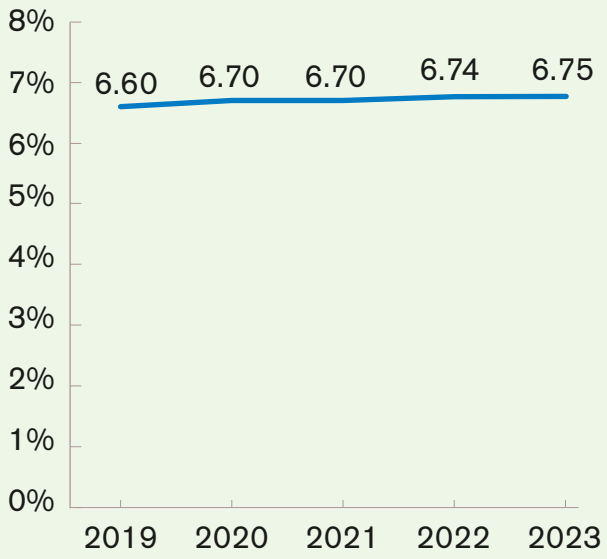
Outcomes from the 'Beat the Peak' domestic products to date are as follows.

- 18,500 customers participated in the pilot (October 2022 to August 2023)
- 88% pilot participants signed up for energy events
- 24,107 pilot participants reported behavioural changes
- 20% reported uplift in participants feeling in control of electricity consumption, while wider population showed no change
- 23% reported increase of customer awareness of peak times
- 18% reported increase in the role of weather and wind in renewable generation
- Built a 'Green Energy Messaging' system tool to support customers in knowing when there is surplus renewables on the network
- Brought the BTP-D sign up onto the Customer Portal to ensure improved validation of MPRN and supporting ongoing rewards
- Launched new advertising and recruitment campaign to coincide with August 2023 release
- Delivered weekly educational content to participants

Losses

Distribution system losses are inherent losses within an electrical system. Distribution losses from 2019 to 2023 are outlined in the chart below. In 2023, approximately 6.75% of the energy that was put into the distribution system was accounted for as losses. This was a marginal increase on 6.74% seen in 2022.

Distribution Losses



Losses are comprised of 'technical' and 'non-technical' losses.

- **Technical losses are heat losses arising from the passage of electricity through lines, cables, and transformers. Technical losses depend on the volume of electricity flowing in the system and the characteristics of the lines, cables, and transformers.**
- **Non-technical losses on the other hand are electricity units which are unaccounted for, for example as a result of theft arising from unauthorised connections.**

Some of the factors that affect the percentage of electricity lost are outlined below.

- **The proportion of electricity that is distributed at the various voltage levels**. Electricity distributed to customers connected at higher voltages incur less system losses than electricity connected at lower voltages.
- **Utilisation of assets. If the loading of transformers, lines and cables increases, losses will also increase.** As networks are naturally reinforced, this will normally result in a reduction in losses.
- **Operating voltage of lines and cables.** The higher the operating voltage of lines and cables, the lower the losses for a given electricity throughput.
- **Generator connection.** As more generation is connected to the distribution network there is an impact on losses. There are additional losses on the lines and cables connecting to wind farms and other large generation sites. Some losses may be avoided due to supply of electricity locally displacing electricity supplied via the transmission system, particularly for generation connected at LV (e.g., photovoltaic generation).
- **Unauthorised connections/metering tampering.** The propensity for unauthorised connections and meter tampering in the customer base and the effectiveness of measures to reduce it.

More current flows through the network as demand on the distribution system increases. It is not feasible to eliminate losses completely, but what is required is to manage the losses to an economically optimum level, that is, the point where the total cost of supply to the customer is minimised. ESB Networks recognizes the importance of managing losses and commits to continuing to manage losses optimally on the distribution network.

Examples of how ESB Networks is managing losses are provided below.

Conversion of 10 kV to 20 kV

ESB Networks is undergoing a program to convert its 10 kV network to a 20 kV network. One of the primary benefits of converting the electricity network to a 20 kV network is that the thermal capacity is increased by a factor of two and voltage drop performance is increased by a factor of four. In addition, the conversion to 20 kV reduces losses by a factor of 4. The conversion programme continued in 2023, with 618 kilometres of the network converted to 20 kV. This results in an estimated avoidance of 551,442 kg of CO2 emissions per year. To date, ESB Networks has converted 53% of the 10 kV network to 20 kV.

Capitalisation of losses in network investment decisions

The efficiency of equipment is factored into purchasing decisions. The cost of the losses associated with each design is included with the plant costs, so that the overall total cost of ownership over the lifetime of the investment is minimised. In general, this means that designs which are energy efficient are chosen over designs which are not, all else being equal.

4 Environment

4. Environment

ESB Networks is dedicated to conducting our business in a way that prioritises our environmental and sustainability performance and reflects our commitment to responsible management of these areas. We strive to prevent pollution and safeguard the natural environment to the best of our ability. To learn more about our approach, please refer to ESB Networks' Policy Statement on the Environment.

Our Networks for Net Zero Strategy aims to reduce carbon emissions through the adoption of renewable energy, electric vehicles, and smart technologies, while also promoting sustainable practices across its operations.

During 2023, ESB Networks achieved the following.

- **We had a significant reduction in emissions associated with our SF6 switchgear.**
- **We maintained external certification of our Environmental Management System (EMS) to the international standard ISO 14001, following external surveillance audits by an accredited third party.**
- **Through the course of the year, ESB Networks has progressed initial drafting of its Biodiversity Strategy, comprising both strategic and practical actions which are readily implementable and scalable.**

Energy Usage – Buildings and Fleet

Electricity usage in our buildings was down by 5.9% in 2023, compared to 2022. Aided by a decrease in the carbon emission factor of electricity, this resulted in a 10.2% reduction in the carbon footprint associated with our buildings. In ESB Networks, sustainable carbon reducing measures are a feature of all current and future building upgrade works and include lighting, insulation, energy efficient heating systems, windows, and other works.

Vehicle fleet fuel consumption was 0.4% lower in 2023 compared to 2022 (however, due to a change in the manufacturing of the biofuel used, associated direct carbon emissions of biofuel rose by 6.3%). This fuel consumption reduction is attributable to newer and more efficient vehicles being brought onto the fleet, and an expansion of our electric vehicle fleet. Ongoing engagement with the vehicle industry continues to search for and identify viable low carbon vehicle solutions for the fleet, with most viable options addressing the area of smaller fleet vehicle replacement.

Carbon Emissions

ESB Networks' carbon emissions can be categorised into three different scopes.

Scope 1 – These are direct emissions from ESB Networks owned or controlled sources. This includes our vehicle fleet, SF6 emissions from switchgear, diesel generators, and from gas heated buildings.

Scope 2 – These are typically indirect emissions from the generation of purchased energy, such as electricity used in ESB Networks' buildings. However, as ESB Networks is an electrical utility, this also includes transmission and distribution losses from the network.

Scope 3 – These emissions are all indirect emissions (not included in Scope 2) that occur in the value chain of the reporting company, including both upstream and downstream emissions. This includes waste, capital goods, business travel, employee commuting, working from home and the upstream emissions of purchased fuels.

ESB Networks' annual carbon footprint for 2023 is detailed in the table and figure below.

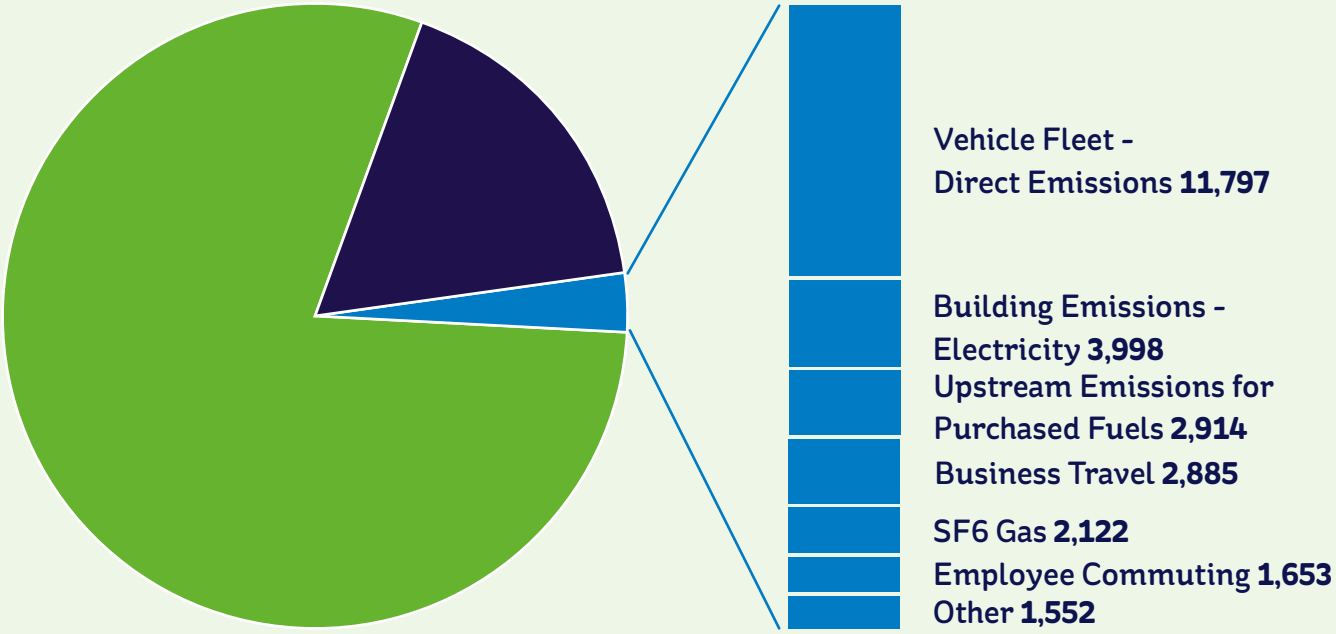
Scope	Category	Tonnes of CO_2 Equivalent
Scope 1	Vehicle Fleet - Direct Emissions	11,797
	SF6 Gas	2,122
	Perfluorocarbon Tracer (PFC) *	2.6
	Generator Emissions*	568
	Building Emissions - Heating Gas *	160
Scope 2	Building Emissions - Electricity	3,998
	Transmission and Distribution Losses	771,568
Scope 3	Waste *	207
	Capital Goods	151,668
	Business Travel	2,885
	Upstream Emissions for Purchased Fuels	2,914
	Upstream Emissions of Gas Consumption in Buildings *	26
	Employee Commuting	1,653
	Working from Home*	588
Total Tonnes CO2E		**950,157**

* These categories are included in the 'Other' category in the below figure.

Overall CO2e Emissions

Note: Overall CO2 equivalent figures compiled using relevant Department of Environment, Food and Rural Affairs (DEFRA) and Sustainable Energy Authority of Ireland (SEAI) CO2 conversion factors.

Breakdown of ESB Networks' 2023 Carbon Footprint



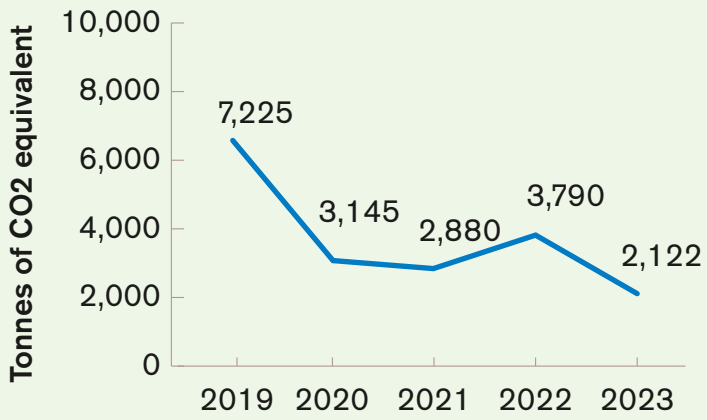
SF6 Gas Management

SF6 is used in a significant portion of ESB Networks' high-voltage switchgear assets on the transmission and distribution networks.

It is used because of its very high electrical insulating properties, which facilitate efficient and safe operation of the switchgear. Emission rates for SF6 gas are reported to the EPA on an annual basis in line with Regulation (EC) No 166/2006.

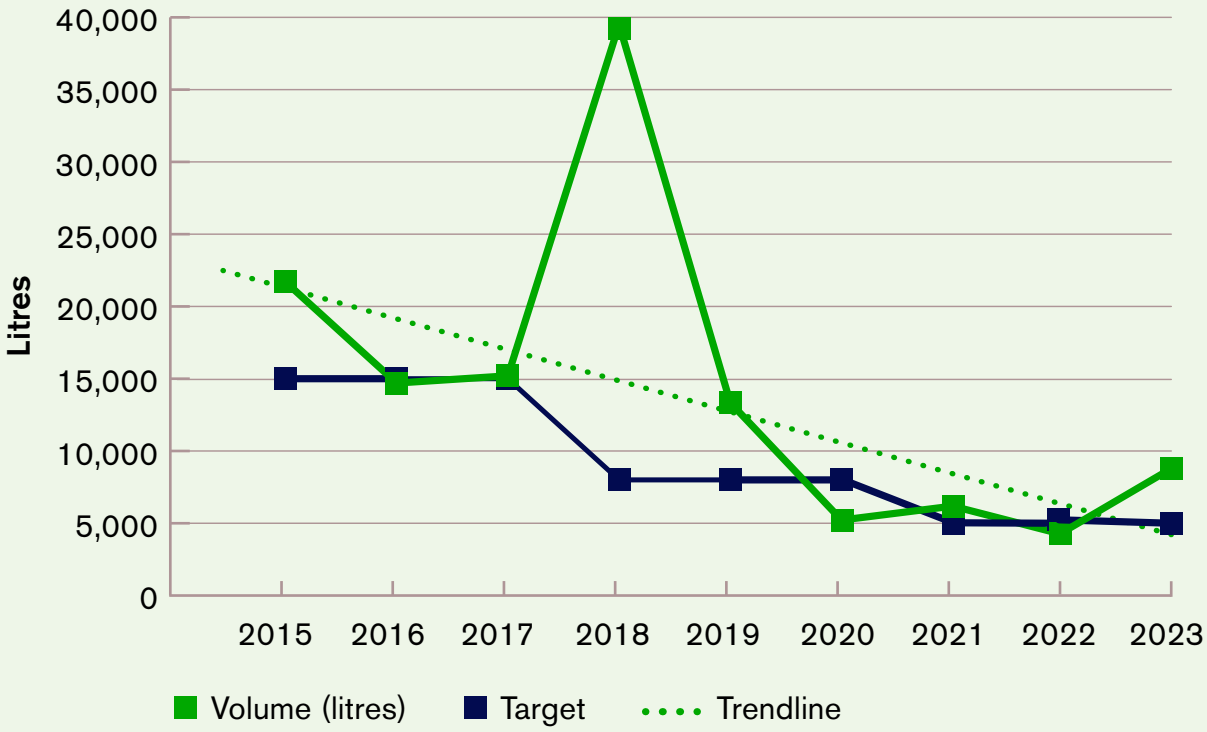
In 2023, 90.29 kg of SF6 was emitted due to equipment faults, representing 0.04% of the total installed inventory of SF6. The comparable 2022 leak quantity was 166.23 kg, representing 0.08% of inventory. This overall leakage rate compares favourably to other European utilities. As we replace and repair our older switchgear, we can see an overall downward trajectory of SF6 emissions which is shown in the following graph.

SF6 Gas - Tonnes CO2 Equivalent



Fluid-Filled Cables

ESB Networks responds to each leak and continuously works to reduce its annual leakage by improving on leak identification and repair times and by progressing our fluid filled cable (FFC) replacement programme.



Four distribution circuits had Local Authority notifiable leaks in 2023, with one distribution cable leak repaired.

The graph above outlines target and outturn fluid cable leakage from 2019 to 2023. ESB Networks' company standard, 'Management of Fluid- Filled Cables' set a maximum cable leakage volume of 5,000 litres per annum from 2021 to 2023. In 2023, 9,016 litres of cable insulating fluid leaked from ESB Networks' HV cable network, compared to 4,917 in 2022. This increase in 2023 is due to factors such as the increasing age of the assets, third party damage and the requirement to maintain a constrained critical network.

Waste Management

ESB Networks is dedicated to sustainability and views effective waste management as a crucial environmental objective in line with its strategy. During 2023, a consultant was employed to prepare applications for appropriate waste authorisations for designated ESB Networks' sites. The consultant is currently preparing appropriate documentation prior to submitting applications.

Additionally, ESB Networks maintains memorandums of understanding with Dublin City Council, South Dublin City Council, and Dun Laoghaire-Rathdown County Council to address illegal dumping of waste, litter and graffiti at unoccupied ESB Networks' facilities.

Environmental Management System

Since 2010, ESB Networks has been using an EMS that has been certified to the ISO 14001 Standard. This has enabled the company to identify, evaluate, prioritise, and manage environmental risks associated with its operations. The EMS covers all of ESB Networks' activities, services and processes related to managing the electricity network on behalf of ESB Networks. The EMS maintained its ISO 14001 certification after external surveillance audits in 2023, reporting no non-conformances.

Managing the Environment During Construction

In line with our commitments to deliver PR5 by 2025 and in keeping with our Networks for Net Zero Strategy, a sustainability approach is a key consideration in the design and construction stage of all our projects.

ESB Networks has remained committed to achieving timely and cost-effective project delivery, despite the demanding landscape of project planning and consenting. To this end, ESB Networks has made continuous improvements and adapted to the challenges of the environment to ensure successful project implementation.

At the planning and design stage for each project, multi-disciplinary technical teams work to develop projects and site-appropriate construction methodologies in order to deliver connections to customers, while protecting sensitive receiving environments. Detailed construction packs, capturing all of the requirements (e.g. planning consents) are provided to our external contractors, who are increasingly important to project delivery. Project support through document review processes is key to ensuring delivery on planning permission condition requirements (e.g. inputs to construction environment management plans, traffic management plans, resource waste management plans). Oversight of construction projects is achieved through the appointment of specialists such as environmental coordinators, project ecologists, ecological clerks of works, project archaeologists.

The Waste Enforcement Regional Lead Authorities (WERLA) oversees enforcing waste regulations and ensuring the appropriate handling of construction and demolition waste at a national level. When requested, ESB Networks provides WERLA with data on their construction undertakings that could produce construction and demolition waste. This information is then passed on by WERLA to waste enforcement officers from local authorities throughout the country, who conduct inspections to verify that waste and materials are being properly managed at construction sites. This effort is part of a strategic approach to managing construction and demolition waste in the State.

Biodiversity

ESB Networks continues to be highly cognisant of the importance of biodiversity in the Irish landscape, and to ensure its activities are managed in a sustainable manner in relation to wildlife and habitat protection. It is also aware of the requirements to identify potential impacts on biodiversity, with the aim of avoiding or mitigating these impacts, and where feasible, works to enhance biodiversity. The Networks for Net Zero Strategy notes that ESB Networks will aim for net biodiversity gain from our operations by 2025.

Several ESB Networks' documents are in place to advise staff on biodiversity matters and communicate their requirements for legislative compliance. In 2023, ESB Networks finalised and approved a significantly updated procedure with regard to designing and undertaking work in proximity to sites designated for nature conservation. We are continuing to develop guidance for managing biodiversity-related risks to our assets, particularly in relation to invasive species and wildlife damage.

Throughout 2023, ESB Networks has progressed initial drafting of its Biodiversity Strategy. This includes both strategic and practical actions which are readily implementable and scalable. Measures relate to both operational infrastructure and future projects and will include a consideration of tools and metrics by which biodiversity net gain can be monitored.

During 2023, ESB Networks committed sponsorship funding to the EurElectric Power Plant - Phase II research project. The project aims to deliver a charter of guiding principles for a legislative and regulatory framework supporting biodiversity protection and power sector investment for electricity utilities across the EU. This sponsorship will demonstrably facilitate ESB Networks' drive for sustainability and support the transition to a low carbon future as it aligns and supports the commitments in the Networks for Net Zero Strategy, most specifically those regarding biodiversity gain.

In addition, staff from the ESB Networks' Environment Team have been directly contributing to the 'Business for Biodiversity Platform' and the development of its community of practice through 2023. This is a government backed national platform which is helping Irish businesses transition towards a 'nature positive' way of working, where they can actively seek to support nature restoration. The initiative is a key objective delivery vector in the 4th National Biodiversity Action Plan (NBAP), with an aim to scale up to 900 businesses over the duration of the plan.

ESB Networks has progressed preparations for reporting requirements relating to biodiversity and ecosystems under the Corporate Sustainability Reporting Directive requirements. An initial assessment has been carried out on available baseline data, existing tools and methods for assessing our risks, impacts, dependencies and biodiversity opportunities. This has been carried out utilising the 'LEAP' approach (Locate, Evaluate, Assess and Prepare), as advocated by the Taskforce for Nature-Related Financial Disclosures.

ESB Networks continues to support the All-Ireland Pollinator Plan, pursuing opportunities for more pollinator-friendly management of properties, where this fits with the needs of safety, business operations and property management. In addition to the continuation of a pollinator-friendly management regime at the National Training Centre in Portlaoise, ESB Networks has expanded its trialing of practical biodiversity actions to a number of asset locations around the country. For example, a suite of actions has been undertaken at the retired Stradbally Road 38 kV substation property in Athy, to enhance the biodiversity value of the site. The site originally comprised of extensive stoned and concrete surfaces, as well as several towers and a control room building. Working closely with our civil contractors, ESB Networks has undertaken native seeding and planting on site and repurposed remaining buildings and structures for nesting birds and roosting bats. Non-native species have been removed and deadwood was used to create habitat for insects and small mammals. The results from this trial will be used to inform and design biodiversity action at other ESB Networks' substations, depots and offices located around the country.

Staff continue to regularly engage with the ESB Networks' Environment Team and ecology staff (based in Engineering and Major Projects) on various biodiversity-related issues, including screening for appropriate assessment, invasive species response and management, and the implementation of appropriate mitigation measures.

5 Safety

5. Safety

Our purpose in ESB Networks has always been to connect and distribute electricity - safely, securely and affordably.

The safety, health and wellbeing of our staff and contractors as well as the communities and customers we serve, continues to be a core strategic priority and area of focus. Our Safety Strategy sets out our strategic intent and commitment to how we keep our network safe. It outlines how we raise awareness about the importance of safety, health and wellbeing among our staff and contractors, as well as the dangers of coming into contact with, or being in close proximity to, our electricity networks and equipment for the general public. In 2023, we continued to make improvements across the key areas of safety compliance, engagement, communications, safety culture transformation, road safety and public safety, while all the time ensuring the provision of essential services to the communities we serve.

External Validation of Safety Management System

In keeping with our aim to continuously improve and develop our capability and performance levels in safety, health and wellbeing, ESB Networks successfully retained its certification to the international ISO 45001 Occupational Health and Safety Management System standard in 2023. ESB Networks was also found to be in compliance with the public safety conditions set out the in the Distribution System Owner, Distribution System Operator and Transmission System Owner licences issued by the CRU. The National Standards Authority of Ireland (NSAI) recognised the continued effort and commitment that is required to continuously drive safety improvements.

Safe and Sound – Safety Culture Transformation Programme

During 2023, through our internal Safe and Sound programme we continued with our commitment to creating and embedding a positive, proactive and engaging workplace safety culture where safety, health and wellbeing is at the centre of everything we do. Safe and Sound is an employee-centred safety culture transformation programme based on changing attitudes and perceptions to safety, health and wellbeing. The objective of the programme is to build and embed a world class values-based safety culture that is sustainable over time, where people speak up, challenge unsafe practices, and take responsibility for their own safety and the safety of others. During 2023 we increased our safety leadership teams and participation across the business, with approximately 40 leadership teams (up from 35 in 2022) which include approximately 350 safety leaders (compared to 325 in 2022). These teams met monthly to drive and embed the Safe and Sound philosophy at a local level and take on challenges as they arose.

2023 marked the crucial point where Safe and Sound transitioned from a programme implemented with the support of external consultants, to business as usual driven internally by ESB Networks. Throughout the year this transition was supported by the Safety Culture and Leadership Team and Business Unit Leadership Team.

Throughout 2023, the theme of Human Factors continued in the form of short videos and information in our all-staff monthly safety communications. Human Factors focuses on the interaction between our job, our environment and indeed each other. It looks at those factors that influence us in our safety behaviours. During the year, we focussed on creating a greater understanding of why human errors and mistakes happen, how these contribute to incidents and empowering people to take steps to increase attention and focus at work.

Road Safety

As an employer, ESB Networks has a responsibility to provide a safe place of work and a safe system of work. The ESB Networks' road safety 'Driving for Work' programme, reminds staff that when driving and using the road that it needs to be done in a safe manner. Unfortunately, in 2023 188 people lost their lives on Irish roads, which is a 21% increase on 2022. Road safety continues to be a priority within ESB Networks, and there has been an increased focus on all aspects of road safety (covering all modes of transport) across the ESB Group. In 2023, we continued to implement our Road Safety Strategy (2021 – 2025), which is the focal point of our safety delivery. Some of the key highlights of 2023 are as follows.

Centralisation of driving data

In 2023, ESB Networks commenced Phase 1 of the centralisation of driving data for staff who drive for work. The data is recorded on SAP launchpad, which enables our managers to check that staff driving on behalf of the organisation have the relevant competency to do so.

Road safety cross industry forum

In November 2023, we held our annual cross industry forum with key internal and external stakeholders. This was addressed by the Road Safety Authority and other prominent speakers, with a focus on the national trends we are seeing on our roads.

Engagement and communication

Central to road safety improvement is the continuous engagement and communication with our staff and contractors. We engage directly with all staff on road safety through our monthly safety and core briefs, as well as monthly business line reports and recognition of positive driver behaviour. The Road Safety Bureau had face-to-face engagements with over 3,000 of our staff on road safety. The Road Safety Bureau have been working closely with An Garda Síochána in the delivery of the 'Lifesaver' project presentation across the ESB Group.

Public Education and Awareness

Our customers are at the heart of everything we do, and we continue to strive to ensure their safety and the safety of those who work on, or may come in close contact with, the electricity network. Increasing awareness of electrical safety risks is essential, and safety education and awareness programmes continue to be a strategic objective of our public safety activities.

In 2023, we continued to implement our Public Safety Strategy (2021 – 2025), which is anchored in the core purpose of our business and continues to be a core strategic priority and area of focus for ESB Networks.

The simple and clear campaign messaging of 'Are You Sure It's Safe?' and 'Stay Safe, Stay Clear' helps to encourage the public to stop and think of the danger when they are close to the electricity network. This campaign has continued to resonate with our key at risk groups since its creation in 2016 and maintained awareness levels at 85% to 95%. To ensure the continued success of this very important campaign, the 'Are You Sure It's Safe?' campaign was refreshed and relaunched during 2021.

In 2023, our latest safety advert ran across TV, video-on-demand, radio, digital audio, social media, display marketing and paid search, in both English and Irish. It includes four key risk scenarios:

- **builders using scaffolding near overhead wires;**
- **people using drones near overhead wires;**
- **people hanging flags and bunting on electricity poles; and**
- **a generic fallen wires message.**

Awareness figures for the campaign remained high. In particular, our TV and digital audio campaigns delivered a reach of 91.5% and 97%, respectively in 2023.

ESB Networks' social media channels continued to target key at-risk audiences, with always-on safety messaging targeting our key 'at risk' sectors (i.e. farming, construction, general public, schools). We achieved a combined result of 41.8 million paid impressions in 2023, which was a 325% increase from 2022.

ESB Networks promotes educational resources on safety in both primary and secondary schools nationally. The 'Stay Safe, Stay Clear' primary school competition calls for primary school children to create posters with electricity safety tips. This competition helps to educate primary school children about how to stay safe when they are playing outdoors near electricity poles and overhead wires. We've received great engagement with the competition to date. In 2023, a total of 2,541 entries were received from 141 primary schools. These schools were located across the 26 counties, providing a brilliant geographical spread of engagement.

We also engage with secondary schools through our partnership with the Irish Farmers Journal. This initiative calls on agricultural science students to partake in a safety competition where they can provide ideas on how to be more safety conscious when on the farm.

We issued several press releases on topics such as storms and fallen wires, transporting of high loads, winter safety, Christmas safety and working near electricity wires. This provided an opportunity to engage with large audiences through both national and local radio.

We provide more detail on sector specific initiatives relating to farm, construction and local authorities, state agencies and emergency services below.

Farm Safety

Through our partnership with the Irish Farmers Journal, we ran nine adverts / articles which were issued to both their online and offline readers with an overall reach of over one million adults. Our informative videos during Farm Safety Week 2023, along with ESB Networks own social media channels continued to extend our reach among the farming community.

Our 'Safe Family Farms' partnership with the Irish Farmers Journal continued into its ninth year. In 2023, to raise awareness of electrical safety on farms, we made further additions to the library of general farm safety videos, regular safety pages and created full-page public safety advertorials. We delivered safety talks to Teagasc colleges and University College Dublin's Agriculture and Food Science School as part of the 'Champions for Safety' initiative, in association with the Health and Safety Authority (HSA) and FBD Insurance.

As part of our membership of the Farm Safety Partnership Advisory Committee, ESB Networks sponsored the creation and publication of a farm safety video that focussed on electrical safety around the farm. The video was launched by Minister Neale Richmond T.D. and Minister Martin Heydon T.D.

Construction Safety

Our partnership with the CIF resulted in a strong focus on electricity for 'Construction Safety Month 2023', with electricity recognised and promoted as one of the five key construction risks via a webinar discussion. This panel discussion was chaired by our partners in CIF, with contributors from other CIF member bodies and utility providers.

Local Authorities, State Agencies and Emergency Services

Electrical awareness sessions were delivered to front line operational staff across 18 different local authorities during 2023. In addition to this, the ESB Networks' Training Centre hosted two electrical appreciation sessions with the Local Authority Safety Officers Group in order to raise their awareness levels associated with the hazards and risk of working close to the electricity network.

During 2023, electrical safety sessions were also held with all OPW outdoor staff and an e-learning module on electrical safety was developed in collaboration with Coillte for onward delivery to their timber harvesting contracting partners.

As part of our commitment to engaging with the emergency services sector, we delivered awareness training to approximately 30 newly appointed Fire Service Incident Commanders at national training events in Sligo and Bray, as well as attending other local training events. Our Public Safety Team also delivered keynote talks to the Senior Fire Officers annual conference in Tullamore. Safety talks were also delivered as part of safety representative training for members of An Garda Síochána.

ESB Networks continued to participate in the An Garda Síochána-led metal theft forum, which met during the year to share information and coordinate responses to break-ins and metal theft. Our staff continued to provide an excellent emergency response service in all situations, including major storms, emergency calls from the public and from the other emergency services.

Networks Work Programmes and Critical Safety Processes

The delivery of our public safety work programmes (including cyclical hazard patrols, maintenance of overhead and underground networks, and timber cutting) continued to be prioritised during 2023 to ensure public safety. The delivery of these programmes is monitored and reviewed regularly to ensure delivery within agreed cycles. Our incident recording system recorded and actioned all public safety incidents and provided important information that led to focused public safety initiatives and campaigns.

The internal staff monthly safety communication, which is circulated to all staff in ESB Networks, provided information on significant public safety incidents. This communication emphasises the importance of public safety, recognises the contribution of staff and contractors in keeping the public safe, and it continually reinforces the prioritisation of public safety actions.

We continued to implement critical public safety interventions by serving 'Notifications to Stop Work' where ESB Networks' staff became aware of unsafe work near electricity networks. During 2023, we served 141 notifications to stop work to third parties (up from 122 in 2022). Of these 141 notices, 75 were passed on to the HSA Workplace Contact Unit for further follow-up with the parties involved.

As part of our emergency response, when we were notified of low or fallen electricity wires, we continued to implement the remote disconnection of the electricity network, where appropriate, to safeguard the public. The 'Dial Before You Dig' service provided maps of the overhead and electricity networks to construction companies to support compliance with HSA Codes of Practice in relation to electricity.

The number of dangerous occurrences / third-party damages that occurred from 2019 to 2023 are outlined in the table below.

Number of dangerous occurrences/third-party damage

	2019	2020	2021	2022	2023
3rd Party plant damages (excluding underground cable dig-ins)	2,637	2,620	2,707	2,780	3,000
3rd Party plant damages caused by underground cable dig-ins	1,035	778	756	616	418
Non 3rd party – MV and 38kV notifiable fault incidents (line drops and reduced clearances)	263	132	404	344	676
Non 3rd party – LV notifiable fault incidents (line drops and reduced clearances)	948	1,012	384	383	936

6 Delivering on Price

6. Delivering on Price

Every five years (known as a 'Price Review' period), the CRU determines the revenue price control, which sets the amount of Distribution Use of System (DUoS) revenues that ESB Networks can recover through tariffs from DUoS customers. These revenues are utilised for safely operating, maintaining, and improving the distribution network.

The Price Review is a robust process where all capital and operating costs are assessed and benchmarked against peer utility companies. This ensures that costs are efficiently and effectively managed, so that the customer receives the maximum value for money.

In December 2020, the CRU published its final determination for PR5, setting the allowed revenue for ESB Networks for the five-year period (2021 to 2025), starting in January 2021.

The CRU's key strategic objectives for PR5 are:

1. **facilitating a secure, low carbon future;**
2. **transforming the role of the DSO;**
3. **increasing efficiency and protecting customers; and**
4. **resolving local security of supply (in the Dublin area).**

The final determination provides allowances for capital and operating expenditure, totalling €5.9 billion (in 2019 prices), over the five-year period 2021 to 2025. This allows ESB Networks to provide the infrastructure needed to meet the Irish Government's CAP and the EU's Clean Energy Package. The split of ESB Networks' capital and operating expenditure across the business in 2022 and 2023 is provided in the figures below.

The determination also includes a very significant investment (€0.88 billion) in Ireland's smart metering programme, which aims to roll out 500,000 smart meters per year between 2021 and 2024.

The Price Review process facilitates annual adjustments to these revenues using the K-factor mechanism for reasons such as updated forecasts, inflation, incentive out-turns, additional unforeseen items (e.g. storms), and updates due to potential under- or over-recovery of revenue. If there is an over-recovery, meaning that the revenue recovered from customers was more than required, this is deducted from the following year's revenue allowance. Likewise, if there is an under-recovery, this is added to the next year's revenue allowance via the K-factor. The CRU approved DSO revenues of €1,037.66 million for 2023.

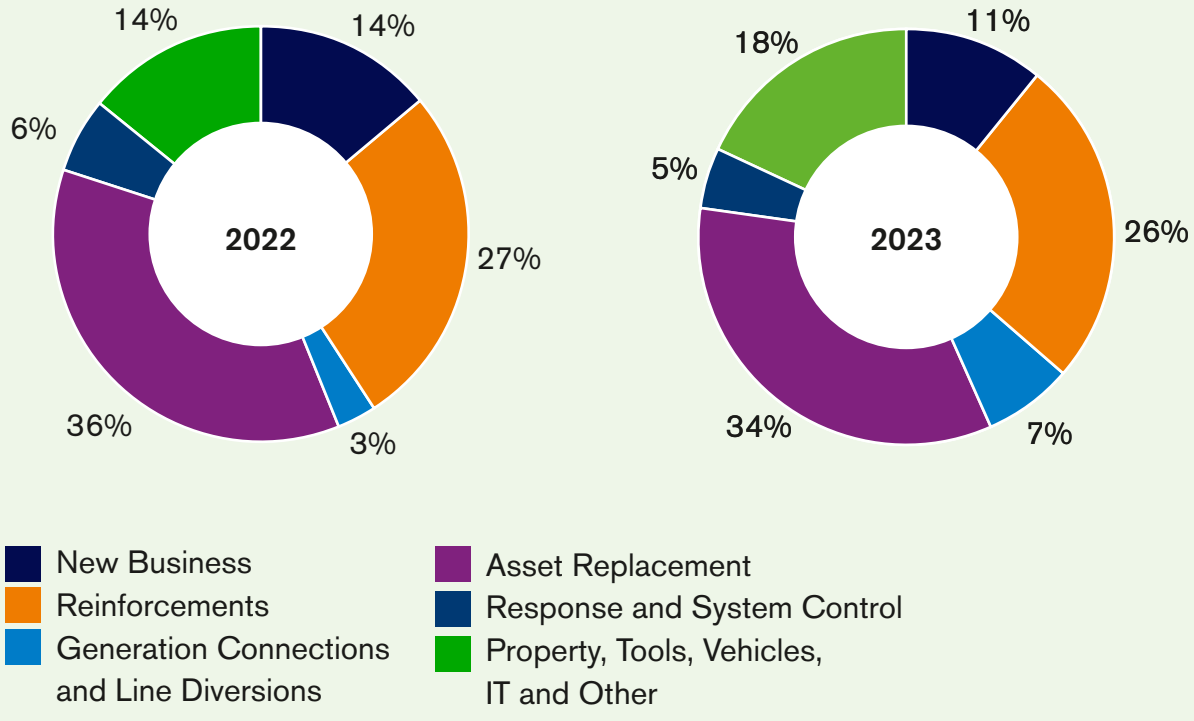
DUoS tariffs are the proportion of a unit of electricity which pay for distribution system development and operation. These tariffs are updated in October each year, based on changes in demand, inflation and other decisions made by the CRU. The CRU publishes an Average Unit Price (AUP) every year. The CRU's AUP is calculated by dividing the total allowed revenue by the total forecast units of electricity (measured in kWh).

While the actual tariff allocation is more complex, the AUP gives a high-level indication of network tariff movement between 'tariff periods' (i.e., a 12-month period, starting in October).

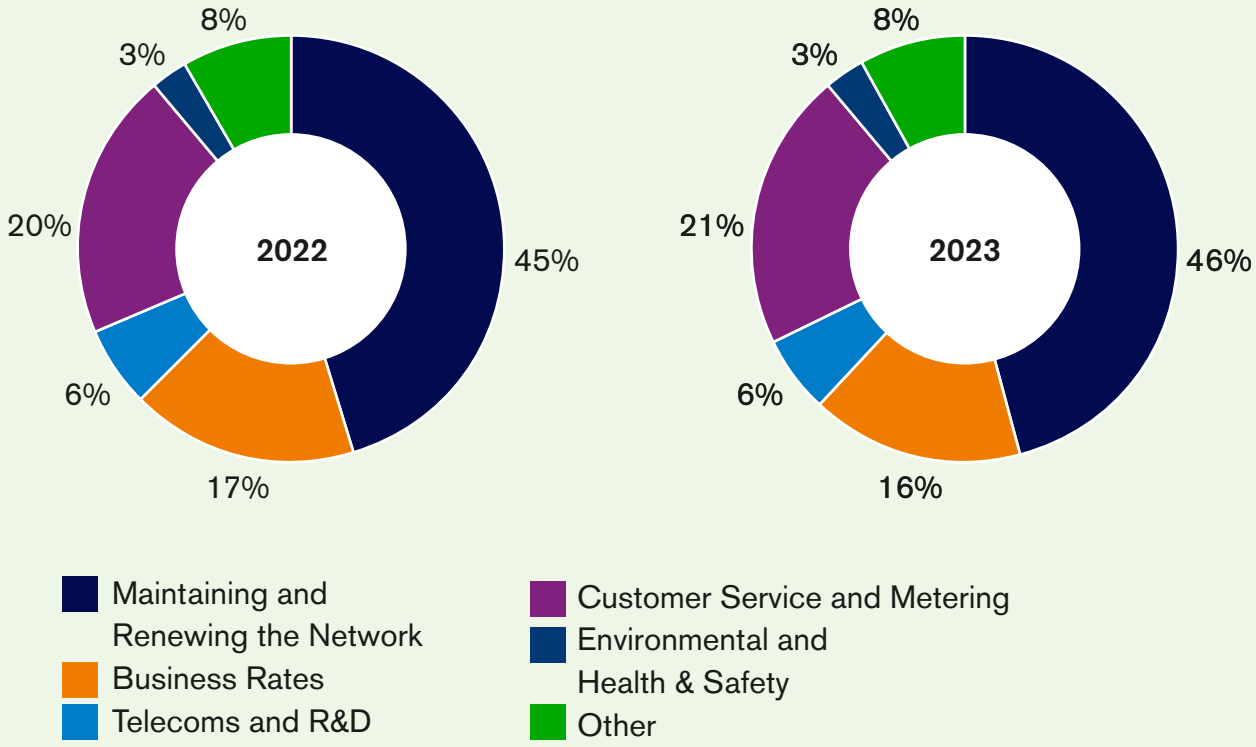
- The AUP for the 1st of October 2022 to 30th September 2023 period was 3.79c/kWh, a 10.7% increase relative to the AUP for the October 2021 to September 2022 period.
- The AUP for the 1st October 2023 to 30th September 2024 period (including the final three months of 2023) was €4.51c/ kWh. This represents a 19.1% increase relative to the AUP for the first nine months of 2023.

More detail on the allowed revenues and tariffs for 2023 is available in the CRU's decision paper, 'Electricity Distribution Network Allowed Revenue for 2023, DUoS Tariffs and Distribution Loss Adjustment Factors (DLAFs) for 2022/2023' and 'Electricity Distribution Network Allowed Revenue for 2023.

Capital Expenditure



Operating Expenditure



Incentives Outturn

The CRU set out the incentive arrangements for ESB Networks in the PR5 decision. The table below shows ESB Networks' performance against these incentives for 2023, and the associated reward or penalty.

	2022 DSO Incentive Outturn			2023 DSO Incentive Outturn		
Incentive	**Target**	**Actual**	**Payment/ Penalty (€m)**	**Target**	**Actual**	**Payment/ Penalty (€m)**
Customer Minutes Lost (CML)	82.9	103.34	-€10.0m	80.8	105.592	-€10.0m
Customer Interruptions (CI)	116.9	127.12	€-5.11m	114.8	126.4	€-5.79m
Customer Satisfaction (National Customer Care Centre)	90	83.58%	€-5.35m	90%	91.69%	€1.41m
Customer Satisfaction Survey	81.50%	81.82	€0.32m	82%	80.10%	€-1.50m
Smart Metering Delivery	458,255 (adjusted target agreed with CRU)	481,793	€0.24m	450k-500k	464,954	€0.24m
Smart Metering Functionality	New functionality in place by Q4 2022	Partially completed with some deferred	€0.20m		Partially completed with some deferred	€0.20m
Smart Metering Customer Satisfaction	>80% Customer Satisfaction	95% net satisfied	€0.36m	>80% Customer Satisfaction	96% net satisfied	€0.36m
Stakeholder Engagement	10	7.63	€0.57m	10	7.6	€0.57m
Delivering New Connections	Process ECP offers 30 days before batch deadline	Completed	€1.6m	Process ECP offers 30 days before batch deadline	Completed	€1.03m
Worst Served Customer	5,400	1,239 (for 2021 work[1])	N/A	>9,000	13,569 customers met the success criteria	6.70m
Outage Information	Balanced Scorecard	100%	€1m	Balanced Scorecard	90%	€0.9m
Flexibility	Balanced Scorecard	98%	€2.95m	Balanced Scorecard	100%	€3.00m
Visibility	Balanced Scorecard	39%	€1.17m	Balanced Scorecard	84.30%	€2.53m
Joint DSO/TSO Coordination	Balanced Scorecard	71%	€2.13m	Balanced Scorecard	78.30%	€2.35m
Independent Role of the DSO	Balanced Scorecard	85%	€0.85m	Balanced Scorecard	56%	€3.12m
Total			**-€9.70m**			**€5.13m**

1 *To measure the effectiveness of WSC interventions, a one-year time lag is necessary.*

7 Social Obligation and Engagement

7. Social Obligation and Engagement

We recognise the importance of engaging with the communities we serve and ensuring that all our people feel part of our journey to net zero. ESB Networks' Inclusion & Diversity Policy reflects a dedication to creating a workplace and a service that values difference, promotes a sense of belonging, and supports a diverse range of voices and perspectives.

Social Obligation

Electric Aid

Established in 1987, ElectricAid is an independent, standalone social justice fund set up and run by volunteers from ESB and EirGrid. ElectricAid is supported by 2,041 employees (both currently serving and retired employees), and donations are matched by ESB on a 2:3 ratio to a ceiling of €275,000 annually.

As a registered charity with its own constitution, it is administered and directed by an elected volunteer committee, which includes staff from ESB Networks. ElectricAid contributes to the development of people at home and abroad through co-funding of projects that aim for long-term sustainable improvement and relief of poverty and, where relevant, supports emergency appeals.

Since its foundation, ElectricAid has provided funding for small development projects in Ireland, as well as projects in 91 different countries and territories across Europe and the developing world. Projects are monitored over the course of their lifetime and have been shown to have huge impacts on the lives of the most marginalised people worldwide.

In 2023, ElectricAid funded 85 projects in 36 countries through a total funding of €955,536. Each project directly addressed one or more of the United Nations Sustainable Development Goals. A copy of the 2023 ElectricAid annual report as well as project reports and newsletters are available from the ElectricAid website (www.electricaid.ie).

Charitable volunteering

Employees in ESB Networks volunteer in many ways, for example by giving time to the running of the Energy for Generations (EFG) fund and ElectricAid, to getting involved in initiatives that ESB funds, to organising fundraising events. In addition, when ESB Networks' employees volunteer over 20 hours of their time or fundraise at least €250, they can apply to the ESB's EFG fund for a grant of €250 to that organisation, increased to €500 for support of refugees. In 2023, a total of 21 ESB Networks' staff participated in this scheme.

School Volunteering

In 2023, a total of 37 ESB Networks' staff took part in the 'Time to Read' and 'Time to Count' programmes.

The aim of the 'Time to Read' programme is to improve literacy rates with second class children by increasing their enjoyment of reading, improving their confidence and encouraging self-discovery among children during the 20-week programme.

Inclusion and Diversity at ESB Networks 2023

Diversity equity and inclusion are important to us in ESB Networks, and we work to foster an environment that enables everyone to bring their whole self to work, every day. ESB Networks are committed to building and sustaining an increasing diverse workforce, in a strong values based and inclusive culture that aligns with our values which are illustrated below.

Each of us is prepared to challenge the way we've always done things, stand up for what we feel is right and try better ways of working.

We're putting customers' current and future needs at the heart of what we do and we keep ourselves and others safe and healthy.

We bring passion and persistence to what we do every day, innovating and collaborating to meet the challenges and opportunities ahead.

We each play our part, taking ownership of our responsibilities, seeing the job through and protecting our own health and safety, as well as others'.

ESB Networks fosters an inclusive working environment by increasing inclusive leadership capabilities for all people managers and supporting a range of programmes which are delivered either hybrid or virtually, enabling a broader, increased participation across the business.

Building on the success and impact of the award winning BeMe@ESB (ESB's LGBT+ Employees and Allies Network), five new Employee Resources Groups (ERGs) were established in 2023 – accessibility, cultural diversity and ethnicity, gender, LGBT+. ERGs are voluntary, employee-led groups of colleagues, working to progress diversity, equity and inclusion through action planning and initiatives. ESB Networks are active members on each of ESB's ERGs.

Stakeholder Engagement

Engagement with our external stakeholders is integral to our day-to-day operations and is at the heart of everything we do at ESB Networks. Engaging with our customers and stakeholders is crucial to how we shape the future of our business and the electricity network. It helps us develop new initiatives which benefit the communities and industries we serve, as well as improving and enhancing existing ones. It shapes our business planning and strategic priorities and informs the decision-making process. Engagement with wider industry accelerates innovation within the business and the energy sector through shared learnings and ideas.

Our Stakeholders are defined as the individuals, groups of individuals, communities or organisations that affect (or could be affected by) our activities, products or services, and associated performance. Given our central role in the electricity industry in connecting over 2.5 million homes, farms, communities, and businesses around the country, we have a very broad range of stakeholders. Since considerable changes are taking place within the energy sector at an unprecedented scale, who we engage with and how is constantly changing.

We have developed this stakeholder wheel to help us better define and categorise our vast stakeholder base.


OUR STAKEHOLDERS
Business
Large users
SMEs
Local media
National media
Media
Research bodies, think tanks etc
Schools and Universities
Academia research
Contractors
Technical Suppliers
Supply Chain
Local authorities
State agencies
Other
Local government
Communitites and representatives
Schools and colleges
Local business and enterprise groups
Healthcare
Vulnerable customer representatives
Community interest groups
Charities/NGOs
Industry
Transmission System Operator
Gas
Water
Electricity Suppliers
Telecoms
Developers and representative bodies and associations
Housing associations
Landowner/ farmers
Generation customers
Builders and developers
National government and policy influencers
Trade Unions
Regulators
TDs
Government bodies
Emergency Services
Other
Fire
Ambulance
Gardaí
Domestic customers
Domestic Customers
Vulnerable poor customers
Hard to reach
Future customers

We tailor our engagement approach to our broad stakeholder base which is constantly changing given the pace of change that is taking place across the energy sector. We continually review and improve our engagement methodology as we benchmark our systems and processes against international best-in-class practice in this field.

ESB Networks recognise that engagement is essential for the successful management of our business and as a strategic priority, it is led by the senior leadership team and is seen as a vital activity at every level of the organisation. Engagement with our customers and stakeholders is now an essential part of everyone's role and it is at the heart of our operations.

Our Engagement Incentive

In 2018, the CRU introduced a new incentive for ESB Networks (as the DSO) and EirGrid (as the Transmission System Operator (TSO)) in relation to stakeholder engagement. The objective of this incentive, as stated by the CRU, is to promote cultures within the system operators that put stakeholders (i.e., customers, generators, and local communities) at the centre of what the network companies do. This ensures that the system operators deliver high quality outcomes for energy customers and the wider public.

The incentive for ESB Networks is worth a maximum of €1 million per annum under PR5. It is evaluated on an annual basis by a CRU appointed panel which consists of stakeholders from the across the electricity sector (Networks Stakeholder Engagement Evaluation Panel (NSEEP)).

The evaluation process requires ESB Networks to demonstrate our comprehensive, up-to-date stakeholder engagement strategy, plans, delivery channels and initiatives for engaging with stakeholders, and demonstrable positive impacts on stakeholders, stakeholder groups or the business. Each year we must publish for consultation our Stakeholder Engagement Strategy and plans for the year ahead. This provides stakeholders with pathways to engage with ESB Networks, sets out our engagement priorities for the year ahead and outlines our stakeholder engagement outturn/performance report for the previous year.

In December 2022, we published our 'Stakeholder Engagement Strategy and Plan for 2023'. This report set out our proposed engagement approach, priorities and planned activities for 2023, and provides our stakeholders with pathways to engage with us throughout the year.

Our corresponding outturn report for 2023 'ESB Networks Stakeholder Engagement Report 2023' was published in March 2024. This provides an overview of the vast engagement we had with our many stakeholders throughout the course of 2023. In this report we demonstrate how our engagement supports the delivery of our Networks for Net Zero Strategy targets and action plan, which we have set out to 2030. This allows us to report on the impact of our external engagements going forward in supporting the delivery of our net zero climate action targets.

Some examples of the key achievements from our external engagements in 2023 are provided below.

- Industry engagement enabled delivery of renewable hub substations pilots, with the objective of embedding into our 'Build Once for 2040' concept. Engagement helped us identify the optimum locations of renewable hubs and create additional capacity to enable an increase in renewables connecting to the distribution network. This will provide greater certainty for customers about capacity and up-front costs, which should lead to a lower project attrition rate.
- Three-way engagement between EirGrid, customers and ESB Networks, in addition to quarterly engagement with key renewable industry stakeholders, is ensuring processes are understood and developed to enable achievement of CAP deliverables.
- Through early engagement with developers of renewable generation projects, we offer a free initial assessment of potential grid connection options. This allows the customer to make better-informed decisions regarding participation in the ECP process.
- The EirGrid/ESB Networks' Joint Outage Transformation Programme (JOTP) was established in 2023. This sets out various interventions focussed on increasing outage availability and maximising utilization and effectiveness.
- Strong industry collaboration on the National Smart Metering Programme (NSMP) is ensuring clear, consistent, and adequate information is provided to customers to gain their trust, acceptance and buy-in to the smart meter roll out programme. A significant milestone of 1.5 million smart meters installed across the country was reached in November 2023, with a 96% customer satisfaction with the programme. We gained valuable customer acceptance and buy-in to the day and night meter exchange through strong industry engagement and collaboration via the smart metering programme's communications and engagement working group.
- Stakeholders and customers continue to inform the strategy and direction for the delivery of the NNLC. This ongoing collaboration is supporting the rollout of new products and services across the areas of security of supply products, 15-20% flexibility propositions and pilots. The Distribution Markets and System Operation community toolkit was published in December 2023. It contains resources created to support customers and communities in engaging with flexible demand.
- Our 'Beat the Peak' initiatives were commended across Europe for its contribution to peak demand reduction measures. Ireland was ranked as one of the first European countries to implement a successful peak-shaving product.

- We've enhanced our customer and stakeholder research and insights capability through independently led surveys and focus groups. This helps us to understand changing customer needs and to drive continuous improvement in line with these needs across the organisation.
- We improved communications on customer connections journey through our online portal services. In 2023, 88% of new connection applications occurred online and 61% of customers affected by outages accessed the PowerCheck website.
- Enhanced collaboration and engagement on the 'Housing for All' government initiative resulted in an approximate 5% increase in the total number of new connections completed in 2023, compared to 2022 (as outlined in the 'New Demand Connections' section above).

8 Innovation

8. Innovation

Innovation in ESB Networks is critical to delivering the electricity network for Ireland's clean electric future.

Innovation takes place across ESB Networks, with each business unit focusing on innovation projects and actions that directly support the efficient delivery of their functional responsibilities. In addition, we have a dedicated Innovation Team which works across business units to identify, research, test and evaluate emerging technologies and solutions that are aligned with our strategic objectives and customer commitments.

We recognise that innovation and collaboration are central to achieving a net zero ready electricity distribution network by 2040. Over the past year, ESB Networks has engaged with a wide range of partners (including academic institutions, start-ups, local authorities, peer utilities and customers), to progress a range of innovation activities and projects. Our innovation consultation paper, that we published earlier this year 'Innovation to Deliver Networks for Net Zero', provides in-depth commentary on ESB Networks' 2023 innovation project portfolio.

To maximise the value and transparency of our innovation activities, we consult regularly with stakeholders on our innovation pipeline. As innovation projects progress through evaluation and trials, we capture and communicate lessons and insights via a range of digital and traditional media channels.

Innovation KPI's 2023

ESB Networks' innovation initiatives are extensive and encompass partnerships with numerous organisations, as highlighted by the performance indicators below.

- **95 innovation ideas examined in 2023.**
- **28 projects currently in delivery, with seven new projects initiated and two projects completed in 2023.**
- **90+ external collaborations and partnerships across a wide range of industry sectors and research organisations.**
- **60+ staff are working on and supporting innovation projects across ESB Networks, with over 450 staff engaged across our broader internal innovation community.**

Our projects are carefully scoped and advanced to ensure they align with our strategic objectives and deliver significant benefits to our customers. Examples of customer benefits arising from innovation projects in 2023 are outlined below.

- We are enhancing network resilience through the 'Inspection of Overhead Lines Using Drones and Image Processing Analytics' project. This project delivered a new 'Unmanned Arial Vehicle Framework' for inspecting overhead lines. Potential use cases include vegetation management, line patrols following storms and the identification and location of intermittent faults on the electricity network.
- We are supporting the electrification of heat and transport and improving network resilience by taking data-driven decisions regarding grid reinforcements and new connections on the LV network. This is enabled through the 'Plexigrid' project. This project leverages advanced analytics and simulation to predict future load growth and facilitate better understanding and management of LV network capability and performance.
- We are increasing network capacity to enable residential customers to adopt low carbon technologies (such as heat pumps and electric vehicles) in densely populated urban areas, through the 'Sidewalk Transformer' project. This project will facilitate the uptake of low carbon technologies in areas where spatial restrictions currently limit the potential to construct traditional substations with larger footprints.
- We are enhancing the speed and efficiency of the application process for customers by enabling network planners to perform quick, high-level capacity assessments of new applications through the development of a new proof of concept 'MV Planning Assist tool'.

Performance Highlights for 2023

Key improvements, achievements and engagements that were delivered in 2023 include the following.

- We initiated seven new innovation projects, which have been added to nineteen other projects that are ongoing. We completed two innovation projects and shared learnings with our partners and stakeholders from these and other ongoing projects.
- We initiated an Innovation Feasibility Study for Uprating of Existing 38 kV Overhead Lines to 110 kV. The output of this study will shape the strategy to transform and upgrade the existing 38 kV network. This includes the provision of additional capacity for customers in line with our Networks for Net Zero Strategy and its principle of 'Build Once for 2040'.
- We initiated a Composite Street Light project to provide a means for electric vehicle drivers without private driveways to charge their electric vehicles in the vicinity of their homes.
- We progressed a project looking at alternatives to creosote wood poles. ESB Networks has procured 1,400 composite poles as an alternative to wood poles in order to aid in the critical shortage of wood pole supply and address sustainability and environmental issues relating to creosote wood poles.
- We hosted an in-person utility workshop with DSOs from other jurisdictions (including NIE Networks, Hydro Quebec, China Light and Power, EDP and E.ON) to share insights and learnings.
- We published our Network for Net Zero Strategy, outlining a range of commitments and actions that build on our innovation programme.
- We collaborated and engaged with a wide range of stakeholders, community groups, the TSO, academia, international DSOs, industry, the Irish Government, the CRU, and international research organisations.
- We continued to develop ESB Networks' innovation culture through design thinking workshops, conferences, and programmes.
- We presented at a range of industry events including Engineers Ireland, NSAI, ABB and the CIRED 2023 conference in Rome.

Project Details for 2023

The tables below outline innovation projects that were completed, in development and progressed in 2023.

Innovation projects completed in 2023

	Name	Impact Status	Networks For Net Zero Strategic Objective
1	On-street charging customer interface	Incremental	Empowering customers
2	Positive city exchange (+CityxChange)	Breakthrough	Empowering customers

Innovation projects in development in 2023

	Name	Impact Status	Networks For Net Zero Strategic Objective
1	Sustainable backup power solutions	Breakthrough	Decarbonised electricity
2	Island decarbonisation	Breakthrough	Decarbonised electricity
3	Analysing impacts of behind-the-meter innovative solutions	Breakthrough	Resilient infrastructure
4	Flexible demand connections	Incremental	Empowering customers
5	Industrial heat pump network impacts	Incremental	Empowering customers
6	E-fleet: decarbonisation of the fleet	Incremental	Empowering customers
7	Resilient charging solutions	Incremental	Empowering customers

Innovation projects in progress

	Name	Impact Status	Networks For Net Zero Strategic Objective
1	Investigate statistical contributions from distribution generation: F-Factors	Incremental	Decarbonised electricity
2	Plexigrid: advanced modelling, planning, and analysis for LV electrification	Breakthrough	Decarbonised electricity
3	Development of Dynamic Line Ratings (DLR)	Incremental	Resilient infrastructure
4	Sidewalk transformers	Incremental	Resilient infrastructure
5	Novel use of drones and AI for line patrolling and fault location	Incremental	Resilient infrastructure
6	MV planning assist tool	Incremental	Resilient infrastructure
7	Alternatives to creosote wood poles	Incremental	Resilient infrastructure
8	Wildlife OHL contact prevention	Incremental	Resilient infrastructure
9	Inspection of OHLs using drones and image processing analytics	Incremental	Resilient infrastructure
10	Developing 400MHz spectrum use for smart grid applications	Breakthrough	Resilient infrastructure
11	AI synthetic analyses of 110 kV composite insulators	Breakthrough	Resilient infrastructure
12	Grid vision AI for condition assessment of tower corrosion	Breakthrough	Resilient infrastructure
13	Innovation feasibility study for uprating of existing 38 kV overhead lines to 110 kV	Breakthrough	Resilient infrastructure
14	CSS voltage quality dashboard	Incremental	Empowering customers
15	Composite street light	Incremental	Empowering customers
16	Low carbon technologies register	Incremental	Empowering customers
17	Electric vehicle charge point database and capacity mapping	Incremental	Empowering customers
18	International community for local smart grid	Incremental	Empowering customers
19	AI in smart metering applications	Breakthrough	Empowering customers

Future Focus: Advancing Innovation at ESB Networks

ESB Networks is committed to innovation and collaboration as it is key to address Ireland's evolving energy needs and to achieve net zero. Guided by PR5, CAP, and our Networks for Net Zero Strategy, we aim to create a net zero ready energy network by 2040, which supports the Government's binding commitment to reach a net zero society by 2050. Full details on our innovation pipeline are contained in this year's Innovation Annual Consultation report.

In 2024, we will continue to innovate with the aim of enhancing network resilience, decarbonising electricity and empowering customers in line with our Networks for Net Zero Strategy. To build network resilience, enhance capacity, and maintain asset health, we will leverage digital and data capabilities (as we have through the Plexigrid project), and adopt advanced technologies such as Sidewalk Transformers.

We are also exploring innovative solutions to support the electrification of heat, transport and industry, by working in collaboration with partners to facilitate widespread electrification. We are currently engaged in a number of projects looking at the uptake and impact of new low carbon technologies on the electricity network, including the Low Carbon Technology Register and Industrial Heat Pump projects.

We continually work to deepen our collaborations across academia, industry and communities, to drive sustainable innovations and to remain leaders in the energy transition. We will continue to develop and drive customer-centric projects that empower customers and support the achievement of Ireland's decarbonisation goals. Such projects include the Island Decarbonisation project, which is looking at alternatives to diesel generators for electricity production, and the Composite Street Light project described in the section above.

Innovation is integral to our culture at ESB Networks. The Innovation Team is responsible for building innovation capacity across the company through education and engagement. It is also responsible for bringing new insights into ESB Networks through our engagement with start-ups, international peer utilities and industry bodies. This is critical to finding solutions to accelerate and enable the changes necessary for a net zero energy system. Moving forward, our focus on excellence and innovation prepares us for transformative change that will ensure a sustainable, efficient, and customer-focused energy future.

9 Connectivity and Digitalisation

9. Connectivity and Digitalisation

ESB Networks is at the forefront of rolling out smart metering technology in Ireland. This enhances the efficiency of energy consumption, empowers customers with detailed insights into their energy usage and fosters a more dynamic electricity market. Retail Market Services play a crucial role in providing meter and data services to the electricity market. ESB Networks Telecommunications leverages its extensive telecommunications network to provide robust communication solutions for Ireland's distribution and transmission systems. Together, these ESB Networks initiatives show our commitment to innovation, customer empowerment, and the development of a sustainable, smart energy future.

National Smart Metering Programme (NSMP)

During 2023, ESB Networks continued the NSMP. The NSMP aims to replace 2.2 million electricity meters in homes, farms and businesses with next generation smart meters by the end of 2025. This will support the transition to a low carbon electricity network as it is a key enabler of CAP, specifically regarding microgeneration and the electrification of heat and transport. We achieved the following relating to smart meters in 2023.

- The programme continued to safely install smart meters in every county in Ireland. During 2023 464,957 smart meters were installed. This brings the total number of smart meter installations to 1,567,955 by the end of December 2023. This includes 37,119 smart meter installations for microgeneration customers, bringing this total to 70,636 with smart meters.
- ESB Networks delivered the V13.06.00 retail market release, which enabled the like-for-like exchange of day/night meters and a process to replace night storage heating meters that are no longer in use. By the end of 2023, almost 36,000 day/night meters and almost 4,000 night storage heating meters were replaced by smart meters.
- ESB Networks is committed to ensuring that the NSMP is delivered in compliance with all applicable data privacy laws and that all customer personal data is safe and secure. We have ongoing engagement on this topic with the CRU, DECC and the Data Protection Commission. ESB Networks fully engaged with the CRU's Smart Meter Data Access Code (SMDAC) consultation, including a high level SMDAC proposal as part of its consultation response.
- Usage of the ESB Networks' Customer Online Account grew steadily in 2023. The 'My Energy Consumption' option offers customers insight into their half hourly interval usage on their smart meter. It gives the customer graphs of both their import and export electricity data. This information can also be downloaded by the customer (in .csv format). At the end of 2023, smart meter data for over 1.5 million customers was available, with over 77,000 customer accounts set up and over 44,000 customers accessing their consumption data. There were almost 200,000 visits to the 'My Energy Consumption' site and almost 85,000 downloads.

- ESB Networks delivered the V13.00.00 retail market release required to support the delivery of smart services by suppliers in February 2021. By the end of 2023:
  - 274,000 customers have availed of half-hourly interval data for smart services and tariffs; and
  - 38,000 customers had availed of day/night/peak standard smart tariffs.
- ESB Networks commenced remote meter reading of smart meters. There have been over 13 million bi-monthly reads since go live, with 6.9 million of these occurring 2023. This resulted in a significant reduction in estimated bills and improved billing accuracy for customers with smart meters. Since going live, ESB Networks have pulled 353,000 on-demand reads from smart meters to support the change of supplier and change of legal entity retail market processes.
- ESB Networks led industry forums and working groups throughout 2023. Through this engagement we have ensured alignment with supplier system and process development and provided ongoing support for supplier queries.
- ESB Networks continues to lead the implementation of the agreed industry-wide 'Strategic Framework for Communications and Consumer Engagement'. This framework aims to support the meter deployment programme and outline the benefits of smart meters. We have included updates to programme material including more information on standard smart tariffs and data privacy.
- Based on customer feedback, the smart meter upgrade section on the ESB Networks' website has been updated to include expanded FAQs, additional information on smart meter benefits, the customer portal and an updated 'How to Read your Smart Meter' video which covers all smart meter types.
- ESB Networks has undertaken a public information campaign across local radio, press and social media channels. We've developed branding for the public to easily identify the contractors' associated with the ESB Networks' programme, created media assets and stakeholder packs and engaged with local radio stations. We have also delivered briefings to national and local stakeholders. This included a 'myth busters' series on social media.
- Consumer surveys conducted during 2023 demonstrate that customer awareness is rising (97% in Q4 2023), and that sentiment towards the programme is positive. This is further supported by the average 95% customer satisfaction rating of the exchange process.

Networks Telecoms

The transmission and distribution electricity networks rely on resilient, highly available telecommunications to centrally control and operate the grid. This connectivity is provided by an extensive private telecommunications network within ESB Networks, covering a range of technologies including fibre, microwave, satellite, polling radio, as well as operational technology networking systems. These technologies form Ireland's largest private telecommunications network, which is managed by our 24/7 network management centre.

Connecting Renewables

The telecommunications network continues to be developed and extended to support the:

- **growth of the electricity system and control centres operating the grid; and**
- **significant addition of renewable energy generation.**

Operational Network Development Plan

An advanced operational telecommunications network is required to meet the future requirements and needs of ESB Networks. In particular, the dependency on operational telecommunications has increased with greater smart grid adoption.

We developed a revised Technology Strategy in December 2022, which set out a future network architecture and the required development of the operational telecommunications network. This sees the adoption of high-capacity fibre connectivity and a new highly resilient core network architecture. We are achieving this while ensuring the ongoing development of a strong cybersecurity infrastructure throughout the telecommunications network.

Private Long Term Evolution (P-LTE)

In 2023, the procurement of a delivery partner for a new P-LTE network based on long-term evolution mobile cellular networks was concluded.

The radio plan for the network was substantially advanced in 2023. ComReg have supported the work to develop an Irish SmartGrid and awarded a 15 year licence for spectrum in the 410 – 414 MHz band paired with 420 – 424 MHz, which this radio network will be built on.

Delivery of the first high sites will commence in 2024 and will be completed within three years. Initial works are ongoing to enable the full deployment of the network, including backhaul upgrades, power upgrades and high site enabling works.

Retail Market Services

During 2023 the Retail Market Services Team continued to serve approximately 2.5 million customers and their registered suppliers. The team provided meter and data services to the electricity market. In addition to our core responsibilities, Retail Market Services delivered the following key initiatives in 2023.

Electricity Costs Emergency Benefit Scheme

The Irish Government introduced the first Electricity Costs Emergency Benefit Scheme in winter 2021 to support domestic electricity customers with the exceptional increase in global energy prices. A second scheme was announced as part of a range of Budget 2023 measures. The associated legislation obliged both ESB Networks and electricity suppliers to operate and administer the scheme.

Similar to the first scheme, ESB Networks engaged with the CRU and suppliers through the established Industry Governance Group (IGG) forum to develop and agree a market process that facilitated the operation of the scheme. The second scheme saw three emergency benefit payments of €183.49 each credited to customers' accounts. The processes (put in place by ESB Networks and suppliers), resulted in over two million domestic electricity customers receiving up to €1.2 billion from the Government to help address the rising costs of energy for winter 2022-23. Budget 2024 included a provision for a third scheme for winter 2023-24 which saw up to €1.007 billion being credited to domestic customers for this period.

Public Service Obligation Payments

Due to unprecedented and sustained high wholesale electricity prices, the CRU announced that the PSO fund requirement for PSO year 2022-23 was a negative €491.25 million. This resulted in a payment to, rather than a charge/levy on, electricity customers. Legislative and operational amendments were required to facilitate the PSO payment to customers. ESB Networks engaged extensively with the CRU and EirGrid to develop a process which would facilitate a PSO payment to retail suppliers for distribution to final customers. ESB Networks also engaged with electricity suppliers through the established IGG forum to agree a market process that facilitated processing of the PSO payment. The processes put in place resulted in a payment of €89.10 for domestic customers, €311.51 for small commercial customers and €37.82/kVA for medium/large customers in 2022-23.

10 Service Level Agreements

10. Service Level Agreements (SLA)

The table below outlines the SLA report for 2023. This report provides a description of each SLA and the measure which its level of performance is reported against. The actual performance is measured as the percentage of transactions that were completed within:

- **the agreed SLA timeline; and**
- **twice the SLA timeline in 2023.**

Description	No.	Standard Approval Timelines (SLA)	Within SLA Timeline	Within twice SLA Timeline
Change of Supplier (NQH)	1A	Validate within 5 days	99.97%	100%
	1B	Using customer read supplied by the customer– Complete within 3 days	99.92%	100%
	1B	Using a special read organised between the customer and ESB Networks– Complete within 10 days	99.72%	100%
	1B	Using one of ESB Networks scheduled reads – Complete within 3 days	98.14%	100%
Change of Supplier (QH)	2A	Validate within 5 days	99.52%	100%
	2B	Complete within 3 days	98.21%	100%
Change of Supplier Cancellation	3A	Validate supplier cancellation within 5 days	99.98%	100%
	3B	Complete supplier cancellation within 5 days	99.51%	100%
New Connection and registration with supplier (NQH)	5A	Prepare Quote – Within 7 working days where no site visit required. Within 15 working days where site visit required	95.30%	100%
	5B	Complete connection – Within 10 working days of receipt of Safe Electric certificate.	98.00%	100%
	5C	Data Processing – Issue details to Supplier within 10 days	99.46%	99.71%
New Connection and registration with supplier (QH)	6A	Prepare Quote – Within 7 working days where no site visit required. Within 15 working days where site visit required	95.30%	100%
	6B	Complete Connection –Within 10 working days of receipt of Safe Electric certificate.	98.00%	100%
	6C	Data Processing – Issue details to Supplier within 10 days	66.00%	80.00%

Description	No.	Standard Approval Timelines (SLA)	Within SLA Timeline	Within twice SLA Timeline
Change to meter point characteristics	8A	Prepare quote – Within 7 working days where no site visit required. Within 15 working days where site visit required	95.30%	100%
	8B	Complete change – Within 10 working days of receipt of Safe Electric certificate.	98.00%	100%
	8C	Process Change – Issue details to Supplier within 10 days	96.39%	98.77%
De-energisation of meter point	9A	De-energise of meter point within 5 days	89.44%	94.31%
	9B	Issue Meter details to Supplier within 10 days	99.02%	99.86%
Re-energisation of meter point	10A	Re-energise meter point within 5 days	97.65%	98.73%
	10B	Issue Meter details to Supplier within 10 days	98.52%	100.00%
Change of meter configuration	11A	Reconfigure meter within 5 days after the receipt and validation of Supplier request	87.14%	92.42%
	11B	Process data within 10 days	99.28%	99.72%
Meter problems and reports of damage	12A	Repair or replace faulty meter within 5 days	53.83%	60.81%
	12B	When a faulty meter is repaired or replaced – process meter data within 5 days	98.40%	98.87%
NQH Meter Reading	14A	Scheduled Read – Distribution of Reads to Suppliers within 7 workdays	94.78%	99.94%
	14A	2 Scheduled reading visits per annum	98.44%	NA
	14A	4 Scheduled reading visits per annum	96.03%	NA
	14A	Actual reads for scheduled meter reading visit	87.19%	NA
	14A	Actual reads for scheduled MD meter reads	86.00%	NA
	14A	One actual read per annum	96.51%	NA
	14B	No Consecutive Block Estimations	99.14%	NA
	14B	No Consecutive MD Block Estimations	100%	NA
	14C	Out of Cycle Customer Read – Readings processed within 3 workdays	97.58%	98.43%

Description	No.	Standard Approval Timelines (SLA)	Within SLA Timeline	Within twice SLA Timeline
QH Data Collection	15A	D+4 QH data-	100%	NA
		Send to SEM-O / Suppliers in 1 workday		
	15B	QH Actual Data. Send to suppliers within 4 and 10 days**	96.91%	97.40%
Request for Special Read	18A	Site visit by 7 days	64.82%	77.68%
	18B	Issue of Meter details within 3 Days	66.98%	71.86%
Data Aggregation	16	Issue of aggregated data to SEM-O/ TSO/Suppliers and Generators within 5 workdays	100%	NA
Change of SSAC	20	Complete process in 3 workdays	100%	NA
De-registration	21	Auto Completion within 5 workdays	99.97%	NA
		Manual Completion within 10 workdays	100.00%	NA
Change Customer Details	24	Complete within 5 days	99.96%	100%
Change Legal Entity	25	Complete within 5 days	99.29%	99.40%

11 Register of Assets

11. Register of Assets

The following table is a register of all relevant distribution system assets at the end of 2023.

Register of Distribution System Assets at end of 2023

Asset	Units	Volume
220kV		
220kV Substations	No.	2
220/110kV Transformer Capacity	MVA	2,500
110kV		
110kV Overhead Lines	Km	390
110kV Underground Cable	Km	235
110kV Substations	No.	129
110kV Switching Substations	No.	11
110/38kV Transformer Capacity	MVA	7,160
110kV/MV Transformer Capacity	MVA	1,558
38kV		
38kV Overhead Lines	Km	5,621
38kV Underground Cable	Km	1,304
38kV Substations	No.	426
38kV Transformer Capacity	MVA	5,401
MV		
20kV 3-ph Overhead Lines	Km	15,812
20kV 1-ph Overhead Lines	Km	32,433
10kV 3-ph Overhead Lines	Km	13,158
10kV 1-ph Overhead Lines	Km	23,517
20kV Underground Cable	Km	2,055
10kV Underground Cable	Km	8,753
3-ph Pole mounted Transformers	No.	22,896
1-ph Pole mounted Transformers	No.	228,412
MV Ground Mounted Substations	No.	23,789
LV		
LV 3-ph Overhead Lines	Km	4,779
LV 1-ph Overhead Lines	Km	57,518
LV Underground Cable	Km	15,606
Mini-Pillars	No.	182,030

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