ESB NETWORKS

Price Review 6 Business Plan

Executive Summary

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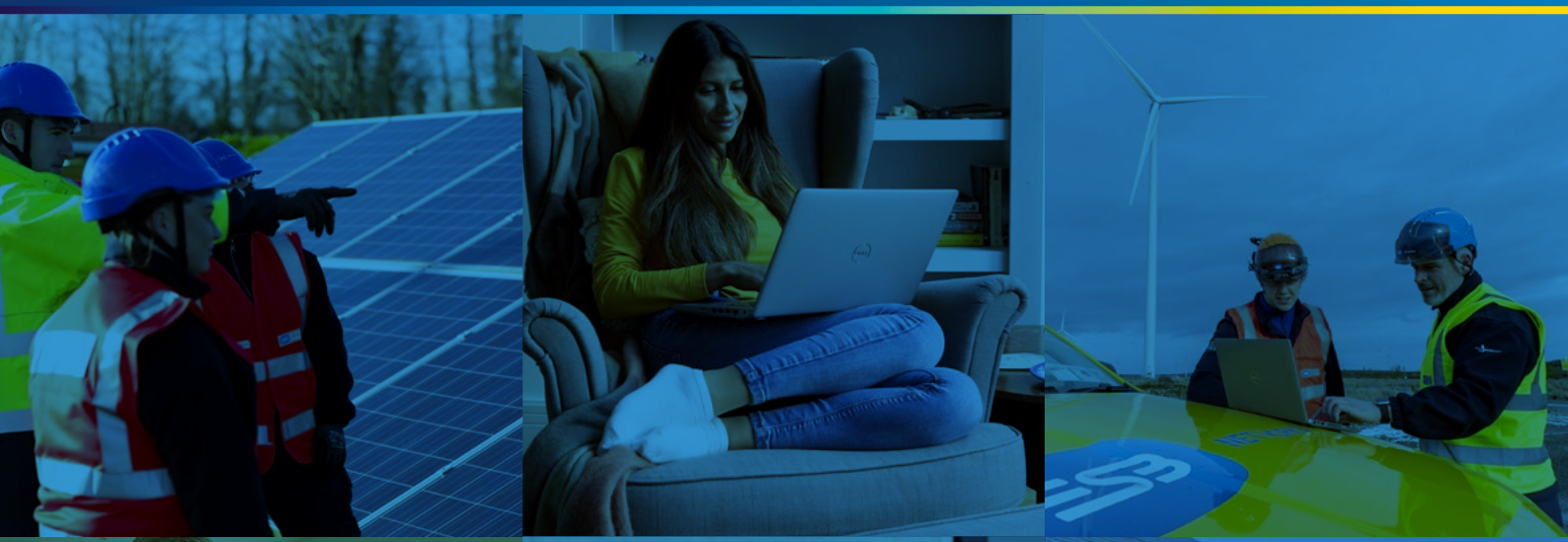

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Managing Director's Foreword

Ireland's electricity network is a critical component of our national infrastructure which underpins economic growth, sustains our modern economy and supports key policy objectives relating to housing, industrial growth and climate change. The investments we make in the electricity network directly affect people's lives now and in the future. They impact on our national competitiveness, our ability to attract foreign direct investment, the pace of new housing development, and our legally binding target to reach net zero no later than 2050.

Every five years, ESB Networks submits a business plan to the Commission for the Regulation of Utilities (CRU), outlining our planned investments in the network over the next five years as part of a regulated Price Review (PR) process. This process safeguards customers by regulating how much money ESB Networks can recover through electricity bills and ensuring that the benefits for customers are delivered safely, sustainably, and efficiently.

Our business plan for Price Review 6 (PR6) covers the period 2026 to 2030. It addresses the strategic objectives and outcomes identified by the CRU in their PR6 Strategy Paper as well as our own long term vision for the network, as set out in our Networks for Net Zero Strategy.

PR6 will build on and accelerate the significant progress achieved across the electricity sector over the past five years. Since 2021, ESB Networks has connected over 1.4 GW of utility scale renewable generation, 120,000 Microgen solar installations, and over 135,000 homes, farms, and businesses to the network. We have installed more than 1.85 million smart meters, invested in digital, data, and telecoms systems, and set up the National Networks Local Connections programme to unlock the benefits of a more flexible distribution system for our customers. During PR5, we have also made a crucial contribution to Ireland's energy security by connecting 853 MW of thermal generation and 608 MW of battery energy storage to the transmission and distribution networks, with further projects to be connected before the end of 2025.

We have also invested significantly in our existing network asset base, strategically maintaining and replacing network assets to ensure that they remain reliable and resilient to the challenges that lie ahead.

We achieved these milestones against a backdrop of geopolitical instability, population growth, and growing concern about climate change. These factors have fundamentally altered the energy landscape, resulting in accelerated housing, infrastructure, and climate targets and placing significant new demands on the electricity network.

In this context, our PR6 investment programme will be bigger in scale and ambition, reflecting the strategic importance of the electricity network in enabling social, economic and environmental transformation over the coming decades. We are seeking to address the immediate and future needs of customers by aligning our plan with relevant policy objectives and targets, including those contained in the draft National Planning Framework, Housing for All, the National Development Plan 2021-2030 and the Climate Action Plan.

While our plan for PR6 is significant in its own right, it is just one part of a strategic roadmap that builds on PR5 and puts in place the foundations for further investment beyond 2030 on Ireland's path to Net Zero. Substantial and sustained investment will be needed to achieve this ambition.

This will require whole-of-system support, recognising the interconnected nature of the energy landscape and the need for coordinated action across all sectors. We have worked very closely with EirGrid, the transmission system operator (TSO), and with our customers and stakeholders to put together this plan.

We have outlined our approach to scaling our investment in a way that optimises the pace and scale of delivery and protects customers. The plan reflects the realities of the world in which we live today, and the inherent uncertainty and risks surrounding the pathway to Net Zero. To address this uncertainty, we are proposing an ambitious but balanced approach which combines investment in physical network assets with smart, non-wires solutions and an agile investment approach. This will ensure that the benefits of a resilient, sustainable, and future proofed network are realised without placing undue burden on our customers.

As we chart a course for Ireland's pathway to a sustainable, vibrant, Net Zero economy, our approach is firmly grounded in the needs and expectations of our customers and the communities we serve. Our proposals are guided by their insight and feedback, and we thank the many individuals and groups who have taken the time to engage with us in the preparation of this Plan.

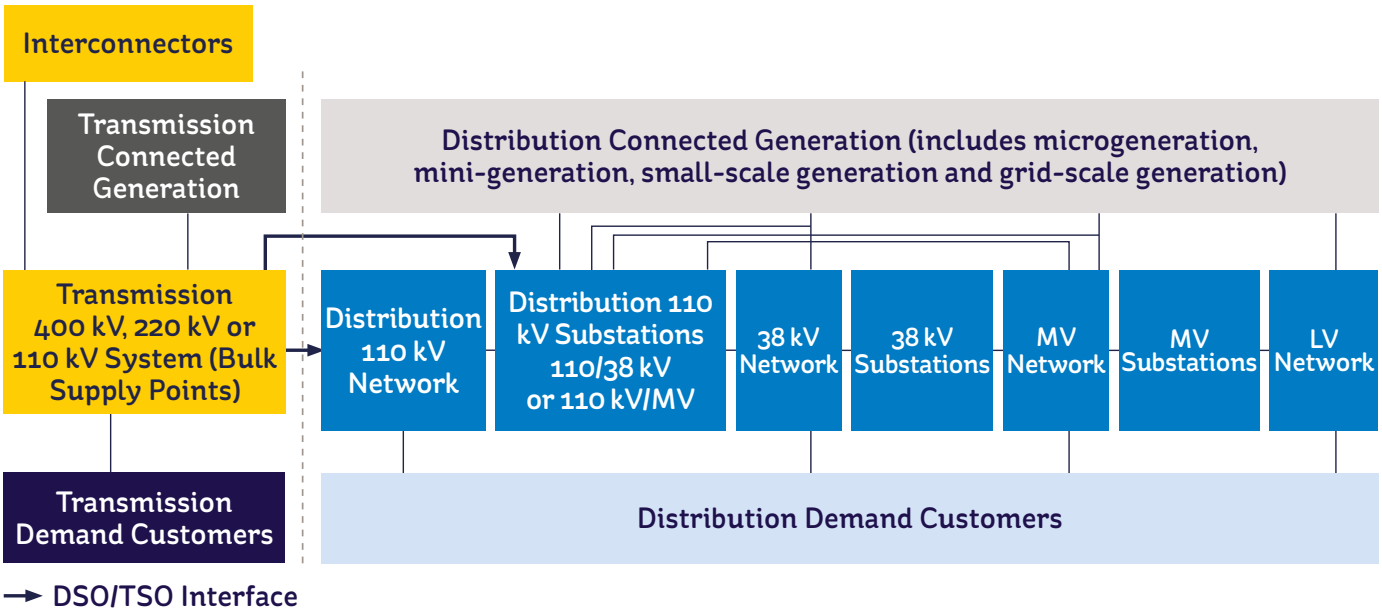
We look forward to working with the CRU, our customers, and all stakeholders to deliver our PR6 business plan, so that together we can achieve the transformation needed to ensure a sustainable, low carbon future for Ireland.

Executive Summary

ESB Networks' role and the Price Review process

ESB Networks is the electricity distribution system operator (DSO), distribution asset owner (DAO), and onshore transmission asset owner (TAO) in the Republic of Ireland. We work to meet the needs of all electricity customers in Ireland, regardless of supplier, connecting them to Ireland's clean electric future. As TAO, ESB Networks is responsible for building and maintaining the high voltage transmission system in line with requirements set out by EirGrid, the transmission system operator (TSO). As DAO and DSO, we carry out all functions relating to the electricity distribution system, including asset management, planning, construction, maintenance, and operation of the high, medium, and low voltage distribution network. Figure 1 below illustrates the structure of the electricity network and the interface between the transmission and distribution systems.

Figure 1: Structure of the electricity transmission and distribution systems



ESB Networks is licenced by the Commission for the Regulation of Utilities (CRU), which oversees our investment in the electricity network through a five-yearly Price Review process to ensure that it delivers value for customers. This business plan sets out our investment proposals to the CRU for Price Review 6 (PR6), covering the period 2026 to 2030 and building on the progress that we have made in previous Price Review periods.

Building on developments during PR5*

Significant geopolitical, demographic and social changes have occurred during the current Price Review period which have accelerated climate action, disrupted supply chains, driven up electricity prices, affected the availability and cost of capital, increased demand for network capacity and added to delivery risk.

Despite this volatility, the electricity sector stepped forward during PR5 to support customers and respond to a rapidly changing energy landscape, with ESB Networks playing a central enabling role. We are on track to deliver our largest ever capital investment programme (€5.0bn), with investments materially in line with what we had planned. Capital investment at the end of PR5 will amount to 97% of our projected programme, while operational expenditure is forecast at 106% of what was anticipated.

Over the course of PR5, we have increased total annual capital expenditure from €0.8bn in 2021 to over €1.1bn projected for 2024 (both in 2024 money) and have undertaken significant work to transform our delivery capability in anticipation of a much larger work programme in PR6. We have also made the network smarter and more flexible to meet the increasingly complex demands associated with decarbonisation and electrification, and to minimise the need for physical network reinforcements.

ESB Networks engaged Frontier Economics to conduct a comparative study assessing ESB Networks' efficiency compared to peer companies. This study has concluded that ESB Networks' cost performance was efficient across the PR5 period. Frontier found that our costs are, on average, 6.7% more efficient than the mean efficient level of GB DNOs. Their sensitivity scenario supports this, consistently showing that ESB Networks' total expenditure (totex) is at or below the mean efficiency level across 2021 to 2024.

To ensure that our capital investment programme in PR6 continues to optimise outcomes and benefits for customers, we used a standardised asset health and condition-based approach to target assets that are most at risk of failure. This approach is CNAIM (common network asset indices methodology) and is aligned with and approved by Ofgem in the UK. This allows us to objectively assess the health of assets and their risk of failure now and in the future and put forward investment proposals prioritised based on asset risk. We also completed cost-benefit analyses on the network investment programmes.

Our PR6 plan builds on developments during PR5 and sets out how we propose to efficiently develop and scale our investment programme to meet accelerated climate targets and support the needs of a much larger population over the next Price Review period.

**Unless otherwise stated, all monies outlined in this document are quoted in real 2024 terms*

PR6 Outlook

Ireland's electricity network is a critical component of our national infrastructure which underpins economic growth, sustains our modern economy, and supports the delivery of key policy objectives relating to housing, economic growth, and climate change. Substantial and ongoing investment is needed in the electricity network between now and 2040 to enable the delivery of targets contained in the National Development Plan, the draft National Planning Framework, Housing for All, the Climate Action Plan, and other key policies and frameworks. Based on projections in the draft National Planning Framework, the Irish population is forecast to grow by around 1 million people by 2040, requiring an additional 50,000 homes to be built each year throughout PR6.

An initial ramp-up and then progressive scaling of investment will also be needed between 2026 and 2040 to connect renewables, support the electrification of heating, transport, and industry, and maintain a secure, reliable, and resilient electricity network to meet the needs of customers.

The electricity network must be capable of meeting both peak demand and larger flows of electricity. We anticipate an increase in connection applications of all sizes, as well as higher levels of network utilisation by existing customers. This will require investment in additional network capacity at all voltage levels (high, medium and low voltage), as well as measures to increase the reliability and resilience of the existing network.

Considerable ongoing investment is needed to maintain the existing electricity network. Without ongoing investment, we will experience more asset failures which will result in an increased level of reactive asset replacements and unplanned customer interruptions. This will be compounded by risks associated with climate change, including faster vegetation growth, the emergence of invasive species (including woodpeckers), and more extreme weather events such as flooding and high winds. As usage of the network increases and people's dependence on electricity grows, more investment will be needed in asset replacement and maintenance. Measures to improve continuity of supply will also be required, including automated self-healing network technologies and more extensive vegetation management programmes.

By 2030, millions of devices including heat pumps, electric vehicles, battery storage, renewables, and smart meters will be connected to the electricity distribution network in line with the Government's Climate Action Plan (CAP24). The network must be capable of accommodating these devices and ready to handle much more complex flows of electricity across the system. This will require smarter and more flexible network operations, as well as close co-operation with the transmission system operator (EirGrid). Flexibility will help to overcome network constraints, capitalise on the availability of renewables, and minimise the need for new network capacity in the short term by shaving peak demand.

The National Energy Demand Strategy (NEDS) aims to achieve 20% to 30% flexibility in energy demand by 2030. Demand side management allows active energy customers to respond to signals and adjust their energy use, storage and local generation dynamically. The NEDS requires ESB Networks to enable circa 11% of this flexibility. Encouraging consumers to flex their electricity consumption in response to the needs of the network will require new flexibility products and markets, as well as sophisticated demand response programmes and technologies that can detect and react to local changes in usage. Advanced monitoring and control systems, digital systems and data management, and enhanced cyber security will be needed to handle huge volumes of digital data from numerous sources, including sensors and smart devices, to ensure reliable and efficient network operation.

As we undertake these investments, it is important to recognise that we are doing so in parallel with many other countries across the world. This will pose challenges in terms of resourcing, supply chain access, and access to capital. Securing funding certainty, building on the progress during PR5, and scaling up to deliver substantial and sustained levels of investment over time are essential in mitigating these risks and ensuring timely delivery of projects.

Putting customers at the heart of business planning and decision making

In developing our business plan for PR6, we have engaged extensively with customers and stakeholders through bilateral meetings, presentations, independent market research, and our PR6 Stakeholder Consultation Paper to understand their evolving needs and expectations. Through this process, we have gained insights into the priorities of our customers and stakeholders, which are reflected throughout our business plan.

Large customers and stakeholders have highlighted their dependence on the availability of network capacity to connect houses, support electrification, and deliver renewable projects. They want assurance that the capacity they need can be delivered efficiently, and at an appropriate pace and scale. They emphasise the need for rapid infrastructure delivery and support anticipatory investment.

Our domestic customers have told us that having **access to reliable electricity supply, renewable energy and tools to better manage their costs** are important to them. However, while approximately 70% have indicated that they would pay some additional weekly amount for those benefits, around 30% are opposed to taking on additional costs. Business customers are also resistant to taking on more costs, with SMEs in particular indicating that they cannot absorb higher electricity costs right now, as they are already struggling with rising expenses across the board.

We have carefully considered these insights and perspectives in developing our investment proposals and have sought to strike an appropriate balance in our plan that addresses the needs of all of our stakeholders and customers.

Strategic Commitments

This plan responds to the CRU's PR6 Strategy Paper which sets out clear outcomes for the networks companies to achieve during the Price Review period, including **decarbonised electricity, secure and resilient networks and supply,** and **empowered customers,** along with the following objectives to ensure delivery of these three outcomes:

- Deliver infrastructure at pace
- Enhance system efficiency
- Ensure compliance with security of supply standards
- Drive smarter, flexible, more digitally enabled networks
- Place customers at the heart of business planning and decision making

ESB Networks is committed to supporting these outcomes and objectives, and to deliver a Net Zero-ready energy network by 2040 in line with our Networks for Net Zero Strategy. A whole-of-system response is needed to support this, recognising the interconnected nature of the energy landscape and the need for coordinated action across the transmission and distribution networks, and across different sectors of the economy.

Key elements of our PR6 Plan

Our business plan is based on an ambitious investment scenario which reflects the strategic importance of electricity to Irish society and is designed to meet critical national policy objectives relating to housing, economic growth, and climate action. During PR6, we are proposing a no-regrets investment framework that will deliver greater value to customers by:

- Adopting a phased and targeted approach to increase network capacity, using data analytics to strategically focus investments on where the need for additional capacity is greatest and where our investment will deliver maximum impact.
- Deploying smart, flexible, and digitally enabled solutions to reduce peak demand and therefore minimise the amount of network reinforcements needed to add capacity. This will require investment in new operating systems, digital and data solutions, telecoms, and cyber security to enable active system management and customer participation.
- Safely increasing network utilisation (i.e. absorbing demand growth by increasing loading on existing assets) using an evidence-based approach to monitor asset condition and manage risk.
- Adopting an agile investment framework to manage uncertainty.

The following section outlines how the key elements of our PR6 investment programme will support the strategic outcomes and objectives identified by CRU in their PR6 Strategy Paper.

Reliable and resilient infrastructure

Increasing networks capacity:
The amount of electricity that the electricity distribution network can safely handle is determined by the capacity of network assets such as transformers, cables and conductors, and protection devices. If assets such as these become overloaded, it can lead to equipment damage, poor power quality, power outages, accelerated asset degradation, and safety risks. The Irish distribution network cannot, without additional investment in capacity, accommodate new housing schemes, industrial development, population growth, increasing volumes of renewables, and electricity demand growth from electrification. A number of our assets – particularly some of our high voltage (110 kV and 38 kV) stations – are overloaded due to rapid demand growth over the past decade. Current forecasted capacity requirements for 2030, based on national policy and growth targets, exceed current capacity in specific areas across the network. We are therefore proposing major investments in network infrastructure at all voltage levels (high, medium and low) including overhead lines, cables, transformers, and substations, with a particular focus on 110 kV stations to ensure adequate capacity to accommodate growing electricity demand. This investment is targeted where it is needed most today, while also creating capacity for future growth. We will also continue the conversion of 10 kV medium voltage (MV) network to 20 kV to reduce losses and provide additional capacity on the MV network.

Non-networks solutions:
Growing demand for electrical connections is driving the need for network capacity and reinforcements which take considerable time to complete. However, if customers are prepared to adapt their electricity usage patterns in response to an incentive (e.g. a flexibility payment), it may be possible to shift load away from peak times to delay or, in some cases, eliminate the need for traditional network reinforcements. To optimise our infrastructure investment decisions, ESB Networks uses the common evaluation methodology (CEM) tool to compare the value of flexibility services with traditional network reinforcements. This cost-benefit analysis tool was developed as part of the Energy Networks Association (ENA) Open Networks Project and is used by DNOs in Great Britain. Additionally, and in recognition of the capacity challenge facing the network, flexibility can also be used to provide capacity where traditional network reinforcement is particularly challenging or will not be completed in time to meeting growing demand needs. Several locations have been identified where demand growth and peak loading of the substation could be facilitated by a flexibility solution, such as battery storage.

A risk-based asset maintenance and replacement programme:
The reliability of the network and its ability to withstand future challenges is critical. Significant investment throughout PR6 will go towards maintaining the existing network to prevent the risk of equipment failure and ensure that customers have access to secure, continuous supplies of electricity. As customers adopt new low-carbon technologies, customer confidence in the network will become increasingly important. Without intervention, 57% of HV stations will be over 60 years old in 2040. In the context of this aging asset base, ESB Networks is proposing a range of risk-based maintenance and replacement programmes to minimise the likelihood of equipment failure and improve the network performance.

Using asset health models to objectively monitor condition, we plan to prioritise areas of greatest need based on known risk. In line with our 'Build Once for 2040' anticipatory investment approach, we propose to avoid piecemeal solutions and deliver future proofed maintenance and replacement programmes that will increase network resilience as we move towards 2050.

Major asset replacement programmes will focus on high voltage stations, wood poles, and overhead lines and conductors. In parallel with this, we plan to implement more extensive vegetation management and install automation devices on the medium voltage (MV) network to reduce the number and duration of unplanned customer outages.

Transmission Delivery:
In our role as TAO, we deliver all transmission infrastructure projects that are brought forward by EirGrid as TSO. Once these projects achieve consents, they are transferred to ESB Networks for delivery, where they go through four key steps: detailed design, procurement, construction, and commissioning. Our plan ensures that the reasonable needs identified by the TSO in terms of securing electricity supplies, renewables integration, and supporting new demand are met in an efficient and timely manner.

EirGrid and ESB Networks have taken a collaborative and data-driven approach to developing a PR6 investment programme that meets ambitious climate and energy policy goals. We are preparing to deliver a significantly increased work programme on behalf of the TSO, including delivery of 231 projects and development/delivery of a further 138. EirGrid has identified investment needs across all transmission voltage levels and in different parts of the country with the greatest needs being in Dublin and the east of the country. We plan to build new transmission capacity and refurbish existing assets. The size and scale of the infrastructure required is significant. It includes 27 new DSO substations to provide capacity to the distribution system, six transmission substations (including three new bulk supply substations), 90km of new 400 kV underground cable, and replacement of 55km of 220 kV underground cable in Dublin. As the TAO, we will continue to maintain transmission assets according to plans set out by the TSO. During 2025, as the Price Review process progresses, we will continue to review and update the transmission and large distribution project delivery plans.

ESB Networks is fully committed to the efficient delivery of the entire transmission programme in PR6 and is already implementing a range of initiatives to enable delivery. We will continue to coordinate closely with the TSO on key enabling structures including the joint outage transformation programme and development of an integrated transmission programme.

As DSO, ESB Networks is responsible for ensuring safe, reliable supplies of electricity to all customers connected to the distribution network. The transmission system supplies electricity to the distribution network via bulk supply points (BSPs), which are the interface points between the transmission and distribution system. We have collaborated with EirGrid, the TSO, to ensure that the BSPs required to meet the demands of distribution customers are included in their plans.

Decarbonised Electricity

Utility scale distributed generation:
We anticipate that approximately 4.4 GW of utility-scale renewable projects will connect to the distribution network during PR6, 1.6 GW of which was contracted in PR5. This will require capacity reinforcements at 25 substations, as well as the construction of five renewable hubs. To accelerate renewable connections, we plan to process two ECP (enduring connections policy) batches per year, and will work with the CRU, EirGrid, and wider stakeholders to further streamline connections and implement innovative solutions to help address capacity constraints.

Mini, Micro, and Small Scale Generation:
We anticipate applications for Mini, Micro, and Small Scale Generation will increase by about 30% annually due to technological improvements, enhanced government supports, and growing capacity and expertise across the industry. To support this growth and adapt to changing patterns of network usage, we plan to regularly review developments and respond as appropriate to ensure that the needs of customers and the network are being met. As part of our investment, we are planning to develop systems to capture and track data to enable accurate reporting against the Climate Action Plan target of over 2.5 GW of non-utility solar by 2030.

Preparing for the network of the future:
As the distribution network becomes more complex with the integration of renewable energy, electric vehicles, heat pumps, storage, and other distributed energy resources, ESB Networks will take on a more active role in managing energy flows to meet the requirements set out in the Clean Energy for All Europeans Package, the Climate Action Plan, and the National Energy Demand Strategy.

During PR6, we will continue to prepare for flexible network operations and flexibility markets by investing in telecoms infrastructure, new operating management systems, and data management and digitalisation. This is necessary to operate the system efficiently, and to manage flows of data and electricity between millions of distributed energy resources (i.e. wind farms, solar panels, heat pumps, EVs, smart meters, etc).

Through our newly established Distribution Markets and System Operations team, we propose to focus on the following three strands of activity:

- ***Smart+ and retail transformation:*** Our PR6 investments will build on the smart meter rollout and the smart metering operations centre (SMOC) and data access office to maximise smart meter capabilities and data use cases (in line with the Smart Meter Data Access Code).
- ***Operations transformation:*** We plan to undertake key operations systems upgrades, including enhanced monitoring and control, integration of new technologies, and improved security measures to support active network management.
- ***Flexibility market transformation:*** We plan to refine and develop our product offering (underpinned by extensive customer engagement) to build flexibility market liquidity. This growing market liquidity will be managed through investments in new front end and back end platforms/technologies.

Empowering Customers

Customer Experience:
The next decade will bring significant changes in how customers use electricity and interact with the electricity network, driven by the adoption of low-carbon technologies (LCTs) like heat pumps, electric vehicles, and smart meters.

We are planning further measures to enhance customer experience by digitising core customer journeys, launching flexibility products, and providing insights to customers on their electricity use, based on smart meter data. A key investment will be in our One Customer View (CRM) platform, which will give customers more choices on how and when they interact with us. We are seeking to continue to embed a customer-first culture, informed by an advanced 'voice of the customer' programme, and will provide enhanced agent support through the national customer contact centre (NCCC) in Wilton, Cork, which handles approximately 1.4 million customer calls, emails, and social media queries per year. We also propose to engage with vulnerable customers and customers at risk of being excluded from the energy transition to understand their unique needs, and ensure our services are inclusive and accessible.

We plan to adopt a customer centricity maturity framework as a tool to bring about higher levels of customer satisfaction and experience, ultimately driving a more customer-centric approach across ESB Networks.

Connecting new customers:
We anticipate a significant increase in new connection applications during PR6, driven by accelerating housing, growth, and electrification targets. The number of new customer connection applications rose from circa 30,000 per year in 2021 to circa 41,000 in 2023, and we expect this to increase to over 50,000 during PR6, driven by revised housing targets that are likely to be adopted over the life of the plan. In addition to connecting new homes, farms, and businesses, there is a target to complete up to 500,000 home retrofits by 2030 under the Climate Action Plan (CAP24). This will require ESB Networks to temporarily detach (and subsequently reattach) electrical cables to allow external insulation to be fitted. Connection applications from large customers are increasing across a number of sectors, and we await the outcome of a decision on extra-large energy users, including data centres, which has the potential to significantly impact on future network capacity requirements.

Our approach to delivery

Accelerating Delivery:
PR6 looks set to be the largest investment programme in ESB Networks' history and will require more than 500 major capital projects to be delivered. This scale of investment is necessary to meet demands on the electricity network arising from population growth, economic development and climate action. Scaling up to meet such an ambitious programme of investment would be challenging in the normal course of events, but the challenges are compounded by global competition for resources, supply chain disruptions, geopolitical instability, network (and outage) constraints, and aging infrastructure.

During PR6, we will continue to implement, refine, and expand measures to increase workforce resilience, enter into competitively procured framework contracts for advance procurement of materials, and implement new ways of working.

We plan to continue to adopt modern methods of construction including modularisation, shifting work from field to factory to accelerate delivery and reduce risk. We are also building a more resilient supply chain by diversifying our supplier base, standardising designs, undertaking advance ordering, and increasing our storage facilities to avoid unnecessary delays.

Anticipatory Investment:
In the context of accelerated housing, economic growth, and climate targets, it will be necessary to scale and maintain a very significant level of investment in the network from now to 2040. The most efficient way to do this is adopt an anticipatory investment approach ('Build Once for 2040'), where possible. This involves designing projects now to meet the anticipated needs of customers in 2040, even if the associated electricity demand is not likely to materialise in the near term. This is in line with EU electricity market design reforms and the EU Action Plan on Grids, which promote anticipatory investment as a way of accelerating climate action. In our PR6 plan, the investment to deliver additional network capacity (refer to Section 6.2) is based on a targeted investment approach, based on known capacity constraints today, as well as expected regional demand growth. We propose to use a 'Build Once for 2040' approach only where it makes sense to do so, to ensure that we do not over-invest during PR6.

Foundational Capabilities

Accelerating digital and data:
ESB Networks depends on core IT systems to operate and manage the network and fulfil our licence obligations. Substantial ongoing investment is needed to maintain these systems and keep them up to date. This is essential for business continuity, cyber security, and productivity. During PR6, we plan to leverage these existing investments in core IT systems to accelerate our use of digital and data, to enhance customer experience, improve network efficiency, and drive productivity. We are on a path to becoming a fully digitised utility, which will also provide new opportunities to use data to improve decision making and transparency. Investments in IT and new operating systems will also support the development of a smarter, more flexible electricity network by providing the capability to manage data and power flows, integrate more renewables, and empower customers through new flexibility markets. These systems will provide the foundations to manage complex flows of data and energy around the network and enable a range of customer centric use cases that will increase efficiency, support decision making and streamline delivery.

Stepping forward on safety and environmental sustainability:
The UN defines sustainability as meeting the needs of the present without compromising the ability of the future. While most of our PR6 investment will be targeted towards the three UN Sustainable Development Goals (7,9, and 13) where we can make the most tangible and lasting difference, we intend to embed sustainability at the core of everything that we do during PR6. Our recently published 'Networks for Nature' biodiversity strategy sets out our commitment to a regenerative approach to biodiversity and communities. We propose to show leadership by continuing to electrify our yellow van fleet, upgrade buildings to meet our energy efficiency targets, and invest in initiatives that protect the safety of the public and people who work on the network. We are also planning to enhance support for vulnerable customers and customers at risk of being left behind by the energy transition through the development of enhanced services. Maintaining our own workforce diversity is critical to supporting our diverse customer base, and we propose to drive out further initiatives to build diversity, equality, inclusion and belonging across our organisation.

Workforce Strategy:
To ensure we have the appropriate skills to deliver our PR6 programme, we have developed a workforce resilience strategy focusing on the acquisition, retention, and development of talent throughout the entire employee life cycle, from recruitment to retirement. The aim is to cultivate a resilient, skilled, adaptable, and diverse workforce capable of meeting the challenges of a rapidly changing industry. Our plan is focused on inclusive growth, ensuring that all employees have the opportunity to develop and progress within the organisation.

Proposed investment and managing uncertainty

Table 1 below provides an overview of investment planned for PR6, which shows we are working to deliver a programme totalling €13.4 bn. Having analysed the uncertainties and inherent project development and delivery risks of such a large programme, we are proposing an initial baseline investment of €10.1 bn over the Price Review period. Our proposal is that initial capital investment allowances are set at the lower amount of €10.1bn, which will be converted to revenue to allow us to finance our activities for PR6. In the event that risks do not materialise or are mitigated, we will be aiming to deliver as close to the total programme of €13.4 bn as possible.

We are proposing the use of an agile investment framework mechanism, whereby proposed expenditure above the €10.1bn baseline would be subject to approval by the CRU during the Price Review period. This would enable a more dynamic assessment of the total investment during the 2026 to 2030 period. The alternative approach would be to include the full €13.4 bn up front, which would be charged to customers from the outset, which we believe would not reflect the delivery risks inherent in the programme.

A significant proportion of the investment in the baseline scenario will go towards increasing capacity on the network to accommodate renewable generation and increasing demand associated with housing, economic growth, and meeting the electrification targets in the Climate Action Plan.

Table 1: Overview of investment planned for PR6: Numbers subject to rounding

Description (€' bn)	PR5 Determination	PR6 (Baseline)	PR6 (Baseline + AIF)
Empowering Customers (incl. New Business)	0.8	1.3	1.3
Distribution Markets and System Operation (DMSO)	1.2	1.0	1.2
Network Reinforcement	0.6	2.2	2.6
Generator Connections	0.2	0.3	0.4
Reliable and Resilient Infrastructure (Asset Management)	0.6	1.0	1.2
Transmission	1.4	3.4	5.9
Foundational Capabilities	0.4	0.8	0.8
Total	**5.2**	**10.1**	**13.4**

Financing the Plan

ESB Networks is entering into an extensive investment programme, which is far from 'business as usual'. This programme of investment will last significantly beyond PR6 and, due to its scale and strategic importance, ESB Networks must adapt to materially heightened risk in the process. ESB Networks' ability to deliver the scale of investment outlined in this plan will depend on our financial strength.

The landscape of capital markets has dramatically shifted since PR5. In response to a variety of global shocks, the period of ultra loose macroeconomic policy has ended. Over the last few years, there has been a significant rise in interest rates and the cost of borrowing.

These challenges are arriving at a time when investors have many competing opportunities (projects, companies and geographies) into which they can deploy capital, as countries all over the world also seek rapid progress towards a decarbonised future. As a result, electricity networks around the world are facing intense global competition for capital from a multitude of projects aimed at supporting each country's own decarbonisation efforts.

To fund this ambitious programme, ESB Networks must maintain continuous access to capital at reasonable rates. Setting an appropriate WACC at 4.23% (aligned with the target credit rating set at least at BBB+/A-) is essential to ensuring access to capital. Misalignment in allowed returns could jeopardise ESB Networks' ability to raise the necessary funds to the detriment of consumers. This is supported by clear legal obligations relating to financing capability, previous regulatory decisions and by credit ratings of similar network companies.

The baseline investment proposal delivers a plan that is deemed financeable from a Price Review perspective. When considering the 5 years of the Price Review period, the difference between the total estimated nominal cash outgoings and the total projected revenues is circa €4.6 bn. Keeping the gearing at 55% of the Regulated Asset Base, in accordance with the regulatory model, means that circa €3.7 bn can be financed through increased borrowings. This leaves a remaining funding requirement of circa €1 bn, which would ordinarily be addressed through equity.

The financeability of the baseline + AIF scenario remains unresolved in our business plan submission and will require consideration through the PR6 process. In addition, the residual funding requirement of circa €1 bn in the baseline plan, referred to above, would be significantly bigger under the baseline + AIF scenario.

The funding of investment in the networks is ultimately a matter for ESB as owner of the assets. ESB Networks envisages that these residual funding requirements, under both scenarios, will require resolution between ESB and ESB's Ministerial Stockholders before the final determination for PR6 is settled.

Impact on customers' bills

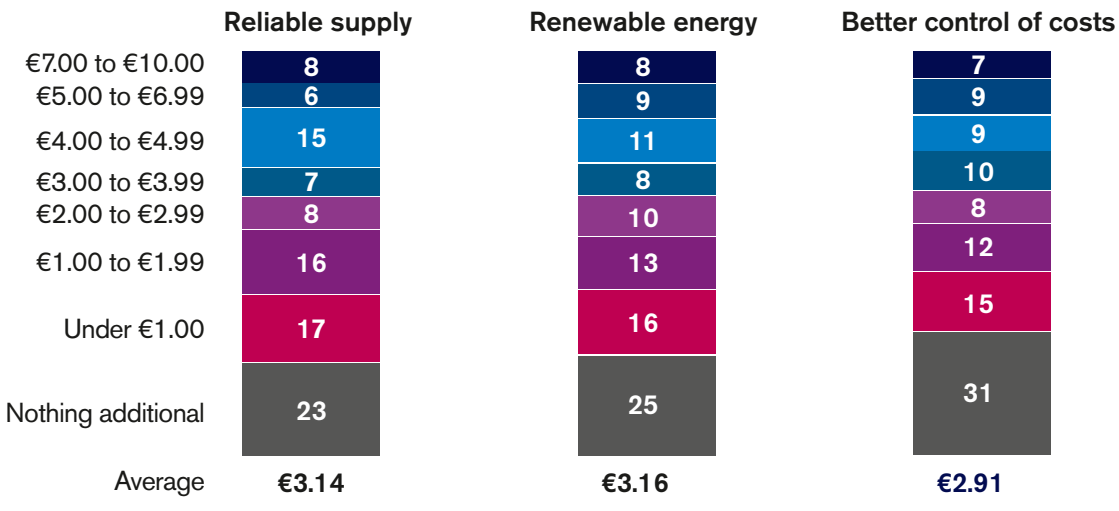
Ireland is going through a process of fundamentally recalibrating our energy system away from high carbon fossil fuels for heating and transport towards clean, sustainable electricity. This will result in significant societal benefits, including greater energy independence, air quality improvements, carbon reduction, and ultimately cost savings. However, substantial and sustained investment in the electricity network out to 2040 is needed to enable this transition.

We have listened carefully to what customers and stakeholders have told us about their needs and priorities, and their willingness to pay. We are acutely aware of the cost-of-living increases that customers have had to bear over the past few years and the impact that this has had on both domestic and business customers.

Figure 2 below illustrates the weekly amounts that domestic customers have indicated that they are willing to pay for reliable supply, access to renewable energy, and better control of their electricity costs.

Figure 2: Weekly amounts that domestic customers are willing to pay for reliable supply

A core group; one in four to 30% depending on the benefit assessed, is opposed to paying anything additional on a weekly basis to benefit from a more reliable network, access to renewable energy, or better control of costs



As noted above, 70% of customers have indicated that they would pay some additional weekly amount for those benefits, but around 30% have told us they are opposed to taking on any additional costs. Business customers are also resistant to taking on more costs, with SMEs in particular indicating that they cannot absorb higher electricity costs right now.

Given the scale of investment necessary to meet the needs of customers and stakeholders during PR6, it is important that we remain efficient and that we manage risks effectively to avoid placing undue costs on customers. It is for this reason that we are proposing the AIF outlined above, which allows for a very ambitious work programme during PR6 without committing customers to costs that may not materialise during PR6.

Under the regulatory model, investment in the electricity network is recovered through customer bills over the long term, which means that customers do not have to fund a peak in investment in the short term within a Price Review period. Notwithstanding this, our baseline investment scenario would result in an increase in distribution network charges on customers' bills, due to the overall scale of the investment programme.

The existing typical cost for a domestic customer for distribution charges to fund investment and operating costs for the electricity distribution network is circa €254 per year. This is a portion of a customer's total electricity bill, which is, on average, just over €1,900 including VAT per annum for a domestic customer . With an assumed distribution demand growth of circa 3% on average across PR6, there would be an average unit price increase of circa 33% for distribution charges across the period to 2030 under the proposed baseline investment scenario. This would bring the typical distribution network cost for domestic customers from €254 per year to €337 per year on average over the period. This represents an increase of circa €1.60 per customer per week over the period, prior to any inflation. Similar increases would be required for business customers connected to the distribution network.

This equates to approximately a 4.8% total increase in the annual overall electricity bill of a typical domestic customer across PR6 using today's estimated price of electricity. Any investment above our proposed baseline investment of €10.1bn (as we strive to deliver the full transmission and distribution programme) would further increase the impact on customers' bills.

We are forecasting that the additional circa 33% increase in distribution charges to customers during PR6 will cater for:

- Significant network reinforcements to provide capacity to connect houses, support economic growth, and advance electrification.
- Maintenance and replacement of existing network assets to ensure safe, reliable, and resilient electricity supplies for customers now and in the future.
- Implementation of automation technologies and improved vegetation management to reduce unplanned customer outages.
- Development of a smarter, more flexible network capable of safely and securely handling flows of electricity between millions of distributed devices (e.g. solar panels, EVs, heat pumps).
- New tools, products, and market structures to empower customers to take more control over their energy costs.

- Increased volumes of customer driven work, including new housing and business connections.
- Significant renewable generation connections, from domestic rooftop solar to large utility scale generation.

Ensuring Efficiency

At the end of PR4, ESB Networks commissioned independent benchmarking of our relative costs compared to the costs incurred by the GB electricity distribution companies. That analysis confirmed that ESB Networks was efficient, relative to the average costs incurred by the GB distribution companies. As we transitioned into PR5, we substantially increased our scale of investment compared to PR4 (from €3.2bn in capital expenditure over PR4 to €5.0bn forecasted for PR5 – all 2024 money).

ESB Networks has commissioned a similar independent analysis to assess the efficiency of our costs during the PR5 period. This analysis has concluded that ESB Networks' PR5 costs are efficient, even with the step up in expenditure compared to PR4. Specifically, ESB Networks' total expenditure (excluding load-related capex) is on average 6.7% more efficient than the mean efficiency level of GB DNOs over the PR5 period.

For PR6, ESB Networks is seeking cost allowances that are materially above the base year costs due to several factors. Firstly, we plan to significantly scale up delivery across most existing work programmes and take on new activities. These include adding substantial MW of additional distribution capacity to manage increased total and peak demand and integrating more renewable energy – all significantly higher than in PR5. Additionally, there will be a greater number of new customer connections and an expanded transmission programme to support decarbonisation objectives. We are also establishing a new Distribution Markets and System Operation (DMSO) function.

Secondly, challenges in procuring external contract resources and security materials have escalated costs. These increases are the result of competitive procurement processes, which have ensured that the higher rates are market tested.

Nonetheless, we remain committed to maximising efficiencies by organising the business to deliver more quickly and cost effectively, leveraging cost savings from data and digitalisation initiatives, and utilising flexibility wherever possible.

Customer Benefits

Since our foundation, ESB Networks has always played a key role in Ireland's social and economic development. The investments we make during PR6 will address the immediate needs of customers and put in place the foundations for a clean electric future. We recognise our unique role as a catalyst for change and our responsibility to deliver core electricity infrastructure to meet the needs of Ireland's growing population and enable the transition to Net Zero by 2050. The key benefits of our plan are summarised below. **Reliable and resilient infrastructure**

Our business plan provides for significant investment in network capacity reinforcements to enable the timely connection of renewable generators and accommodate growing demand for electricity from new housing developments, industrial growth, and the electrification of heat, transport and industry. This investment will reduce loading on network assets, reduce the risks associated with equipment failure, and provide targeted capacity in key high growth urban areas in line with growing customer demand.

The proposed capacity reinforcement works will provide capacity at all voltage levels, including large blocks of additional capacity headroom at new substations. This will enable us to speed up customer connections. The capacity added will include:

- 562 MW of firm transformer capacity at 110 kV in Dublin
- 1.1 GW of firm transformer capacity at 38 kV (nationwide)
- 1.5 GW of firm transformer capacity at medium voltage (nationwide)

As well as enabling more customer connections, the additional capacity on the system will allow more outages to take place. This will enable maintenance and asset replacement works which are necessary to improve the **safety, reliability, and resilience of the network**. This investment will also facilitate **electrification** by providing increased capacity at medium voltage level, and will ensure that voltage quality is maintained, ensuring that delivered power meets the required power quality standards. Upgrades to the MV network will increase efficiency by reducing network losses and will deliver environmental benefits.

In addition to capacity reinforcements, our plan includes significant investment in **network reliability and resilience**, which our customers and stakeholders have indicated is a priority. This investment (which includes targeted maintenance and asset replacement, the deployment of automation devices on the MV network, and increased vegetation management) will ensure that the electricity network will remain reliable and resilient, even in the face of increased demand and disruptive climate events.

This will contribute to a reduction in the frequency and duration of unplanned outages, so that by 2030, we plan to decrease customer minutes lost (CML) to 75 minutes per year and customer interruptions (CI) to 90 per year. This would be a 25% reduction on the average overall fault duration currently experienced by customers. Further detail on the specific programmes of work proposed to achieve this is included in Chapter 6. These investments will deliver a safer, more dependable electricity system.

Decarbonised energy

The investments we make during PR6 will directly support decarbonisation and assist in reducing Ireland's dependence on imported fossil fuels. Our investment will support the connection of 4.4 GW of utility-scale renewable generation projects to the distribution network, as well as 30% annual growth in Mini-Generation, Microgeneration, and Small-Scale Generation to the LV network. We will also connect customers to the transmission network, as directed by EirGrid, to support the CAP24 target of 22 GW of onshore renewable generation connected by 2030.

As well as delivering additional capacity to enable renewable connections, we plan to support customers by further streamlining processes for connecting renewable generation and moving to process two batches of enduring policy connection (EPC) applications per year to accelerate renewable connections.

The electrification of heat, transport, and industry is critical for the decarbonisation of society. Under this plan, we plan to continue working closely with EV charge point operators, housing developers, and large commercial customers to develop standards, solutions, and innovations to accelerate electrification and enable widespread LCT uptake.

Empowered customers

Our PR6 plan builds on developments in PR5, including the rollout of smart meters, the launch of the networks online account, and investments in digital and data to empower customers. By investing in new operating systems, cybersecurity, data and digitalisation, and customer engagement platforms, we will make it easier for customers to safely and securely interact with us in ways that suit them, whether that is through a digital channel or a human agent. All core customer journeys will be optimised by the end of PR6 to ensure more convenient, seamless, and simple interactions with ESB Networks. Our investments in **digital and data** will enable us to develop new tools, products, and insights to improve communications with customers and integrate processes to enhance customer experience. For example, we are targeting 80% proactive digital notifications for outages by the end of PR6 (up from 65% in PR5) to free up call centre agent time for more complex queries. We are also seeking to significantly reduce standard quotation timelines by streamlining processes. Electrification customers will benefit from improved access to data to inform decision making.

The impact of our investments in empowering customers will be measured by our customer satisfaction (CSAT) score. We are seeking to increase this to 83% by 2030, acknowledging that this will be challenging given the scale of our investment programme and the impact that this will have on customers.

Through investments in self-serve and digital tools, we will free up human agent time in the national customer contact centre (NCCC) to deal with more complex and time consuming queries, with a view to maintaining a 90% customer satisfaction score for the NCCC. By 2030, 80% of customers affected by an outage will get updates via the digital notifications app.

Smart flexible, digitally enabled network

Investments in IT, digital and data, cybersecurity, and the Distribution Markets and System Operation (DMSO) function will ensure that we are ready to efficiently operate the network of the future and empower customers to benefit fully from their role in providing flexibility to the system. By 2030, there will be millions of interconnected devices connected to the network (including heat pumps, EVs, batteries, and solar panels). The actions we take now will ensure that ESB Networks is prepared to take an active role in managing the flows of electricity between devices in a way that overcomes network constraints and capitalises on the availability of renewables. These investments will also enable customers to fully leverage the capability of their smart meters to take advantage of flexibility markets and make better decisions about their energy use.

Our Smart+ and meter transformation investments will ensure that customers can benefit from up to date smart meter technology, advanced insights about their energy use to help them make informed decisions and accurate payments for Microgeneration exports. It will also improve choice for customers by creating routes to market for new suppliers, increasing competition and enabling energy sharing. Investments in operational transformation will ensure that we can continue to provide a safe, secure, and reliable distribution system operation for customers.

Flexibility market transformation will create new revenue streams for customers and enable them to play their part in tackling climate change by engaging in flexibility initiatives and demand reduction events.

Environment, safety and sustainability

Our proposed approach to environment, safety, and sustainability will ensure that our operations can support and enable Ireland's transition to a clean electric future while also preserving our natural habitats and species and protecting the health and wellbeing of our people, contractors, and the communities we serve. Our 'Networks for Nature' biodiversity strategy 2024-2029, launched this year, underscores our commitment to integrating biodiversity considerations into all aspects of our business, and our commitment to a regenerative approach to nature and communities. Through the electrification of our yellow van fleet and energy efficiency upgrades to our buildings, we can demonstrate the benefits of electrification and deliver long term value for our customers and stakeholders.

Safety will remain front and centre of our work during PR6. As we scale up to deliver a much larger capital investment programme, we are proposing to undertake significant measures to protect the health, wellbeing, and safety of the public and the communities we serve. Our risk-based approach to asset maintenance and replacement will reduce risks associated with aging assets, while our public safety campaigns will help to ensure a high level of awareness around the risks and dangers associated with the electricity network.

Our commitment to achieving an incident- and accident-free workplace is reflected in our implementation of a 'just culture' framework, which promotes an atmosphere of trust and encourages open and honest reporting of incidents and errors. By implementing a 'just culture', ESB Networks aims to foster a positive safety culture, enhance employee engagement, and improve overall safety performance.

Table 2: Linking key investments to key customer benefits

Investment Area	Safe, Reliable and Resilient Network	Decarbonised Energy	Empowered Customers	Smart, Flexible Digitally enabled Network	Environmental, Safety and Sustainability
Empowering Customers (incl. New Business)	Yes	Yes	Yes		
Distribution Markets and System Operation		Yes	Yes	Yes	
Network Capacity Reinforcements	Yes	Yes	Yes	Yes	
Generator Connections		Yes			
Strategic Asset Management	Yes			Yes	Yes
Transmission Delivery	Yes	Yes	Yes		
IT and Telecoms	Yes	Yes	Yes	Yes	Yes
Other		Yes		Yes	Yes

Outputs

Category	Benefits	Metrics
Safe, Reliable and Resilient Network 	Additional network capacity Asset health improvement Resilience to extreme weather events Reduction in frequency and duration of unplanned outages	• Over 500 capital projects delivered • 562 MW of firm transformer capacity at 110 kV (Dublin) • 1.1 GW of offirm transformer capacity at 38 kV (nationwide) • 1.5 GW of firm transformer capacity at medium voltage (Nationwide) • 743 MVA of LV capacity • 6 x 110 kV line refurbishment projects • 15 x 38 kV substations uprated • 18 x new 38 kV substations energised (11 driven by capacity and 7 driven by asset life) • 16 x 110 kV substations uprated (including 5 renewable hubs) • 27 x new 110 kV substations energised • 75 customer minutes lost, 90 customer interruptions • 45,725 MV pole replacements • 4,550 LV pole replacements • 2,257km MV conductor replacement • 9,000km of MV network converted to 20 kV • 231 transmission projects • 138 additional transmission projects progressed • Robust cybersecurity system
	Public safety work programmes	• Delivery of the rural and urban public safety hazard patrol programme
	Response to storm events	• Respond to all storm events with continued emphasis on public safety and restoring power as soon as possible
	Load index management	• 100% of current LI4 and LI5 110 kV substations reinforced

Category	Benefits	Metrics
Decarbonised Energy 	Reduced dependence on imported fossil fuels Renewable generation	• 4.4 GW of renewable generation connected at distribution level • Support the CAP24 target of 17 GW of onshore renewable generation connected by 2030 (transmission and distribution) *This will be dependent on renewable project development and delivery timelines as well as transmission and distribution project delivery and risk management.* • 255 new renewable connections, hubs, and reinforcement projects (estimate) • Forecasted 40,000 Microgeneration connections per year along with continued growth in Mini-Generation and Small-Scale Generation
	Flexibility	• ~11.3% additional flexibility delivered per the National Energy Demand Strategy • ~4.2% additional flexibility delivered under Area 1 – smart services (implicit flexibility) • ~3.9% additional flexibility delivered under Area 2 – demand flexibility and response (explicit flexibility) • ~3.2% additional flexibility delivered under Area 3 – new demand connections (non-firm flexible connections) • New operating management system • 12 year cyclical replacement programme for smart meters commenced
Empowered Customers and Enhanced Customer Experience 	Personalised and proactive communications, especially during outages and planned maintenance	• 50,000 homes (G1/G2) customers connected per annum • 83% customer satisfaction by 2030 • Maintain 90% national customer contact centre satisfaction • Empower between 176,000 and 236,000 existing customers to be low-carbon technology (LCT) ready for 2040 • 1 million EV/680k eHeat (this will be dependent on customer adoption) • 80% of customers to get proactive notifications about outages through digital app • Fair and inclusive services, support for vulnerable customers

Category	Benefits	Metrics
Smart, Flexible and Digitally Enabled Network 	Smart technologies to optimise network performance and support future energy demands (electrification), openness, and transparency Implementing innovative solutions and technologies to reduce operating costs and improve efficiency	• Integration of data, tools, and systems to enhance organisation effectiveness to serve our customers • Data at the point of need for customers and employees • Improved digital collaboration between customers and ESB Networks, and also across business teams • Self-serve options for customers • Centralised, standardised approach to key business processes, facilitating transparency
	Driving innovation in the energy sector	• Pilot projects and collaboration with industry stakeholders
Environmental, Safety and Sustainability 	Reducing environmental impact of network operations, including biodiversity and carbon reduction	• 69% of yellow van fleet electrified • 51% reduction in carbon emissions from building • Annual CSRD report • Implement biodiversity net gain on our projects as per 'Networks for Nature' biodiversity strategy • Continue to work internally and with our contract partners to achieve excellence in safety performance

Conclusion

The programme of investment we have put forward for PR6 reflects the strategic importance of electricity to Irish society as it transitions to a Net Zero future and prepares to support a much larger population.

While substantial and sustained investment in the network is needed to support the transition, we have taken steps to minimise the impact of this on customers in the context of significant uncertainty. We are proposing a phased and targeted approach to new infrastructure investment, the deployment of smart, flexible, and digitally enabled solutions to reduce peak demand and empower customers to take better control over their own energy use, optimisation of our existing assets, and an evidence-based approach to managing asset risk so that we target investment to priority areas. We are also proposing a risk-informed investment framework, which minimises upfront costs for customers.

Since our foundation, ESB Networks has always played a key role in Ireland's social and economic development. The investments we make during PR6 will address the immediate needs of customers and put in place the foundations for a clean electric future. We recognise our unique role as a catalyst for change and our responsibility to deliver core electricity infrastructure to enable Ireland's transition to Net Zero by 2050. PR6 is a vital stepping stone towards this goal. Through our investment programme, we intend to deliver substantive changes to meet Ireland's 2030 targets and ensure that the network can be Net Zero ready by 2040.

The energy transition will not be achieved without ongoing active customer and stakeholder participation, engagement and support. We thank all of the customers and stakeholders who took the time to contribute to this plan.

The PR6 business plan is supported by 76 technical annexes, which outline in detail our investment plans relating to specific areas of activity. These outline proposed expenditure, performance metrics, and targets relating to our role as DSO and TAO. Retrospective narratives relating to expenditure and performance for PR5 have also been prepared.

Note: all monies referenced in this document are stated in real 2024 terms unless otherwise stated. Due to rounding of the proposed investment figures, the sum of each row in the investment tables in this document may appear slightly higher or lower than the stated table totals.

For more detail on the business plan, please visit ESB Networks Price Review 6 Business Plan

Glossary of Terms

- **Asset Management**: The systematic process of operating, maintaining, and upgrading physical assets in the distribution network to ensure optimal performance and long-term sustainability.
- **Climate Adaptation**: Strategies and measures taken to prepare the network for and respond to the impacts of climate change, such as increased frequency of extreme weather events.
- **Customer Interruptions (CIs)**: A performance measure used to track the number of customers affected by power outages over a specific time period.
- **Customer Minutes Lost (CMLs)**: A metric used to quantify the duration of power interruptions, representing the average number of minutes that a customer experiences a loss of supply over a year.
- **Demand Side Response (DSR)**: A system where consumers adjust their electricity usage in response to signals from the grid, such as price changes or incentives, to help balance supply and demand.
- **Distribution System Operator (DSO)**: A company responsible for operating, maintaining, and upgrading the electricity distribution networks that carry electricity from the transmission system and generators to homes and businesses.
- **DMSO**: The Distribution Markets and System Operation team is the team within ESB Networks that is responsible for implementing advanced distribution management systems, managing smart meter deployment and supporting retail and flexibility markets.
- **Electric Vehicle (EV) Charging Infrastructure**: The network of charging stations and associated infrastructure needed to support the mass adoption of electric vehicles.
- **Energy Efficiency**: The practice of using less energy to provide the same service or output, achieved through the deployment of more efficient appliances, lighting, heating, and industrial processes, contributing to the overall reduction in energy demand.
- **Energy Transition**: The shift from a fossil fuel-based energy system to one based on renewable energy sources and low-carbon technologies, which is necessary to meet Net Zero targets and address climate change.
- **Flexible Connections**: A type of connection agreement that allows generators or large consumers to connect to the grid with more flexible terms, often in return for managing their energy usage during peak demand times or grid constraints.
- **Load Management**: Techniques used to manage electricity demand across the network, ensuring that supply can meet demand and avoiding overloading of infrastructure.
- **Low Carbon Technology (LCT)**: Technologies that produce fewer greenhouse gas emissions than traditional fossil-fuel-based solutions, including electric vehicles (EVs), heat pumps, solar photovoltaics, and wind turbines.
- **LV Network Visibility**: Refers to the ability to monitor and understand what is happening on the low voltage (LV) network.

- **Maximum Import Capacity (MIC):** MIC stands for Maximum Import Capacity. It is the maximum volume of electricity in kVA that a customer is permitted to import.
- **Microgeneration:** Refers to LV connected generation operating in parallel with the LV system with a capacity of up to 6 kW for single-phase and 11 kW for three-phase connections. These connections have been successfully implemented without application fees.
- **Mini-Generation:** Refers to inverter-connected generation installed by customers to produce clean electricity primarily for self-consumption. It operates in parallel with the electricity network and covers capacities from 6 kVA to 17 kVA for single-phase, and 11 kVA to 50 kVA for three-phase connections.
- **Net Zero:** The UK government's target to reduce greenhouse gas emissions to Net Zero by 2050, which requires transitioning to a low-carbon economy, including decarbonising electricity generation and consumption.
- **Network Capacity:** Network capacity refers to the amount of electricity that the electricity distribution network can safely handle.
- **Resilience:** The ability of the electricity infrastructure to withstand and recover from extreme weather events, cyberattacks, or other disruptions, ensuring a continuous supply of power.
- **Reliability:** The capability of the electricity network to consistently supply power to consumers without interruptions or outages, especially during periods of peak demand.
- **Smart Grid:** A modernised electricity network that uses digital technology and automation to improve efficiency, reliability, and flexibility, enabling better integration of renewable energy sources and LCTs.
- **Totex (Total Expenditure):** The total costs that DNOs incur to deliver their services, including both capital expenditure (capex) for long-term investments and operational expenditure (opex) for the day to day running of the network.
- **System Flexibility:** The ability of the electricity system to respond dynamically to changes in supply and demand, incorporating flexibility services such as DSR, energy storage, and flexible generation.
- **Transformer:** A device that transfers electrical energy between two or more circuits through electromagnetic induction, typically used to increase (step-up) or decrease (step-down) voltage levels.
- **Small Scale Generation:** Refers to customer-installed generation at demand premises, including both synchronous (e.g., CHP) and inverter-connected (e.g., PV) systems. These generators produce clean electricity primarily for self-consumption fuels. They operate in parallel with the electricity network up to 200 kVA.
- **Substation:** A part of the electricity distribution system that transforms voltage from high to low or vice versa and performs various other important functions like protection and switching.

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