



NETWORKS

# NETWORKS FOR NET ZERO

Delivering the Electricity Network  
for Ireland's Clean Electric Future



## Introduction

Climate change is one of the greatest challenges facing humanity and it is widely accepted that rapid and unprecedented action is required to limit greenhouse gas (GHG) emissions to avert the worst consequences of climate change and protect both current and future generations.

The 17 UN Sustainable Development Goals (SDGs) provide a global and widely accepted blueprint to achieve a better and more sustainable future for all by 2030. They act as a call to action for countries, NGOs, companies, and individuals to align their actions around common goals that matter to people and the planet. Our Strategy is focused on three of the SDGs where ESB Networks can make a lasting and tangible difference – namely:



**ENSURE ACCESS TO AFFORDABLE, RELIABLE, SUSTAINABLE AND MODERN ENERGY FOR ALL**

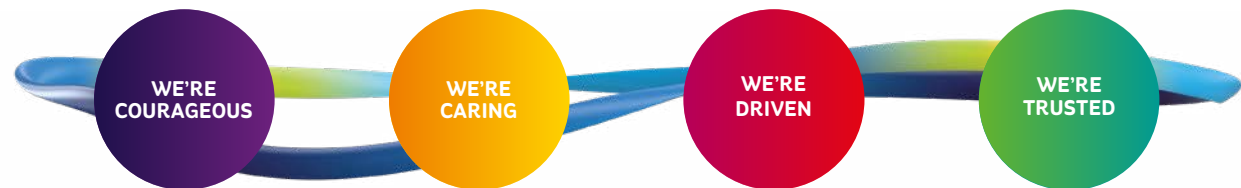


**BUILD RESILIENT INFRASTRUCTURE, PROMOTE INCLUSIVE AND SUSTAINABLE INDUSTRIALIZATION AND FOSTER INNOVATION**



**TAKE URGENT ACTION TO COMBAT CLIMATE CHANGE AND ITS IMPACTS**

Our purpose is to deliver a clean electric future, and make Ireland’s net zero goal a reality. The delivery of this Strategy is underpinned by **Our Values** of being Courageous, Caring, Driven and Trusted.



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’.

## About ESB Networks

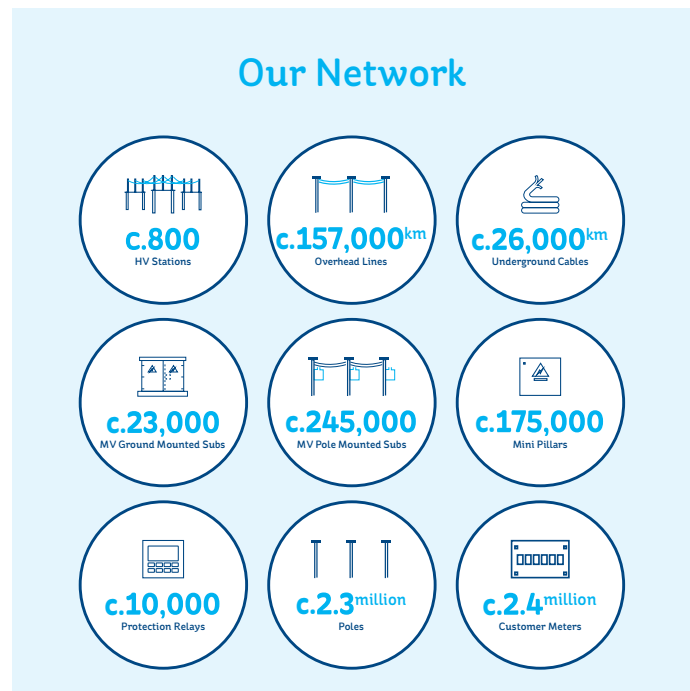
ESB Networks is the electricity Distribution System Operator (DSO), Distribution Asset Owner (DAO) and onshore Transmission Asset Owner (TAO), and we work to meet the needs of all Irish electricity customers, providing universal affordable access to the electricity system.

ESB Networks supports the electricity retail market through the ring-fenced Meter Registration System Operator (MRSO) and Retail Market Design Service (RMDS) and supports the wholesale Single Electricity Market through the provision of aggregated electricity meter data.

We invest approximately €800m per annum, which is due to grow over the years ahead. We have 3,500 employees working in all parts of the country delivering a safe and resilient network.

Customer service is at the heart of everything we do at ESB Networks. We provide services to every electricity customer irrespective of their electricity supplier. We are committed to facilitating the move towards low carbon technologies, supporting all customers to enable them to participate in the energy market.

Our operating environment is changing rapidly driven by new policy and regulation measures, by the advancement of technology and by the changing needs and expectations of our customers and stakeholders. This means the role of electricity is changing, bringing an opportunity to decarbonise society and enable all customers to take control of their energy consumption, participate in the energy markets and adopt innovative energy products and services.



## Policy Context

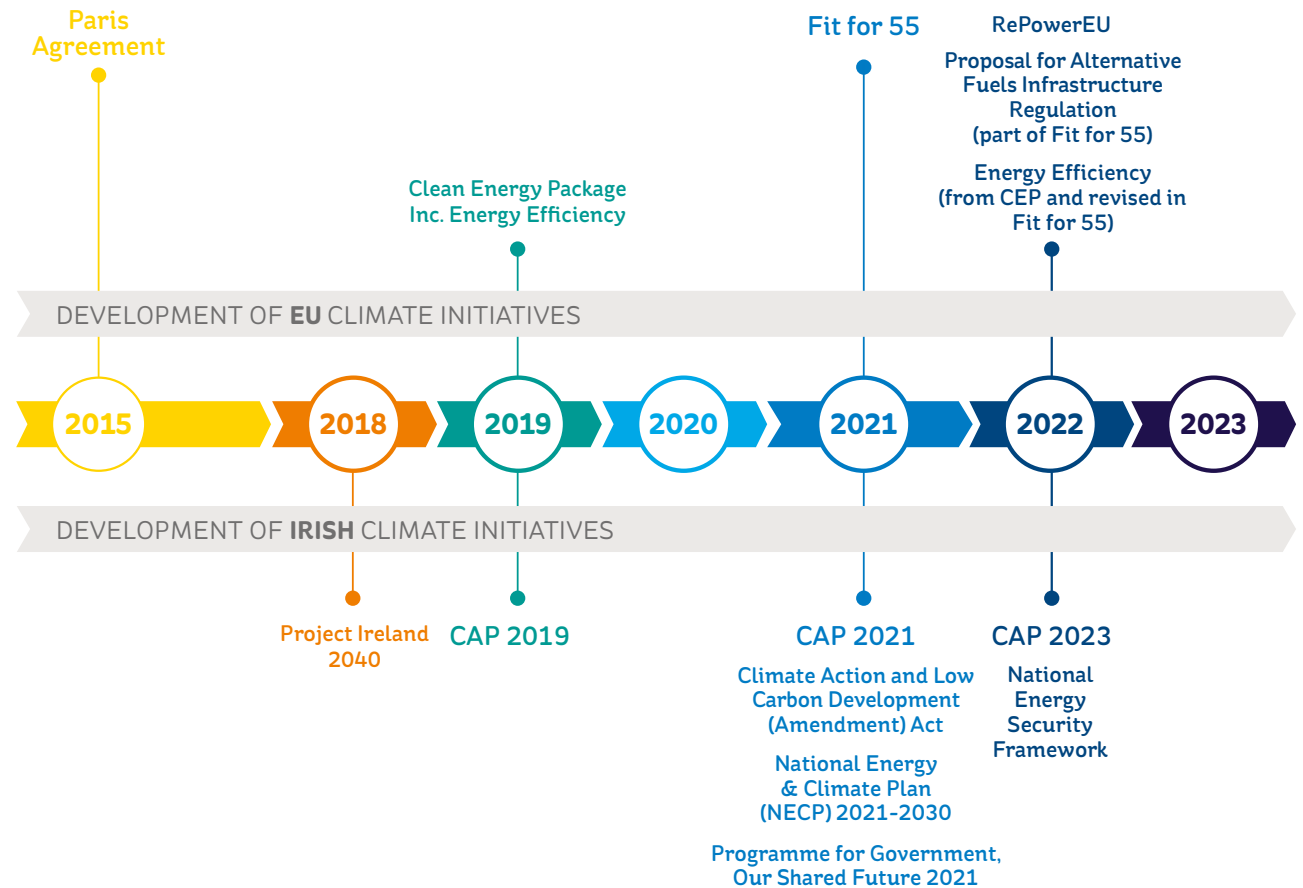
In 2019, the Irish Government published the first Climate Action Plan (CAP), which sets out Ireland's strategy to meet its 2030 climate and energy targets. In late 2022, the Climate Action Plan was revised (CAP23), and it contains further accelerated targets.

The EU is also accelerating its decarbonization plans. In July 2021, the European Commission adopted a package of legislative proposals called "**Fit for 55**" that outline the EU's goal to reduce emissions by at least 55% by 2030 and for the EU to be climate neutral by 2050.

The Irish Government launched the response to Ireland's energy security needs in the context of the Russian invasion of Ukraine through the **National Energy Security Framework (NESF)** in April 2022.

In May 2022, the EU published the **REPowerEU** plan. This plan responds to the disruption to the global energy market caused by Russia's invasion of Ukraine and accelerates the reduction in use of fossil fuels.

The policy context remains dynamic but with an overall theme of accelerating the transition to renewable electricity generation, electrification of industry, heat and transport, energy efficiency, affordability, and energy security.





## Regulation

ESB Networks is a commercial semi-state company regulated by the Commission for the Regulation of Utilities (CRU) since 1999. ESB Networks develops investment programmes through a process called "Price Reviews" that are overseen by CRU. Price Reviews set the revenue that ESB Networks can recover from electricity customers and are agreed every five years. The CRU price review periods clearly mandate what is expected of ESB Networks as Distribution System Operator (DSO), Distribution Asset Owner (DAO), and onshore Transmission Asset Owner (TAO). The current Price Review (PR5) determination was finalised in 2020 and runs from 2021 to 2025. When developing this five year

programme, both ESB Networks and CRU considered the development and investment required to support economic growth, network resilience and delivery of national decarbonisation targets.

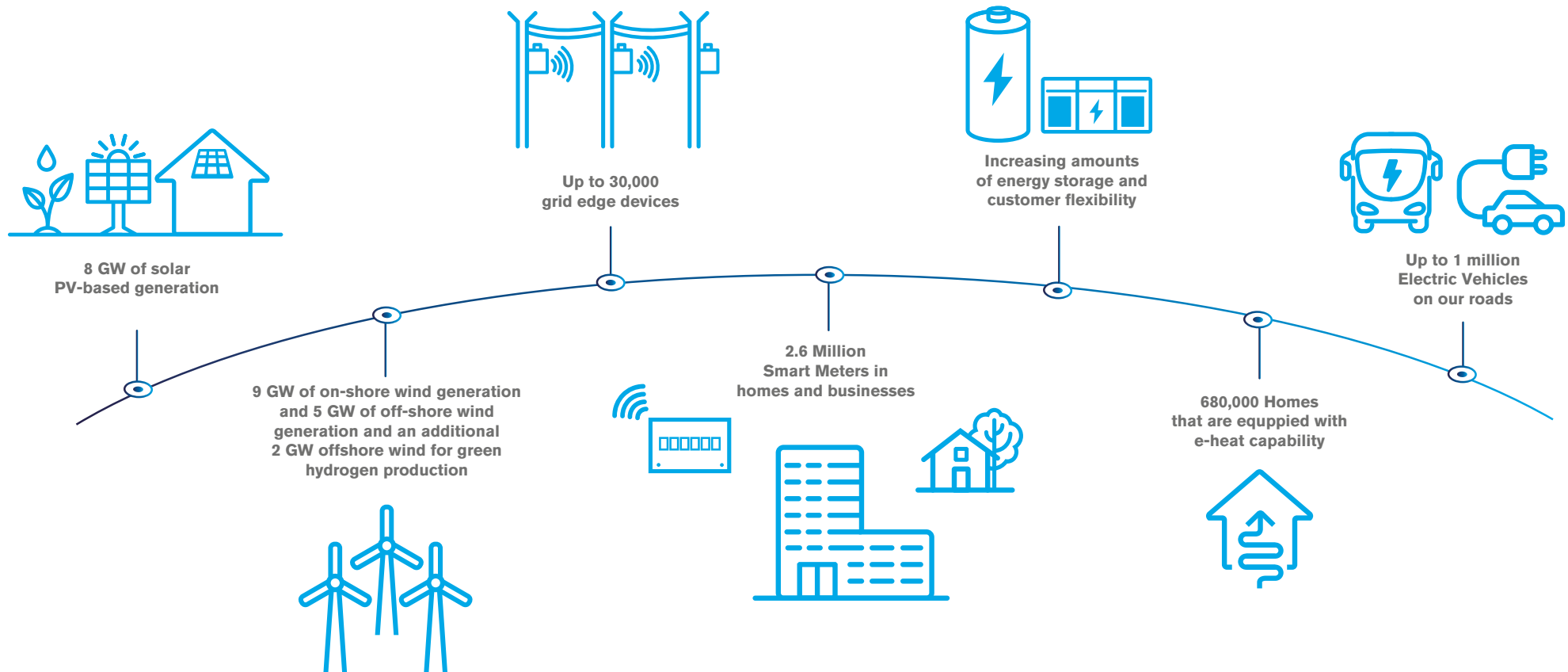
This Strategy identifies high level actions out to 2030 with PR6 (2026 to 2030) being of critical importance to continued momentum to achieve net zero. The specific investment in both the distribution network, the transmission network (proposed by EirGrid) and other investment such as in IT, digital technology and customer service will be assessed by CRU through the Price Review process during 2024 and 2025. Our Networks for Net-Zero Strategy sets out our ambition

for the period to 2030 and our commitments in what is a fast-changing environment. These will be revised and updated in time for the PR6 Business Plan submission and will be subject to regulatory review and stakeholder engagement in advance of 2026.

Numerous external factors have impacted on the energy landscape since the determination of PR5 in 2020 such as Fit for 55, REPowerEU, National Energy Security Framework, CAP21 and CAP23. The scale of work has increased, driven by the high levels of wind, solar and storage required to connect to the network together with accelerating electrification.



## Electricity network by 2030



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, as well as connecting renewable generation at scale to the electricity network. This means delivering our role

to help the targets for 2025 and 2030 as set out in Climate Action Plan 2023. Delivering this is going to require a transformation of our network, our systems, and our approach. The sustainable social and economic development of communities, businesses, Ireland's climate action response and transition to net zero are all dependent on ESB Networks delivering our purpose through to 2030 and beyond.

## Net Zero Timeline

Climate legislation in Ireland is based on limiting cumulative emissions over time through the carbon budgets. This means that early intervention and action are key to meeting the future budgets.

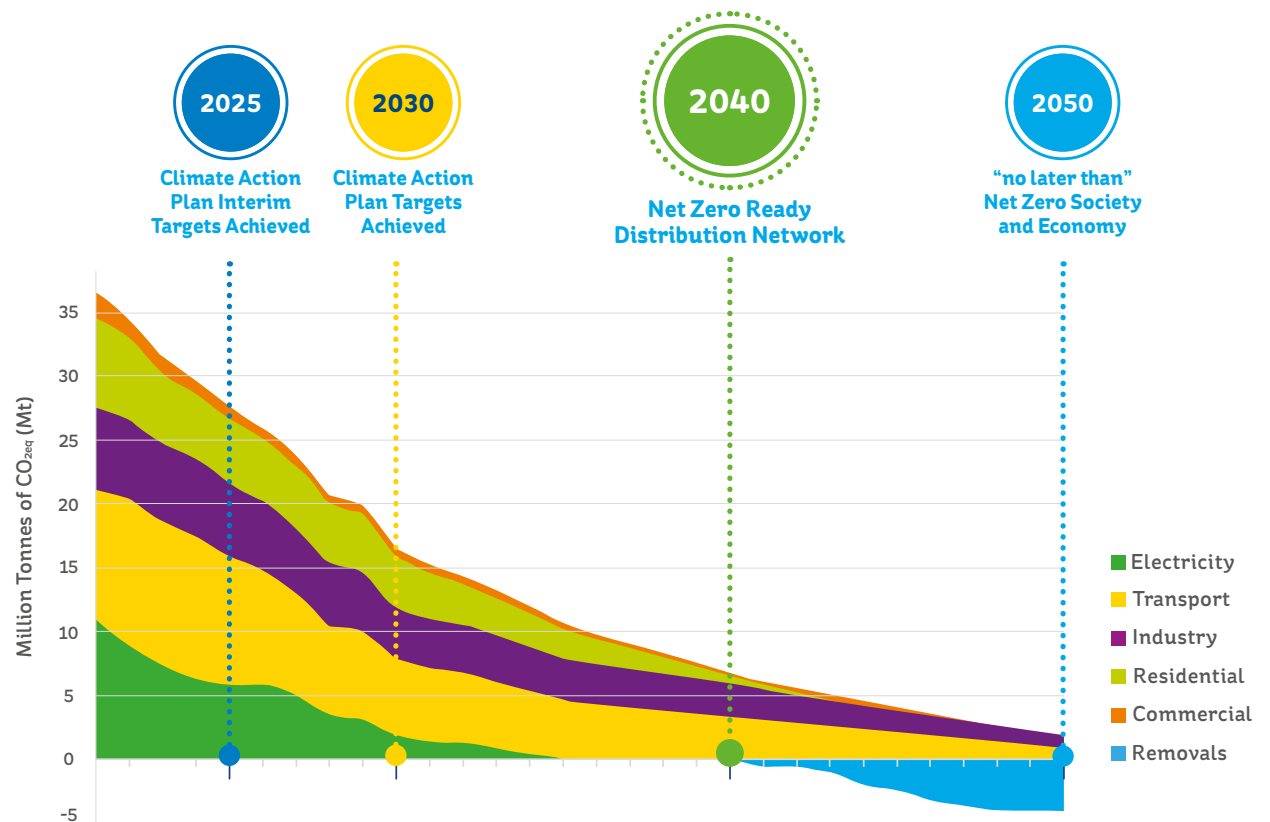
Decarbonisation of the electricity sector coupled with the replacement of fossil fuels with clean electricity in other sectors is a fundamental component of the climate strategies being adapted across global economies. This is also at the core of Ireland's Climate Action Plan and requires that Ireland decarbonise electricity at source with renewables and increase the supply of this clean electricity throughout the economy. It is particularly important for areas that currently use fossil fuel like transport, heat and industry. This path is widely accepted as the least cost way to achieve emissions reduction and is at the core of Climate Action Plan 2023. The development of a smart distribution network is a critical enabler of this transition.

In the decade ahead, all customers, from renewable generators to large energy users, to home, farm and business customers will adopt new technologies, products and services changing how they generate, store, or consume electricity. As the electricity system transitions to Net Zero, our role is to deliver a smart and sustainable distribution system, enabling smarter planning, operations, and flexibility markets, as well as providing network capacity.

The graphic below from University College Cork (UCC) / Marine and Renewables Energy Ireland (MaREI) shows the evolution of emissions reduction in Ireland on a pathway to a net zero energy system. The glidepath set out is in line with Ireland's statutory Carbon Budgets.

This chart shows Energy Systems emission only and does not include Agriculture and Land use. The Profile is stylised reflecting a diversity of pathways to meet Net Zero and Carbon Budgets.

### 'Net Zero' Energy System Emissions Reduction Profile





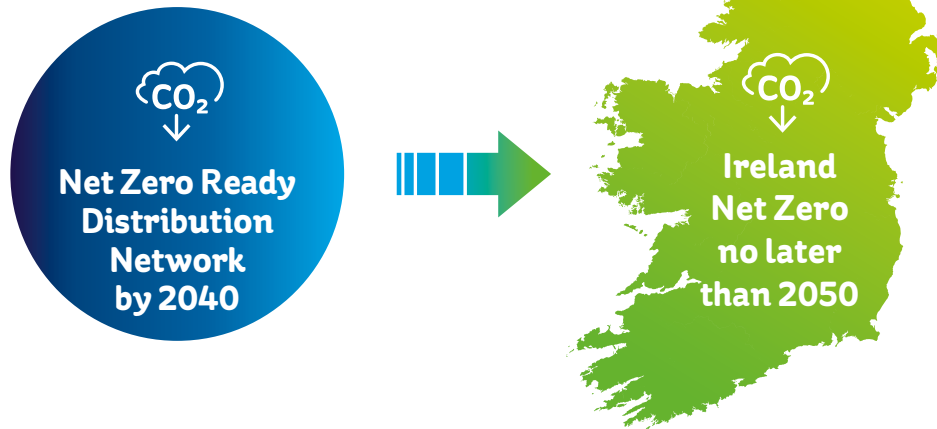
# ESB NETWORKS' STRATEGY

Our Strategy in ESB Networks until 2030 is framed by the Government's Climate Action Plan. It is driven by ESB Networks' central role in leading the transition to a secure and affordable low-carbon future, using clean electricity. The transition to a Net Zero society no later than 2050 will be enabled by a Net Zero Ready Distribution Network by 2040.





## Networks for Net Zero



Our Networks for Net Zero Strategy sets out ESB Networks' role in enabling the delivery of the Government's Climate Action Plan 2023 and supports the decarbonisation of electricity by 2040, which will enable the achieving of Ireland's net zero ambition no later than 2050.

In this Strategy we are setting out a clear objective to develop a digital electricity network that is flexible and smart and will provide a foundation for a clean electric future in Ireland by 2040. This means having a Net Zero Ready Distribution Network by 2040 to enable Ireland's achievement of net zero no later than 2050.

We plan to introduce a 'Build Once for 2040' concept that will ensure that the distribution network and supporting services such as demand management are designed and developed to meet the anticipated needs of customers in 2040 and to deliver a clean electric future. This will eliminate the need for repeated,

costly and resource intensive interventions on the network. Essentially, where possible, we will deploy solutions today which are scalable to meet the needs of customers and stakeholders in 2040.

For our customers, electricity will continue to provide a safe, secure, and reliable energy source and it will also present new opportunities to take part in the energy transition through self-generation and storage, demand management, energy efficiency opportunities, and selling electricity by exporting back on to the electricity network. As customers engage with new opportunities, and as renewable energy connections increase, managing the network will become more complex.

In ESB Networks we are also putting plans in place to ensure that we will be a Net Zero Business by 2040. To achieve this, we will continue the work already underway in our business examining everything we

do from procurement, to how we utilise, maintain, and will ultimately convert our fleet of vehicles and equipment, to how we manage waste and how we upgrade, maintain, and use our facilities through a sustainability lens.

We know that change is happening at pace, and we are evolving our business processes, systems, and ways of working in anticipation of future network requirements.

### Collaboration with our stakeholders

At ESB Networks, we understand that we have been entrusted with the responsibility to play a vital role in Ireland's energy future, and we know we cannot do this alone. Collaboration with our customers and all our stakeholders will be critical to achieving our vision for an electric future and meeting Ireland's climate targets.

### Innovation

A key enabler of our Strategy is to continuously innovate towards a sustainable low carbon energy future for our customers and for Ireland. Our definition of innovation is to implement new ideas for the enduring benefit of our customers and business.

Collaboration is central to our innovation strategy, and we have partnered with over 80 companies to date in the delivery of our innovation projects including academia, energy providers, community agencies and international research organisations.

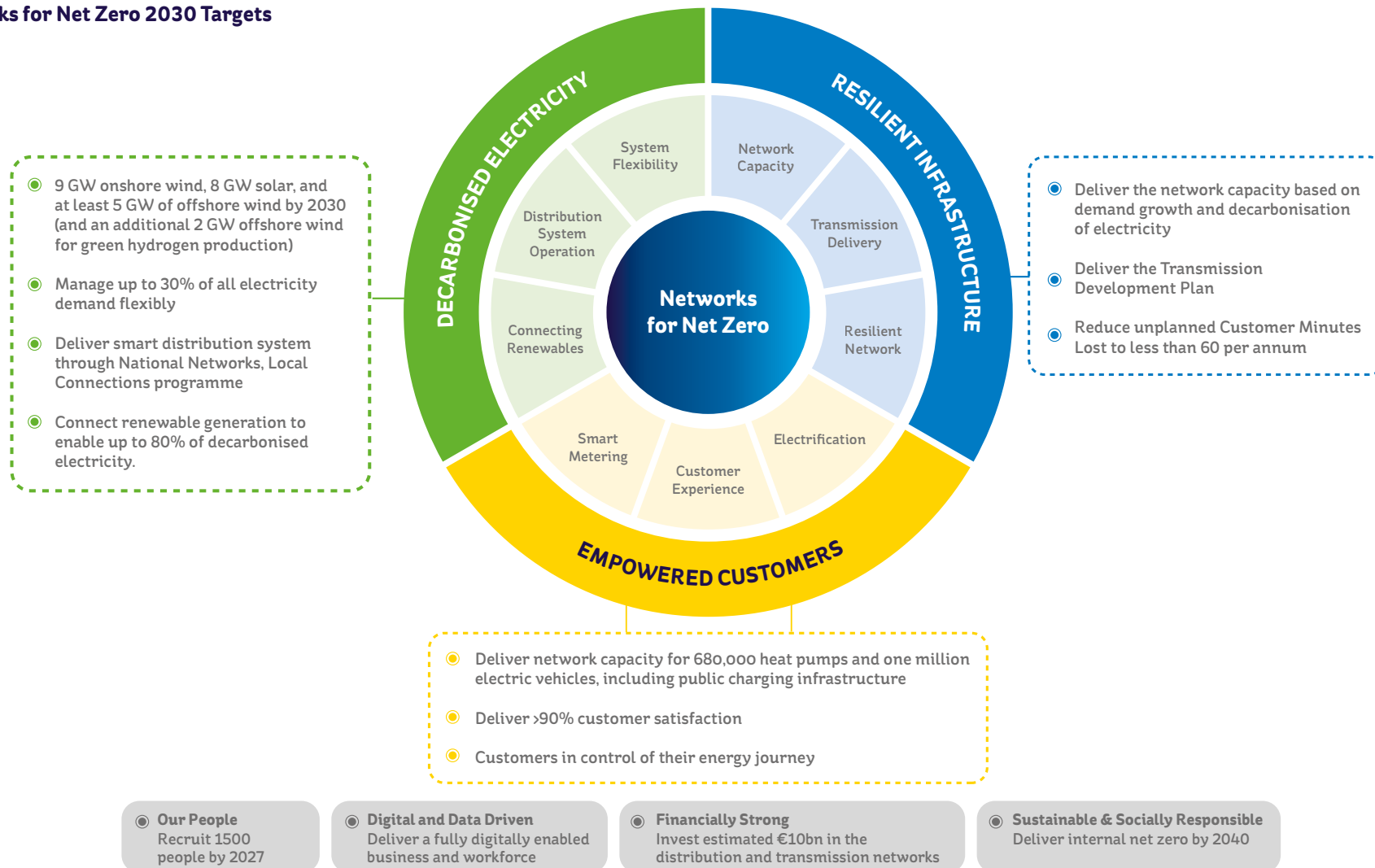
These collaborative partnerships will continue to be core to the delivery of our Strategy.

In anticipation of the changes ahead, and informed by the inputs above, we have structured our Strategy around three key strategic objectives on which we will focus our efforts.

Our Strategy is further underpinned by a suite of four foundational capabilities which will be critical to ensuring we are positioned to execute and deliver on our ambition.

These objectives and capabilities are illustrated in the graphic here and in the descriptions on the following pages.

### ESB Networks for Net Zero 2030 Targets



## DECARBONISED ELECTRICITY



### Connecting renewables:

ESB Networks will facilitate the connection in the region of 22 GW of renewable generation by 2030. In line with CAP there should be 9 GW of onshore wind, and at least 5 GW of offshore wind (and an additional 2 GW offshore wind for green hydrogen production) and 8 GW of solar connected to the electricity system by 2030. As part of our 'Build Once for 2040' concept, we are proposing to develop renewable hubs and explore advance build network reinforcements so that increased wind, solar, batteries (including community projects and smaller scale generation customers) can connect safely to the electricity network. To deliver on this target we will significantly increase our customer engagement to provide guidance on different pathways for connecting renewables. We will also implement smart technologies to enable customers to take part in the energy transition through self-generation and storage, demand management, energy efficiency opportunities, and selling electricity back to the network.

### Distribution System Operation:

Our purpose in our role as Distribution System Operator (DSO) is to deliver a clean electric future through the electrification of heat, transport and industry, as well as connecting renewable generation at scale to the electricity network. As the electricity

system transitions towards a smarter, sustainable model, the operation and management of intermittent and renewable generation coupled with new types of demand will require a digital network that is both flexible and smart. Historically, electricity network companies have designed and managed the distribution network through a top-down approach and extensive management and monitoring tools were not required to analyse predictable electricity flows. As increasing numbers of active customers and Distributed Energy Resources (DER) connect to the network, this will result in more unpredictable power flows, greater variations in voltage and different reactive power characteristics making the system more challenging to manage. In 2020, we established the **National Network, Local Connections Programme**. It is putting in place the systems, processes and capabilities needed to allow industry, customers, and communities to participate actively and securely in transmission, distribution, and market activities. This will facilitate and enable us to maximise the use of renewable energy up to 80% of overall usage and beyond. The NN,LC Programme is also supporting the reduction in peak electricity demand and putting measures in place to improve electricity demand management in line with CAP23.

### System Flexibility:

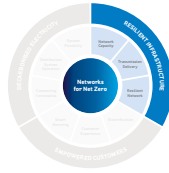
System flexibility means a portfolio of practices and technologies (e.g., flexible demand, generation, and storage) that increase network efficiency, resilience, and ability to integrate variable renewable energy sources. ESB Networks is enabling flexibility through the National Network, Local Connections (NN,LC) Programme and we will put systems in place to meet the system flexibility targets set out in CAP23 for 2025 and 2030.

#### The benefits of flexibility include:

- Reducing the need for new infrastructure.
- Efficient integration of renewable energy sources.
- Enabling customers to participate in markets.
- Enabling faster electrification and therefore reduction in carbon emissions.
- Reducing dependency on imported fossil fuels.
- Minimising deployment of non-renewable sources at peak times.



## RESILIENT INFRASTRUCTURE:



### Network Capacity:

We are ensuring that our network has the capacity to connect and accommodate renewables, as well as the demand growth driven by population growth, new housing developments, the economy, and the significant increase in demand due to electrification of heat, transport, and industry. Major investments in network infrastructure at all voltage levels, from low voltage to high voltage, such as overhead lines, cables, transformers, and substations are needed to deliver the energy transition. We have developed and will continue to develop new tools and procedures to enable the use of new innovative technologies and concepts to solve constraints on the distribution network. Our aim is to optimise the investment by maximising the use of the existing distribution network and smart solutions.

### Transmission Delivery:

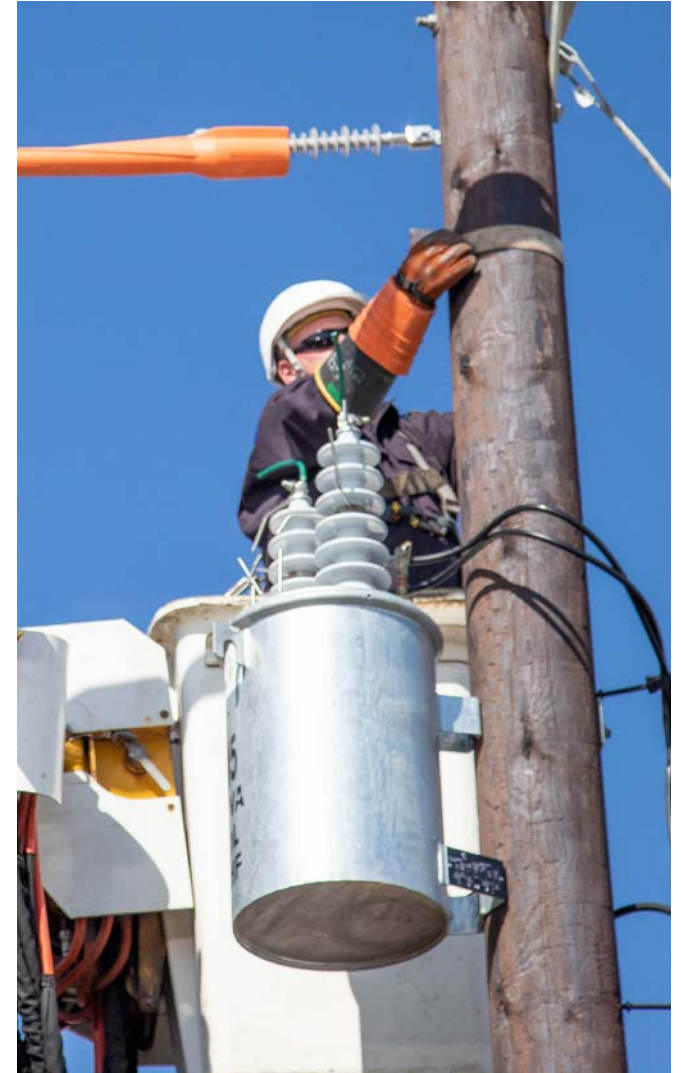
ESB Networks, in our role as onshore Transmission Asset Owner, is responsible for transmission network construction and maintenance works defined by the Transmission System Operator (TSO). The investment in the transmission system is projected to rise to meet the climate challenge in line with the Government targets. The rapid transition to a low carbon future requires new Bulk Supply Points (BSPs) to meet growing demand due to significant electrification,

the connection of large volumes of renewable generation, high-capacity storage solutions and further interconnection with other transmission networks.

As society increasingly relies on electricity for its energy needs, interoperability of the Transmission and Distribution systems is required including new 'Smart' solutions and technologies involving all connected customers. ESB Networks' strategy is to deliver an optimal whole-of-system solution for Ireland, our economy and society for 2030 and beyond. ESB Networks is working with EirGrid, customers and all other interested parties to innovate and deliver these objectives.

### Resilient Network:

As decarbonisation of society develops through electrification, and the dependence on the electricity network increases, the quality, condition and performance of the network will become increasingly important. We will continue to adapt and strengthen our network so that we can collectively transform our energy future and lessen the risk of extreme weather events and cyber-attacks. This will be achieved by using data insights to target continual improvement in the performance of the network.





**EMPOWERED CUSTOMERS**



**Electrification:**

We will support and facilitate our customers to connect up to 1 million electric vehicles and 680,000 heat pumps to the distribution system by 2030. We will provide network capacity for public charging infrastructure in line with the Alternative Fuel Infrastructure Regulation. ESB Networks are ensuring that our network has capacity to accommodate electrified heat and transport and microgeneration by reinforcing and adopting new processes, systems and technologies and thus ensuring network readiness.

**Customer Experience:**

Our commitment is to connect our customers with a great experience through proactive engagement and by consciously placing their needs at the centre of everything we do. We will support all customers on their journey to the clean electric future through electrification of industry, heat, and transport and by facilitating them to participate in the markets, adopt innovative products and services and take control of their energy consumption. This will be achieved by embedding a customer centric culture across the organisation, transforming the customer experience, improving our customer engagement, being transparent, and delivering excellent network performance, particularly in relation to reliability of electricity supply. We will continue to deliver new electricity connections for business and for new

homes, and are committed to ensuring that we play our part in delivering the Housing for All - A New Housing Plan for Ireland.

**Smart Metering:**

As part of the National Smart Metering Programme, new smart meters are being offered to every home in Ireland. By the end of 2022, there were more than 1.1million smart meters successfully installed and this will continue with the final commitment to have 2.4 million smart meters installed across Ireland by the end of 2024. Smart meters provide more accurate

information on energy usage and reduce the need for estimated bills as well as enabling payment to customers for exporting their microgeneration to the grid. Smart metering will also enable the provision of new smart products and services to be made available by electricity supply companies. These could provide significant value and advantage for customers. Furthermore, these new products and services could, in time, enable solutions that can support the development of a digital network that is flexible and smart.



FOUNDATIONAL CAPABILITIES

**Our People:**

Our people are crucial to what we deliver as a company. Over the coming five years we plan to recruit 1,500 people to both sustain and grow our capabilities across a range of areas. We will ensure we have the resource capacity and flexible deployment capability to deliver this Strategy, supporting Ireland's Climate Action Plan and our net zero future.

An important part of ensuring the deployment capability is the work we do with our partners and suppliers to deliver our projected work programmes. We value this relationship with our Suppliers and Contract Partners, and today we have €4bn of Framework Contracts in place. Our strategic approach to procurement and our delivery strategy position ESB Networks to increase the Framework Contracts to ramp up and deliver at pace if and when required. In 2021 ESB Networks' contribution to the Irish Economy was approximately €1.2bn.

**Digital and Data Driven:**

Digital is the integration of technology and new ways of working into all aspects of the business, driving change in how we operate, serve our customers, and deliver value to society. Transforming operations and systems with data and digital technologies and new ways of working can create substantial value and improve performance in areas such as safety, reliability, customer satisfaction, predictable and efficient delivery, and enabling the active customer.

**Financially Strong:**

Maintaining ESB Networks' financial strength is critical to ensure we can fund the continued development of the electricity infrastructure and for the activities necessary to deliver Networks for Net Zero Strategy. We expect to invest in the region of €10bn by 2030. We will continue to balance the need to invest to provide a resilient network and essential Infrastructure to support economic growth (e.g. provide connections for new housing) and to provide a Smart Network to enable a decarbonised economy with maintaining affordability for customers by focussing on operating as efficiently as possible.

**Sustainable and Socially Responsible:**

ESB Networks believes in the role of electricity infrastructure as an enabler of social, environmental, and economic growth. We will work to reduce the carbon footprint of our business. As the electricity network is embedded in every community right across the country, the safety of the public is fundamental to how we design, operate, and manage the system today and into the future. Our Public Safety Strategy, including public safety awareness campaigns will continue to be developed as people become more reliant on electricity. While ESB Networks has made large strides in the carbon reduction area over the past few years, we are committed to accelerating our progress on the trajectory to net zero by 2040. We will integrate Carbon Emission Assessment as part of all infrastructure capital investments by 2025. We will reduce our impact on the environment by applying similar principles to those in Green Public Procurement (GPP). All our procurement activities will be green-compliant by 2025.

Our contribution to Irish economy ~€1.2bn per year

Recruit 1500 people

Estimated total capital investment by 2030 €10bn

Total allowed revenue to be invested in PR5 €6.5bn

€4bn Framework contracts in place in 2030

Over 1,100 Irish vendors

Please see our commitments to deliver Networks for Net Zero Strategy presented in the table below.

		2025 Targets	2030 Targets	2040 Targets	Outcome
<b>DECARBONISED ELECTRICITY</b>	<b>Connecting Renewables</b>	Connect additional renewable generation to decarbonise up to 50% of electricity. Deliver up to 5 GW of solar and 6 GW of onshore wind connections.	Connect additional renewable generation to decarbonise up to 80% of electricity. Deliver 8 GW of solar, 9 GW of onshore wind and at least 5 GW of offshore wind connections.	Deliver the connections for all renewable generation needed to fully decarbonise electricity.	ESB Networks enabling net zero electricity.
	<b>Distribution System Operation</b>	Deliver the operation tools and systems to operate the distribution network with 85% SNSP.	Deliver Smart Distribution System (through NN,LCP), the operation tools and systems to operate a distribution network with 95-100% SNSP.	Continuously improve and innovate the operation of the flexible, a smart distribution network.	ESB Networks enabling a smart and sustainable distribution system.
	<b>System Flexibility</b>	Manage 15-20% of all electricity demand flexibly.	Manage 20-30% of all electricity demand flexibly.	Extend and optimise the use of electricity demand to deliver a Net Zero Ready Distribution Network.	Well informed customers using flexibility to deliver their climate action.
<b>RESILIENT INFRASTRUCTURE</b>	<b>Network Capacity</b>	Deliver the network capacity for 2025 AFIR, DART+ and public transport charging, demand growth and renewables connection according to CAP.	Adopt 'Build Once for 2040' concept and deliver the network capacity based on demand growth and decarbonisation of electricity.	Deliver the full network capacity required for Net Zero Ireland.	Electricity network ready for electrified demand and renewables needed to decarbonise electricity.
	<b>Transmission Delivery</b>	Work with the Transmission System Operator to develop and deliver the Transmission Development Plan.	Deliver Transmission Development Plan as agreed with the Transmission System Operator.	Deliver the transmission projects to enable the connection of offshore renewables at scale.	ESB Networks enabling 100% renewable electricity and supporting security of supply.
	<b>Resilient Network</b>	Reduce unplanned CML<76.6 per annum. Reduce unplanned Ck<109.6 per annum.	Reduce unplanned CML<60 per annum. Reduce unplanned Ck<80 per annum.	Continuously improve network performance as opportunities arise.	ESB Networks providing a smart resilient network that customers can rely on when they need it.
<b>EMPOWERED CUSTOMERS</b>	<b>Electrification</b>	Deliver network capacity for 215,000 HPs, 196,000 EVs and 180 MW of public charging infrastructure capacity.	Deliver network capacity for 680,000 HPs, up to one million EVs and 800 MW of public charging infrastructure capacity.	We will have a network that enables full decarbonisation of industry, heat and transport.	ESB Networks enabling net zero Ireland.
	<b>Customer Experience</b>	Deliver >83% customer satisfaction.	Deliver >90% customer satisfaction.	Continuous improvements in all aspects of customer engagements.	ESB Networks providing Customer Experience Excellence.
	<b>Smart Metering</b>	Replace 95% of electricity meters with smart meters.	Deliver and scale the enhanced retail market capabilities set out in Industry High Level Design of the smart metering programme.	Customers in control of their energy journey.	ESB Networks enabling customers to control their energy journey.



Please see our commitments to deliver Networks for Net Zero presented in the table below.

		2025 Targets	2030 Targets	2040 Targets	Outcome
<b>FOUNDATIONAL CAPABILITIES</b>	<b>Our People</b>	Recruit and ensure safety competence of 900 people to support net zero delivery.	Deliver 40% gender diversity target for all new joiners.	Truly diverse and inclusive organisation with high levels of employee engagement and retaining a top quartile position in employment market.	Safe and empowered employees working in an inclusive, customer centric and values-led culture.
	<b>Digital &amp; Data Driven</b>	Build the foundational IT systems and capabilities. Upgrade core telecommunications infrastructure by 2026 (SmartGrid Spectrum).	Transform ESB Networks to a data driven digital utility.	A fully digitally enabled business and workforce.	ESB Networks a Digital Utility.
	<b>Financially Strong</b>	Total capital investment of -€4.4bn in PR5 (2021-2025). A minimum BBB+ credit rating on a standalone basis.	Capital investment of -€10bn on the transmission and distribution infrastructure 2023-2030.	Efficiently delivered, sustainable and affordable electricity network supporting the Irish economy.	ESB Networks delivering an affordable electricity network for net zero Ireland.
	<b>Sustainable and Socially Responsible</b>	50% of our buildings to be at BER B rating. Integrate Carbon Emission Assessment as part of all infrastructure capital investments.	Deliver absolute CO <sub>2</sub> reduction of 50%. 80% of Light Duty Vehicles will be electric.	Fully decarbonised fleet. Replace all Fluid Filled Cables by 2035. ESB Networks fully decarbonised as a business.	ESB Networks at net zero as a Business.





# NETWORKS FOR NET ZERO - ACTION PLAN TO 2030



# JOIN US ON THE NET ZERO JOURNEY

Join us on the journey, in delivering the electricity network for Ireland's clean electric future, by sharing with us your ideas, challenge our approach and continue to hold us to account. We want to hear your views on how ESB Networks delivers net zero, and whether we are focusing on the right challenges to connect our customers to a clean electric future.

Please send your comments and feedback to  
[ESBNetworksStrategy@esb.ie](mailto:ESBNetworksStrategy@esb.ie)

For more detail on the strategy, please visit  
[esbnetworks.ie/strategy](https://esbnetworks.ie/strategy)







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