ED3 DSO STRATEGY

ED3-S10

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1. EXECUTIVE SUMMARY

Electrification is fundamentally changing how electricity networks must be planned and operated. This change is being driven by transport, heat and industry, as well as growing distributed generation, storage and flexible demand. Customers and stakeholders want earlier access to capacity and greater certainty over future investment. They also expect better network performance and stronger value from the transition to net zero. Our actions must be transparent, coordinated across the wider energy system and supported by clear evidence. Our DSO Strategy sets out how we'll meet these expectations and enable our optimised Build and Flex strategy, as outlined in our (ED3-S01) Load Related Expenditure (LRE) Annex.

We are delivering an integrated DSO model, co-ordinating strategic network planning, network operations, flexibility, voltage management and losses optimisation. Acting as the trusted coordinator of a smarter and more efficient distribution system, we'll provide improved access to capacity for connections, increase utilisation of existing assets and better operate our network via investment in new tools and monitoring. We'll work across the energy system with customers, communities and stakeholders including: local authorities, NESO (as RESP and system operator), transmission owners, the market facilitator and market participants. This coordination will help deliver the greatest value for consumers.

Our integrated DSO model creates a continuous cycle of planning, optimisation and delivery that maximises the value of existing network assets while maintaining reliability, affordability and consumer value. We'll identify future network needs earlier, compare build, flex and operational solutions consistently, and optimise how existing network assets are used before committing customer funding to reinforcement.

STRATEGIC NETWORK PLANNING	NETWORK OPERATIONS	OPERATIONAL FLEXIBILITY
Identifies future network needs, maximises use of existing assets and selects the most efficient mix of build and flex.	Translates plans into day-ahead and near-real-time decisions that optimise capacity, performance, voltage and losses.	Delivers practical outcomes by accelerating connections, reducing curtailment, supporting outages and improving whole-system efficiency.

Compared with today's DSO, this represents a step change: operating the distribution network as an integrated system, optimising local opportunities while coordinating with the wider energy system across strategic planning and operational timescales through consistent standards, common systems and enhanced asset visibility.

Our approach is founded on transparency, evidence-based decision-making and stakeholder collaboration. It builds on our extensive experience of innovating in the sector through products and tools that enable us to make better decisions. Published methodologies, extensive stakeholder engagement, open data and independent challenge ensure our choices remain explainable, proportionate and focused on consumer outcomes. Through our Open Data Portal, wider DSO performance reporting and independent scrutiny from our DSO Advisory Board, we'll continue to hold ourselves to account and provide a clear line of sight from customer funding to delivery and consumer value.

We'll deliver four outcomes for customers and stakeholders:

- **Access Capacity Sooner**
- **Plan and Invest with Confidence**
- **Experience Better Network Performance**
- **Pay Less Over the Long Term**

Investment required - To deliver our integrated DSO model we'll invest in three complementary capabilities covering planning, operations and flexibility. These enable the end-to-end framework described above and provide the people, systems and services required to deliver consumer benefits throughout ED3. We are seeking **£107.19 million** of investment across our SHEPD and SEPD licence areas to enable the people, digital platforms, operational systems, flexibility services and targeted interventions required to deliver measurable consumer benefits throughout ED3.

- **£14.21 million for Strategic Network Planning and Enhanced Customer Support**, including [redacted] for specialist capability and [redacted] for probabilistic planning tools.
- **£44.30 million for Digitised Network Operations, Market Facilitation Voltage & Losses**, [redacted]
- **£48.68 million for Operational Flexibility**, including [redacted] to improve customer access, manage curtailment and accelerate connections, [redacted] to support outage management and [redacted] to improve whole-system coordination through Smart Signal (our implicit flexibility service that gives customers and market participants signals to adjust LCT operation to avoid congestion). Whilst flexibility is already used within our Build

and Flex approach - Operational Flexibility extends this into network operations, creating new opportunities to accelerate connections, reduce curtailment, optimise outages and improve whole-system outcomes for customers.

Outcome 1: Access Capacity Sooner: We'll improve access to capacity through earlier planning, active operation and operational flexibility.

Across ED3, we'll offer earlier-access options to more than **5GW of connection capacity** and deliver at least **2.5GW-years of accelerated connections**. Every reinforcement-delayed HV and EHV connection will be assessed for earlier-access options, and we'll make suitable products available to **85% of new demand and generation customers**. We'll also use network data and analytics to address constraints affecting more than **20,000 looped services to enable fast connection of LCT**.

These outputs will reduce connection delays and uncertainty, support economic growth and accelerate low-carbon investment. Our DSO benefits methodology indicates that avoiding 2.5GW-years of connection delays could unlock more than **£1 billion of social value**.

Outcome 2: Plan and Invest with Confidence: We'll give customers, communities and stakeholders clear, coordinated insight into future network needs and opportunities.

We'll maintain annually refreshed Strategic Development Plans covering **100% of both our licence areas**, integrating regional and local plans coordinated with Transmission operators, customer evidence, strategic connections, connections growth and network intelligence. Probabilistic planning and enhanced network visibility will support Build and Flex decision-making and **improve planning forecast accuracy by 17%** by the end of ED3, compared to the ED2 average. By 2030, our Local Energy Support Team will support at least **100 communities and businesses each year**. We'll also complete annual assessments for nationally significant sectors and reflect identified requirements in strategic plans and investment decisions.

This will provide greater certainty for customers, communities and investors while ensuring customer funding is committed efficiently and only where investment is justified.

Outcome 3: Experience Better Network Performance: We'll move beyond monitoring network performance towards actively managing and optimising it.

By the end of ED3, we'll enable dynamic voltage management for **50% of network load**, supported by Voltage Management Control at **187 primary substations**. This will unlock more than **1GW of hosting capacity**, enabling up to **300,000 EV chargers and 100,000 heat pumps** without major reinforcement. By 2029, the Voltage Index will cover **100% of primary transformers and 90% of LV feeders**. We've also targeted the installation of a suite of voltage optimisation devices and automation on up to **50 circuits**. From 2028, granular operational envelopes and Smart Signal will support market-led coordination. Smart Signal will reach up to **10% of secondary substations**, targeting an average **5% congestion reduction** in enabled areas.

These measures will improve power quality, increase utilisation of existing assets, reduce disruption and enable greater electrification at lower cost.

Outcome 4: Pay Less Over the Long Term: We'll cut long-term costs by maximising existing assets, using flexibility where it delivers value and embedding efficiency in every planning and operational decision.

Our Build and Flex approach will use flexibility to help **optimise investment efficiency and manage uncertainty and deliverability**, reducing **network expenditure by** [redacted] compared with a build only approach. We'll maintain an average pre-dispatch flexibility fill rate of at least **95%** and enable at least **25,000 low-income and vulnerable households** to access flexibility, smart-energy services or tailored advice by 2032. Through conservation voltage reduction and improved voltage optimisation, we'll reduce annual domestic energy consumption losses by 47.5GWh each year by 2033.

By releasing existing network capacity, reducing unnecessary energy consumption and applying flexibility where it provides better value than reinforcement, we'll help lower long-term whole-system costs for consumers.

The capabilities we have developed in ED2 across planning, flexibility, visibility, forecasting and operational coordination provide the strong foundation needed for ED3, giving confidence that benefits can be delivered efficiently and at scale. Innovation has been critical to developing these capabilities and will continue to support smarter, more efficient network operation throughout ED3. These investments and capabilities create a practical roadmap that balances affordability, reliability and economic growth, enabling customers to access capacity sooner, benefit from a

better-performing network and realise lower long-term costs.

Table 1.1 Our ED3 Commitments supported by this Strategy

	ED3 Commitment	Metric
Investing for growth and the energy transition		
We will scale flexibility to optimise our network	**We will maximise flexibility to meet customer capacity needs, helping to keep bills as low as possible by using 13.4GW of flexibility through ED3, a six-fold increase on ED2, to accelerate connections and avoid unnecessary investment.**	Utilising 13.4GW of flexibility, providing capacity at lowest possible cost and to avoid delay
Creating a smarter network		
We will provide earlier access for customers to connect	**We will use flexibility to unlock capacity faster, more than doubling early-connection capacity from 2.3GW in ED2 to around 5GW by the end of ED3.**	Achieve and maintain an independent market confidence score of 9/10 or higher among flexibility service providers and market participants
		Offer to customers more than double the capacity of earlier connections offered by 2033, providing approximately 5GW of capacity, up from 2.3GW in ED2.
We will enhance data driven network management	**We will reduce wasted energy losses across our network by 47.5GWh and increase hosting capacity by 1GW through enhanced network visibility and real-time control by the end of ED3**	Achieve 95% local network visibility with data published on our data portal.
		Implement dynamic voltage management across 50% of our network load which will unlock more than 1GW of LCT hosting capacity, enabling up to 300,000 EV chargers and 100,000 heat pumps, without major reinforcement.
		Reduce domestic energy consumption losses by 47.5GWh through improved voltage optimisation by 2033
We will maximise the customer value from innovation	**We will deliver £4 of customer value for every £1 invested through our innovation portfolio by the end of ED3**	Reduce average data request response times from 20 days to 5 days by 2029, by implementing AI into our Data Portal. This will help customers make faster and more informed investment decisions
		Establish our Local Energy Support Team to provide tailored network, connection and flexibility advice, accessible guidance and workshops to at least 100 communities and businesses each year, reducing connection uncertainty through improved access to network information and options.

2. STAKEHOLDER ENGAGEMENT AND DRIVERS FOR CHANGE

This section explains why our DSO Strategy is needed and how it has been shaped by customers, communities, local authorities, flexibility providers, developers and wider energy system partners. It sets out the challenges facing the future electricity system, the priorities stakeholders have identified, and how these have informed our vision, outcomes and approach for ED3.

2.1 WHO WE ENGAGED, HOW, AND WHAT WE HEARD

Between 2024 and 2026, we engaged domestic customers, communities, local authorities, developers, flexibility providers, market participants, policy bodies and users of our data and planning services. We used national and regional forums, targeted roundtables, bilateral discussions, Strategic Development Plan consultations, customer research, our Autumn and Spring Series and established Keep in Touch channels.

Operational evidence supported these priorities, showing growing complexity from low-carbon technologies and distributed generation, including more localised voltage issues and changing losses patterns. This evidence confirmed that data quality, visibility, coordination, voltage and losses must be embedded in core DSO planning and operations, rather than treated as separate technical issues.

Table 2.1 Impact of Stakeholder Feedback

Stakeholder Theme	Stakeholder Feedback (summarised)	Business Plan Impact (summarised)
Investment in network capacity	Strong support for anticipatory investment; capacity constraints are a major barrier, and stakeholders want clearer reinforcement visibility and flexibility solutions.	Adopting programmatic investment ahead of need, expanding flexibility products and publishing long-term reinforcement plans.
Supporting local economic growth & Local Authorities (DSO)	Stakeholders want coordinated place-based planning, stronger local authority engagement and clearer community energy involvement.	Establishing RESP-aligned planning, dedicated community energy coordination and Local Authority Development Plans.
DNO role in energy efficiency	Customers support LCT readiness, targeted energy efficiency measures and support for vulnerable households.	Creating a Local Energy Support Team and embedding Equal LCT learnings and expanding smart LCT and flexibility solutions.
Enabling equal access to LCTs	Strong demand for EV, heat pump and solar readiness, with tailored support for vulnerable and digitally excluded customers.	Committing to enabling LCTs, faster connections and targeted support through readiness indicators, proactive investment and a Just Transition approach.
Supporting local economic growth & Local Authorities (Smarter Networks)	Stakeholders see place-based planning and community energy support as essential for local growth.	Positioning us as a strategic planning partner with integrated regional planning and stronger Local Authority collaboration.
Community and Local Energy	Stakeholders want us to engage proactively with community energy schemes, promote connections readiness and help communities navigate network solutions.	Creating dedicated Local Energy Support Team, helping community energy schemes participate in flexibility, producing guided routes to participation and making DSO products and services easier.
Accelerating connections & capacity provision	Stakeholders want faster, clearer and more affordable connections supported by anticipatory planning.	Introducing enhanced advisory services, stronger load planning and earlier reinforcement signalling.
Sector modernisation & digitalisation	Stakeholders strongly support digital transformation, AI and better data platforms provided they improve customer experience.	Digital capability becomes a core enabler through platform unification, data governance and responsible AI.
Data strategy: quality, sharing & governance	Stakeholders want transparent, high-quality data, stronger lineage and better visibility of network constraints.	Strengthening governance, metadata standards, cyber controls and access to granular network data.
Data visibility & digital platforms	Demand for better LV visibility, transparent capacity information and practical digital tools remains high.	Reinforcing innovation focus on transparency, measurable benefits and deployment of successful projects into BAU.
Proactive vs reactive unlooping	Strong support for proactive LV upgrades, with concerns focused on disruption rather than the principle.	Embedding proactive reinforcement and prioritisation frameworks to support large-scale LCT adoption.
Strategic long-term development plans	Stakeholders want better forecasting, clearer planning assumptions and more transparent communication.	Enhancing whole-system planning (including transmission operators, transport hubs, water and others), forecasting capability and transparency of investment decisions.
Using flexibility to maximise capacity	Stakeholders support flexibility markets but want simpler participation and greater transparency.	Establishing a market incubator, advanced flexibility systems and further integrating flexibility into investment decision-making
Data & digital tools for system optimisation	Stakeholders prioritise data quality, digital visibility and actionable insights over raw information.	Embedding digitalisation across operations to improve efficiency, resilience and customer outcomes.
Operational visibility & monitoring	Stakeholders value evidence-based network management, automation and improved voltage management.	Committing to wider monitoring, a Voltage Index, smarter operations and enhanced data sharing.
Innovation	Stakeholders stated innovation must move beyond pilots to scale measurable customer and system value.	Extensive use of ED2 innovation and insights in ED3 including LENZA, LAEP+, Voltmetric, Smart Signal etc.

2.2 HOW ENGAGEMENT SHAPED OUR STRATEGY AND PLANS

Stakeholder feedback did not simply confirm our direction of travel; it directly shaped and strengthened our ED3 strategy in four important ways.

a) It reinforced the need to move earlier and be more proactive.

Stakeholders told us that current planning and interventions happen too late: once constraints are already visible in connection queues, voltage complaints have been received or curtailment initiated. In response, our ED3 strategy places much greater emphasis on earlier forecasting, scenario-led and place-based planning, and anticipatory investment. This is reflected in our approach to strengthen SDPs (migration to our early business plan proposal, SDP+), align them more closely with DFES and Local Area Energy Plans (LAEPs), and integrate voltage and losses considerations consistently into network planning and optioneering.

b) It drove a stronger focus on transparency, consistency and trust.

Communities, market participants and developers consistently asked for decisions that are explainable, fair and predictable. This feedback has shaped our move toward a unified, data-driven DSO decision-making framework that is applied consistently across thermal constraints, voltage performance, losses and flexibility use. We are also strengthening the publication of constraints, options and methodologies, supported by clearer metrics and improved losses methodologies, so stakeholders can understand where issues exist and how decisions are made.

c) It elevated voltage and losses to core DSO responsibilities.

Customers and operational teams made clear that voltage issues affect everyday experience and confidence in electrification, while losses are increasingly seen as a system efficiency issue, particularly where they affect how costs are distributed across customers. As a result, our ED3 strategy explicitly embeds voltage management and losses optimisation into planning, operational decision-making and the use of flexibility markets, supported by improved monitoring, analytics and real-time control capability. This represents a deliberate shift away from treating these topics as isolated engineering problems.

d) It shaped a more customer-centred approach to access and connections.

Developers, communities and customers asked for earlier clarity on where and how they can connect, and for clearer communication of trade-offs where constraints exist. This feedback directly informed our investment in enhanced pre-application support, clearer readiness indicators, improved optioneering tools and more predictable Flex-and-Build pathways, helping customers reduce avoidable costs and delays. It has also shaped our approach to strategic development planning across energy vectors as well as reinforcing our need to engage fully in the development of Regional Energy Strategic Plans.

2.3 BALANCING DIFFERENT INTERESTS AND TRADE-OFFS

Stakeholders recognised that decisions must balance affordability, faster and more certain connections, fair treatment, and long-term resilience. Our response is a whole-system, evidence-led approach that compares reinforcement, flexibility and operational solutions using improved local visibility of capacity, voltage and losses. This helps us choose proportionate, lower-cost interventions while protecting a reliable, good-quality supply for existing customers.

Table 2.2 Rationale for Strategic Choices

Strategic Choice	SSEN DSO Approach	Strategic Rationale
Build vs Flex vs Operate	Select the optimal mix of reinforcement, flexibility and active operation.	Maximises customer value, accelerates access, improves whole-system outcomes
Access Sooner vs Firm Capacity	Early Access and active network operation to accelerate customer connections.	Delivers earlier benefits while maintaining a pathway to enduring capacity.
Invest Ahead vs Wait for Certainty	Target anticipatory investment where evidence supports future need.	Brings forward capacity, supports growth and reduces future costs.
Efficiency vs Resilience	Increase utilisation while maintaining resilience and security of supply.	Unlocks existing capacity without compromising network performance.
Affordability Today vs Long-Term Value	Invest where long-term benefits materially exceed costs.	Reduces whole-life costs and improves customer outcomes.
Capacity vs Losses	Optimise losses within a wider consumer-value framework.	Supports access, renewable integration and economic growth while improving efficiency.

Voltage Optimisation vs Customer Service	Optimise voltage in order to maintain service quality and compliance.	Delivers energy and carbon benefits without compromising customer outcomes.

We'll apply smarter networks and digital services transparently and accessibly, with protections for vulnerable customers and people less able to participate directly. This reflects stakeholder expectations that ED3 should deliver visible local benefits and value for money, not only pilots or benefits deferred to later periods.

2.4 USING INDEPENDENT RESEARCH

Our wider stakeholder engagement was supplemented by dedicated consumer research, including the Create Clarity ED3 Customer Priorities and 'Shaping ED3 Triangulation' research. This research, drawing on engagement with over 46,000 customers and stakeholders, reinforced several critical messages.

Customers told us that fairness, value for money and trust are fundamental. They want to see real, tangible progress during ED3, not just pilots or long-term aspirations. They expect smarter networks to deliver visible local benefits, clearer information on constraints and connections, and simpler, fairer use of flexibility to reduce costs and speed up access. Importantly, customers emphasised that no one should be left behind by smarter systems, particularly those in vulnerable circumstances.

These findings shaped how we prioritised and packaged our ED3 investments. We have focused our ambition on outcomes that customers can see and experience during ED3: faster and more predictable connections, clearer and more transparent network information, improved voltage performance, reduced losses and lower long-term system costs. They also reinforced our commitment to move from pilots to delivery, scaling those capabilities that demonstrably unlock capacity, improve power quality and support local electrification.

2.5 THE IMPACT OF ENGAGEMENT ON OUR PLAN

Stakeholder engagement and customer research are foundational to our ED3 strategy. Stakeholders told us clearly what needs to change, and our strategy responds by embedding earlier, more transparent and more proactive DSO decision-making; integrating voltage and losses as core system functions; strengthening place-based planning and coordination; and focusing investment on deliverable outcomes that provide real value for consumers during ED3.

Case Study - Data Portal and Centralised Network View: Enabling Better Decisions

Our Data Portal and Centralised Network View give customers, communities, developers, local authorities and flexibility providers easier access to network data, capacity information and constraints. Bringing these resources together helps users assess opportunities earlier, understand local network conditions and make better-informed decisions about connections, flexibility and energy projects. Improved transparency reduces information barriers, planning uncertainty and avoidable cost, while supporting local energy planning and wider participation in flexibility markets. Further improvements to search, machine-readable data, network visibility and user experience will strengthen these benefits in ED3, helping customers **access capacity sooner, plan and invest with confidence**, and **reduce whole-system costs**.

This engagement led approach has shaped, not only what we'll deliver in ED3, but how we'll do it - balancing competing interests, maintaining trust, and ensuring that the benefits of a smarter, more flexible distribution system are delivered consistently across customers and communities, including those less able to participate directly. The following table summarises how feedback has improved our plan. This is further detailed in Appendix 3 Stakeholder Engagement decision log.

2.6 THE CHANGING ENERGY SYSTEM

The distribution network is experiencing fundamental change as electrification accelerates, distributed energy resources increase and customers play a more active role in the energy system. These changes are increasing the complexity of both network planning and network operation and require a more proactive DSO role.

To test our strategy, we conducted an analysis to identify which emerging societal, economic and political trends generate medium and long-term risks and opportunities for the DSO.

The accelerating electrification of heat and transport, alongside growth in distributed generation and storage, is fundamentally altering how distribution networks behave. These changes introduce new voltage and losses characteristics, particularly at local level. This reinforces that ED3 cannot rely on reinforcement-led solutions alone. The DSO must integrate voltage management, losses optimisation, flexibility and operational coordination into planning and real-time decision-making to support the transition at pace and at least cost.

Customer technologies are increasingly automated, responding dynamically to prices and control signals. While this brings opportunities, it also amplifies volatility in demand, generation and voltage at local level.

This means static or manually intensive approaches to network operation are no longer sufficient. In ED3, the DSO must rely more on continuous, data-driven optimisation, using smart-meter insights, enhanced LV visibility and structured decision frameworks to manage constraints as conditions change.

Consumers and communities are increasingly active participants in the electricity system, installing low-carbon technologies, offering flexibility and developing local schemes. Participation at scale depends on access to trusted data and clear system signals.

Coordination across energy vectors is increasingly significant in the development of efficient, holistic spatial plans. The DSO has a critical role in informing NESO strategic planning as well as working closely with other network organisations including DNOs, TOs, Gas Distribution Networks, and water companies.

Case Study – Smart Signal for smarter network operation

Smart Signal is an implicit flexibility service developed during ED2 to help customers respond to local and wider system constraints. As EVs, heat pumps and batteries create new local peaks, it uses congestion forecasts to publish half-hourly local price signals, potentially a week ahead. Customers and market participants can then shift consumption or generation without complex bidding or baselining, helping us use existing capacity more efficiently alongside explicit flexibility and network investment. By 2030, our ambition is to reach up to 10% of secondary substations and target an average 5% congestion reduction in enabled areas.

2.7 OUR STRATEGY RESPONDS TO STAKEHOLDERS, TRENDS AND OFGEM

Ofgem's Sector Specific Methodology and Business Planning Guidance are part of their broader response to the changing energy system, setting out their expectations for this business plan, the key roles our plan must fulfil, as well as emerging regulatory structures to incentivise outcomes. Our plan therefore addresses Ofgem's minimum requirements but also puts our stakeholder inputs at the heart of how we respond to those requirements, while our future trend analysis ensures we can be confident of delivering for customers as the energy system continues to evolve.

Stakeholder feedback, customer research and wider analysis pointed to four consistent priorities: enabling earlier access to network capacity, supporting better-informed investment decisions, maintaining strong network performance and delivering long-term value for consumers. These priorities directly informed the four outcomes that underpin our ED3 DSO Strategy:

- Access capacity sooner
- Plan and invest with confidence
- Experience better network performance
- Pay less over the long term

These are explored further in our Vision within Section 4. Section 3 sets out our ED2 track record, the capabilities we have developed, and the lessons that have shaped our approach to ED3.

3. OUR ED2 TRACK RECORD AND FOUNDATIONS FOR ED3

3.1 BUILDING DSO CAPABILITY IN ED2

During ED2, we moved Distribution System Operation from an emerging function into an established part of how we plan, operate, and develop the network. Investment in strategic planning, flexibility markets, open data, network visibility, operational coordination and whole-system working created the foundations for the expanded DSO role required in ED3.

Table 3.1 ED2 Performance against Commitments

ED2 Business Plan commitment	ED2 Target	Actual Performance	Status
DSO Strategy & Action Plan	Annual publication and refresh	Delivered annually	On Track.

Smart Optimisation Output	Annual delivery of integrated platform and outputs	Delivered	On Track.
Innovation Deployment Customer Report	Annual publication	Delivered	On Track.
Local Authority Energy Planning Support	Annual support and engagement programme	Delivered	On Track.
Distribution Future Energy Scenarios Engagement	Annual DFES engagement and data provision	Delivered	On Track.
Flexibility Procurement	2 GW (ED2)	1 GW (Y3)	On Track
EV Readiness	Ready for 0.88m EVs	0.66m EVs connected	On Track - Connections enabled through network readiness
Heat Pump Readiness	Ready for 200k heat pumps	67.5k heat pumps connected	
DER Readiness	Ready for 7.08 GW	7.79 GW connected	Exceeding target

DSO performance.

Our annual DSO Performance Incentive results show a clear progression from building capability to delivering measurable system-wide benefits. In Year 1, we established open data, network visibility, early strategic planning tools and a growing flexibility market. In Year 2, we scaled these enablers through more usable data, broader market access and the first long-term regional Strategic Development Plans. By Year 3, these capabilities were embedded across our licence areas and delivered at scale.

Table 3.2 DSO Performance Incentive Results

DSO Performance Incentive	Year 1	Year 2	Year 3
DSO Satisfaction Survey	7.42	8.53	9.20
DSO Performance Panel	7.59	7.81	8.79

This sustained improvement provides evidence that we are committed to building, scaling and operating new DSO capabilities, and gives confidence in our ability to deliver the more integrated and outcome-focused model proposed for ED3.

Data Accessibility and Quality

Throughout ED2, we have transformed our data services from a foundational open-data offering, substantially expanding the scale, accessibility and independent assurance of our DSO data services. The scale of data available has increased over the period, we have expanded our Open Data Portal to 308 published data sets in 2026 and supported 556+ methodologies, maps, data dictionaries and insight reports. We've led the industry by becoming the first DSO to implement Icebreaker One level 1 assurance on our data sets and the first to pilot NESO's Data Sharing Infrastructure to implement operational outage-planning data exchanges.

Case Study - Smart Meter Data: Improving Network Insight

Aggregated smart meter data is improving our visibility of local electricity demand, supporting better forecasting, targeted investment and more efficient network operation. For example, analysis in Orkney has identified where meter coverage can provide meaningful network insight, while monitoring in Tayvallich and 30-minute demand data from Bressay provide increasingly detailed views of low-voltage demand while protecting customer privacy. This evidence helps identify where flexibility could provide better value than traditional reinforcement and improves information available to communities, local authorities and developers. As coverage grows, smart meter data will help customers **access capacity sooner**, **support confident investment decisions and reduce long-term network costs.**

We've comprehensively engaged with stakeholders throughout. Data Portal engagement has grown substantially, reaching 13,820+ users by the end of 2025/2026 supported by self-service functionality, user guidance, webinars and bespoke support. Our smart meter capability has also grown significantly, increasing from industry-leading publication of half-hourly consumption data in Year 1 to 3.23 billion smart meter datapoints in 2025-26.

Alongside increased availability, data quality has continued to improve through formal governance, enhanced modelling reviews, and with independent assurance from Icebreaker 1. In 2025-26, 50% of our data sets were independently assured and our forecasting capability achieved over 90% short-term accuracy, providing stakeholders with greater confidence in the reliability and usability of our data.

Table 3.3 Data Accessibility KPIs

	Year 1	Year 2	Year 3

Data sets published on the data portal	0	93	308
Smart meter data points published daily (in billions)	0	1.6 billion	3.23 billion
Number of data sets available via API	0	1	73

Flexibility

At the start of ED2 we established strong foundations for market growth, procuring over 700MW of flexibility services, unlocking network capacity through operational measures and technical limits, and deferring more than £44m of reinforcement investment through flexibility dispatch. This demonstrated the potential for flexibility to provide an efficient alternative to traditional network reinforcement.

During 2024-25, we focused on scaling participation and simplifying access to flexibility markets. We introduced a new flexibility market platform, more than doubled the number of participating organisations, reduced onboarding complexity by simplifying contracts from four to one, and used flexibility to manage £192m of new infrastructure requirements. At the same time, we improved operational coordination and market integration through new arrangements with NESO and wider industry partners.

By 2025-26, flexibility had become an embedded operational tool delivering benefits at scale. We procured nearly 1GW of flexibility, representing a 37% increase since 2024-25, and dispatched 1,335MWh of flexibility, demonstrating sustained growth in operational utilisation. We also achieved an 82.5% bid acceptance rate and 73% utilisation rate, showing a mature approach focused on value-driven dispatch rather than procurement volume alone. We launched our Day-Ahead flexibility markets and enabled more than 2,000 domestic MPANs to participate in flexibility services.

Table 3.4 Flexibility Services KPIs

	Year 1	Year 2	Year 3
Number of constraint managed zones (CMZs)	25	98	203
Annual volume of dispatch (MWh)	493	512	1258
Capacity available for local constraint markets (MW)	721	970	2144

Options Assessment & Conflicts of Interest

In 2023-24, we focused on building the foundations of our options assessment framework. This included publishing our first 2050 Net Zero Strategic Plans for five Grid Supply Points, introducing transparent planning methodologies and strengthening stakeholder engagement through dedicated Net Zero Advisors and Local Area Energy Planning support. We also established governance arrangements to ensure decision-making remained transparent and accountable.

In 2024-25, we expanded and matured these capabilities. We became the first DSO to publish Strategic Development Plans (SDPs) identifying network needs out to 2050, providing communities, developers and supply chains with greater certainty on future network requirements and potential solutions. We also introduced our DSO Service Statement, giving stakeholders greater transparency over how decisions are made and how conflicts of interest are managed. Independent challenge was strengthened through our DSO Advisory Board, with 90 formal recommendations actioned, while our DNOA methodology received independent validation.

By 2025-26, these processes had become fully embedded within our DSO operating model. We published 37 Strategic Development Plans covering our entire licence area, with digitised outputs, stakeholder-consulted methodologies and accessible summaries. We also became the first DSO to extend our DNOA planning horizon from 5 years to 10 years, providing visibility into ED3 and ED4 investment needs. To further strengthen stakeholder confidence, we established a central, publishable Conflicts of Interest Register, supported by independent assurance, while acting on a further 95 DSO Advisory Board recommendations. We continued to broaden our coordination across energy vectors initiating strategic discussions with TOs to better optimise the T-D interface whilst also fully engaging in the development of the transitional RESP.

Table 3.5 Transparency and Options Assessment KPIs

	Year 1	Year 2	Year 3
Active users on LAEP+	122	455	595
Annual SDPs published across our licence area	0	9	37
Annual DNOA outcomes independently assured	0	73	48

DER Dispatch

In 2023-24, we established the foundations for transparent dispatch by publishing our first Operational Decision Making (ODM) Framework, providing stakeholders with visibility of how flexibility is dispatched and how operational decisions are made. We also enhanced DER visibility through improved network monitoring and closer coordination with NESO and wider market participants.

During 2024-25, we strengthened operational coordination and transparency by refreshing our industry-leading ODM framework, publishing enhanced performance reporting and supporting the delivery of flexibility across multiple markets. This included enabling 368MW of flexibility to flow through our network for wholesale and NESO requirements, while pioneering new data-sharing arrangements to improve coordination across the electricity system.

By 2025-26, dispatch had become a fully integrated operational capability. We moved from visibility to action, delivering 1,335MWh of flexibility dispatch and embedding automated, coordinated dispatch processes aligned with both DSO and NESO requirements. This has enabled greater network utilisation, improved system resilience and more efficient management of constraints, while maintaining transparency through published methodologies and performance reporting.

Table 3.6 DER Dispatch KPIs

	Year 1	Year 2	Year 3
MW of DER participation in NESO markets (cumulative)	721	970	2142
Annual MWh dispatched	554	551	1335
Annual risks of conflicts between DSO and NESO assessed	0	533	2152

Innovation

Innovation has played a central role in the development of our DSO capabilities. During ED2, many of the tools, processes and services that support our DSO model today were developed and trialled through innovation before being embedded into business-as-usual operations. This includes capabilities relating to flexibility services, strategic network planning, open data, forecasting, network visibility and whole-system coordination. This approach has enabled us to develop and deploy new capabilities in response to changing customer needs and an increasingly complex energy system.

Through innovation, we have strengthened our ability to measure, assess and model losses. Through collaboration with industry partners, academia and other network operators, together with innovation activities such as the Innovating Losses Analysis and Detection (I-LAD) Strategic Innovation Fund (SIF) project and New Approach to Losses (Network Innovation Allowance), we have enhanced our understanding of both technical and non-technical losses, reviewed the fairness and accuracy of losses apportionment methodologies, and explored opportunities to modernise losses management through improved analytics, automation and data quality. Our work to develop a connection readiness indicator has already been taken up by other DSOs and has informed further work on asset visibility.

Building on our track record, innovation continues to support the evolution of our DSO functions throughout ED3, helping develop new approaches in areas such as place-based planning, losses reduction, network optimisation, voltage management and customer decision support. Further detail on our innovation activities, deployment ambitions and future priorities is provided in the (ED3-S09) ED3 Innovation Strategy.

BPI early proposal: SDP+

In ED2 we enhanced our DSO planning functionality to consider the longer-term strategic needs of our networks. We recognised that this strategic approach would enable us to more efficiently plan for our longer-term network needs and ensure we developed a network that was appropriately sized for future customer requirements. Stakeholders also told us that we should be consultative and transparent in the process. We therefore became the first DSO to publish local consultations on our longer-term needs and outline plans, inviting stakeholders to input with their insights and information. This was through our Strategic Development Plans which were launched in 2024.

Our BPI early proposal, SDP+, builds on this functionality and consultative approach providing a digitised holistic view of future network needs and proposals that has been informed by stakeholders and is updated annually. Going forwards it will link with our Long-Term Integrated Network Plan (LINP) providing stakeholders with an accessible view of our future plans, load and non-load, whilst also facilitating feedback to inform their content and direction.

We have already started working towards SDP+, we published our updated SDP methodology in July 2026 following stakeholder consultation which included commitments to improving both the digitisation of SDP information and their content to include non-load asset needs. These are both key steps towards SDP+.

Later in the summer, we engaged further with stakeholders, inviting them to provide updated insights and information to feed into our SDPs. We are now finalising the local SDP reports, which will publish later in the Autumn.

4. OUR LONG-TERM APPROACH AND ED3 STRATEGY

This section sets out our long-term vision for Distribution System Operation and how we'll deliver value for customers, communities and the wider energy system during ED3. It explains how our DSO Strategy supports the wider ED3 Business Plan, the outcomes we'll deliver by 2033, and the operating model that will enable those outcomes.

It builds on the stakeholder priorities described in Section 2 and the capabilities established during ED2, providing the strategic framework for the detailed activities and investments described later in this document.

4.1 SUPPORTING THE ED3 BUSINESS PLAN

The DSO role sits at the intersection of network planning, network operation and customer decision-making. As electrification accelerates, customers increasingly need more than a network connection. They need confidence that network capacity will be available when required, visibility of future opportunities and constraints, and assurance that investment decisions are delivering long-term value.

Our DSO Strategy is therefore a key enabler of the wider ED3 Business Plan. It supports:

- delivery of a safe, resilient and increasingly intelligent electricity system;
- improved customer and stakeholder experiences through greater transparency and earlier access to capacity;
- sustainable and electrified communities through coordinated local and regional planning; and
- the development of the capabilities, skills and tools required to operate a more dynamic energy system.

The DSO Strategy complements wider ED3 strategies, including network plans the DSO is directly responsible for. The **(ED3-S01) LRE Annex** sets out how we'll develop networks and add capacity to support growing demand, embedded generation and low-carbon technology uptake, including the local network through the LV strategy. The **(ED3-S02) Long-Term Integrated Network Plan (LINP)** describes how network investment decisions are translated into programmes of reinforcement and flexibility for ED3 and the longer-term, out to 2050. These strategies provide the physical network development, while the DSO Strategy describes how we'll plan, coordinate and operate the system to maximise the value of those investments.

4.2 LONG-TERM VISION

Our long-term ambition is to be the trusted coordinator of a smarter, more flexible and more efficient electricity system, enabling place-based electrification while delivering reliable and affordable outcomes for customers.

By 2050, we expect the distribution network to accommodate significantly higher levels of electrification, distributed generation, flexible demand and energy storage. Delivering this transition efficiently will require the network to be planned and operated as an integrated system, combining forecasting, network planning, flexibility, operational decision-making and whole-system coordination.

Our role will increasingly move beyond managing assets in response to changing conditions. Instead, we'll proactively identify future network needs, coordinate with local and regional stakeholders, actively manage network capacity and provide clearer signals that help customers make informed investment decisions. Our approach emphasises the importance of:

- **Planning around place-based needs**, ensuring network development reflects local ambitions and future energy requirements in coordination with transmission operators and aligned to RESP.
- **Operating the network more intelligently**, using enhanced visibility, forecasting, flexibility and automation to make better use of existing assets.
- **Delivering consumer value,** ensuring network decisions improve affordability, reliability and access to electrification opportunities.

4.3 OUR ED3 OUTCOMES

While our long-term vision extends beyond ED3, our strategy for this price control is focused on delivering four outcomes for customers, communities and stakeholders by 2033. These outcomes provide the framework against which we'll prioritise activities, measure success and demonstrate the value created through our DSO role.

Table 4.1 Summary of Strategic ED3 Outcomes

Outcome 1: Access Capacity Sooner	Outcome 2: Plan and Invest with Confidence	Outcome 3: Experience Better Network Performance	Outcome 4: Pay Less Over the Long Term
Customers consistently tell us that timely and predictable access to network capacity is essential to support investment, growth and decarbonisation. We'll improve access to capacity	Customers, communities, developers and local authorities need transparent information about future network requirements and opportunities. We'll strengthen forecasting,	As the network becomes more dynamic, maintaining strong performance becomes increasingly important. We'll improve visibility, forecasting, voltage management and operational decision-	Consumers expect the transition to net zero to be delivered efficiently. By making better use of existing assets, increasing the use of flexibility where it delivers value and adopting a whole-system

through earlier identification of network needs, proactive planning, flexibility-enabled solutions and more intelligent network operation.

place-based planning and whole-system coordination to provide the confidence needed to make long-term investment decisions.

making to support a resilient, reliable and efficient electricity system.

approach to investment and operational decisions, we'll help reduce the long-term costs of electrification.

4.4 FROM VISION TO DELIVERY

Our ED3 strategy is delivered through two core DSO functions:

- **Strategic Network Planning**
- **Network Operations**

Strategic Network Planning ensures future network needs are identified early, future investment requirements are understood, and network development is coordinated with customers, communities, local authorities and wider energy system partners including NESO and Transmission Operators. Network Operations ensures the network is operated efficiently in real time, making best use of available capacity, improving network performance and coordinating operational decisions across the wider energy system. These two functions are supported by three cross-cutting DSO responsibilities that apply across planning and operations:

- **Market development and flexibility**
- **Voltage management**
- **Losses optimisation**

These functions and responsibilities create a single DSO model that translates our long-term vision into practical actions and measurable outcomes. Strategic Network Planning focuses on understanding future needs and identifying solutions. Network Operations focuses on using those solutions to optimise the network in real time. The cross-cutting responsibilities provide the tools, data, markets and optimisation techniques needed to deliver both effectively.

The following section describes each element of this model in more detail, including the specific activities we'll undertake during ED3, how those activities support our four outcomes and where additional investment is required to deliver enhanced capability.

4.5 HOW THE STRATEGY IS STRUCTURED

The following sections explain how our integrated operating model translates our strategy into delivery.

- Section 5 introduces the model and how its components work together
- Section 6 sets out our commitments and the benefits they will deliver for consumers
- Section 7 provides a further detailed description of our integrated DSO model, including the capabilities, activities and investments required to deliver it.

5. INTRODUCING OUR INTEGRATED DSO MODEL

Our DSO model translates our ED3 vision and outcomes into an integrated operating framework for planning, coordinating and operating a more dynamic electricity system. It combines our DSO functions and supporting capabilities to enable earlier access to capacity, more informed investment decisions, improved network performance and lower long-term costs for consumers. The diagram below illustrates how these functions work together, with the following sections describing each component of the model, the role it plays and the value it delivers for customers and stakeholders. Our DSO model is described in further detail in Section 7.

Table 5.1 Summary of Integrated DSO Model

1. Strategic planning identifies needs and efficient interventions.
2. Network operations turns plans into day-ahead and real-time action.
3. Flexibility markets manage constraints, accelerate connections and optimise outages.
4. Voltage management increases hosting capacity and improves power quality.
5. Losses optimisation reduces costs and improves efficiency for customers.

IN ED3 WE WILL DELIVER AN INTEGRATED SET OF CAPABILITIES ACROSS FIVE INTERCONNECTED AREAS

Strategic network planning

Our approach

- Introduce dedicated whole-system planning roles to align regional, local and national energy needs., including tRESP
- Establish local energy support team and pre-connection services providing practical, engineering-led advice.
- Deploy probabilistic planning tools and specialist forecasting capability to identify needs and options earlier.
- Integrate reinforcement, flexibility, voltage and operational solutions through annually refreshed strategic plans.

Our ED3 deliverables

- Annually refreshed Strategic Development Plans covering 100% of both licence areas.
- Planning forecast performance will improve by 17%
- More than 5GW of connections offered earlier access to capacity.
- Tailored advice for at least 100 communities and businesses each year from 2028.
- Annual assessments for nationally significant sectors.

Network operations

Our approach

- Transform strategic plans into connections, outage management, curtailment reduction and daily network operations.
- Introduce new resource to coordinate greater volumes and wider flexibility use cases.
- Integrate the Flex Toolkit, DERMS and control room systems to support coordinated, auditable decisions.
- Strengthen DSO, Control Room and NESO coordination through dedicated operational roles.

Our ED3 deliverables

- Day-ahead and near-real-time operation of the network.
- Improved visibility and forecasting to enable better decisions.
- Reduced constraints, interruptions and time to restore supply.
- Operational decisions that maximise existing assets and customer value.
- Coordinate outages and connections to minimise customer impact.

Market development & flexibility

Our approach

- Scale Smart Signal to provide location-specific signals and increase market-led responses to congestion
- Publish granular operational envelopes to support automated flexibility participation.
- Establish a market incubator to develop new products for connections, outages, voltage and curtailment
- Deliver FlexForward to grow accessible, trusted and scalable flexibility markets.

Our ED3 deliverables

- Suitable early access products available to 85% of new demand and generation customers where appropriate.
- Accelerate at least 2.5GW-years of energisation.
- Procure and dispatch flexibility to manage constraints and reduce curtailment.
- Smart Signal on up to 10% of secondary substations, targeting 5% congestion reduction.

Voltage management

Our approach

- Scale Voltage Management Control to optimize voltage dynamically
- Use CVR to reduce avoidable domestic consumption while maintaining voltage standards
- Apply the voltage index to identify issues and target investment consistently
- Deploy modern AVCs, on-load tap changers and Volt/VAR devices to resolve persistent local constraints.

Our ED3 deliverables

- Dynamic voltage management on 50% of network load.
- Voltage Management Control at 233 primary substations.
- Unlock more than 1GW of hosting capacity.
- Voltage Index covering 100% of primary transformers and 90% of LV feeders by 2029.

Losses optimisation

Our approach

- Embed technical losses in planning, options assessment, asset design and operational decision making.
- Maintain lower-loss asset standards and whole-life assessment for replacement decisions.
- Improve non-technical loss detection using settlement, metering, network and analytical evidence- subject to successful validation.
- Publish annual performance against losses commitments and consumer outcomes.

Our ED3 deliverables

- Reduce technical and non-technical losses.
- Target investments and operational automation that improve efficiency.
- Lower bills and carbon through reduced losses.
- Use data-led decisions to track and improve performance.

OUR DSO OUTCOMES

1. Access Capacity Sooner
2. Plan and invest with confidence
3. Experience better network performance
4. Pay less over the long term

5.1 STRATEGIC NETWORK PLANNING

Plan earlier, manage uncertainty and give customers clearer choices.

5.1.1 Customer need and strategic purpose

The low-carbon transition is creating uncertainty about where, when and how demand, generation and storage will grow. Customers, developers, local authorities and regional planners need earlier, clearer capacity information to make confident investment decisions. Traditional periodic planning and single forecasts are less effective where customer behaviour, technology uptake and policy priorities change quickly. Without better foresight, customers can face delay and networks risk investing either too early or too late. Strategic Network Planning provides the evidence base for the DSO and DNO activity, identifying future needs earlier and supporting choices between reinforcement, flexibility, active operation, voltage management and combined solutions.

Case Study - Strategic Development Plans: Transforming Network Planning

Strategic Development Plans combine network data, future energy scenarios, stakeholder insight and whole-system evidence to identify where capacity will be required and how needs could be met. This enables us to anticipate constraints, assess flexibility and operational solutions alongside reinforcement, and make more transparent investment decisions. Earlier identification of network needs can reduce connection delays, improve investment certainty and support the coordinated connection of electric vehicles, heat pumps and renewable generation. The plans frame the individual Distribution Network Option Assessments (DNOAs) that bring build and flex assessment into network planning and provide a foundation for ED3 delivery, helping **customers access capacity sooner**, **plan with confidence**, **experience better network performance** and **pay less over the long term.**

5.1.2 ED3 approach and change from ED2

Currently regional planning evidence, including tRESP-aligned (transitional Regional Energy Strategic Plan) pathways and Strategic Energy Needs, provide a common baseline for testing need, timing and uncertainty. In ED3 we'll combine this with local plans, customer intelligence, connection activity, monitoring and observed performance, using probabilistic power flow modelling to assess constraints, capacity needs and investment options under multiple credible futures.

This will allow us to further tailor solutions and differentiate priorities across SEPD and SHEPD, reflecting urban, rural, island and remote network characteristics, different LCT uptake pathways, local authority ambitions and resilience requirements.

During ED3, we'll move from periodic planning to a continuously informed planning service across both licence areas, with our Long-Term Integrated Plans and digital Strategic Development Plans (place-based network plans that set out future needs, options and timing) refreshed annually and supported by improved forecasting and analysis to ensure investment and delivery plans reflect changing requirements. We will reflect our increased coordination with TOs to take a more holistic view of needs within each SDP region, building on early successes in diverse areas such as Scottish Islands and West London.

5.1.3 ED3 deliverables and milestones

Our key ED3 deliverables include digitisation and continuous maintenance of all 37 Strategic Development Plans, annual publications covering 100% of both licence areas, establishment of specialist forecasting and regional-planning capability, and deployment of DIGI-03-01 (a specific Digital Justification Paper under the (ED3-S13) Data and Digitalisation Annex, providing our probabilistic power flow modelling toolset).

By 2030, we'll provide engineering-led support to at least 100 communities and businesses each year to give clearer information about capacity and options for early access through our Local Energy Support Team combining dedicated community energy and whole-systems resource. By the end of ED3, every reinforcement-delayed HV and EHV connection will be assessed for an earlier-access option through a phased implementation approach. By 2033, planning forecast performance will improve by 17% - this will be measured by comparing current ED2 average MAPE (a standardised measure of forecasting error) with expected performance at the end of ED3.

5.1.4 Customer value, evidence and stakeholder influence

Strategic Network Planning enables earlier, better decisions: customers receive clearer information, communities gain confidence in future plans, and investment aligns more closely with local need. It supports more than 5GW of earlier access offers for capacity, reduces unnecessary reinforcement risk and strengthens the evidence base for anticipatory investment and flexibility deployment.

Stakeholders have highlighted the need for earlier visibility, clearer capacity information and stronger coordination with local authorities, communities and system partners, reinforcing the case for place-based planning supported by better forecasting and transparency.

This section links directly to the (ED3-S08) DNO Role in Low Carbon Technology and Energy Efficiency Rollout, (ED3-S16) Connections and (ED3-S03) Climate Resilience Strategies. Place-based planning and annual Strategic Development Plans support the (ED3-S08) DNO Role in LCT and EE Rollout by identifying where low-carbon technology uptake will create local network needs; they support the (ED3-S16) Connections Strategy by improving visibility of future capacity and earlier-access options; and they support the (ED3-S03) Climate Resilience Strategy by helping network development consider critical customers, local dependencies and climate-related risks alongside demand growth.

5.1.5 Transparent decision-making

When a need is identified, our Build and Flex strategy (Our approach to comparing reinforcement, flexibility and operational solutions before committing to investment) systematically applies flexibility to ensure efficiency, certainty and deliverability. This supports transparent, evidence-based decisions in coordination with transmission operators at the T-D boundary and ensures customers are offered the solution that delivers the best long-term value. We describe our Build and Flex strategy in detail in the (ED3-S01) LRE Annex.

Case Study - Bicester: Coordinating Investment and Flexibility to Unlock Growth

Planned housing and economic growth around Bicester has created significant connection demand, triggering six major reinforcements across the East Claydon Grid Supply Point. Engagement with local authorities and the Oxford Growth Commission through the Strategic Development Plan process clarified the scale and timing of growth, helping us to prioritise future network requirements. We're now working with NGET and NESO to examine whether the third Bicester North 132kV circuit can be accelerated, while exploring flexible options such as alternative access arrangements and Dynamic Load Averaging. These measures could enable earlier connections and manage peak demand before full reinforcement, helping customers **access capacity sooner**, **invest with confidence** and **reduce long-term system costs**

5.1.6 Investments and other dependencies

- **DSO Investment A:** funds the core strategic planning capability. (Section 8.2 sets out the Cost-benefit Analysis we have applied to our investment option selection)
- **DIGI-03-01 Probabilistic Planning:** a specific Digital Justification Paper under the (ED3-S13) Data and Digitalisation annex, providing probabilistic power flow modelling, forecasting and optioneering tools.
- **Network visibility:** improves evidence from smart meters, LV monitoring and observed performance.
- **Digital Strategic Development Plans:** turns static plans into annually refreshed planning products.
- **Downstream DSO functions:** use planning outputs for flexibility, operations, voltage and losses decisions.

5.1.7 How success will be measured

Success will be measured through forecasting accuracy, earlier-access outcomes, customer confidence, annual Strategic Development Plan coverage and uptake of engineering-led support, with the ultimate test that customers access capacity sooner and make better-informed investment decisions.

5.2 NETWORK OPERATIONS

Transform strategic plans into coordinated, optimised, operational actions.

5.2.1 Customer need and strategic purpose

Planning creates value only when translated into safe operational decisions that maximise existing asset capability while maintaining security, resilience and service quality. As distributed generation, flexible demand and storage increase, network conditions become more dynamic, and customers expect faster access to usable capacity. DSO Network Operations bridges long-term planning and real-time operation by creating additional options for Control Room and Outage Planning decisions.

5.2.2 ED3 approach and change from ED2

DSO capabilities will provide insight, market-led flexibility, and automation options to support and preserve clear Control Room accountability for a safe, reliable and resilient network.

During ED3, we'll create an integrated network operations environment in which DERMS (the Distributed Energy Resource Management System used to manage flexible and distributed assets), PowerOn/ADMS (the network management platform used by Control Room teams), forecasting, outage planning and flexibility capabilities operate through connected data, workflows and decision support, with specific increased capability in flexibility scheduling and performance assurance.

Forecasting and network-state information will be used to assess risks and opportunities in day-ahead and near-real-time operation. Flexibility, network reconfiguration, Active Network Management (automated control of distributed generation and demand within network limits) and voltage control will provide operators with additional options to improve capacity utilisation and customer outcomes, automated wherever possible.

Building on ED2, ED3 connects planning, flexibility and operational functions through a consistent Operational Decision-Making Framework (Our governed process for assessing options, accountability and operational trade-offs) and auditable workflow.

5.2.3 ED3 deliverables and milestones

Our key deliverables include deployment of DIGI-03-02 Flex Toolkit and DIGI-10-01 Enhanced System Orchestration, integration of DERMS and PowerOn environments, expanded operational flexibility use cases and end-to-end visibility from forecast need through to operational action.

5.2.4 Customer value, evidence and stakeholder influence

Customers benefit through reduced curtailment, improved use of existing assets, faster access to capacity, more efficient outage planning and better coordination across the electricity system.

We'll contribute at least 2.5GW-years of accelerated energisation while reducing avoidable operational constraints and disruption.

Stakeholders support better use of existing networks before reinforcement, with operational coordination, visibility and flexibility deployment identified as key routes to lower-cost outcomes.

This section supports the (ED3-S16) Connections and (ED3-S03) Climate Resilience Strategies by turning plans into operational choices that can maintain safe access, manage constraints and reduce disruption. It also supports the (ED3-S08) DNO Role in LCT and EE Rollout strategy by helping the network accommodate more dynamic demand from electric vehicles, heat pumps, storage and distributed generation without relying solely on reinforcement.

5.2.5 Transparent decision-making

Network Operations turns strategic plans into day-ahead and real-time operational decisions that improve network utilisation while maintaining resilience and operational accountability. Flexibility dispatch decisions are made in accordance with our Operational Flexibility CBA methodology.

The DSO provides forecasts, visibility, flexibility and operational options; the Control Room and outage planners retain clear accountability for safe operation and network access.

5.2.6 Investments and other dependencies

- **DSO Investment B:** funds the integrated network operations environment (section 8.3 sets out the Cost-benefit Analysis we have applied to our investment option selection)
- **DIGI-03-01 Probabilistic Planning:** provides forecasts and future need assessments.
- **DIGI-03-02 Flex Toolkit:** enables operational use of flexibility.
- **DIGI-10-01 Enhanced System Orchestration:** connects operational systems, data and decision support.
- **Voltage and visibility data:** gives operators clearer evidence of constraints and options.

5.2.7 How success will be measured

Success will be measured through fill rates (the proportion of flexibility need successfully secured before dispatch), Generator Minutes Lost (lost generation due to network constraints), generation lost, accelerated energisation, curtailment, asset utilisation and evidence that operational decisions follow an auditable, coordinated process.

5.3 MARKET DEVELOPMENT AND FLEXIBILITY

Make flexibility easier to participate in and more valuable to operate.

5.3.1 Customer need and strategic purpose

Customers need faster access to capacity than reinforcement alone can always provide. Flexibility offers a practical way to accelerate connections, reduce curtailment, support outages, manage congestion and lower whole-system cost.

The purpose is not to create markets for their own sake, but to use flexibility where it solves customer problems and delivers better value than reinforcement or other alternatives. We will continue to support the Market Facilitator's work to simplify and coordinate flexibility markets.

5.3.2 ED3 approach and change from ED2

During ED3, we'll broaden flexibility from reinforcement deferral into an operational capability supporting four use cases:

- accelerating access to capacity where reinforcement-related delays would otherwise constrain customers;
- supporting planned and unplanned outages by giving Control Room and outage planners additional options;
- reducing curtailment and managing congestion so renewable generation and existing assets are used more effectively; and
- supporting voltage management and whole-system coordination through flexible demand or generation.

FlexForward is our multi-year, multi-market framework for delivering flexibility. It links these use cases to market design, procurement, dispatch and performance reporting, with requirements identified through strategic planning and operational processes. FlexForward provides a layered approach in which longer-term services manage uncertainty and support Build and Flex, while shorter-term services support access, outages, curtailment and whole-system coordination. This provides a tailored approach to meeting regional conditions, recognising that dense urban areas, rural networks, constrained generation areas and island or remote communities need different options, participation routes and support.

Building on ED2 market foundations, ED3 moves from individual procurements to an end-to-end flexibility service supporting planning, operations and coordination, with easier participation for smaller providers, community organisations and domestic customers. We'll continue to publish forward requirements, procurement horizons and utilisation outcomes. In ED2, we're proud to be supporting early deployment of the Market Facilitator's Flexibility Market Asset Register (FMAR).

Case Study – Large Industry Early Access + Flexibilty: Unlocking Capacity and avoiding curtailment

This initiative enables a large industrial customer to access network capacity sooner by agreeing to reduce demand during peak periods. Flexible turn-down services help manage network constraints and curtailment risk, allowing earlier connections without waiting for reinforcement. The approach improves utilisation of existing assets, supports reliable network operation, and can defer costly network upgrades where flexibility offers better value. It demonstrates how customers can **access capacity sooner**, **experience better network performance**, and **pay less over the long term** through smarter, flexibility-led solutions.

ED3 represents a material increase in operational flexibility volumes during ED3, moving flexibility from a targeted reinforcement-deferral tool into a routine capability for managing access, outages, curtailment, congestion and voltage-related needs.

Table 5.2 - ED3 flexibility in planning to manage uncertainty and deliverability, optimising our investment plan and providing capacity when and where it is needed. Full justification of flexibility procurement for strategic planning purposes is provided in our (ED3-S01) Load Related Expenditure Annex

	Flexibility Use Case	What it does	Capacity (MW)	(£m)	Consumer / Business Value	NPV (£m) Whole Life Improvement Vs build-only
Strategic Planning	Alternative to reinforcement	Defers or avoids traditional network upgrades where flexibility is lower cost	146	[redacted]	Lower bills, reduced network spend, faster deployment than reinforcement	[redacted]
	Manage uncertainty	Provides temporary capacity while future demand and generation	1.9	[redacted]	Avoids premature investment and stranded assets	

		requirements become clearer				
	Optimise investment portfolio delivery	Reprofiles schemes where flexibility provides an interim solution	115	[redacted]	More affordable and deliverable investment programme	

Table 5.3 - ED3 flexibility to support network operations that drive whole-system outcomes, accelerating network access and minimising disruption where viable and economic

	Flexibility Use Case	What it does	Capacity (MW)	(£m)	Consumer / Business Value	NPV (£m) Whole Life
Network Operations	Accelerate customer connections	Provides earlier access capacity before reinforcement is complete, including reducing ANM and curtailment constraints	3,341	[redacted]	Quicker connections, accelerated electrification and economic growth	[redacted]
	Improve outage management	Supports planned and unplanned outages by maintaining supplies and releasing operational capacity	9,684	[redacted]	Improved resilience, reduced disruption and lower outage costs	
	Whole-system coordination (Smart Signal)	Coordinates distribution and transmission constraints using operational signals and flexible assets	144	[redacted]	More efficient use of network capacity and reduced congestion costs	

5.3.3 ED3 deliverables and milestones

During ED3, we'll extend FlexForward and establish dedicated Market Incubator capability (specialist resource to design, trial and scale new flexibility propositions). DIGI-03-02 Flex Toolkit will connect publication of need, provider onboarding, procurement, dispatch, settlement and performance reporting.

From 2028, we'll publish increasingly granular operational envelopes (location-specific information on the capacity and operating limits available to customers and providers) and deploy Smart Signal coverage for up to 10% of secondary substations at an expected average 5% congestion reduction rate (Smart Signal is our implicit flexibility product that gives customers and market participants signals to adjust LCT demand or generation to avoid congestion).

Products will be expanded across these use cases, with simplified routes for smaller and community-based providers and non-digital engagement where appropriate.

The strategy targets a pre-dispatch flexibility fill rate of at least 95% to maintain the best practice established in ED2 and introduces a flexibility market confidence score of at least 9 out of 10. Support will also be provided to 25,000 low-income and vulnerable households by 2032 through access to flexibility, smart-energy services and tailored advice.

5.3.4 Customer value, evidence and stakeholder influence

Flexibility creates value by enabling earlier access, reducing delays and curtailment, improving utilisation and giving customers clearer information about future opportunities. It is procured where assessment shows it delivers better outcomes than reinforcement or other operational alternatives.

Each use case has been assessed through rigorous Cost-benefit Analysis to confirm where flexibility is expected to deliver net benefits, including earlier customer access, reduced constraint and curtailment costs, improved outage resilience, deferred or avoided reinforcement, better asset utilisation and lower whole-system cost.

Stakeholders have emphasised faster connections, market transparency, clearer signals of future needs, predictable processes and greater opportunities for community participation. Coordination with suppliers, aggregators, NESO and other participants will reduce duplication and unnecessary intervention.

This section links most directly to the Connections and LCT Strategies. Flexibility can provide earlier or managed access where reinforcement would otherwise delay customers, while simplified participation routes, Smart Signal and

community-facing propositions help households, communities and market participants contribute to a more efficient LCT rollout. Flexibility also supports resilience by providing additional options during outages, constraints and restoration activities.

5.3.5 Investments and other dependencies

- **DSO Investment C:** Funds the operational flexibility volumes. Section 8.4 sets out the Cost-benefit Analysis applied to investment option selection.
- **DIGI-03-02 Flex Toolkit:** links need publication, onboarding, procurement, dispatch, settlement and reporting.
- **DIGI-03-01 Probabilistic Planning:** identifies future needs and tests flexibility options.
- **DIGI-10-01 Enhanced System Orchestration:** enables flexibility to support operational decisions.
- **Strategic Network Planning:** defines where and when flexibility is needed.
- **Network Operations:** confirms how flexibility can be dispatched safely.
- **Voltage Management:** creates additional use cases for whole-system/NESO flexibility.
- **Planning Flexibility:** as justified through individual LRE IDPs and through our Agile Use of Flexibility in Network Planning (DSO Investment D). Further details are set out in our (ED3-S01) LRE Annex.

5.3.6 How success will be measured

Success will be measured through earlier access, reduced curtailment, fill rates (the proportion of flexibility need successfully secured before dispatch), market confidence, participation, customer satisfaction, support for vulnerable and community customers, and evidence that flexibility enables better decisions than would otherwise have been possible.

5.4 VOLTAGE MANAGEMENT

Use voltage to actively improve performance and release capacity.

5.4.1 Customer need and strategic purpose

Voltage must remain within statutory limits, and our ED3 approach creates an opportunity to use voltage actively to unlock capacity, improve efficiency and reduce customer cost. Growth in electric vehicles, heat pumps and distributed generation is increasing pressure on networks where capacity can be constrained by voltage as much as thermal limits. Monitoring, analytics and control now provide alternatives to conventional reinforcement. The purpose of voltage management is to move beyond compliance and use targeted intervention, dynamic control and improved visibility to release capacity, reduce consumption and maintain service quality for the individual customers we serve and in coordination with NESO at the transmission boundary.

Case Study - Voltmetric: Improving Power Quality and Targeting Investment

Voltmetric combines smart meter data, network monitoring and future energy scenarios to create a Voltage and Power Quality Index, providing a consistent view of network performance across our LV, HV and EHV networks. Our engagement with all UK DNOs has tested the index, reviewed its methodology and explored its application using anonymised smart meter data. These insights will help us identify voltage issues earlier and target operational solutions or investment where customer benefits are greatest. By improving power quality, supporting low-carbon technologies and avoiding unnecessary reinforcement, Voltmetric will help customers **experience better network performance, plan with confidence and pay less over the long term.**

5.4.2 ED3 approach and change from ED2

We'll apply a Prepare, Protect and Perform approach:

Prepare: embed voltage considerations into network planning through forecasting, network design, tap-setting optimisation and proactive reinforcement to address emerging voltage needs.

Protect: target engineering, secondary-network, control or reconfiguration interventions where evidence shows persistent issues or high emerging value.

Perform: adjust voltage dynamically to reflect network conditions, increasing hosting capacity and improving network performance.

Building on ED2 monitoring and early voltage-management capability, ED3 expands smart-meter data, monitoring coverage, the Voltage Index (a standardised measure of voltage performance used to prioritise investment and operational interventions) and active voltage control across a much larger proportion of the network.

5.4.3 ED3 deliverables and milestones

During ED3, we'll extend the Voltage Index across all primary transformers and 90% of LV feeders by 2029, creating a consistent view of voltage performance and customer experience across the network. Deployment will be prioritised using local voltage evidence, recognising that rural feeders, high-LCT areas and networks with higher distributed generation can face different voltage constraints and customer impacts across both SEPD and SHEPD.

Voltage Management Control (Our system capability used to coordinate active voltage settings and optimisation across enabled primary substations) will be deployed at 187 primary substations. Dynamic voltage management will progressively expand across the network with the ambition of managing 50% of network load by the end of ED3.

The strategy will also unlock more than 1GW of additional hosting capacity (equivalent to 300,000 EV chargers and 100,000 heat pumps) through a combination of voltage optimisation, enhanced visibility and targeted interventions. This is equivalent to supporting significant additional deployment of low-carbon technologies, including electric vehicles and heat pumps, without requiring equivalent levels of conventional reinforcement.

Targeted Volt/VAR control, automatic voltage control and secondary-network interventions will be guided by customer need and value. Integration with DIGI-10-01 will make voltage management part of the wider operational decision-making environment.

We'll apply Conservation Voltage Reduction (controlled voltage optimisation that reduces energy consumption while keeping customers within statutory voltage limits) in conjunction with our Losses Optimisation approach.

5.4.4 Customer value, evidence and stakeholder influence

Voltage management releases capacity, improves power quality, reduces consumption and losses, and supports better use of existing assets where affordability, disruption, service quality and reliability are protected. Our strategy will eliminate nuisance tripping for up to 150,000 LCTs.

This section links directly to the (ED3-S08) DNO Role in LCT and EE Rollout strategy because voltage performance is a key enabler of electric vehicles, heat pumps, solar PV and battery storage on local networks. It also supports the (ED3-S16) Connections Strategy by releasing additional hosting capacity and reducing avoidable reinforcement and supports the (ED3-S03) Climate Resilience Strategy by improving power quality and giving operators more active tools to manage changing network conditions.

5.4.5 Investments and other dependencies

- **DIGI-10-01:** extends voltage optimisation alongside operational decision-making.
- **Enhanced network visibility:** provides smart-meter, LV monitoring and model data to target action.
- **Voltage Management Control:** coordinates active voltage settings and optimisation.
- **Forecasting and modelling:** identifies emerging voltage constraints and opportunities.
- **Strategic Network Planning:** links voltage interventions to future capacity needs.
- **Flexibility and losses optimisation:** assess wider value and trade-offs.

5.4.6 How success will be measured

Success will be measured through additional hosting capacity, Voltage Index improvements, active voltage-management deployment, reduced energy consumption, reduced losses, power-quality indicators and evidence that voltage actions have avoided cost while maintaining statutory compliance.

5.5 LOSSES OPTIMISATION

Optimise whole-system losses and long-term customer cost.

5.5.1 Customer need and strategic purpose

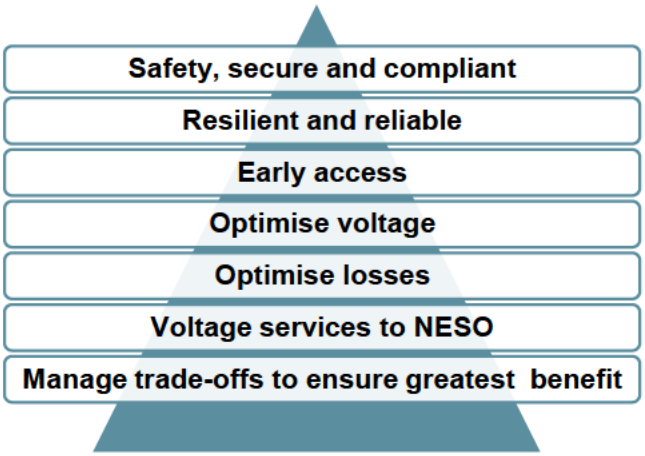
Every unit of electricity lost before reaching customers creates a cost that consumers ultimately pay. In ED3, the priority is to optimise whole-system value, not minimise every individual loss regardless of cost. Losses decisions must balance efficiency, affordability, resilience, decarbonisation and access to capacity. Some higher-loss options may still deliver greater overall value where they release material customer or system benefits. The strategic purpose is to embed losses into planning, investment and operational decisions so energy efficiency is considered alongside wider customer outcomes.

5.5.2 ED3 approach and change from ED2

Building on ED2 engineering standards, asset policies, improved data and losses reporting, ED3 embeds losses systematically into planning, investment and operational decision-making.

The strategy adopts a Voltage and Losses Optimisation Hierarchy (Our decision framework for balancing capacity, resilience, voltage performance, losses and whole-system value) so losses are considered alongside network capacity, flexibility, renewable integration and customer outcomes, not assessed separately afterwards. This accepts a marginal increase in losses if it enables materially earlier connections, reduces renewable curtailment or avoids disproportionate reinforcement costs.

Figure 5.1 SSEN Voltage and Losses Optimisation Hierarchy



The strategy also recognises the importance of non-technical losses. Our innovative I-LAD (Intelligent Losses Analysis and Detection) data-led approach, supported by human oversight and appropriate safeguards, will help identify unregistered or incorrectly settled supplies and improve the accuracy of settlement processes.

5.5.3 ED3 deliverables and milestones

During ED3, we'll embed the hierarchy into planning and operational decision-making. DIGI-03-01 will support consistent assessment of losses within reinforcement, flexibility and active-operation options, while DIGI-10-01 will enable optimisation through network configuration, voltage control and system orchestration.

The strategy will continue the deployment of lower-loss conductors, transformers and network designs where whole-life benefits justify investment. Up to 50 11kV feeders or circuits will be assessed for targeted automation where energy savings and network benefits provide a strong consumer value case. Losses interventions will be targeted where local network characteristics justify action, including rural or sparse SHEPD networks where feeder length, loading patterns and automation opportunities can materially affect whole-life value.

We'll also continue to improve settlement quality by resolving more than 8,000 unregistered or incorrectly settled MPAN (Meter Point Administration Number) records annually and further developing data-led approaches to identifying potential non-technical losses where this can be achieved safely, transparently and with appropriate customer protections.

Through voltage optimisation and Conservation Voltage Reduction, we'll deliver 47.5GWh reduced annual domestic energy consumption losses by the end of ED3 while maintaining the longer-term engineering policy trajectory associated with approximately 465GWh of avoided losses.

5.5.4 Customer value, evidence and stakeholder influence

Losses optimisation lowers whole-system cost by reducing avoidable energy waste and targeting investment where it delivers demonstrable customer and system value. Stakeholder engagement has emphasised affordability, efficiency and value for money, and our approach responds by using evidence-led, targeted losses optimisation to invest wisely rather than pursuing losses reduction at any cost.

This section links to the (ED3-S08) DNO Roll in LCT and EE Rollout and (ED3-S03) Climate Resilience Strategies by ensuring that electrification is delivered efficiently and with long-term network performance in mind. It also supports the (ED3-S16) Connections Strategy by making sure that reinforcement, flexibility and operational choices consider whole-life efficiency and cost, rather than treating capacity release, losses and resilience as separate decisions.

5.5.5 Investments and other dependencies

- **DIGI-03-01:** embeds losses into planning, reinforcement and flexibility assessments.
- **DIGI-10-01:** supports operational optimisation through configuration, voltage control and orchestration.
- **Voltage Management Control:** enables Conservation Voltage Reduction and active voltage optimisation.
- **Network visibility and smart-meter data:** target losses interventions using evidence.

- **Forecasting improvements:** support whole-life assessment of future losses and value.
- **Asset policy and settlement processes:** reduce technical and non-technical losses through enduring control.

5.5.6 How success will be measured

Success will be measured through annual energy savings, reductions in technical and non-technical losses, improved settlement accuracy, lower whole-system cost, better network utilisation, reduced carbon emissions and evidence that losses are routinely considered in major planning, investment and operational decisions.

6. OUR COMMITMENTS AND BENEFITS FOR CUSTOMERS

The tables in this section set out our Theory of Change and demonstrate how our ED3 DSO commitments translate into measurable outputs, customer outcomes and tangible benefits. They provide a clear line of sight from the drivers shaping the future energy system, through the activities and capabilities we'll deliver, to the outcomes that matter most to customers. By defining success measures for each commitment, we can transparently monitor delivery, demonstrate progress and ensure our investments are creating real value for consumers, communities and wider stakeholders. Collectively, these models show how our strategic planning, customer support, network operations, flexibility services and whole-system coordination will deliver earlier access to capacity, greater confidence in investment decisions, improved network performance and lower long-term costs, ensuring that customers receive enduring benefits from the transition to a smarter, more flexible and decarbonised energy system.

6.1 ACCESS CAPACITY SOONER

We'll help customers access network capacity sooner by improving the way we understand future demand, plan with stakeholders and manage constraints across our networks. Through better forecasting, place-based planning and the use of flexibility, visibility and Active Network Management solutions, we'll identify and unlock capacity ahead of traditional reinforcement timescales. Alongside enhanced customer support and electrification advice, this will provide customers with earlier, clearer and more predictable routes to connection. The benefits include reduced connection delays, lower uncertainty and faster progress towards decarbonisation and local economic growth.

Table 6.1 Theory of Change – Accessing Capacity Sooner

Driver	Activity	Output	Outcome	Benefit
Planning with stakeholder				
Need for timely, local network information	Integrate LAEP, RESP, SDP and new/further stakeholder insights into forecasting	Annually refreshed SDPs covering 100% of both license areas.	**Accessing capacity sooner**	Improved investment efficiency through enhanced needs identification
Demand Forecasting				
Need to see constraints before they happen	Combine monitoring, smart meters, connections and local plans	Improve forecasting accuracy by 17%	**Accessing capacity sooner**	Improved investment efficiency through forecasting accuracy
Accelerating connections and reducing curtailment				
Customers need timely, predictable access	Offer of Early Access Solutions	More than 5GW of connections offering earlier access to capacity	**Accessing capacity sooner**	Avoided cost of delaying connection and social benefit from acceleration of affordable homes
Optioneering Support				
Stakeholders need support in enabling more LCTs to connect	Provide optioneering advice and readiness information	100 businesses and communities supported.	**Accessing capacity sooner**	Avoided cost with LAs, community groups and customers

Table 6.2 Our Commitment Metrics and Outputs – Accessing Capacity Sooner

1. Early access to network capacity	Across ED3, we'll offer earlier-access options to more than 5GW of connection capacity. The resulting connections energised ahead of their reinforcement date are expected to deliver at least 2.5GW-years of accelerated access.	Commitment Metric
2. Earlier access offered as standard	By the end of ED3, every HV and EHV customer whose connection is delayed by reinforcement will be assessed for earlier access options as standard. We'll expand our range of early access solutions so that 85% of new customers seeking a demand or generation connection have access to a suitable early access product, reducing connection times and accelerating electrification.	ED3 Output
3. Unlocking low-carbon technology connections	During ED3, we'll use network data and advanced analytics to identify and address constraints affecting more than 20,000 looped services, enabling additional low-carbon technologies to connect and increasing utilisation of existing network capacity.	ED3 Output
4. Proactive planning for priority sectors	By 2031, we'll complete annual strategic assessments for all nationally significant sectors in our licence areas and incorporate identified requirements into SDPs and network investment plans - including data centres, ports and ferries, beyond our standard DFES planning process.	ED3 Output

Ambition: This is a material shift from targeted earlier access to a repeatable, customer-facing capability. The ambition is credible because it is tied to real connection barriers: reinforcement delays, constrained local networks, ANM limits and uncertainty over future demand and generation. The test is not simply more products, but whether customers can make earlier, better-informed investment decisions with clearer choices, risks and timelines.

Evidence: We have already shown leadership in earlier access, with ED2 delivery ahead of comparable DSO benchmarks and a strong foundation in Active Network Management, Early Access Management, digital analysis fundamentals and published network visibility. Strategic Development Plans, sector analysis and customer engagement have already identified where clearer routes to capacity are most valuable, including for ports, hospitals, local authorities, communities and vulnerable customers.

Readiness: ED3 scales proven capability rather than starting again. The combination of probabilistic planning, LV visibility, connection optioneering specialists and improved customer advice gives us the tools and governance to make earlier access more consistent, evidence-led and explainable across both licence areas.

6.2 PLAN AND INVEST WITH CONFIDENCE

We'll give customers, local authorities and stakeholders greater confidence in network investment decisions by providing transparent information, coordinated planning and evidence-based forecasting. By integrating local energy plans, strategic development plans and whole-system assessments, we'll improve our understanding of future network needs and ensure investment decisions are robust and proportionate. This will enable customers and communities to make informed decisions about electrification and energy projects, while ensuring that network investment reflects future needs and delivers long-term value.

Table 6.3 Theory of Change – Plan and Invest with Confidence

Driver	Activity	Output	Outcome	Benefit
Strategic Development Plans				
Local community support	Refresh SDPs using integrated planning data	Annual assessments for national significant sectors.	**Plan and invest with confidence**	Customers and local authorities gain confidence
Whole-system coordination				
Electrification requires joined-up decisions	Dedicated whole system and community energy support	% representation with RESP	**Plan and invest with confidence**	Investment reflects future system and local needs
Network Data				
Customers need insights as well as data sets	Intergrated AI-enabled support in our Data Portal	SLA reduction from 20 days to 5 days	**Plan and invest with confidence**	Customers able to make faster, more confident decisions.
Flexibility Markets				
Continued quality support for flexibility market participants	Continued comprehensive support and stakeholder engagement	Independent satisfaction survey score of 9/10 with market participants	**Plan and invest with confidence**	Faster and easier participation in markets for participants.

Table 6.4 Our Commitment Metrics and Outputs – Plan and Invest with Confidence

5. Faster Access to Network Data	By 2029, we'll reduce average data request response times from 20 days to 5 days by integrating AI-enabled support into our Data Portal, helping customers make faster and more informed investment decisions.	Commitment Metric
6. Local Energy Advice	By 2030, we'll establish our Local Energy Support Team to provide tailored network, connection and flexibility advice, accessible guidance and workshops to at least 100 communities and businesses each year, reducing connection uncertainty through improved access to network information and options.	Commitment Metric
7. Annually refreshed SDPs	Throughout ED3, we'll refresh our strategic development plans for network investment to consider the latest information from RESP, stakeholder insights and where flexibility may be more appropriate on an annual basis.	ED3 Output
8. Trusted Flexibility Markets	By the end of ED3, we'll achieve and maintain an independent market confidence score of 9/10 or higher among flexibility service providers and market participants, demonstrating trusted, coordinated and innovative DSO market operations.	Commitment Metric

Ambition: The ambition is to make planning information faster, clearer and more useful for the decisions customers and stakeholders need to make. This goes beyond publishing data: it requires trusted, customer-designed services that turn complex network evidence into practical advice, credible plans and transparent investment choices.

Evidence: ED2 provides strong proof-points: we developed our stakeholder-led Data Portal, expanded published data sets, supported API access and created practical tools such as the Central Network Viewer. Data Portal engagement has grown significantly, smart-meter data capability has scaled, and independent assurance has improved confidence in data quality. We have also built a strong local-authority support model through our award-winning Net Zero Advisers, LAEP+ capability and Strategic Development Plans.

Readiness: We recognise network data is complex and customer expectations are rising. The ED3 plan is therefore underpinned by automation, service design and dedicated planning/advisory roles, so the same evidence base can support local authorities, communities, developers, flexibility providers and investment planning in a more consistent and responsive way.

6.3 EXPERIENCE BETTER NETWORK PERFORMANCE

We'll improve network performance by developing a more visible, flexible and actively managed network. Through enhanced monitoring, forecasting, flexibility dispatch, voltage management and coordinated operational decision-making, we'll respond more effectively to changing patterns of demand and generation. These capabilities will help reduce the impact of outages, improve power quality and enable greater utilisation of existing network assets.

Customers will benefit from a more resilient and responsive network that supports increasing electrification while maintaining reliable service levels.

Table 6.5 Theory of Change – Experience Better Network Performance

Driver	Activity	Output	Outcome	Benefit
Reduce outages				
Customers need a resilient, responsive network	Use visibility, forecasting, flexibility and coordination	Coordinate outages and connections to minimise customer impact	**Experience better network performance**	Reduced outage impacts and improved resilience
Flexibility Dispatch and whole system coordination				
Complex networks require coordinated operation	Integrate dispatch, DERMS, outage planning and NESO coordination	Accelerate at least 2.5GW-years of energisations	**Experience better network performance**	Utilisation dispatch expenditure savings Reduced outages
Voltage management				
LCT growth creates voltage challenges	Use Voltage Index, targeted interventions and VMC	Dynamic voltage management on 50% of the network	**Experience better network performance**	Increased LCT opportunity
Network visibility				
Operational decisions need granular network data	Expand LV monitoring, smart meter analytics and forecasting	95% local network visibility	**Experience better network performance**	Better operational decisions and performance

Table 6.6 Our Commitment Metrics and Outputs – Experience Better Network Performance

9. Dynamic Voltage Management	By deploying dynamic voltage management across 50% of our network load, we'll unlock over 1GW of hosting capacity, enabling the connection of up to 300,000 EV chargers and 100,000 heat pumps while improving voltage quality and reducing nuisance tripping.	Commitment Metric
10. Market-led whole-system coordination	From 2028, we'll begin to deploy Smart Signal, targeting 5% average reduction in congestion and reaching up to 10% of secondary substations by the end of ED3. From 2028 we'll publish granular operational envelopes to support coordination across system and market parties to automate participation and maximise flex potential.	ED3 Output
11. Data-Driven Network Operations	By 2031, we'll combine LV observability, forecasting, DERMS, flexibility and automated operational decision-making to achieve operational forecasting accuracy across our network of 15% MAPE (Mean Absolute % Error) or better. We will achieve 95% of local network visibility from secondary substation monitors and smart metering and will publish this through our data portal - reducing operating costs and the need for operational interventions	Commitment Metric
12. Voltage Index	By 2029, we'll launch and apply a Voltage Index covering 100% of primary transformers and 90% of LV feeders, enabling proactive investment decisions and reducing voltage-related service impacts for customers.	ED3 Output

Ambition: This is a deliberate move from monitoring network performance to actively managing it. The ambition is stretching because ED3 networks will be more dynamic, with more distributed generation, flexible demand, suppliers, flexibility providers and NESO interactions. The focus is to scale active voltage management, operational coordination and forecasting from targeted foundations into system-wide practice.

Evidence: We have already made the case to Ofgem for early ED2 dynamic voltage management and have developed a meaningful Voltage Index through innovation and analysis. Smart-meter voltage data, LV monitoring, network modelling and projects such as Voltmetric provide a strong evidence base for prioritising action. We have also pioneered market-led coordination through local constraint markets, Diversity Services and Smart Signal, while Systems for Flex has laid the groundwork for enhanced operational forecasting.

Readiness: ED2 has established the key ingredients: voltage visibility, active-control foundations, operational forecasting, ANM, flexibility dispatch, DSO-Control Room coordination and emerging NESO interfaces. ED3 integrates these capabilities through DERMS, Flex Toolkit and enhanced system orchestration, making performance management more automated, auditable and scalable.

6.4 PAY LESS OVER THE LONG TERM

We'll help customers pay less over the long term by making better use of existing network assets and identifying the most efficient solutions to meet future needs. By increasing participation in flexibility markets, optimising network losses and supporting community-led energy solutions, we can defer or reduce the need for higher-cost reinforcement where this represents best value. These approaches will lower whole-system costs, improve network efficiency and support a more affordable pathway to electrification, helping ensure customers receive long-term value from network investment.

Table 6.7 Theory of Change – Pay Less over the Long Term

Driver	Activity	Output	Outcome	Benefit
Market development and flexibility				
Need to manage uncertainty and maintain affordability	Planning and Operation Flex CBAs Grow participation in Flexibility Markets	Suitable flexibility products available to 85% of new demand and generation customers where appropriate	**Pay less over the long term**	Reduced consumer bills Revenue from participating in Flexibility
Technical losses optimisation				
Losses affect whole-system value and affordability	Embed losses in planning, VMC, open-point automation and analytics	VMC at 233 primary substations	**Pay less over the long term**	Lower energy waste and long-term consumer costs
Whole system optimisation				
Other actors need granular network data	LV monitoring and access to half-hourly consumption data form smart meters	Publish Near-real time data at street level	**Pay less over the long term**	Lower whole system costs
Facilitating whole system cost reduction				
New generation requires grid access in constrained areas	Offer of early access solutions Refined ANM/DERMS operation	More than 5GW of connections offered earlier access to capacity	**Pay less over the long term**	Lower whole system costs Reduced Carbon

Table 6.8 Our Commitment Metrics and Outputs - Pay Less over the Long Term

13. Flexible Capacity When Needed	Throughout ED3 we'll achieve and maintain an average pre-dispatch flexibility fill rate of at least 95%, ensuring flexibility is available when required and reducing the cost of operating the electricity system.	ED3 Output
14. Cut Wasted Energy Losses	By 2033 we'll reduce annual domestic energy consumption losses by 47.5GWh through conservation voltage reduction and improved voltage optimisation, lowering wasted energy and reducing costs for all consumers.	Commitment Metric
15. Inclusive access to flexibility and smart-energy support	By 2032, we'll work with local partners, flexibility providers and trusted community organisations to enable at least 25,000 low-income and vulnerable households to access flexibility, smart energy services or tailored energy advice, increasing participation from groups currently under-represented in flexibility markets.	ED3 Output
16. Efficient Deferred Investment	We'll deploy 260MW of planning flexibility[1] to manage uncertainty and minimise short-term bill impacts where it is economic to do so, increasing benefits by £60.07 million NPV.	Commitment Metric

Ambition: The ambition is disciplined value creation, not headline procurement volumes. We'll use flexibility, voltage optimisation and targeted losses interventions only where they meet customer and network need and where the economic case is robust. This reinforces affordability by investing wisely, avoiding unnecessary expenditure, and targeting interventions only where they provide clear, evidence-based benefits for customers and the network.

Evidence: We are already an active and mature flexibility user. By ED2 Year 3, over 1GW of flexibility need was being met, around 1.3GWh was dispatched, participation was growing, and we operated one of the broadest ranges of flexibility markets. The approach is needs-led: volumes are tied to specific network requirements, supported by operational CBA, published methodologies, FlexForward and transparent market development.

Readiness: ED3 builds on established procurement, dispatch, market governance and operational experience. The next step is broader participation, including harder-to-reach sectors, domestic customers and community routes, supported by the Market Incubator, Smart Signal and improved digital services. This breadth is essential to maintaining liquidity, competition and fair access to flexibility value.

[1] This is in additional to operational flexibility, making a total of 13.4GW of flexibility in ED3.

7. DETAILED DESCRIPTION OF OUR INTEGRATED DSO MODEL

This section sets out in detail how we'll deliver our ED3 DSO strategy. The information provided is in line with the requirements set out by Ofgem in the Business Plan Guidance to support Ofgem's review of the strategy.

The costs required to deliver this strategy are set out in Section 8 (Investments), which provides a breakdown of the baseline allowances requested for each investment, references the relevant BPDT submissions, and explains how costs have been derived using supporting cost-benefit analyses (CBAs), Engineering Justification Papers (EJPs) and, where applicable, Digital Justification Papers (DJPs).

7.1 STRATEGIC NETWORK PLANNING

We'll maintain annually refreshed, place-based Strategic Development Plans (SDPs) covering 100% of our licence areas. DIGI-03-01 will provide the governed data and probabilistic analytical capability needed to connect forecasting, network-needs identification, options assessment, and investment planning. This will support the delivery of our early Business Plan Incentive proposal, SDP+. Dedicated specialists will support scenario development, forecasting, customer optioneering, RESP coordination and LV analysis so that planning is continuously maintained rather than periodically recreated.

Table 7.1 Evolving and developing our ED3 Capability – Strategic Network Planning

Capability Area	Established in ED2	Evolved in ED3
Planning with stakeholders	LAEP-led and primarily local authority-focused engagement	2 dedicated planning roles, one in each licence area, will coordinate monthly RESP engagement and integrate evidence from communities, developers and commercial customers into SDPs and investment planning throughout ED3.
Strategic planning (SDPs)	Semi-manual Strategic Development Plan production focused on load-related needs and having a traditional PDF-based format.	DIGI-03-01 will support annual publication and continuous maintenance of SDPs covering 100% of our licence areas throughout ED3, integrating forecasting and network-needs evidence into a fully digitised approach. SDPs build on the LINP approach by taking whole-system view and will migrate towards SDP+.
Energy scenario development	DFES supported by internal forecasting inputs	A dedicated scenario and strategic-planning specialist will lead scenario development, policy tracking and input design throughout ED3, integrating RESP and stakeholder evidence into planning assumptions. This will allow for creation of more granular and frequent forecasts, enabling stakeholders to understand how RESP forecasts are changing within the three-year RESP cycle.
Demand and DER forecasting	Deterministic forecasting with limited granularity	A dedicated forecasting data scientist, supported by DIGI-03-01, will integrate demand and generation data sets and deploy probabilistic forecasting across voltage levels. By 2033, planning forecast performance will improve by 17% (compared with current ED2 average).
Options assessment and optioneering	Predominantly manual assessment of reinforcement and flexibility options	DIGI-03-01 will streamline assessment of reinforcement, flexibility and operational options through a common network-needs and optioneering process during ED3. This will be complemented by the Voltage Index covering 100% of primary transformers and 90% of LV feeders by 2029.
Customer access and connection readiness	Connections surgeries and advisory support	Two Connection Optioneering Specialists working with regional and local stakeholders including developers, local authority and community generators to challenge traditional mechanisms for connections.
Community and local energy support	Limited and project-based engagement	Structured support for community energy organisations and local energy initiatives through our new Local Energy Support Team. Working collaboratively with local actors to develop coordinated plans that deliver efficient network and non-network solutions that work for communities.
Whole-system coordination	Pilot discussions with other energy organisations, including NESO, around	Robust process in specific local authority areas that bring together relevant TOs, DNOs and NESO to develop and monitor delivery of infrastructure programmes. This will

	particular areas of need (e.g. Oxfordshire, West London).	leverage the transition to mayoral responsibilities where applicable and be extended to include the strategic needs of devolved governments.
LV forecasting, analysis and data sharing	Initial adoption of VisNet analysis tool. Greater visibility of LV network behaviour through smart metering and network monitoring.	Robust forecasting of LV networks to understand thermal and voltage drivers that will underpin our LV upgrade programmes. Sharing of associated workplans and needs with relevant stakeholders to ensure aligned plans for local communities. DIGI-03-01 will enhance our forecasting capabilities.

This evolution reflects our transition from establishing strategic planning capability during ED2 to applying these capabilities at scale during ED3. It will enhance our whole-system coordination and facilitate increased use of flexibility. Through DIGI-03-01, annual SDPs and dedicated forecasting and scenario roles, we'll provide continuously refreshed needs assessments for 100% of our licence areas and complete annual strategic assessments for all nationally significant sectors by 2031. This will support the delivery of the early Business Plan proposal for SDP+.

7.1.1 Ongoing Load & DER planning, connection readiness and optimisation

During ED3, we'll build on Regional Energy Strategic Planning outputs and local energy plans to maintain and regularly refresh demand and generation forecasts. This will include using network data, contracted connections, pre-application enquiries, customer and stakeholder intelligence to develop informed views of future energy needs. A dedicated scenario and strategic-planning specialist will track policy, develop planning inputs and test alternative electrification pathways. This will help us regularly update our forecasts to allow identification of emerging constraints and investment triggers earlier, while keeping plans adaptable as the timing, location and scale of demand and distributed energy resources change.

These outputs will feed the annual SDP cycle and our Build and Flex approach. Outputs will consider the persistence and scale of constraints, flexibility availability, market maturity, resilience, deliverability, consumer value and whole-life cost. Where flexibility can provide capacity earlier or at lower cost, or preserve option value while uncertainty reduces, it will be assessed alongside reinforcement. Where reinforcement is the efficient enduring solution, flexibility may bridge the period before delivery.

Improved planning will be translated into practical pre-connections support drawing from our experience in NIA innovation projects like FORTRESS, FARM and SEACHANGE and aligned to CP30 generation queues. By 2030, our Local Energy Support Team and two connection optioneering specialists, one in each licence area, will provide engineering-led pre-application and post-application advice on network capacity, timing, cost, operating limits, flexibility and earlier-access products. They will work with regional and local stakeholders, including developers, local authorities, businesses and generators, to identify credible connection pathways and challenge traditional approaches where alternatives can deliver positive consumer value and result in accelerated connections. Dedicated community energy support will provide more proactive help for community energy schemes in our licence area; developing services and information that helps groups make informed decisions about future projects.

By the end of ED3, every reinforcement-delayed HV and EHV connection will be assessed for earlier-access options. This support will help customers compare conventional and managed-access choices, reduce avoidable effort and abortive cost, and understand the opportunities, constraints and trade-offs associated with their investment. It will also provide an additional source of evidence for forecasting and planning, ensuring that emerging customer requirements influence network decisions at an earlier stage.

7.1.2 Place-based and whole-system planning & coordination

Place-based and whole-system planning will ensure that network development reflects local ambitions while remaining aligned with regional and national energy-system requirements. During ED3, we'll build on our Strategic Development Plans, Local Area Energy Plans, LAEP+ and established planning relationships to coordinate with local authorities, developers, community energy groups, commercial customers, NESO, Transmission Owners, neighbouring networks and other relevant infrastructure providers.

Two dedicated whole-system planning roles, one for each licence area, will coordinate monthly engagement with relevant energy organisations, building on t-RESP engagement practices (including consultation activities that provide transparent stakeholder input into planning decisions), and representing us in appropriate RESP working groups, bilateral discussions, consultations and regional governance. They will ensure that Regional Energy Strategic Planning outputs, Strategic Energy Needs, local plans and cross-boundary requirements are consistently reflected in our planning assumptions, network-needs assessments and investment decisions.

Evidence on housing, transport electrification, heat decarbonisation, industrial growth, community energy and wider economic development will be combined with demand and generation forecasts, connection activity, network visibility

and impact assessments. This integrated evidence base will identify future capacity requirements, flexibility opportunities and investment needs, informing annually refreshed Strategic Development Plans covering 100% of our licence areas. Reinforcement, flexibility, voltage-management and operational solutions will be considered together through our Build and Flex approach to identify the option that delivers the greatest consumer and whole-system value. We'll present the outputs of these assessments through our Distribution Networks Options Assessment process to demonstrate a clear line of sight from LAEPs and other regional planning documents into our plans for reinforcement, flexibility procurement, and anticipatory investment.

Where credible local evidence differs materially from regional or national assumptions, we'll test the network implications, reconcile the available evidence and transparently record the adopted assumption and its effect on reinforcement, flexibility and anticipatory investment decisions. We'll work closely with NESO to agree a solution when this local/distribution evidence offers a different planning approach as evidenced in our Bicester Case Study which facilitated coordination across the transmission-distribution boundary (Section 5.1.5, p.18) and our ramping solution for West London which enabled new housing developments in the face of transmission constraints. In parallel we will extend our coordination with TOs to develop co-ordinated strategic plans building on our work with NGET in West London and with SSEN Transmission on Scottish Islands, where new HVDC links and associated infrastructure provide opportunities for efficient whole-system development. Material cross-boundary requirements will be similarly documented in the relevant Strategic Development Plan and investment plan which will also consider joint scenario reconciliation and regional need assessments. This will allow local priorities to influence network development without compromising consistency with wider planning frameworks. Building on our ED2 work with UKPN and NGED, we'll continue work with NESO and neighbouring DNOs to develop consistent assumptions and a consistent approach to DFES data ingestion as well management of strategic demand clusters across DNO boundaries.

Coordination will extend beyond electricity networks where dependencies with housing, transport, heat, industrial clusters or other infrastructure affect efficient delivery. In targeted areas, we'll work with local and regional partners to align infrastructure programmes and share relevant future needs and work plans. This will support better sequencing, reduce avoidable disruption and align network investment with economic development and decarbonisation priorities. Relevant forecasts, constraints, network needs and future work programmes will be made visible through Strategic Development Plans, LAEP+ and appropriate data services.

Our new Local Energy Support Team will provide communities and businesses with a technically informed route to network, connection and flexibility advice. The service will help customers understand planning evidence, realistic milestones, network constraints, earlier-access products and routes to market participation, while ensuring community and customer insight informs local plans, Strategic Development Plans and regional evidence. By 2030 the Local Energy Support Team will support at least 100 communities and businesses each year, including coordination through low-carbon technology enablement and LV upgrade programmes.

Where customers require more detailed advice on a potential connection, Connection Optioneering Specialists will provide engineering-led support on network capacity, timing, cost, operating limits, flexibility and Early Access options. This will provide a clear interface between place-based planning, customer advice and the assessment of credible connection pathways.

Through ED3 we'll define, develop and provide NESO with demand and generation forecasts, constraint locations, hosting capacity, and network visibility data sets. This will be delivered through DIGI-03-01 forecasting and planning capabilities, DIGI-10-01 operational visibility and orchestration capabilities, existing ICCP and operational data-sharing arrangements, participation in NESO's TIDE programme, and innovation initiatives such as Fractal Flow and CASCADE. These initiatives will improve visibility to enable more effective whole-system planning and operations.

7.1.3 Network forecasting and visibility

Digital investment DIGI-03-01 (probabilistic planning) and our two new specialists in scenario development, forecasting and data science will provide an increased forecasting capability across voltage levels. The capability will combine network monitoring, smart meter insights, contracted connections, Strategic Energy Needs, RESP outputs, LAEP+ evidence and wider stakeholder intelligence. By 2033, planning forecast performance will improve by more than 17% - as measured by comparing current ED2 average MAPE (a standardised measure of forecasting error) with expected performance at the end of ED3. This will support earlier identification of constraints, more proportionate investment and clearer information for customers and stakeholders.

Our MAPE targets for forecasting on primary and secondary networks at the start of, and for each delivery year within ED3 are set out below. These values have been determined using MAPE performance through ED2 to date and adjusted to show increased performance driven by network visibility and technical improvement.

Table 7.2 MAPE targets for forecasting accuracy on the primary and secondary networks at the start of, and for each delivery year within ED3

SEPD	SHEPD

Delivery Year	Primary	Secondary	Primary	Secondary
ED2 Average	13.51%	Not reported	25.62%	Not reported
ED3 Year 1	12.67%	12.67%	24.03%	24.03%
ED3 Year 2	11.91%	11.91%	22.59%	22.59%
ED3 Year 3	11.58%	11.58%	21.96%	21.96%
ED3 Year 4	11.35%	11.35%	21.52%	21.52%
ED3 Year 5	11.12%	11.12%	21.09%	21.09%

Shared data will support whole-system optimisation by giving ourselves, NESO, TOs, local authorities, market participants and other stakeholders a common view of emerging needs, enabling better coordination of transmission-distribution boundary requirements, flexibility procurement and anticipatory reinforcement decisions. ED3 investments will strengthen this through digital tools such as LAEP+ and the Data Sharing Infrastructure (DSI).

ED3 will strengthen the link between LV visibility, forecasting and forward planning. To complement this, we'll establish a team of three LV system analysts within DSO, to use this greater visibility to build and optimise future programmatic needs on secondary and LV networks. This will include the associated development of non-network options including flexibility market opportunities and align with our proposed LCT pilots in ED3 (see (ED3-S08 DNO Role in LCT and EE Rollout). The analysts will take a whole-system view of load, voltage, resilience and asset-condition drivers and develop longer-term plans that feed into the Long-Term Integrated Network Plan and delivery programmes.

Relevant future work plans and needs will be shared with local authorities, communities and other utilities where appropriate, enabling aligned place-based planning, development of flexibility proposals and more efficient delivery. This will be presented through LAEP+ to local authorities providing both visibility and the ability for them to optimise alongside their existing work programmes. It will also be made available to other utilities through LAEP+ to facilitate co-ordinated work planning thus reducing disruption to communities. Our LV programmes will also be made publicly available through both our data portal and Centralised Network View ensuring that communities and affected consumers have an ability to understand and monitor when upgrades will potentially affect them.

During ED3, smart meter data, LV monitoring and enhanced network models will be integrated into DIGI-03-01 to support feeder-level needs assessment. The Voltage Index will cover 100% of primary transformers and 90% of LV feeders by 2029. Forecasts and assumptions will be reviewed through the annual SDP cycle, ensuring plans remain aligned with changes in customer behaviour, technology uptake, development activity and policy.

7.1.4 Using flexibility in network planning

Our (ED3-S01) Load Related Expenditure Annex provides an overview of how we have established our flexibility forecasts for ED3 based on Ofgem's Build and Flex approach. This has been done in consultation with other DSOs ensuring we have a consistent approach in ED3. This includes a methodical justification of the costs and volumes requested for flexibility and non-wire solutions under primary and secondary network reinforcement in the BPDTs, including reference to factors which influence flexibility unit cost such as market liquidity and ceiling prices.

This approach sets our template for how we'll assess new flexibility opportunities that emerge during ED3 and as we monitor our project portfolio to identify opportunities to use flexibility should a project-need become less certain, or where there are deliverability challenges. Deliverability challenges include changes, additional scope, or third-party issues such as consenting. Through this approach we'll ensure we can deliver capacity in an efficient manner where it is needed, helping facilitate earlier connection of demand and generation customers.

We'll procure 262.9MW of flexible services to support the strategic development of the network, in accordance with our Build and Flexibility Strategy within the (ED3-S01) LRE Annex. We'll use flexibility to meet the strategic needs of our network by providing an efficient alternative to reinforcement, preserving options where the need is uncertain, and managing deliverability by bridging the period before a durable network solution can be delivered.

Our plans for flexibility services in ED3 expand across a broader range of strategic planning and network operation use cases - each economically evaluated to ensure net stakeholder benefit. This represents a 309% increase on ED2 expenditure.

SDPs, stakeholder evidence, RESP outputs, and local energy needs will identify where flexibility may provide value. Through our DNOA methodology and Integrated Network Needs Identification processes, flexibility is embedded within network options assessment, ensuring reinforcement, flexibility and operational solutions are evaluated through a consistent framework that identifies the most efficient response to network needs. DIGI-03-01 will compare options, and DIGI-03-02 will provide market information.

7.2 NETWORK OPERATIONS

Network Operations provides the operational bridge from longer-term plans to day-ahead and near real-time decisions that optimise network performance. We'll invest in digital capabilities to provide enhanced system orchestration and decision support, integrating DSO optimisation with Control Room processes (DIGI-10-01), extend forecasting output to inform operational risks and options (DIGI-03-01) and connect flexibility procurement, scheduling and dispatch with operational systems (DIGI-03-02).

Table 7.3 Evolving and developing our ED3 Capability - Network Operations

Capability Area	Established in ED2	Evolved in ED3
Network visibility	Improved visibility using telemetry and smart meter data	Integrated operational data and decision support through DIGI-10-01, complemented by the Voltage Index covering 100% of primary transformers and 90% of LV feeders by 2029.
Operational decision-making and governance	Defined dispatch frameworks, governance arrangements and Operational Decision-Making Framework	Auditable operational recommendations across constraint management, voltage optimisation and flexibility dispatch, with Control Room oversight retained.
Short-term forecasting	Early forecasting capability embedded within Active Network Management and operational processes	DIGI-03-01 outputs integrated with DIGI-10-01 decision support to assess forecast uncertainty, outage risk, configuration and intervention options.
Operational and outage planning	Established outage planning and network access processes	Integrated outage planning, flexibility coordination and operational optimisation capability as per DIGI-03-01
Flexibility scheduling and dispatch	Defined flexibility scheduling capability within existing operational systems	Two new Flexibility Scheduling Engineers, supported by DIGI-03-02, will coordinate higher volumes and wider use cases, contributing to an average pre-dispatch fill rate of at least 95% throughout ED3.
Real-time network operations	Established Control Room capability and operational processes	A whole-system coordination role and DIGI-10-01 will provide the policy-to-practice bridge between DSO Network Operations, the Control Room and wider system parties.
Distributed Energy Resource integration	Early technical aggregation capability and limited operational integration of DERs	Scaled DERMS-enabled coordination and optimisation of distributed flexibility resources as per DIGI-10-01
NESO and whole-system coordination	Initial coordination arrangements and data sharing with NESO	DIGI-10-01 and the whole-system coordination role will support operational data exchange and coordinated decision-making with NESO, complemented by Smart Signal deployment from 2028.

7.2.1 Using flexibility in Network Operations

Our ED3 strategy will use 13.4 GW of flexible services to meet the operational needs of our customers. Operational flexibility is used to support earlier customer access to network capacity, reduce the impact of planned outages, minimise curtailment and improve the utilisation of existing network assets.

Flexibility options are assessed alongside operational and network solutions using our Operational Decision-Making Framework and the SSEN/ENA Operational cost-benefit assessment tool and methodology to consider flexibility viability, consumer value and pricing and ensure decisions are transparent, evidence-based and deliver value for consumers. Strategic Network Planning identifies where flexibility can provide an efficient solution to future network needs, while Network Operations uses those services in day-to-day operation of the network. The Flex Toolkit (DIGI-03-02) will manage the end-to-end flexibility lifecycle, including market interactions, scheduling, dispatch and settlement, while DERMS (DIGI-10-01) will integrate these capabilities into near real-time operational decision and control room processes, enabling coordinated and auditable decision-making.

7.2.2 Reducing Impact of Outages

In ED3, DIGI-03-01 and DIGI-10-01 will combine probabilistic planning, network-state information and operational decision support to assess planned-outage risk, alternative configurations and flexibility options before outages are confirmed.

DIGI-03-01 will test planned outages against forecast demand, generation and network uncertainty, allowing operational planners to compare network reconfiguration, flexibility and temporary-generation options before finalising outage plans. These tools will support more informed operational decisions while maintaining the safety and reliability of the network.

We'll expand the use of operational flexibility services, as detailed in 7.3.3, to maintain supply, reduce reliance on temporary generation, mitigate second-circuit outage risks, reduce outage impact on customers and generators and improve network productivity. To support unplanned outages, we'll continue to procure Operational Utilisation (OU), as in ED2 and expect to procure approximately 9,684 MW throughout ED3.

For the new use case of flexibility to reduce impact of planned outages, we'll use a Scheduled Availability and Operational Utilisation (SAOU) product, to cover the duration of the outage period with availability, and the option to dispatch in the event forecasts or other network events require it. Two new Flexibility Scheduling Engineers will coordinate operational flexibility for outage use cases. Our flexibility procurement strategy will maintain a minimum 95% average pre-dispatch fill-rate throughout ED3.

We'll use the SSEN/ENA Operational CBA tools to assess the economic level of flexibility to manage outage risks. Our baseline volume and costs for this are summarised in the Market Development and Flexibility section and included in the LRE section of this strategy.

We'll also strengthen coordination with NESO and other whole-system parties as detailed in 7.2.3. Better alignment of transmission and distribution outage plans will help reduce operational conflicts, improve access to network capacity and support more efficient use of both transmission and distribution assets. This will become more important as distributed energy resources participate across local and national markets.

During ED3, our digital and operational technology investments will further strengthen our operating model. Enhancements to ADMS, DERMS, operational forecasting, probabilistic planning and network analytics will provide operators with clearer information on network conditions and available interventions. These tools will support better outage planning, flexibility dispatch, network access decisions and operational coordination with NESO, retailers, aggregators and flexibility providers.

Severe weather, changing demand patterns and distributed generation are creating new operational challenges. These investments will improve network visibility and decision making and support and test outage and operational plans against forecast uncertainty and support alternative network configurations and flexibility interventions.

7.2.3 Flexibility dispatch capabilities & whole-system coordination

Flexibility is now a core operational capability within our network operations model. In ED3, we'll use flexibility not as a standalone procurement activity, but as part of an integrated operating framework that supports outage management, curtailment reduction, resilience, voltage management, network access and whole-system optimisation.

A dedicated performance and operations manager will use flexibility and operational data to assure compliance, publish performance and update the ODM framework where evidence identifies a required change.

Whole-system coordination will become increasingly important as distributed energy resources participate in both local and national services. A dedicated whole-system coordination role, supported by DIGI-10-01 and DIGI-03-02, will coordinate operational data exchange and manage interactions between customer access rights, DSO actions, DNO Control Room and NESO requirements.

Our DERMS, delivered alongside the Flex Toolkit under investments DIGI-10-01 and DIGI-03-02, enables coordinated decision-making across network operations. These capabilities integrate network visibility, forecasting, flexibility markets, scheduling, dispatch, settlement and near real-time control. This enhances coordination between DSO Network Operations, the DNO Control Room and NESO, supports emerging flexibility use cases, integrates advanced monitoring and forecasting capabilities, and enables the management of increasing large volumes of DER and flexibility assets, including the requirements arising from Market Facilitator. Through industry-leading operational rules, optimisation and control capabilities, the platforms support safe and transparent ODM, accelerating connections, reducing curtailment and optimising existing network capacity for all customers.

We've established close integration between DSO Network Operations and the DNO Control Room through ED2, embedding flexibility, outage planning, network visibility and operational coordination into day-to-day operations. In ED3 our DSO function continues to lead flexibility operations, DERMS coordination, and NESO flexibility coordination to optimise network outages and curtailment, while the Control Room retains responsibility for safe and reliable real-time network operation, including the decision to take an outage. Through common operational processes, shared visibility and integrated decision-making, both functions will operate as a single operational capability.

Our Flex Toolkit investment programme will further integrate flexibility dispatch, network visibility, DERMS, outage planning and control room systems, enabling increasing levels of automation across forecasting, scheduling, voltage management, constraint resolution and customer access arrangements. DIGI-03-02 and DIGI-10-01 will automate the

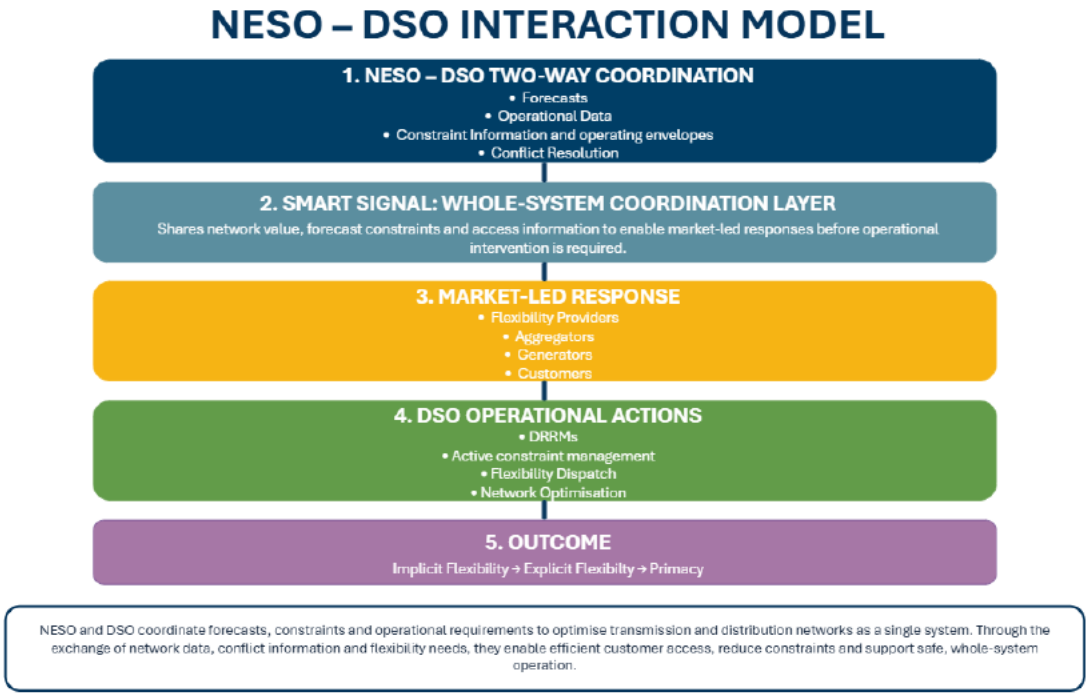
transfer of forecasting, scheduling and dispatch information across flexibility, DERMS and operational decision-support processes. This will allow operational decisions that are currently managed through manual coordination to be executed consistently and at scale.

Figure 7.1 Flexibility as part of an Integrated Operating Framework



Our Smart Signal implicit flexibility service will form an important part of this operational model. By communicating where customer behaviour can deliver value to the network and wider system, Smart Signal will help customers, retailers, flexibility providers and aggregators make more efficient decisions. Over time, these signals will support a more coordinated operating model in which market participants help manage constraints before direct DSO intervention is required.

Figure 7.2 NESO - DSO Interaction Model



7.2.4 Accelerating connections & reducing curtailment

Will offer more than 5GW earlier access for connections and accelerate at least 2.5GW-years of connection capacity during ED3.

Our digital investments DIGI-03-01 will identify the network need and compare reinforcement, flexibility and operational responses; DIGI-10-01 will support the operational assessment and management of access to accelerate connections and reduce curtailment; and DIGI-03-02 will enable the efficient and coordinated dispatch of flexibility.

We'll expand early access options such as Ramped Connections, Transmission-Distribution ANM, Community Smart Access, and Scheduled Capacity. Where an earlier-access option is technically appropriate, customers will receive a clear explanation of timing, cost, operating limits and curtailment information. Flexibility funded by all consumers will only be used where the value is positive and proportionate. By the end of ED3, we'll make a suitable earlier-access product available to 85% of new demand and generation customers and assess delayed HV and EHV customer for earlier access options as standard.

We'll offer all EHV and 132kV connecting customers options for early access as standard, where technically appropriate. By the end of ED3, we'll offer this to all HV customers as standard where technically appropriate. We'll offer options for early access for HV, EHV and 132kV demand where the wait for reinforcement and connection is over 4 years.

Curtailment reduction will form a core part of this strategy. We'll use enhanced visibility, forecasting, power-flow modelling, network configuration, automation and ANM to maximise available capacity and reduce the need for operational restrictions. Where constraints remain, we'll use flexibility services, including demand turn-up and other solutions, where these provide efficient value for consumers. We'll use the SSEN/ENA Operational cost-benefit assessment tool and methodology to consider flexibility viability, consumer value and pricing, ensuring decisions are transparent, evidence-based and deliver value. The expected costs for these services are outlined in section 7.3.3.

We recognise that flexibility funded by all consumers will not always be the most efficient way to reduce curtailment. In these circumstances, pre-connections support and will explain connection timing, operational limits and applicable earlier-access products, enabling customers to compare conventional and managed-access options. This is central to our Early Access approach and helps ensure customers can make informed decisions about connecting sooner.

Our DERMS is built on proven ED2 capabilities and will be enhanced as part of DIGI-10-01 to transition into a coordinated operating environment. Our approach is to enhance, integrate and scale established capabilities to support accelerated connections. Our ANM will increase to cover 25 new zones, and we'll evolve functionality and increase network coverage through Voltage Management Control (VMC) to 187 primaries.

As a result, more low carbon energy will enter the system. The minimum amount we expect to enable is shown in the table below:

Table 7.4 Additional Low-Carbon MWh Provided to System

	2028/29	2029/30	2030/31	2031/32	2032/33
Additional Low-Carbon MWh Provided to System	17,560	18,350	19,174	20,064	21,010

7.2.5 Network operations capability and performance measures

During ED3 we'll implement a continuous operational planning cycle that integrates forecasting, outage planning, flexibility scheduling, capacity release and network optimisation activities. This will strengthen the link between Strategic Network Planning and real-time Network Operation, ensuring operational activities remain aligned with future network requirements and wider whole-system needs.

The effectiveness of our Network Operations capability will be assessed through a combination of capability and operational measures, including:

Table 7.5 Network Operations performance measures

Measure	ED2 Baseline	ED3 Ambition				
		28/29	29/30	30/31	31/32	32/33
Forecast Accuracy (MAPE)	Limited pilot sites	Achieve and maintain average operational forecasting accuracy of ≤15% MAPE by 2031				
Earlier Access Enabled Through Operations	1.7GW-Years (ED2 Y3)	2.5GW-years of accelerated energisation through active network management and operational flexibility				
Generator Minutes Lost (min) SHEPD	4345	4345	4165	4165	4165	4165
Generation Lost (MWh) – SHEPD	221	221	216	216	216	216
Low Carbon Generation Lost (MWh) – SHEPD	Data Not available					
Capacity Normalised Generation Lost (MWh) SHEPD	45	44	44	44	44	44
Low Carbon Capacity Normalised Generation Lost (MWh) – SHEPD	Data Not available					

Generator Minutes Lost (min) – SEPD	1567	1439	1439	1439	1439	1439
Generation Lost (MWh) – SEPD	765	755	755	755	755	755
Low Carbon Generation Lost (MWh) – SEPD	Data Not available					
Capacity Normalised Generation lost (MWh) – SEPD	105	103	103	103	103	103
Low Carbon Capacity Normalised Generation Lost (MWh) – SEPD	Data Not available					

Notes on baseline data: these figures have been calculated in accordance with paragraph 5.88 of the Business Plan Guidance. The formulas set out within paragraph 5.88 have been used to derive both the baseline performance benchmark and our ED3 target. The baseline and ambition figures for MWh lost have been calculated based on loss of access rather than loss of generation. They are also based on contracted capacity, rather than actual output at the time of curtailment. We do not currently have the system capability to capture curtailment and lost generation data by technology type. As a result, we have been unable to produce baseline and target values for the Low Carbon Generation Lost and Low Carbon Capacity Normalised. Work is already underway to develop these data capture and reporting capabilities ahead of ED3. This functionality will be delivered through additional fields within our ADMS system by year 5 of ED2.

7.3 MARKET DEVELOPMENT AND FLEXIBILITY

In ED3, we'll introduce two Market Incubator specialists who will design, test and transition new products into operational use. A performance manager will monitor outcomes, assure compliance, publish performance and drive improvement. Throughout ED3, we'll maintain an average pre-dispatch fill rate of at least 95% and target an independent market-confidence score of at least 9/10 by the end of ED3.

Through our multi-year, multi-market flexibility strategy- **FlexForward**, we align market participation, procurement approaches and new flexibility use cases with changing network and Market Facilitator requirements. This will help ensure flexibility becomes a routine and trusted component of both Strategic Network Planning and Network Operations, supporting earlier access to capacity, more efficient network development and lower long-term costs for consumers.

Table 7.6 Evolving and developing our ED3 Capability - Market Development and Flexibility

Capability Area	Established in ED2	Evolved in ED3
Product development and innovation	Introduced flexibility products and new use cases through innovation and operational delivery	Two Market Incubator specialists will design, test and transition new flexibility products into operational use, covering connection access, outages, voltage and whole-system coordination.
Flexibility Service Provider engagement	Defined onboarding and participant management processes	DIGI-03-02 will provide scalable digital participation and operational interfaces for flexibility providers as products and use cases expand during ED3.
Market information publication	Published flexibility opportunities, requirements and outcomes	Enhanced transparency, interoperability and visibility of market opportunities
Market operations	Established procurement, scheduling and settlement processes	Integrated and scalable market operations supporting a broader range of flexibility use cases
Market reporting and assurance	Existing reporting and compliance arrangements	A dedicated performance manager will monitor market and operational-flexibility data, assure compliance, publish performance and lead continuous improvement throughout ED3.
Implicit flexibility mechanisms	Smart Signal MVP	Scaled Smart Signal and other implicit flexibility services integrated into market processes

This evolution reflects our transition from establishing flexibility capabilities during ED2 to developing mature, competitive and scalable flexibility markets throughout ED3.

7.3.1 Plan to grow and develop flexibility markets in ED3

Building upon one of the industry's broadest portfolios of flexibility products, procurement approaches and participation routes, we'll expand participation, increase market liquidity and improve the efficiency with which flexibility services are procured and utilised. Throughout ED3, we'll grow participation where it improves the availability, competition and efficiency of flexibility. DIGI-03-02 will support simpler participation, common interfaces, and clearer operational information. Our new Market Incubator specialists will develop routes for smaller, domestic, and community assets, with adoption and performance reported through market assurance.

Flexibility will increasingly become embedded within customer access arrangements, network planning processes and operational decision-making, ensuring flexibility is considered routinely and transparently wherever it can efficiently deliver value.

7.3.2 New markets and flexibility use cases

Enabling Market Participation

Our ED3 approach builds on a strong track record of identifying participation barriers, trialling new approaches and embedding successful solutions into enduring market arrangements coordinated with the Market Facilitator. We'll continue to improve transparency, expand access to market information and reduce barriers to participation through enhanced digital services, Smart Signal and improved network visibility.

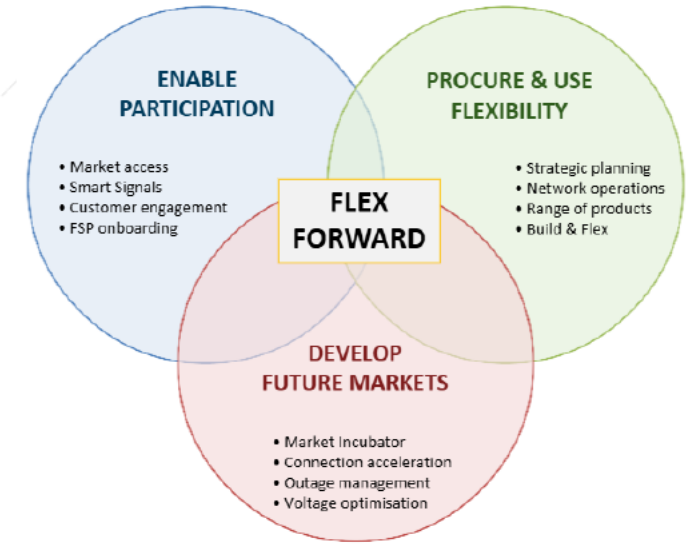
In 2032, the Market Incubator and stakeholder teams will work with local partners and trusted organisations to enable at least 25,000 low-income and vulnerable households to access flexibility, smart-energy services or tailored advice.

Through ED3, we'll continue to evolve participation approaches, procurement arrangements and customer engagement to increase market liquidity, improve competition and reduce the cost of flexibility procurement for consumers.

PROCURING AND USING FLEXIBILITY

FlexForward provides the framework through which flexibility is procured and utilised across both Strategic Network Planning and Network Operations.

Our approach recognises that network requirements become more certain over time and that different flexibility products are needed to address different network needs. Longer-term flexibility can help manage uncertainty, preserve optionality and support our Build and Flex approach, while shorter-term services can support customer access, outage management, curtailment reduction and whole-system coordination.



During ED3, flexibility will be procured through a range of products, contract durations and commercial arrangements reflecting local network characteristics and customer requirements. This layered approach ensures flexibility is deployed where it delivers demonstrable consumer and whole-system value while supporting efficient market outcomes.

DEVELOPING FUTURE MARKETS

Building on our ED2 experience, we'll continue working with industry partners, NESO and emerging Market Facilitator arrangements to support consistent and interoperable market development. During ED3, two Market Incubator specialists will provide end-to-end product development and operational coordination across connection access, outage, voltage and whole-system flexibility use cases.

Priority areas for further, future development include connection acceleration; outage management; voltage optimisation; curtailment reduction; implicit flexibility services; Smart Signal development and customer-led flexibility offerings.

DELIVERING VALUE THROUGH MARKETS

Flexibility will only be procured and utilised where it delivers demonstrable consumer and whole-system value. We'll continue to apply transparent cost-benefit methodologies and monitor performance through market outcomes, utilisation, participation, customer benefits and consumer value metrics. Equally as important, we work to ensure wider flexibility value can be accessed by market participants and NESO by removing barriers and ensuring alignment.

Transparency is a cornerstone of our flexibility strategy. By openly signalling future network needs, procurement horizons and the anticipated balance between availability and utilisation revenues, we reduce uncertainty and support

competitive market participation. This is particularly important in emerging flexibility markets, where excessive risk premiums can increase costs for consumers. Through ED3, we'll continue to provide clear, forward-looking signals that enable flexibility providers to invest with confidence, while ensuring risk and reward are shared proportionately between network users and service providers.

7.3.3 Baseline flexibility requirements

In ED3 we'll deploy flexibility to deliver the following use cases and volumes. Section 8 of our DSO Strategy sets out the investment decision for the use of flexibility to support network operations. The justification for the operational flexibility procurement volumes is detailed in Investment Decision Pack C. The use of flexibility for strategic network planning is set-out in Individual Load-Related Engineering Justification Papers and DSO Investment D (our agile use of flexibility in network planning). Strategic planning deferral decisions are made based on the solution with the highest NPV to ensure value-for-money to our customers. The NPV improvement of the strategic planning flexibility is £60.07m compared with a build-only approach. This is set out in more detail in our (ED3-S01) LRE Annex.

Table 7.7 Flexibility Volumes

	Flexibility Volumes (MW)					Total ED3 Cost
	28/29	29/30	30/31	31/32	32/33	
Strategic Planning						
Provide an efficient alternative to asset-based reinforcement	32.30	19.45	22.21	20.63	50.95	[redacted]
Manage uncertainty	0	1.88	0	0	0	[redacted]
Optimise the deliverability and affordability of our investment portfolio	13.30	16.61	32.01	28.89	24.51	[redacted]
					Total	[redacted]
Network Operations						
Improve customer access and accelerate customer connections	556.85	605.90	665.63	727.40	785.09	[redacted]
Reducing outage impact	990.00	1463.40	1936.80	2410.20	2883.60	[redacted]
Increase whole-system coordination (smart signal)	28.86	28.86	28.86	28.86	28.86	[redacted]
					Total	[redacted]

Table 7.8 Reinforcement Deferral through Strategic Planning

Reinforcement Deferred through Strategic Planning and Agile Build & Flex (£m)				
28/29	29/30	30/31	31/32	32/33
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Our plans for flexibility services in ED3 expand across broader range of strategic planning and network operation use cases - each economically evaluated to ensure net stakeholder benefit. This represents significant increase on ED2 activity and expenditure.

7.3.4 Data sharing with flexibility providers

Our objective in ED3 is to move beyond publishing flexibility market information and towards enabling market-led coordination, providing transparency of network needs, market opportunities and operational requirements. From 2028, DIGI-03-02 will support publication of granular operational envelopes and deployment of Smart Signal, targeting a 5% average congestion reduction and coverage of up to 10% of secondary substations by the end of ED3.

During ED3 we'll expand the data available to support market-led responses to network needs, including:

- Forward visibility of flexibility requirements by planning and operational use case.
- Smart Signal services to communicate emerging network needs where market-led responses can deliver value.
- Long-term forecasts of capacity constraints, congestion and network access requirements.
- Planning and operational flexibility requirements, including Build-and-Flex opportunities, connection acceleration and outage management.
- Enhanced transparency of procurement, dispatch and utilisation outcomes.

As industry arrangements evolve, we'll continue aligning with NESO and Market Facilitator requirements, adopting common standards for flexibility interoperability, data sharing and market coordination to support a more efficient and integrated electricity system.

Table 7.9 Our approach to expanding the data available

Area / Initiative	Key Dependency	Decision Point	Funding Basis	Risk	Mitigation
Publication of granular operational envelopes	Delivery of DIGI-03-02 capabilities, network monitoring deployment, data platform readiness	Confirmation of ED3 funding and investment approval; extent of network observability achieved	ED3 Digitalisation funding (DIGI-03-02)	Insufficient network data quality or coverage limits operational envelope accuracy	Prioritise high-value network areas, phased rollout, validation against operational outcomes, ongoing data quality assurance
Deployment of Smart Signal services	Development of Smart Signal platform, integration with flexibility service providers (FSPs), market adoption	Approval of Smart Signal investment and design standards	ED3 Digitalisation funding (DIGI-03-02)	Low provider participation reduces congestion management benefits	Early engagement with FSPs, open standards, iterative service development, provider onboarding programme
Forward visibility of flexibility requirements	Network planning & operational processes, forecasting capabilities and data governance	Determination of forecasting methodology and publication granularity	ED3 flexibility market development funding	Forecasts prove inaccurate, reducing market confidence	Continuous forecast refinement, transparent assumptions, stakeholder feedback mechanisms
Publication of long-term capacity constraint forecasts	Reliable load growth, LCT uptake and connection forecasts	Confirmation of data models and planning methodologies	ED3 planning and digitalisation investment	Uncertainty in demand growth and future network conditions	Scenario-based forecasting, annual forecast refresh cycles, sensitivity analysis
Build-and-Flex opportunity visibility	Coordination between planning, connections and flexibility teams	Definition of Build-and-Flex processes and eligibility criteria	Connections and flexibility programme funding	Limited uptake by customers or misalignment with connection processes	Customer engagement, clear guidance, pilot projects to validate commercial attractiveness
Connection acceleration opportunities	Regulatory framework and connections process evolution	Decision to embed flexibility within connection offers	Connections and flexibility market funding	Customers unwilling to accept flexible connection arrangements	Demonstrate cost and timing benefits, targeted customer education, optional participation models
Outage management flexibility requirements	Operational systems integration and operational team adoption	Determination of operational use cases and dispatch processes	Operational flexibility funding	Operational teams do not fully utilise flexibility solutions	Develop operational procedures, training, control room engagement and benefit demonstration
Enhanced transparency of procurement, dispatch and utilisation outcomes	Market systems, data accessibility and reporting tools	Agreement on data publication standards and reporting scope	Digitalisation and flexibility market funding	Data quality issues limit transparency	Define governance framework, anonymise sensitive information, automate reporting and validation processes

7.3.5 Market development capability and performance measures

The effectiveness of our Market Development and Flexibility strategy will be assessed through a combination of market participation, procurement and capability measures.

Table 7.10 Market Development and Flexibility Strategy KPIs

Measure	ED2 Baseline	ED3 Ambition
Market Confidence Score	New	Establish an independent market confidence score and achieve ≥9/10 by the end of ED3
Flexibility Fill Rate	100-110% typically	Maintain an average pre-dispatch fill rate ≥95% throughout ED3
Earlier Access Delivered Through Flexibility	1.7GW-Years (ED2 Y3)	Contribution towards 5GW earlier-access capacity offers and >2.5GW-years accelerated energisation
Smart Signal Adoption	Pilot/MVP	Smart Signal deployed to up to 10% of secondary substations
Congestion Reduction Achieved	New	Average 5% reduction in congestion in Smart Signal-enabled areas
Participation from Vulnerable and Low-Income Customers	New	Enable ≥25,000 households to access flexibility, smart energy services or tailored advice by 2032
Operational Envelope Publication	Data for Local Constraint Market	Granular operational envelopes published from 2028 to support automated participation

Table 7.11 Core Milestones, Deliverables and Impacts

Milestone	Core Deliverable	Impact
2028	Enhanced flexibility market governance, market performance management and independent market confidence assessment established	Greater market transparency and trust, improving investor confidence and supporting long-term market participation.
2028	Smart Signal deployment commences and granular operational envelopes published	Market participants receive earlier visibility of network conditions and can automate participation in flexibility services.
From 2028	Flex Toolkit and operational coordination processes integrated into day-to-day DSO decision-making	More consistent use of flexibility as an alternative to operational intervention and reinforcement.
2028-2032	Market Incubator service supports development of new flexibility products, participants and local energy initiatives	Broader participation and innovation, enabling flexibility solutions to address a wider range of network needs.
2030	Operational envelope data routinely supports automated coordination across DSO, NESO and market actors	Reduced coordination friction, improved whole-system decision-making and faster access to available network capacity.

7.4 VOLTAGE MANAGEMENT

During ED2, we established strong foundations through investment in network monitoring, smart meter data utilisation, voltage analytics and the innovative Voltage Index (VI). These capabilities improved our understanding of voltage performance across our networks and demonstrated the opportunity that can be delivered from active voltage management.

During ED3, we build on these foundations to embed voltage management across Strategic Network Planning and Network Operations. By the end of ED3, through targeted voltage optimisation and increasingly dynamic control of network assets, we'll:

- Improve power quality by eliminating nuisance tripping for up to 150,000 LCTs.
- Unlock over 1GW of hosting capacity, enabling up to 300,000 EV chargers and 100,000 heat pumps.
- Reduce long-term costs for consumers by reducing annual domestic energy consumption losses by 47.5GWh.

Our approach is based on three complementary activities:

- **Prepare** – understanding future voltage requirements and embedding voltage considerations within network planning and investment decisions.
- **Protect** – deploying targeted voltage management solutions where they deliver consumer and system value.
- **Perform** – scaling a dynamic Voltage Management Control system that optimises tap changer positions at primary substations to deliver consumer benefits and services to NESO.

These capabilities will enable us to manage voltage dynamically across the network while supporting increased electrification, improved customer outcomes and more effective utilisation of existing assets.

Table 7.12 Evolving and Developing our ED3 Capability – Voltage Management

Capability Area	Established in ED2	Evolved in ED3
Voltage visibility and monitoring	Expanded use of smart meter data, LV monitoring and voltage analytics	Increased data integration across LV, HV and EHV networks supporting proactive voltage management
Voltage performance assessment	Development of Voltage Index methodologies through innovation activities	Voltage Index embedded within planning, operational decision-making and performance reporting
Network voltage planning	Voltage considerations assessed within planning activities	Voltage management embedded within Strategic Network Planning and network needs assessment
Near-real-time voltage management	Initial deployment of improved dynamic Voltage Management Control on modern AVCs.	Scaled rollout of Voltage Management System capability delivering coordinated real-time voltage optimisation across primary substations
Secondary network voltage management	Reactive response to local voltage issues	Proactive deployment of targeted voltage optimisation solutions across the secondary network
Reactive power visibility and coordination	Limited visibility and coordination of reactive power requirements	Enhanced coordination with NESO and transmission operators to support whole-system optimisation
Voltage optimisation and consumer value	Emerging understanding of voltage optimisation opportunities	Active voltage management supporting power quality, hosting capacity, reduced losses and wider consumer benefits

Optimised by our digital investment DIGI-10-01, we'll deploy dynamic voltage management across 50% of network load, unlock more than 1GW of LCT hosting capacity, apply the Voltage Index to 100% of primary transformers and 90% of LV feeders by 2029, and reduce annual domestic energy consumption losses by 47.5GWh by 2033.

7.4.1 Assessing existing and emerging voltage issues

During ED2, our focus has been on building the visibility, monitoring and analytical capabilities required to support a more active approach to voltage management. While voltage management represents a new DSO responsibility, the investments delivered during ED2 have already improved our understanding of voltage performance across the network and created the foundations required to deliver consumer and system benefits throughout ED3.

We have consciously maximised shared GB investment in smart metering to develop an industry-leading and highly granular understanding of voltage performance at the local network and customer level. At current levels of smart metering deployment in our licence areas, voltage can be accurately assessed across 86% of LV feeders, covering around 90% of customers. Combined with LV monitoring, network modelling and enhanced forecasting, this provides a strong foundation for the voltage management activities we intend to deliver during ED3.

We estimate that up to 13.4% of LV feeders have experienced voltage conditions approaching our design limits at least once in the past 12 months – with 10% experiencing higher voltages, 3.1% experiencing lower voltages and 0.3% experiencing both. Most of these instances took place in our SEPD licence region.

Whilst demand from low-carbon technologies is forecast to increase during ED3, analysis indicates that voltage rise associated with distributed generation will remain the principal voltage issue. If left unmanaged, continued growth in solar PV and battery storage connections is expected to increase the frequency and geographical spread of these issues, particularly in rural and semi-rural LV networks.

Our ED2 Voltage Management Baseline

Voltage Control Equipment - The tables below show the existing voltage control equipment we have installed across both our SEPD and SHEPD licence regions. For a forecast of how we'll expand on this and roll out targeted voltage interventions in ED3, along with other key metrics, please refer to section 7.4.6.

Table 7.13 - Existing Voltage Control Equipment on the primary network (SEPD/SHEPD combined)

Asset	Voltage	Volumes
Bulk Supply Points with AVC Relays	33kV	85
Voltage Regulators	33kV	16
Shunt Capacitors	33kV	2
Shunt Reactors	33kV	16
STATCOMs	33kV	1
DVARs	33kV	9

Table 7.14 - Existing Voltage Control Equipment on the secondary network (SEPD/SHEPD combined)

Asset	Voltage	Volumes
Primary substations with AVC Relays	11kV	758
Voltage Regulators	11kV	215
Shunt Capacitors	11kV	10
Shunt Reactors	11kV	7
Series Reactors	11kV	2
STATCOMs	11kV	3
DVARs	11kV	1

T-D Boundary GSP Power Flows - Over ED2, we have observed an increase in reactive power export at Grid Supply Points. This trend has been influenced by the continued growth of embedded generation and the changing nature of power flows across the distribution network. Reactive export is generally higher across the SEPD network than in SHEPD, with an average daily peak export of 29 MVAr per GSP compared to 3 MVAr in SHEPD and a median daily peak export of 25 MVAr compared to 3 MVAr in SHEPD. For a full list of reactive power flows for all GSPs, refer to Appendix 1 Reactive power baseline.

7.4.2 Delivering new DSO responsibilities for voltage management outcomes

We'll maximise the capabilities of existing network assets to maintain effective voltage performance through the rollout of our Voltage Management Control system to 187 primary substations. Voltage management will become an integrated capability spanning both Strategic Network Planning and Network Operations.

1) Establish and Embed a Comprehensive Voltage Index

We'll assess and communicate voltage performance across our LV, HV and EHV networks using the Voltage Index. We'll deploy the Voltage Index across 100% of primary transformers and 90% of LV feeders by 2029 to provide a transparent and repeatable framework for assessing voltage performance and benefits. It will support planning, operational decision-making and investment prioritisation across the network.

2) Introduce a Clear Voltage and Losses Optimisation Hierarchy and Decision-Making Framework

We'll apply a Voltage and Losses Optimisation Hierarchy as set out in Section 5 to support efficient, transparent decision-making that is aligned with wider network and whole-system objectives.

3) Deliver Dynamic Voltage Optimisation

We'll continue to roll out and scale our dynamic voltage management system, through our digital investment DIGI-10-01 and Primary Automatic Voltage Control (AVC) relay upgrades. These will optimise voltage performance in response to changing network conditions by combining smart meter, LV monitoring and SCADA data to optimise voltage control at the primary network and reach many secondary networks at once. Dynamic voltage management will unlock more than 1GW of hosting capacity, enabling up to 300,000 EV chargers and 100,000 heat pumps during ED3.

4) Deploy Targeted Voltage Optimisation Solutions

Utilising the visibility of voltage developed during ED2, combined with the Voltage Index, we'll identify and prioritise secondary network interventions. These include secondary network voltage and reactive power management technologies such as on-load tap changers (OLTCs), voltage balancing equipment and other Volt/VAR optimisation solutions. Secondary network interventions will be deployed when persistent voltage issues cannot be resolved by dynamic voltage management.

7.4.3 Our voltage and losses optimisation hierarchy

Voltage and losses are important measures of network performance, but neither is optimised in isolation. Our objective is to deliver the greatest long-term value for customers by balancing voltage performance, losses, network utilisation, flexibility, resilience and affordability within a consistent decision-making framework.

When making planning, investment and operational decisions, we apply the following Voltage and Losses Optimisation Hierarchy:

1. Maintain safety, security and statutory compliance - Safety and compliance are our highest priorities. We'll operate the network within statutory voltage and thermal limits and maintain compliance with all relevant licence obligations, engineering standards and operational requirements.

2. Maintain resilient and reliable network operation - We'll ensure decisions support secure network operation and maintain resilience for existing and future customers. Actions that materially compromise network reliability or operational resilience will not be pursued solely to improve voltage performance or reduce losses.

3. Enable timely and efficient access to network capacity - We'll prioritise actions that help customers connect and utilise low-carbon technologies sooner by making efficient use of existing network capacity and reducing barriers to access where this delivers net consumer benefit.

4. Optimise voltage outcomes - We'll use active voltage management to improve power quality, increase network headroom, support flexibility deployment and maximise customer value while maintaining statutory compliance.

5. Optimise losses within a whole-system context - We'll seek to keep losses as low as reasonably practicable while recognising that modest increases in losses may sometimes deliver significantly greater customer benefits through improved network utilisation, accelerated customer connections, flexibility deployment or reduced reinforcement costs.

6. Provide voltage management services to NESO – Where technically feasible and once preceding priorities have been achieved, we'll provide additional voltage management services to NESO, if requested to do so.

7. Deliver the greatest overall consumer value - Where trade-offs arise, decisions will be informed by transparent assessment of whole-system impacts including affordability, decarbonisation, resilience, customer outcomes and network efficiency, ensuring consumers receive the greatest long-term benefit.

7.4.4 Voltage management in planning & operations: prepare, protect, perform

Voltage management will be embedded across both Strategic Network Planning and Network Operations during ED3 through our Prepare, Protect and Perform stages:

Prepare: Embedding Voltage Management in Network Planning

Combining the Voltage Index with forecasting will help us understand how voltage performance may evolve as demand, generation and low-carbon technology uptake continue to increase.

The Voltage Index acts as a core planning metric used to understand voltage performance, prioritise optimisation opportunities and support investment decision-making. Strategic Development Plans, forecasting activities and network needs assessments will incorporate voltage considerations alongside capacity, resilience, losses and flexibility requirements. This will ensure voltage management opportunities are assessed within our coordinated planning framework and considered alongside alternative interventions when identifying efficient solutions to future network requirements.

During the Prepare stage, our focus will be to:

- Optimise primary transformer tap settings where appropriate to support a Voltage Index of VI3 or better and maximise available network capacity.
- Deploy 300mm^2 cables where appropriate at LV and standardise the use of 300mm^2 for HV to improve voltage performance and support future electrification requirements. By the end of ED3 all newly installed 11kV cables will be 300mm^2.
- Investigate and optimise the topology of high load-density HV networks to improve network utilisation, reduce electrical impedance and support efficient voltage performance.
- Proactively reinforce the LV network, bringing forward 32.4 km of LV cable and 59.8 km of overhead line upgrades to resolve voltage issues.
- Develop predictive analytics down to LV feeder and MPAN level, enabling earlier identification of future voltage management opportunities and supporting proactive network optimisation.

By embedding voltage management within planning processes, we'll ensure future network plans support increasing levels of electrification while maintaining efficient voltage performance and maximising the utilisation of existing network assets.

Protect: Delivering Targeted Voltage Optimisation

As electrification accelerates, there will be increasing opportunity to improve voltage performance through the targeted deployment of voltage optimisation technologies. The Protect phase provides a structured approach to delivering these interventions where they can improve power quality, increase hosting capacity and maximise utilisation of existing network assets.

During the Protect phase, our focus will be to:

- Deploy up to 200 Volt/Var optimisation devices and other voltage regulation technologies at targeted locations to improve voltage performance and reduce customer complaints and deploy up to 120 secondary On-Load Tap Changers (OLTCs) where they provide an efficient means of managing high/low voltage issues, helping to improve voltage control and support future demand and generation requirements.
- Utilise Voltage Index assessments to prioritise interventions in locations where voltage optimisation can eliminate voltage excursions and nuisance tripping of LCTs.
- Maintain flexibility to incorporate emerging voltage management technologies where they demonstrate clear consumer and system benefits.
- Target a Voltage Index of VI3 whenever we intervene.

These targeted optimisation measures will complement our wider planning and operational activities, ensuring voltage management is applied proportionately and where it delivers the greatest value.

Perform: optimising voltage through dynamic setpoint control

The Perform phase represents the most advanced stage of our voltage management strategy, moving from targeted voltage optimisation towards increasingly dynamic management of voltage across the network. Building on the visibility, analytical capability and targeted interventions established through the Prepare and Protect phases, we'll optimise transformer tap changer positions in response to changing network conditions.

At the heart of this approach is the deployment of Voltage Management Control (VMC) capability across our network. VMC combines smart meter data, LV monitoring, power quality monitoring, network telemetry and advanced network models to create a comprehensive understanding of real-time network conditions. Using these inputs, VMC will determine optimal voltage settings and automatically coordinate voltage control assets to maintain efficient voltage performance across the network. This capability will enable us to respond more effectively to changing patterns of demand and generation, supporting a more dynamic distribution system while making better use of existing network assets.

During the Perform phase, our focus will be to:

- Deploy Voltage Management Control (VMC) capability across 50% of our network load, enabling increasingly dynamic management of network voltage.
- Utilise smart meter data, LV monitoring, Power Quality Monitors (PQMs) and network telemetry to provide enhanced situational awareness and support real-time voltage optimisation.
- Create more than 1GW of hosting capacity by unlocking additional capability from existing assets through dynamic voltage optimisation, enabling up to 300,000 EV chargers and 100,000 heat pumps by the end of ED3.
- Deliver an annual Conservation Voltage Reduction (CVR) benefit of 47.5GWh, reducing energy consumption losses while maintaining customer voltage within statutory limits, saving our customers around £12m per year.
- Ensure readiness for providing voltage services to NESO where this aligns with our Voltage and Losses Optimisation Hierarchy and delivers whole-system value.

Dynamic voltage management will allow voltage to be optimised as network conditions evolve, helping to support growing levels of electrification whilst reducing the number of voltage excursions experienced by customers. Through the scaled roll out of Voltage Management Control, we'll transition voltage management from a largely analytical capability to an active operational function embedded within day-to-day network management.

Through the Perform phase, voltage management becomes a core DSO operational capability that supports network utilisation, customer experience and whole-system efficiency while providing a platform for future innovation and increasingly dynamic network operation.

7.4.5 Optimising reactive power performance at GSPs

Effective voltage management will increasingly require coordinated action across transmission and distribution networks. As power flows become more dynamic and distributed energy resources play a greater role in supporting the electricity system, understanding and managing reactive power will become increasingly important to maintaining efficient voltage performance and delivering whole-system benefits at this interface. For example, in the SEPD region, we have observed an increase in reactive power export at Grid Supply Points over the last decade. This trend is likely to be influenced by the continued growth of embedded generation and the changing nature of power flows across the distribution network. As distributed generation capacity increases, reactive power behaviour at transmission-distribution interfaces becomes more complex, creating both challenges and opportunities for coordinated voltage management.

During ED3, we'll strengthen our understanding of reactive power flows across transmission-distribution interfaces and identify opportunities where coordinated voltage and reactive power management can improve network performance and support wider system objectives. Building on enhanced visibility, network modelling and voltage management capabilities, we'll improve our ability to assess reactive power requirements, understand the impact of voltage management decisions and coordinate activities with wider system operators. Our ED3 activities will:

- Improve visibility of active and reactive power flows at Grid Supply Points (GSPs) and across the wider distribution network.
- Develop a clearer understanding of how voltage management activities influence reactive power requirements, network utilisation and overall system performance.
- Strengthen coordination with NESO and Transmission Owners to develop improvement plans at Bramley, Fleet and Lovedean GSPs and other high-priority GSPs to ensure reactive power interventions remain aligned with wider system requirements and future network developments.
- Identify opportunities where improved reactive power management can support voltage performance, increase network efficiency and deliver wider whole-system benefits.

This approach ensures that reactive power improvement activities are targeted where they can provide the greatest benefit, while supporting a more coordinated and data-driven approach to network and system operation. We'll adapt our plan and activities, subject to improvement plans agreed with NESO, which are yet to be finalised.

7.4.6 Performance Metrics

The effectiveness of our Voltage Management control will be assessed through a combination of capability, performance and customer outcome measures. The effectiveness of our Voltage Management Control capability will be assessed through a combination of capability, performance and customer outcome measures. As we deploy Voltage Management Control, we'll explore the optimal configuration and actively seek opportunities to improve performance for our customers.

Table 7.15 SEPD ED2 Baseline & ED3 Estimates

Metric	ED2 Baseline	2029	2030	2031	2032	2033
Customer boundary voltage visibility (%)	86%	87%	90%	92%	94%	96%
Number of targeted voltage interventions achieving a Voltage Index of VI3	-	37	56	82	98	116
Estimated prevalence of voltage-related EV charger trips (%)	12%	10%	8.9%	7.9%	7%	6%
Average voltage supplied to customers (V)*	242.8	242.2	241.9	241.5	240.9	240.4
Modern AVC Installations on primary substations	33	15	25	32	37	42
Volt/Var optimisation devices on the secondary network	0	30	43	59	73	90
Flexibility capability offered to NESO from temporary voltage reduction (MW)	4.1	9.8	13.3	20.6	28.9	37.5

*Assumes statutory voltage limits remain unchanged

Table 7.16 SHEPD ED2 Baseline & ED3 Estimates

Metric	ED2 Baseline	2029	2030	2031	2032	2033
Customer boundary voltage visibility (%)	86%	87%	90%	92%	93%	94%
Number of targeted voltage interventions achieving VI3	-	5	10	13	17	21
Estimated prevalence of voltage-related EV charger trips (%)	10%	9.5%	8.8%	7.8%	6.5%	5%
Average voltage supplied to customers (V)*	244.1	243.5	243.2	242.8	242.2	241.7
Modern AVC Installations on primary substations	13	4	8	11	13	15
Volt/Var optimisation devices on the secondary network	0	2	5	5	5	5
Flexibility capability offered to NESO from temporary voltage reduction (MW)	0.5	1.2	1.6	2.5	3.6	4.6

*Assumes statutory voltage limits remain unchanged

7.5 LOSSES OPTIMISATION

During ED2, we strengthened network modelling, monitoring, smart-meter data use, forecasting and analytics and embedded lower-loss asset standards and engineering design as set out in our published standard ST-NET-RRP-001.

In ED3, we'll build on these foundations to embed losses optimisation within Strategic Network Planning, Network Operations and Voltage Management activities. By improving visibility of losses, enhancing analytical capability and incorporating losses considerations into decision-making processes, we'll support more efficient use of network assets and deliver long-term value for consumers.

By 2033 we'll reduce annual domestic energy consumption losses by 47.5GWh each year through conservation voltage reduction and improved voltage optimisation. Lowering wasted energy reduces costs for all consumers.

Digital investments DIGI-03-01 and DIGI-10-01 will incorporate losses into operational decision support, so that losses are assessed alongside capacity, resilience, voltage and whole-system services.

Table 7.17 Evolving and developing our ED3 Capability - Losses Optimisation

Capability Area	Established in ED2	Evolved in ED3
Losses visibility and modelling	Improved understanding of network losses through modelling and analysis	Enhanced losses visibility integrated across planning and operational activities
Losses assessment	Losses considered within network investment decisions	Losses embedded within Integrated Network Needs Identification and options assessment
Network planning and losses	Losses considered within selected planning activities	Losses integrated within forecasting, planning and investment decision-making
Operational losses optimisation	Limited operational assessment of losses opportunities	Enhanced operational capability supporting losses-aware network optimisation
Voltage management integration	Emerging understanding of voltage-loss interactions	Coordinated voltage and losses optimisation capability
Whole-system losses assessment	Network-focused losses analysis	Improved understanding of whole-system costs and consumer benefits
Performance monitoring	Baseline losses reporting capability	Enhanced monitoring, reporting and optimisation of losses performance

This evolution reflects our transition from understanding losses performance during ED2 to actively incorporating losses optimisation within planning and operational decision-making throughout ED3.

Technical losses are influenced by asset loading, power flows and voltage levels, with losses increasing as networks become more heavily loaded. The growing connection of low-carbon technologies, including electric vehicles, heat pumps and distributed generation, is changing when, where and how power flows across the network, creating new and evolving loss patterns. Appendix 2 Worked Examples of Voltage and Losses Optimisation provides worked examples that show how losses vary under different network scenarios.

7.5.1 Our plan to deliver broader, balanced loss optimisation

Network losses are an unavoidable consequence of transporting electricity. Fixed losses arise when equipment is energised, while variable losses increase with network current and utilisation. As customers electrify transport, heat and industry, energy flows and absolute losses may increase even where the network is being used more efficiently.

We therefore distinguish between beneficial energy flows, which support customers and decarbonisation, and avoidable energy waste, which provides no additional customer or system value. Our role is to enable the former while reducing the latter. We manage losses through three principles:

- embedding losses within planning, operational and investment decisions;
- optimising losses within the available capacity and customer-voltage envelope; and
- targeting interventions where loss reduction delivers demonstrable consumer or whole-system value.

7.5.2 ED2 performance

During ED2, we continued to implement our losses strategy through a combination of established business-as-usual activities and new initiatives designed to reduce losses and improve our understanding of where they occur on the network. As part of our Environmental Action Plan, losses were incorporated within our Science Based Target (SBT) for greenhouse gas emissions reduction, which targets a 55% reduction in GHG emissions by 2033 and at least a 35% reduction in combined Scope 1 and Scope 2 (including losses) emissions during ED2. We also committed to reducing the emissions associated with network losses to no more than 350,233 tCO_2e by the end of the price control period and to delivering over 465 GWh of avoided losses. We remain on track to achieve these commitments and have already delivered significant reductions in emissions associated with losses and calculated cumulative loss savings.

A key focus of ED2 has been embedding loss reduction into network design standards and asset investment decisions. We continued to specify larger transformer ratings and cable sizes, accelerate the replacement of historical high-loss transformers, and upgrade network voltages where economically justified. We also adopted larger overhead line conductors, low-loss transformers and reduced cable tapering as standard practice. Collectively, these measures have ensured losses are considered alongside capacity, resilience and asset health throughout the asset lifecycle, while improving the efficiency of new and replacement network assets.

ED2 also delivered a step change in network visibility and data capability. Through the rollout of LV substation monitoring, increased access to smart meter data and the development of digital network models, we have significantly improved our understanding of load profiles, voltage performance, power quality and network utilisation across the LV network. This has helped address one of the most significant challenges associated with losses management: understanding where losses occur on our network and where interventions will deliver the greatest benefit.

We have also continued to address non-technical losses through substation energy efficiency programmes, the resolution of conveyance inaccuracies and the investigation of unrecorded consumption. Our Network Protection team has maintained its focus on reducing losses associated with MPAN discrepancies, energy theft and settlement inaccuracies, helping to ensure energy consumption is accurately accounted for and costs are allocated fairly across consumers.

Beyond the direct reductions in losses achieved, ED2 has delivered four important foundations for ED3: lower-loss asset standards, improved network visibility, enhanced losses analytics and a stronger whole-system approach to network optimisation. These capabilities position us to move from predominantly asset-based losses reduction towards actively optimising losses through both network planning and network operation, ensuring losses are considered alongside capacity, resilience, voltage and flexibility.

7.5.3 Optimising losses where practically efficient

Losses will be managed through our wider Voltage and Losses Optimisation Hierarchy, as set out in 7.4.3.

This hierarchy provides a practical framework for the underlying economic trade-offs. It allows losses to be considered consistently without requiring a bespoke marginal-cost assessment for every planning or operational decision. We first ensure the network remains safe, resilient and within statutory voltage limits. We'll then enable efficient capacity and beneficial energy flows, including customer connections, low-carbon generation, flexibility and managed access. Within the remaining feasible options, we'll reduce losses and select the solution that provides the greatest whole-system value.

Automation will help us go further in ED3. Through the digital investment DIGI-10-01 DSO (Enhanced Systems and Orchestration) we'll extend our DERMS and Voltage Management Control (VMC) capability to optimise network configuration. Within the VMC optimisation algorithm, network losses will be assigned a financial value (£/MWh) and evaluated alongside other operational objectives. For example:

- where multiple voltage settings can maintain acceptable customer voltage levels, the VMC system will select a solution that delivers lower losses; and
- where we have sufficient network automation to adjust open-points without reducing system resilience, we'll develop the VMC to periodically adjust network configuration to minimise losses.

During ED3 we'll install additional secondary automation on up to 50 circuits in the North of Scotland where circuit length and network load will provide opportunities to reduce losses. Our ED3 deployment remains relatively moderate whilst we evaluate the long-term success of this approach.

This approach ensures losses remain as low as reasonably practicable while recognising that consumer value is maximised through balanced consideration of all network objectives.

7.5.4 Integration of loss considerations in network planning & operations

Table 7.18 ED3 Tools, Methodologies and Data Sources to assess Losses

Decision Area	Data Sources	Tools & Systems	Analytical Approach	Decision Output
Network planning and Long-Term Integrated Network Plan	Network Model Management (NMM), smart meter data, LV monitoring, demand forecasts, LCT uptake forecasts	NMM, strategic planning models, load forecasting tools	Assess future utilisation, voltage performance and losses under multiple network growth scenarios	Identify least-cost interventions balancing capacity, losses and customer outcomes
Reinforcement versus flexible alternatives	Network studies, flexibility procurement data, constraint forecasts	Flexibility CBA tools, optioneering models, DSO planning tools	Compare reinforcement, flexibility and operational alternatives including losses impacts	Select option delivering greatest whole-system net benefit
Voltage management	Smart meter voltage data, LV/HV monitoring, power quality records	Voltage Management Control (VMC), ANM and	Assess impact of voltage changes on customer service, losses, demand reduction and asset utilisation	Optimised voltage settings within statutory limits

		operational planning tools		
Real-time network operation	SCADA, operational telemetry, outage information, flexibility dispatch data	DERMS, System for Flexibility, operational forecasting and decision support tools	Assess network configuration, dispatch and switching options considering whole-system impacts	Operational decisions balancing security, losses and network utilisation
Asset replacement and refurbishment	Asset condition data, asset health models, utilisation data, losses studies	Asset management systems and engineering standards	Assess replacement, uprating or refurbishment options using whole-life cost and network benefit assessment	Investment decisions delivering long-term value for consumers
Non-technical loss identification	Settlement data, metering data, exception reporting, theft investigations	I-LAD and associated analytical tools	Identify potential theft, metering inaccuracies and data quality issues	Targeted mitigation and recovery actions
Whole-system assessment	DSO forecasts, NESO modelling, flexibility studies and future energy scenarios	Cost-benefit analysis and whole-system assessment frameworks	Assess impacts on transmission constraints, reinforcement needs, flexibility utilisation and decarbonisation outcomes	Transparent whole-system investment and operational decisions

Supporting digital capabilities

ED3 investment DIGI-03-01 (Probabilistic Planning) introduces new digital tools that will allow losses to be routinely considered alongside capacity, resilience, voltage and flexibility within network-needs assessment and options appraisal. Network models, monitoring data and forecasts will help identify heavily loaded areas and opportunities where loss reduction can complement wider network benefits following the principles of our Voltage and Losses Optimisation Hierarchy.

ED3 investment DIGI-10-01 DSO (Enhanced Systems and Orchestration) enables the management of losses through active voltage control, network automation, flexibility scheduling and network configuration using the tools delivered through Operational decisions will first maintain safety, resilience, customer voltage and required capacity. Where alternative actions achieve these outcomes, operational systems and procedures will support selection of the lower-loss or higher-value option.

Alongside existing and ongoing investments in Network Model Management (NMM), enhanced network observability, LV monitoring and smart-meter integration, DERMS and System for Flexibility capabilities, and Data quality, analytics and visualisation platforms to the improve the accuracy of network studies, operational decisions and investment planning.

7.5.5 Managing trade-offs between voltage management and losses

Voltage management can influence customer demand, network capacity, power quality, flexibility potential and network losses. These outcomes do not always move together in the same direction. We therefore apply our Voltage and Losses Optimisation Hierarchy to ensure decisions are made consistently, transparently and in the long-term interests of consumers.

Table 7.19 Application of Voltage and Losses Optimisation Hierarchy to balance Trade-Offs

Trade-off	How the hierarchy applies
Safety and compliance vs losses reduction	Statutory voltage compliance, safety and secure operation will always take precedence over reducing losses.
Customer voltage quality vs lower energy consumption	Voltage may be lowered where this reduces energy consumption without affecting the service customers receive. Where lower voltage could negatively affect customer voltage quality or low-carbon technologies, voltage quality takes priority.
Network capacity vs losses reduction	Additional network capacity may be enabled through voltage management even where this results in a small increase in losses, provided the overall consumer benefit is greater.

Faster customer connections vs lower losses	We accept a marginal increase in losses where doing so accelerates customer access to demand or generation connections and avoids disproportionate reinforcement costs.
Network utilisation vs losses reduction	Improved utilisation of existing assets may increase local losses but can reduce network costs and improve access to capacity. Decisions will reflect overall consumer value rather than losses alone.
Flexibility deployment vs losses reduction	Flexibility and active network management may alter network flows and losses. These impacts will be considered alongside avoided reinforcement costs, improved utilisation and customer benefits.
Generation output vs lower losses	Additional power flows associated with renewable generation may increase losses while reducing curtailment and enabling decarbonisation. The hierarchy considers the full system benefit.
Voltage optimisation vs losses optimisation	The lowest-voltage or lowest-loss operating position will not automatically be selected. Voltage settings will be chosen based on the best overall balance of capacity, flexibility, resilience, customer outcomes and efficiency. Conservation Voltage Reduction will be applied where it reduces energy wastage without reducing the useful service customers receive. This allows us to reduce avoidable energy use while continuing to support EVs, heat pumps, distributed generation and other low-carbon technologies.

For routine operation, these trade-offs will be managed through Voltage Management Control parameters and operating limits. More detailed assessment will be undertaken where the trade-off is material, novel or cannot be resolved through standard operating frameworks.

7.5.6 Understanding, measuring and monitoring losses

We use smart meter data, LV monitoring, SCADA, network models, asset information and settlement data to estimate losses, identify loss hotspots and monitor network performance. Enhanced visibility and analytical capabilities developed through ED2 enable us to better understand both technical and non-technical losses, assess the impact of operational and investment decisions, and target interventions where they deliver the greatest consumer value. Losses performance is monitored through our operational and sustainability reporting processes to ensure losses remain as low as reasonably practicable.

Table 7.20 Losses Performance Baseline

Published Baseline (2024-25 unless stated, source ST-NET-RRP-001)	Value
Total annual network losses	2,057 GWh
Share of distributed energy lost	Typically 5-8%
Forecast ED2 losses avoidance from strategy interventions	465,274 MWh

In ED3, we'll assess how technical losses vary with asset loading, power flows, voltage levels and the increased connection of low-carbon technologies through our digital investment DIGI-03-01 (Probabilistic Planning). This will provide the forecasting and analytical capability to quantify losses under different network scenarios. DIGI-10-01 (Enhanced Systems and Orchestration) will provide the operational visibility, modelling, simulation, decision support tools and control capability needed to monitor and optimise losses in real time as network conditions change.

Section 7.5.9 defines the measures and targets for ED3.

7.5.7 Assessing the whole-system impact of losses

Our objective is to manage losses as part of delivering the best overall outcome for consumers and the wider energy system. The following examples show how a modest increase in distribution losses is justified to enable materially greater customer and whole-system benefits when following our Voltage and Losses Optimisation Hierarchy. It should be noted that work continues to further quantify how losses and the cost of lost energy vary over time. Following an evidence-based approach, we will monitor and update our Voltages and Losses Optimisation Hierarchy to ensure it leads to the best whole-system outcome. Further detail is included in Appendix 2 Worked Examples of Voltage and Losses Optimisation.

- **Accelerating demand connections:** Increasing primary-substation utilisation from 45 MW to 55 MW is estimated to increase annual losses by approximately **0.78 GWh**, valued illustratively at [redacted]. The additional 10 MW is equivalent to 10.53 MVA at 95% power factor. [redacted].

- **Reducing renewable curtailment:** Increasing export capability from 20 MW to 25 MW is estimated to increase annual losses by approximately **0.45 GWh**, [redacted].
- **Deferring reinforcement:** Increasing utilisation of a 33kV circuit from 15 MW to 18 MW is estimated to add **0.264 GWh of losses per year**, or [redacted]. The benefit of deferral is approximately four times this cost using the CEM NPV saving after flexibility and other relevant costs, with additional loss costs included and the applicable customer-sharing treatment applied.

These examples demonstrate how the hierarchy compares losses with connection-delay costs, wholesale-system savings, carbon impacts and reinforcement-deferral value.

Loss optimisation is embedded within SSEN's established planning and operational decision-making frameworks and is not considered in isolation. Across the worked examples presented in Appendix 2 Worked Examples of Voltage and Losses Optimisation, wider societal and whole-system impacts consistently have a greater influence on decision-making than losses alone. Consequently, losses are considered alongside network utilisation, customer connections, flexibility, resilience, operability, decarbonisation and affordability to ensure decisions deliver the greatest overall benefit to consumers and the wider energy system.

When considering network needs and potential interventions in ED3, we'll use established planning and operational frameworks including:

- **tRESPs and Long-Term Integrated Network Planning** to align distribution planning with wider system needs and future energy pathways.
- **DNOA Build and Flex assessments** to consider network, flexibility and operational solutions consistently.
- **Local Area Energy Planning (LAEP/LHEES)** and stakeholder engagement to understand future demand, generation and electrification pathways.
- **Network Operations, Voltage Management and DERMS processes** as defined in our **Operational Decisions Making Framework** to consider losses alongside network utilisation, flexibility deployment and operational optimisation.
- **Asset management and engineering standards** to ensure losses are considered alongside asset health, resilience and whole-life network performance.

Our voltage and losses optimisation hierarchy reflects this approach, recognising that the solution with the lowest losses does not necessarily deliver the greatest overall value. Decisions therefore consider losses within the context of wider consumer, network and societal outcomes, ensuring alignment with established planning frameworks and whole-system objectives.

7.5.8 Non-Technical Losses

Our ED3 approach to non-technical losses will build on the successful activities established during ED2, maintaining a strong focus on electricity theft, settlement inaccuracies, unregistered MPANs and unmetered supply data quality. We'll continue to operate our dedicated revenue protection and network investigation activities, working collaboratively with suppliers, RECCo, Elexon, law enforcement agencies and other stakeholders to identify and resolve instances of unrecorded consumption and energy theft.

A key enhancement during ED3 will be the deployment and integration of the I-LAD (Intelligent Losses Analysis and Detection) platform. Building on the innovation work undertaken during ED2, I-LAD will combine network monitoring data, smart meter information, geospatial data sets and advanced analytics to improve the identification, prioritisation and investigation of non-technical losses. This will enable a more proactive, data-led approach to theft detection, reducing reliance on reactive reporting and improving the efficiency and effectiveness of investigations. All model outputs will be subject to appropriate governance, human oversight and customer protections to ensure interventions remain fair, proportionate and evidence-based.

I-LAD represents an important step in the evolution of our losses management capability. During the remainder of ED2, we'll continue to develop and validate the approach through innovation activity, improving confidence in both the methodology and its operational application.

Alongside I-LAD deployment, we'll continue targeted programmes to improve settlement accuracy, reduce the volume of unregistered and disconnected MPANs, improve the quality of unmetered supply inventories and strengthen industry collaboration on theft prevention and revenue protection.

7.5.9 Losses optimisation performance measures

The effectiveness of our losses optimisation strategy will be assessed through a combination of capability, operational and consumer-focused measures:

Measure	ED2 Baseline	ED3 Target
Operational Management of Losses		
No. of 11kV feeders automated to support loss optimisation	0	50
Reduction in annual domestic energy consumption losses through conservation voltage reduction and improved voltage optimisation	0	47.5GWh by the end of ED3
Percentage of network with voltage control capable of optimise voltage for losses	0	50% (by demand served)
Specifically target reduced losses associated with unregistered and incorrectly settled MPANs	7821	Resolve >8000 records per annum
Management of non-technical losses		
Deploy I-LAD as a business-as-usual losses detection tool (subject to successful ED2 validation)	New for ED3	I-LAD operational across both licence areas by Year 2 of ED3
Improve unmetered supply accuracy	Occasional review triggered by need or request	Complete risk-based audits of all major unmetered supply inventories annually
Strengthen industry collaboration	Maintained in ED3	Participate in all relevant industry theft and revenue protection forums and maintain active partnerships with RECCo and suppliers
Maintain Asset and Engineering Policy-based management of losses		
Asset and Engineering Policy based interventions	Maintained in ED3	Maintain ED2 projected performance at around 465 GWh

8. INVESTMENTS

Our ED3 investments are focused on developing the capabilities required to deliver our DSO Strategy and meet the advancing expectations of the Distribution System Operator role. Building on the foundations established in ED2, these investments will strengthen our ability to plan and operate the network more proactively, support place-based electrification and deliver the outcomes described in Section 4.

These investments will also support the development of the enabling capabilities described in Section 4, including market development and flexibility, voltage management, losses optimisation, and the core digital, data and organisational capabilities required to deliver them.

8.1 OVERVIEW OF FUNDING REQUEST

To achieve the aims of this strategy, we are requesting allowances to invest in additional capabilities. These capabilities require additional IT and OT systems, new roles, operational flexibility and network investment (in the case of losses and voltage related investment). We have clustered these requests into three distinct Investment Decision Packs (IDPs), each of which provides a detailed breakdown of what options we developed, the cost-benefit analysis that justifies our decision, and our plan for delivery.

Table 8.1 Summary of Investment Decision Packs

Investment package	Value	ED3 outcomes driven	Associated IDP name
A. Strategic network planning and enhanced customer support	[redacted]	Access capacity sooner, Plan and invest with confidence, Pay less over the long term	SSEN_ED3_LRE_DSO_A_ StrategicPlanningAndEnhancedCustomerSupport Inclusive of (DIGI-03-01) Probabilistic Planning and Power Flow Tools
B. Digitised network operations, market facilitation voltage & losses	[redacted]	Access capacity sooner, Pay less over the long term, Experience better network performance	SSEN_ED3_LRE_DSO_B_ DigitisedNetworkOperationsVoltage&Losses

			Inclusive of (DIGI-03-02) Evolution of Flex Toolkit and (DIGI-10-01) - DSO Enhanced System & Orchestration
C. Operational Flexibility	[redacted]	Access capacity sooner, Pay less over the long term, Experience better network performance	SSEN_ED3_LRE_DSO_C_OperationalFlex
Total Value	**£107.19m**		

These costs are reported across multiple CV tables, and also captured in other strategies where they form part of a broader portfolio for the DNO as a whole:

- For IT or OT systems, costs and volumes are included in the (ED3-S13) Data and Digitalisation Strategy, and tables C4 – IT&T (Non-Op), C13 – (IT&T (BS) and CV11 – Op IT & Telecoms.
- For losses-related network interventions, costs and volumes are in CV21 - Losses.
- For voltage-related interventions, costs and volumes are in CV44 – Voltage Management.
- For staff related changes, these are included in the broader (ED3-S05) Delivery Strategy, and the costs captured in C9 – Core CAI.

Investment Decision Packs for each investment area include Engineering Justification Papers and Cost-benefit Analysis. The investments operate as an integrated portfolio and include delivery of shared benefits, such as faster, lower-cost connections. Benefits have been allocated and attributed across the individual investments to avoid double counting.

Note: Planning Flexibility is separately justified through individual LRE IDPs and through our agile portfolio for managing uncertainty and deliverability (DSO_D Agile use of Flexibility in Network Planning). Further details are set out in our (ED3-S01) LRE Annex.

8.2 INVESTMENT A – STRATEGIC NETWORK PLANNING AND ENHANCED CUSTOMER SUPPORT

Investment A will create an integrated strategic-planning and enhanced customer-support capability for ED3. It will connect stakeholder and customer evidence, future energy scenarios, forecasting, network-needs identification, options assessment and investment planning with practical advice for customers and stakeholders.

The investment builds on, but does not re-fund, ED2 capabilities including Strategic Development Plans, Network Model Manager, LENZA/LAEP+, Early Access Management, Scaled Local Network Modelling and the Enterprise Data Platform. It funds the integration, governed data, probabilistic analysis, people, processes and customer-support capability required to operate these foundations as one scalable planning chain.

We are requesting **£14.21m during ED3**, comprising:

- [redacted] **for ten specialist FTE**, covering community energy, connections optioneering support, LV planning, scenario development, stakeholder and RESP engagement, and forecasting data science.
- [redacted] **for DIGI-03-01**, providing a governed planning-data layer, probabilistic forecasting and power-flow capability, interfaces, implementation and ongoing support.

Capabilities delivered

- structured integration of RESP, Strategic Energy Needs, local plans and customer evidence;
- digitised and annually refreshed strategic plans;
- scenario-based probabilistic forecasting and power-flow assessment;
- integrated identification of thermal, voltage, losses and whole-system needs;
- repeatable Build and Flex optioneering with enhanced CBA;
- governed and traceable planning data with named ownership and confidence reporting;
- enhanced customer support, including community energy and pre-connection optioneering; and
- one reusable analytical capability across Strategic Network Planning, connections, Early Access, operational planning and outage optimisation.

Preferred option and value

- Option 3, **Integrated probabilistic planning with enhanced customer support**, is recommended. [redacted]. These benefits are principally associated with faster and lower-cost connections, more efficient planning and reduced local-area energy-planning costs.

- The option is preferred because lower-scope alternatives leave material gaps in data integration, probabilistic analysis, options assessment and customer support. A broader option involving formal low-carbon technology and energy-efficiency partnerships was not selected because it extends beyond the efficient core DSO planning and advisory role and delivers no additional quantified benefit.

The case for investment in ED3

Accelerating electrification, growing demand for network capacity and increasing stakeholder expectations require a significant enhancement in planning and customer support capability during ED3.

Electrification carries inherent uncertainty in the scale, timing and location of future network requirements. Alongside this, RESP, Strategic Energy Needs, connections reform and wider stakeholder inputs will increase the range of evidence and decisions that the planning process must manage. Current fragmented and manually intensive arrangements will not scale efficiently to meet this need.

Investment is required in ED3 to establish the architecture, data governance, stakeholder processes and service design and to deploy the consolidated planning-data layer and probabilistic tools. Deferral would prolong manual processing, restrict enhanced customer support and delay benefits from related digital and operational investments.

Consumer and system benefits directly attributed to Investment A

£35.32m undiscounted ED3 benefit, [redacted]. Key consumer and system benefits include:

- support more proportionate Build and Flex decisions across a range of credible futures;
- improve transparency and traceability from stakeholder evidence to investment decisions;
- give customers clearer information about capacity, access products and connection trade-offs;
- reduce customer uncertainty, avoidable effort and abortive cost;
- support faster and more predictable access to network capacity;
- improve Early Access, connections and outage assessments through shared probabilistic capability;
- make better use of existing data, systems and network capacity; and
- support lower long-term system costs through more consistent and evidence-led decisions.

These benefits directly support the strategy outcomes **Access Capacity Sooner**, **Plan and Invest with Confidence** and **Pay Less Over the Long Term**.

Dependencies

These are defined in the Investment A Engineering Justification Paper and include: delivery of DIGI-03-01, RESP and Strategic Energy Needs maturity, transmission-data access, network-data quality, integration complexity, customer adoption, specialist capacity and engineering-policy adoption of probabilistic outputs. These dependencies will be mitigated through phased delivery, clear governance, early engagement with internal and external data owners, dedicated specialist resource, progressive testing of probabilistic outputs and structured adoption through engineering policy, customer-support and planning processes.

Risks of non-delivery

Without this investment, we would be unable to complete the following commitments and capabilities:

- **Wider access-to-capacity commitments would be constrained:** Without these capabilities, we would be less able to deliver 5GW of earlier access offers, 2.5GW-years of accelerated connections and address constraints affecting 20,000+ looped services during ED3.
- **Integrated planning and investment decisions would remain fragmented:** Continued reliance on disconnected data and deterministic assessments would weaken Build and Flex decisions, optioneering and investment traceability.
- **Forecasting and network-needs identification would remain constrained:** Without specialist forecasting and data-science capability, we could not fully implement probabilistic planning to identify constraints earlier and target interventions efficiently.
- **RESP and whole-system planning would be weakened:** Without dedicated North and South resources, integration of RESP, stakeholder and regional evidence into planning and annual SDP updates would be less robust.
- **Customer optioneering support would be reduced:** Without specialist engineers, we could not consistently provide enhanced pre-application support or assess all reinforcement-delayed HV and EHV customers for earlier-access options.
- **Scenario and strategic planning capability would be reduced:** Limited scenario development and policy analysis would weaken strategic assessments and the incorporation of emerging sector requirements into SDPs and investment plans.

- **Community energy and advisory support would be limited:** We would be unable to establish the proposed advisory service and community support capability at the scale required to support 100+ communities and businesses annually.

8.3 INVESTMENT B – DIGITISED NETWORK OPERATIONS, MARKET FACILITATION, VOLTAGE & LOSSES

Investment B will deliver the digitised network operations, market facilitation voltage and losses capabilities required to establish a more integrated, digitally enabled and actively managed distribution system during ED3.

We are requesting **£44.30m** during ED3 to deliver integrated network visibility, operational decision-making, flexibility utilisation, voltage management and whole-system coordination capabilities. This investment will build on the operational foundations established during ED2 and enable us to manage an increasingly dynamic electricity system more efficiently and at greater scale.

The investment includes DIGI-03-02, which delivers an integrated flexibility operating capability for ED3 connecting flexibility markets, forecasting, dispatch, settlement, planning and network operations into a single coordinated framework and, DIGI-10-01, which delivers the digital operational platform required to scale Active Network Management (ANM), Voltage Management Control (VMC) and Distributed Energy Resource Management System (DERMS) capabilities across our network during ED3.

We are requesting £44.30m during ED3, comprising:

- [redacted]: Digital Investment DIGI-03-02 for adaptive flexibility and DER integration which will create a centralised operational data platform; automate flexibility procurement, scheduling, dispatch and reporting; improve coordination between DSO Network Operations and the Control Room; integrate flexibility into planning and outage management; and enable automated cost-benefit assessment of flexibility solutions.
- [redacted]: Digital Investment DIGI-10-01 for DSO enhanced systems and orchestration which will expand ANM deployment; roll out VMC across 187 primary substations; enhance network visibility and telemetry; introduce advanced voltage analytics and loss optimisation capabilities; and strengthen integration between DERMS, ADMS, flexibility platforms, NESO interfaces and operational systems.
- [redacted]: Voltage and Loss management to upgrade AVC relays on primary substations to enable the rollout of our voltage management system and deploy Volt/Var optimisation devices to resolve voltage excursions on problem feeders; and Targeted Losses optimisation implement automation on complex rural feeders to reduce technical losses and; maintain an operational data platform aimed at reducing non-technical losses.
- [redacted]: Resources to support the flexibility and DER integration work delivered in DIGI-03-02. These specialist roles will help operationalise and extract value from the newly integrated operational platforms, ensuring we have the resource in place to scale flexibility in accordance with our ED3 targets.

Capabilities delivered

- **An integrated flexibility operating platform** by connecting forecasting, flexibility markets, dispatch, settlement, reporting, planning tools and operational systems through a common data and integration layer, reducing manual processes and improving end-to-end visibility
- **Flexibility-first network operation** through shared DSO and Control Room visibility, automated decision support, outage optimisation, integrated constraint management, and coordinated use of flexibility to release capacity, reduce curtailment and optimise network operation
- **Improved market scalability and governance** with automated procurement, scheduling, dispatch and settlement, simplified provider interfaces, independent performance assurance, structured reporting, and compliance with evolving Market Facilitator requirements
- **An expanded Distribution Embedded Resources Management System (DERMS),** providing early access for customers, enabling more dynamic management of constraints and voltage and reducing reliance on traditional reinforcement.
- **Enhanced DERMS-led operational decision-making** through improved monitoring, telemetry, forecasting, analytics and network visibility, allowing more coordinated management of voltage, constraints, curtailment and network performance
- **Orchestrated operational systems** including ADMS, flexibility platforms, outage planning tools and NESO interfaces, creating a coordinated operational environment that supports whole-system optimisation and future voltage service capabilities
- **Scaled rollout of a Voltage Management Control System** which will dynamically optimise transformer tap changer positions to increase hosting capacity, reduce consumption and eliminate nuisance tripping of LCTs
- **Targeted deployment** of Volt/Var optimisation devices and automation to resolve persistent voltage issues and reduce technical losses on complex rural networks

Preferred option and Value

- Option 3, **Coordinated Network Operations**, is recommended. At **£44.30m**, it is the minimum investment required to deliver integrated network operations, voltage and losses management, flexibility utilisation and whole-system coordination at ED3 scale. It delivers a positive ten-year NPV of £81.20m, with benefits principally associated with faster and lower-cost connections, improved voltage management, increased flexibility utilisation and more efficient operation of existing network assets.
- The option is preferred because lower-scope alternatives would leave material gaps in operational coordination, voltage optimisation, loss optimisation and NESO-facing capability. It provides the lowest-cost approach that unlocks the full package of ED3 operational benefits while creating a scalable platform for enhanced flexibility integration, Active Network Management, Voltage Management Control, DERMS-enabled decision support and coordinated operational decision-making.

The case for investment in ED3

Accelerating electrification, increasing volumes of distributed energy resources and growing operational complexity require a significant enhancement of network operations capability during ED3.

While ED2 established strong foundations through flexibility markets, enhanced network monitoring, Active Network Management, operational forecasting and visibility improvements, these capabilities were developed independently and are not designed to operate at the scale required during ED3.

At the same time, flexibility is becoming a core operational tool, voltage constraints are emerging across both primary and secondary networks, and there are increasing expectations for coordinated operation across the transmission-distribution boundary.

Investment is required during ED3 to integrate existing and emerging operational capabilities into a coordinated framework that enables us to actively manage network constraints, optimise voltage performance, reduce losses where economically justified, and make greater use of flexibility services. This will support more informed real-time operational decision-making, enhanced coordination with NESO and market participants, and increased utilisation of existing network capacity, helping to deliver a more efficient and responsive electricity network for customers

Without this investment, opportunities to release capacity, improve network performance and reduce operational costs would be significantly constrained, increasing reliance on traditional network reinforcement and reducing value for consumers.

Consumer and system benefits directly attributed to investment B

£78.29m undiscounted ED3 benefit, comprising [redacted] faster and lower-cost connections, [redacted] voltage management, [redacted] increased flexibility and [redacted] other benefits, actively operate the network, combining enhanced visibility, flexibility, voltage management and whole-system coordination to maximise the value of existing network assets. Key consumer and system benefits include:

- Faster and lower-cost customer connections through improved operational capability and increased utilisation of existing network capacity.
- Increased flexibility utilisation and more efficient flexibility scheduling and dispatch.
- Greater participation in flexibility markets, including new flexibility services at LV level.
- More cost-effective connection solutions through improved operational coordination and network visibility.
- Improved voltage management, power quality and energy efficiency through active voltage optimisation and conservation voltage reduction.
- Reduced customer disruption during planned outages through integrated outage-planning capability.
- Reduced curtailment of low-carbon generation through enhanced operational flexibility and dispatch capabilities.
- Operational efficiencies resulting from integrated systems, improved visibility and reduced manual intervention.
- Improved coordination with NESO and reduced DSO-NESO conflicts through enhanced forecasting, data sharing and operational alignment.
- Increased hosting capacity and additional capacity release from existing network assets through active voltage optimisation.

These benefits directly support the strategy outcomes **Access Capacity Sooner**, **Improved Network Performance** and **Pay Less Over the Long Term**.

Dependencies

These are defined in the Investment B Engineering Justification Paper and include: delivery of DIGI-03-02 and DIGI-10-01, integration with DERMS, ADMS, outage-planning and flexibility platforms, network-data quality and telemetry availability, voltage and losses data maturity, delivery of Voltage Management Control, availability of specialist operational and flexibility resources, cyber and system-integration assurance, NESO interface development, market participant adoption, and Control Room and operational-policy adoption of new decision-support capability. These dependencies will be mitigated through staged system integration, formal cyber and operational assurance, early

engagement with NESO and market participants, progressive Control Room adoption, dedicated delivery governance and use of specialist resources to test, embed and scale the new operational capabilities safely.

Risks of non-delivery

Failure to deliver this investment would significantly constrain our ability to realise the benefits of our strategy and reduce our ability to operate an increasingly complex electricity system efficiently. Without this investment, we would be unable to complete the following commitments and capabilities:

- **Integrated DSO operations would remain fragmented:** Flexibility services, voltage management, outage planning and network control would continue to operate through separate processes rather than a coordinated operational framework, limiting our ability to operate an increasingly complex electricity system efficiently.
- **Voltage management benefits could not be realised at scale:** We would be unable to scale our Voltage Management Control System across the network, preventing delivery of an annual energy consumption losses reduction of approximately **47.5GWh by the end of ED3**. **Additional network hosting capacity would not be unlocked:** we would be unable to create the estimated **> 1GW of additional hosting capacity**, reducing the network's ability to accommodate the growing uptake of low-carbon technologies (LCTs) without conventional reinforcement.
- **Customer voltage-related issues would increase:** Without targeted Volt/Var optimisation interventions, we would be unable to mitigate voltage excursions effectively, increasing the risk of nuisance tripping for up to **150,000 low-carbon technology customers**. **Flexibility services could not be deployed efficiently at scale:** The ability to identify, dispatch and coordinate operational flexibility as a routine network management tool would be constrained, limiting the value that flexibility can deliver for customers.
- **Curtailment reduction and lower-cost connection solutions would be more difficult to achieve:** The ability to actively manage network constraints and support alternative connection arrangements would be reduced, potentially reducing our ability to connect 2.5GW-years of early access connections
- **Coordination with NESO would remain limited:** We would have reduced capability to support near real-time forecasting, operational data exchange and conflict management and would not have the capability to offer voltage services, weakening coordination across the electricity system.
- **Customer and market participant experience deteriorate:** Lower levels of operational visibility, transparency and responsiveness would limit our ability to provide timely information and efficient services to customers and market participants.

8.4 INVESTMENT C – OPERATIONAL FLEXIBILITY

Investment C: Operational flexibility will play an increasing role in enabling a more efficient, resilient and flexible network during ED3. Building on ED2 capabilities, flexibility will expand beyond reinforcement deferral to support operational use cases such as connections acceleration, outage management, curtailment reduction and whole-system coordination, improving asset utilisation, managing constraints and facilitating the connection of low-carbon technologies.

ED3 investment will provide the market capability, procurement arrangements and operational processes required to identify, procure and deploy flexibility where it delivers the greatest consumer and whole-system value. This includes developing flexibility markets, maintaining market liquidity and ensuring flexibility can be utilised as a scalable operational solution across both licence areas.

Flexibility will continue to be assessed against alternative network and operational interventions using established cost-benefit assessment methodologies and will only be deployed where it represents the most economically efficient solution. This approach ensures consumers benefit from lower-cost network solutions whilst supporting wider objectives relating to economic growth, decarbonisation and the transition to a more flexible electricity system.

We are requesting **£48.68m during ED3**, comprising:

- [redacted] **investment for Planned Outages**: To support planned outages by managing network loading during maintenance activities, reducing network risk, reliance on temporary generation and enabling a wider range of outage schedules (for example, allowing an outage to be taken at a different time of day or time of year). This improves the efficiency and deliverability of network investment programmes while reducing customer disruption and outage-related risks. We'll provide additional operational tools for unplanned outages during abnormal network conditions, allowing demand reduction or generation support to be deployed where required to manage network constraints and maintain security of supply. This increases operational resilience and provides additional options for managing network risk.
- [redacted] **Investment to Improve customer access (and accelerate customer connections)**: Providing earlier access to network capacity for demand and generation customers, accelerating connections and supporting economic growth, electrification and decarbonisation objectives. The same capability can also be used to reduce the curtailment of low-carbon generation by increasing network access and maximising the export of renewable energy onto the electricity system
- [redacted] **Investment for Increased whole-system coordination (Smart Signal):** To improve market efficiency by providing transparent, location-specific signals that allow suppliers, aggregators and flexibility providers to respond

proactively to emerging network constraints. This increases market participation, improves utilisation of flexible resources and supports market-led solutions to congestion, helping to reduce the overall cost of managing network constraints and supporting timely access for low-carbon technologies though Smart Signal.

Capabilities delivered

- **Consumer benefit:** Lower whole-system costs and earlier access to network capacity through efficient alternatives to traditional reinforcement.
- **Network benefit:** Improved utilisation of existing assets and greater operational flexibility to manage constraints and outages.
- **Societal benefit:** Faster electrification, economic growth and reduced customer disruption through accelerated connections and improved outage management.
- **Environmental benefit:** Reduced curtailment and increased integration of low-carbon generation, supporting net zero objectives.
- **Market benefit:** Increased market liquidity, competition and flexibility provider participation, supporting a more mature and efficient flexibility market.

Preferred option and value

- Following option assessments and cost-benefit analysis, **Option 2, Enhanced Operational Flexibility**, is the preferred option as it provides the most proportionate balance between consumer value, deliverability and operational capability. The option expands flexibility across a broader range of operational use cases, including connections acceleration, outage management, curtailment reduction and whole-system coordination (Smart Signal), while building on the established markets, governance arrangements and operational experience developed during ED2.
- The option provides a scalable capability that can respond to uncertain and evolving network requirements throughout ED3, whilst maintaining a robust and economically efficient approach to procurement and deployment. Flexibility services will only be utilised where they are demonstrated, through established cost-benefit assessment methodologies, to deliver consumer and whole-system value relative to alternative network or operational interventions.

[redacted]

The case for Investment in ED3

Demand for operational flexibility will increase materially during ED3 as connection volumes grow, networks become more dynamic and reinforcement programmes face uncertainty and delivery constraints. The proposed investment enables flexibility to be used as a scalable operational tool, not only to defer reinforcement but to accelerate connections, reduce renewable curtailment, support planned and unplanned outages and improve whole-system coordination.

The preferred option builds on proven ED2 markets, governance and dispatch capability, while extending flexibility only where established cost-benefit assessment demonstrates better consumer and whole-system value than network or alternative operational interventions. Without investment, customers would face longer connection delays and greater disruption, renewable generation would be curtailed more often, and the network would rely more heavily on potentially higher-cost reinforcement and operational solutions.

Consumer and system benefits directly attributed to investment C

Operational flexibility creates a new opportunity to increase consumer value and system benefits:

Accelerate customer connections [redacted]

Improve outage management [redacted]

Whole-system coordination (Smart Signal) [redacted]

The total 10-year **NPV is** [redacted]

Key consumer and system benefits include:

- Earlier access to network capacity by accelerating demand and generation connections ahead of reinforcement delivery, reducing connection delays and supporting customer investment decisions.
- Improved network utilisation through more effective use of existing network assets, reducing the need for premature reinforcement and improving asset efficiency.
- Enhanced outage management by using flexibility to support planned and unplanned outages, reducing customer disruption, improving network resilience and supporting more efficient delivery of network investment programmes.
- Reduced curtailment of low-carbon generation by managing thermal and voltage constraints, increasing renewable energy output and maximising utilisation of existing network capacity.

- Support for economic growth and electrification through faster connection of homes, businesses, low-carbon technologies and distributed energy resources.
- Improved whole-system coordination by enabling flexibility to support network, customer and wider electricity system requirements, improving overall system efficiency, including smart signal to reduce dynamic congestion.
- Increased flexibility market liquidity and competition through expanded procurement opportunities, encouraging greater participation from flexibility providers and improving long-term market efficiency.

Dependencies

These dependencies are defined in the Investment C Engineering Justification Paper and include the availability of sufficient flexibility market liquidity, effective provider participation, delivery of DIGI-03-02 and wider operational integration, forecasting and network-needs identification, clear operational decision-making processes, coordination with the Control Room and outage-planning teams, and continued alignment with NESO and market arrangements. They will be mitigated through phased procurement, early market engagement, transparent publication of requirements, established operational CBA governance, progressive rollout of flexibility use cases, and ongoing performance monitoring to ensure flexibility is only used where it provides clear consumer and whole-system value.

Risks of non-delivery

Failure to deliver the operational flexibility investment would constrain our ability to utilise flexibility as a scalable operational tool and reduce the benefits that flexibility can provide across ED3 operational use cases

- **Reduced ability to accelerate customer connections**, limiting earlier access to network capacity and increasing reliance on customers waiting for conventional reinforcement to be delivered.
- **Increased customer disruption during planned outages**, through reduced ability to use flexibility to support maintenance activities, optimise outage programmes and avoid the use of higher-cost alternatives such as temporary generation.
- **Reduced capability to manage unplanned network events**, limiting operational options available to maintain network security and resilience during abnormal system conditions.
- **Higher levels of low-carbon generation curtailment**, reducing utilisation of existing network capacity and limiting the contribution of renewable generation to the wider electricity system.
- **Increased reliance on traditional network and operational interventions**, potentially resulting in higher whole-system costs where flexibility would otherwise provide a more efficient solution.
- **Reduced market liquidity and provider confidence**, limiting flexibility market development and constraining the availability of flexibility services needed to support future network requirements.
- **Reduced ability to deliver ED3 objectives** relating to network utilisation, operational resilience, connections acceleration, whole-system coordination and support for a more flexible electricity system.

9. IMPLEMENTATION

Our ED3 DSO Strategy will be delivered through a phased implementation approach that builds on the foundations established in ED2 and progressively develops the capabilities required to achieve our four DSO outcomes: Access Capacity Sooner, Plan and Invest with Confidence, Experience Better Network Performance, and Pay Less Over the Long Term. The implementation roadmap set out in Figure 9.1 illustrates how capabilities are expected to evolve across ED3.

Early ED3: Establishing the Foundations

During the early years of ED3, our priority will be to establish the enabling capabilities, governance arrangements, data foundations and digital platforms required to support a more proactive and integrated DSO model. This phase will focus on strengthening strategic network planning, expanding stakeholder-led planning activities, improving forecasting and network visibility, and developing the supporting digital infrastructure needed for future operational optimisation. We'll also continue the evolution of flexibility markets, customer support services and network operations capabilities, ensuring that planning, market development and operational functions become increasingly integrated.

The primary objective of this phase is to improve visibility of future network needs, create stronger planning and operational intelligence, and provide customers and stakeholders with earlier and more transparent information about network capacity and opportunities.

Mid ED3: Scaling Capability and Embedding New practices

The middle years of ED3 will focus on embedding new capabilities into business-as-usual decision-making and scaling the solutions proven during the early phase. During this period, we expect to increase the use of integrated network planning, probabilistic forecasting, flexibility-enabled solutions and coordinated operational decision-making. Customer-facing tools, market participation arrangements and stakeholder planning processes will mature and become more closely connected with network investment and operational delivery.

We'll also begin to realise the benefits of enhanced network visibility, expanded operational forecasting and greater coordination between planning, flexibility, voltage management and network operations. This phase represents the transition from capability development towards consistent delivery of measurable customer and whole-system outcomes.

Later ED3: Delivering The next generation DSO Model

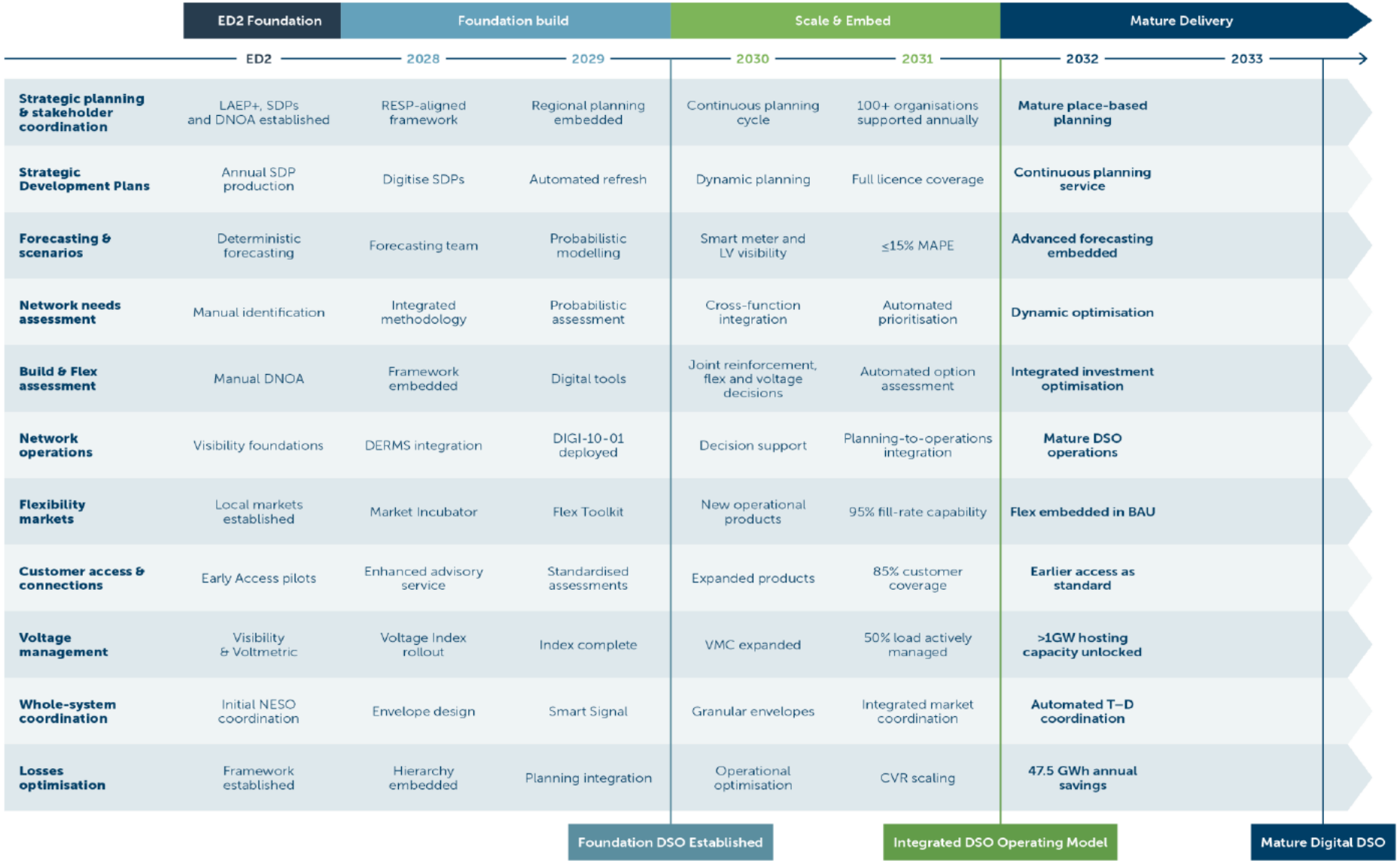
By the later years of ED3, we'll operate a mature, digitally enabled DSO model that actively coordinates planning, flexibility, network operations, voltage management and whole-system interactions. At this stage, we expect to be making greater use of automation, advanced operational tools and integrated decision-making processes to optimise network performance, increase utilisation of existing assets and support more efficient investment decisions. Strategic planning outputs, market signals and operational actions will increasingly operate as a connected system, enabling more proactive management of capacity, performance and affordability challenges.

This phase is intended to maximise the value of the capabilities established earlier in the price control, helping deliver earlier access to capacity, improved customer confidence, better network performance and lower long-term costs for consumers.

Maintaining Flexibility Throughout ED3

While the implementation pathway provides a clear direction of travel, we recognise that the pace of electrification, emerging regulatory requirements, market developments, technology advancement and stakeholder needs may evolve during the ED3 period. We'll therefore retain flexibility within our delivery approach and will regularly review priorities, sequencing and implementation plans to ensure they remain aligned with customer needs, whole-system opportunities and regulatory expectations. The implementation roadmap should therefore be viewed as a strategic delivery framework rather than a fixed programme.

Figure 9.1 ED3 DSO Implementation timeline



APPENDIX 1 REACTIVE POWER BASELINE

SEPD Active/Reactive Power Export Baselines

SEPD	AXMINSTER	0.00	2.17	0.00	1.79	0.14	2.60	0.67	2.28	Low
SEPD	BOTLEY WOOD	0.00	4.52	0.00	1.54	0.02	5.15	0.08	4.46	Low
SEPD	BRAMLEY	0.51	26.24	0.70	24.52	1.25	24.00	0.14	23.41	High
SEPD	CANAL BANK WILLESDEN HARLESDEN	0.00	1.84	0.00	2.15	0.00	2.75	0.00	3.35	Low
SEPD	CHICKERELL	0.00	16.54	0.00	16.55	0.02	16.99	0.00	16.83	Med
SEPD	COWLEY	0.00	23.55	0.00	19.85	0.00	24.87	0.01	23.02	Med
SEPD	EALING	0.00	8.27	0.00	6.64	0.00	7.90	0.00	7.04	Low
SEPD	EAST CLAYDON GSP (SE)	1.21	22.41	0.12	21.68	5.55	23.30	6.03	22.81	Med
SEPD	FAWLEY	0.04	15.15	0.21	13.82	2.26	15.54	3.64	14.88	Med
SEPD	FLEET	0.00	40.50	0.00	33.66	0.00	44.31	0.00	42.67	High
SEPD	IVER 132KV	0.00	17.02	0.00	13.96	0.00	17.96	0.00	15.61	Med
SEPD	IVER 66KV	0.00	10.34	0.00	9.02	0.00	9.57	0.00	8.12	Low
SEPD	LALEHAM GSP	0.00	16.42	0.00	13.82	0.00	15.63	0.00	14.07	Med
SEPD	LOVEDEAN	0.00	50.04	0.00	44.78	0.00	49.83	0.00	48.35	High
SEPD	MANNINGTON	0.00	21.06	0.00	16.83	0.37	21.00	1.53	19.17	Med
SEPD	MELKSHAM	0.00	11.93	0.00	8.00	0.24	13.16	0.99	12.05	Low
SEPD	MINETY	0.00	12.41	0.00	10.03	3.33	10.93	6.91	8.49	Low
SEPD	NORTH HYDE	0.00	2.76	0.00	1.33	0.00	1.17	0.00	0.87	Low
SEPD	NURSLING	0.00	17.15	0.01	12.21	0.18	16.38	0.07	13.95	Med
SEPD	WESLEY AVENUE GSP (WILLESDEN)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Low

Metering Data from the 25/26 FY. Winter Morning (06:00-09:00am), Winter Evening (16:00 – 20:00), Summer Morning (06:00 – 12:00), Summer Afternoon (12:00 – 18:00)

SHEPD Active/Reactive Power Export Baselines

SHEPD	ABERNETHY GSP	0.59	1.67	0.88	1.62	1.97	1.51	1.24	1.46	Low
SHEPD	ALNESS S/S	10.79	2.39	12.32	2.12	7.30	2.20	8.73	1.81	Low
SHEPD	ARBROATH	0.45	1.92	0.49	1.79	1.21	1.58	0.46	1.41	Low
SHEPD	ARDKINGLAS	3.67	0.07	5.19	0.06	1.57	0.08	2.01	0.06	Low
SHEPD	ARDMORE S/S	3.42	2.07	1.98	2.81	3.71	0.71	4.43	0.57	Low
SHEPD	BEAULY	0.02	0.63	0.00	0.52	0.00	0.54	0.00	0.54	Low
SHEPD	BERRYBURN GRID	21.71	7.73	22.32	7.73	8.65	5.99	10.33	6.49	Low
SHEPD	BOAT OF GARTEN	2.79	1.32	3.10	1.19	2.42	1.66	2.65	1.58	Low
SHEPD	BRACO	7.51	3.47	6.12	3.24	3.72	4.86	5.64	4.47	Low
SHEPD	BRIDGE OF DUN	0.29	0.36	0.13	0.28	0.08	0.50	0.11	0.34	Low
SHEPD	BROADFORD	0.00		0.00		0.00		0.00		Low
SHEPD	BURGHMUIR	0.00	2.00	0.00	1.87	0.00	1.75	0.00	1.67	Low
SHEPD	CAIRNFORD SUBSTATION	11.07	0.42	13.19	0.33	7.52	0.88	7.05	0.75	Low
SHEPD	CARRADALE	14.69	0.09	16.47	0.08	8.47	0.25	11.00	0.22	Low
SHEPD	CASHLIE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Low
SHEPD	CASSLEY	2.77	0.59	3.34	0.51	3.72	0.59	3.22	0.61	Low
SHEPD	CEANNACROC	5.00	0.00	5.92	0.00	2.94	0.00	2.47	0.00	Low
SHEPD	CEANNACROC P/S	6.08	0.08	7.66	0.12	6.14	0.12	5.38	0.10	Low
SHEPD	CHARLESTON	0.09	0.62	0.08	0.62	0.04	0.25	0.01	0.19	Low
SHEPD	CLACHAN	14.10	0.11	28.27	0.04	6.34	0.18	3.26	0.13	Low
SHEPD	CLAYHILLS	0.00	0.31	0.00	0.13	0.00	0.14	0.00	0.02	Low
SHEPD	COUPAR ANGUS	5.78	0.79	6.37	0.68	5.03	0.98	4.30	0.66	Low
SHEPD	CRAIGIEBUCKLER	0.00	1.99	0.00	1.84	0.00	1.86	0.00	1.88	Low
SHEPD	DALLAS	21.94	0.11	23.70	0.12	13.43	0.37	13.22	0.20	Low
SHEPD	DOUNREAY	8.89	0.12	10.08	0.12	2.85	0.07	3.76	0.05	Low
SHEPD	DUDHOPE	0.00	0.96	0.00	0.46	0.00	0.71	0.00	0.41	Low
SHEPD	DUNBEATH	1.87	0.18	2.47	0.15	2.29	0.28	2.93	0.26	Low
SHEPD	DUNOON	2.24	1.90	2.05	1.65	1.08	1.68	1.35	1.59	Low
SHEPD	DUNVEGAN	6.80	0.11	6.01	0.11	5.02	0.22	6.02	0.13	Low
SHEPD	DYCE	0.12	2.82	0.03	3.00	0.06	2.73	0.13	2.60	Low
SHEPD	ELGIN	0.00	1.30	0.00	1.22	0.00	0.79	0.00	0.74	Low
SHEPD	FASNAKYLE GSP	3.64	0.16	4.03	0.16	2.84	0.17	2.66	0.16	Low
SHEPD	FETTERESSO	0.00	0.00	0.00	0.00	6.83	2.12	8.84	2.02	Low
SHEPD	FIDDES GSP	10.13	1.29	9.24	1.06	3.35	1.74	5.96	1.23	Low
SHEPD	FORT AUGUSTUS GSP	5.88	2.15	7.65	2.09	2.75	2.29	2.15	2.20	Low
SHEPD	FORT WILLIAM GSP	4.87	2.32	4.71	1.86	1.12	1.60	1.08	1.64	Low
SHEPD	FRASERBURGH GSP	0.00	0.11	0.00	0.09	0.00	0.06	0.00	0.07	Low
SHEPD	GLENAGNES	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Low
SHEPD	GLENFARCLAS GSP	20.92	0.78	26.14	0.75	10.36	1.77	11.00	1.71	Low
SHEPD	GRUDIE BRIDGE	9.39	0.89	11.75	0.62	6.16	0.75	4.69	0.94	Low
SHEPD	HARRIS GSP	3.67	0.82	5.17	0.63	3.79	0.44	3.34	0.58	Low
SHEPD	INVERNESS	0.84	0.49	0.45	0.30	0.48	0.45	0.43	0.25	Low
SHEPD	KEITH	6.02	0.33	6.31	0.31	4.19	0.43	4.72	0.33	Low
SHEPD	KILLIN	4.54	0.00	4.56	0.00	1.76	0.01	1.71	0.00	Low
SHEPD	KINLOCHLEVEN	26.16	0.04	25.69	0.05	26.94	0.06	26.65	0.07	Low

SHEPD	KINTORE GSP	0.14	3.37	0.03	3.32	0.30	4.20	0.63	3.84	Low
SHEPD	LAIRG	10.81	2.72	11.43	2.88	6.63	3.25	8.57	3.17	Low
SHEPD	LEWIS STORNOWAY GSP	4.36	0.52	3.14	0.93	3.22	0.26	3.91	0.21	Low
SHEPD	LUBREOCH	1.44	0.00	1.47	0.00	0.24	0.00	0.23	0.00	Low
SHEPD	LUNANHEAD	0.00	0.85	0.00	0.75	0.05	0.61	0.09	0.47	Low
SHEPD	LYNDHURST	0.04	1.64	0.00	1.59	0.14	1.67	0.03	1.69	Low
SHEPD	MACDUFF GSP	7.14	1.79	7.24	1.68	3.50	2.34	4.99	2.07	Low
SHEPD	MILTON OF CRAIGIE	0.00	1.23	0.00	0.97	0.00	1.74	0.00	1.60	Low
SHEPD	MYBSTER	18.42	0.48	21.68	0.35	7.83	0.71	9.25	0.51	Low
SHEPD	NAIRN	0.00	0.08	0.00	0.06	0.00	0.15	0.00	0.16	Low
SHEPD	ORRIN	11.29	0.36	12.41	0.46	8.14	0.48	11.12	0.40	Low
SHEPD	PERIVALE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Low
SHEPD	PERSLEY	0.00	3.00	0.00	3.22	0.00	2.83	0.00	2.87	Low
SHEPD	PETERHEAD GRANGE GSP	4.04	1.53	3.62	1.56	2.82	1.47	2.60	1.35	Low
SHEPD	PETERHEAD SHELL GSP	0.00	0.32	0.00	0.32	0.00	0.14	0.00	0.15	Low
SHEPD	PORT ANN GSP	2.75	0.95	2.65	1.00	2.02	1.14	1.87	1.11	Low
SHEPD	POWERGATE GSP	0.00	0.02	0.00	0.01	0.00	0.08	0.00	0.08	Low
SHEPD	QUOICH	10.93	0.30	13.66	0.39	13.28	0.33	11.95	0.27	Low
SHEPD	RANNOCH	14.31	0.02	20.44	0.00	1.46	0.38	1.26	0.37	Low
SHEPD	REDMOSS	0.08	0.70	0.02	0.93	1.07	0.90	1.54	0.88	Low
SHEPD	ROTHIENORMAN	3.30	1.75	3.67	1.78	1.10	0.36	1.52	0.34	Low
SHEPD	SHIN	7.43	0.45	8.39	0.47	5.60	0.20	4.39	0.18	Low
SHEPD	SLOY	1.02	0.01	0.99	0.00	0.71	0.01	0.70	0.01	Low
SHEPD	ST FERGUS GAS / EAST GSP	1.40	0.01	1.45	0.01	0.44	0.00	0.65	0.00	Low
SHEPD	ST. FILLANS	17.39	0.00	18.70	0.00	3.73	0.07	1.52	0.08	Low
SHEPD	STRICHEN	4.57	0.84	4.00	0.85	3.22	0.61	5.05	0.42	Low
SHEPD	TARLAND	0.74	0.33	0.66	0.30	1.07	0.58	1.50	0.49	Low
SHEPD	TAYNUILT	7.79	1.27	7.91	0.79	5.05	1.48	4.80	1.39	Low
SHEPD	THURSO	6.48	1.05	6.20	0.83	6.32	2.63	7.15	2.33	Low
SHEPD	TORR ACHILTY	2.27	0.06	2.58	0.03	1.20	0.01	1.10	0.04	Low
SHEPD	TUMMEL BRIDGE GSP	10.09	0.13	11.07	0.14	2.35	0.48	1.23	0.39	Low
SHEPD	WILLOWDALE GSP	0.00	1.17	0.00	1.00	0.00	0.80	0.00	0.73	Low
SHEPD	WOODHILL GSP	0.00	2.32	0.00	2.14	0.00	1.97	0.00	1.74	Low

Metering Data from the 25/26 FY. Winter Morning (06:00-09:00am), Winter Evening (16:00 – 20:00), Summer Morning (06:00 – 12:00), Summer Afternoon (12:00 – 18:00)

APPENDIX 2 WORKED EXAMPLES OF VOLTAGE AND LOSSES OPTIMISATION

Illustrative Applications of the Voltage and Losses Optimisation Hierarchy

Purpose and methodology
These worked examples illustrate a change in distribution losses with the customer, network and societal benefits enabled by a planning or operational decision. They demonstrate the decision framework and do not constitute ED3 forecasts or commitments.

The examples follow SSEN's Theory of Change:

Activity > Output > Outcome > Benefit

SSEN's benefits methodology distinguishes benefits to customers, connecting customers, the whole energy system, society and the environment. It applies established evaluation approaches including Ofgem CBA, the Common Evaluation Methodology, Social Return on Investment and HM Treasury Green Book methods.

Estimating annual electrical losses
For each example, annual technical losses are estimated by:

1. establishing peak power flow;
2. estimating the electrical losses at peak flow;
3. applying a loss load factor to represent annual variation in loading; and
4. testing the alternative power flow using the approximate relationship that variable losses change with the square of current.

The simplified annualisation formula is:
Annual losses = peak losses × 8,760 hours × loss load factor

The change between baseline and alternative operation is estimated as:
Alternative variable losses = baseline variable losses × (alternative power flow ÷ baseline power flow)²

Example 1: Accelerating a demand connection

Activity, output and outcome
Voltage management and operational optimisation increase the usable demand capacity of a primary substation from **45 MW to 55 MW**, enabling a **10 MW demand connection** before conventional reinforcement. The output is 10 MW of additional capacity. The outcome is avoided connection delay, enabling earlier electrification or productive investment.

Step 1: Estimate the additional losses
Assume:

- baseline peak flow: 45 MW;
- baseline peak losses: 2% of peak flow;
- representative loss load factor: 20%.

Baseline peak losses are:
45 MW × 2% = **0.90 MW**
Baseline annual losses are:
0.90 MW × 8,760 × 20%
= 1,576.8 MWh
= **1.58 GWh per year**
The ratio between alternative and baseline power flow is:
55 MW ÷ 45 MW = 1.222
Applying the squared-current relationship:
$1.222^2 = 1.494$
Alternative annual losses are therefore:
1.5768 GWh × 1.494
= **2.36 GWh per year**
The estimated increase is:
2.36 GWh − 1.58 GWh
= **0.78 GWh per year**
Using an illustrative loss-energy value of £100/MWh:
780 MWh × £100/MWh
= **£78,000 per year**

Step 2: Estimate the benefit of earlier demand connection
The SSEN DSO benefits methodology values avoided demand-connection delay at **£397,999 per MVA per year**, uses a **95% power factor** to convert between MW and MVA, and applies adjustments including attribution, deadweight and optimism bias.

The 10 MW connection is equivalent to:
10 MW ÷ 0.95
= **10.53 MVA**
Before methodology adjustments, the indicative avoided-delay value for one year is:
10.53 MVA × £397,999/MVA/year
= **approximately £4.19 million per year of delay avoided**
Comparison with the additional losses cost:
£4.19 million ÷ £78,000
= **approximately 54:1**

Conclusion
On these illustrative assumptions, one year of accelerated access produces a gross avoided-delay value approximately **54 times** the value of the additional losses.

Example 2: Reducing renewable-generation curtailment

Activity, output and outcome
Voltage management increases export capability from **20 MW to 25 MW** and enables a renewable generator to export an additional **6 GWh per year** that would otherwise be curtailed. The output is 5 MW of additional export headroom. The outcome is additional renewable generation delivered to the system.

Step 1: Estimate the additional losses
Assume baseline annual losses on the relevant network section are **0.80 GWh**.

The loading ratio is:
25 MW ÷ 20 MW = 1.25
Applying the squared-current relationship:
$1.25^2 = 1.5625$
Alternative annual losses are:
0.80 GWh × 1.5625
= **1.25 GWh per year**
The estimated increase is:
1.25 GWh − 0.80 GWh
= **0.45 GWh per year**
Using an illustrative loss-energy value of £100/MWh:
450 MWh × £100/MWh
= **£45,000 per year**

Step 2: Estimate wholesale-system benefit
SSEN's DSO benefits methodology values additional renewable output by comparing solar-PV operating costs with displaced CCGT operating costs. The current methodology uses a gross saving of **£158/MWh**, comprising avoided CCGT variable operating, fuel and carbon costs.

The illustrative wholesale-system benefit is therefore:
6,000 MWh × £158/MWh
= **£948,000 per year**

After deducting the illustrative additional loss-energy cost:
£948,000 − £45,000
= **£903,000 per year**

The gross wholesale benefit is:
£948,000 ÷ £45,000
= **approximately 21 times** the value of the additional losses.

Step 3: Estimate the carbon impact
Using SSEN DSO benefits methodology:

- avoided emissions factor: 0.174 tCO_2e/MWh;
- carbon value: £262/tCO_2e.

Avoided emissions are:
6,000 MWh × 0.174 tCO_2e/MWh
= **1,044 tCO_2e per year**

Indicative societal carbon value is:
1,044 tCO_2e × £262/tCO_2e
= **£273,528 per year**

Note: carbon costs are already included within the wholesale-cost calculation. The £273,528 carbon value should therefore be considered as a separate environmental indicator and **not added** to the £948,000 wholesale benefit

Conclusion
The additional renewable generation, wholesale-system saving and avoided emissions materially outweigh the increase in distribution losses.

Example 3: Deferring reinforcement through higher asset utilisation

Activity, output and outcome
Network reconfiguration increases the usable capacity of an existing circuit from **15 MW to 18 MW**, allowing reinforcement to be deferred for five years while maintaining customer connections and network operability. The output is 3 MW of additional usable capacity. The outcome is later reinforcement and reduced near-term network expenditure.

Step 1: Estimate the additional losses
Assume baseline annual losses **0.6 GWh**.
The loading ratio is:
18 MW ÷ 15 MW = 1.20
Applying the squared-current relationship:
$1.20^2 = 1.44$
Alternative annual losses are:
0.60 GWh × 1.44
= **0.864 GWh per year**
The estimated increase is:
0.864 GWh − 0.60 GWh
= **0.264 GWh per year**
Using an illustrative loss-energy value of £100/MWh:
264 MWh × £100/MWh
= **£26,400 per year**
Undiscounted over five years:
£26,400 × 5 = **£132,000**

Step 2: Estimate the reinforcement-deferral benefit
Assume the counterfactual reinforcement has an estimated capital cost of **£4 million**. This is the cost of the deferred asset, not automatically a £4 million benefit. Under SSEN's methodology, the consumer benefit would be calculated through the Common Evaluation Methodology. The CEM compares the discounted cash flows of reinforcement, flexibility and alternative solutions over the asset life or 45 years. It accounts for the timing of reinforcement and flexibility costs, and returns the NPV saving from the selected deferral option. The methodology then applies the relevant Totex Incentive Mechanism sharing factor, currently described as 50% for the customer share.

The appropriate calculation is therefore:
Net system benefit = CEM NPV saving from deferral − present value of additional loss costs not already captured, and:
Customer benefit = net system benefit × applicable customer sharing factor
For illustration, assume the CEM produced an NPV saving of **£1.20 million**, and the present value of additional losses were approximated at **£132,000**, the residual system benefit would be:
£1,200,000 − £132,000 = **£1,068,000**
Applying an illustrative 50% customer-sharing factor: £1,068,000 × 50%
= **£534,000 customer benefit**

Wider societal contribution
Deferring reinforcement may also avoid or postpone the embodied carbon, land requirements, construction disruption and resource use associated with installing new assets. These effects have not been quantified

Conclusion
CEM, including the additional loss cost, demonstrates positive net consumer value and engineering assessment confirms that safety, resilience, voltage quality and operability are maintained.

APPENDIX 3 STAKEHOLDER ENGAGEMENT DECISION LOG

Type of Engagement Undertaken	Stakeholder Groups	Summary Feedback	Impact on Business Plan
Customer Conferences (SHEPD & SEPD), Connections Forums (DER, ICP/IDNO, Housing Developers, LA), Think Tanks (Installers), Expert Panels, Virtual Roundtables, Focus Groups ED3 Stakeholder Engagement Workshops, March 2026 (Perth, Reading & online deliberative workshops, independently facilitated): Session 1 - Planning for the ED3 price control; Session 2 - Transforming our approach to low voltage networks.	DER Operators, ICPs/IDNOs, Housing Developers, Installers, Local Authorities, Community Energy Groups, Domestic Customers, Storage Providers, Renewable Generators	Greater network investment ahead of need was consistently ranked as the top priority across all stakeholder groups. Stakeholders highlighted grid capacity constraints, particularly in rural and island areas, as a significant barrier to connections. Generation and storage balance was ranked third priority by installers (score 3.33). There were strong calls for proactive communication on reinforcement timelines and capacity release. Stakeholders expressed support for flexibility products, community batteries, and dynamic load averaging as solutions to manage constraints while reinforcement is delivered.	A programmatic approach to network investment has been adopted, releasing capacity ahead of individual connection requests. Alignment of network planning, connections, and delivery functions ensures coordinated investment. Expanded flexibility and access products are being developed to maximise existing capacity. Long-term development plans are now published to provide visibility of reinforcement timelines. DSO flexibility products and CBA tools are being rolled out. Accelerated LV and HV reinforcement is prioritised in constrained areas.
DSO Surveys (Keep in Touch), DSO Autumn Series (Webinars, Workshops, Roundtables), Connections Forums (DER, ICP/IDNO, Housing Developers), DNO Working Group on Community Energy, Consumer Priorities Research, Utility Week Virtual Roundtables ED3 Stakeholder Engagement Workshops, March 2026 (Perth, Reading & online deliberative workshops, independently facilitated): Session 1 - Planning for the ED3 price control; Session 2 - Transforming our approach to low voltage networks.	Local Authorities, Community Energy Groups, Housing Developers, Consultants, Distributed Generation Customers, ICPs/IDNOs, Domestic Consumers, SMEs, Academics, Industry Bodies	Stakeholders consistently called for coordinated, place-based planning with clear alignment between national, regional and local energy plans. Local authorities want scenario tools, LAEP-ready data, and regular coordination on housing, EV/heat planning and renewables to support predictable, joined-up planning. Community energy groups emphasised the need for practical support, accessible tools, and clearer visibility of how their needs feed into SDPs, RESP and tRESP processes. There was strong consensus that community benefit and local value must be visible outcomes of network investment, with stakeholders wanting DSOs to act as coordinators and enablers rather than simply asset managers. Stakeholders also highlighted that customer engagement must be reframed in consumer-relevant terms, with benefits framed as outcomes such as 'EV-ready homes' and 'future-proof streets' rather than infrastructure language.	Stakeholder feedback has directly shaped the ED3 DSO Strategy by reinforcing the commitment to place-based, joined-up planning. LENZA and LAEP+ tooling developed in ED2 will be evolved into a fully integrated planning capability aligned to Regional Energy Strategic Planning (RESP) processes. The strategy establishes structured, ongoing engagement with NESO and regional stakeholders, producing coordinated, RESP-aligned planning outputs. A dedicated community energy coordination capability will be established to provide structured engagement, technical workshops and clear routes into SSEN's planning and connections processes. Working relationships Local Authorities to ensure coordinated delivery. The strategy commits to aligning network investment with local net zero, housing, and economic development priorities.
Focus Groups (Consumer Priorities Qualitative), Online Events (Equal LCT, DSO Autumn Series), Research ED3 Stakeholder Engagement Workshops, March 2026 (Perth, Reading & online deliberative workshops, independently facilitated): Session 1 - Planning for the ED3 price control; Session 2 - Transforming our approach to low voltage networks.	Domestic Customers, LCT Adopters, Local Authorities, Housing Associations, Academia, Consumer Groups, Community Energy	Customers expect network ready for LCTs (EVs, heat pumps, solar, battery storage). Strong support for EV infrastructure, vehicle-to-grid, and unlooping. Equal LCT project insights: deferred reinforcement possible through targeted heat pump and energy efficiency adoption using geospatial tools. Targeted energy efficiency and LCT rollouts requested, with geospatial tools to maximise network value and defer reinforcement. Payment models and support for those most in need requested, especially for heat pump adoption and fuel poverty.	LCT Enabler role established with commitment to facilitate LCTs supporting system needs by end of first year of ED3. Equal LCT innovation learnings embedded into BAU - exploring whether enhanced energy efficiency allows smaller heat pumps, reducing heat-led peak demand and deferring reinforcement. Smart LCT solutions developed with LEMA partnership (Community Smart Access, Dynamic Load Averaging). LV flex service products committed from start of ED3 to support voltage and enable rooftop solar connection. Framework arrangements with LCT installers to facilitate consumer bill management opportunities.
Focus Groups (Consumer Priorities Qualitative), Surveys (Consumer Priorities Quantitative), Online Events (Equal LCT, LA Forum, Housing Developer Forum), Research (ENA Unlooping Research) ED3 Stakeholder Engagement Workshops, March 2026 (Perth, Reading & online deliberative workshops, independently facilitated): Session 1 - Planning for the ED3 price control; Session 2 - Transforming our approach to low voltage networks.	Domestic Customers (including vulnerable, hard-to-reach, rural, urban), LCT Adopters, Local Authorities, Housing Associations, Community Energy, Consumer Groups, Academia	LCT adopters want proactive investment and support for domestic LCT readiness. 46% believe smarter network operation will become more important in next 10 years. There is a strong appetite for enabling EVs, heat pumps, and solar panels across all customer groups. Vulnerable customers need tailored support, more notice, and accessible formats. Digital exclusion concerns raised - need for human contact retained alongside digital tools. Concerns about complexity and upfront costs for community schemes. 100% of LA forum attendees want early visibility of LV upgrade programmes; 50% support upgrades to enable all homes regardless of current demand.	Strategy commits to enabling homes to connect LCTs in ED3 across both licence areas.. Socio-demographic factors included in prioritisation to ensure Just Transition and equal access. Dedicated engagement teams from start of ED3 working with local communities. Customer engagement portal with Connections Readiness Indicator so consumers can check LCT enablement status. Partnership approach with LCT installers to accelerate consumer benefits and bill reduction opportunities.

DSO Surveys, DSO Autumn Series, Connections Forums, DNO Working Group on Community Energy, Consumer Priorities Research, Utility Week Virtual Roundtables, Have Your Say Webinars, Southampton Energy Coalition Conference, GB Energy Bilateral, ESC Bilateral **ED3 Stakeholder Engagement Workshops, March 2026 (Perth, Reading & online deliberative workshops, independently facilitated): Session 1 - Planning for the ED3 price control; Session 2 - Transforming our approach to low voltage networks.**	Local Authorities, Community Energy Groups, Housing Developers, Consultants, DER Customers, ICPs/IDNOs, Domestic Consumers, SMEs, MPs, Academia, Major Customers, Government Bodies, NESO, Energy System Partners	Stakeholders consistently emphasised that coordinated, place-based planning is essential to enable local economic growth and community energy development. Local authorities reported lacking resources and relying heavily on DNO guidance for future load requirements, reinforcing the value of SDPs, LENZA and RESP support tools. Community energy groups highlighted persistent financial and capacity barriers, requesting clearer pathways, coordinated support and more predictable, long-term investment signals. The Southampton Energy Coalition validated SSEN's role as an enabler rather than a blocker, with stakeholders endorsing a £150m investment programme and committing political advocacy for ED3. Stakeholders also called for broader, more inclusive definitions of community energy, strong cross-government and NESO/LA/DNO coordination, and place-based, multi-technology delivery models to address constraints and maximise local benefits.	The business plan now positions SSEN as a strategic planning partner with trusted collaboration with LAs, NESO and government bodies. LENZA and LAEP+ have evolved into integrated RESP-aligned capabilities enabling scenario-based regional planning. Dedicated community energy coordination has been established. LA Development Plans will be co-developed to align network investment with local priorities. The Southampton engagement provides a case study demonstrating multi-party consensus on investment need, with Coalition-identified grid constraints integrated into ED3's load planning evidence base. A joint SSEN-ESC-LA/NESO working group will tackle planning misalignment early and de-risk centralised RESP uncertainty.
DSO Surveys, Connections Forums, DSO Autumn Series, Consumer Priorities Research, Utility Week Virtual Roundtables, Have Your Say Webinars, GB Energy Bilateral, Southampton Energy Coalition, Regen Bilateral **ED3 Stakeholder Engagement Workshops, March 2026 (Perth, Reading & online deliberative workshops, independently facilitated): Session 1 - Planning for the ED3 price control; Session 2 - Transforming our approach to low voltage networks.**	DER Customers, ICPs/IDNOs, Housing Developers, Consultants, LAs, I&C Customers, Domestic Consumers, SMEs, Community Energy Groups, MPs, Academia, Major Customers	Stakeholders made strong calls for faster, clearer and more affordable connections, with better curtailment visibility and forecasting. Remote communities, particularly islands, highlighted resilience and outage reduction as priorities. Community groups raised concerns about disproportionate costs and complex requirements. Stakeholders emphasised the need for earlier, strategic and anticipatory load planning to avoid networks becoming a blocker to electrification, heat pump rollout, EV charging and wider economic activity. Data centre growth, AI clusters and other high-demand industries were cited as significant step-change load drivers. LCT providers highlighted that outdated processes and unpredictable enabling-works timelines slow deployment. The Regen bilateral emphasised that community energy projects often emerge late but can scale quickly once funding aligns, increasing the risk of volatile load and strengthening the case for ahead-of-need investment.	An advisory service will be operational from 2030, providing tailored pre-application optioneering support to customers including community energy groups, Industrial & Commercial customers and those seeking to install LCTs. This will deliver integrated customer optioneering with customer-facing tools across all voltage levels. The plan strengthens anticipatory load planning and early signalling of reinforcement, with scenario-based load modelling reflecting late-emerging community and public-interest load. Queue management principles for sub-5MW projects are being reviewed for fairness and transparency. Place-based coordination models with local authorities are being piloted for community and public-interest projects. The Southampton investment programme demonstrates strategic, ahead-of-need approach.
Webinars (Connections Forums - LA, DER, ICP/IDNO, Housing Developers), In-person Events (Connections Customer Conferences), Surveys (GPTW Survey), Industry Forums (DSO Autumn Series, Utilities Strategy Forum), Partner Engagements (Microsoft, AWS, Gartner), Research (Consumer Priorities Research) **ED3 Stakeholder Engagement Workshops, March 2026 (Perth, Reading & online deliberative workshops, independently facilitated): Session 1 - Planning for the ED3 price control; Session 2 - Transforming our approach to low voltage networks.**	DNOs, Local Authorities, ICPs/IDNOs, Housing Developers, DER Operators, Industrial & Commercial Customers, Internal Staff, Technology Partners, Consumer Advocates, Installers, Supply Chain Partners	Strong stakeholder consensus that digitalisation is essential for delivering reliable, resilient and affordable networks. 100% of respondents at Connections Forums supported AI and digital tools to enhance self-serve capabilities. Stakeholders emphasised digital transformation must be customer-centred, reducing effort rather than adding complexity. Clear demand for integrated/centralised data platforms and training in data analytics/data literacy. Staff feedback highlighted need for robust, user-friendly systems with automation that genuinely reduces manual workload. DSO stakeholders called for enhanced data quality, forecasting, and deeper insight into network constraints. Utilities Strategy Forum reinforced need for inter-utility interoperability and common data standards, with learning from telecoms and open finance sectors.	ED3 strategy positions digital capability as core enabler of efficient network outcomes. Work underway to improve data quality, governance and accessibility through unified data platform. Digital and data improvements to be delivered as one integrated programme with strong governance. Platform unification accelerated with responsible AI embedded from outset. Customer and colleague tools designed to support simpler, faster and more reliable services. Technology strategy provides secure, data-driven foundations for resilient, intelligent network operation. Long-term vision established for fully digital, data-driven and autonomous network operator.
Webinars (Connections Forums, Have Your Say SDP Alignment), In-person Events (Connections Customer Conferences), Partner Engagements (Anmut, Microsoft, AWS), Industry Forums (DSO Autumn Series), Surveys (GPTW Survey), Research (Consumer Priorities Research) **ED3 Stakeholder Engagement Workshops, March 2026 (Perth, Reading & online deliberative workshops, independently facilitated): Session 1 - Planning for the ED3 price control; Session 2 -**	DNOs, Local Authorities, ICPs/IDNOs, Housing Developers, DER Operators, Data Specialists, Technology Partners, Regulators, Consumer Advocates, Industrial & Commercial Customers, Internal Staff	Data transparency and quality have been identified as critical - stakeholders want granular, timely and consistent network data including headroom, constraints, queue position and reinforcement plans. Requests for availability of raw data feeding SDPs with clear 'data lineage' across planning products. Strong desire for transparent, evidence-driven decisions shaped open-data strategy. Stakeholders raised concerns customer journey data is unreliable/incomplete with cost accuracy issues needing better management. Clear value placed on treating data as strategic asset. Anmut emphasised quantifying data value and linking investment to measurable customer benefit. LENZA access and data-sharing functionality discussed for local authority partner access. Some strategic forecasts cannot be shared publicly for security reasons - secure-access	Governance strengthened through improved data quality, clearer data lineage, trusted data sources and strong cyber-security controls ensuring safe AI use. External discoverability and Open Data metadata based on DCAT standard for dataset discovery and reuse. Internal metadata governance based on ISO/IEC 11179 standards for precise, consistent data definitions. Controlled-access, secure sharing expanded where public publication not feasible. Work underway to improve data quality, governance and accessibility through unified data platform. Data lifecycle control improved through governance updates. Commitment to more granular geospatial data sets for clearer visibility of local network constraints.

Transforming our approach to low voltage networks.		versions required. Staff feedback highlighted need for digital confidence, data literacy and skills development.	
Webinars (Connections Forums, Data to Insights Show & Tell, Equal LCT), Surveys (DSO Keep in Touch), In-person Events (Energy Innovation Summit, Watt Works Hackathon), Bilaterals (ENA/Citizens Advice, Ofgem DNO Innovation Forum), Roundtables (UW Focus Groups), Reports (Citizens Advice Transparency Review), Research (Consumer Priorities Research) ED3 Stakeholder Engagement Workshops, March 2026 (Perth, Reading & online deliberative workshops, independently facilitated): Session 1 - Planning for the ED3 price control; Session 2 - Transforming our approach to low voltage networks.	DNOs, Local Authorities, Academia, ICPs/IDNOs, Community Energy Groups, Consultants, Housing Developers, Installers, Government, Research Bodies, NESO, Regulators, Consumer Advocates, Industrial & Commercial Customers, Domestic & SME Customers	Stakeholders consistently emphasise the urgent need for better LV asset visibility, granular data, and accurate forecasting to manage heat pump, EV and wider LCT uptake. Clear demand exists for open, interpreted (not raw) data, transparent capacity information, and real-time network data as the top digital/data improvement. Citizens Advice highlighted inconsistent transparency in innovation reporting, with SIF projects more transparent than NIA due to stronger governance. DSO survey respondents want capacity maps with headroom, queue times, and upgrade timelines. Installers want transparent, real-time network capacity information including substation loading. Strong cross-sector engagement shows broad industry support for SSEN's digitalisation direction, with stakeholders recognising Data2Insights's potential to reduce barriers, accelerate decision-making and lower digitalisation costs. 100% of housing developers support AI/digital tools to improve self-serve capabilities.	(ED3-S09) ED3 Innovation Strategy reinforced to focus on clearer consumer value, improved transparency, stronger governance, and consistent routes to BAU deployment. Committed to more programmatic approach to innovation with clearer routes from NIA/SIF projects into BAU deployment and strengthened benefits tracking. D2I project positioned as delivering already and progressing into ED3 with stakeholder support. Integrating stakeholder insights into ED3 planning with focus on deliverability, measurable customer outcomes, and BAU transition. Early visibility of LV works to be included in LENZA platform. Supporting continued decarbonisation pathways including LAEP-aligned forecasting, flexible connections, and capacity transparency.
Webinars (Customer Service & AI Think Tank, Future of Installers Think Tank, Data to Insights Show & Tell, Connections Forums), In-person Events (Energy Innovation Summit), Roundtables (UW Focus Groups), Bilaterals (Ofgem DNO Innovation Forum), Research (Consumer Priorities Research) ED3 Stakeholder Engagement Workshops, March 2026 (Perth, Reading & online deliberative workshops, independently facilitated): Session 1 - Planning for the ED3 price control; Session 2 - Transforming our approach to low voltage networks.	DNOs, Consumer Advocates, Regulators, Academia, Installers, ICPs/IDNOs, Housing Developers, Industrial & Commercial Customers, Government, Supply Chain Partners, Digital & Data Specialists, Research Bodies	AI must be trustworthy, transparent and explainable - customers need to understand how answers were generated. Strong warnings that AI being 'confidently wrong' could cause major reputational harm. Customers value easy escalation to human and clear boundaries for AI operation, especially for complex or high-stakes issues. Vulnerability and inclusivity must be designed in from start. Improved prediction of outages and restoration times were ranked as top AI priority. AI, automation and integrated data viewed as essential for DSO system-orchestration.	Making the case for additional use of AI, especially agentic AI options to deliver time-saving innovations to the business. SmartETR to be reviewed for use in planned supply interruptions, with innovation funding offered to expand capability. D2I Beta phase (June 2026 if approved) positions SSEN to mature digital tools in time for early ED3 delivery. Advisory Service and Innovation Festival proposals from Ofgem to be incorporated into plan. Developing list of potential deployments from current and emerging innovation portfolio for deployment allowance within ED3. Innovation supporting connections reform through digital tools where applicable.
Webinars (Equal LCT, Have Your Say), Online Forums (LA Forum, DER Forum, ICP/IDNO Forum, Housing Developer Forum), Surveys (Consumer Priorities Quantitative), Focus Groups (Consumer Priorities Qualitative), Research (ENA Unlooping Collaborative DNO Research Phase 1 & 2) ED3 Stakeholder Engagement Workshops, March 2026 (Perth, Reading & online deliberative workshops, independently facilitated): Session 1 - Planning for the ED3 price control; Session 2 - Transforming our approach to low voltage networks.	Domestic Customers, Local Authorities, Housing Associations, Community Energy, ICPs/IDNOs, Housing Developers, DER Operators, Consultants, Consumer Groups, Academia, Suppliers	There is a strong consensus for proactive LV upgrades, 77% support proactive upgrades even where homes don't currently need LCTs (Equal LCT); 100% of housing developers agree proactive improvements are necessary; whereas ENA research highlighted 66-68% acceptance for both reactive and proactive unlooping. Concerns centre on disruption (digging, access, reinstatement), not the principle itself. Customers expect DNOs to show leadership and coordinate street-by-street works efficiently, which will require enhanced forecasting and modelling techniques to inform prioritisation approaches.	Proactive programmatic approach embedded as core LV strategy with stakeholder support. Strategy targets homes enabled to connect LCTs in ED3. Prioritisation framework developed considering asset condition, fault history, and socio-demographics to ensure Just Transition.
DSO Surveys, DSO Autumn Series, ODM Consultation, Consumer Priorities Research, Utility Week Virtual Roundtables, Have Your Say Webinars, Day Ahead Flexibility Markets Webinar, SDP Methodology Consultation, DNOA Consultation, Value of Lost Load Research	Local Authorities, Consultants, Developers, FSPs, Technology Providers, Community Groups, System Operation Specialists,	Stakeholders placed critical importance on accurate, granular, standardised data and called for improved forecasting, real-time data and headroom visibility. Stakeholders consistently called for clearer, jargon-free messaging across RESP, SDPs and ED3 planning, with requests for worked examples and scenario transparency.	Earlier whole-system planning will be embedded as a core strategic planning capability, enhancing our in-house forecasting capability across all voltages, we'll use probabilistic modelling tools to produce network needs assessments incorporating voltage and losses. Automated CEM-based options assessments enable more transparent decision-making. The plan now includes clearer strategic alignment with NESO, greater transparency on how SDPs, DFES and RESP

ED3 Stakeholder Engagement Workshops, March 2026 (Perth, Reading & online deliberative workshops, independently facilitated): Session 1 - Planning for the ED3 price control; Session 2 - Transforming our approach to low voltage networks.	Domestic Consumers, SMEs, Regulators, Academics, Trade Associations		inputs shape long-term investment needs, and improved communication on the rationale for anticipatory reinforcement. VoLL insights justify proactive, anticipatory interventions at LV, not only traditional reinforcement. Stakeholder feedback on transparency, coordination and flexibility deployment has strengthened the engagement approach and reinforced the drivers for change narrative.
DSO Surveys, DSO Autumn Series, Day Ahead Flexibility Markets Webinar, ODM Consultation, DNO Working Group on Community Energy, Utility Week Virtual Roundtables, Have Your Say Webinars, Energy Efficiency Roundtable **ED3 Stakeholder Engagement Workshops, March 2026 (Perth, Reading & online deliberative workshops, independently facilitated): Session 1 - Planning for the ED3 price control; Session 2 - Transforming our approach to low voltage networks.**	FSPs, Aggregators, Storage/Renewable Providers, CMZ Operators, Community Energy, Consultants, LAs, Technology Providers, Academics, System Operation Specialists	Stakeholders value flexibility but consistently raised barriers including onboarding complexity, unclear dispatch decisions and opaque curtailment interpretation. The Day Ahead Flexibility Markets webinar showed strong confidence in SSEN's approach, with 67% strongly agreeing their understanding had improved and 80% indicating they are likely to participate. All respondents felt SSEN is using flexibility services effectively. The flex market is growing with 2.6 GW tendered and 915 MW awarded. However, disproportionate telemetry requirements hold back smaller actors, and community groups currently lack capability to participate effectively in flexibility markets. Stakeholders supported community batteries and dynamic access products as load-relieving alternatives. Flexibility providers noted the need for long-term clarity on when flexibility will be used to defer reinforcement, with the understanding that flex is an option, not a universal substitute for load investment.	To support further development of flexibility products and drive lower costs, a market incubator team will be established, scaling it's applicationa and engaging a broader range of customers. To enable the seamless use of flexibility and these new use cases, our technology and control systems also need to be scalable and seamless. We have proposed to further develop the Systems for Flexibility technology stack with DERMS deployed for real-time flexibility management to enable this. The Day Ahead pilot outcomes strengthen the (ED3-S01) ED3 LRE Annex by demonstrating stakeholder confidence in flexibility markets as a credible, low-regret option for managing uncertainty. Flexibility is integrated into load optioneering but is not treated as a universal substitute for reinforcement due to delivery uncertainty. Reliance on community-scale flexibility as a baseline offset to reinforcement has been reduced, with flex included within optioneering as a supplementary, risk-managed input.
DSO Surveys, DSO Data Portal Survey, DSO Autumn Series, Connections Forums, Consumer Priorities Research, Utility Week Virtual Roundtables, Have Your Say Webinars, Value of Lost Load Research	Developers, LAs, Consultants, FSPs, Housing Developers, DER Customers, Community Energy, Domestic Consumers, SMEs, Trade Associations	Data quality, accessibility and standardisation emerged as the most universally expressed stakeholder theme. Stakeholders requested APIs and interpreted insights rather than raw data, and clearer signposting of available tools. Strong demand exists for digital forecasting, real-time visibility and AI tools, but only if linked to affordability outcomes. Stakeholders want 'real' visibility - accurate asset visibility, LV monitoring, clearer headroom and interpretable insights to support credible decision-making. Consultations on our Operational Decision Making Framework, revealed consistent calls for greater clarity, transparency and technical depth around real-time operations, integration with NESO, and how emerging technologies and flexibility assets are accommodated.	Digitalising at the core - ensuring initial inputs are correct through monitoring and data quality checks, which flow through to improvements across the customer journey and across the organisation, through accelerated connections, reduced outages and greater operational efficiency.
ED3 Stakeholder Engagement Workshops, March 2026 (Perth, Reading & online deliberative workshops, independently facilitated): Session 1 - Planning for the ED3 price control; Session 2 - Transforming our approach to low voltage networks.		The Value of Lost Load research reinforced that a consistent, evidence-based voltage index and improved loss modelling align well with customer value because they reduce preventable outages. Digitisation must be embedded at core with intelligence shifting to software, standards and automation.	The investments proposed within the DSO strategy deliver enhanced operational visibility with expanded monitoring and modern AVC's alongside greater penetration of smart-meter data, providing the granular inputs required for coordinated network development and operation. A Voltage Index covering 100% of primary substations by 2029 has been committed. Monitoring data will be embedded in operational decision-making by 2029 with enhanced operational data sharing with NESO. The strategy commits to automation and enhancement of operational data sharing with NESO and other system parties, including upgrades to ANM data flows, ICCP links and ADMS interfaces. LV data quality improvements and standardised LV/HV planning approaches are being implemented which will simplify the way in which stakeholders can use our data.