# Annex 1: Delivering Value

NESO
National Energy System Operator

# Contents

# Introduction and Methodology

## Introduction

This Annex brings together all the details that underpin NESO's business plan, with the clear aim of demonstrating how our activities deliver value to consumers, the energy system, and wider society. It brings together, in a single document, the full suite of NESO's performance objectives, investment themes, and supporting narratives, ensuring that every aspect of our plan is transparent, evidenced, and aligned with regulatory expectations.

The content is structured to directly address Ofgem's Business Plan Guidance, providing a clear line of sight from NESO's strategic intent through to the specific activities, costs, and outcomes that underpin our delivery commitments.

## NESO1 - Delivering value

Delivering value and ensuring value for money (VfM) is central to NESO, as a publicly accountable organisation, we recognise that the way we use resources must be demonstrably efficient, effective, and in the long-term interests of consumers. This business plan is therefore structured to provide both a robust ex-ante assessment of how our activities will deliver benefits relative to their costs and provide a framework that NESO will use day-to-day to manage and report its performance. In doing so, it ensures that our commitments are not only credible at the point of submission, but also capable of being tracked and evidenced throughout the life of the plan and beyond.

The regulatory framework for NESO was designed to recognise that NESO can create most value through delivering sectoral outcomes and reducing external energy system costs, rather than through minimising its own internal costs. The regulatory framework is designed to be dynamic to provide flexibility to NESO to adapt quickly in response to energy sector developments.

We have developed a value framework that clearly connects strategic objectives and operational activities to these broader societal and economic benefits, ensuring that its value proposition is understood by all stakeholders. Which is our aim within this Annex.

This framing underpins the approach set out in the next sections of the introduction and reflected on each of the business roles narratives. The assessment considers NESO's impact across different areas of the energy system and beyond. This recognises that Value for Money depends on both immediate performance and longer-term outcomes.

## From Roles to Delivered Value: NESO's Strategic Cascade

To understand how NESO creates and delivers value, we developed a line-of-sight mapping that connects NESO's strategic goals through to its performance objectives, and ultimately to the activities and outputs that deliver them.

This mapping represents the strategic cascade that underpins NESO's value narrative (see Figure 1). The cascade shows how NESO's strategic aims translate into roles, activities, and outputs, which in turn link to performance objectives, outcomes, and ultimately wider impacts.

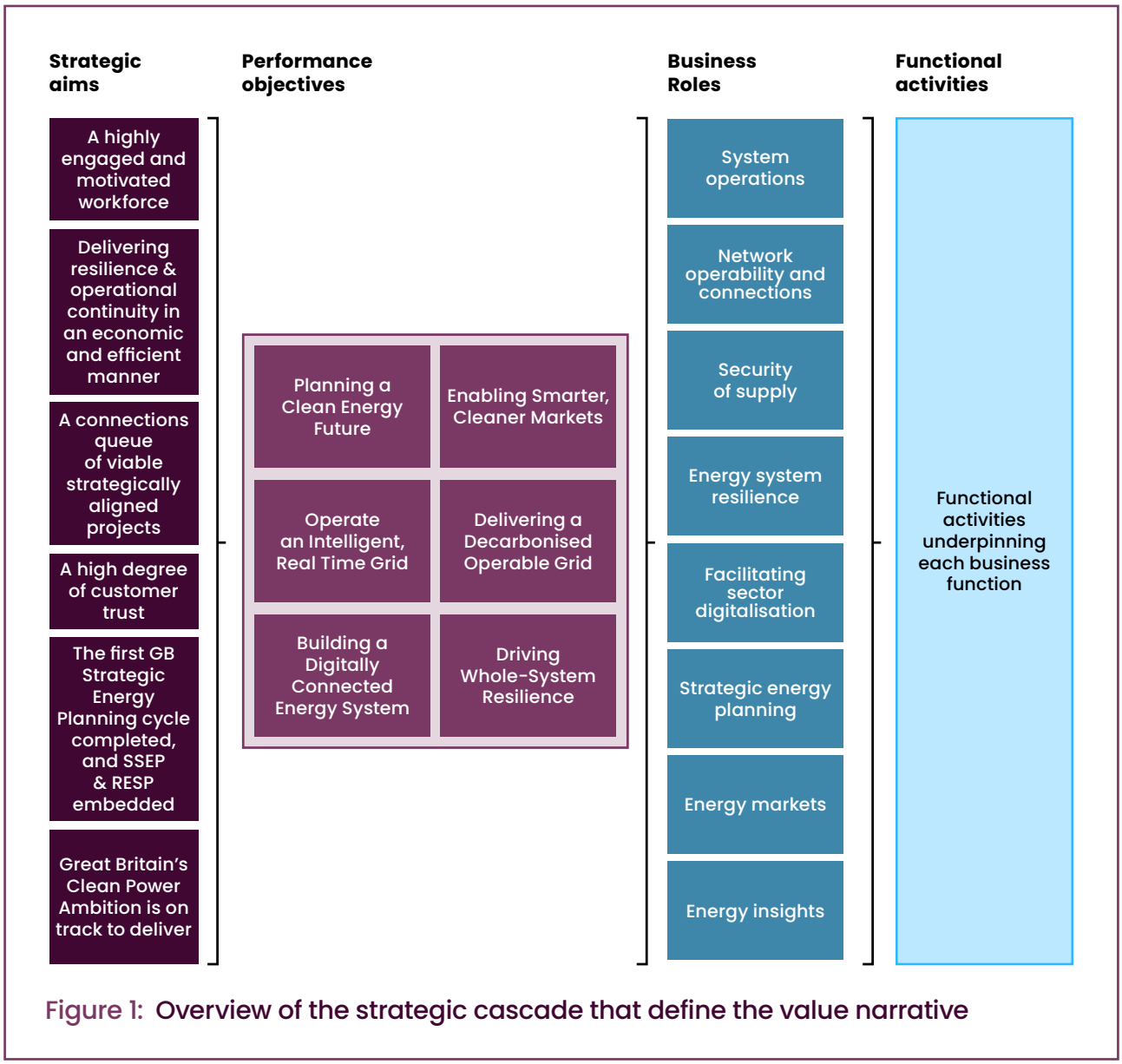



Figure 1: Overview of the strategic cascade that define the value narrative

This exercise provides a clear conceptual model of how NESO's work contributes to public value and lays the foundation for future impact assessment.

We have conducted this by role in order to ensure that the full breadth of NESO's activities are captured in this exercise as opposed to only the major outcomes that NESO intends to achieve which are covered by our Performance Objectives. We will make this clear where it applies in the narrative that follows.

## Methodology and Approach

The headline impact figure provides in the Core Business Plan Document helps us show a strategic overview of NESO's contribution but necessarily simplifies a complex and interconnected picture. NESO's value is delivered through a broad set of interdependent roles and activities, each contributing in distinct yet overlapping ways.

While the estimate captures the scale of impact, it does not fully reflect the richness of NESO's individual roles or the dynamic interactions between them.

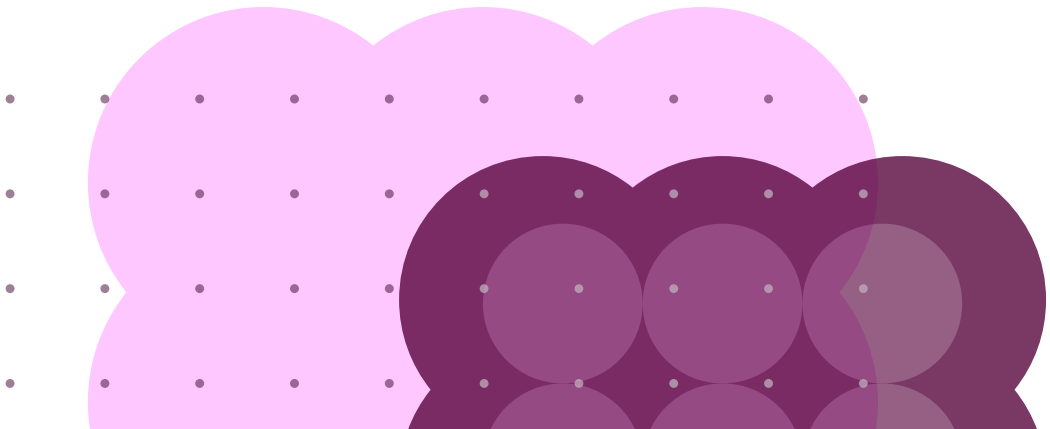
NESO's value is derived from measurable benefits from its activities and the link to its strategic roles. These benefits form the foundation of our impact framework, which is central to demonstrating value for money.

Each role contributes to three types of benefits, monetisable benefits quantifiable and qualitative benefits all that support this business plan. While monetisable benefits offer a compelling narrative, they represent only part of NESO's overall impact. The full value lies in the combination of financial, operational, and societal outcomes delivered through a coordinated, whole-system approach. For further details on the methodology see Appendix 2 (Methodology Overview).

# How Are We Going to Deliver?

To ensure NESO remains a trusted, future-ready organisation, we are embarking on a bold transformation journey. This journey is guided by four interconnected strategies that will shape how we operate, engage, and lead:

- **Public Voice:** We will build a clear, confident, and consistent public identity that reflects our values, reinforces our independence, and strengthens stakeholder trust
- **Customer:** We will strengthen relationships with customers and stakeholders by being open, responsive, and collaborative—ensuring their voices shape our priorities and actions
- **People:** We will empower our people with the skills, culture, and leadership needed to thrive in a dynamic energy system fostering innovation, inclusion, and purpose
- **Data, Digitalisation and AI:** We will harness the power of digital technologies, data, and AI to enhance our technical capabilities, improve decision-making, and deliver smarter, faster, and more resilient outcomes



## Public Voice & Brand

**NESO will be a credible, independent voice that shapes public understanding, strengthens trust, and connects people to purpose through clear, consistent, and transparent communication.**

We aim to be recognised as an independent, trusted voice in the energy system, shaping public understanding, informing national debate, and strengthening credibility through clear, consistent communication. A strong, values-led brand will reflect our purpose and independence, while evidence-based insights and strategic partnerships will position it as a go-to expert on complex energy issues. Internally and externally, transparent engagement will connect people to purpose, foster collaboration, and build confidence in NESO's role at the heart of the energy system.

By fostering public understanding and trust through clear, consistent, independent and transparent communication, we aim to connect people from across the country and wider energy industry to understand our purpose and value in Great Britain's energy system.

Stakeholder feedback has demonstrated that transparent communication and a values-led identity are essential to us building trust, reinforcing independence, and enabling meaningful collaboration across the energy system. Stakeholders—particularly the Independent Stakeholder Group (ISG)—emphasised the importance of NESO's autonomy from National Grid and its credibility as a trusted expert.

**Strengthening our public voice and brand to build trust, reinforce independence, and establish NESO as a recognised expert in the energy transition.** We are strengthening our public voice and brand by enhancing how we are perceived, reinforcing our independence, and building recognition as a trusted expert in the energy transition. Through clear, consistent, and transparent communication, we shape public understanding and demonstrate our credibility. By aligning our brand with our purpose and values, we foster trust, connect people to our mission, and lay the foundation for long-term influence. Our approach is grounded in public sentiment, strategic storytelling, and a commitment to speak with one voice across the organisation.

**Building strategic partnerships that, inform policy and co-create solutions across the energy ecosystem.** We are building strategic partnerships that position us at the centre of the national energy conversation. By engaging collaboratively with government, industry, and civil society, we co-create solutions to shared challenges and inform policy with system-wide insight. These partnerships are grounded in mutual trust and a shared commitment to a secure, sustainable, and affordable energy future. Through purposeful communication and joined-up thinking, we amplify our collective impact while reinforcing NESO's role as an independent, expert voice.

**Embedding clear, consistent communication that connects people to purpose, promotes collaboration, and enables agile responses to system-wide challenges.** We are embedding purposeful, values-led communication across NESO to connect people to our mission and promote collaboration. By fostering a shared understanding of complex, system-wide challenges, we enable more agile and aligned responses both internally and with stakeholders. Our communication approach is grounded in insight, adaptable to external trends, and designed to build trust and resilience. This ensures we remain responsive, credible, and effective in a rapidly evolving energy landscape.

## Customer

**NESO will be a trusted, customer insight-driven organisation delivering tailored value, collaborative engagement and seamless service excellence experiences across a diverse and evolving customer landscape.**

Being recognised as a trusted expert is central to our ability to accelerate the energy transition. By developing a deeper understanding and collaborating closely with stakeholders, we can generate better insights, anticipate trade-offs, and make more informed decisions. Making it easier for stakeholders to engage with us ensures smoother delivery, reduces inefficiencies, and removes unnecessary effort for both our teams and our customers, creating more productive and effective value adding outcomes.

Our customer strategy translates stakeholder input to date into a structured, customer-focused framework, providing clarity on priorities and highlighting the wider impact of our work across the energy system. It establishes systematic approaches to listening, responding, and collaborating across end-to-end teams, embedding insight into service design and delivery. This ensures that we demonstrate how we deliver, not just what, reinforcing credibility, accountability, and our role as a trusted partner in the sector.

By aligning activity, reducing duplication, and focusing resources where they create the greatest value, this approach accelerates progress toward shared energy transition goals and supports innovation. It ensures stakeholders and customers can clearly see that we act with an understanding of their interests, balance competing priorities thoughtfully, and deliver outcomes collaboratively. Our recognition of the importance of understanding and collaboration underpins this objective in the business plan, reflecting our commitment to removing barriers and maximising value across the system.

**Developing a shared, strategic understanding of NESO's customers what they need, what they value, and how to deliver trust through advanced segmentation and targeted service and engagement experience strategies.** We will establish a shared, organisation-wide understanding of NESO's diverse customer base by systematically identifying customer types, needs, and value drivers. Using advanced segmentation and structured engagement, we will create and maintain customer profiles that inform tailored service delivery. This will enable us to prioritise engagement efforts, align services with customer expectations, and ensure that interactions are relevant, proportionate, and consistent across the organisation.

**Leveraging integrated data and insights to enhance visibility, track outcomes, and guide confident, value-driven decisions across the customer journey.** We will integrate customer data sources and feedback mechanisms to build a unified view of the customer journey. This will support real-time visibility of customer voice, engagement activity, enable tracking of service outcomes, and inform decision-making across planning, operations, and market design. By embedding insight into our processes, we will improve our ability to anticipate customer needs, evaluate the effectiveness of our actions, and adapt our approach to maximise system and customer value.

**Embedding consistent frameworks and cross organisational capability to support integrated design and delivery of experiences that strengthen trust and drive long term impact.** We will implement consistent engagement frameworks and service standards across all customer-facing functions. These will be supported by training, tools, and cross-functional collaboration to ensure our teams are confident and capable in delivering insight-led, trusted service and engagement end to end. This approach will strengthen relationships, improve service consistency, and support long-term impact by embedding customer understanding into day-to-day operations and strategic planning.

## People

**NESO will cultivate a high-performing, inclusive workforce empowered by clear development pathways, strong leadership, and a collaborative culture focused on learning and impact.**

We ensure the organisation has the right capabilities, culture, and systems to deliver our whole-system ambitions. We foster an inclusive, values-led environment that supports learning and engagement, ensuring we attract, develop, and retain the right people, with aligned structures and behaviours to accelerate impact. Together, we empower a high-performing, collaborative workforce essential for NESO's long-term success.

Our ability to achieve our ambitions is powered by our people. As NESO, we have significantly expanded our workforce and strengthened our capabilities. We remain committed to developing talent, fostering diversity, and empowering our teams—ensuring we have the right skills and expertise to deliver meaningful outcomes. Our people capability is essential to delivering our NESO1 obligations and preparing for future needs. Our approach focuses on continuing to embed culture and values, developing skills, deploying agile teams, and promoting diversity and performance. By investing in talent and transforming core systems, we empower our workforce and enhances operational efficiency.

**Attracting, growing, and retaining the talent NESO needs through clear frameworks for career progression, leadership development, and succession planning aligned with strategic priorities:** We will strengthen our ability to attract, develop, and retain the skills and capabilities required to meet NESO's evolving responsibilities. We will introduce clearer career pathways and job architecture that link roles to skills and development opportunities, including technical leadership. We will maintain a transparent banding structure that supports fair progression and reward. We will implement scalable frameworks for career growth, leadership development, and succession planning, supported by improved people systems and processes. We will evolve our approach to reward and employee relations to support long-term alignment and sustainability. Through inclusive hiring, targeted development, and structured progression, we will build the capabilities needed for the energy transition. We will also begin using workforce planning tools to anticipate future needs and inform talent decisions.

**Embedding a values-led, inclusive culture across the employee lifecycle—shaped by DEI commitments, continuous listening, and a strong employee experience:** We will continue to develop a values-led, inclusive culture that supports engagement, performance, and long-term impact. We will embed Diversity, Equity, and Inclusion (DEI) principles more consistently across the employee lifecycle, supported by responsive systems and regular feedback mechanisms. We will strengthen the employee experience by aligning values, leadership behaviours, and day-to-day practices. We will evolve performance management into a more continuous and developmental process, helping individuals align their goals with NESO's mission. We will promote equitable access to development and progression opportunities, and we will work to build a culture of belonging and shared purpose across teams.

**Aligning structures, systems, and ways of working to accelerate progress, empower leadership, and support learning, collaboration, and change adoption:** We will begin aligning our organisational structures, systems, and ways of working with NESO's strategic goals. We will modernise our organisational design and digital tools to support more agile, efficient, and collaborative working. We will invest in learning and development to build the skills needed for today and tomorrow, with a focus on leadership capability, technical expertise, and change readiness. We will introduce succession planning in key areas to support continuity and resilience. As we embed more integrated systems and behaviours, we will create the conditions for more effective collaboration, leadership empowerment, and gradual adoption of new ways of working.

## Digitalisation, Data and AI

**NESO will be a digitally advanced, AI-enabled organisation powered by trusted data, secure systems, and smart technologies that enhance efficiency, agility, insight, and innovation.**

**Enhancing trust in our data, supporting scaling & adoption of AI to generate insights, improving operational accuracy, and supporting complex, system-wide decision-making.** We will enhance data reliability and scale AI adoption by strengthening our internal digital foundations to ensure data is accurate, secure, and accessible across all NESO functions. By embedding modern data governance, traceability, and quality assurance practices, we will create a trusted environment for advanced analytics and decision-making. Through the adoption of AI—including machine learning, real-time analytics, and predictive modelling we will generate deeper insights, improve operational accuracy, and support complex, system-wide decisions. A digital-first, product-oriented approach will streamline data flows and automate routine processes, while investment in digital skills and ethical AI practices will embed intelligence into our core operations enabling NESO to operate with greater agility, precision, and foresight.

**Modernising technology foundations and accelerating innovation by completing the transition from legacy systems and adopting emerging digital tools at pace.** We will modernise our technology foundations and accelerate innovation by completing the transition from legacy systems to agile, scalable, and secure digital platforms. This transformation will enable faster delivery, seamless integration, and continuous improvement across our operational and planning environments. By adopting emerging technologies such as cloud-native infrastructure, AI-enabled tools, and modular architectures we will unlock new capabilities in system modelling, forecasting, and optimisation. Our shift to a product and service mindset, supported by a digitally skilled workforce and a culture of innovation, will ensure NESO remains adaptive and future-ready in a rapidly evolving energy landscape.

**Embedding security and resilience by design through strategic investment in secure architectures and delivery practices aligned with evolving obligations.** We will embed security and resilience by design through strategic investment in secure architectures, zero-trust principles, and delivery practices that evolve with our operational and regulatory responsibilities. Security will be integrated from the ground up across infrastructure, data, and AI systems ensuring that our platforms are robust, compliant, and capable of withstanding emerging threats. By modernising our networks and adopting real-time monitoring and automated response capabilities, we will enhance system integrity and operational continuity. Through a digital-first approach and a culture of secure innovation, NESO will proactively manage risk and uphold its role as a trusted, resilient, and forward-looking system operator.

# NESO's Performance Objectives

This section sets out NESO's Performance Objectives and how they drive delivery throughout the business plan period. Each objective is presented in a consistent format to ensure transparency, coherence and alignment.

- **Strategic Alignment**
  Each Performance Objective begins with the strategic rationale explaining why it is a priority for NESO, how it addresses sector challenges, and how it supports NESO's overarching strategic aims.
- **Performance Objective defining expected outcomes and benefits**
  You'll find a summary of the benefits NESO expects to deliver, including the value generated for consumers and the sector.
- **Success Indicators**
  For every objective, defined success indicators show how progress and impact will be measured throughout the regulatory period.
- **Major Deliverables**
  Key deliverables are identified, providing clear markers of progress and accountability within the business plan.
- **Activities, Capabilities and Costs**
  Each section details the NESO roles and activities underpinning delivery, showing how our teams and respective capabilities work together to achieve objectives. This includes both core actions and those related to Digital, Data, and Technology investments, with a transparent link to costs and expected benefits.
- **Dependencies and Risk**
  Potential challenges and dependencies are highlighted to provide context for delivery and to support risk management.
- **Stakeholder Engagement**
  Evidence of stakeholder involvement and feedback is included, demonstrating how engagement has shaped each objective.

By following this structure, you gain a clear and direct view from NESO's five-year strategy, through focused two-year delivery and robust measurement, to the tangible impact and value created for the energy system and its stakeholders.

This approach ensures every step is transparent, accountable, and rigorously managed providing confidence in NESO's ability to deliver on its commitments and drive meaningful progress across the sector.

# Planning a Clean Energy Future

NESO will shape the future of energy by defining the energy infrastructure requirements across Great Britain that reflect societal and community values, safeguard the environment, maintain system resilience and ensure consumer benefits are realised. This will guide the transition to a clean, affordable and secure energy for Great Britain by delivering first-of-a-kind whole energy strategic planning.

## Introduction

This performance objective is a priority for NESO to deliver by 2028 because it is central to shaping a resilient, decarbonised, and consumer-focused energy future for Great Britain. Strategic Energy Planning (SEP) enables NESO to take a whole-system view across electricity, gas, and emerging energy vectors, ensuring infrastructure development aligns with net-zero goals, regional needs, and societal values. By integrating national and regional planning through tools like the Strategic Spatial Energy Plan (SSEP) and Regional Energy Strategic Plans (RESP), NESO can guide timely and efficient investment, support local ambitions, and provide consistent data for decision-making. Delivering this aligns with critical regulatory and policy timelines, allowing NESO to fulfil its statutory role and support government objectives such as Clean Power 2030 (CP30). Ultimately, SEP ensures that energy infrastructure is planned in a way that safeguards the environment, maintains system resilience, and delivers tangible benefits to consumers and communities across Great Britain.

SEP helps address key challenges in the energy sector by enabling an integrated, long-term planning across energy systems to support the transition to net zero. This will help overcome fragmented infrastructure development, ensure system reliability, and guide efficient investment. For consumers, it promotes affordability, access to clean energy, and equitable outcomes, while fostering transparency and trust in the energy transition.

We are advancing a more integrated and strategic approach to energy system planning by improving coordination across electricity, gas, and hydrogen. This whole-system planning enables more effective network development and supports the deployment of low-carbon energy solutions, accelerating decarbonisation through system optimisation and enhanced flexibility. By enabling flexibility markets, we are unlocking new opportunities for innovation and efficiency. To support long-term investment, we are reducing uncertainty for investors by providing a clear view of future system needs and encouraging coordinated investment across transmission, distribution, and generation. This not only improves investment efficiency but also ensures that infrastructure development is aligned with net zero objectives.

Our commitment to ongoing stakeholder engagement—independent of commercial interests—enhances transparency and trust in planning assumptions and methodologies. This contributes to greater stakeholder satisfaction and ensures that planning reflects a broad range of perspectives. By considering long-term system needs and future-proofing infrastructure, we are also enhancing system reliability, safety, security, and resilience. Furthermore, promoting competition in network development fosters innovation, reduces costs, and accelerates the delivery of critical infrastructure needed to achieve net zero.

### This PO contributes to the primary strategic aim of completing the first Great Britain Strategic Whole Energy Planning cycle completed and SSEP and RESP embedded.

This framework defines the infrastructure requirements across Great Britain, ensuring that planning is not only technically robust but also aligned with societal values, environmental protection, and system resilience.

By integrating these considerations, we ensure that the energy system is future-proofed, consumer-focused, and regionally responsive, which is essential for embedding the SSEP, CSNP and RESP. The emphasis on societal engagement, resilience, and consumer benefits helps build legitimacy and trust, making the plans more actionable and sustainable—thus fulfilling the dual goals of having the planning cycle completed and the outputs embedded.

Achieving the Great Britain's decarbonisation goals and successfully integrating low-carbon and renewable energy projects requires continued collaboration between government, industry, and consumers. As we move towards net zero, the pace of decarbonisation and decentralisation of both energy generation and demand will accelerate. SEP considers increasingly complex trade-offs across energy vectors that will be vital to delivering a cost-effective net zero system. Building a clean, interconnected energy system demands resilient systems thinking, coordinated planning, and effective collaboration. Through our innovative strategic plans, we will align national asset strategies with local initiatives to support policy objectives in energy security, net zero delivery,

efficiency, and economic growth. This will be achieved by assessing the energy infrastructure needs across Great Britain and identifying the optimal locations and timelines for deployment.

Whilst this business plan period focuses on the production and completion of the first full cycle of the SSEP, CSNP, and RESP frameworks with emphasis on quality, integration, and stakeholder engagement, the years beyond will concentrate on embedding these outputs into enduring strategic, operational, and investment processes. NESO will move from plan creation to integration, ensuring that these frameworks are not only adopted but actively shape decision-making across the energy system. This continued embedding will support long-term alignment with DESNZ's delivery pathways and Ofgem's infrastructure acceleration priorities, enabling a resilient, consumer-focused, and regionally responsive energy future.

## Key Areas of Progress to Date

Since the last Business Plan (BP3) submission, we have made significant progress, including:

1. We launched the Planning a Clean Energy Future performance objective, focusing on building the methodologies, capabilities, and foundations needed to deliver national and regional plans.
2. The SSEP was commissioned by the UK, Scottish, and Welsh governments to map out optimal locations and types of energy infrastructure, including electricity generation, storage, and hydrogen assets.
3. We began developing RESPs to ensure nations and regions receive the infrastructure needed to meet net zero and growth ambitions.
4. We consulted on the methodology for the CSNP in the summer of 2025.
5. Stakeholder engagement has been central, with feedback shaping the scope, success measures, and expectations for transparency and collaboration.

The energy system is undergoing rapid transformation, with increasing complexity and interdependencies across sectors like transport, water, and telecoms. Previous planning was fragmented and siloed; NESO's whole-system approach addresses inefficiencies and accelerates progress toward net zero. The government's ambition for Clean Power by 2030 and legally binding net zero targets by 2050 require coordinated, long-term planning.

NESO was created under the Energy Act 2023 to serve as an impartial, expert system planner and operator. Its independence from commercial interests allows it to take a neutral, consumer-focused view, ensuring planning decisions are made in the public interest. NESO's remit spans all energy vectors and regions, enabling it to deliver integrated, strategic plans that reflect national policy and local needs.

We will also ensure our plans maintain a secure and reliable energy system, so consumers will continue to benefit from networks that meet their needs. While most benefits will be realised in the longer term due to the nature of network planning, some benefits may emerge in the medium-term.

## Performance Objective: Planning a Clean Energy Future

**NESO will shape the future of energy by defining the energy infrastructure requirements across Great Britain that reflect societal and community values, safeguard the environment, maintain system resilience and ensure consumer benefits are realised. This will guide the transition to a clean, affordable and secure energy for Great Britain by delivering first-of-a-kind whole energy strategic planning.**

We will do this by:

1. **Delivering the first-of-a-kind whole-energy strategic planning to guide the transition to a clean, affordable and secure energy for Great Britain.** We will establish a cohesive, data-driven planning ecosystem to support the transition to a decarbonised, integrated energy system. By 2028, we will deliver a SSEP to identify optimal locations for low-carbon generation and storage infrastructure. Alongside this, we will develop a CSNP to plan electricity and gas transmission infrastructure development, and hydrogen network options. At the nations and regions level, we will develop 11 RESPs to assess local o ensure that local areas get the energy infrastructure they need to help meet local and national goals. These plans will be aligned with the Operability Strategy to ensure the technical viability of our recommendations and will be regularly reviewed to remain responsive to evolving system needs.
2. **Developing and embedding the critical capabilities and tools required to deliver.** We will continue to strengthen our technical capabilities, data modelling, and stakeholder engagement to ensure our planning remains responsive to evolving policy, regional priorities, and system needs. By 2028, we will have embedded enhanced digitalisation and open data practices to support shared planning assumptions and transparent forecasting. We will also implement iterative scenario modelling methodologies to ensure our strategy remains agile in the face of technological, policy, and regional developments. In parallel, we will invest in our people, tools, and processes to deliver a more integrated, evidence-based planning framework—supporting a clean, secure, and affordable energy future for all.
3. **Fostering inclusive engagement with stakeholders to ensure the plans reflects diverse perspectives.** We will continue to expand and deepen our stakeholder engagement to ensure our planning reflects a broad spectrum of societal, industry, and regional perspectives. By 2028, we will have embedded structured forums, bilateral meetings, and targeted consultations—supported by Customer Relationship Management (CRM) systems, AI-driven analysis, and digital platforms—to enable early, transparent, and continuous dialogue. Stakeholder input will be systematically captured and used to shape planning decisions, resolve trade-offs, and refine methodologies. In parallel, SEP's working groups—spanning societal, environmental, geospatial, and advisory domains—will ensure inclusive representation and diverse expertise. This collaborative approach will build trust, enhance decision-making, and align infrastructure, markets, and innovation with national, regional, and local priorities.

## Expected Benefits

The activities set out in this PO[1] generate value through:

- Improving energy infrastructure planning through greater whole system coordination and alignment of national, regional and local priorities with policy targets.
- Accelerating decarbonisation by producing strategic energy plans to facilitate greater uptake of low carbon technologies (e.g. heat pumps) and generation.
- Driving investment into the right areas through improved market signals, strategic energy plans and improved whole system forecasting.
- Empowering stakeholders and customers through engagement and opportunities to support the design and implementation of strategic energy plans.

1 Note the activities on which this value assessment is based cover the breadth of NESO activities required to fulfil our function and so go beyond those specific in the PO.

These underpin the outcome to wider impacts pathways highlighted in Figure 2.

SEP outcomes improve both the efficiency and effectiveness of infrastructure planning and delivery. The outcomes of strategic energy planning scale into **wider impacts** that benefit consumers and society. Better coordination reduces duplication and costs. Accelerated decarbonisation lowers emissions. Targeted investment improves economic efficiency. Increased competition drives innovation. Anticipating long-term needs strengthens resilience. Together, these outcomes support the net zero transition in a cost-effective and trusted way.

The delivery of Strategic Plans is the first step to unlock these benefits. Insofar as NESO's responsibility will be to ensure that the plans can be adopted and operationalised through quality and timely outputs. The ability to achieve these benefits in full are dependent on a series of actors (i.e. Ofgem, DESNZ, Industry) and factors (i.e. market, regional, local, national, external), which may influence the scale but also the timing of the impact, which is very likely to fall outside this regulatory period.

| Monetisable value measures | |
|---|---|
| Strategic energy planning is unlocking renewable capacity and facilitating the deployment and uptake of low carbon technologies. Through system-wide planning and foresight, NESO enables a coordinated transition to net zero, guiding infrastructure investment, policy alignment, and innovation. SEP activities provide the right levels of signals through the plans to cement the opportunity to develop, deploy and utilise renewables across the entire energy system, by better coordination in energy system planning and acceleration of investments to achieve net zero. There are other roles that contribute to this figure including Security of Supply and System Operations. | |
| **Carbon emission savings from renewable penetration** | **£300m** |

- Enhanced system modelling helps align energy planning with future needs and policy goals, using shared data and assumptions to support coherent, cross-sector decision-making at all levels.
- NESO's SEP role boosts system reliability by anticipating future constraints, reducing constraint costs, and avoiding expensive short-term fixes.
- Whole-system modelling identifies optimal sites for generation and infrastructure, guiding investment toward low-risk, high-impact opportunities aligned with Net Zero and CP30.
- Strategic plans accelerate Low Carbon Technology (LCT) roll-out by coordinating asset location and infrastructure readiness with key stakeholders, supporting decarbonisation of heat and transport, and reducing fossil fuel reliance.

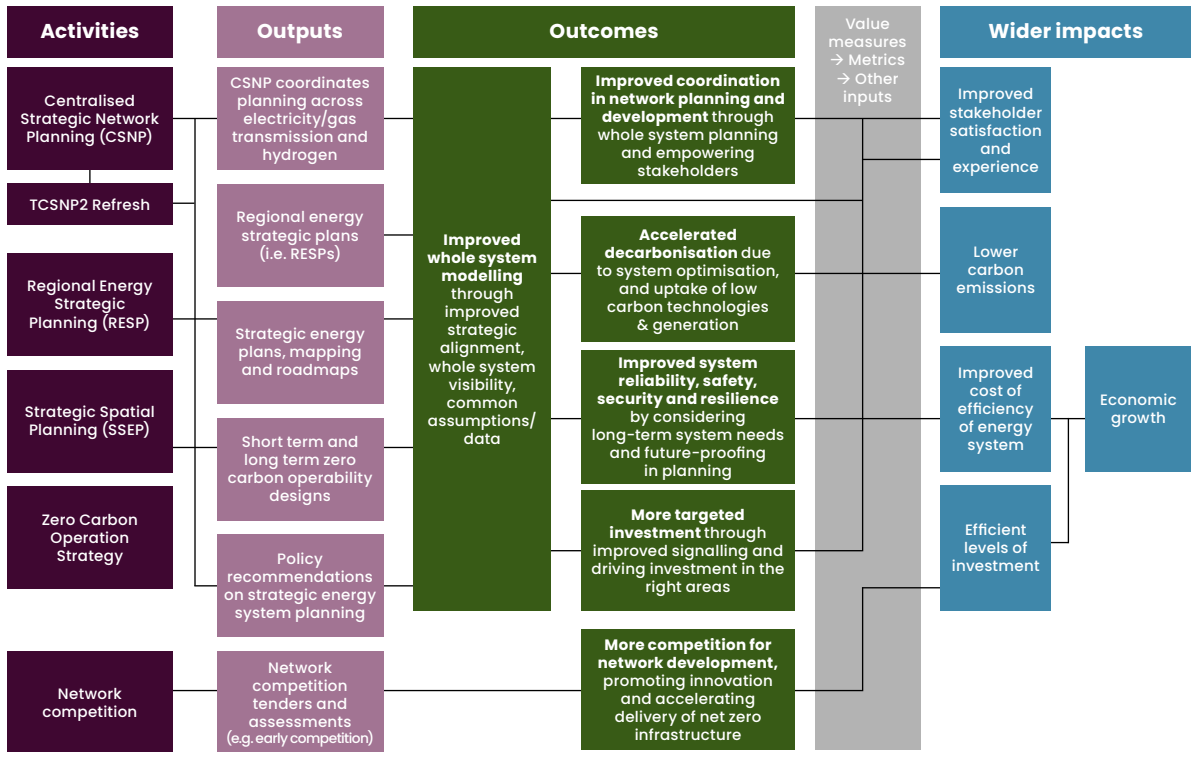



Figure 2: Impact pathway

In summary, activities such as centralised network planning, regional planning, and operability design produce **outputs** including strategic plans, regional plans, and operability frameworks. These outputs lead to **outcomes** of improved coordination, accelerated decarbonisation, and targeted investment. Over time, these outcomes deliver **wider impacts** including economic growth, efficient investment, cost efficiency, improved stakeholder satisfaction and experience through empowering, listening and consulting with them, and reduced carbon emissions.

## Measuring Success – NESO's Success Indicator

While the previous section highlights the broader benefits that can flow from SEP activities, it is important to remain conscious and pragmatic about the specific role that NESO plays in delivering these outcomes. NESO's activities act as enablers for a wide array of system-wide and consumer benefits, but the organisation's direct influence is best captured through a focused set of success measures. The success measures presented in the following section have therefore been carefully selected to reflect not only the delivery of major outputs, but also the outcomes that NESO is uniquely positioned to achieve within the regulatory period. This provides an optimal balance between accountability for delivery and the realistic assessment of NESO's contribution within the wider energy landscape, ensuring that NESO's performance is evaluated both robustly and fairly against its defined performance objectives during the regulatory period.

**Table 1: List of the success measures which sit within each sub-objective, to demonstrate what successful delivery will look like**

| Success Measure | Rationale and justification |
|---|---|
| Endorsement of the plans by the established governance | Governance endorsement validates the strategic alignment and credibility of the planning process and quality of the outputs. It supports outcome improved coordination and contributes towards wider impacts like stakeholder satisfaction and efficient investment. We will measure governance outputs and feedback. |
| # and % of SEP datasets published | Publishing SEP datasets enhances whole system visibility and common data assumptions. It supports competition and innovation and accelerated decarbonisation, contributing to lower carbon emissions and cost efficiency. We will measure the number of data publications made. |
| Customer trust index | Trust metrics reflect stakeholder confidence in the planning process (and the underlaying models). They contribute to wider impact stakeholder satisfaction and experience. |
| Participation and representation across societal, environmental, geospatial and advisory groups | Inclusive representation ensures planning reflects societal and environmental needs. It supports system reliability and future-proofing through the planning process and contributes to wider of lower emissions and stakeholder satisfaction. |

## Measuring Delivery

Table 2: **Summary of Draft Sub-objectives and the Major Deliverables**

| Sub-objectives | Major Deliverables | Target |
|---|---|---|
| 1. Deliver the first-of-a-kind whole-energy strategic planning to guide the transition to a clean, affordable and secure energy for Great Britain. | Deliver the SSEP | TBC |
| | Deliver SSEP methodology [update / V2] (subject to Commission) | TBC |
| | Deliver the transitional CSNP2 (tCSNP2) Refresh | TBC |
| | Deliver the CSNP | TBC |
| | Deliver first RESPs (11x RESP) | TBC |
| 2. Develop and embed the critical capabilities and tools required to deliver. | Finalise the establishment of the regional people capabilities required to deliver the RESP | November 2026 |
| | Deliver the annual Operability Strategy Report | March 2027 |
| | Build and develop our capabilities to undertake independent engineering assurance of energy networks | Ongoing |
| | Adopt digital-first capabilities to support the production of our strategic energy plans | Refer to NESO1 Digital, Data, and Technology Annex |
| | Progress delivery of Distributed Energy Resources (DER) visibility product roadmap | TBC |
| 3. Foster inclusive engagement with stakeholders to ensure the plans reflects diverse perspectives. | Establish regional external Governance Boards through RESP | July 2026 |
| | Establish national SEP external governance framework | December 2026 |
| | Establish a dynamic stakeholder and societal engagement framework | Ongoing |

# 1. Deliver the first-of-a-kind whole-energy strategic planning to guide the transition to a clean, affordable and secure energy for Great Britain

## Deliver the SSEP

SSEP will play a vital role in supporting the energy transition by setting out a zonal framework for the location, scale, and type of electricity and hydrogen generation and storage infrastructure required across Great Britain over time.

Our approach to developing the SSEP will be informed by public input, environmental and economic considerations, and the need to balance energy infrastructure with other land and sea uses.

The plan will be developed in collaboration with the UK, Scottish, and Welsh governments.

The SSEP will provide strategic context for Great Britain's future energy needs, enable early engagement with the supply chain, and bring greater clarity to planning and consenting processes.

While it will take a zonal approach to identifying suitable areas, it will not specify or endorse individual projects.

## Deliver SSEP methodology

Subject to a renewed commission, we will publish the revised SSEP methodology (Version 2) following approval from the Secretary of State for Energy Security and Net Zero (UK Energy Secretary) and Ofgem. This update will be developed in consultation with the UK, Scottish, and Welsh Governments.

The publication process will include:

- Iterative development of the methodology, incorporating feedback from consultations and advisory groups.
- Integration of new modelling approaches, including collaborative marine modelling and spatial evaluation techniques.
- Formal environmental reporting, such as Strategic Environmental Assessment (SEA) and Habitats Regulations Assessment (HRA) addendums, to ensure compliance with planning and environmental regulations.
- A final publication stage, where NESO will release the updated methodology digitally, accompanied by a SEA Adoption Statement and supporting documentation.

This process ensures the methodology remains transparent, inclusive, and technically robust, supporting the delivery of a spatially coordinated, whole-system energy plan for Great Britain.

## Deliver the tCSNP2 Refresh

The tCSNP2 refresh is a refreshed version of NESO's Beyond 2030 network plan, originally published in March 2024. It outlines reinforcement projects for the onshore electricity transmission network that are needed to support the UK's transition to net zero beyond 2030. It will bridge the gap until the first CSNP is fully in place and ensure that our network planning remains robust and forward-looking.

It outlines our recommendation for which network reinforcement projects should receive investment, and when. The plan builds on the earlier Holistic Network Design (HND) and identifies both offshore and onshore infrastructure upgrades, many of which are still in early development stages.

### Deliver the CSNP

The Pathway to 2030 Holistic Network Design and the recommendations set out in the Network Options Assessment (NOA) were the first steps towards a more centralised, strategic network planning approach that is critical for delivering affordable, clean and secure power, as we journey towards our net zero future.

We're building on this long-term, strategic approach through the development of a CSNP. The CSNP will take a broad, whole energy system view to transforming the pace and scale of our planning.

Our vision is to provide an independent, coordinated, and longer-term approach to wider whole-energy network planning in Great Britain to help meet the government's net zero ambitions.

The CSNP serves as a network blueprint for the country, mapping demand and optimal locations for onshore and offshore transmission infrastructure to support a decarbonised energy grid.

We will publish the first CSNP through a structured and transparent process, which includes stakeholder engageent, data publication, and the release of a draft for review. The CSNP will be updated every three years and will align with national energy policy and regional planning frameworks.

### Deliver first RESPs (11x RESP)

The RESP role was developed to support energy security and resilience, net zero and economic growth. Ofgem directed us to undertake the RESP role, which was formalised in April 2025. Through this role, a new approach to strategic energy planning at a distribution level is being created, with NESO producing 11 regional energy strategic plans (RESPs) for Scotland, Wales and nine English regions.

These plans will provide key inputs to the business plans developed by gas and electricity distribution networks, enhancing network consistency and reflecting local priorities. The RESPs will complement other Great Britain-wide NESO strategic plans, such as the SSEP and the CSNP. They will be designed to enable cross-vector coordination, including low-carbon gases (hydrogen and biomethane).

RESP will run on a 3-year cycle and will be coherent with NESO's other strategic energy plans.

## 2. Develop and embed the critical capabilities and tools required to deliver

### Finalise the establishment of the regional people capabilities required to deliver the RESP

To finalise the regional people capabilities needed to deliver the RESP, we will continue to build 11 dedicated teams in the nations and regions, supported by new technologies, analytical and modelling capabilities to deliver the RESPs in line with our Methodology. The development of the RESPs will be underpinned by supporting enabling capabilities:

- Place-based engagement is essential to delivering RESP when establishing structured, transparent, and accessible routes to engage with our customers and stakeholders.
- Technical coordination to ensure that RESP outputs are coherent across nations, regions and national strategic plans.
- Governance in the nations and regions as well as at a Great Britain's level to ensure accountability, coordination, and transparency in regional energy strategic planning.

Along with finalising our methodology and integrating local data sources to improve spatial modelling and decision-making, these efforts are part of a phased approach to ensure NESO has the capability by November 2026—both in people and systems—to deliver robust RESPs, coherent with national plans and local objectives.

## Deliver the Operability Strategy Report (annually)

The Operability Strategy Report (OSR) is NESO's annual publication that outlines the technical challenges and strategic solutions required to operate Great Britain's electricity system as it transitions to zero-carbon operation. It provides a forward-looking view of system needs, including stability, frequency control, restoration, and flexibility, and highlights the tools, services, and market reforms needed to maintain safe, reliable, and efficient system operation.

We will publish the OSR in March 2027, with annual publications thereafter as an interactive digital report, and the report will be:

- Accessible online, with interactive charts, embedded links, and expandable content for deeper insights.
- Aligned with other strategic publications, such as the Markets Roadmap and System Operability Framework (SOF), ensuring consistency across planning and market design.
- Supported by stakeholder engagement, including webinars, Q&A sessions, and open feedback channels to refine future iterations.

Each annual report will build upon the previous year's findings and incorporates new data, operational experiences, and stakeholder input to ensure NESO remains responsive to the evolving energy landscape.

## Build and develop our capabilities to undertake independent engineering assurance of energy networks

We will develop independent engineering assurance capabilities by building specialist internal teams with deep technical expertise across electricity, gas (methane and biomethane), and hydrogen networks. These teams will operate under NESO's statutory independence, enabling impartial assessment of infrastructure needs and investment decisions. We will also be embedding assurance across our strategic outputs—such as the SSEP, the CSNP and the RESPs—while engaging stakeholders through forums and consultations to strengthen transparency and challenge assumptions. Supported by formal governance and regulatory oversight, our approach will ensure engineering assessments are aligned with national net zero objectives.

The expected outcomes will include the delivery of robust, impartial assessments of energy infrastructure needs across electricity, gas (methane and biomethane), and hydrogen networks. This will enhance the credibility and transparency of strategic planning outputs like the CSNP and RESP, ensuring they are technically sound and aligned with net zero goals. It will also support more efficient investment decisions, reduce delivery risks, and foster greater stakeholder confidence in NESO's recommendations. Ultimately, this capability will help NESO fulfil its statutory role as a trusted, independent system planner and operator, driving a secure and coordinated energy transition.

## Adopt digital-first capabilities to support the production of our strategic energy plans

We are adopting digital-first capabilities to support the production of our strategic energy plans by embedding advanced technologies, data-driven tools, and AI across our operations. Through the Digitalisation Strategy and Action Plan (DSAP), we will invest in both traditional and generative AI to enhance modelling, scenario planning, and stakeholder engagement. This includes prototyping AI-powered tools like Vanguard for strategic energy planning and Volta for control room operations, which personalise insights and improve decision-making.

NESO's digital-first approach is built on principles of agility, transparency, and customer focus, aiming to create a unified digital ecosystem that supports innovation and collaboration across the energy sector. By harmonising data standards, improving spatial modelling, and enabling multi-modal interactions (e.g., voice, alerts, dashboards), it ensures that our strategic plans (CSNP, RESP, and SSEP) are more accessible, transparent, responsive, and technically robust.

### Progress delivery of Distributed Energy Resources (DER) visibility product roadmap

Greater visibility of and access to distributed and consumer energy resources is central to NESO's ambition to plan and operate a clean whole energy system. It will enable greater co-ordination between NESO and DSO activities to support faster connections, increase market liquidity, accelerate consumer-led flexibility, allow transparent optimisation, maintain system resilience and improve responsiveness to the changing energy landscape.

Our implementation will centre around four key areas. We will publish a roadmap for achieving DER visibility and access, informed by industry consultation, which will accelerate the development of engineering solutions and digital capabilities for DER across Great Britain, enabling coordinated delivery of changes to improve real time operations, modelling & forecasting, network & system planning, and market evolution. We will focus on DER data integration and platform development, informing industry initiatives, and building scalable data pipelines and digital interfaces that ingest and process data from diverse sources, thereby improving asset-level granularity and geographic coverage. We will co-develop and test priority use cases with stakeholders to ensure the roadmap delivers tangible system benefits. We will embed capability and operational readiness by equipping internal teams with the necessary tools, processes, and training to operationalise DER visibility in planning and operations, ensuring sustained impact and continuous improvement.

We will demonstrate progress by:

- Publishing a roadmap, informed by industry consultation, to achieve distributed energy visibility and access out to 2030 and beyond
- Developing a conceptual architecture to integrate distributed energy into core NESO functions & realise the roadmap
- Delivering products and capabilities for standardisation and harmonisation of operational data between NESO & DNOs
- Tracking industry progress needed to facilitate wider market access for distributed energy, interoperability and NESO-DSO coordination

## 3. Foster inclusive engagement with stakeholders to ensure the plans reflects diverse perspectives

### Establish regional external Governance Boards through RESP

We will establish Strategic Boards in each of our 2 nations and 9 regions to ensure transparent, accountable, and locally informed planning. These boards will be composed of representatives from Distribution Network Operators (DNOs), Gas Distribution Networks (GDNs), local and devolved governments, and cross-sector stakeholders such as community energy groups, consumer groups, industrial users, and planning authorities. We will ensure the Boards are representative and operate under clear governance protocols, with regular meetings and defined roles. Their role will be to provide strategic input and challenge to the development of RESPs. Each board will be responsible for reviewing and signing off its areas RESP, with Ofgem stepping in if consensus cannot be reached. This collaborative structure ensures that regional energy planning is inclusive, transparent, and strategically aligned.

To support the Strategic Boards, RESP will also establish a set of working groups in each nation and region as well as nationally where insights and views will be gathered from place-based stakeholders to support the development of the 11 RESPs. The purpose of working groups is to provide structured, accessible and transparent processes for customers and stakeholders to provide and scrutinise inputs, consider trade-offs and the feasibility of plans.

We will also establish a GB-wide National Steering Committee, the purpose of this National Steering Committee is to support the development of the RESP methodology, ensure national alignment, and coordinate strategic plans across nations and regions. At a minimum it should have representatives from NESO, DESNZ, the devolved governments and Ofgem.

### Establish national SEP external governance framework

We will be implementing a governance structure that ensures strategic oversight, stakeholder input, and alignment with UK-wide policy by December 2026. At the heart of this is the SSEP Committee, which includes representatives from NESO, the UK, Scottish, and Welsh Governments, and Ofgem. This committee sets the strategic direction for SEP and oversees the development of key planning outputs like the SSEP and CSNP.

We are also forming several advisory groups, including the Expert Advisory Group (EAG), which brings together stakeholders from environmental, spatial planning, industry, and societal interest working groups. These groups provide technical and policy input into SEP methodologies and modelling approaches. Additionally, the Cross-Government Advisory Group (CGAG), established by DESNZ, ensures coordination across government departments.

This governance framework is designed to be transparent, inclusive, and responsive, enabling us to deliver strategic energy plans that are robust, credible, and aligned with national decarbonisation goals.

### Establish a dynamic stakeholder and societal engagement framework

We will be integrating stakeholder and societal feedback loops into Strategic Energy Planning by embedding structured engagement across all planning stages. This will be on an ongoing basis and will include public consultations, RESP forums, and thematic working groups that gather input from communities, local authorities, and industry. We will also be analysing the feedback to refine modelling, scenario development, and investment recommendations, creating a continuous loop that improves the relevance and quality of its plans. Governance structures like Regional Strategic Boards and Expert Advisory Groups ensure ongoing input and challenge, while digital-first tools enhance transparency and accessibility, allowing stakeholders to interact with planning data and assumptions in real time.

## Enduring Cost and Time Bound Investments

We are committed to providing transparency to our stakeholders and enabling the VfM assessment of the overall plan by Ofgem.

We present below, for the purpose of planning, an estimate of the resource allocation to this role. This assessment has enabled NESO to develop a total planning envelope facilitating a global assessment of the resources required to achieve the commitments in the plan overall.

We have provided a breakdown of this cost by the enduring activities and services NESO provides to industry and time bound investment that NESO is proposing to make over the business plan timeframe connected to the achievement of the Planning a Clean Energy Future Performance Objective.

It is important to note that it is critical that NESO remains agile and flexible to the changing demand on our roles and activities. As such the allocation of resources will change as demand changes, whilst NESO is committed to remaining within the overall business plan envelope. As set out in the Core Plan this is part of a process that represents a coherent framework for aligning strategic intent with resource allocation across the organisation.

Within SEP there are two main drivers of change since the previous plan:

**Regional Energy Strategic Planning:**

1. As we continue to implement the activities related to RESP we are building capacity and capability across the 2 nations, 9 regions and expect to be in an enduring operational state by end of the planning period, FY28. The RESP teams in the nations and regions will work with organisations at a local level ('local actors') including local government and gas and electricity distribution networks, to improve understanding of the network infrastructure needed in different parts of the country to enable the nations and regions to deliver their energy ambitions and unlock investment. Stakeholder engagement will be key to unlocking the benefits of integrated energy planning.
2. RESP will be responsible for standing up NESO's critical capabilities in the regions by Q3 26 whilst we commence development of our 11 RESPs from Q2 26. Our approach to sizing the resource required per region is based on regional indicators of complexity incl. population, DNO/GDN licences, Local Authorities and Supply and Demand Growth forecasts against the outcomes RESP must deliver against Ofgem's policy decision which was published July 25.
3. RESP is a first of a kind implementation. Our approach has been informed by extensive industry engagement and is overseen by our Operating Committee, Executive Committee and the Board. We continue to engage closely with the team at Ofgem on progress against the Blueprint (co-developed with Ofgem) that set out the detailed implementation plan and resource assumptions. We recgonise that whilst initially estimates have been based on clear assumptions, we have and continue to utilise learning and continuous improvement to evolve our approach. This is a important feedback loop and mitigation. This approach is evidenced as below we have set out a reduction to the expected resource to operate RESP compared to that in the previous plan (NESO1 198FTE, BP3 266FTE).

**Hydrogen Planner:**

We will adopt the hydrogen strategic planner activities from 2026, aligned with DESNZ expectations and proposed policy options with a minded-to position that NESO should adopt the role, complementing natural gas and electricity activities. Industry responses to a public consultation indicate wide support for NESO adopting the role, as a natural complement to existing gas and electricity roles.

The role scope focuses on augmenting existing NESO activities, rather than adding new activities: strategic energy planning, identification of critical national infrastructure, and gas security of supply assessments. This requires the inclusion of hydrogen considerations within SEP, Critical National Infrastructure (CNI) and potentially Hydrogen Security of Supply Assessments (HSSA).

The impact of NESO's SEP role and activities have, together with the outcomes they enable and benefits they deliver are captured in the above cascade and justify the level of cost and investment in NESOs Energy Markets Role.

## Table 3: Role costs

| ACTIVITY | FY26 | | FY27 | | FY28 | |
|---|---|---|---|---|---|---|
| | COST £m | FTE | COST £m | FTE | COST £m | FTE |
| Centralised Strategic Network Planning | 8 | 85 | 8 | 85 | 9 | 85 |
| Gas Network Development | 2 | 21 | 2 | 21 | 2 | 21 |
| Network Competition | 2 | 5 | 2 | 5 | 2 | 5 |
| Regional Energy Strategic Planning (RESP) | 17 | 153 | 32 | 198 | 25 | 188 |
| Strategic Spatial Energy Planning (SSEP) | 8 | 48 | 8 | 48 | 9 | 48 |
| Zero Carbon Operation Strategy | 8 | 31 | 8 | 31 | 4 | 31 |
| NEW Activity - Hydrogen Planner | – | – | 3 | 30 | 3 | 30 |
| Central Costs - Strategic Energy Planning | 10 | 104 | 10 | 97 | 12 | 97 |
| **Total Strategic Energy Planning activity costs** | **55** | **446** | **74** | **514** | **65** | **504** |
| Strategic Energy Planning | 7 | – | 13 | – | 14 | – |
| NEW RESP Property Investment | – | – | 6 | – | 3 | – |
| **Investment in Strategic Energy Planning** | **7** | **–** | **19** | **–** | **17** | **–** |
| **Total Strategic Energy Planning Costs** | **62** | **446** | **94** | **514** | **82** | **504** |

Further granularity on numbers and costs is provided within Annex 6: (Data Tables). Further detail of our proposed investments is contained within Annex 2: Data, Digital & Technology (DD&T).

# 1. Investments in Digital, Data and Technology

We have set out below our proposed time bound investment in the role of SEP. To achieve the incremental change necessary for NESO to achieve its strategic aims and the Planning a Clean Energy Future Performance Objective we will need to invest in and innovate across our digital, data and technology capabilities. Further detail of the investments can be found in Annex 2: Data, Digital & Technology (DD&T).

### Strategic Energy Planning (NESO1-250)

This investment will deliver capabilities to be utilised by internal users across the SEP directorate, along with external customers interacting with each of the plans including Ofgem, DESNZ, local governments, GDNs, DNOs, local authorities, investors and consumers. At the same time, we will enable:

- Integration of electricity, hydrogen, and storage modelling across zonal geographies. Scenario-based planning to test plausible futures and sensitivities.
- Alignment with CP30 and other national policy targets.

Adopting a digital-first approach, the area will leverage supported tools and ensure integration with other business units, while also publishing interactive outcomes in accordance with SEP standards. This strategy aims to enhance collaboration, streamline processes, and deliver accessible, high-quality outputs that align with broader organisational objectives.

## Dependencies and Risks

The successful delivery of this performance objective is contingent upon several critical dependencies.

The SSEP will be underpinned by data and assumptions derived from the Future Energy Scenarios (FES), which will inform the spatial identification of future energy infrastructure requirements. Our plans must also be closely coordinated with the Connections Reform programme, ensuring alignment in both strategic intent and delivery timelines.

In addition, the robustness of our outputs will rely heavily on the availability and quality of external datasets. Key data providers include the DESNZ, the Crown Estate, Transmission Operators, Distribution Network Operators, Gas Distribution Networks, and Local Authorities. These datasets are essential to ensuring the credibility and accuracy of our spatial modelling and planning assumptions.

The capacity to hold to the deadline above-mentioned for the SSEP and the tCSNP2R relies on the Energy Secretary taking a decision on the SSEP pathway no later than the 17 July 2026.

The principal risks associated with this objective stem from its pioneering nature. We are simultaneously designing a first-of-its-kind strategic planning approach, developing internal capabilities, and delivering outputs within tight timeframes. Key risk factors include:

- Our ability to attract and retain the specialist talent required to deliver the plan.
- The timely delivery of above-mentioned inputs as well as their quality.
- The potential for changes in Government(s) policy to impact plan deliverables.
- Stakeholder challenge to process, decision or outputs based on dependencies that are outside of our control.

## Stakeholder Engagement

The Performance Objective was shaped through extensive engagement with stakeholders via a range of sources. This includes our Independent Stakeholder Group (ISG), a range of Strategic Energy Planning forums and groups, consultations, surveys, and other ongoing feedback.

Throughout our engagement, stakeholders emphasised the need for transparent and coordinated strategic planning to support the shift to a clean, secure, and affordable energy system. Key feedback included calls for greater clarity and transparency in NESO's planning processes, more involvement of project developers and demand users, and better integration of regional and national needs in new planning frameworks such as the SSEP and RESP.

In response, we have worked to improve our communication, embed more robust stakeholder engagement, and align our strategic plans with market and regulatory reforms. The process also included enhancing data transparency, accelerating the delivery of key outputs, and refining performance measures to focus on real-world impacts and stakeholder endorsement, ensuring that the Performance Objective reflects both national ambitions and local requirements.

The following examples illustrate how stakeholder feedback has directly shaped this Performance Objective:

- **Feedback from the BP2 End-Scheme Call for Input** highlighted the importance of considering co-location of generation and storage at both transmission and distribution levels. In response, we expanded the scope of SSEP to include embedded generation and industrial/commercial demand, ensuring that planning reflects both national and local system needs.
- Stakeholders also raised concerns about the transparency of the initial SSEP methodology and engagement with energy industry representative groups. We responded by delivering direct engagement with project developers, committing to early and continuous engagement, improving the clarity of planning assumptions, and embedding stakeholder feedback loops into the development of future iterations of the SSEP.
- **Insights from the CSAT Surveys** reinforced the need for greater transparency in modelling and planning outputs, especially around RESP decisions and their links to other NESO activities like CP30 and CSNP. We addressed this by improving data sharing, clarifying technology capacity limits, and enhancing the integration of planning tools.
- **The ISG** called for clearer articulation of NESO's roles and responsibilities in strategic planning, and how SEP activities coordinate with other national and regional plans. We responded by strengthening our coordination across planning frameworks (SSEP, RESP, CSNP) and improving communication about how these plans interlink and support broader system transformation.

- In both our **ISG sessions and in Ofgem's Business Plan 3 Draft Determination responses**, stakeholders requested accelerated delivery of RESP outputs, better measurement of stakeholder engagement success, and more detail on how the SSEP scope will evolve. We responded by embedding timeliness and endorsement of our engagement as metrics into our performance framework and committing to iterative development of strategic plans.
- **Responses to the NESO Business Plan Call for Input** emphasised the need for clarity on interactions between RESP, CSNP, and SSEP, and urged NESO to prioritise the coordinated development of these plans. NESO has taken this forward by aligning SEP activities with market design reforms, flexibility signals, and regulatory approval processes, ensuring that strategic planning supports both system efficiency and decarbonisation.

While we have incorporated a wide range of stakeholder feedback into this Performance Objective, some areas remain under review or outside the current scope. Stakeholders requested faster delivery of Holistic Network Design (HND) impact assessments and more agile RESP processes; although we are working to improve delivery timelines, these enhancements are not yet fully reflected in the current objective. Ongoing concerns about the initial SSEP methodology, particularly the lack of detail provided for early industry feedback, have been acknowledged, and we are striving to improve transparency in future iterations, but the present this PO does not yet fully address this gap. Some stakeholders called for explicit independence from Government in strategic planning; while NESO maintains its impartiality, this feedback has not yet resulted in a formalised independence statement within the PO. The suggestion to evaluate the practical implications enabled by strategic plans, rather than just their existence, is being considered for future success measures but is not yet embedded in the current framework.

# Operating an Intelligent, Real-Time Grid

NESO will operate a flexible, and increasingly intelligent, electricity system, optimising transparent real-time decision-making and ensuring ongoing resilience of the energy system. Enhanced operational decision-making will be enabled through data, automation and future-ready digital tools. Operational capability will be transformed by maximising the benefit of digitalisation and ensuring the correct skillsets and processes are in place to manage increasing variability and complexity of the Great Britain Power System.

## Introduction

This performance objective underpins the transformation needed to manage an increasingly complex and dynamic electricity system. As the Great Britain power system evolves with greater reliance on renewables, decentralised assets, and electrification, we must ensure the system remains resilient, reliable and flexible. This requires enhanced real-time decision-making powered by data, automation, and future-ready digital tools. By prioritising digitalisation and equipping our operational teams with the right skillsets and processes, we will optimise operational capability to maintain system stability amid growing variability and facilitate increased participation in balancing markets. This objective aligns with broader strategic goals, including supporting net zero, enabling market reform, and delivering long-term value for consumers and customers.

Through delivery of this PO, we support Great Britain's transition to a low-carbon, secure, and affordable energy system. It addresses several key challenges, including facilitating the extensive system access required to deliver upgrades and reinforcement necessary to enable CP30, while minimising constraint costs. Additionally, it focuses on integrating clean power sources and enabling consumer flexibility, both of which are essential for a more sustainable and responsive energy system. Finally, it ensures the continued maintenance of security of supply, safeguarding the reliability of energy delivery throughout the transition.

### This PO contributes to the primary strategic aim of delivering resilience & operational continuity in an economic and efficient manner

This PO directly supports the strategic aim of delivering resilience and operational continuity in an economic and efficient manner by enabling smarter, faster, and more adaptive grid management. Through the integration of data, automation, and future-ready digital tools, we can anticipate and respond to system challenges in real time, reducing operational risks and improving reliability. This digital transformation also enhances cost-efficiency by optimising resource use, minimising manual interventions, and enabling efficient decision making. Ultimately, it ensures that the electricity system remains robust, responsive, and economically sustainable as it transitions to a clean power system.

Looking beyond 2028, continuous improvement of digital tools will be central, enhancing performance and refining operational processes to ensure the intelligent grid keeps pace with change, while sustaining cost-efficiency and reliability.

## Key Areas of Progress to Date

Since the BP3 submission, we have made significant progress in operating a more flexible and intelligent electricity system. Reflecting our new role as an independent public body, we have shifted from activity-based performance metrics to outcome-focused success measures, introducing tools like the carbon intensity of operational actions and the skip rate measure to improve visibility into real-time decision-making and system efficiency. This progress is underpinned by transformed forecasting, situational awareness, and the integration of more flexible technologies, all supported by advanced automation and digital tools that enable faster, data-driven decisions. We have strengthened stakeholder collaboration through improved data transparency and coordination, ensuring the system remains resilient, efficient, and aligned with the UK's net zero goals. These changes respond to the growing complexity of the energy system and rising expectations for accountability, we are uniquely positioned to lead this transformation through our impartiality, whole-system oversight, and innovation leadership.

# Performance Objective - Operating an Intelligent, Real-Time Grid

**NESO will operate a flexible, and increasingly intelligent, electricity system, optimising transparent real-time decision-making and ensuring ongoing resilience of the energy system. Enhanced operational decision-making will be enabled through data, automation and future-ready digital tools. Operational capability will be transformed by maximising the benefit of digitalisation and ensuring the correct skillsets and processes are in place to manage increasing variability and complexity of the Great Britain Power System.**

We will do this by:

1. **Continued digitalisation of real time operations through the integration of new and enhanced operational tools, digitalisation through data and automation, to optimise operational decision-making for clean power and customer responsiveness.** We will deliver an increasingly digitalised system operations by embedding advanced digital tools, data-driven automation, and AI across our systems. During this business planning period, we will deliver new situational awareness capabilities through Network Control Management System (NCMS) and enhanced scheduling and dispatch capabilities, as we continue to roll out our Open Balancing Platform (OBP). Through innovation and guided by principles of agility, security, and customer-centricity, we are positioning ourselves as a digital leader in the transition to a zero-carbon grid.
2. **Transforming real time operational capability to maximise benefit of digitalisation of the energy sector and ensure correct skillsets and processes are in place to manage operational risk and optimise balancing costs.** We will evolve our operational capabilities to meet the demands of an increasingly complex electricity system. By embedding digitalisation across our people, processes and systems we will enable transparent, efficient decision-making and unlock greater value from demand-side flexibility. As a key driver of overall balancing costs, we will focus on reducing transmission constraint costs, delivering initiatives such as System Access Reform (SAR) and improved constraint management services, resulting from the Constraints Collaboration Project and the Reformed National Pricing programme. In parallel, we will champion small, flexible generators and consumer-led flexibility by removing barriers to participation and deploying digital tools, data and technology. A clean, reliable system will underpin these ambitions, supported by enhanced modelling and forecasting, improved situational awareness, system strength monitoring, and new operational capabilities. These developments will ensure we maintain a secure, reliable and affordable energy system while delivering measurable consumer value.

## Expected Benefits

The activities set out in this PO[1] generate value through:

- Operating the system efficiently and effectively maintaining system security and security of supply.
- Reducing the carbon intensity of balancing actions, and;
- Minimising balancing costs through optimising the volume and cost of balancing actions[2].

These outcomes represent improved functioning of the energy system in real time. Over time, the outcomes accumulate into **wider system and societal impacts**. For example, reduced balancing costs contribute to overall cost efficiency; stable operations provide confidence to investors; and better integration of renewables supports decarbonisation. Outcomes are therefore the bridge between operational results and long-term system-wide benefits as they also increase public trust and confidence in NESO's ability to design, manage and operate the energy system and support wider economic activity and growth.

These underpin the outcome to wider impacts pathways highlighted in Figure 3.

| Monetisable value measures | |
|---|---|
| **Reduction in carbon emissions from lowering carbon intensity of balancing actions and increased renewable penetration** | **~£550m** |

- NESO efficient system operations are estimated to have saved ~£550m through reducing carbon emissions by running the energy system efficiently and using cleaner energy sources.

- Accurate forecasting, real-time instructions, and clear operational rules help maintain system stability and efficiency by minimizing disturbances and enabling swift recovery. NESO's actions prevent and/or mitigate the impact of disturbances to critical system characteristics (e.g., frequency) ensuring efficient system recovery if they occur. The public gains trust and confidence in NESO's ability to safeguard the energy system.
- Balancing costs are a key part of running the energy system and skip rates—show how efficiently it's being managed, with lower numbers meaning better cost efficiency, although cost efficiency is only one element in the dispatch decision making process. A lower number of skip rates will be reflected in improved cost efficiency of the energy system.

1 Note the activities on which this value assessment is based cover the breadth of NESO activities required to fulfil our function and so go beyond those specified in the Performance Objective.

2 It is important to acknowledge a fundamental tension within these value drivers: the dual aims of delivering lower-carbon system operations and minimising costs may not always align. In practice, lower-carbon solutions could carry higher upfront or operational costs, while more cost-effective options for system needs may not meet the same decarbonisation standards.
This trade-off reflects the current market and system structures, where environmental and economic outcomes are not always mutually reinforcing. NESO is tasked with navigating this complexity, and the balance between these objectives will be actively monitored throughout the delivery of this PO.
Recognising this dynamic is essential to ensure transparency in decision-making and to support a balanced approach that delivers value across both dimensions and overall supports delivery of the PO.

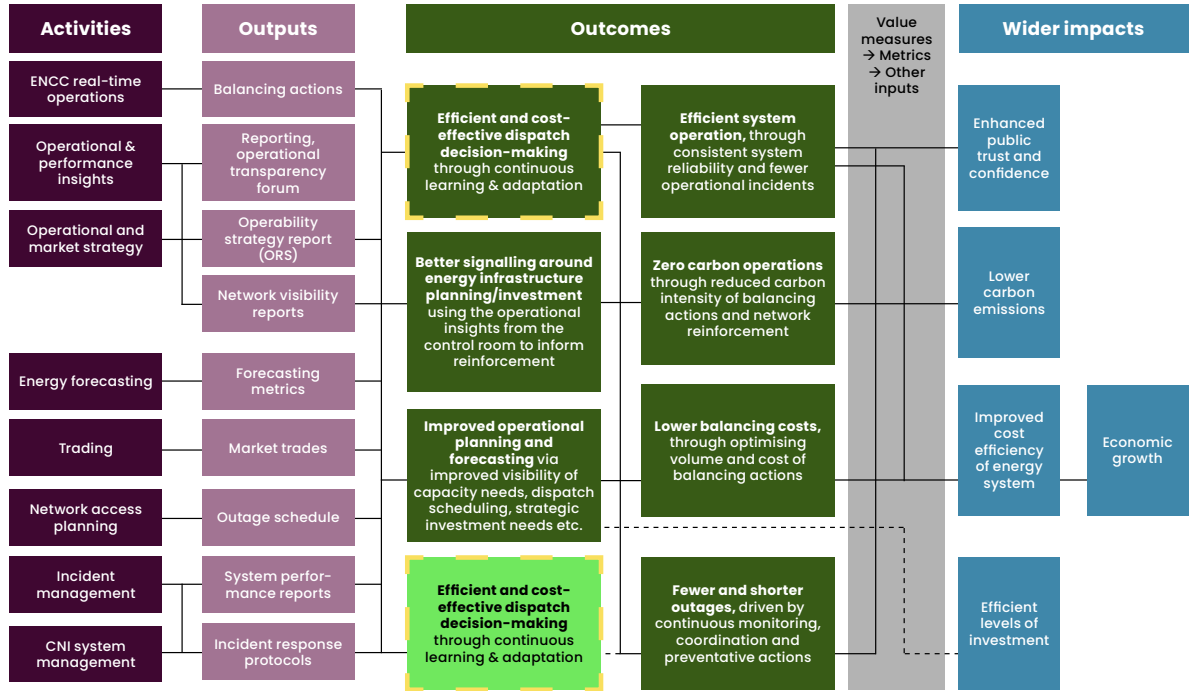



Figure 3: Impact pathway

In summary, electricity system operations follow a clear causal pathway. **Activities** such as control room operations, trading, planning and forecasting generate **outputs** in the form of balancing actions, forecasts, reports, and protocols. These outputs drive **outcomes** such as stability, efficiency, and renewable integration. Over time, these outcomes scale into **wider benefits** including cost efficiency, investment confidence, energy security, and public trust.

## Measuring Success

This PO centres on enhancing operational efficiency and resilience through digitalisation and capability transformation. It aims to integrate advanced tools, data automation, and digital processes to support cleaner power and improve responsiveness to customer needs. Additionally, it focuses on evolving the operational skillsets and processes to align with the digital energy landscape, ensuring effective risk management and cost optimisation. Success is measured through indicators such as carbon intensity, zero carbon operability, security of supply evidence, bid offer acceptance metrics, dispatch efficiency, forecasting accuracy, market participant onboarding time, frequency management, and voltage disturbance tracking. These measures collectively reflect progress in achieving a more agile, data-driven, and sustainable system operation.

While the previous section highlights the broader benefits that can flow from System Operations activities, it is important to remain conscious and pragmatic about the specific role that NESO plays in delivering these outcomes. NESO's activities act as enablers for a wide array of system-wide and consumer benefits, but the organisation's direct influence is best captured through a focused set of success measures. The success measures presented in the following section have therefore been carefully selected to reflect not only the delivery of major outputs, but also the outcomes that NESO is uniquely positioned to achieve. This provides an optimal balance between accountability for delivery and the realistic assessment of NESO's contribution within the wider energy landscape, ensuring that NESO's performance is evaluated both robustly and fairly against its defined performance objectives during the regulatory period.

The impact of this PO will be evident in managing balancing costs effectively, increased participation, improved dispatch efficiency, and greater carbon efficiency in balancing actions — all while maintaining a stable, secure, and reliable electricity supply. This ensures consumers have access to power whenever they need it. By transforming existing processes and ways of working, we aim to deliver these outcomes at the lowest possible cost to consumers.

**Table 4: List of the success measures which sit within each sub-objective, to demonstrate what successful delivery will look like**

| Success Measure | Rationale and justification |
|---|---|
| Carbon intensity | Reduced carbon intensity of balancing actions is a direct outcome of digitalised, data-driven decision-making. It supports the transition to clean power operations and contributes to wider impacts like lower emissions and public trust. We will measure the carbon intensity of our system operations decisions. |
| Zero carbon operability measure | This measure reflects how tools and automation enable cleaner dispatch and system reinforcement strategies. We will measure the level of zero carbon operations in the system. |
| System availability and reliability | Provide transparency and assurance around system reliability and availability to provide overall system security of supply through outturn reliability and system availability in key times of the year ie Winter. We will measure outturn reliability and system availability. |
| Dispatch efficiencies | Improved dispatch efficiency is a key indicator of operational decision making. We will measure levels of dispatch efficiency. |
| Forecasting accuracy | Accurate forecasting improves operational planning and dispatch scheduling. We will measure NESO's forecasting accuracy across different areas. |
| On-boarding time of market participants to engage with the balancing mechanism | Faster onboarding reflects improved operational processes and market accessibility. We will measure the average time to on-board participants. |
| System management and disturbances | Overall effective system management (frequency, inertia, voltage) and reducing network disturbances reflects improved system reliability and preventative operational actions. We will measure system stability and frequency and voltage disturbances. |
| Customer Index | Trust metrics reflect stakeholder confidence in the NESO's ability to operate an effective and efficient system. |

## Measuring Delivery

Table 5: **Summary of Sub-objectives and the Major Deliverables**

| Sub-objectives | Major Deliverables | Target |
|---|---|---|
| 1. Continued digitalisation of system operations through the integration of new and enhanced operational tools, digitalisation through data and automation, to optimise operational decision-making for clean power and customer responsiveness | Transform electricity system operations to enable CP30 and increase consumer and small asset flexibility while ensuring continuity of secure and efficient operations | March 2028 |
| | Operationalise NCMS and OBP, leveraging enhanced situational awareness and capabilities to drive cost and dispatch efficiency | March 2028 |
| | Complete the transition to a unified, modern balancing capability centred on the Open Balancing Platform (OBP) while maintaining safe and secure operation | March 2027 |
| | Continuously enhance OBP to support regulatory compliance, improve control room functionality, increase transparency, and deliver key market and network services | March 2028 |
| | Embed new operational tools to monitor system stability and strength, and integrate into operational processes and support models | March 2028 |
| | Maximise benefit of new data platforms and drive improvements to data quality | Continuous |
| | Continue to enhance the customer experience and maintain delivery of improvements to operational transparency | Continuous |
| | Fully embed new simulator environments and develop a strategy for future people capabilities | April 2027 |
| | Enhance the digital capability to realised benefits of system access and transmission analysis reform | April 2027 |
| | Transform our energy forecasting capability, in line with our published forecasting strategy, while building new forecasts and models as required to meet the ever-changing landscape | March 2028 |

| Sub-objectives | Major Deliverables | Target |
|---|---|---|
| 2. Transforming electricity system operations operational capability to maximise benefit of digitalisation of the energy sector and ensure correct skillsets and processes are in place to manage | Transform operational capabilities to enable CP30 and deliver enhanced system access and connections services, including delivery through the constraint collaboration project and system access reform (SAR) | March 2028 |
| | 2Embed functional changes to our operating model and ways of working, enabling our operational teams to optimise secure and efficient operation of the electricity system | September 2026 |
| | Continue to optimise balancing costs and drive dispatch efficiency through initiatives such as the dispatch strategic review and by facilitating market access for small and flexible assets | Continuous |
| | Accelerate the transformation of real-time operations by embedding advanced people capabilities and leveraging next-generation operational tools, driving measurable improvements in agility, decision-making, and system resilience | Continuous |

### Major Deliverables

## 1. Continued digitalisation of system operations through the integration of new and enhanced operational tools, digitalisation through data and automation, to optimise operational decision-making for clean power and customer responsiveness

### Transform System Operations to enable CP30 and increase consumer and small asset flexibility while ensuring continuity of secure and efficient operations

To enable CP30 and drive strategic system access reform, we will transform System Operations by embedding future-ready capabilities that ensure continuity of secure and efficient grid management. This transformation will enable NESO to optimise real-time decision-making, integrate distributed energy resources, and maintain system resilience as the energy mix evolves. By leveraging automation, data-driven insights, and digital tools, we will create a more agile operational environment that supports zero-carbon system goals. A comprehensive plan will be developed to enact System Access Reform and Transmission Analysis Reform recommendations, aligning operational practices with long-term strategic goals. Additionally, we will develop and implement a roadmap to realise the benefits of the dispatch strategic review, to deliver optimal dispatch processes.

We will deploy intelligent control systems to automate real-time balancing and reduce manual intervention. New frameworks will enable participation from small-scale assets and consumers, enhancing system flexibility. Advanced analytics and modelling tools will support predictive decision-making and scenario planning.

### Operationalise NCMS and OBP, leveraging enhanced situational awareness and capabilities to drive cost and dispatch efficiency

We will operationalise the Network Control Management System (NCMS) and Open Balancing Platform (OBP), embedding future-ready capabilities that enhance real-time decision-making and grid flexibility. OBP will support scalable, zero-carbon dispatch by improving integration of distributed energy resources such as batteries and wind, and enhanced consumer flexibility, while NCMS will strengthen constraint and inertia management across the system. These platforms will be underpinned by advanced digital tools, improved modelling and forecasting accuracy, and operational agility.

Enhanced decision-making capabilities and situational awareness will provide our operational teams with the tools that they need to drive balancing cost efficiency, including constraint costs, reduce skip rates and protect security of supply.

Success will be measured through improved system responsiveness, increased participation of small and demand-side flexible assets, enhanced operational efficiency, and alignment with CP30 decarbonisation targets, whilst maintaining a secure and reliable electricity system.

### Complete the transition to a unified, modern balancing capability centred on the OBP while maintaining safe and secure operation

We will complete the transition to a unified, modern balancing capability centred on the OBP. The programme's priorities are to finalise the remaining core capabilities and integrations, ensure a safe and effective transition from legacy systems.

The focus will be on delivering the final elements required for OBP to assume full responsibility for balancing operations. This includes dispatch and scheduling capability for constraint management, optimisation, scheduling of storage assets and improved interconnector management.

Critical National Infrastructure Data Centre will have the capacity, connectivity, and resilience required by OBP as more capability is created/transitioned.

### Continuously enhance OBP to support regulatory compliance, improve control room functionality, increase transparency, and deliver key market and network services

OBP will evolve as a continuously improving balancing capability. Code and rules changes, such as GC0166, will be embedded directly into optimisation, scheduling, and dispatch processes. Control room user functionality will be improved, and transparency will be enhanced by enabling interfaces for customer facing outputs such as settlement and market reporting. OBP will progressively enable near real-time co-optimisation across response and reserve. New network tools and services will be integrated with the OBP.

Improvements to interconnector visibility and management will also be delivered.

We will demonstrate progress by:

- Publishing delivery milestones and providing regular updates on implementation.
- Providing regular updates on stakeholder engagement and user feedback, showing how OBP enhancements are supporting broader participation and meeting evolving market, network and regulatory requirements.

### Embed new operational tools to monitor system stability and strength, and integrate into operational processes and support models

To support the continued digitalisation of system operations, we will embed new operational tools designed to monitor system stability and strength in real time. We will set clear, timebound milestones for tool deployment, integration into control room processes, and user enablement across operational teams. These tools will integrate into core operational processes and support models, enabling more intelligent and responsive decision-making across the control room.

By leveraging advanced analytics, automation, and data-driven insights, this will enhance the ability to detect and respond to system disturbances, manage grid strength, and maintain resilience in a zero-carbon electricity system. This integration will be underpinned by robust change management and training programmes to ensure operational teams are equipped to utilise these tools effectively.

### Maximise benefit of new data platforms and drive improvements to data quality

We will maximise the operational value of the Data & Analytics Platform (DAP), Advanced Analytics Environment (AAE), and Data Sharing Infrastructure (DSI) by embedding them into system operations and enhancing data quality across key workflows. This will involve setting clear, timebound milestones for platform utilisation, data onboarding, and quality improvement initiatives. These platforms will enable more accurate forecasting, improved situational awareness, and faster decision-making by providing access to high-quality, timely, and trusted data. Additionally, we will implement data governance frameworks and continuous quality monitoring to ensure data integrity, consistency, and usability across operational domains.

### Continue to enhance the customer experience and maintain delivery of improvements to operational transparency

We will collaborate with the central customer strategy team to implement targeted improvements that are specific, measurable, and timebound. We will also introduce clearer reporting mechanisms and engagement protocols to improve visibility of operational decision-making, ensuring customers have timely access to relevant information. These enhancements will be rolled out in phases, with defined milestones for system upgrades, process integration, and stakeholder engagement, ultimately strengthening trust, responsiveness, and alignment with the wider system operations performance objective.

### Fully embed new simulator environments and develop a strategy for future people capabilities

We will embed new simulator environments into our operational training facilities, utilising scenario-based learning to continuously develop our training capabilities. This will involve setting clear, timebound milestones for simulator deployment, integration into training programmes, and user engagement. These environments will support enhanced decision-making by enabling realistic simulations of complex grid conditions, including zero-carbon scenarios and high system variability. Additionally, we will develop a long-term strategy for future training capabilities and integrate this with a robust strategic workforce plan, including digital learning pathways, continuous skills development, and alignment with evolving operational needs.

### Enhance the digital capability to realise benefits of system access and transmission analysis reform

To realise the benefits of system access and transmission analysis reform, we will accelerate the integration of advanced digital tools and data-driven platforms into electricity system operations. This includes deploying intelligent automation and analytics capabilities that enable faster, more transparent and potentially 'whole system' assessments of system access requests and transmission constraints. By leveraging real-time data, machine learning, and modular digital architectures, as well as further building enhanced people capability, we will improve the accuracy and responsiveness of operational decision-making. These enhancements will support a more dynamic and flexible grid, ensuring that access and transmission planning are optimised for a zero-carbon future. This deliverable will be achieved through timebound milestones, including the phased rollout of new digital tools, stakeholder engagement on data transparency and improved ways of working, and measurable improvements in system access processing times and transmission analysis accuracy.

We will deploy multi-scenario analysis tools to improve whole system co-ordination, flexibility and responsiveness in system access decisions. Existing operational tools will be upgraded to boost speed, accuracy, and automation, reducing manual intervention and increasing efficiency. A digital handover platform will be developed to enable more consistent and structured, data-driven transitions between planning and real time operations, improving continuity and foresight.

### Transform our energy forecasting capability, in line with our published forecasting strategy while building new forecasts and models as required to meet the ever-changing landscape

We will deliver a transformation of NESO's energy forecasting capability, aligned with our published forecasting strategy, to support more intelligent, flexible, and zero-carbon system operations. This transformation will involve deploying advanced forecasting models, integrating new data sources, and embedding forecasting outputs into real-time operational tools. These enhancements will improve forecast accuracy, responsiveness, and situational awareness across multiple time horizons. The forecasting capability will be supported by digital platforms such as the DAP and AAE, which enable scalable, automated analysis and decision support. Through this strategy-led transformation, this will strengthen our ability to anticipate system conditions, optimise clean power dispatch, and respond to customer needs with greater agility.

Our integrated forecasting and prediction products will enhance both forecasting and real-time prediction to meet evolving operational needs. Forecasting outputs will continue to cover existing capabilities, with ongoing refinement to improve accuracy and responsiveness and incorporating new data sources, to strengthen output quality and support more informed control room decisions.

Prediction (RTP) capabilities will expand its coverage to include additional signals, providing minute-by-minute insights for the control room. The VOLTA innovation project will further enhance these capabilities by introducing advanced machine learning models, enabling more accurate, adaptive, and probabilistic predictions.

## 2. Transforming system operations operational capability to maximise benefit of digitalisation of the energy sector and ensure correct skillsets and processes are in place to manage operational risk and optimise balancing costs

### Transform operational capabilities to enable CP30 and deliver enhanced system access and connections services, including delivery through the constraint collaboration project and System Access Reform (SAR)

CP30 and SAR present a transformative opportunity to modernise how NESO delivers system access and connections services. We will evolve our operational capabilities to fully enable these reforms by embedding new digital processes, enhancing constraint management through the Constraint Collaboration Project, and aligning operational delivery with the principles of SAR.

We will develop and integrate the capabilities, processes, and tools needed to support CP30 delivery, ensuring readiness for new access arrangements and an improved customer experience. Enhanced constraint management will be delivered through digital tools and collaborative workflows to optimise system balancing and reduce costs. We will also align with SAR by updating processes, platforms, and training to ensure consistent, transparent, and efficient access and connections services.

### Embed functional changes to our operating model and ways of working, enabling our operational teams to optimise secure and efficient operation of the electricity system

To optimise secure and efficient operation of the electricity system, we will embed functional changes to NESO's operating model and ways of working. This transformation will ensure our operational teams are equipped to manage increasing system complexity, operational risk, and balancing costs in a digitalised energy landscape. The redesigned model will support agile decision-making, improved coordination across functions, and enhanced responsiveness to system conditions.

Success will be measured through a structured approach that tracks the implementation of key milestones related to operating model changes and the adoption of new processes. We will monitor improvements in operational decision-making and balancing cost efficiency, ensuring that the changes deliver tangible benefits to system performance.

### Continue to optimise balancing costs and drive dispatch efficiency through initiatives such as the dispatch strategic review and by facilitating market access for small and flexible assets

To continue optimising balancing costs and improve dispatch efficiency, we will deliver targeted initiatives that enhance operational decision-making and broaden market participation. This includes progressing the dispatch strategic review to identify and implement improvements in dispatch processes, facilitating access to the market for small and flexible assets. We will support changes identified through the Enabling Demand Side Flex programme and the Clean Flexibility Roadmap, and continue to remove blockers to participation, for example through changes to the operational metering standards. These efforts will enable more granular, cost-effective balancing actions and support a more dynamic and responsive electricity system.

We will conduct a strategic review of dispatch processes to improve efficiency, transparency, and alignment with system needs, helping to reduce balancing costs. Market access will be enabled by removing barriers and deploying digital solutions that support participation from small and flexible assets, boosting competition and system flexibility. Operational tools will be upgraded to enhance automation, accuracy, and responsiveness in real-time decision-making. We will also collaborate closely with stakeholders to co-develop solutions aligned with broader market reform objectives.

We will measure success by closely monitoring the number and diversity of small and flexible assets entering the market, as this will be a key indicator of improved accessibility and system responsiveness. The implementation of dispatch process improvements and tool upgrades will be tracked to ensure timely delivery and operational impact. Stakeholder feedback and engagement outcomes will also be assessed to confirm that our initiatives are aligned with industry needs and expectations.

### Accelerate the transformation of real-time operations by embedding advanced people capabilities and leveraging next-generation operational tools, driving measurable improvements in agility, decision-making, and system resilience

To strengthen real-time operational performance, we will introduce enhanced people capabilities into the real time environment, combining updated operational tools with new skillsets. This transformation will ensure our operational teams are equipped to manage the increasing complexity of a digitalised, zero-carbon electricity system. By embedding future-ready capabilities and leveraging advanced digital tools, we will improve decision-making, reduce operational risk, and optimise balancing costs. Delivery will be supported by structured training programmes, role-based enablement, and close collaboration with the Digital, Data & Technology (DD&T) and People teams.

We will uplift capability through targeted training and development, ensuring teams are equipped to manage evolving system challenges and adopt new skills. Updated tools and platforms will be integrated to enable data-driven, automated decision-making in real-time environments. Operational roles will be redefined to reflect new responsibilities aligned with digitalised system operations. A structured change programme will support the transition, with clear milestones and feedback mechanisms to ensure successful adoption.

We will measure success by tracking training completion rates and monitor performance improvements across operational teams to ensure that new skillsets are being effectively applied. The adoption and utilisation of updated operational tools will be closely monitored to confirm that digital enhancements are supporting more efficient and secure system operation. We will also assess how well roles are aligned to the evolving demands of system complexity and risk, alongside regular monitoring of team engagement and readiness to operate in a future-focused, digitalised grid.

## Enduring Cost and Time Bound Investments

We are committed to providing transparency to our stakeholders and enabling the VfM assessment of the overall plan by Ofgem.

We present below, for the purpose of planning, an estimate of the resource allocation to this role. This assessment has enabled us to develop a total planning envelope facilitating a global assessment of the resources required to achieve the commitments in the plan overall.

We have provided a breakdown of this cost by the enduring activities and services NESO provides to industry and time bound investment that we are proposing to make over the business plan timeframe connected to the achievement of the Operating an Intelligent, Real-Time Grid Performance Objective.

It is important to note that it is critical that NESO remains agile and flexible to the changing demand on our roles and activities. As such the allocation of resources will change as demand changes, whilst we are committed to remaining within the overall business plan envelope. As set out in the Core Plan this is part of a process that represents a coherent framework for aligning strategic intent with resource allocation across the organisation.

The impact NESO's System Operations role and activities have, together with the outcomes they enable and benefits they deliver are captured in the above cascade and justify the level of cost and investment in NESO's System Operations role.

## Table 6: Role costs

| ACTIVITY | FY26 | | FY27 | | FY28 | |
|---|---|---|---|---|---|---|
| | COST £m | FTE | COST £m | FTE | COST £m | FTE |
| Operational Readiness | 7 | 52 | 7 | 52 | 8 | 52 |
| Network Control Programme | 2 | 25 | 2 | 25 | 2 | 25 |
| Balancing Programme | 0 | 35 | 0 | 35 | 0 | 35 |
| ENCC Real-time Operations | 18 | 136 | 19 | 136 | 20 | 136 |
| Future ENCC Design | 1 | 25 | 1 | 25 | 1 | 25 |
| Network Access Planning | 6 | 85 | 6 | 85 | 7 | 85 |
| Operational & performance insights | 7 | 88 | 8 | 88 | 8 | 88 |
| Central Costs - System Operations | 7 | 6 | 12 | 6 | 8 | 6 |
| **Total System Operations activity costs** | **49** | **451** | **56** | **451** | **54** | **451** |
| Balancing Asset Health | 5 | - | 6 | - | 7 | - |
| Balancing Innovation Delivery | - | - | 5 | - | 5 | - |
| Digital Trials Platform | - | - | 3 | - | 3 | - |
| Dispatch Transparency | - | - | 3 | - | 3 | - |
| ENCC Operations Enablement | 9 | - | 14 | - | 8 | - |
| Forecasting & Predictions | 7 | - | 9 | - | 8 | - |
| Interconnectors | 2 | - | 2 | - | 1 | - |
| Network Topology Optimisation | - | - | 1 | - | 3 | - |
| Open Balancing Programme | 19 | - | 38 | - | 39 | - |
| Situational Awareness Tools | 15 | - | 13 | - | 17 | - |
| System Access | 10 | - | 14 | - | 17 | - |
| **Investment in System Operations** | **67** | **–** | **106** | **–** | **110** | **–** |
| **Total System Operations costs** | **116** | **451** | **162** | **451** | **164** | **451** |

Further granularity on numbers and costs is provided within Annex 6: (Data Tables). Further detail of our proposed investments is contained within Annex 2: Data, Digital & Technology (DD&T).

# Investments in Digital, Data and Technology

We have set out below our proposed time bound investment in the role of System Operations. To achieve the incremental change necessary for NESO to achieve our strategic aims and Operating an Intelligent, Real-Time Grid Performance Objective, we will need to invest in and innovate across our digital, data and technology capabilities. Further detail of this investment is set out in our NESO1 Digital, Data and Technology Annex.

## Network Topology Optimisation (NESO1-460)

This investment is looking to move towards a more automated and integrated NTO process. NTO will drive a focus on efficiency and sound economic decisions powered by digitally advanced, AI-enabled technologies.

Our future, long-term vision is to build out NTO capabilities that will deliver the following:

- **Automated NTO tools:** that will interact with power system models to generate an optimum topology for real-time constraints management, for any given transmission outage pattern or generation schedule
- **Optimisation recommendations:** based on wide and varied scenarios and permutations, providing engineers additional options to manage system conditions
- **Integrated, automatic application of operational rule sets within the NTO tools:** that will be used as inputs to provide optimisation recommendations in a real-time operational timeframe
- **Integration of NTO tools:** within our planning and modelling tools and within our real-time situation awareness tools in the control room, presenting a unified and coherent experience for control room operators
- **Full integration of NTO tools with other investment areas:** such as Volta and Dispatch Optimisation

## Interconnectors (NESO1-390)

This investment strengthens our ability to support both existing and new interconnectors, ensuring flexibility, reliability, and alignment with future energy needs such as non-standard assets like Offshore Hybrid Assets. By modernising our platform for greater automation and integration, we can improve real-time control, reduce renewable energy waste, and expand access to energy markets. Ultimately, this investment supports smarter decision-making, enhances energy security, and helps the UK progress towards net zero emissions in line with European energy market developments.

## ENCC Operations Enablement (NESO1-450)

This investment targets delivery of improved capabilities and efficiencies to support the ENCC workforce in their operational work. Through delivering streamlined and future-looking technology, underpinned by robust tools and platforms, we can ensure that the ENCC can continue to operate a secure and resilient energy system in line with our strategic goals.

Our ambition is for the ENCC to have a unified and customisable operator workspace that seamlessly integrates all control room applications, data, and workflows. This holistic, secure, and resilient operational platform will provide much enhanced real-time situational awareness and decision support, using technology to reduce cognitive load whilst still retaining the human in the loop for assurance.

Through this investment, we will be providing the technology enablers for a future-ready ENCC that is highly responsive to organisational and operational change within the context of a decarbonised power system.

### Open Balancing Programme (NESO1-400)

Over the next investment period, we will complete the transition to a unified, modern balancing capability centred on the OBP. The programme's priorities are to finalise the remaining core capabilities and integrations, ensure a safe and effective transition from legacy systems, and further strengthen transparency and market alignment.

OBP will continue to evolve, enabling more coordinated decision-making across response, reserve, and constraint management in near real-time. The emphasis will be on robust optimisation models and engineered data pipelines that support consistent, scalable, and high-performance operations, laying the foundation for future co-optimisation across balancing services.

The focus will be on delivering the final upstream and downstream integrations required for OBP to assume full responsibility for balancing operations.

### Balancing Asset Health (NESO1-410)

This investment is critical to ensure the continued reliability and performance of NESO's existing Balancing Mechanism (BM) systems. While we transition to the OBP, this investment maintains a secure and stable balancing capability to support safe systems operation and short-term market value.

### Balancing Innovation Delivery (NESO1-420)

This investment is NESO's dedicated stream for accelerating the integration of advanced AI, optimisation, and data-driven tools into balancing operations. It builds on the Volta Innovation Programme (which started in 2021, bringing together leading researchers from the University of Cambridge and Google DeepMind), focusing on delivering AI-driven models that evolve with changing grid conditions to improve forecasting accuracy and operational decision-making.

As the energy system becomes more complex and dynamic, the ability to quickly test, iterate, and embed new digital tools is essential for maintaining reliability, efficiency, and market responsiveness. This investment supports NESO's ambition to lead in digital system operations and to deliver a more intelligent, adaptive, and efficient balancing function.

### Dispatch Transparency (NESO1-480)

This investment addresses long-standing challenges in the Balancing Mechanism, particularly skip rates faced by battery storage operators. Legacy systems, limited visibility, and manual interventions have hindered operational efficiency and stakeholder trust. This programme delivers tools to enhance transparency, automate processes, and improve decision accountability, whilst enabling real-time mitigation of skips and better post-event analysis. Through this investment, we will look to improve our industry-wide transparency as we refine our end-state solutions.

## Forecasting and Predictions (NESO1-430)

In addition to supporting operational decision making within NESO, transparent and accurate forecasts are essential for market participants' trading and operational decisions. We publish forecasts via the Data Portal and Elexon and engages stakeholders through the Forecasting Stakeholder Forum to capture feedback and drive continuous improvement. Forecast accuracy links directly to incentive performance, including metric 1B (day-ahead demand forecast) and metric 1C (day-ahead BM Unit wind forecast).

Within Forecasting, the Platform for Energy Forecasting (PEF) supports the industry and key ENCC operations by providing forecasts for wind generation, solar PV generation, Grid Supply Point (GSP) demand, and National Demand. These forecasts are produced across multiple operational horizons, including intraday, day-ahead, and week-ahead—and are integrated with control room systems and used by the markets to inform operational decisions.

For Predictions, our The Real-Time Prediction (RTP) capability, which is being developed during BP3, will provide minute-by-minute predictions for the control room, enabling timely and effective balancing decisions. By the end of BP3 the investment will have delivered a robust, scalable prediction system that complements the forecasting suite.

## System Access (NESO1-440)

This investment responds to the scale and pace of transmission build-out required for CP30, which is driving a step change in planned outages, regional constraints, and system operability. Current processes and data exchanges are fragmented, limiting NESO's ability to optimise access windows, reduce constraint costs, and provide transparent, system-wide visibility to industry stakeholders.

Within this investment, there will be five main delivery areas aligned to:

- **System Access Reform:** SAR will overhaul how access to the transmission system is planned and delivered so the CP30 build-out can be delivered safely, predictably and at the least cost.
- **Regional Development Programme:** RDP delivers targeted regional operability improvements, such as enhanced MW Dispatch, and better interconnector coordination, to relieve constraints and enable connections where local action has national benefit.
- **Planning and Outage Data Exchange:** PODE provides enhancements of outage planning and data exchange systems to enable a whole system approach to access networks, manages significantly increased data volumes, and provides interactive stakeholder engagement.
- **Offline Network Modelling (ONM):** ONM a strategic investment aimed at transforming NESO's modelling and data management capabilities to support zero-carbon operability.
- **Network Services Procurement (NSP):** NSP supports the delivery of stability, voltage, and constraint management services via the Pathfinder programme and enhanced control room capabilities.

## Digital Trials (NESO1-490)

The Digital Trials Platform is a new investment for NESO1, building on the progress of the REVEAL innovation proof of concept The platform will provide a secure, cloud-hosted environment outside of Critical National Infrastructure (CNI), allowing NESO and industry participants to trial new services, technologies, and regulatory changes without operational risk. This capability is essential as the energy system becomes increasingly decentralised and complex, requiring agile, scalable solutions to maintain reliability and affordability.

## Situational Awareness Tools (NESO1-470)

This investment focuses on delivery of advanced monitoring tools and data infrastructure to support increased visibility of system conditions, frequency, and inertia. These capabilities will ensure that we continue to provide a secure, efficient and cost-effective system operation – our core priority and continuing strategic goal. This investment also aims to deliver the Transmission Analysis Capability Reform (TACR) initiative; a strategic transformation effort aimed at modernising how NESO conducts power system analysis across operations and planning.

## Dependencies and Risks

Achieving NESO's ambition of operating a flexible, intelligent, and resilient electricity system depends on a complex network of technical, operational, and stakeholder interdependencies. NESO, working in close partnership with Distribution Network Operators (DNOs), Transmission Operators (TOs), and Ofgem, plays a pivotal role in ensuring that grid infrastructure, system security, and control room capabilities are robust enough to support real-time decision-making.

Seamless integration of legacy systems with future-ready digital tools requires strong collaboration with technology vendors, while the delivery of scalable and reliable infrastructure is essential to maintain operational resilience. Risks associated with aging infrastructure and system security—particularly from Transmission System Operators and Network Owners—could undermine efficiency and reliability.

Accurate and timely weather forecasting from meteorological agencies and data providers is critical to managing the variability of renewables. At the same time, poor coordination or overstretched systems within DNOs could impair situational awareness. Automation technology providers must deliver dependable solutions to streamline routine decisions, and system analysts and emergency response teams need access to advanced analytics to respond effectively to incidents.

Volatility in energy markets—driven by suppliers, traders, and renewable generators—poses challenges to balancing costs and maintaining system stability. Enabling technologies such as real-time platforms and effective data-sharing protocols are vital, though persistent cybersecurity threats continue to jeopardize operational continuity.

Additional risks include shortages of qualified system operators, misaligned policy shifts from Ofgem or DESNZ, and delays from equipment manufacturers—all of which could impede the rollout of essential digital infrastructure. Ultimately, societal trust and coordinated stakeholder engagement will be fundamental to ensuring NESO's operational strategy remains adaptive, resilient, and future-proof.

## Stakeholder Engagement

Stakeholder engagement played a crucial role in shaping this Performance Objective. Through surveys, consultations, working groups, and forums, we have gathered extensive input that highlighted the persistent need for transparency, modernisation, and improved communication within system operations. Stakeholders called for enhanced forecasting accuracy, greater skip rate transparency, better data exchange, and more visible real-time decision-making capabilities. Their feedback prompted us to prioritise embedding clearer success measures like skip rate tracking and data visibility.

Additionally, stakeholders emphasised the importance of cost optimisation, flexibility enablement, and modern control systems. This led us to accelerate developments in areas such as AI-based forecasting, the Digital Spine, and the Virtual Energy System, as well as reforms to balancing markets and operational reporting. Feedback from Business Plan consultations and dedicated forums reinforced the demand for us to articulate benefits like $CO_2$ savings and constraint cost reductions, and to foster ongoing engagement and transparency through improved data portals and product design. Together, these contributions have helped us ensure that the PO directly addresses stakeholders' priorities for a smarter and more resilient electricity grid.

### How has stakeholder feedback shaped this PO?

The following are examples of how stakeholders have specifically helped us shape this PO:

Stakeholder feedback has been instrumental in shaping the System Operations PO, ensuring our commitments reflect the sector's evolving needs and expectations.

**Through our Independent Stakeholder Group (ISG) we heard a number of key themes which helped us shape our plan:**

- Feedback from the ISG and a range of other engagements repeatedly called for actions to help reduce system costs and unlock flexibility. We responded by shaping its roadmap for balancing market reforms to increase participation from small assets and interconnectors, and to reduce constraint costs through improved coordination with TOs and DNOs.
- Members had repeatedly flagged the importance of us taking action on zero carbon and carbon intensity. Therefore, we have committed to success measures that assess our performance of the carbon intensity of our system operations decisions.
- **Feedback submitted in the BP2 End-Scheme call for input and our CSAT Surveys both** raised concerns on our forecasting accuracy and Skip Rate Transparency. Therefore, we have committed to enhance our AI-based forecasting tools, establish clear skip rate benchmarks, and embed skip rate tracking as a formal success measure in this business plan.
- **Responses to our BP2 End Scheme call for input and NESO Business Plan call for input** stakeholders urged use to improve data sharing and coordination, prompting accelerated development of the Digital Spine and Virtual Energy System. These platforms will enable secure, interoperable data exchange across the sector. We are also embedding real-time data quality support and subject matter expert access to resolve urgent operational issues.
- **Stakeholders responding to our CSAT Surveys and NESO Business Plan call for input** called for simplification and modernisation of control room systems and our legacy systems. Our Future ENCC Design now incorporates digital twins, smart grid technologies, and automated incident management tools to support a more adaptive and resilient grid. We have also committed to delivering a number of technology updates and digitalisation activities in our Major deliverables.
- **Our engagement through our Balancing Programme** has been continuing to build on its customer focussed approach engaging through regular events, stakeholder focus groups and 1-2-1s. We have continued to adapt our approach to developing this business plan based on the feedback we have received through these engagements. The programme has been mapping out our roadmaps beyond BP2 and sharing with our stakeholders through a series of "beyond 25" engagement activities.

Although we have integrated a broad spectrum of stakeholder feedback into this PO, certain areas are still under consideration or beyond the current remit. Stakeholders requested quantified $CO_2$ savings and constraint cost reductions associated with our operational decisions; while we are investigating methods to track and report these metrics, they are not yet part of the existing performance framework. The idea to co-develop publication schemas and schedules with users to enhance transparency is being reviewed but has not been formally incorporated into our product development process. Additionally, although concerns about legacy system constraints—such as outdated Grid-Code and control interfaces—have been acknowledged, comprehensive modernisation remains a longer-term objective and is not reflected in immediate deliverables.

# Enabling Smarter, Cleaner Markets

NESO will evolve key market frameworks to enhance market signals, improve market access and make our data accessible. This will increase competition, reduce supply and price risks, support flexibility and innovation, and enable efficient market participation of new technologies and distributed resources.

# Introduction

Market design and operation are central to delivering a smarter, cleaner, and more efficient energy system that benefits consumers and supports the energy transition. We have demonstrated through our recent balancing services reforms that better consumer outcomes can be delivered through effective and economic market arrangements. As the UK moves toward a Clean Power electricity system by 2030 and ultimately toward net zero, markets must continue to evolve to reflect the changing nature of supply and demand, integrate new technologies, and provide the incentives for investment in flexibility and innovation.

We play a vital role in coordinating whole energy markets across electricity, gas, hydrogen, and carbon, with a focus on promoting competition, innovation, and supporting the UK's net zero ambitions. Through our Whole Energy Market Strategy, Future Gas Markets Plan and Markets Roadmap, we are driving reforms that enhance system operability, integrate renewables, and harmonise cross-vector energy interactions. We are also working with government on a Reformed National Pricing programme following their recent decisions to retain a national wholesale price. Levers such as the Strategic Spatial Energy Plan, changes to network charging and Balancing Mechanism reforms will now be key to progressing change and positive outcomes for consumers.

This PO outlines strategic actions such as modernising frameworks to support low-carbon and flexible technologies, building the gas market and whole system capabilities of the future, enabling smarter markets with clearer signals and open access, enhancing consumer empowerment through transparency and participation, improving system efficiency via better coordination and real-time optimisation, and unlocking innovation by removing barriers and improving data accessibility.

Ultimately, this objective ensures we are enabling markets that are fit for the future—supporting consumer value, system reliability, and the transition to a low-carbon economy.

## This PO contributes to the primary strategic aim of delivering resilience & operational continuity in an economic and efficient manner

By designing competitive and accessible markets we are ensuring that energy procurement is cost-effective and reliable, which directly enhances system resilience and operational efficiency. Transparent market design and fair market access help market participants maintain continuity even under stress.

Evolving market frameworks to support decarbonisation, flexibility, and innovation introduces more adaptable and responsive mechanisms into the energy system. This flexibility allows the system to better absorb shocks, integrate variable renewable energy sources, and respond to changing demand patterns—key factors in maintaining resilient operations.

Finally, enhanced whole energy system signals and coordination across electricity, natural gas, hydrogen, and distributed resources ensures that all parts of the energy system work together efficiently. Clear signals enable timely and informed decisions by market participants, while coordination reduces duplication and inefficiencies, supporting both economic operation and continuity of service.

Together, these efforts create a robust, future-ready energy system that can withstand disruptions, operate efficiently, and deliver consistent value to consumers.

## Key Areas of Progress to Date

Since the BP3 submission, substantial progress has been made in enabling smarter, cleaner markets, including:

- Reform to our balancing services markets is set out in our annual Markets Roadmap. The roadmap outlines how we are driving net zero transformation through competitive procurement of various services, and improved market access for flexible assets including via revenue stacking. We have implemented changes to our services including Quick Reserve and Dynamic Response, as well as engaging on planned changes to the Demand Flexibility Service, static frequency response and progressing changes to how we procure reactive power through changes to mandatory products such as the ORPS (Obligatory Reactive Power Service) and the introduction of a mid-term reactive power market. We also anticipate completing the development and deployment of our new Slow Reserve service replacing our existing legacy Short Term Operating Reserve (STOR) service within the BP3 period.
- We have continued to explore future developments to our markets including within day procurement of frequency response and locational procurement of our response and reserve products, enhancing the capabilities and value of these services to our control room.
- As a formal member of the government's REMA Programme, we delivered analysis and insight to support the government's decision in July 2025. Since the July decision, we have been working with DESNZ and Ofgem to re-scope and re-plan the programme under Reformed National Pricing (RNP). We are leading on the development of a package of balancing reforms, to enhance operational efficiency. We are also working closely with DESNZ to identify options to bear down on thermal constraint volumes and costs out to 2030. And we are contributing to the DESNZ 'siting and investment' workstream under RNP, which aims to design the optimal package of levers to deliver the best outcomes from the SSEP. We are supporting DESNZ to publish a RNP Delivery Plan in December 2025, followed by a NESO call for input on balancing reforms.
- We have engaged substantively with the Market Facilitator contributing constructively towards its establishment and helping to ensure that it is in a position to quickly focus on key priorities for flexibility. We anticipate continuing to work closely with Elexon in this role, enabling the first iteration of the Flexibility Market Rules to drive forward meaningful change.
- In July 2025, NESO, Ofgem, and DESNZ jointly published the Clean Flexibility Roadmap – with an ambition for 55.2 GW of flexibility capacity by 2030. It includes annual targets for non-domestic consumer flexibility, plans to report carbon savings from consumer actions, and open calls for large load participation such as supermarket cold storage. We are leading on actions within the Roadmap relating to electricity markets and consumer-led flexibility and working closely with DESNZ, Ofgem and industry to support progress of other actions enabling more flexibility across the whole electricity system.
- Our CP30 implementation plan builds on our 2024 advice to government – this offers detailed pathways to achieve clean power by 2030. It integrates network, market, and operability requirements, continues reforms to the connections process to align with strategic energy needs, and introduces dashboards to track progress on transmission and generation projects. Additionally, the delivery of the Clean Flexibility Roadmap is an action from the Clean Power Action Plan, published by DESNZ to outline how CP30 can be achieved.
- We have established the independently chaired Gas Advisory Council which consists of industry experts across the gas industry to shape and collaborate on the projects that will enable the transition of the gas market to a decarbonised energy system. This council has identified and prioritised projects that will be taken forward to form the Future Markets Gas Plan.
- The NESO Code Administrator has worked with industry, Panels, and Ofgem to support code change and prioritisation of modifications. We have supported industry through the management of several urgent Connections Reform Modifications. In April 2025, Ofgem published their decision to approve the urgent Connections Reform (TMO4+) modifications. We have raised a second suite of modifications to further improve the Connections process which have since been approved or are with Ofgem for approval. These changes aim to improve the connection process for smaller Distributed Generation and incentivise the timely removal

of unviable projects from the connections queue. We undertook extensive engagement with industry before raising these modifications to maximise efficiency.

- We have also supported progress of high priority Grid Code Modifications, including enhanced data exchange with DNOs and the inclusion of the Demand Control Rotation Protocol into the Grid Code. We have raised new Modifications this year, including the development of a notification process for Space Weather events and standardisation of Metering Polarity. We continue to lead on work to develop future Code Modifications, including on the topics of Holistic Network Design (HND), Grid Forming, and reviewing GB-wide ramping arrangements.
- We have continued to support the Market Wide Half Hourly Settlement (MHHS) programme, including central governance and condensing our testing timelines to support central programme delivery. We have also delivered internal changes on time and to budget, ensuring we have never contributed to programme delays.
- The transition from legacy billing and settlements platforms to the Settlements and Revenue (STAR) system has established a robust, future-ready framework for managing revenue streams with providers. STAR's enhanced adaptability enables the organisation to respond swiftly to market changes and accelerate the deployment of new ancillary services. As a key enabling platform, STAR integrates seamlessly with systems such as Single Markets Platform (SMP) and Open Balancing Platform (OBP), delivering a unified digital experience for providers. This integration supports efficient decision making across the organisation and ensures operational resilience through streamlined data exchange and automation. We have collaborated with EU TSOs on further development of the trading arrangements known as Multi-Region Loose Volume Coupling (MRLVC) identified within the TCA with Europe. Three key MRLVC workstreams were progressed: assessing its feasibility for Day Ahead market coupling, developing a prototype Bordering Bidding Zone forecaster, and evaluating its compatibility with offshore and hybrid assets. The final report has now been submitted to regulators.

## Performance Objective - Enabling Smarter, Cleaner Markets

**NESO will evolve key market frameworks to enhance market signals, improve market access and make our data accessible. This will increase competition, reduce supply and price risks, support flexibility and innovation, and enable efficient market participation of new technologies and distributed resources.**

We will do this by:

1. **Enhancing whole energy system market signals and coordination to enable efficient participation by new technologies and distributed energy resources.** We will enhance coordination across electricity and gas markets to enable efficient, equitable participation by emerging technologies and distributed resources. By 2028, we will have implemented reforms that improve market signals, reduce entry barriers, support whole-system optimisation, through the implementation of the actions within the Clean Flexibility Roadmap and our Enabling Demand Side Flexibility programme. This includes the development of our balancing services markets, increased participation of demand side flexibility, and the deployment of digital platforms that support open access to data. We will have published our first Gas Future Markets Plan outlining plans to facilitate the transition of the gas market to a decarbonised energy system. We will also fulfil our market surveillance responsibility, ensuring that governance is streamlined, and market behaviour is transparent, compliant, and fair. These efforts will ensure that the energy system is adaptive, decentralised, and aligned with net zero objectives.
2. **Evolving market frameworks to support decarbonisation, flexibility, innovation and consumer value.** We will continuously adapt market frameworks to accelerate the transition to a decarbonised, flexible energy system. By 2028, we will have begun the implementation of the package of reforms under RNP and we will have implemented enhancements to the Capacity Market and Contracts for Difference (CfDs) regimes to support the delivery of Clean Power by 2030. We will fufil our reponsibilities as Code Administrator, such as progressing gas code changes to support decarbonisation and supporting DESNZ's development of a dedicated hydrogen network code, in collaboration with DESNZ and Ofgem. These frameworks will be reviewed and updated regularly to ensure they remain fit for purpose, support innovation, and deliver measurable consumer value.

3. **Designing and operating competitive, accessible markets to minimise supply and price risks for consumers.** We will deliver more competition in, and access to, our electricity balancing markets by implementing reforms that reduce price volatility, improve liquidity, and enhance investor confidence. By 2028, we will have enhanced the capability of our CM and CfD portals to ensure that we are able to continue to meet both regulatory requirements and policy priorities, improve operational efficiency and address key security and IT infrastructure recommendations. Alongside this, we will operationalise the Early Competition Framework to introduce innovative, cost-effective infrastructure solutions. These reforms will be delivered in alignment the Markets Roadmap and will be supported by our role as the EMR Delivery Body. Through these actions, we will ensure that market operations actively minimise supply and price risks for consumers while supporting long-term affordability and resilience.

## Expected Benefits

This activity contributes to the delivery of value through:

- Enhanced system optimisation and flexibility by providing clarity on market evolution enabling investment, efficient participation and innovation.
- Improved system resilience, and reliability by identifying and monitoring market risks to maintain secure supply
- Further market development though collaboration (i.e. forums and webinars) around future market design
- Improved cost optimisation for the system and consumer through efficient market design
- Greater market competition driven by capacity markets, CfD auctions and competitive flexibility initiatives dynamic services, frequency response mechanisms and demand participation.
- Improved governance of the energy system due to effective market monitoring and maintained codes

These underpin the outcome to wider impacts pathways highlighted in Figure 4.

The outcomes achieved through this performance objective scale into **wider impacts for the energy system and the consumer**. For example, greater competition aims to optimise costs for consumers; investor confidence supports timely investment; and efficient governance builds trust. In this way, outcomes translate into impacts that are aligned with delivering efficiency, security, and fairness. These outcomes are the mechanisms through which **benefits and value are delivered**—not just to market participants, but to the system as a whole.

## Monetisable value measures

- Market participants in NESO-launched markets[1] are estimated to generate over £400m in revenues over 2026/27 to 2027/28[2]. The expected growth of market revenues across Response, Reserve and demand flexibility services reflects efficient and effective market design, enhancing investor confidence.
- Analysis of new NESO services suggest that these save around £5 million in annual balancing costs each year[3].

| | |
|---|---|
| **Expected market participant revenues in NESO-launched markets and driving optimisation in balancing costs** | **£400m** |

- Cost optimisation for the energy system and consumers is achieved through competitive market design, strong system-wide market signals to support innovation, and efficient balancing market operations to ensure reliability and affordability.
- Greater market competition—enabled by low entry barriers, simplified services, strong incentives, and transparency—allows NESO to access diverse resources, reducing balancing costs and enhancing market efficiency.
- Greater investor confidence is driven by NESO's long-term market design, fixed-term contracts, and multiple revenue streams, which attract diverse participants, boost market liquidity, and reduce entry barriers.
- Improved governance in market processes enhances public trust and confidence by ensuring transparent, accountable, and fair management of the energy system that aligns with public interests.

1 NESO-launched markets included in estimation are response services (DCH, DMH, DRH, DCL, DML, DRL), quick reserve services (NQR, PQR) and DFS.

2 Market revenue estimation methodology assumes constant trend in 2025/26 and 10% growth in market revenue in 2026/27 and 2027/28.

3 Based on NESO analysis: Demand Flexibility Services save £0.5m annually; Response Reform services save £33m across 6 services (£5.5m per service). The average saving per new service is £4.8m per year.

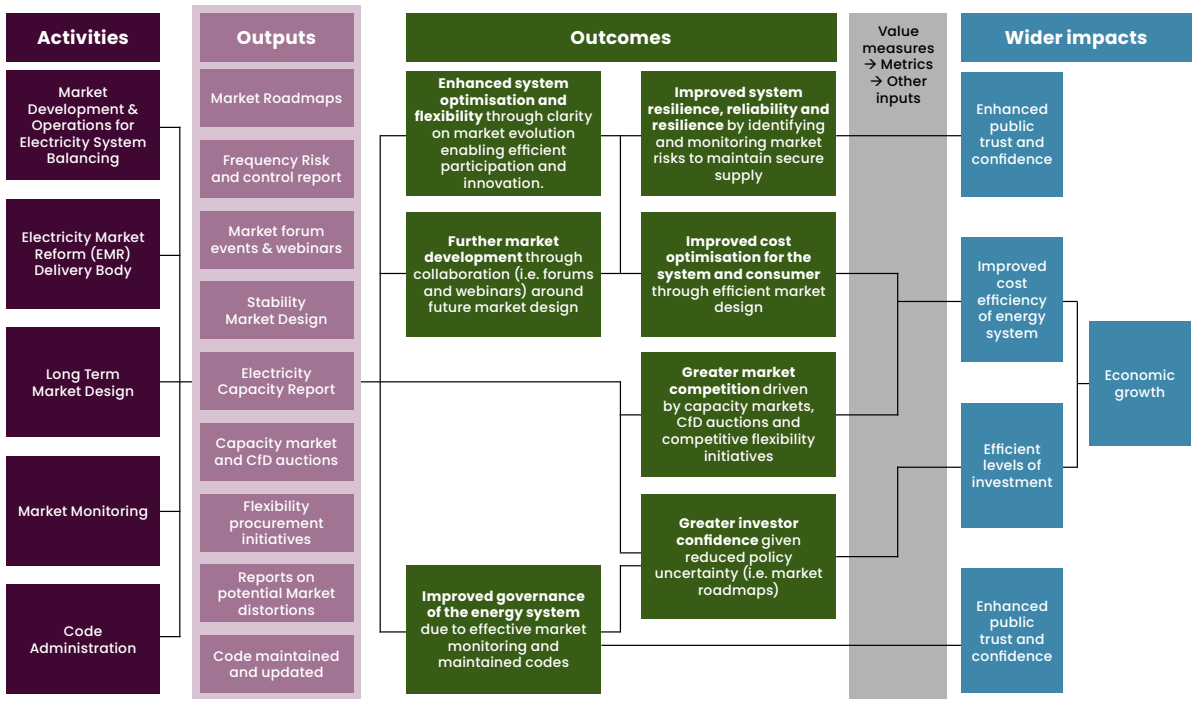



Figure 4: **Impact pathway**

In summary Energy Markets activities such as code administration, market development, operations and monitoring generate **outputs** like updated codes, roadmaps, reports, and auction results. These outputs drive **outcomes** including improved governance, greater investor confidence, stronger competition, and efficient participation. Over time, these outcomes translate into **wider benefits**, including cost efficiency, secure investment, economic growth, and public trust.

## Measuring Success

While the previous section highlights the broader benefits that can flow from Energy Markets activities, it is important to be clear about the specific role that we play in delivering these outcomes. Our activities act as enablers for a wide array of system-wide and consumer benefits, but our direct influence is best captured through a focused set of success measures. The success measures presented in the following section have been selected to reflect both the delivery of major outputs, and also the outcomes that we are uniquely positioned to achieve. This provides an optimal balance between accountability for delivery and the realistic assessment of our contribution within the wider energy landscape, ensuring that our performance is evaluated both robustly and fairly against our defined performance objectives during the regulatory period.

Table 7: **List of the success measures which sit within each sub-objective, to demonstrate what successful delivery will look like**

| Success Measure | Rationale and justification |
|---|---|
| Effective markets whole system coordination | Whole system coordination improves efficiency across energy vectors, reducing costs and enhancing consumer value. |
| Effective code administration | These measures reflect our effectiveness in developing market frameworks and the value this drives. We will measure a set of metrics relating to code administration that could include the number of modifications progressed. |
| Balancing Services consumer benefits (£m) from new and existing services | Effective market operations can translate to system cost efficiency in the balancing mechanism. We will measure the influence of our market services in increasing efficiency in system operations. |
| Efficiency and effectiveness of NESO Markets | Efficient and effective market operations support long-term system resilience and optimisation and contribute to wider impacts like public trust and system efficiency. We will continue to measure the performance of our existing market products. |
| Growth of demand side participation in NESO markets | Increased demand side participation reflects market accessibility and innovation. We will measure the number and concentration of participants in the market as well as the volume of demand side flexibility procured. |
| Adoption rate and participation of existing and new products and services | Adoption of new products demonstrate market responsiveness and innovation. We will measure the level and volume of participation in new products and services. |
| Customer trust index | Trust metrics reflect stakeholder confidence in NESO's ability to coordinate, manage and support energy markets. |

## Measuring Delivery

Table 8: **Summary of draft sub-objectives and the Major Deliverables which have been grouped against each**

| Sub-objectives | Major Deliverables | Target |
|---|---|---|
| 1. Enhancing whole energy system market signals and coordination to enable efficient participation by new technologies and distributed energy resources. | Implement changes from 'Enabling Demand Side Flex' programme and Clean Flexibility Roadmap | March 2028 |
| | Develop our digital infrastructure to enable market outcomes/access (inc. digital platforms and data) | March 2028 |
| | Publish and develop in collaboration with industry our Future Markets Gas Plan which will facilitate the transition of the gas market to a decarbonised energy system | March 2028 |
| 2. Evolving market frameworks to support decarbonisation, flexibility, innovation and consumer value. | Progress implementation of RNP, including changes to balancing and constraints | March 2028 |
| | Support DESNZ and Ofgem by advising on the role of TNUoS and connection charges within RNP, as well as advise on detailed design options | March 2028 |
| | Alongside DESNZ and Ofgem deliver CM & CfD reform for a Clean Power system | March 2028 |
| | Progress hydrogen and CCUS integration into market frameworks | March 2028 |
| | Be a trusted expert on Gas Code and lead/ progress gas modification to drive change aligned to decarbonisation | March 2028 |
| | Support the development of frameworks across RNP, Connections, Cross-border, Flexibility, DSO | March 2028 |
| | Continue stakeholder engagement to support the facilitation and implementation (when appropriate) of Energy Code Reform, ensuring NESO fully understands the impacts and identifies opportunities to enable optimal outcomes | March 2028 |

| Sub-objectives | Major Deliverables | Target |
|---|---|---|
| | Support DESNZ in the development and implementation of the Hydrogen Code | March 2028 |
| | Develop balancing services to meet clean power system needs in line with the Markets Roadmap | March 2028 |
| 3. Designing and operating competitive, accessible markets to minimise supply and price risks for consumers. | Operate procurement mechanisms (auctions, network services, EMR delivery body) to ensure real time system requirements are met | March 2028 |
| | Increase of demand side participation in NESO markets through delivery of the Routes to Market project | March 2028 |
| | Implement a "Demand for Constraints" service, intended to incentivise flexible demand in constrained areas | August 2026 |

## Major Deliverables

# 1. Enhancing whole energy system market signals and coordination to enable efficient participation by new technologies and distributed energy resources

### Implement changes from 'Enabling Demand Side Flex' and Clean Flexibility Roadmap

We will implement a coordinated set of actions from the Enabling Demand Side Flexibility strategy[4] and the Clean Flexibility Roadmap to evolve market frameworks that support decarbonisation, flexibility, innovation, and consumer value. These initiatives are designed to unlock the full potential of demand side participation and integrate it into our markets at scale.

This includes removing barriers to demand side participation by reforming balancing and ancillary services, for example making it easier for smaller and aggregated assets to participate in our markets. We will also work more directly with large industrial users with the aim of increasing their participation in our markets through providing onboarding support and insight into the carbon benefits of providing demand-side flexibility to the electricity system. Annual participation targets for demand-side flexibility targets will be set, supported by a governance framework to monitor delivery.

Innovation projects such as Crowdflex and the Virtual Energy System will improve forecasting, accelerate connections, and enable scalable data sharing. We will also work closely with the Market Facilitator to align our markets with DNO markets whilst also embedding flexibility into regional and spatial energy plans, local network operations, and broader market reforms. These efforts will enhance system efficiency, support clean energy integration, and deliver greater value to consumers.

### Develop our digital infrastructure to enable market outcomes/access (inc. digital platforms and data)

We will advance our digital infrastructure to enable more efficient market access and outcomes, enhancing whole energy system coordination and market signals to support participation by new technologies and distributed resources.

Key developments will include the continued rollout and enhancement of the Single Markets Platform (SMP), which provides frictionless access to NESO markets and streamlines onboarding for ancillary services. We will also expand the Enduring Auction Capability (EAC), a co-optimised procurement platform for day-ahead frequency response and reserve products, enabling providers to participate in multiple markets with improved efficiency and transparency.

In parallel, we will maintain and upgrade the Contracts for Difference (CfD) and Capacity Market (CM) portals to support clean power procurement and ensure alignment with evolving auction parameters and regulatory requirements. The Opening Balancing Platform (OBP) will be developed to facilitate real-time balancing and dispatch, improving system responsiveness and enabling broader participation from distributed energy resources.

Together, these initiatives will improve market signals, reduce system costs, and deliver consumer value by unlocking flexibility, enhancing access, and supporting innovation across the whole energy system.

### Publish and develop in collaboration with industry our Gas Future Markets Plan which will facilitate the transition of the gas market to a decarbonised energy system

As part of our statutory obligations under the Gas System Planner Licence Conditions, we are committed to publishing the Gas Future Markets Plan in close partnership with industry stakeholders. This initiative is central to our role in shaping a decarbonised energy system, ensuring that gas market frameworks are not only strategically aligned with net zero goals but also

4 Enabling Demand Side Flexibility in NESO Markets | National Energy System Operator

aligned with the priorities of the gas industry. We will convene and act as technical secretary to the Gas Advisory Council to create structured spaces for dialogue, challenge, and co-development—bringing together regulators, market participants, industry representatives, and technical experts. This collaborative approach enables us to "join the dots" across policy, regulation, and market design, ensuring that the Gas Future Markets Plan reflect the challenges of a decarbonised energy system. The Plan will enable us to show our progress against specific projects agreed through the Gas Advisory Council, outline our priorities, and guide future action.

## 2. Evolving market frameworks to support decarbonisation, flexibility, innovation and consumer value

### Progress implementation of Reformed National Pricing, including balancing changes and constraints

Following the government's decision to pursue Reformed National Pricing (RNP), we are working with DESNZ, Ofgem and wider industry stakeholders to develop an efficient package of reforms under RNP[5]. The aim is to deliver a) more efficient locational investment signals through an appropriate package of investment levers underpinned by the Strategic Spatial Energy Plan (SSEP); and b) to enhance the efficiency of balancing and constraint management through a series of reforms to balancing and settlement arrangements and constraint management markets.

The SSEP will inform optimal asset siting and support anticipatory investment. This spatial planning framework will underpin market processes by aligning infrastructure development with system needs, enabling more efficient market outcomes. The levers used to deliver against the SSEP could include changes to connections or TNUoS charges, both of which would be delivered by changes to the Connection and Use of System Code (CUSC).

Balancing reforms aim to improve the wholesale market's ability to self-balance; to give more visibility of the final wholesale market position ahead of the Balancing Mechanism (BM); and to increase the volume of flexible capacity available in the BM. These reforms should reduce the volume and cost of balancing actions we need to take. These reforms are likely to include changes to the Balancing and Settlements Code (BSC).

Together, these market-focused reforms will deliver a more predictable and resilient framework, supporting competitive investment in low-carbon technologies and contributing to a secure, affordable transition to clean power.

There is significant work yet to be done to finalise the package of reforms under RNP, including extensive engagement with industry. The final package is expected to be decided in FY27, at which time implementation will begin. Therefore, by the end of NESO1, implementation of these various reforms should be underway.

### Support DESNZ and Ofgem by advising on the role of TNUoS and connection charges within RNP, as well as advise on detailed design options

In July 2025, DESNZ set out their plan to work with Ofgem to develop reforms to TNUoS and connection charging for generation and demand. We understand that their ambition is for reformed network charges to be a significant part of the RNP reform package and one of the key policy levers that supports the delivery of the SSEP.

We expect that this will involve a review of network charging arrangements, reviewing charging objectives, ensuring alignment with the SSEP/CSNP and compatibility with the other delivery levers mentioned in the decision.

We are responsible for the charging methodology within the CUSC which outlines how Transmission Network Use of System (TNUoS) and Balancing Services Use of System (BSUoS)

5 Reformed National Pricing | National Energy System Operator

tariffs and charges are calculated and recovered. Performing that role requires an in-depth understanding of the current charging regime and the incentives that it places on network users.

We intend to use that insight and expertise to support and advise Ofgem and DESNZ as they look to develop the type of charging reforms envisioned in the RNP decision. In doing, so we will seek to act as an independent and trusted advisor throughout the policy development process.

### Alongside DESNZ and Ofgem deliver CM & CfD reform for a Clean Power system

We will work alongside DESNZ and Ofgem to reform the Capacity Market (CM) and Contracts for Difference (CfD) schemes, aligning them with the UK's Clean Power 2030 ambition and evolving market frameworks to support decarbonisation, flexibility, innovation, and consumer value as well as strengthening electricity security of supply.

Key developments will include identification of new emerging technologies to participate in the Capacity Market such as hydrogen and CCUS-enabled generation, and new requirements for combustion plants to present credible conversion plans to clean alternatives. We will also support the strategic use of unabated gas, while continuing to inform auction volumes through the Electricity Capacity Report. We will also provide operational insight to DESNZ and Ofgem to identify and propose improvements to ensure a more robust and fit for purpose delivery assurance framework for the CM.

In the CfD scheme, reforms will improve budget transparency, extend eligibility to emerging technologies like floating offshore wind and repowered onshore wind, and introduce procedural improvements such as fixed appeal timelines. We will assess the market impacts of these changes and advise on their integration with broader market mechanisms.

As part of RNP, we will work with DESNZ to assess any potential reforms to the CfD, CM or other government support mechanisms to align with the SSEP.

Together, these reforms will accelerate clean investment, enhance system flexibility, and ensure market signals reflect consumer priorities—delivering a more reliable, affordable, and sustainable energy system.

### Progress hydrogen and CCUS integration into market frameworks

We will advance the integration of hydrogen and Carbon Capture, Usage and Storage (CCUS) into market frameworks to support decarbonisation, flexibility, innovation, and consumer value.

We will also contribute to the development of market codes and operational models for early hydrogen pipeline networks, focusing on industrial clusters and evolving toward broader market participation.

For CCUS, we are supporting the transition from government-led to market-led systems through the CCUS Future Network Strategy, helping define commercial models and system integration. Additionally, we will work with DESNZ to align revenue support and dispatch models for low-carbon hydrogen and CCUS-enabled generation, ensuring these technologies are competitively procured and efficiently dispatched.

These efforts will enable hydrogen and CCUS to scale within competitive markets, enhance system flexibility, foster innovation in infrastructure and regulation, and deliver consumer value by improving efficiency and reducing reliance on fossil fuels.

### Be a trusted expert on Gas Code and progress modifications to drive change aligned to decarbonisation

We will strengthen our position as a trusted gas expert by proactively leading and progressing gas code modifications that enable and accelerate the transition to a decarbonised energy system. We will collaborate closely with DESNZ, Ofgem and industry stakeholders, leverage our technical expertise, and ensure that changes to the Gas Code are aligned with the UK's decarbonisation objectives.

### Support the development of frameworks across RNP, Connections, Cross-border, Flexibility and DSO

We will support the development of frameworks across RNP, Connections, Cross-border coordination, Flexibility, and DSO integration to evolve market structures that support decarbonisation, flexibility, innovation, and consumer value.

In the DSO transition, we will coordinate planning, procurement, and operations with DNOs, harmonising codes and enhancing data sharing. These efforts will collectively strengthen system efficiency, enable clean technology participation, and deliver greater value to consumers.

We will continue to co-ordinate with UK TSOs on Trade and Cooperation Agreement requests from the SCE including cross-border balancing, capacity calculation and allocation arrangements. We will monitor the impact of evolving European regulations and network codes on Great Britain and support code modifications where necessary.

### Engage with stakeholders to facilitate optimal outcomes on code reform

We will continue to engage with industry and contribute to Energy Code Reform consultations and workshops, helping to shape the future of both technical and commercial energy codes, their governance, and associated processes.

As part of this reform, we will develop NESO's position on the enduring Code Manager role(s), support efforts to simplify and consolidate code content, ensure robust governance, and help coordinate and prioritise strategic changes across industry codes.

These actions will promote transparency, broaden participation, and deliver market frameworks that are efficient, adaptable, and future-ready.

## 3. Designing and operating competitive, accessible markets to minimise supply and price risks for consumers

### Support DESNZ in the development and implementation of the Hydrogen Code

Working with DESNZ and Ofgem, we will contribute to the creation, design and implementation of a new Hydrogen Code, focused initially on industrial clusters then evolving towards broader market participation. This will ensure a competitive, accessible hydrogen market that minimises supply and price risks for consumers and supports the UK's decarbonisation objectives.

### Develop balancing services to meet clean power system needs in line with the Markets Roadmap

We will develop and reform balancing services in line with the Markets Roadmap[6], ensuring competitive and accessible markets that minimise supply risks and costs for consumers, while supporting the transition to a clean power system.

Key developments will include reviews of balancing service areas—such as response, reserve, thermal, voltage, stability, restoration, and the Balancing Mechanism—to enable zero-carbon system operation and support CP30. Key aspects for this period will include locational procurement of response and reserve, maximising the potential of new technologies like grid-forming batteries and ensuring that our markets are able to accommodate large number of demand-side flexibility providers.

To support flexibility and transparency, we will invest in new digital platforms and operational tools that allow for more granular bidding, improved visibility of system needs, and better integration of demand-side flexibility. These reforms will reduce consumer costs through efficient procurement, enhance system reliability with diverse service providers, and deliver consumer value through competitive, transparent, and future-ready market design.

6 Markets Roadmap | National Energy System Operator

## Operate procurement mechanisms (auctions, network services, EMR delivery body) to ensure real time system requirements are met

We are enhancing our procurement mechanisms including CM, CfD, network services tenders, and Early Competition to support the delivery of competitive, transparent markets that align with system needs and decarbonisation goals. As the EMR Delivery Body, we will work in partnership with DESNZ, Ofgem, and the Low Carbon Contracts Company to ensure CfD and CM processes are robust, accessible, and aligned with long-term system planning.

We will enhance these mechanisms by implementing any auction design improvements, refining auction parameters and de-rating factors, streamline CfD allocation processes, and upgrade digital platforms to improve transparency and stakeholder engagement.

Network services procurement is being expanded to include bundled tenders and new platforms for constraint and voltage management, while Early Competition is being advanced to promote innovation and cost-efficiency in transmission investment.

On a daily basis we will continue to procure the requirements needed in our response and reserve products to ensure effective operation of the electricity transmission system.

These changes will improve market access, support clean energy investment, and deliver greater system resilience and consumer value through efficient, forward-looking procurement.

## Increase of demand side participation in NESO markets through delivery of the Routes to Market project

We will enable the expansion and wider demand side participation in NESO markets to support the delivery of a secure, low-cost, and decarbonised electricity system. Demand side participation currently faces regulatory, technical, and commercial barriers that limit its role, and we are actively working to remove these through targeted reforms and stakeholder engagement.

We have implemented a programme of work to enable demand side flexibility to participate seamlessly across balancing and ancillary services, driven by effective market signals and fair dispatch. Innovation projects such as Crowdflex are testing domestic flexibility at scale, while digital infrastructure upgrades, including smart meters and Market-wide Half-Hourly Settlement are enabling consumers to benefit from demand flexibility.

Locational and temporal pricing signals will be integrated into system operation through locational procurement of response and reserve, which will optimise system efficiency. These efforts will unlock low-carbon flexibility, reduce system costs, and support the transition to a resilient, consumer-focused energy system.

## Implement a “Demand for Constraints” service

In the next financial year, we intend to launch the first tender for a “Demand for Constraints” service. This new service will be similar to previous pathfinder projects, where we use a long-term contract to incentivise new investment. In this case, we are looking to incentivise new flexible electrical demand in areas which are often constrained. The participants in this service will be able to increase their demand as requested by NESO at times of grid congestion, which will avoid having to curtail wind generation as well as reduce the costs associated with wind curtailment. The aim is to launch the first tender in the summer of 2026.

## Enduring Cost and Time Bound Investments

We are committed to providing transparency to our stakeholders and enabling the VfM assessment of the overall plan by Ofgem.

We present below an estimate of the resource allocation to this role.

We have provided a breakdown of this cost by the enduring activities and services NESO provides and the investment that NESO is proposing to make over the business plan timeframe connected to the achievement of the Energy Markets Performance Objective.

We will need to remain agile and flexible to changing requirements in our roles and activities. As such the allocation of resources may change as requirements changes. We are committed to remaining within the overall business plan envelope. As set out in the Core Plan this is part of a process that represents a coherent framework for aligning strategic intent with resource allocation across the organisation.

Within Energy Markets costs across all activities remain consistent with the previous plan. We have excluded from NESO1 the items set out below and will work with stakeholders and Ofgem on the impacts and costs as more certainty emerges:

- **Reformed National Pricing (RNP):** at the time of writing the plan the impact of RNP is under development and the full impact on the activities NESO undertakes is uncertain.
- **Regulatory Change:** the impact of regulatory change over the planning period remains uncertain. NESO1 excludes any estimate of this activity. We will work with stakeholders on the impact as that demand materialises. For example, this includes impacts of changes required by the Market Facilitator, industry code change or regulation/policy changes and changes outside of NESO's current plan for the EMR Delivery Body.

Table 9: **Energy Markets activity cost**

| ACTIVITY | FY26 | | FY27 | | FY28 | |
|---|---|---|---|---|---|---|
| | COST £m | FTE | COST £m | FTE | COST £m | FTE |
| Code Administration & Mkt Frameworks | 5 | 50 | 5 | 50 | 5 | 50 |
| Electricity Market Reform (EMR) Delivery Body | 4 | 48 | 5 | 48 | 5 | 48 |
| Long Term Market Design | 6 | 52 | 6 | 52 | 6 | 52 |
| Market Development & Operations for Electricity System Balancing | 7 | 89 | 8 | 89 | 8 | 89 |
| Market Monitoring | 1 | 8 | 1 | 8 | 1 | 8 |
| Central Costs - Energy Markets | 2 | 3 | 2 | 3 | 2 | 3 |
| **Total Energy Markets activity costs** | **26** | **250** | **27** | **250** | **28** | **250** |
| Capacity Market (CM) and Contracts for Difference (CfD) Regimes | 7 | - | 7 | - | 8 | - |
| Flexibility Enablement | - | - | 2 | - | 2 | - |
| Market Access & Procurement | 20 | - | 22 | - | 25 | - |
| Regulations | 5 | - | - | - | - | - |
| **Investment in Digital, Data and Technology** | **31** | **–** | **32** | **–** | **34** | **–** |
| **Total Energy Market Costs** | **57** | **250** | **58** | **250** | **62** | **250** |

Further granularity on numbers and costs is provided within Annex 6: (Data Tables). Further detail of our proposed investments is contained within Annex 2: Data, Digital & Technology (DD&T).

## Investments in Digital, Data and Technology

We have set out below our proposed time bound investment in the role of Energy Markets. To achieve the incremental change necessary for NESO to achieve our strategic aims and Energy Markets Performance Objective we will need to invest in and innovate across our digital, data and technology capabilities. Further detail of this investment is set out in our NESO1 Digital, Data and Technology Annex.

### Capacity Markets and Contracts for Difference (NESO1-320)

NESO will focus investment in enhancing the capability of its CM and CfD portals ensuring that we are able to continue meeting both regulatory requirements and policy priorities, improving operational efficiency and addressing key security and infrastructure recommendations.

NESO is also transitioning from a third-party auction platform to NESO's enduring auction capability to support long-term scalability, security, and strategic control. This initiative will automate data integration processes post-Prequalification.

### Flexibility Enablement (NESO1-350)

This investment consolidates two strands of work into a single programme which looks to deliver distributed energy data ingestion, standardisation, and sharing across NESO, and to support the productionisation of CrowdFlex models. This will move domestic flexibility insights from innovation into supported business as usual services.

Together, these changes will allow us to see, value and dispatch distributed flexibility at scale, improving forecasting, outage planning, real time operations and restoration, while reducing balancing costs and enabling CP30.

### Market Access and Procurement (NESO1-340)

This investment will focus on the design, operation, and governance of electricity markets and procurement mechanisms. We will investment in the development of the Single Market Platform (SMP), Ancillary Services Reform, and Demand Flexibility Service. We are responding to industry changes, enhancing user experience, and integrating with NESO and broader industry systems improving the user experience. We are also supporting the onboarding of more services based on the customer expectations, needs and enhancing the necessary changes required to downstream systems and our control room processes. We will continue to enhance our settlements and revenue platform delivering mandated changes resulting from Ofgem changes (CMP316, CMP440 and CMP453) as well as enabling and improved customer experience.

## Dependencies and Risks

The work we are carrying out within this Performance Objectives relies on a wide range of interdependent stakeholders.

Ofgem and government are critical actors within the development of our deliverables and the realisation of outcomes. We rely on close collaboration with these important stakeholders to drive forward changes to market arrangements and also rely on certain deliverables, actions and policy statements to ensure successful and timely delivery.

We are dependent on the capability of all market participants to respond to and participate in key transformation and development activities. Through timely, clear and comprehensive engagement and collaboration, we will support market participants' awareness of and preparation for planned changes during the business plan period.

Emerging technologies from Hydrogen, CCUS, Flexibility, and Storage Providers present new risks and opportunities, requiring careful oversight. Together, these dependencies form a dynamic ecosystem that we must manage with agility, transparency, and strategic foresight to deliver a resilient and adaptive energy market.

There is a key dependency on the Open Balancing Platform (OBP) because it is central to enabling real-time market access, dispatch, and coordination—all of which are critical for delivering competitive and accessible markets as well as our other key investment programmes.

Finally, there is a dependency on the PO: Operating an intelligent, real-time grid, due to procurement in our electricity markets, as this directly impacts how the electricity system is operated. It determines which resources are available, when they are dispatched, and how they contribute to system stability, flexibility, and cost-efficiency.

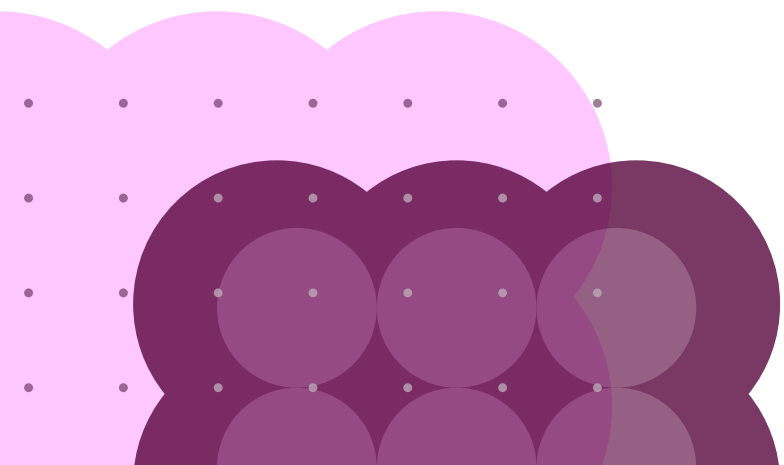
## Stakeholder Engagement

This Performance Objective has been developed in collaboration with a range of stakeholders from across a range of forums and groups. Across these engagements, stakeholders have consistently emphasised the need for market reforms that deliver cleaner, more affordable, and resilient energy. Feedback has signalled we should focus on improving market signals, enhancing access to flexibility services, and reducing barriers to participation—particularly for non-traditional and consumer-led assets. There is strong endorsement for our role in shaping inclusive market frameworks that support decarbonisation, innovation, and consumer empowerment. Stakeholders have also called for better coordination across electricity and gas markets, improved transparency, and streamlined governance to ensure markets are fit for purpose and deliver long-term value.

**Through our Independent Stakeholder Group (ISG) we heard a number of themes which helped us shape our plan:**

- Members emphasised the need to articulate consumer value more clearly, which led us to consider how the objective can help minimise supply and price risks and deliver long-term affordability.
- ISG called for closer collaboration with the Market Facilitator and more impactful stakeholder engagement reflected in our success measures and our role in whole-system coordination.
- Members also highlighted the importance of providing high-quality information to market participants and being explicit about what constitutes fair and competitive markets—both of which have informed our commitments to transparency, open access to data, and reforms that improve participation across market types.
- ISG flagged the need to address increasing system constraints and align market design with the low-carbon agenda. This feedback supports our view of continued development and reform of our markets where there is both an operational need, and the ability to deliver consumer value.
- **During our BP3 engagement programme** we heard strong support for reforms that promote liquidity, transparency, and demand-side participation. This feedback has been reflected in our plans to embed a Competitive Procurement Framework and enhance the Capacity Market to better integrate flexibility and support Clean Power by 2030.
- **Feedback submitted in the BP2 End-Scheme call for input** responses highlighted barriers to flexibility participation and concerns around digital infrastructure. In response, we've prioritised the development of digital platforms and market services that improve access and reduce entry barriers for emerging technologies and distributed resources. We have also published our Enabling Demand Side Flexibility Roadmap and worked with Ofgem and government to develop the Clean Flexibility Roadmap. We will build on this through this plan enabling wider market participation and encouraging flexibility.
- **Insights from our End-Scheme CSAT surveys** reinforced the need for faster delivery, clearer communication, and improved governance. This has shaped our role as Code Administrator and Market Monitor, with a focus on streamlining processes and ensuring transparent, fair market behaviour.

- **Recurring themes from responses to Ofgem's Business Plan 3 Draft Determination and NESO-1 Business Plan Call for Input** stressed the importance of enabling consumer-led flexibility, coordinating with the market facilitator, and aligning with Government's Smart Secure Electricity System programme. These themes are embedded in our approach to whole-system coordination and our commitment to open access and inclusive market design.
- We have heard how important it is that NESO considers the whole energy system and have taken on **feedback from the Gas Markets Council** in particular to make this more central to our plans.



# Delivering a Decarbonised, Operable Grid

NESO will enable efficient connections and coordinated system standards, delivering a resilient, operable and decarbonised energy system whilst reducing barriers to entry. Reordering the connections queue will ensure timely and efficient network connections that support system growth and delivery of CP30. This will be underpinned by a reimagined and transparent enduring connections process, whilst maintaining coordinated operability standards across an increasingly complex, decentralised energy system.

## Introduction

This performance objective is a priority for NESO to deliver because it underpins the transition to a secure, operable, and decarbonised energy system. As Great Britain moves toward net zero, the energy system must accommodate a rapid increase in low-carbon technologies like renewables, storage, and hydrogen. This requires efficient and fair connection processes, as well as coordinated system standards that ensure resilience and operability across transmission and distribution networks. By focusing on this objective, NESO supports the timely integration of clean energy projects, enhances system stability, and aligns with national decarbonisation goals. It also reflects NESO's commitment to delivering long-term value for consumers and stakeholders, as outlined in its NESO-1 Business Plan, and responds to regulatory reforms aimed at improving transparency and equity in grid access. Ultimately, achieving this objective is essential for enabling a zero-carbon electricity system and ensuring the energy system remains reliable, affordable, and fit for the future.

We aim to tackle key challenges in the UK energy sector by enabling a resilient, operable, and decarbonised electricity grid. Also addressing the growing complexity of managing a low-carbon system, streamlines inefficient grid connection processes, and reforms market frameworks to support flexibility and transparency. Through integrated whole-system planning and stakeholder engagement, NESO ensures that the grid can reliably accommodate renewable energy, reduce consumer costs, and meet net zero targets—aligning with both industry needs and public priorities for clean, affordable, and secure energy.

This Perfomance Objective also helps lower costs by aligning connections with strategic energy needs and providing developers with increased certainty about their connections, as well as earlier connection dates. This should also reduce unnecessary network reinforcement costs and reduce system constraint cost for consumers.

To support the transition to a clean power system by 2030, we are driving improvements across the energy value chain that enable faster connection times and a more viable connection queue. These enhancements are strategically aligned with the broader clean energy goals, ensuring that projects are not only viable but also contribute meaningfully to the decarbonisation agenda and other key strategic goals. By providing greater certainty for Balancing Service Providers accessing operability service markets with increased liquidity, we are strengthening system reliability, safety, security, and resilience, enabling more confident participation and investment.

Our approach also prioritises an affordable, reliable, and secure power supply, with improved integration of renewables to meet growing demand sustainably. Through cost optimisation—both in system operations and connection processes—we are reducing financial burdens and unlocking economic efficiency. This, in turn, lowers barriers to entry, fostering a more inclusive and competitive energy market. Ultimately, these efforts ensure that projects are not only technically and economically sound but also strategically aligned with national and regional energy objectives.

### This PO contributes to the primary strategic aim of achieving a connections queue of viable, strategically aligned projects in several key ways:

By focusing on delivering a grid that is resilient and operable, we ensure that only projects which can be reliably integrated into the system are progressed. This naturally filters the queue toward technically viable projects that align with system needs.

Integrating whole-system planning ensures that connection decisions are made in the context of the broader energy system—generation, demand, storage, and network infrastructure—so that projects in the queue are not only viable in isolation but also strategically aligned with national decarbonisation and system efficiency goals.

By reducing delays and inefficiencies in the connections process, we help move viable projects through the queue more quickly, while also identifying and removing stalled or speculative projects that do not meet readiness or strategic alignment criteria.

Aligning connection and operability frameworks with market signals ensures that projects in the queue are responsive to real system needs—such as flexibility, location, and timing—making them more likely to be both economically and strategically viable.

Embedding flexibility and coordinated system operation into planning and connection processes, supports the development of projects that can adapt to evolving system conditions, further ensuring their long-term viability and alignment with strategic objectives.

In essence, this Performance Objective acts as a strategic filter and accelerator, ensuring that the connections queue is not just efficiently managed, but populated by projects strategically aligned with CP30 and (in due course) future strategic energy plans.

As we move into subsequent business plans beyond 2028, the focus will shift toward optimising queue performance and sustaining strategic alignment. Connection offers will need to remain responsive to evolving system needs, locational priorities, and technology mixes. This phase will prioritise accelerating the delivery of designated clean energy projects, refining the enduring connections process.

## Key Areas of Progress to Date

Since the last BP3 submission, we have made substantial progress by reforming the grid connections process to prioritise readiness and strategic alignment, accelerate access, launching whole-system planning strategies that integrate electricity, gas, and hydrogen, and advancing market reforms to support flexibility and zero-carbon operation.

By December 2025, we will have published a connections queue aligned to CP30 to improve transparency, facilitate better outcomes, and reduce barriers to entry in the connections process.

Key innovations include AI-driven analytical and planning tools, interactive customer data portal and model exchange platform, as well as enhanced stakeholder engagement. These changes reflect NESO's unique role as an independent, whole-system operator tasked with delivering a resilient, decarbonised grid aligned with national targets like CP30 and Net Zero 2050.

## Performance Objective - Delivering a Decarbonised, Operable Grid

**NESO will enable efficient connections and coordinated system standards, delivering a resilient, operable and decarbonised energy system whilst reducing barriers to entry. Reordering the connections queue will ensure timely and efficient network connections that support system growth and delivery of CP30. This will be underpinned by a reimagined and transparent enduring connections process, whilst maintaining coordinated operability standards across an increasingly complex, decentralised energy system.**

We will do this by:

1. **Managing the connections queue to ensure timely and efficient network connections to support system growth and delivery of clean energy integration (including CP30):** We will deliver faster, more efficient access to the grid by 2028 through a reformed connections process that prioritises viable, strategically aligned projects. By integrating our Connections Strategy and Operations with whole-system planning, we will streamline application procedures, standardise technical assessments, and enhance transparency across all network regions. These reforms will help facilitate the timely connection of clean energy and demand projects and support the efficient use of network capacity. The connections framework will be regularly reviewed to ensure it remains responsive to system needs, accelerates decarbonisation, and delivers measurable value to consumers.
2. **Maintain operability standards across a more complex, decentralised energy system:** We will maintain and evolve operability standards to ensure secure, stable system performance as the grid transitions to a decentralised, low-carbon future. By 2028, we will have embedded our operability framework across planning, connections, and market operations, enabling flexible, technology-neutral solutions that uphold system resilience. Through advanced modelling, real-time data integration, and targeted service deployment, we will proactively manage emerging risks such as reduced inertia, voltage instability, and thermal constraints. These standards will be regularly reviewed to support innovation, enable decarbonisation, and ensure the system remains secure and adaptable to changing conditions.
3. **Champion a reimagined, transparent connections process that builds trust with Industry and drives long-term growth:** We will transform the customer connections experience, co-creating a more efficient, open, and inclusive process in collaboration with transmission owners, distribution operators, developers, and wider stakeholders. Through the deployment of digital tools, shared data platforms, and harmonised technical standards, we will reduce complexity and enhance coordination across the energy system. This transformation will unlock access for emerging technologies and new market entrants, align connections with regional and national priorities, and ensure the grid remains accessible, investable, and resilient to future demand. These improvements will be continuously refined to support innovation, accelerate decarbonisation, and maintain a customer-centric, future-ready energy system.

## Expected Benefits

This activity contributes to the delivery of value through:

- Optimising and reducing system and connection costs.
- Facilitating faster connection times, shorter queues, and a connection queue in line with CP30 and future strategic energy plans.
- Improving system reliability, safety, security and resilience. For example, by providing greater certainty around balancing service provider (BSP) access to markets and liquidity.
- Improving the overall connection processes, effectively reducing barriers to entry for new connections that are strategically aligned, meet the technical specifications and are viable connection projects.

These underpin the outcome to wider impacts in pathways highlighted in Figure 5.

| Monetisable value measures |
|---|

- Every GW of renewable energy added to the network leverages an estimated £1.9 billion in capital investment[1]. Meeting the UK's CP30 ambitions would leverage over £82 billion over 2024/25 to 2027/28[2]. Based on these estimates we can determine a level of attribution to NESO based on its Network Operability and Connections role will lead to £275m of value as a result of our activities.

| Investment leveraged to support additional renewable energy projects | £275m |
|---|---|

- Cost optimisation in balancing service procurement ensures a more efficient energy system by securing the right volume of services at fair prices and managing provider contracts effectively, reducing costs and market distortions.
- Reliable and resilient system operations, supported by strong connections and data integrity, enable faster, more secure investment and boost investor confidence—leading to greater and more efficient investment in the energy system.
- Reliable and compliant system operations enable smooth, standards-based connections and trusted technical frameworks, boosting stakeholder confidence and satisfaction—resulting in a better overall connection experience.
- Speeding up the connection and integration of low-carbon and flexible technologies supports strategic energy goals, reduces high-carbon reliance, improves system flexibility, and enables better use of renewables—leading to lower overall carbon emissions.

1 Based on levelised cost estimates for electricity generation produced by DESNZ, see: Electricity generation costs 2023. This assumes a split of 39% offshore wind, 18% onshore wind, and 43% solar consistent with NESO's 'new dispatch' Clean Power 2030 scenario.

2 Assuming a deployment of 14.3 GW of renewables generation annually, the average annual amount needed to deliver NESO's 'new dispatch' Clean Power 2030 scenario. We assume an attribution factor of 0.5% if because NESO's role is primarily strategic and advisory, not directly responsible for capital allocation. The investment decisions are made by other entities (e.g. transmission owners, developers), but NESO's work (e.g. queue updates, planning signals) helps shape those decisions.

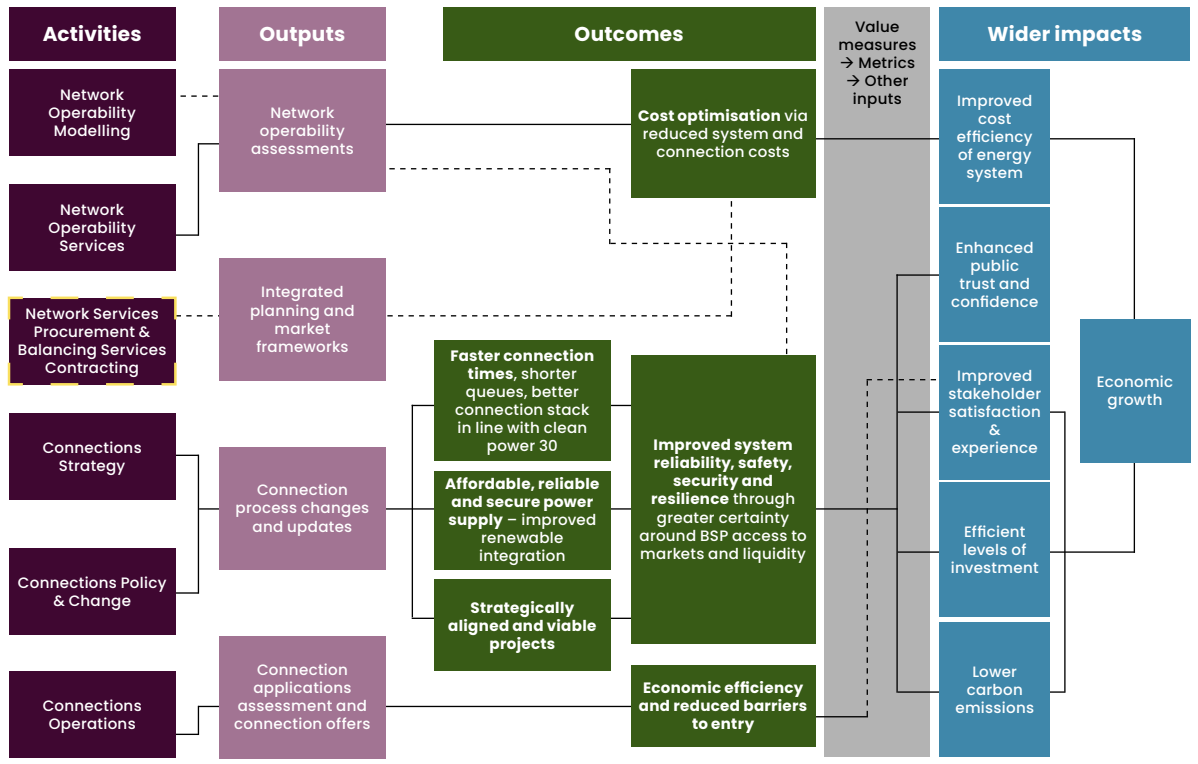



Figure 5: Impact pathway

These outcomes improve the efficiency and predictability of connections, enhancing economic efficiency while enhancing confidence in system operability. The outcomes achieved at the connection and operability level scale into **wider impacts**. Strategically aligned projects reduce wasted investment and deliver assets more quickly where they are needed. Improved reliability and resilience support consumer trust and investor confidence. Lower connection and system costs improve economic efficiency. Thus, outcomes at the operational and project level translate into long-term societal and system-wide benefits that support the path towards decarbonisation and enhances wider economic growth.

In summary, activities such as operability modelling, connections policy, and services procurement generate **outputs** in the form of assessments, offers, and frameworks. These outputs deliver **outcomes** of aligned projects, improved reliability, and reduced costs. Over time, these outcomes lead to **wider benefits**, including system cost efficiency, efficient investment, economic growth, and public confidence.

## Measuring Success

While the previous section highlights the broader benefits that can flow from Network Operability and Connections activities, it is important to remain conscious and pragmatic about the specific role that NESO plays in delivering these outcomes. NESO's activities act as enablers for a wide array of system-wide and consumer benefits, but the organisation's direct influence is best captured through a focused set of success measures. The success measures presented in the following section have therefore been carefully selected to reflect not only the delivery of major outputs, but also the outcomes that NESO is uniquely positioned to achieve. This provides an optimal balance between accountability for delivery and the realistic assessment of NESO's contribution within the wider energy landscape, ensuring that NESO's performance is evaluated both robustly and fairly against its defined performance objectives during the regulatory period.

Table 10: **List of the success measures which sit within each sub-objective, to demonstrate what successful delivery will look like**

| Success Measure | Rationale and justification |
|---|---|
| % of projects in the new connection queue strategically aligned with CP30 | Strategic alignment ensures that projects in the queue contribute directly to clean power goals, capacities and system growth. We will measure the % of projects that reflect the strategic alignment requirement. |
| Acceleration of connections times | Meeting targets through queue reordering supports faster connection times reliable and secure power supply. We will measure the difference between connection date requested and offered. |
| % compliance rate of service terms | High compliance ensures contributes to public trust and confidence in the Connections process. |
| Queue composition and size (connections tracking – capacity, operability requirements and technology types) | Monitor actual connections reflect the effectiveness of the process and support system efficiencies. We will measure capacities / numbers of all projects connected (and technology type). |
| New way of working under GC0139 Mod (model exchange) established with all DNOs | Establishing new working models enhances transparency and coordination. We will measure stakeholder feedback regarding this new way of working. |
| NESO Connections Platform use and experience | Platform engagement reflects usability contributing to improved stakeholder experience and trust. We will measure different metrics around engagement and use of the Connections Platform. |
| Embedding lessons from previous connections windows | Evaluating and learning from previous connections windows support the improvement and enhanced delivery of future windows. We will track how lessons are being implemented. |
| Customer Trust Index | Trust metrics reflect stakeholder confidence in NESO's ability to coordinate, manage and deliver an effective connections process. |

## Measuring Delivery

Table 11: **Summary of Sub-objectives and the Major Deliverables**

| Sub-objectives | Major Deliverables | Target |
|---|---|---|
| 1. Managing the connections queue to ensure timely and efficient network connections to support system growth and delivery of clean energy integration (including CP30) | Conduct a comprehensive end-to-end review of User Grid Code compliance process to accelerate user integration into the system and enable proactive alignment between future system requirements and user accountability | March 2028 |
| | Deliver Operability Policy Reform to achieve strategic alignment between Operational Assessment and Strategic Energy Planning (SEP) | March 2028 |
| | Deliver national strategic demand project | March 2028 |
| 2. Maintain operability standards across a more complex, decentralised energy system | Fully embed operability assessments in network / system planning and connections | March 2027 |
| | Deliver a scalable, market-driven operability services suite that enhances grid flexibility, resilience, and cost-efficiency | March 2028 |
| | Deliver Transmission Analysis Reform project and share the learning with the industry | March 2028 |
| | Enhance balancing service performance monitoring through real-time data analytics and actionable insights to drive system reliability and provider's accountability | March 2028 |
| 3. NESO will champion a reimagined, transparent connections process that builds trust with Industry, and drives long-term growth | Deliver a re-imagined, transparent customer connections journey aligned to SEP | March 2028 |
| | Launch shared digital platform for connections data to improve transparency of connections information | March 2028 |
| | Facilitate existing customers' progress through the end-to-end connections process and enable new customer's entry and accelerate their integration into the system | March 2028 |
| | Enhance data and modelling sharing with DSOs and stakeholders | March 2028 |

Major Deliverables

# 1. Managing the connections queue to ensure timely and efficient network connections to support system growth and delivery of clean energy integration (including CP30)

## Conduct a comprehensive end-to-end review of User Grid Code compliance progress to accelerate user integration into the system and enable proactive alignment between future system requirements and user accountability

To support timely and efficient network connections and the delivery of CP30 and future strategic energy plans, we will carry out a comprehensive end-to-end review of User Grid Code Compliance progress through to physical connection and operation onto the transmission system This review will identifying systemic barriers and opportunities for improvement across the connection lifecycle and how we can better assist users meeting their obligations under the Grid Code. By analysing customer and stakeholder feedback on the compliance process, we will review and streamline the compliance reporting and engineering model submission process. This will ensure that Grid Code adherence is not only monitored but actively supported. The insights gained will enhance transparency, accelerating delivery timelines, and reinforcing the operability and resilience of the future energy system.

We will streamline key stages of the process—from application and assessment to offer and delivery—by embedding digital tools, standardising data requirements, and introducing clearer governance and accountability frameworks. The redesigned process will be co-developed through stakeholder engagement and piloted in phases, with defined milestones for design validation, implementation, and performance monitoring.

## Deliver Operability Policy Reform to achieve strategic alignment between Operational Assessment and Strategic Energy Planning (SEP)

We will deliver Operability Policy Reform by leveraging insights from Operational Assessments to identify and address emerging system constraints that impact timely and efficient network connections. This reform will involve a systematic review of existing operability policies, followed by the proposal of relevant policy changes to enable the efficient and effective operation of a decarbonised, flexible energy system.

By aligning policy with real-time operational data and future system needs, this enables a clear line of sight of the projects needed for future operability, prioritising those projects that contribute to delivery of strategic energy plans. The reform process will be timebound, with clear milestones for assessment completion, stakeholder consultation, policy drafting, and implementation. These changes will ensure that connection, planning and operation decisions are supporting coordinated system growth and accelerating delivery timelines.

## Deliver national strategic demand project

We will deliver a Strategic Demand Connections Reform programme to accelerate the integration of high-priority demand customers, such as data centres, in support of CP30 and future energy plans.

This initiative responds to long connection delays—where only 15% of strategic demand customers receive their requested dates, with others facing average delays of five years. The current queue far exceeds the Government's target of 6–10 GW of new data centre capacity by 2030, risking CP30 delivery.

Key issues include speculative projects blocking progress, legal and regulatory barriers to prioritisation, and siting challenges. New powers under the Planning and Infrastructure Bill will allow Government and Ofgem to direct NESO and network operators to prioritise credible projects, with a strategic plan expected in early 2026.

We will work with stakeholders to develop and implement targeted reforms, including clearer prioritisation frameworks, streamlined processes, and alignment with spatial energy plans. Government decisions are expected by November 2025, with full implementation by July 2026.

We will also share insights through policy papers and forums, ensuring reforms support investor confidence, system resilience, and efficient delivery.

## 2. Maintain operability standards across a more complex, decentralised energy system

### Fully embed operability assessments in network / system planning and connections

To maintain operability standards across an increasingly complex and decentralised energy system, we will embed operability assessments into both system and network planning and connections processes. This will ensure that system operability considerations—such as voltage control, frequency stability, inertia, and fault level management—are proactively addressed from the earliest stages of project development. We will also develop and apply robust assessment frameworks that integrate real-time operation data, future energy scenarios, regional network characteristics and outcomes of strategic energy plans. By embedding these assessments, this enables more informed decision-making, reduces the risk of operational constraints, and supports the integration of diverse technologies including renewables, storage, and flexible demand. This approach will help safeguard system resilience and reliability while accelerating progress toward a decarbonised grid. We will demonstrate this by tracking operability assessment outcomes along with CSNP and through Network Service Procurement events in light of system changes. We will also demonstrate process efficiency improvements during the delivery process of connection and long-term network development.

### Deliver a scalable, market-driven operability services suite that enhances grid flexibility, resilience, and cost-efficiency

We will collaborate with market participants, transmission owners, distribution network operators, and regulatory bodies to implement targeted improvements that are specific, measurable, and timebound. This includes the continuation of reviewing and reforming the whole suite of market-based operability services that address key system needs such as inertia, voltage control, and frequency response. We will embed these services into existing market structures where possible, while also developing new mechanisms to support emerging technologies and decentralised assets. Clear procurement pathways, transparent service definitions, and robust performance metrics will be introduced to ensure accountability and efficiency. These services will be rolled out in phases, with defined milestones for market design, stakeholder engagement, and service activation, supporting a more resilient and flexible energy system.

### Deliver Transmission Analysis Reform project and share the learning with the industry

We will deliver the Transmission Analysis Reform project to enhance the operability of a more complex and decentralised energy system. This initiative will modernise the analytical frameworks used to assess transmission system performance, establishing new methodologies that better reflect the dynamic behaviour of distributed and flexible assets. The project will focus on improving modelling accuracy and agility, scenario diversity, user-experience, interoperability, analysis consistency/auditability and system stress testing, with clear milestones for methodology development, validation, and deployment. It involves collaborating with transmission owners, system operators, and industry experts to implement targeted improvements that are specific, measurable, and timebound. We will share key learnings through published reports, technical briefings, and collaborative forums. By embedding these insights into wider planning and operational practices, will enable a more resilient and coordinated system operation across transmission and distribution boundaries.

The project will introduce updated methodologies, fit for purpose analysis tools, and more representative stress-testing power system models. These improvements will be developed and validated in phases, with defined milestones for stakeholder engagement, technical delivery, and integration into planning and operational processes.

### Enhance balancing service performance monitoring through real-time data analytics and actionable insights to drive system reliability and provider's accountability

We will enhance performance monitoring of balancing services. This initiative will strengthen our ability to assess the effectiveness, responsiveness, and value of balancing actions in real time, ensuring system stability and cost-efficiency as the energy mix evolves. Enhanced monitoring will support continuous improvement of market frameworks and service design and ensure delivery of consumer value. We will work with service providers to ensure that the intended consumer benefits from these balancing service contracts are fully realised in practice. Success will be measured through improved visibility of service performance, increased responsiveness to system conditions, and alignment of balancing actions with whole-system operability goals. These measures will ensure high standards of system resilience and efficiency are maintained as decentralisation accelerates.

## 3. Champion a reimagined, transparent connections process that builds trust with Industry, and drives long-term growth

### Deliver a re-imagined, transparent customer connections journey aligned to strategic energy plans

To support the delivery of CP30 and future strategic energy plans, and to accelerate system growth, we will deliver a re-imagined customer connections journey and manage the connections queue to ensure it is aligned to strategic energy plans. This transformation will prioritise timely and efficient access to the system by ensuring that projects with the greatest system value and readiness are prioritised. This will be informed by whole-system planning principles and will reflect agreed strategic priorities, enabling a more transparent and coordinated approach to grid access.

We will implement a structured delivery plan to ensure timely and efficient network access that supports system growth and the delivery of CP30 and other strategic energy plans. This plan will enable a more transparent, prioritised, and system-value-driven approach to connections, improving coordination across Transmission and Distribution and accelerating the integration of low-carbon technologies.

We will engage closely with stakeholders to ensure transparency and shared understanding of the new process and queue logic.

Success will be measured through monthly tracking of Transmission and relevant Distribution (T&D) offer volumes against targets, alignment of connection activity with national forecasts and targets, and a comparative assessment of the connections queue against CP30 and other strategic energy plan delivery goals. Additionally, we will monitor the penetration of renewable capacity—particularly low-carbon and flexible technologies—connected to the grid, ensuring that the redesigned process directly contributes to decarbonisation and system operability.

### Launch shared digital solutions for connections data to improve transparency of connections information

To enhance transparency and reduce barriers to entry in the connections process, we are exploring the development of a shared digital solution for connections data. This initiative aims to improve transparency and coordination across the sector by providing a more unified, real-time view of connection requests, queue positions, network capacity, and planning timelines. By supporting more consistent data exchange and clearer visibility, it will help all stakeholders engage more effectively with the connections.

We are exploring a centralised digital infrastructure to integrate data from all DNOs, enabling seamless access and exchange of connections information. The solution will enhance process clarity by providing clearer updates and guidance throughout the connections journey. Close collaboration with network operators and developers will ensure the solution reflects user needs and supports efficient decision-making. Performance will be tracked through metrics on platform usage, data quality, and timeliness of connection updates.

Success will be measured through engagement, stakeholder feedback on process clarity, and improvements in the visibility and timeliness of connection updates. These measures will ensure the solution delivers tangible improvements in transparency, coordination, and system access.

### Facilitate new customer entry and accelerate integration into the system

To support the delivery of CP30 and other strategic energy plans, as well as the UK's transition to net-zero, we will, where appropriate, facilitate new customer entry and accelerate their integration into the energy system. This initiative will focus on simplifying and streamlining the connection journey for market participants, including flexible, low-carbon technologies and community-led projects. By working collaboratively with network operators and stakeholders, we will ensure that processes are transparent, accessible, and aligned with whole-system planning principles to enable faster and more equitable access to the system, reduced average time to connect, improved stakeholder feedback, and alignment of new connections with strategic energy plans and associated system growth targets. These measures will ensure that our approach supports a more inclusive, flexible, and decarbonised energy system.

### Enhanced data and modelling sharing with TOs, DNOs and stakeholders

We will collaborate with Transmission Owners (TOs), Distribution Network Operators (DNOs), and wider industry stakeholders to implement targeted improvements that are specific, measurable, and timebound. This includes enhancing the sharing of data and modelling tools to improve coordination across transmission and distribution boundaries in operational and planning timescales. We will establish standardised data formats, interoperable modelling frameworks, and secure digital platforms to enable timely and consistent information exchange. These improvements will support more accurate network assessments, faster connection evaluations, and better whole-system visibility. The initiative will be delivered in phases, with defined milestones for platform development, stakeholder onboarding, and integration into planning and operational processes. By improving transparency and collaboration, we will focus on the outcomes for customers in terms of more streamlined processes and better user experience. We will establish standardised formats and protocols to ensure consistency in operational and planning models. Greater transparency of modelling assumptions and outputs will support stakeholder understanding and engagement. Collaborative frameworks will be developed with TOs, DNOs, and industry partners to co-create data-sharing mechanisms that enable joint planning and operational alignment. Performance will be tracked through metrics on data exchange frequency, stakeholder access, and the quality of shared modelling outputs.

Success will be measured through increased frequency and quality of data shared with TOs, DNOs and other industry parties, improved stakeholder feedback on modelling transparency, and alignment of shared insights with strategic energy plans and associated system planning goals. These measures will ensure that enhanced data sharing contributes directly to streamlined connections and whole-system operability.

## Enduring Cost and Time Bound Investments

We are committed to providing transparency to our stakeholders and enabling the VfM assessment of the overall plan by Ofgem.

We present below, for the purpose of planning, an estimate of the resource allocation to this role. This assessment has enabled us to develop a total planning envelope facilitating a global assessment of the resources required to achieve the commitments in the plan overall.

We have provided a breakdown of this cost by the enduring activities and services we provide to industry and time bound investment that NESO is proposing to make over the business plan timeframe connected to the achievement of the Delivering a Decarbonised, Operable Grid Performance Objective.

It is important to note that it is critical that we remain agile and flexible to the changing demand on our roles and activities. As such the allocation of resources will change as demand changes, whilst we are committed to remaining within the overall business plan envelope. As set out in the Core Plan this is part of a process that represents a coherent framework for aligning strategic intent with resource allocation across the organisation.

Within Network Operability and Connections costs across all activities remain consistent with the previous plan.

The impact NESOs Network Operability and Connections costs role and activities have, together with the outcomes they enable and benefits they deliver are captured in the above cascade and justify the level of cost and investment in NESO's Energy Markets Role.

### Table 12: Role costs

| ACTIVITY | FY26 | | FY27 | | FY28 | |
|---|---|---|---|---|---|---|
| | COST £m | FTE | COST £m | FTE | COST £m | FTE |
| Connections Strategy | 1 | 11 | 1 | 11 | 1 | 11 |
| Connections Policy & Change | 4 | 34 | 4 | 34 | 4 | 34 |
| Connections Operations | 9 | 79 | 9 | 79 | 9 | 79 |
| Network Operability Modelling | 3 | 27 | 3 | 27 | 3 | 27 |
| Network Operability Services | 6 | 80 | 6 | 80 | 7 | 80 |
| Network Services Procurement & Balancing Services Contracting | 4 | 21 | 4 | 21 | 4 | 21 |
| Central Costs - Network Operability & Connections | 0 | 2 | 0 | 2 | 0 | 2 |
| **Total Network Operability & Connections activity costs** | **26** | **254** | **27** | **254** | **29** | **254** |
| Clean Power 2030 Enablement | – | – | 3 | – | 2 | – |
| Connections Enduring Capabilities Ecosystem | 10 | – | 14 | – | 11 | – |
| **Investment in Network Operability & Connections** | **10** | **–** | **16** | **–** | **13** | **–** |
| **Total Network Operability & Connections costs** | **36** | **254** | **43** | **254** | **41** | **254** |

Further granularity on numbers and costs is provided within Annex 6: (Data Tables). Further detail of our proposed investments is contained within Annex 2: Data, Digital & Technology (DD&T).

# Investments in Digital, Data and Technology

We have set out below our proposed time bound investment in the role of Network Operability and Connections. To achieve the incremental change necessary for NESO to achieve it strategic aims and Delivering a Decarbonised, Operable Grid performance objective we will need to invest in and innovate across our digital, data and technology capabilities. Further detail of this investment is set out in our NESO1 Digital, Data, and Technology Annex.

## Clean Power 2030 Enablement (NESO1-240)

The CP30 Enablement investment enables NESO to digitally support the UK Government's commitment to a decarbonised electricity system by 2030, encompassing strategic planning, market reform, infrastructure development, and stakeholder engagement.

Key objectives focus on:

- Supporting the tracking of the Clean Power Action Plan (CPAP) through strategic technology solutions, anticipating risks to the CPAP by leveraging data insights.
- Ensuring that NESO is acting as a trusted advisor to DESNZ and Ofgem, offering modelling, scenario analysis, and implementation guidance.
- Ability to flex and respond tactically to changing business and regulatory requirements to achieve the CP30 objective.

Without this investment, CP30-related data collection, analysis, and reporting will be cumbersome, siloed, and inefficient. Insights and associated decision-making will be slow or based on incomplete information.

## Connections Enduring Capabilities Ecosystem (NESO1-230)

The Connections Enduring Capabilities Ecosystem is a strategic digital initiative designed to transform how networks, NESO, and customers manage end-to-end connections to the transmission system. This investment will continue to leverage and enhance the existing Connections digital ecosystem, which offers a self-service portal with an intuitive user experience – enabling users to register, apply for connections, and manage their project portfolios, all supported by embedded query management functionality.

The future state and enduring capabilities ecosystem will transform how the industry collaboratively manages the end-to-end connections process, optimising registration, data flow, and interoperability within a single, digitalised ecosystem. It will provide an open and transparent, user experience for both industry stakeholders and customers.

Through this investment, we will also be introducing the use of AI as part of the AI Delivery Centre. We will be investing in several facets of AI with the ambition of becoming an early adopter across its core roles, ensuring safe, ethical, and efficient operations. This investment has been identified as a key area where AI can realise significant benefits to operations and productivity through four key areas: delivering value through AI products, data enablement and knowledge bases, people and skills, and assessing AI's impact on our ways of working. The Delivering a Decarbonised Operable Grid performance objective represents value for money by enabling NESO to deliver a more resilient, efficient, and decarbonised energy system while reducing costs and improving service outcomes. It streamlines system access through queue management, reduces speculative activity, and improves transparency, which lowers administrative overhead and accelerates clean energy integration. Advanced operability modelling and real-time data tools help proactively manage system risks, avoiding costly interventions. These efforts result in shorter connection times, improved reliability, and better use of network capacity—delivering tangible economic benefits for consumers, developers, and the wider energy system.

## Dependencies and Risks

Delivering a resilient, operable, and decarbonised grid requires coordinated planning, robust infrastructure, and streamlined processes across multiple actors. The Discovery phase of the Enduring Customer Connections journey will help shape and guide the recommendations and implementation of solutions.

A key dependency is the design and implementation of future-ready IT infrastructure to support a reformed connections process, which must align with strategic energy plan publication timelines (SSEP, RESP, CSNP), future CfD rounds and the CM (Capacity Market), as well as other market support mechanisms (for example cap and floor).

Establishing a clear process for identifying projects critical to security of supply and consumer benefit is essential. We will need to work closely with government, industry and stakeholders during this process.

The success of a shared digital platform across Technology Providers, TOs, and DNOs depends on timely infrastructure delivery and data accuracy from embedded operability assessments. Advanced modelling strategies, supported by academia and technology providers, must be integrated early to inform system planning. Internally, we will ensure collaborative coordination and ownership of streamlined workflows, while investing in talent development to address skills gaps.

External dependencies include the reduction and reordering of the connection queue via the Gate 2 to Whole Queue process, ongoing management of the connections queue by NESO and network companies (including for embedded projects), project development processes by developers and market participants, and timely infrastructure delivery. There is also a clear dependency with Government's approach to reformed national pricing (which may influence the strategic direction of SSEP and connections), and with asset build timelines and network access reform. Finally, clear guidance from Government on identifying strategic demand connections and how demand is reflected within strategic energy plans is vital to ensure alignment across planning, delivery, and market frameworks.

## Stakeholder Engagement

Stakeholder views have played a central role in shaping this performance objective, with feedback gathered through engagement with our connections customers including structured consultations, surveys, bilateral meetings, and formal forums. These methods enabled us to identify common priorities and challenges, guiding the development of more responsive, transparent, and strategically aligned processes.

Feedback has highlighted the importance of aligning Strategic Energy Planning with Connections, reinforcing the need for a coordinated approach across planning and access. Stakeholders have called for clearer articulation of benefits and impacts—particularly around $CO_2$ savings, constraint cost reductions, transmission investment efficiencies, and innovation enablement. There is strong interest in the visibility and pace of connections reform, especially its integration with strategic planning to support timely and efficient network access. Stakeholders also emphasised the need for improved data quality, more user-friendly access portals, and a better overall customer experience, including more consistent engagement and coordination throughout the connections journey.

The following are examples of how stakeholders have specifically helped us shape this Performance Objective:

- **Feedback from the BP2 End Scheme CFI Responses and Connections Role 3 BP2 CSAT Survey Responses** highlighted persistent communication gaps between NESO, TOs, and developers. In response, we have committed to streamlining connection processes through enhanced digital tools, shared data platforms, and consistent technical standards. This includes improvements to the Connections Portal and clearer escalation pathways for unresolved queries. In addition,

more effective engagement with industry participants to increase liquidity in balancing services markets has seen an increasing interests from the market in recent tendering events.

- **Responses submitted to our Role 3 BP2 CSAT Survey Responses and Business Plan 3 Draft Determinations** expressed frustration with delays and speculative activity in the connections process. We have responded by developing a reformed connections process that prioritises viable and strategically aligned projects.
- **Multiple sources, including our Independent Stakeholder Group (ISG)** called for greater attention to demand-side customers. All transmission connected demand projects are in scope of the ongoing connections reforms. NESO is also working with Government and Ofgem to further explore how demand in general, and strategic demand projects more specifically, are considered within the connections process to ensure it is not a barrier to economic growth and ensure alginment with future strategic energy plans.
- **Our ISG members** requested clearer articulation of the benefits and impacts of our activities such as $CO_2$ savings, constraint cost reductions, transmission investment savings and innovation enablement. We have responded by embedding many of these metrics into our success measures and communication strategy.
- The need for strategic alignment and cross-sector coordination particularly considering activities in Strategic Energy Planning was a recurring theme across the **Connections Role 3 BP2 CSAT Survey Responses, our ISG and the NESO Business Plan call for input**. NESO has reflected this by aligning the connections process with broader planning frameworks such as SSEP, RESP, and CSNP, ensuring reforms contribute to whole-system optimisation.

While we have integrated much stakeholder feedback into this Performance Objective, certain areas remain under consideration or outside its immediate scope. For example, although stakeholders called for more proactive support on DNO issues linked to Third Party Works or embedded (ie distribution-connected) demand, these are outside the scope of the connections reforms currently being implemented. We are working with network companies to help them deliver the benefits of connections reforms to these areas. Additionally, proposals for real-time visibility of constraint costs and quantified $CO_2$ savings are being explored for future reporting but are not yet included in the current performance framework.

# Driving Whole-System Resilience

NESO will drive improvements in whole energy system security and resilience by being the catalyst for coordinated and prioritised action across the system to address risks. We will deliver clear insights and advice to our stakeholders through robust analysis, systematic, and topical assessments, reviews, emergency exercises, and plans – grounded in an evolving understanding of system risks and interdependencies. This cycle of continuous learning, assessment, and action will reinforce NESO's position as a trusted technical authority and enhance system resilience.

## Introduction

To deliver this Performance Objective we combine two of our business roles - Energy System Resilience, where we seek to improve whole-energy system resilience by understanding risk and Security of Supply, where we provide expert advice to government on the core underpinning of a reliable and secure energy system. This Performance Objective is a priority because it marks a strategic evolution in the organisation's role—from monitoring electricity risks to becoming a leader in understanding and enhancing whole energy system resilience. The energy system is becoming increasingly complex, integrating electricity with gas, hydrogen, transport, heat and emerging technologies. This interdependence introduces cascading risks across sectors. To be a catalyst for the increased resilience of the energy system we must first also develop and share our evolved definition and understanding of resilience – going beyond traditional physical system reinforcement to also account for a complex landscape of interdependent factors. This shared definition and common baseline is critical both now – to address existing challenges – and in the future as we plan the future energy system and our stakeholders move to deliver it. This Performance Objective ensures we are not only safeguarding today's energy system but also shaping a more secure, adaptable, and future-proof system in alignment with national energy security and net zero goals.

Leveraging this understanding of resilience, the system, and its interdependencies, allows us to conduct high-impact systematic and robust resilience assessments, reviews, exercises, and planning activities, through which we can both further identify and prioritise areas of risk and opportunity as well as drive informed decision making within NESO, Ofgem, DESNZ, and industry. Furthermore, our position as a trusted technical authority allows us to convene and influence stakeholders, by raising shared risks, surfacing unrecognised assumptions, and providing advice and guidance to drive improvements in resilience across the sector.

### This Performance Objective contributes to the primary strategic aims of delivering resilience and operational continuity in an economic and efficient manner

Evolving from a system operator focused on electricity risks to an organisation with a whole energy system view directly supports the strategic aim of delivering resilience and operational continuity in an economic and efficient manner. By building and sharing a deeper understanding of energy system risks and interdependencies, we empower government and industry stakeholders to make informed decisions that avoid reactive or inefficient responses. Systematic and robust resilience assessments provide a clear evidence base for prioritised action, enabling targeted interventions that optimise resource use and prevent costly disruptions. Leveraging our role as a trusted technical authority ensures that resilience improvements are technically sound, economically justified, and widely adopted across the sector. This coordinated approach avoids fragmentation, enhances system-wide efficiency, and strengthens the energy system's ability to withstand and recover from shocks. Collectively, these actions ensure that the system has security of supply and resilience delivered in a way that is proactive, cost-effective, and aligned with national energy priorities fulfilling the strategic aim of economic and efficient operational continuity.

## Key Areas of Progress to Date

Since the BP3 submission, substantial progress has been made in enabling driving whole system resilience, including:

- **Building understanding of the energy system, its resilience, and risks**
  - **Industry surveying:** We have partnered with industry to build understanding on a broad range of questions regarding energy system resilience for the first time. We have undertaken the first Energy System Resilience Assessment (ERA) and the seasonal Winter and Summer Readiness Assessments. Through this we have acquired some baseline knowledge of energy system resilience to be used to build on and compare to in the future.
  - **Academic and wider expert collaboration:** Resilience and security of supply assessments often require expertise beyond the energy sector – we have expanded our regular engagements with academia to start building in expertise from other sectors to ensure we have outputs that reflect the complex system landscape.

- **Systematic and Robust Resilience Assessments**
  - **Energy System Resilience & Risk Assessments:**
    - **Energy Resilience Assessment:** We have produced our first Energy Resilience Assessment, focusing initially on electricity system risks, with future iterations to include gas and cross-vector risks. This assessment evaluates threats such as severe weather, cyber threats, and the impacts of the energy transition, and proposes recommendations to improve the resilience of the system.
    - **Threat reports:** Sector Threat 360 pilot held in July 2025, brought together key Great Britain energy sector stakeholders to consider hybrid threats. Praised for its ambition and actionable insights, pilot outcomes are shaping future events and reports to drive sector-wide resilience.
  - **Seasonal Outlooks & Readiness Assessments:**
    - **Seasonal Outlooks:** Both the summer and winter electricity outlooks are a key product NESO shares with the sector to inform on our anticipated ability to operate an undisrupted system over throughout the expected weather pattern of the coming season.
    - **Seasonal readiness reports:** Successfully delivered the first season ahead readiness reports for winter and summer, with the second winter readiness report due to be submitted during October 2025.
  - **Post-Event Risk Reviews:** The North Hyde Substation Fire review marked NESO's first comprehensive review, credited broadly for its impartial and factual approach in addressing the substation incident and its impact on consumers and Heathrow Airport.
  - **Security of Supply Assessments:**
    - **Electricity Capacity Report:** Providing valued recommendations to government for optimal future capacity procurement to safeguard consumer supply at the best possible cost.
    - **Gas Security of Supply Assessment:** NESO's first-ever Gas Security of Supply Report will be submitted by 31 October 2025 and published shortly thereafter, outlining our analysis on the supply of gas in 5-10 years marking a significant step in NESO's efforts to enhance gas supply security.
- **Resource Adequacy in the 2030s:** This report built on the CP2030 action plan and was positively received, reinforcing NESO's commitment to ensuring clean, reliable energy resources. **Acting as a Catalyst for Mitigations and Solutions**
    - **Electricity System Restoration Preparedness & Planning:** After comprehensive analysis and workshops, the ESRS team have identified and prioritised effective strategies to reduce the average time needed to restore 60% of electricity demand per region. The updated plan includes extra projects to boost restoration readiness among network owners and generators, with work packages ranked by their impact on meeting BPR deadlines in March and December 2026.
    - **Stakeholder Engagement:** We have significantly expanded our engagement with government, industry, and regional stakeholders, through surveys, working groups, and participation at conferences and seminars both in Great Britain and abroad. This is to ensure that resilience planning is collaborative and informed by a wide range of perspectives.
    - **Trusted Technical Authority:** NESO's advice and modelling are now central to government and Ofgem decision-making on system resilience, capacity markets, and restoration standards. The organisation is leading the implementation of the Electricity System Restoration Standard (ESRS), with 95% of required capabilities targeted for delivery within the business plan period.

- **Outcomes and Impact**

    1. **Holistic Risk Management:** Our expanded remit, and new tools have initiated a shift from siloed electricity risk monitoring to integrated, whole-system risk management, supporting more effective and economic resilience strategies.
    2. **Catalyst for Change:** By providing independent, evidence-based recommendations and facilitating cross-sector collaboration, NESO is now a key driver of resilience improvements and innovation across the energy system.

## Performance Objective – Driving Whole-System Resilience

**NESO will drive improvements in whole energy system security and resilience by being the catalyst for coordinated and prioritised action across the system to address risks. We will deliver clear insights and advice to our stakeholders through robust analysis, systematic, and topical assessments, reviews, emergency exercises, and plans – grounded in an evolving understanding of system risks and interdependencies. This cycle of continuous learning, assessment, and action will reinforce NESO's position as a trusted technical authority and enhance system resilience.**

We will do this by:

1. **Enhancing our understanding of energy system & risks, continually combining stakeholder input with ongoing knowledge-building to support our security and resilience assessments, insight, and advice.** We will continually engage with government, industry, and other key stakeholders to deepen our understanding of the energy system and maintain a live view of emerging risks, challenges, and opportunities. Through this sustained collaboration—focused on listening, sharing insights, and building mutual understanding—we will strengthen relationships and establish ourselves as a trusted partner in improving energy system resilience. By 2028, we will have developed the foundational concepts for a Whole Energy System Risk & Resilience Framework and advanced our capability in complex cascading risk modelling and mapping across electricity, gas, hydrogen, carbon, and heat systems. These capabilities will enhance our ability to identify vulnerabilities and interdependencies more effectively, supporting a more sophisticated approach to system-wide risk assessment. We will also evolve our existing processes for collecting, logging, and registering identified risks within a Whole Energy System Risk Encyclopaedia—providing a coherent and evidence-based foundation for analysis and insight generation. This growing body of knowledge will directly inform our systematic and robust energy system resilience analysis, assessments, reviews, emergency exercises, and planning activities, ensuring that our insights and advice are timely, evidence-based, and aligned with national resilience priorities.
2. **Produce systematic and robust energy system resilience analysis, assessments, reviews, emergency exercises and plans, to deliver clear insight and advice.** We will use our knowledge of energy system risks to focus our efforts where our analysis, assessments, reviews, emergency exercises, or forward-looking plans will have the most impact. By 2028, we will have delivered systematic and robust analysis, assessments, reviews, emergency exercises, and forward-looking plans that strengthen whole energy system resilience, security, and guide prioritised action. This includes integrating insights across electricity, gas, hydrogen, and emerging technologies to identify vulnerabilities and inform strategic decision-making. We will apply structured methodologies, advanced modelling, scenario planning, and industry engagement to produce high-impact insights that support regulatory alignment, emergency preparedness, and investment decisions. Our assessments will address a broad spectrum of risks and time horizons—from natural hazards to cyber-physical and malicious threats across the short, medium, and long-term —and will be embedded into NESO's operational and long-term planning. Through this work, we will break down silos, enable risk-based prioritisation, and ensure resilience is a core part of how the energy system is designed, operated, and restored.

3. **Leveraging our role as a trusted technical authority to drive and enable improvements in whole energy system resilience.** We will continue to build-up and leverage our position as an independent, credible technical authority to drive the transformation toward a more resilient, secure, and integrated energy system by 2028. This includes the continuous escalation and reporting of dynamic risks to government and stakeholders, and the co-development of resilience improvements and risk mitigation strategies across the system. We will have supported multiple emergency response exercises annually, including responding to prioritised risks and restoring from a National Power Outage (NPO). We will have adhered to our obligations on delivering the Electricity System Restoration Standard by December 2026 and will continue to support the forward-looking longer-term improvements in restoration. We will also provide annual capacity market recommendations and support emergency response to improve transparency and sector-wide readiness. These efforts will be in service of driving action across the system to mitigate resilience and security vulnerabilities as well as proactively embed resilience and security in system design, operations, and market mechanisms, supporting a robust and adaptive energy system aligned with national security and net zero objectives.

## Expected Benefits

This activity contributes to the delivery of value through:

- Improved system resilience, reliability and safety through improved readiness around future risks, resource adequacy and system need.
- Positive influence on policy and regulation through independent analysis/ recommendations.
- Enhanced system supply security and readiness for future needs.
- Improved system resilience, reliability and resilience through reduced system vulnerabilities, incident response and interruptions.

These underpin the outcome to wider impacts pathways highlighted in Figure 6.

These outcomes increase the ability of the system to withstand shocks and recover efficiently and improve the robustness of the energy system and provides confidence that future needs can be met. Over time, outcomes lead to **wider impacts** for consumers and the economy. Better risk management minimises interruptions. Improved resilience reduces economic disruption. Faster restoration and independent recommendations builds public trust. Policy influence ensures long-term resilience and security is built into system regulation improving cost efficiency of the energy system. Thus, operational outcomes scale up to system-wide societal benefits with increased stakeholder satisfaction and enhanced public trust. Better risk modelling supports efficient stakeholder satisfaction and experience. Collectively, these outcomes deliver long-term benefits to consumers and the economy.

| Monetisable value measures |
|---|

- Increasing system complexity means that mitigation and identification of future system risks will be key to minimising the number of outages. Each avoided outage results in an estimated £100k saving in value of lost load[1].
- NESO system resilience measures are expected to deliver £1.4m in value of lost load savings over 2026/27 to 2027/28[2]. These savings are driven by a forecast reduction of number of losses of supply events (at an electricity transmission level)[3].

| Value of lost load per avoided outage and overall outage reduction savings | £2m[4] |
|---|---|

- System resilience and reliability enable NESO to secure energy supply, integrate low-carbon technologies, and coordinate markets - ensuring sufficient generation, avoiding system stress, and minimizing costly emergency actions.
- Maintaining a secure and reliable electricity supply helps reduce safety incidents, demonstrates effective system management, and reassures stakeholders that risks are being proactively managed.
- Actively engaging with government and regulators and aligning with policy frameworks enables informed decisions, transparent market signals, and operational coherence - building public trust in NESO, demonstrating accountability, and positioning NESO as a reliable partner in shaping the future energy system.
- By assessing low-carbon generation adequacy and flexibility needs, NESO enables greater renewable integration and reduced fossil fuel reliance - supporting Net Zero and Clean Power 2030 goals, enhancing fuel security through clean energy diversity, and guiding strategic planning for renewable deployment.
- Through ongoing risk identification, insight provision and resilience maintenance, strengthens system stability – NESO helps prevent outages, reduce lost load, ensure reliable energy supply, and minimise the cost of responding to disturbances.
- Our influence on policy and regulation stems from its ability to inform decision-making, share strategic insights on system interdependencies, and learn from post-incident reviews. These activities help stakeholders understand system needs, ensure effective planning across Great Britain, and support robust restoration procedures when required.

The true value of Energy System Resilience and Security of Supply activities cannot be captured by a simple monetary figure or through a comprehensive cost-benefit analysis. Our work is fundamentally about prevention and minimising the likelihood of events like the North Hyde[5] outage and avoiding outages like those seen in the Iberic peninsula[6,7].

The absence of major blackouts, widespread disruption, or economic loss is itself the evidence of value. The cost of a single large-scale outage - measured in lost productivity, public safety risks, reputational damage, and societal disruption - would far outweigh any investment in resilience. By preventing such events, NESO's team delivers value that is both essential and, is hard to quantify in pure monetary terms.

1 Value of lost load is assumed to be £6,000/MWh in line with Ofgem's assumption (Balancing Actions above the Value of Lost Load (VoLL). The average volume of lost load is estimated based on 2024/25 figures for unsupplied energy and number of loss of supply events at an electricity transmission level. See: NESO (2025). NETS performance report 2024/25. We take an assumption that there will be six fewer unplanned outages, preventing 15MWh of unsupplied energy for the benefit calculation.

2 Value of lost load is assumed to be £6,000/MWh in line with Ofgem's assumption (Balancing Actions above the Value of Lost Load (VoLL). The average volume of lost load is estimated based on 2024/25 figures for unsupplied energy and number of loss of supply events at an electricity transmission level. See: NESO (2025). NETS performance report 2024/25

3 Assumes a reduction of 3 loss of supply events per year due to NESO system resilience measures.

4 This remains only a partial assessment of the direct benefits of this PO, as it focusses on the operationalisation of energy security and resilience activities and it remains constraint within the NESO1 period. The true value goes beyond that this monetisation as the activities and deliverables within this PO serve as an enabler of other benefits across this business plan.

5 North Hyde Review Final Report

6 Grid Incident in Spain and Portugal on 28 April 2025, ICS Investigation Expert Panel, Factual Report

7 Future-Proofing Great Britain's Power System: Reflections on the April 2025 Iberian Event

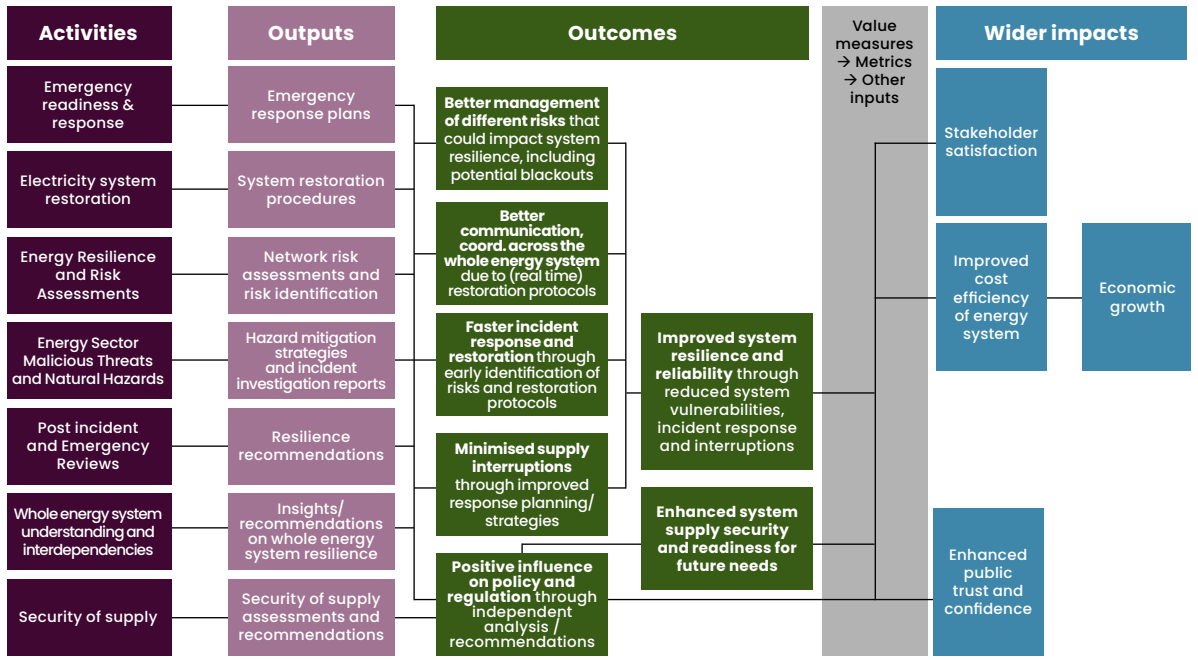



Figure 6: Impact pathway

In summary, activities such as risk assessment, emergency planning, and restoration design, produce **outputs** including resilience recommendations, emergency plans, and procedures and security of supply advice. These outputs generate **outcomes** of improved risk management, system readiness and resilience, and response capability. Over time, these outcomes deliver **wider impacts** such as reduced interruptions, improved system cost efficiency, and greater trust in the energy system.

## Measuring Success

While the previous section highlights the broader benefits that can flow from Energy System Resilience and Security of Supply activities, it is important to remain conscious and pragmatic about the specific role that we play in delivering these outcomes. Our activities act as enablers for a wide array of system-wide and consumer benefits, but the organisation's direct influence is best captured through a focused set of success measures. The success measures presented in the following section have therefore been carefully selected to reflect not only the delivery of major outputs, but also the outcomes that we are uniquely positioned to achieve. This provides an optimal balance between accountability for delivery and the realistic assessment of our contribution within the wider energy landscape, ensuring that our performance is evaluated both robustly and fairly against our defined performance objectives.

Table 13: **List of the success measures which sit within each sub-objective, to demonstrate what successful delivery will look like**

| Success Measure | Rationale and justification |
|---|---|
| Customer trust index | Trust metrics reflect NESO's ability to grow and strengthen its engagements with industry while maintaining an effective and efficient approach to maintaining whole system resilience. Positioning NESO as a trusted technical authority and confidence in Insights and leadership. |
| Assessments of priority resilience topics and risks delivered in a timely manner and to scope and quality | Timely assessments ensure early identification and response to emerging threats. They support better management of different risks and contribute to wider impacts on system cost efficiency and public trust. |
| Licensed assessments, reviews, and reports delivered on time and to scope and quality | Delivering licensed and commissioned reports makes up a key part of compliance with our legal obligations to the Great Britain energy system and reinforces our role as a trusted expert. It supports positive influence on policy and regulation, future system needs and contributes to stakeholder satisfaction and enhanced public trust. |
| Timely delivery of and successful adherence to our obligations under the Electricity System Restoration Standard | Timely delivery of restoration standards supports coordination and communication and faster incident response, contributing to improved system reliability and public confidence. |

## Measuring Delivery

Table 14: **Summary of sub-objectives and the Major Deliverables**

| Sub-objectives | Major Deliverables | Target |
|---|---|---|
| 1. Enhancing our understanding of energy system & risks, continually combining stakeholder input with ongoing knowledge-building to support our security and resilience assessments, insight, and advice | Develop and maintain Whole System Resilience & Risk Framework aligned with gov. strategy | March 2028 |
| | Identify vulnerabilities (including via system mapping and complex risk modelling) | Continuous |
| | Develop and maintain Whole Energy System Risk Encyclopaedia | Continuous |
| 2. Producing systematic and robust energy system resilience analysis, assessments, reviews, emergency exercises and plans, to deliver clear insights and advice | Produce annual Whole Energy System Resilience & Risk assessments | June 2026 & June 2027 |
| | Conduct national security of supply assessments including electricity, gas and hydrogen | Electricity (every 1-2 years)<br>Gas – annual<br>Hydrogen – post 2026 |
| | Review methodology and identify Critical National Infrastructure | As requested by gov. |
| | Produce high-impact assessments on prioritised resilience topics and risk | Multiple times a year |
| | Produce seasonal assessments: energy system readiness and the electricity Outlook | April 2026, October 2026, April 2027, October 2027 |
| | Produce annual emergency response process assessments | December 2026, December 2027 |
| | Undertake post-event and emergency reviews | Ad-hoc |

| Sub-objectives | Major Deliverables | Target |
|---|---|---|
| 3. Leveraging our role as a trusted technical authority to drive and enable improvements in whole energy system resilience | Dynamic risk escalation and reporting to government/stakeholders | Continuous |
| | Co-develop resilience improvements and risk mitigations with government and industry stakeholders | Continuous |
| | Coordinate and support emergency response exercises for NPOs and prioritised risks | Multiple times per year |
| | Deliver Electricity System Restoration Standard | December 2026 |
| | Support emergency response coordination and transparency | Ad-hoc |
| | Provide capacity market recommendations | Annual |

### Major Deliverables

## 1. Enhancing our understanding of energy system & risks, continually combining stakeholder input with ongoing knowledge-building to support our security and resilience assessments, insight, and advice

### Develop and maintain Whole System Resilience & Risk Framework aligned with gov. strategy

We will develop and maintain a Whole System Resilience & Risk Framework, fully aligned with government energy security, net zero and resilience strategies. This will allow for a common understanding of resilience and risk across both NESO and the rest of the energy system. The Framework will include our definitions of resilience, approach to assessing it, as well as scenarios and examples of what good looks like.

The framework will be informed by input across NESO, government, industry, and existing frameworks. Maintaining it will involve regular review and updates to ensure the framework reflects evolving policy, regulatory changes, and lessons learned. Our own assessments and evolving understanding will also influence required updates and changes to the framework. We will define and track key resilience metrics, gather stakeholder feedback, and use these insights to continuously refine the framework. The framework will cover all energy vectors and their interdependencies, using advanced modelling and scenario planning to identify and assess emerging risks, with input from government, industry, and regional stakeholders.

By 2028, we will have developed the foundational concepts of the work and will be working to improve and scale. In the long term, there will be a significant effort to socialise the framework and make it an adopted reference across NESO, industry, and government. Socialisation will be done through publishing the framework document, ongoing forums, working groups, and teach-in sessions with government, industry, and other critical sectors, building collective capability and readiness. This approach will strengthen national resilience, support net zero ambitions, and ensure the energy system remains secure, reliable, and adaptive into the future.

## Identify vulnerabilities (including via system mapping and complex risk modelling)

We will improve our ability to continuously and effectively identify vulnerabilities across the energy system by deploying and employing innovative system mapping and advanced risk modelling techniques. By 2028, we will be able to leverage this technology and modelling capability to gain whole-system insights, from our growing knowledge and data, which we don't have the capability to obtain through our existing models and tools. The ambition for this capability is to eventually encompass all energy vectors and their interdependencies. We will explore and leverage cutting-edge data analytics, , and scenario modelling to map complex system interactions, uncover hidden risks, and anticipate emerging threats such as climate, cyber, and supply chain disruptions.

We will use the insights created from this mapping and modelling to inform government of any newly identified high-priority risks and single points of failure as well as our own assessments and growing base of knowledge.

## Develop and maintain Whole Energy System Risk Encyclopaedia

We will evolve our existing processes for collecting, logging, and registering identified risks to develop and maintain a Whole Energy System Risk Encyclopedia to systematically catalogue and prioritise high-impact risks across the energy system. This resource will be regularly reviewed and updated to reflect new insights, evolving threats, and lessons learned, ensuring it remains aligned with government energy security and net zero strategies. The encyclopedia will cover all energy vectors and their interdependencies, drawing on advanced risk modelling, stakeholder input, and scenario analysis to identify and rank risks according to their potential impact on system stability and resilience.

The Risk Encyclopedia will provide a coherent and evidence-based foundation for analysis and insight generation. This growing body of knowledge will directly inform our systematic and robust energy system resilience analysis, assessments, reviews, emergency exercises, and planning activities, ensuring that our insights and advice are timely, evidence-based, and aligned with national resilience priorities.

We will use the Risk Encyclopedia as the basis of discussions around risk prioritisation with government. System stakeholder collaboration will be embedded through ongoing engagement, forums, and feedback mechanisms, ensuring the encyclopedia reflects diverse perspectives and remains relevant as the energy system evolves.

By making our approach to building up our understanding of the system's resilience and risks robust, systematic, and transparent, we will continue to build confidence in NESO's position as a trusted technical authority as well as the insights, recommendations, and advice we produce for government and industry.

By providing a dynamic, transparent, and prioritised view of system risks, stakeholders will be empowered to make informed decisions, strengthen collective resilience, and support the secure, reliable, and adaptive operation of the energy system.

# 2. Producing systematic and robust energy system resilience analysis, assessments, reviews, emergency exercises and plans, to deliver clear insights and advice

## Produce the annual Whole Energy System Resilience & Risk assessment

We will build on the first Energy Resilience Assessment (ERA) to assess further risks and resilience aspects of the system and enhance our ability to analyse system-wide risk and resilience trends year-on-year. Each year, we will draw on scenario analysis, risk assessments, models, and comprehensive data from across energy vectors and their interdependencies to evaluate system vulnerabilities in resilience. These assessments will be developed in close collaboration with government, industry, and system stakeholders to ensure they reflect the latest risks, policy developments, and operational realities.

We will extract insights and trends from the ERA submitted to the authorities in a way that allows us to share relevant information with industry without jeopardising national security. This approach will empower us and stakeholders to make informed, evidence-based decisions, targeting resources where they are most needed to strengthen system resilience. Ongoing engagement, feedback, and review will ensure the assessments remain relevant and drive continuous improvement. Through this annual process, we will help coordinate and prioritise resilience actions across the energy system, supporting national security, net zero ambitions, and operational continuity.

## Conduct national security of supply assessments including electricity, gas, hydrogen

We will strengthen our capability to assess national security of supply by enhancing our security of supply modelling capability and capacity. As the system's complexity increases, and the insights our stakeholders require to make informed decisions on national security of supply evolve, we will maintain our ability to produce actionable security of supply advice and recommendations to government across time horizons and fuel types (electricity, gas, and future hydrogen systems), including on procuring the supply required to meet national risk appetites through the capacity market. These assessments are underpinned by robust modelling, forecasting, and analysis, enabling us to provide timely, data-driven insights and strategic advice, that support both short-term operational decisions and long-term planning for whole energy system security of supply.

This work will involve the integration of cross-vector data sources, enhanced modelling techniques, and scenario-based forecasting. We will develop and refine methodologies to assess supply-demand adequacy, and market behaviours under varying conditions—including weather, geopolitical shifts, and evolving consumer demand patterns.

Outputs from these assessments will be embedded into control room operations and directorate-level planning, ensuring that real-time decisions are informed by a comprehensive understanding of system risks and opportunities. They will also support strategic coordination with government, regulators, and industry stakeholders, helping to shape policy and investment decisions that safeguard energy security.

By delivering these assessments, we will enhance our ability to anticipate and respond to emerging challenges, enabling the whole energy system remains secure, resilient, and adaptable as the UK transitions to a more integrated and decarbonised energy future.

## Review methodology and identify Critical National Infrastructure

We will review and refine the methodology for identifying Critical National Infrastructure (CNI) in the energy sector, ensuring it reflects the evolving complexity of the energy system, the resulting interdependencies, evolving national security priorities, and supports robust energy system resilience planning. This will include aligning with government frameworks and incorporating best practices from other critical sectors such as water, transport, and telecoms. We will fulfil requests from government to review and identify specific energy CNI. Through close engagement with government departments, regulators, and infrastructure operators, we will validate assumptions, and ensure a consistent, approach to CNI designation.

## Produce high-impact assessments on prioritised resilience topics and risk

We will prioritise resilience topics and high-impact risk assessments by systematically identifying the most critical threats and vulnerabilities across the energy system which we are aware of. This process will be informed by ongoing horizon scanning, stakeholder engagement, and analysis of system interdependencies, ensuring alignment with national energy security and net zero objectives. We will use advanced risk modelling and scenario analysis to focus resources on areas with the greatest potential impact, such as climate, cyber, and supply chain risks.

Regular, robust resilience assessments and reviews will be shared with the relevant system stakeholders and, where appropriate, published wider, providing clear insights and actionable plans for us, government, and industry stakeholders. These outputs will be delivered through reports, stakeholder engagements, digital publications, etc. doing so in a way that, supports transparency and enables prioritised action, while also maintaining the sensitivity and integrity of the underlying information. By concentrating on high-impact risks and systematically reviewing resilience topics, we will help stakeholders make informed decisions, drive targeted interventions, and strengthen the overall resilience of the energy system.

## Produce seasonal assessments: energy system readiness and the electricity Outlook

We will produce seasonal energy system readiness assessments and the seasonal electricity outlook reports to provide systematic and robust insights into system resilience for both us and our stakeholders. These assessments will be developed using industry stakeholder information, advanced weather forecasting, and risk scenario analysis from across all energy vectors, capturing the unique risks and operational challenges of each season. We will engage with government, industry, and regional partners to ensure the assessments reflect the latest intelligence and stakeholder priorities.

Insights from the readiness assessment will be shared with the relevant energy system stakeholders to provide timely insight on the potential risks from weather related seasonal risks. To share seasonal readiness insights wider into the system, we will continue to publish the seasonal electricity outlook. These insights will enable stakeholders to anticipate and prepare for potential disruptions, optimise operational planning, and coordinate effective responses. By embedding seasonal readiness reviews into our resilience planning cycle, we will drive prioritised action, support informed decision-making, and strengthen the overall resilience and reliability of the energy system.

## Produce annual emergency response process assessments

We will produce annual emergency response process assessments to deliver systematic and robust insights into the energy system's resilience. These assessments will be developed through comprehensive reviews of emergency protocols, incident simulations, and stakeholder feedback, ensuring alignment with evolving government policy and industry standards. We will analyse the effectiveness of current emergency response arrangements across all energy vectors, identifying strengths, gaps, and opportunities for improvement.

Insights will be shared with relevant system stakeholders to support addressing gaps and risks related to emergency response processes. These insights will support transparent decision-making, enable prioritised action, and enhance preparedness for a range of emergency scenarios. Collaboration will be embedded through joint exercises, working groups, and regular engagement with partners, fostering collective capability and readiness. By tracking key resilience metrics and incorporating stakeholder feedback, we will ensure our emergency response processes assessments remain robust, adaptive, and fit for purpose.

## Undertake post-event and emergency reviews

We will undertake post-event and near-miss reviews to deliver systematic and robust energy system resilience assessments, insights, and plans for ourselves and our stakeholders. These reviews will analyse the outcomes of significant system events and seasonal operations, using advanced data analytics and stakeholder feedback to identify lessons learned and areas

for improvement. We will assess the effectiveness of response actions, highlight vulnerabilities, and recommend targeted interventions to strengthen future resilience.

Findings and recommendations will be shared with the relevant system stakeholders, and, where appropriate, published wider, through accessible reports, supporting transparency and enabling stakeholders to make informed decisions. Collaboration will be embedded through regular forums and working groups, ensuring that insights from reviews are shared across government, industry, and other critical sectors. By tracking key resilience metrics and continuously refining review processes, we will drive prioritised action, enhance system reliability, and support national resilience and net zero ambitions.

## 3. Leveraging our role as a trusted technical authority to drive and enable improvements in whole energy system resilience

### Dynamic risk escalation and reporting to government/stakeholders

We will continue to perform dynamic risk escalation and reporting to government and stakeholders, leveraging our role as a trusted technical authority to drive improvements in whole energy system resilience. As a result of the efforts we will take to enhance our evolving understanding and awareness of the system (discussed in sub-objective #1), we will also strengthen our ability to identify system risks and vulnerabilities. We will maintain clear protocols for risk escalation and regularly review the thresholds with government to ensure that we are escalating, reporting, and prioritising in line with government's risk tolerance.

We will bring awareness of relevant risks to industry by convening affected stakeholders, facilitating ongoing dialogue through forums and working groups, enabling stakeholders to respond collaboratively to escalated risks and coordinate mitigation strategies. By tracking key resilience metrics and incorporating stakeholder feedback, we will continuously refine escalation processes and reporting mechanisms. This proactive approach will strengthen system resilience, support national energy objectives, and ensure stakeholders are equipped to make informed decisions in a complex and rapidly changing energy landscape.

### Co-develop resilience improvements and risk mitigations with government and industry stakeholders

We will co-develop resilience improvements and risk mitigations with government and industry stakeholders, using insights from our assessments and reports to guide collaborative action. We will facilitate structured engagement through working groups, forums, and bilateral partnerships, ensuring we have shared relevant insight and advice to system stakeholders while creating opportunities for faulty assumptions and hidden risks to surface. This approach to leveraging our insights to convene and collaborate will support industry translating risk insights into practical, prioritised interventions that address vulnerabilities across electricity, gas, hydrogen, and other energy vectors.

When possible, we will provide technical expertise, modelling capabilities, and scenario analysis to support stakeholders in designing and implementing effective mitigations. Findings from our analysis, assessments, reviews, and exercises will be shared with relevant system stakeholders in a way which maximises transparency and collaboration while also maintaining the sensitivity and integrity of the underlying information. Collaboration will be embedded throughout the process, with continuous feedback loops to refine approaches and ensure alignment with national energy security and net zero goals.

By working alongside stakeholders to solve shared challenges, we will help drive targeted investments, policy development, and operational improvements that enhance energy system resilience. This approach will strengthen collective capability, support strategic decision-making, and ensure the energy system remains secure, reliable, and adaptive.

## Coordinate and support emergency response exercises for a National Power Outage (NPO) and prioritised risks

We will coordinate emergency response exercises, along with supporting emergency response plans for NPOs and prioritised risks, leveraging our role as a trusted technical authority to drive improvements in whole energy system resilience. This will involve designing and delivering regular, scenario-based exercises that reflect evolving threats and system interdependencies, whilst also reviewing emergency response plans. We will work closely with government, industry, and regional stakeholders to develop realistic exercise scenarios, test emergency protocols, and evaluate cross-sector coordination. Furthermore, we will regularly review and update guidance, incorporating lessons learned from system events and emerging threats.

Findings and lessons learned from these exercises will be shared with relevant system stakeholders, and where appropriate, through published accessible reports, supporting transparency and enabling stakeholders to strengthen their own emergency preparedness. Collaboration will be embedded through ongoing forums, debriefs, and joint planning sessions, building collective capability and readiness across the system. We will define and track key resilience metrics related to emergency response, gather stakeholder feedback, and use these insights to continuously refine exercise design and sector guidance. This approach will enhance national resilience, support net zero ambitions, and ensure the energy system remains secure, reliable, and adaptive.

## Deliver Electricity System Restoration Standard

We will deliver our obligations under the Electricity System Restoration Standard by coordinating and implementing robust NPO restoration plans across the energy system, leveraging robust restoration modelling and our role as a trusted technical authority to drive improvements in whole system resilience. This will involve regular review and updates to restoration strategies, ensuring alignment with evolving government energy security, net zero, and resilience objectives. We will work closely with transmission and distribution operators, government, and industry stakeholders to ensure restoration capabilities meet or exceed regulatory requirements.

We will work closely with government and industry partners to align restoration strategies with national resilience objectives, ensuring that the electricity system is prepared to recover quickly and effectively from major disruptions.

We will use advanced modelling, scenario planning, and real-time system monitoring to identify restoration needs and optimise response actions. We will share progress against targets, and lessons learned from exercises and real-world events. Actionable insights and guidance will empower stakeholders to strengthen their own restoration plans and coordinate effectively during incidents.

Collaboration will be embedded through ongoing forums, joint exercises, and working groups, building collective capability and readiness across the sector. We will define and track key restoration metrics, gather stakeholder feedback, and use these insights to continuously refine restoration processes. This approach will strengthen national resilience, support net zero ambitions, and ensure the energy system remains secure, reliable, and adaptive.

## Support emergency response coordination and transparency

We will explore ways to further support the whole energy system's emergency response coordination and transparency seeking to enhance information sharing and operational alignment across the energy sector. We will support real-time communication and information exchange between government, industry, and regional stakeholders, increasing the support on coordinated, timely, and effective emergency response actions.

## Provide capacity market recommendations

We will carry out detailed security of supply assessments to inform recommendations through mechanisms such as the Capacity Market, including future electricity capacity needs. These assessments will be critical in enabling robust analysis and forecasting across electricity, gas, and emerging hydrogen systems, supporting both short-term operational decisions and long-term strategic planning.

We will use advanced modelling and scenario analysis to evaluate system adequacy under a range of conditions, including peak demand, low renewable output, and stress events. These insights will help identify potential capacity shortfalls, inform market signals, and guide investment in flexible, low-carbon technologies. Recommendations will be tailored to reflect whole energy system dynamics, ensuring that capacity planning is aligned with decarbonisation goals, consumer behaviour changes, and infrastructure developments.

By embedding these assessments into our planning and advisory functions, we will provide government, regulators, and industry stakeholders with trusted, evidence-based insights. This will enable coordinated action to maintain system resilience and ensure security of supply across all energy vectors—supporting efficient control room operations and a stable transition to a net zero energy system.

## Enduring Cost and time bound Investments

We are committed to providing transparency to our stakeholders and enabling the VfM assessment of the overall plan by Ofgem.

We present below, for the purpose of planning, an estimate of the resource allocation to this role. This assessment has enabled us to develop a total planning envelope facilitating a global assessment of the resources required to achieve the commitments in the plan overall.

We have provided a breakdown of this cost by the enduring activities and services we provide to industry and time bound investment that we are proposing to make over the business plan timeframe connected to the achievement of the Energy System Resilience Performance Objective.

It is important to note that it is critical that we remain agile and flexible to the changing demand on our roles and activities. As such the allocation of resources will change as demand changes, whilst we are committed to remaining within the overall business plan envelope. As set out in the Core Plan this is part of a process that represents a coherent framework for aligning strategic intent with resource allocation across the organisation.

As this role is one of the fundamentally new ones for NESO, we have carried out a concerted effort in our first year to better understand what we need to deliver in order to truly be a catalyst for increased resilience of the system – meeting our regulatory obligations in a way that will facilitate real world benefit for Great Britain's energy system and the consumer. Throughout this period our recognition as a trusted technical authority, specifically in Energy System Resilience, has grown thanks to efforts such as the North Hyde Review and the first Summer Outlook.

The demand on this role continues to evolve and similarly, the level of key stakeholder and industry engagement required to ensure the insights from the reports are communicated, considered, and are driving impact beyond publication is increasing.

The impact NESOs Energy System Resilience role and activities have, together with the outcomes they enable and benefits they deliver are captured in the above cascade and justify the level of cost and investment in NESOs Energy System Resilience Role.

**2025/26 Figures**

NESO is determining options to for a revised resource profile, within the total envelope of the plan, as part of the budget setting activity, to provide necessary resource for this enhanced role.

## Table 15: Role costs

| ACTIVITY | FY26 | | FY27 | | FY28 | |
|---|---|---|---|---|---|---|
| | COST £m | FTE | COST £m | FTE | COST £m | FTE |
| Electricity System Restoration | 5 | 50 | 5 | 50 | 6 | 50 |
| Emergency Readiness & Response | 3 | 25 | 3 | 28 | 3 | 28 |
| Energy Sector Security | 3 | 23 | 3 | 23 | 3 | 23 |
| Central Costs - Energy System Resilience | 0 | 2 | 0 | 2 | 0 | 2 |
| Energy Security Modelling & Insights | 4 | 32 | 5 | 36 | 4 | 36 |
| NEW Activity - Hydrogen Security | - | - | 1 | 15 | 2 | 15 |
| **Total Energy System Resilience activity costs** | **15** | **132** | **17** | **154** | **18** | **154** |
| Electricity Market Reform Discovery | - | – | 0 | – | – | – |
| Resilience & Risk | – | – | 3 | – | 3 | – |
| Restoration | 5 | – | 3 | – | 2 | – |
| **Investment in Energy System Resilience** | **5** | **–** | **6** | **–** | **5** | **–** |
| **Total Energy System Resilience costs** | **20** | **132** | **23** | **154** | **23** | **154** |

Whilst the below represents a summary of the cost by activity and any changes since the last business plan or major changes over the planning horizon, more granularity is provided within the NESO Data Tables. Further detail of our proposed investments is contained within our NESO1 Digital, Data, and Technology Annex.

# Investments in Digital, Data and Technology

We have set out below our proposed time bound investment in the role of Energy System Resilience. To achieve the incremental change necessary for NESO to achieve our strategic aims and Energy System Resilience Performance Objective we will need to invest in and innovate across our digital, data and technology capabilities. Further detail of this investment is set out in our NESO1 Digital, Data, and Technology Annex.

### Resilience and Risk (NESO1-370)

To support the delivery of our Electricity System Operator Licence conditions, the Resilience and Risk investment will continue to develop and integrate a modelling tool able to understand the potential impact of high-risk, low likelihood events across the virtual energy system whilst also enabling whole sector understanding of potential impacts of space weather across our CNI. We will have a risk management tool and processes allowing for management, mitigation and reporting across industry risks and a central knowledge hub to store information at the appropriate classification below secret.

### Restoration (NESO1-360)

Restoration is a strategic investment designed to meet the ESRS and to provide the capability critical for national resilience in the event of a major blackout. The Restoration Decision Support Tool (RDST) work is intended to provide real-time situational awareness and decision support to Control Room Engineers, recommend optimal restoration routes based on live network configurations and reduce cognitive load and manual errors during restoration events. Further components of this investment will aim to:

- Deliver the POC implementation plan following the conclusion of the NPO Digsilent discovery investment.
- Delivery of DNO links to generators including establishing data flows and data visualisation enhancements and comms with 3rd parties during an NPO event.
- Deliver the solution to communicate efficiently and effectively between NESO and Secondary generators in the event of NPO either total/partial.

### Electricity Market Reform Discovery (NESO1-380)

Within our Resilience and Emergency Management team we have our Electricity Market Reform (EMR) analytical team. The team are responsible for a variety of duties including production of the Electricity Capacity Report, mapping and maintaining EMR modelling and their supporting processes and supporting Strategic Planning. To enable this work we currently use an energy market simulation tool. This discovery investment will review the current capabilities of the tool vs what the team need, as currently several manual coding processes must be developed to deliver the analysis the team need.

# Dependencies and Risks

To ensure successful delivery of the work we will be undertaking within this PO, we rely on a complex network of stakeholders and systems. NESO, alongside Distribution Network Operators (DNOs), Transmission Operators (TOs), and Ofgem, is central to ensuring grid infrastructure, fuel supply chains, regulatory compliance, and telecoms for control systems are in place. Collaboration between NESO, DESNZ, and gas network operators supports the development of pipeline networks, international supply contracts, and electricity provision for compression stations. DESNZ, industry participants, and NESO are jointly responsible for establishing production facilities, transport infrastructure, regulatory standards, and electricity supply. Local delivery is shaped by local authorities, NESO, and DESNZ, who coordinate on electricity and gas supply, building infrastructure, and municipal planning.

The success of system-wide forecasting and planning depends on a diverse set of stakeholders and capabilities. Our Modelling Teams are responsible for delivering accurate forecasting and scenario modelling to inform strategic decisions. Collaboration with government, regulators, and industry is essential for robust planning and risk assessments. The reliable performance of low-carbon technologies depends on coordination between grid operators and technology providers, while our Digital Systems must ensure real-time data availability and effective sharing protocols.

Operational integration across the transport, heat, and industry sectors is critical to achieving whole-system efficiency. Strategic alignment with energy goals and regulatory frameworks is guided by DESNZ and Ofgem, while interconnectors and global gas markets play a key role in securing reliable import arrangements and market signals. Emergency response teams are vital for system restoration and black start capabilities in the event of disruptions. Academic input supports the development of causal analysis tools that enhance forecasting accuracy. Finally, grid modernisation teams are responsible for coordinating infrastructure upgrades and enabling greater system flexibility.

Further dependencies include CCUS infrastructure, industrial emitters, regulatory frameworks, and transport systems, which are managed by DESNZ, industry participants, and NESO. Water utilities, NESO, and local authorities ensure electricity for pumping, treatment facilities, and compliance with environmental regulations. The Department for Transport, NESO, and local authorities are key to maintaining fuel supply chains, supporting the electricity grid for EVs, managing logistics networks, and coordinating telecoms. Telecom providers, NESO, and Ofcom are responsible for electricity supply to data centres, cyber security frameworks, and physical infrastructure. Cloud services, electricity, telecoms, and data governance policies are jointly managed by NESO, DESNZ, and industry participants.

Legislative development, inter-agency coordination, stakeholder input, and alignment with international standards are led by DESNZ, Ofgem, and NESO. Local authorities and NESO also play a role in emergency services, infrastructure planning, and community engagement. Finally, consumers, NESO, and Ofgem are integral to the functioning of retail energy markets, smart meter data usage, and demand-side platforms.

As well as external dependencies, there are dependencies on the other Performance Objectives too:

- **Enabling Smarter, Cleaner Markets –** the evolving frameworks referenced in this PO need to consider the impact on resilience and security of supply.
- **Delivering a Decarbonised, Operable Grid -** system standards need to be in consideration of any recommendations of system resilience standards. Vice versa, resilience standards need to consider standards being put in place for the network connections.
- **Operating an Intelligent, Real-Time Grid –** the two POs are inextricably linked with regards to resilience.
- **Planning a Clean Energy Future –** to achieve both the Strategic Energy Planning and Energy System Resilience POs, both must continuously shape the insight/delivery of the other, in a feedback loop.

## Stakeholder Engagement

The development of this Performance Objective was shaped by extensive stakeholder engagement through groups, workshops, and consultations. Stakeholders consistently emphasised the need for a resilient, secure, and well-coordinated energy system. Specific feedback led us to strengthen our resilience evaluation exercises, clarify roles and responsibilities in coordination, and enhance modelling and restoration targets to reflect input from diverse energy vectors and service areas.

Further input from stakeholders encouraged us to prioritise collaborative initiatives such as seasonal readiness assessments, post-incident reviews, and the creation of a comprehensive Critical National Infrastructure register. These contributions helped us refine our approach,

ensuring the Performance Objective addresses both immediate operational needs and long-term strategic goals for national energy security.

Stakeholder engagement was central to the development of this Performance Objective. Through forums, surveys, and working groups, stakeholders stressed the necessity of a secure, resilient, and low-carbon energy supply, particularly as the system grows more complex and new threats emerge. Specific feedback from the Independent Stakeholder Group (ISG) focused on clarifying trade-offs when integrating new assets, increasing transparency around interconnector and gas reliance, and improving cybersecurity measures. Stakeholders also called for clear roles and responsibilities and stronger coordination among NESO, industry bodies, and local authorities.

Additional input from the BP2 End-Scheme and our NESO-1 Business Plan calls for input highlighted the importance of refining restoration procurement, engaging Transmission Owners earlier, and conducting seasonal readiness assessments alongside post-incident reviews. Collectively, these perspectives informed our approach to balancing immediate operational needs with long-term system resilience and security, shaping initiatives like the Critical National Infrastructure (CNI) register and cross-vector resilience planning.

The following examples illustrate how stakeholder feedback has directly shaped this Performance Objective:

**Through our Independent Stakeholder Group (ISG) we heard a number of key themes which helped us shape our plan:**

- ISG asked us to clarify our roles and responsibilities in resilience coordination, particularly in relation to Critical National Infrastructure (CNI)and collaboration with DNOs and DSOs. This feedback directly informed our commitment to develop a whole-system CNI register and to convene cross-sector expertise to shape national resilience standards.
- ISG members also emphasised the importance of addressing short- and long-term risks, including the role of flexibility, heat networks, and EVs in resilience planning. We responded by expanding our modelling capabilities to include compound risk analysis and interdependency mapping across sectors such as transport, telecoms, and water.
- Feedback from the Independent Stakeholder Group (ISG) highlighted the need to assess and communicate the trade-offs inherent in securing supply, particularly when integrating new assets and technologies. This led us to embed a more explicit focus on balancing short-term constraints with long-term system benefits, reflected in our readiness-based planning and coordination across transmission and distribution networks.
- **During our BP3 Draft Determinations** stakeholders called for more ambitious restoration targets and clearer integration of distribution networks in resilience planning. We responded by committing to enhancing our coordination with DNOs and embedding resilience into both operational and long-term planning frameworks.
- **Our BP2 End-Scheme Call for Input** prompted us to strengthen our commitment to cross-vector resilience planning. Stakeholders called for the inclusion of other energy vectors beyond electricity, such as gas and heat, which led to the development of a more integrated approach to risk assessment and scenario modelling. Stakeholders also requested greater clarity and coordination in emergency restoration planning, including more detail on the Local Joint Restoration Plan (LJRP) and its impact. In response, we have embedded structured methodologies and emergency response exercises into its resilience assessments to improve strategic planning and stakeholder coordination.
- Responses also flagged challenges in restoration services procurement, urging NESO to ensure holistic requirements and long-term consumer benefits. This feedback directly informed our approach to streamlining procurement processes and improving early engagement with Transmission Owners (TOs).

- The **NESO 1 Business Plan Call for Input** reinforced the need for seasonal readiness assessments and post-incident analysis. We have committed to conducting and publishing whole-system reviews following emergencies to identify root causes, lessons learned, and opportunities for systemic improvement.
- Stakeholders responding to call for input also called for greater transparency in system dependencies, such as reliance on interconnectors and gas-fired generation. We responded by enhancing our forecasting and scenario planning tools to provide more granular insights into system vulnerabilities and interdependencies.
- Stakeholders raised concerns about cybersecurity readiness and the need for NESO to establish a secure framework that enables participation from new market entrants. In response, we have committed to strengthening its digital infrastructure and exploring cyber resilience metrics as part of our operational performance framework.

While we have incorporated a wide range of stakeholder feedback into this Performance Objective, some areas remain under consideration or outside the current scope. Stakeholders requested more detail on the Local Joint Restoration Plan (LJRP) and its impact, which has not been fully reflected in the current objective. Concerns were raised about the feasibility of Emergency System Restoration (ESR) ambitions, and while we continue to assess these targets, they have not yet been revised in response to this feedback. Some stakeholders expressed frustration with stakeholder burden, including surveys and documentation requirements, and although we are reviewing our engagement processes, these concerns have not yet resulted in specific changes yet. The suggestion to avoid overemphasising one method of resilience, such as CLASS, has been noted, but a balanced representation of resilience tools is still being developed.

Several ISG members have voiced concerns about our ability to respond effectively to extreme scenarios such as war, sabotage, or rare weather events, and have questioned the use of phrases like “at any cost”; although we recognise the importance of clarifying the limits of deliverability, this has not yet been formalised within the current objective. Stakeholders also called for greater transparency regarding cybersecurity breach attempts and our responses. While this feedback is being considered, there is not yet a commitment to publish breach data or incorporate it into performance measures. Additionally, suggestions to improve restoration procurement processes with clearer consumer benefit metrics and more robust Transmission Owner engagement protocols are still in development and have not been fully reflected in this objective.

# Building a Digitally Connected Energy System

NESO will enable a digitally connected energy system through open data, smart standards, AI and interoperable tools—accelerating innovation, broadening participation, and driving system-wide efficiency. This will accelerate digitalisation across the energy sector, champion open data and foster a digital ecosystem that unlocks value and drives collaboration.

# Introduction

Digitalisation is an essential prerequisite to the future of a smart, flexible, and efficient energy system. As the energy landscape evolves—with increasing decentralisation, electrification, and consumer participation — we must lead the development of a digitally interconnected ecosystem that supports innovation, transparency, and collaboration across the sector.

Enabling data access, interoperability, and innovation accelerates the digital transformation of the energy system, allowing stakeholders to develop new tools, services, and business models that enhance system performance and consumer value. By fostering a digital ecosystem, we support greater system efficiency, empower consumer participation, and unlock opportunities for new entrants and technologies to contribute to the energy transition.

Championing open data and digital standards is also critical to unlocking value across the sector. It ensures that data is accessible, usable, and secure, while promoting consistency and collaboration among stakeholders. As a trusted technical authority, we are uniquely positioned to drive this transformation, ensuring that digitalisation efforts are coordinated, inclusive, and aligned with national energy goals.

This objective ensures we remain at the forefront of shaping a modern energy system—one that is resilient, low-carbon, and digitally enabled, delivering benefits for consumers, industry, and society.

By enabling a digitally connected energy system, we are contributing towards solving the problem of fragmentation and inefficiency across the sector—where siloed data, incompatible systems, and limited consumer engagement hinder progress.

The energy system currently suffers from poor data accessibility, lack of interoperability, and high entry barriers that restrict innovation and participation. These challenges lead to inefficiencies, increased costs, and slower decarbonisation. Consumers are often disempowered, with limited visibility and control over their energy use, reducing opportunities for flexibility and tailored services.

To address these issues, this performance objective focuses on enabling open data, smart standards, and interoperable tools. These actions support better system integration, real-time coordination, and broader market access—empowering stakeholders and consumers alike. This approach aligns with sector priorities by accelerating the transition to net zero, improving affordability through efficiency, enhancing resilience via smarter operations, and promoting inclusivity through open digital infrastructure.

## This PO contributes to the primary strategic aim of delivering resilience & operational continuity in an economic and efficient manner

Enabling a digitally interconnected energy system through open data, smart standards, and interoperable tools directly supports the strategic aim of delivering resilience and operational continuity in an economic and efficient manner. By accelerating digitalisation across the sector—making data more accessible, fostering interoperability, and driving innovation—we strengthen the ability to anticipate, respond to, and recover from system challenges. A robust digital ecosystem improves system efficiency, enables real-time monitoring and decision-making, and supports new business models that enhance flexibility and adaptability. Championing open data and digital standards unlocks collaboration and transparency, allowing stakeholders to work together to address risks and optimise operations. Collectively, these actions ensure the energy system is more resilient to disruptions, operates smoothly under changing conditions, and delivers reliable service to consumers at lower cost, fulfilling the strategic aim of economic and efficient resilience.

Looking further ahead we will build on the elements outlined in this business plan by scaling the impact of the digital ecosystem across system operations, market coordination, and consumer engagement. The focus will shift from establishment to embedding of AI-enabled forecasting, expanding cross-sector interoperability, and enhancing the integration of distributed energy resources.

## Key Areas of Progress to Date

Since the BP3 submission, significant progress has been made towards enabling a digitally connected energy system, including:

- Open Data and Transparency – our Open Data Portal has been expanded, with more datasets and comprehensive metadata made available. This has improved transparency and accessibility for stakeholders, supporting innovation and informed decision-making.
- Smart Standards and Interoperable Tools – we have worked with industry partners to develop and implement Application Programming Interface (API) standards for data sharing, particularly for DER registration and forecasting. This has enabled more seamless integration of distributed assets and improved system visibility.
- DSI and Coordination – we have taken on the Interim (DSI) Coordinator role, establishing the organisational function and capabilities required, recruiting necessary staff, and transitioning responsibilities from the Virtual Energy System programme. A pilot release of the DSI was tested with partners from electricity networks, with feedback from these trials being used to refine the design and plan to implement the DSI MVP and support broader industry adoption.
- We have published a Sector Digitalisation Plan – we worked extensively with industry to develop the first Sector Digitalisation Plan, creating clear SMART actions that will collectively help ensure the required digitalisation of the energy system is delivered. The work highlighted key gaps for future focus to enable clean power.
- AI and Digitalisation Strategy – we have published our AI strategy and roadmap, outlining how artificial intelligence will be used to enhance scenario modelling, stakeholder interactions, and data analytics.
- Broader Participation and Innovation – by improving data access and digital tools, NESO has lowered barriers for new market entrants, including tech startups and community energy groups.
- System-Wide Efficiency - enhanced digital coordination and data sharing have supported more efficient system operation, including better forecasting, balancing, and integration of renewables and flexibility.

## Performance Objective – Delivering Outcomes

**NESO will enable a digitally connected energy system through open data, smart standards, AI and interoperable tools—accelerating innovation, broadening participation, and driving system-wide efficiency. This will accelerate digitalisation across the energy sector by enabling data access, interoperability, innovation and driving collaboration across the sector. It will champion open data and foster a digital ecosystem that unlocks value and drives collaboration across the sector.**

We will do this by:

1. **Accelerating digitalisation across the energy sector by enabling data access, interoperability, and innovation.** We will unlock the full potential of a connected energy system by enabling open access to real-time and historical data through APIs and digital platforms. Through innovation-friendly environments like regulatory sandboxes and digital testbeds, we will empower new ideas, technologies, and business models to thrive. By 2028, we will have delivered key digitalisation reforms that transform how the energy sector accesses, shares, and uses data. Networks, market participants, and innovators will benefit from improved access to high-quality, standardised data, with enhanced interoperability reducing friction in system operations and enabling more agile responses. The DSI will serve as a digital backbone, supporting the development of new services, business models, and consumer offerings, while MVP trials will create early opportunities for collaboration and testing. Onboarding regulated networks onto the DSI will simplify compliance, reporting, and coordination, supporting more efficient planning and integration of low-carbon technologies. We will also establish the Digitalisation Orchestrator to align stakeholders around shared digital priorities, reduce

duplication, and foster stronger sector-wide collaboration. These changes will ensure the energy system is more connected, innovative, and responsive to the needs of a decarbonising future.

2. **Fostering a digital ecosystem that supports system efficiency, consumer participation, and new business models.** We will build a digitally enabled energy system that enhances operational performance through technologies like digital twins, AI forecasting, and grid-edge intelligence. By empowering consumers with accessible tools for demand-side response, peer-to-peer trading, and smart home integration, we will broaden engagement and choice. By 2028, we will have fostered a more integrated and user-centric digital ecosystem that supports system efficiency, consumer participation, and the growth of new business models. This includes the coordination of digital interfaces to improve customer experience and the co-creation of major interface and data interaction requirements with industry. These efforts will ensure that consumers can more easily engage with energy services and participate in flexibility markets, while industry stakeholders benefit from clearly defined digital standards that enable smoother integration of emerging technologies. Together, these developments will unlock new commercial opportunities, support whole-system optimisation, and empower consumers to play an active role in the energy transition.
3. **Championing open data and digital standards to unlock value and drive collaboration across the sector.** We will publish high-quality datasets under open licenses, supported by clear metadata and robust assurance processes to ensure usability and trust. By actively shaping and aligning with national and international digital standards, we will promote consistency and interoperability across the sector. We will unlock shared value through strategic cross-sector collaboration—with industries like transport, telecoms, and housing. By 2028, we will have worked with industry to review and prioritise whole-system data standards, ontologies, and taxonomies, ensuring consistency and interoperability across platforms and organisations. We will have significantly enhanced the Open Data Portal, increasing the availability of shareable energy data to support innovation and transparency. In parallel, we will have improved the visibility of Distributed Energy Resources through better registration, onboarding, and forecasting processes. These efforts will enable more dynamic system operation, support the growth of local flexibility markets, and accelerate the transition to a smarter, more decentralised energy system.

## Expected Benefits

This activity contributes to the delivery of value through:

- **Better visibility and coordination** between the NESO and DNOs/DSO driving dispatch efficiency and minimising costs for consumers
- **Foundation for scalable and sustainable data infrastructure** via DSI enabling secure/standardised data exchange between energy system participants
- **Clearer understanding** of Data Assets and Gaps, through decentralised and open access data to stakeholders
- **Improved trust and risk management** in data Sharing via increased transparency of data and our operational efficiency
- **Optimised system operations** through enhanced network visibility and collaboration
- **Increased stakeholder alignment** and buy-in via shared understanding of the purpose of digitalisation and data sharing leading to stronger collaboration

These underpin the outcome to wider impacts pathways highlighted in Figure 7.

The outcomes achieved through digitalisation accumulate into **wider impacts**. Better decisions improve overall system costs. Increased participation fosters competition and innovation through increased stakeholder satisfaction and experience. Transparency builds trust in markets and governance. Efficient planning supports timely investment. Over time, these outcomes deliver system-wide and societal benefits.

## Monetisable value measures

- NESO's optimisation driven by the DSI pilot programme, enhanced data availability, increased visibility of assets and systems across the energy system is projected to contribute to increased flexibility and efficient decision making in NESO system operation activities.

## Savings enabled by DSI £175m

- Data sharing in the energy sector fosters transparency, accountability, and trust by enabling open decision-making, early risk detection, and evidence-based policies.
- Coordinating data governance ensures ethical use and privacy, strengthening public confidence.
- Enhancing system visibility via DSI boosts cost efficiency of system operations through better coordination, smarter decisions, DER integration, improved forecasting, data-driven automation, and lower planning costs.
- Data sharing infrastructure investments strengthen tools that connect stakeholders and create a more coherent and responsive energy system that fosters collaboration, transparency, innovation, and continuous improvement.

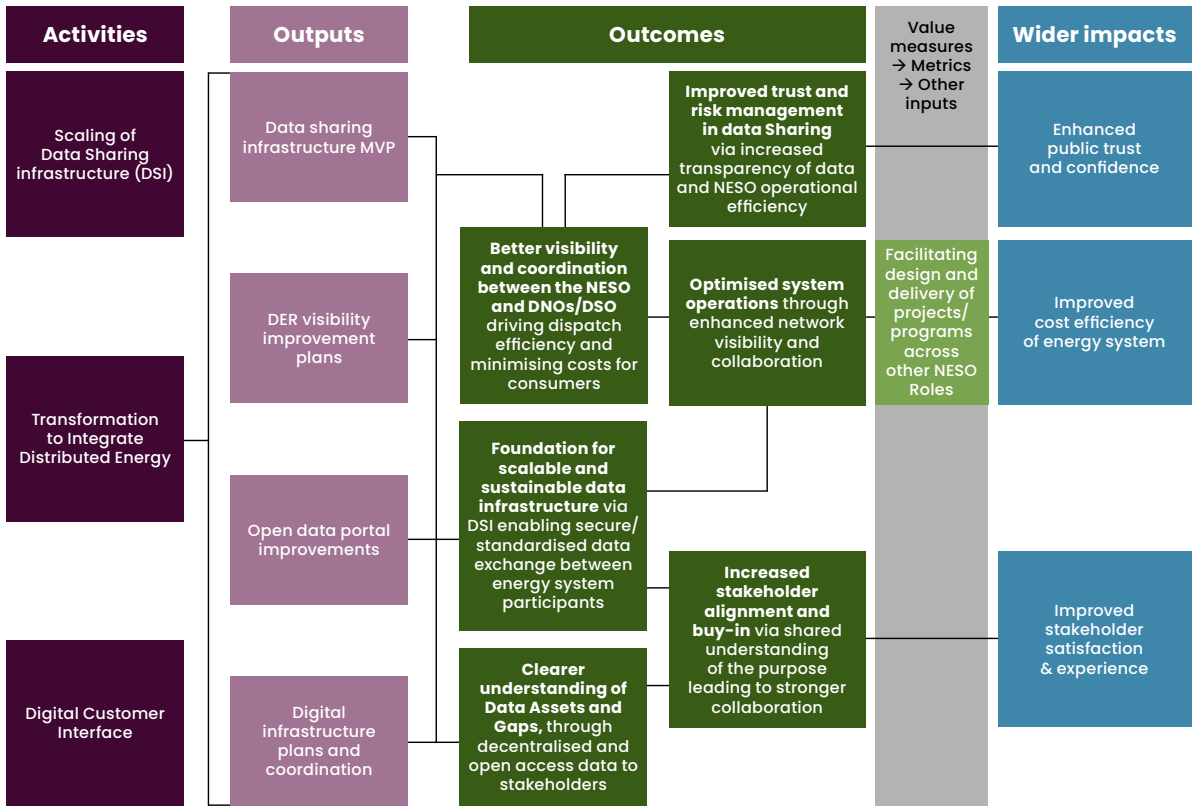



Figure 7: Impact pathway

In summary, activities such as publishing datasets, applying standards, and engaging stakeholders generate **outputs** including plans, DSI MVP, Open Data Improvements. These outputs drive **outcomes** of improved decision-making, participation, and efficiency. Over time, these outcomes lead to **wider impacts** including cost efficiency, efficient investment, growth, and public trust.

## Measuring Success

While the previous section highlights the broader benefits that can flow from Facilitating Sector Digitalisation activities, it is important to remain conscious and pragmatic about the specific role that NESO plays in delivering these outcomes. NESO's activities act as enablers for a wide array of system-wide and consumer benefits, but the organisation's direct influence is best captured through a focused set of success measures. The success measures presented in the following section have therefore been carefully selected to reflect not only the delivery of major outputs, but also the outcomes that NESO is uniquely positioned to achieve. This provides an optimal balance between accountability for delivery and the realistic assessment of NESO's contribution within the wider energy landscape, ensuring that NESO's performance is evaluated both robustly and fairly against its defined performance objectives.

**Table 16: List of the success measures which sit within each sub-objective, to demonstrate what successful delivery will look like**

| Success Measure | Rationale and justification |
|---|---|
| # of industry activities supported by the DSI | Supporting industry activities through the DSI reflects sector-wide engagement and alignment. It contributes to stakeholder alignment and collaboration overall building trust. |
| # of industry participants adopting DSI | Considers DSI utilisation indicating growing trust in secure, standardised data exchange; contributing to public trust and overall system efficiency. We will measure the # of participants adoption DSI. |
| # of regulated networks onboarded onto DSI within RIIO-3 | Considers DSI update and the 'user journey'. Onboarding regulated networks ensures broad interoperability and sector-wide digitalisation. Contributing to optimised system operations and system cost efficiency. |
| Reduced number of customer interfaces | Streamlining interfaces improves user experience and operational efficiency. |
| Reduced number of manual data intake from industry participants | Reducing manual intake reflects improved automation and data flow. Overall increasing visibility and clearer understanding of data assets. Contributing to system efficiency and stakeholder trust satisfaction. We will measure the change of manual intake of data. |
| # active users of NESO open data portal | Active usage reflects trust and value in open data. It supports a clearer understanding of data assets and operations and contributes to public confidence and stakeholder experience. We will measure the number of active users. |
| New datasets published / updated | Publishing new datasets enhances transparency and collaboration. Providing a clearer understanding of data assets and gaps. We will measure the number of new published datasets and the rate of update to existing ones. |
| Customer trust index | Trust metrics reflect stakeholder confidence in the NESO's ability to enable a digitally connected energy system. |

## Measuring Delivery

Table 17: **Summary of sub-objectives and the Major Deliverables**

| Sub-objectives | Major Deliverables | Target |
|---|---|---|
| 1. Accelerating digitalisation across the energy sector by enabling data access, interoperability, and innovation. | Lead on establishing the need for Digitalisation Orchestrator. | September 2028 |
| | Define and operate the DSI as a service through the MVP trials. | (many dates as each MVP will allow for a new component to be operable) 2028 |
| | Onboard all regulated networks onto DSI within RIIO3. | 2028 |
| 2. Fostering a digital ecosystem that supports system efficiency, consumer participation and new business models. | Coordinate digital interfaces to enable improved customer experience. | March 2028 |
| | Co-create with Industry the requirements and definition of major customer interfaces and data interactions. | 2028 |
| 3. Championing open data and digital standards to unlock value and drive collaboration across the sector | Review with industry the priority whole energy system data standards, ontologies and taxonomies. | Spring 2028 |
| | Continue to improve the value of the Open Data Portal by increasing the availability of shareable energy data. | Spring 2028 |
| | Increase distributed energy resources (DER) visibility through improved registration, onboarding and forecasting. | Spring 2028 |

### Major Deliverables

## 1. Accelerating digitalisation across the energy sector by enabling data access, interoperability, and innovation

### Lead on establishing the need for Digitalisation Orchestrator

Following the co-creation of the Digitalisation Orchestrator's responsibilities with industry partners, we will take a proactive leadership role in demonstrating its strategic value and necessity for the sector's digital transformation. We will communicate a clear vision for the Orchestrator, highlighting how it will enable secure, efficient, and interoperable data sharing, drive the adoption of smart standards, and foster innovation across the energy system.

We will use evidence gathered during the co-creation process—such as stakeholder feedback, sector needs, and identified digitalisation gaps—to build a compelling case for the Orchestrator's role. This will be shared through targeted engagement, sector briefings, and collaborative forums, ensuring all stakeholders understand the benefits for system efficiency, resilience, and consumer outcomes.

By piloting key Orchestrator functions through the Interim DSI Coordinator function, we will showcase practical impacts—such as improved data access, streamlined integration of new technologies, and enhanced collaboration between market participants. We will support Ofgem and government in delivering their clean flex roadmap action (path building action 47), and to embed the Orchestrator's responsibilities into sector governance and digitalisation strategies, ensuring alignment with national policy and regulatory frameworks.

Through ongoing leadership, transparent communication, and sector-wide collaboration, we will support establishing the proposed Digitalisation Orchestrator as an essential enabler for accelerating digitalisation, unlocking innovation, and delivering a resilient, efficient, and future-ready energy system.

### Define and operate the DSI as a service through the MVP trials

We will work in partnership with the sector to define the operational model for the DSI as a service, using the MVP implementation and subsequent trials as a foundation for real-world learning and refinement. We will collaborate with industry stakeholders to co-create service requirements, governance structures, and technical standards, ensuring the DSI meets the needs of diverse users and supports secure, scalable, and interoperable data exchange.

The MVP trials will be used to test and validate core DSI functionalities—such as data preparation, trust frameworks, and catalogue services—across a range of use cases. We will gather feedback from participating organisations, using their insights to optimise onboarding processes, enhance data discovery, and improve the reliability and security of data sharing.

We will operate the DSI as a responsive, user-centric service, providing support, guidance, and continuous improvement based on trial outcomes. By facilitating open access to high-quality data and enabling seamless integration of new technologies, we will empower market participants to innovate, develop new business models, and actively participate in the energy transition.

Through transparent engagement, technical leadership, and ongoing collaboration, we will ensure the DSI evolves into a robust, sector-wide service that underpins system efficiency, enhances consumer participation, and drives the growth of a dynamic digital ecosystem for the energy sector.

### Onboard all regulated networks onto DSI within RIIO3

We will take a coordinated, partnership-driven approach to onboarding all regulated networks onto the DSI during RIIO3 with support from Ofgem. This will begin with clear communication of the benefits and requirements of DSI participation, ensuring that network operators understand how secure, interoperable data sharing will enhance operational efficiency, resilience, and innovation across the sector.

We will work collaboratively with network operators, regulators, and technology partners to develop and implement onboarding processes that are streamlined, transparent, and tailored to the needs of different organisations. This will include providing technical support, guidance on integration pathways to ensure a smooth transition for all networks.

Through regular engagement—such as workshops, training sessions, and feedback forums – we will address challenges, share best practices, and continuously improve the onboarding experience. We will also ensure that the DSI's governance and operational frameworks are robust, enabling trusted data exchange and compliance with regulatory requirements.

By successfully onboarding all regulated networks, we will create a unified digital ecosystem where data flows securely and efficiently across the sector. This will empower market participants to innovate, enable new consumer-centric services, and support the development of flexible, resilient energy systems—delivering lasting value throughout RIIO3 and beyond.

## 2. Fostering a digital ecosystem that supports system efficiency, consumer participation and new business models

### Coordinate NESO's digital interfaces to enable improved customer experience

We will lead the coordination of digital interfaces across the energy sector to deliver a more seamless, intuitive, and responsive customer experience. This will involve working closely with industry stakeholders to align user-facing platforms, data access points, and digital services around common standards and design principles.

We will engage with consumers, market participants, and service providers to understand user needs and pain points, ensuring that digital interfaces are designed to be accessible, transparent, and interoperable. By embedding open data standards and consistent user journeys across platforms—such as the Open Data Portal, flexibility markets, and DER registration tools – we will reduce complexity and improve usability.

Through the integration of APIs, shared data catalogues, and real-time system insights, we will enable customers to interact with the energy system more effectively—whether they are accessing data, participating in markets, or managing energy assets. This will support the growth of new business models, empower consumers to make informed decisions, and enhance overall system efficiency.

By coordinating digital interfaces as part of a broader digital ecosystem, we will ensure that customer experience is central to the sector's digital transformation—unlocking value, driving innovation, and supporting a more inclusive and responsive energy system.

### Co-create with Industry the requirements and definition of major customer interfaces and data interactions

We will lead a collaborative process with industry to define the requirements and design principles for major customer interfaces and data interactions across the energy system. This will involve structured engagement with a broad range of stakeholders—including regulated networks, market participants, technology providers, and consumer groups—to ensure that interfaces are intuitive, interoperable, and aligned with sector-wide digital standards.

We will facilitate workshops, user research sessions, and technical consultations to gather insights into customer needs, pain points, and expectations. These findings will inform the development of consistent interface standards, data exchange protocols, and user experience guidelines that support seamless access to energy data, services, and participation opportunities.

By embedding open data principles and common taxonomies into interface design, we will ensure that customers—whether consumers, innovators, or operators—can interact with the energy system in a transparent, efficient, and meaningful way. This will enable the development of new business models, enhance consumer empowerment, and improve system coordination.

Through this co-creation process, we will foster a digital ecosystem that is inclusive, responsive, and future-ready—unlocking value from data, driving innovation, and supporting the sector's transition to a more flexible, efficient, and consumer-centric energy system.

# 3. Championing open data and digital standards to unlock value and drive collaboration across the sector

## Review with industry the priority whole energy system data standards

We will lead a collaborative review of priority data standards, ontologies, and taxonomies for the whole energy system. This will involve structured engagement with industry stakeholders—including network operators, technology providers, regulators, and consumer representatives—through workshops, technical working groups, and consultations. We will facilitate open dialogue to identify current gaps, harmonisation opportunities, and emerging requirements for data interoperability and consistency.

Together with the sector, we will assess existing standards and, benchmark best practices, and co-develop recommendations for updates or new frameworks that reflect the evolving needs of the energy transition. This process will ensure that data definitions, structures, and classifications are aligned across electricity, gas, and emerging vectors such as hydrogen and flexibility services.

By championing open data and digital standards, we will unlock greater value from data assets, enable seamless integration of new technologies, and foster collaboration across market participants. The adoption of common standards and taxonomies will support more efficient system operation, improved analytics, and the development of innovative business models and consumer services.

Through transparent leadership and inclusive partnership, we will ensure that the sector's data foundations are robust, future-proof, and capable of supporting a dynamic, collaborative, and digitally enabled energy ecosystem.

## Continue to improve the value of the Open Data Portal by increasing the availability of energy data

We will actively expand the scope and quality of data available through the Open Data Portal, working in partnership with industry stakeholders to identify and prioritise new datasets that deliver the greatest value for system efficiency, innovation, and consumer participation. We will engage with network operators, market participants, and technology providers to ensure that data contributions are relevant, high-quality, and aligned with sector-wide digital standards and ontologies.

We will enhance the portal's functionality by embedding an improved data catalogue, improving search and query capabilities, and streamlining access and download processes. This will make it easier for users to discover, understand, and utilise energy data for analysis, product development, and operational decision-making.

By continuously increasing the availability of energy data, we will foster transparency, support the development of new business models, and enable collaborative innovation across the sector. The Open Data Portal will continue to serve as a source of NESO data for trusted, standardised information, empowering stakeholders and members of the public to unlock value from data and drive the energy system's digital transformation.

Through ongoing engagement, technical leadership, and a commitment to open standards, we will ensure the Open Data Portal remains a vital resource for collaboration, efficiency, and sector-wide progress.

## Increase Distributed Energy Resources (DER) visibility through improved registration, onboarding and forecasting

We will work in partnership with industry to enhance the visibility of Distributed Energy Resources (DER) by streamlining registration processes, improving onboarding pathways, and advancing forecasting capabilities. We will collaborate with network operators, DER owners, and technology providers to co-design digital registration standards and interoperable onboarding procedures,

ensuring that AI and data is at the forefront ensuring the right quality, accuracy and efficiency from the outset.

By embedding open data standards and sector-wide taxonomies into the registration and onboarding process, we will enable consistent, high-quality data collection and sharing across the energy ecosystem. This will support the integration of DER into system planning, operations, and market participation.

We will also invest in advanced forecasting tools and data analytics, leveraging near real-time DER data to improve system visibility, operational efficiency, and market responsiveness. Enhanced forecasting will enable better grid management, support flexibility services, and empower consumers and innovators to participate actively in the energy transition.

Through these actions, we will champion open data and digital standards, unlocking new value from DER assets and fostering collaboration across the sector. This approach will drive system efficiency, support the development of new business models, and ensure that DER plays a central role in a resilient, flexible, and digitally enabled energy system.

## Enduring Cost and Time Bound Investments

We are committed to providing transparency to our stakeholders and enabling the VfM assessment of the overall plan by Ofgem.

We present below, for the purpose of planning, an estimate of the resource allocation to this role. This assessment has enabled NESO to develop a total planning envelope facilitating a global assessment of the resources required to achieve the commitments in the plan overall.

We have provided a breakdown of this cost by the enduring activities and services NESO provides to industry and time bound investment that NESO is proposing to make over the business plan timeframe connected to the achievement of the Facilitating Sector Digitalisation Performance Objective.

It is critical that we remain agile and flexible to the changing demand on our roles and activities. While we are committed to remaining within the overall business plan envelope, the allocation of resources will change as demand changes. As set out in the Core Plan, this is part of a process that represents a coherent framework for aligning strategic intent with resource allocation across the organisation.

Within Facilitating Sector Digitalisation costs across all activities remain consistent with the previous plan.

The impact of our Facilitating Sector Digitalisation role and activities, together with the outcomes they enable and benefits they deliver are captured in the above cascade and justify the level of cost and investment.

### Table 18: Role costs

| ACTIVITY | FY26 | | FY27 | | FY28 | |
|---|---|---|---|---|---|---|
| | COST £m | FTE | COST £m | FTE | COST £m | FTE |
| Interim Data Sharing Infrastructure (DSI) Coordinator | 1 | 12 | 1 | 12 | 1 | 12 |
| Central Costs - Facilitating Sector Digitalisation | – | – | – | – | – | – |
| **Total Facilitating Sector Digitisation activity costs** | **1** | **12** | **1** | **12** | **1** | **12** |
| Data Sharing Infrastructure | 6 | – | 11 | – | 18 | – |
| **Investments in Facilitating Sector Digitisation** | **6** | **–** | **11** | **–** | **18** | **–** |
| **Total Facilitating Sector Digitisation costs** | **7** | **12** | **12** | **12** | **19** | **12** |

Table 18 represents a summary of the cost by activity and any changes since the last business plan or major changes over the planning horizon, further granularity is provided within the NESO Data Tables. Further detail of our proposed investments is contained within our NESO1 Digital, Data and Technology Annex.

## Dependencies and Risks

The delivery of the DSI initiative relies on a coordinated effort across multiple internal and external stakeholders. The NESO Digital Team is central, providing the technical capability to deliver both the DSI Minimum Viable Product (MVP) and the Open Data Portal. Strategic alignment is ensured by NESO Strategy & Planning (SSEP), which integrates digitalisation efforts with the broader business plan and regulatory timelines. Oversight and governance are provided by NESO Governance, which is responsible to enable the Interim DSI Coordinator role and define the orchestrator function. Ofgem oversees the delivery of the Interim DSI Coordinator role, including monitoring its performance against a variety of metrics, as well as providing regulatory and financial review of the DSI development and operation. DESNZ plays a key role in setting policy direction and securing funding for DSI development.

Collaboration with regulated networks, including DNOs and TOs, is essential for onboarding into the DSI framework and improving Distributed Energy Resource (DER) visibility. Industry stakeholders contribute to the co-creation of the orchestrator role and the development of associated standards. The Technology Advisory Council provides expert input into standards development, the data catalogue, and the overarching digital strategy. Innovators and market participants are expected to leverage the digital infrastructure to enable new business models, while consumers must accept and engage with digital services for the system to be effective.

Supportive regulatory frameworks are required from regulatory bodies such as Ofgem, ensuring that digitalisation efforts are viable and compliant. Finally, cross-sector partners—including those in transport and housing—are vital for establishing shared data standards and enabling integration across sectors.

## Stakeholder Engagement

The Performance Objective was shaped through extensive engagement with stakeholders via consultations, working groups, and feedback forums. Key themes included the necessity for open data, interoperable systems, and stronger digital infrastructure to drive efficiency, innovation, and consumer participation. Stakeholders highlighted issues such as slow IT progress, resource allocation challenges, and the need to leverage existing data and align digital efforts with industry growth and low-carbon goals.

Feedback from business plan engagements and the Independent Stakeholder Group (ISG) reinforced principles like open access for data sharing and the importance of clarity on digitalisation plans and governance. Stakeholders also urged us to better articulate our long-term role in digitalisation, link digital strategy with broader planning activities, and ensure the digitalisation framework evolves to support system transformation.

The following examples illustrate how stakeholder feedback has directly shaped this Performance Objective:

- **Feedback from the BP2 End-Scheme Call for Input and our ISG** highlighted concerns about slow progress on IT projects, particularly in operational metering and capacity market infrastructure. In response, we have prioritised resource optimisation and committed to improving system stability and responsiveness, including enhancements to the EMR portal and ENAMS-related infrastructure.
- **Members of our ISG** highlighted the importance of us doing more to unlock the value of flexibility to meet CP30 flexibility targets. This has informed our commitment to co-develop recommendations for updates or new frameworks that reflect the evolving needs of the energy transition, including flexibility.
- **Stakeholders from both the BP2 End-Scheme responses and CSAT surveys** urged us to leverage existing data and improve coordination with Transmission Owners (TOs) to avoid duplication. We responded by accelerating the development of the DSI and committing to open access principles to support interoperability and reduce entry barriers.

- **The Business Plan 3 Draft Determination** called for clearer execution plans to support sector digitalisation, and raised concerns about cost fairness and governance of the DSI. We have responded by embedding transparency and assurance processes into the DSI rollout and aligning digitalisation efforts with broader strategic planning activities such as the SSEP.
- **Feedback from the NESO Business Plan Call for Input** prompted us to clarify its longer-term role in digitalisation, beyond establishing the DSI MVP. We have committed to continuing to publish outlines on how digitalisation will evolve to support system transformation, including real-time data quality support, dataset openness, and user-driven publication schemas.
- **Stakeholders also recognised** our delivery of value for money through priority IT projects, which has reinforced our focus on cost-effective digital solutions that enable innovation and system efficiency.

Although we have responded to a broad spectrum of stakeholder feedback in shaping this Performance Objective, certain areas remain under consideration or fall outside the current plan. For instance, the requested bulk upload feature for the EMR portal, which would help support consumer flexibility assets at scale, is acknowledged but not yet included in the digital infrastructure roadmap. Similarly, while concerns over cost fairness and redress mechanisms in the Data Sharing Infrastructure (DSI) have been recognised, the development of specific governance and accountability structures is ongoing. In addition, suggestions to clarify NESO's long-term digitalisation role beyond the delivery of the DSI MVP are still being reviewed and have yet to be formalised in this objective.

# Appendix 1 - Glossary of Terms

| Term | Acronym | Description |
|---|---|---|
| Activity | | A subset of responsibilities within a function. |
| Advanced Analytics Environment | AAE | A digital capability within NESO designed to enable sophisticated data analysis, modelling, and forecasting across the energy system. |
| Ancillary Services Dispatch Platform | ASDP | NESO web-based platform used to dispatch ancillary services. |
| Artificial Intelligence | AI | Simulation of human intelligence processes by machines, especially computer systems. |
| Auction | | A competitive process for procuring energy or services, such as capacity or ancillary services. |
| Balancing Mechanism | BM | Platform used to balance electricity supply and demand in real time; NESO can dispatch parties to adjust output. |
| Business Plan | BP | Details NESO's Performance Objectives, Success Measures, and costs for the Business Plan cycle. |
| Business Plan 3 | BP3 | NESO's final Business Plan for the RIIO-2 price control period (April 2025–March 2026). |
| Capacity Market | CM | Scheme to ensure sufficient electricity supply by providing payments to generators for available capacity. |
| Carbon Intensity | | The amount of carbon dioxide emitted per unit of electricity generated. |
| Centralised Strategic Network Plan | CSNP | NESO's long-term plan for transmission infrastructure across Great Britain. |
| Contracts for Difference | CfD | The CfD scheme is the main mechanism for supporting low- carbon electricity generation. CfDs incentivise investment in renewable energy by providing project developers with direct protection from volatile wholesale prices, while also protecting consumers from high energy costs. |
| Clean Power 2030 | CP30 | UK government target for a decarbonised electricity system by 2030. |
| Code Administrator | | NESO's role in managing and updating industry codes governing technical and commercial arrangements. |

| Term | Acronym | Description |
|---|---|---|
| Connections | | The process managed by NESO for enabling energy generation, storage, or demand projects to access the NETS. This includes contractual arrangements, technical assessments, and infrastructure planning required to connect projects to the grid. NESO oversees connections to ensure they are efficient, strategically aligned with national decarbonisation goals, and supportive of system reliability and economic growth. |
| Connections Queue | | List of projects seeking to connect to the transmission system, prioritised for viability and strategic alignment. |
| Connections Reform | | A strategic overhaul of the electricity grid connection process in Great Britain, led by NESO and approved by Ofgem in 2025. The reform replaces the traditional "first come, first served" model with a "first ready and needed, first connected" approach. It introduces a two-gate system to prioritize projects based on readiness and strategic alignment with national energy goals, aiming to accelerate clean energy deployment, reduce delays, and improve transparency and efficiency in grid access. |
| Critical National Infrastructure | CNI | Assets and systems essential for national functioning; disruption would have major impacts. |
| Customer Trust Index | | Metric used to measure stakeholder confidence in NESO's planning and operations. |
| Data & Analytics Platform | DAP | A foundational digital capability developed by NESO to support a modern, low-carbon, and flexible energy system. |
| Data Sharing Infrastructure | DSI | Digital backbone enabling secure, interoperable data exchange across energy sector participants. |
| Decarbonisation | | The process of reducing carbon emissions from the energy system. |
| Diversity, Equity, and Inclusion | DEI | A strategic framework aimed at fostering a workplace and society where diverse identities and perspectives are valued, equitable opportunities are provided, and inclusive practices ensure everyone feels respected and empowered. |
| Distributed Energy Resources | DER | Small-scale energy assets (solar, batteries, flexible demand) connected to the distribution network. |
| Department for Energy Security and Net Zero | DESNZ | UK government department responsible for energy policy and net zero targets. |

| Term | Acronym | Description |
|---|---|---|
| Digitalisation | | Adoption of digital technologies and processes to improve efficiency and innovation in the energy sector. |
| Digitalisation Orchestrator | | A strategic role, function, or platform responsible for coordinating and integrating digital transformation initiatives across an organisation. |
| Distribution Network Operator | DNO | Companies responsible for operating and maintaining electricity distribution networks. |
| Distribution System Operator | DSO | Entities managing local electricity networks, enabling flexibility and integration of distributed resources. |
| EMR Delivery Body | | The entity (NESO) responsible for administering the Capacity Market and Contracts for Difference schemes. |
| Flexibility Market | | A market that enables trading of flexible energy resources, such as batteries or demand response, to balance supply and demand. |
| Gas Distribution Networks | GDN | Gas Distribution Networks are regional infrastructure systems that transport natural gas from the high-pressure National Transmission System (NTS) to homes, businesses, and industrial users at lower pressures. They are responsible for the safe, reliable, and efficient delivery of gas through a network of underground pipes. |
| Gas Future Markets Plan | | NESO's strategic roadmap for transitioning the gas market to support decarbonisation. |
| Governance Board | | A formal group overseeing the development and approval of strategic plans. |
| Grid Code | | Technical code governing the operation and connection of assets to the transmission system. |
| Grid Supply Point | GSP | The point where electricity enters the distribution network from the transmission system. |

| Term | Acronym | Description |
|---|---|---|
| Holistic Network Design | HND | Strategic planning approach integrating transmission and distribution needs for optimal network development. |
| Independent Stakeholder Group | ISG | External advisory group providing feedback and oversight on NESO's business plan and activities. |
| Industry | | The collective group of stakeholders and participants within the energy sector who interact with NESO. This includes electricity and gas generators, transmission and distribution network operators, energy suppliers, large consumers, balancing service providers, and regulatory bodies. These entities contribute to the planning, operation, and development of the national energy system and engage with NESO through consultations, agreements, and market participation. |
| Interconnector | | Infrastructure enabling electricity exchange between Great Britain and neighbouring countries. |
| Low Carbon | | Refers to processes, technologies, or systems that produce significantly fewer greenhouse gas emissions compared to conventional alternatives. The goal of low-carbon approaches is to minimise environmental impact and support the transition to a net zero economy. |
| Market Facilitator | | Entity supporting efficient market operation, participant onboarding, and rule development. |
| Monetisable Benefits | | Financially quantifiable benefits resulting from NESO's activities. |
| National Energy System Operator | NESO | Independent public body responsible for planning, operating, and coordinating the energy system in GB. |
| Net Zero | | The target of balancing greenhouse gas emissions produced and removed from the atmosphere, aiming for zero net emissions. |
| Network Operability | | Ability of the electricity system to function securely, reliably, and efficiently under varying conditions. |
| Network Control Management System | NCMS | A critical digital infrastructure used by the Electricity National Control Centre (ENCC) to manage and operate Great Britain's electricity system in real time. |
| Network Options Assessment | NOA | NESO's annual assessment recommending network reinforcement projects. |
| Ofgem | | UK energy regulator overseeing NESO's performance and regulatory compliance. |

| Term | Acronym | Description |
|---|---|---|
| Open Balancing Platform | OBP | NESO's digital platform for real-time balancing and dispatch of electricity resources. |
| Operability Strategy Report | OSR | NESO's annual publication outlining technical challenges and solutions for system operation. |
| Performance Objective | PO | Specific goal within NESO's business plan, defining expected outcomes and deliverables. |
| Place-based Engagement | | Stakeholder engagement tailored to local and regional priorities in energy planning. |
| Quality of Power Supply | | Maintaining technical standards for electricity delivery (frequency, voltage, stability). |
| Regional Energy Strategic Plan | RESP | NESO's regional plans for energy infrastructure, supporting local net zero and growth ambitions. |
| Reformed National Pricing | RNP | Government-led reforms to network charging and market arrangements for efficiency and investment signals. |
| RIIO3 | | A regulatory framework set by Ofgem for electricity and gas network companies in Great Britain, covering the period from April 2026 to March 2031. |
| Sector Digitalisation Plan | | NESO's roadmap for accelerating digital transformation across the energy sector. |
| Settlement | | The process of calculating and reconciling payments between market participants. |
| Strategic Alignment | | The process of ensuring that an organisation's activities, resources, and goals are consistently directed toward achieving its long-term vision and strategic objectives. |
| Strategic Energy Planning | SEP | NESO's whole-system approach to planning electricity, gas, and hydrogen infrastructure. |
| Strategic Environmental Assessment | SEA | A systematic process used to evaluate the likely significant environmental and socio-economic effects of proposed policies, plans, and programmes. |
| Strategic Spatial Energy Plan | SSEP | NESO's plan mapping optimal locations for energy infrastructure across Great Britain. |
| Stakeholder Engagement | | Ongoing consultation and collaboration with industry, government, and consumers. |
| Success Measure | SM | Metric or indicator used to track progress and impact against NESO's objectives. |

| Term | Acronym | Description |
|---|---|---|
| System Access Reform | SAR | Initiatives to improve access to the transmission system, reduce constraints, and accelerate connections. |
| System Operability Framework | SOF | NESO's framework for ensuring the technical viability of system operation. |
| Transmission Network Use of System | TNUoS | Charges paid by users for access to the electricity transmission network. |
| Transmission Owner | TO | Refers to the three transmission asset owners within Great Britain: National Grid Electricity Transmission, Scottish Hydro Electric Transmission and Scottish Power Transmission. |
| Value for Money | VfM | Principle of using resources efficiently and effectively to deliver maximum benefit to consumers and society. |
| Zero Carbon Operation | | Operating the electricity system without carbon emissions, primarily through renewables and flexible technologies. |

# Appendix 2 - Methodology Overview

## Introduction

Ofgem requires the National Electricity System Operator (NESO) to demonstrate value for money by aligning its Business Plan proposals with clear Performance Objectives and measurable Success Measures.

This Appendix aims to be able to describe the approach and process taken to evidence the broader value NESO delivers to its stakeholders through its activities, and how this being a core element within the development of this Business Plan. Similarly, this appendix aims to describe and provide an overview of the method to define value and articulate the impact of each of the roles.

## What Counts as Value?

### NESO's impact across the energy system and economy

Our role as the energy system operator is multifaceted, and so are the ways it can create and influence value. Some of this value is direct. We incur costs and produce outputs that provide an immediate basis for assessing efficiency. Other effects are indirect. Our activities can shape system performance over time and, because the energy system underpins economic activity, influence wider economic outcomes.

**Defining Value for Money**

Value for Money means using resources in the most effective way to achieve stated objectives. It considers social, economic, and environmental benefits, balances short-term needs with long-term opportunities, and evaluates trade-offs between costs and benefits.*

*Adapted from: NESO (2024). Value for Money Foundational Framework.

Given the complexity of our roles, quantifying benefits in purely financial terms is challenging. However, it is broadly recognised that the system operator role delivers wide ranging benefits through overseeing and facilitating a coordinated energy system.

We have developed a Value Measurement Framework that captures monetizable, quantitative and qualitative value. This allows us to create a narrative that clearly connects and demonstrates how strategic objectives and operational activities link to broader societal and economic benefits, ensuring that our value proposition is understood by all stakeholders. Our framework and approach set out a robust, context-sensitive methodology for value assessment. It stresses evidence-based decision-making, meaningful stakeholder engagement, and flexibility to evolving needs.

As part of NESO's commitment to delivering robust and transparent value for money assessments, our framework is designed to reflect economic best practice while remaining responsive to the evolving nature of NESO's remit. We recognise that our strategic role will continue to develop which may introduce new types of activities, impact and value. Accordingly, this framework is not static; it will be subject to regular review and refinement, informed by feedback from both internal and external stakeholders, to ensure it remains fit for purpose and aligned with NESO's current and future responsibilities.

### Overview of our approach

This framing of value underpins the approach set out in the next sections of this appendix. The assessment proposed by this framework recognises that our impact is delivered across different areas of the energy system and beyond, also recognising that value for money depends on both immediate performance and longer-term outcomes. We have focussed on the timeframe that pertains to this regulatory cycle, therefore focussing more on immediate performance but without loosing sight of the longer-term outcomes.

At the core of our methodology is a strategic cascade that provides a clear line of sight from inputs through to impacts and system benefits. We begin by identifying the resources, evidence, and capabilities required to deliver our statutory obligations and roles to deliver our Performance Objectives. These are then linked to the activities we undertake, which in turn generate outputs in the form of services, processes, coordination functions, and products. The outputs contribute to outcomes, such as more efficient system operation, more effective markets, and enhanced insight to support decision making, amongst other things. These outcomes, when taken together, deliver the ultimate benefits of a secure, affordable, and low-carbon energy system. By following this pathway consistently, we can show how the costs of our activities translate into measurable benefits.

This cascade does more than provide an ex-ante justification for the business plan. It underpins our performance objectives, success measures, and benefit statements, ensuring that every activity can be linked to a defined outcome and measures of success, supporting on-going performance management. This ensures that value for money is not considered solely at the planning stage but is actively used to manage performance throughout the business plan period and beyond. We believe that this dual function – as both an appraisal framework and a performance management tool – is one of the strengths of our approach.

For Ofgem and wider stakeholders, this approach provides a clear and transparent method for assessing the value of our roles. By adopting a proportionate, role-level framework that is consistent with regulatory guidance, we offer confidence that the benefits of our activities are being compared fairly against the costs of delivery. At the same time, we commit that significant new programmes or material additional expenditure will be subject to detailed cost–benefit appraisal, in line with Green Book standards, ensuring regulatory assurance on areas of greatest materiality. In this way, the business plan is designed to demonstrate compliance with expectations and provide a practical tool that supports ongoing regulatory oversight and can remain adaptable to changes over the next regulatory period.

Following the development of the strategic cascade we have assessed role level benefits through a monetisable, quantitative and qualitative lens. We believe this is the right approach for us at this stage, providing clarity and accountability by creating a single, coherent framework that connects costs, activities, outcomes, and benefits. It also gives confidence to Ofgem and stakeholders by showing how the plan delivers consumer and system value, while also creating the practical tools we need to monitor delivery and manage performance effectively.

Our approach strikes a proportionate balance by avoiding unnecessary duplication of analysis, while committing to deeper appraisal where it is most needed. And it is firmly aligned with the principles of established regulatory guidance and best practice, ensuring that our business plan rests on a transparent, evidence-based, and consumer-focused assessment of value. Further details on our approach is described over the next sections of this appendix.

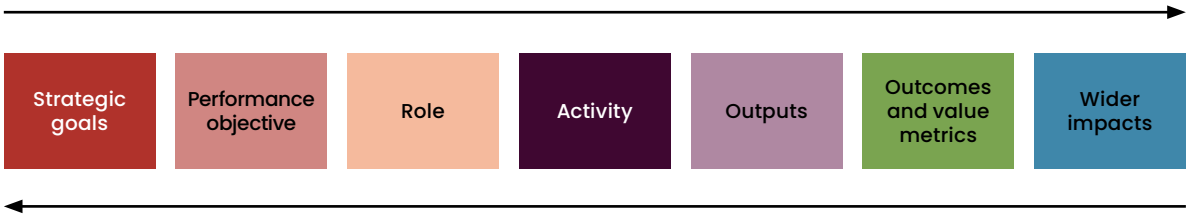
## Integrating Value for Money into the Business Planning Process

### Line of Sight Mapping from Strategic Priorities to Wider Values

To show how we create and deliver value, a line-of-sight mapping has been developed. This connects our strategic goals to its performance objectives and the activities and outputs that allow us to achieve them. Through applying Theories of Change (ToC) – see Box 3 for further details as to what is a ToC and how to interpret it - we outline value delivery within NESO's operations, recognising the complexity and multifaceted outputs that exist within the organisation.

We consider both the tangible and intangible benefits, immediate and future impacts, and both direct and indirect outcomes relevant to NESO's mission. As a result of the line-of-sight and valuation, the full range of activities performed by NESO have been mapped and a broad range of metrics demonstrative of the value created identified.

Figure 8: Overview of the strategic cascade that defines the value narrative



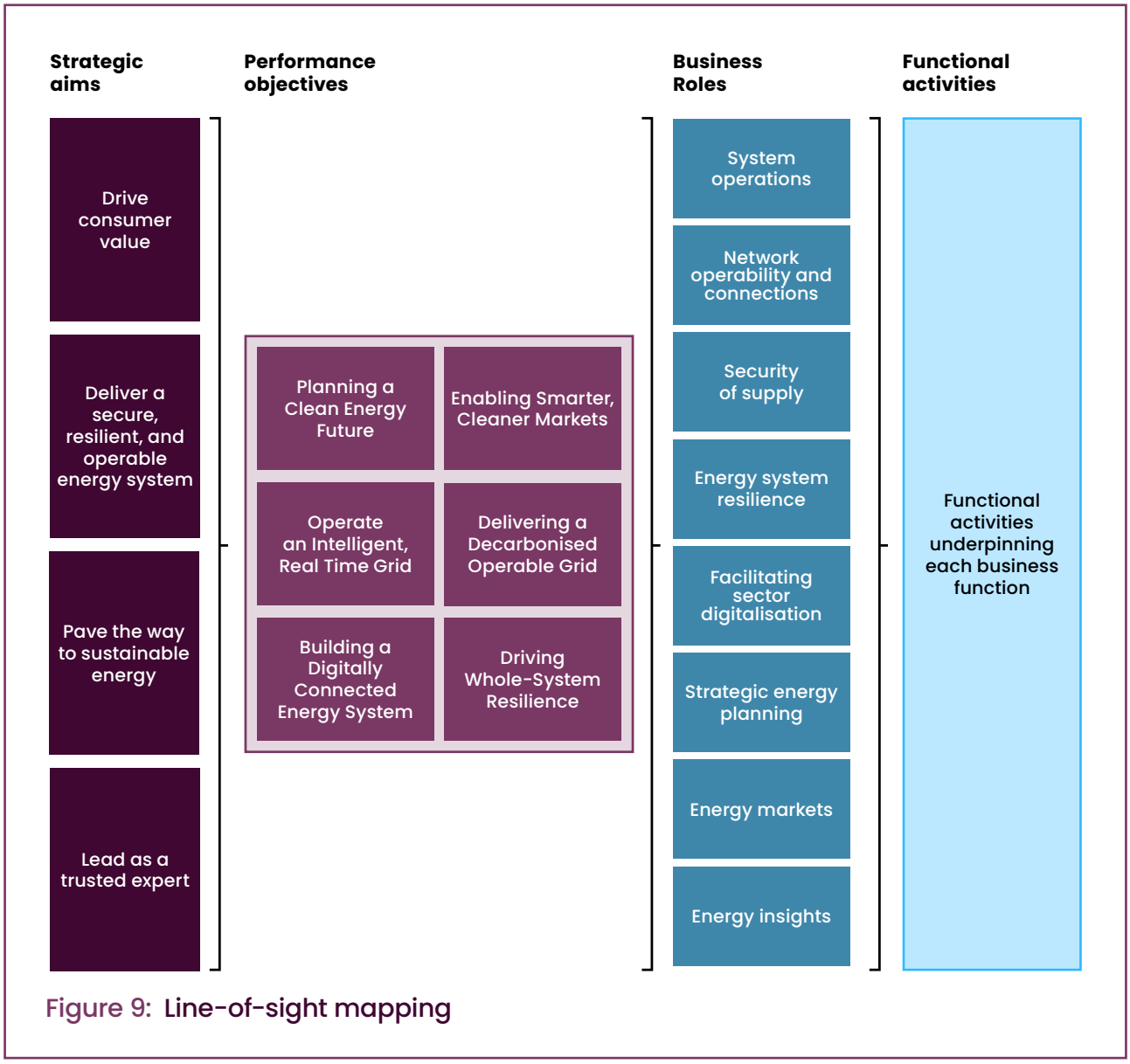




Figure 9: Line-of-sight mapping

**Benefits of the line-of-sight approach**

The line-of-sight mapping embeds several features into the analysis, including:

**Traceability:** it shows how day-to-day activities support our strategic priorities and performance objectives, creating transparency for stakeholders.

**Alignment:** it helps identify gaps, overlaps, or misalignments between activities and strategic goals.

**Confidence:** it gives us, Ofgem, and other stakeholders assurance that our work is structured to deliver meaningful outcomes.

**Measurement**: it establishes the groundwork for assessing and demonstrating Value for Money across our roles.

In short, this step provides the bridge between NESO's activities and the real-world impacts they deliver, ensuring that value is evidenced, measurable, and clearly linked to strategic objectives.

To articulate value identified in a consistent and across all the roles and Performance Objectives we consolidated role level outcomes into 12 shared outcomes (See Table 10. for further details and descriptions). These outcomes bring together value delivered across different activities and Roles. They align and support the Performance Objectives and our strategic goals, and support communication and unification of a cohesive NESO story, as well as providing and enduring framework to support strategy, planning and performance on an on-going basis for this and future planning cycles.

## Value Measurement

Our value assessment methodology clearly articulates the challenges and imperatives of evidencing Value for Money, including detailed cost justifications and clear articulation of the benefits of investments. Acknowledging the inherent difficulties in conveying NESO's full value. Through transparent and data driven analytical tools we have quantified the direct and indirect benefits of our activities. This has highlighted the complexity of translating all benefits into purely financial terms, and affirms the need to have robust quantitative and qualitative methodologies to support the broader evidence base for value for money delivery. For each role we assessed value in three categories:

- Monetised value measures, which translate into a tangible financial impact of NESO value;
    - quantitative value measures, reflecting tangible and specific business indicators; and
    - qualitative value measures, where the impact of each NESO role was qualitatively assessed due to difficult quantification or due to lack of input data.
- As much as possible we have aimed to isolate benefit and link them to individual roles to prevent double counting. Where several roles supported the same outcomes we have considered as an aggregate impact and counted it once.
- We have also adopted conservative and transparent assumptions where NESO is not the only stakeholder to mitigate against overestimating benefits.

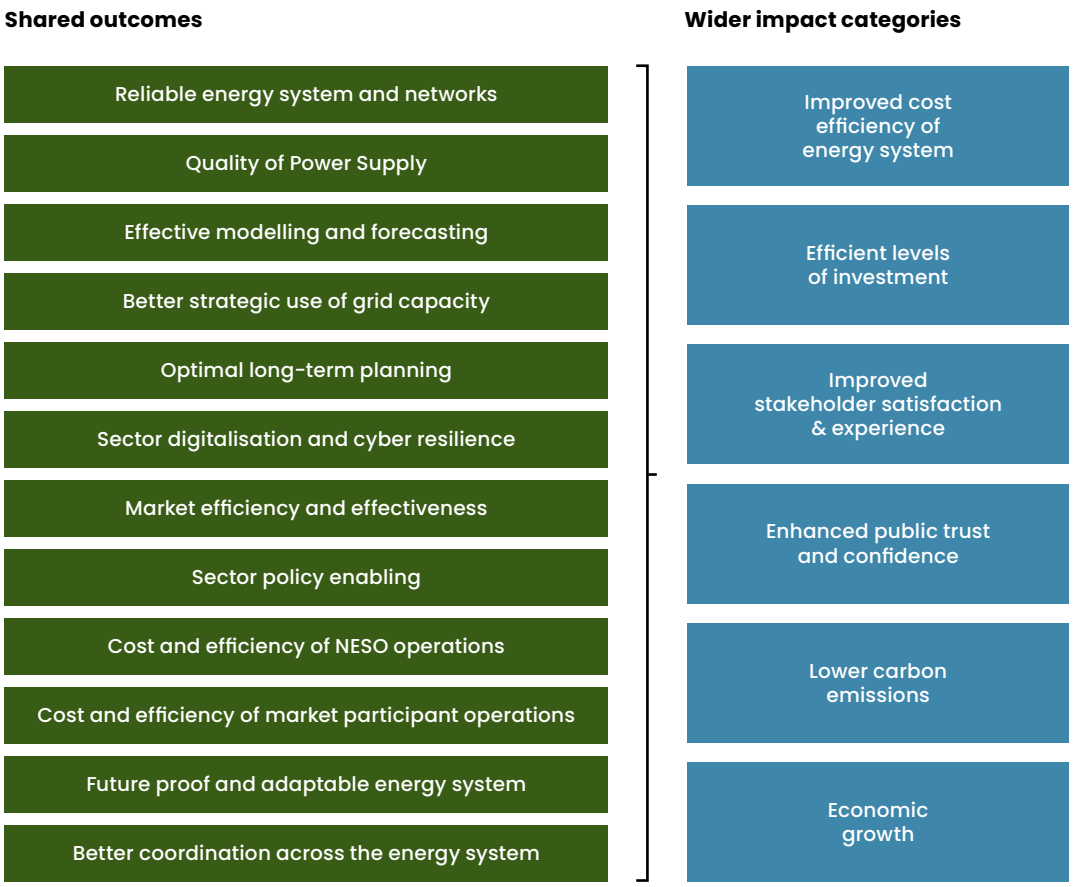



Figure 10: NESO value framework

## Our Approach to Baselining and the Counterfactual

Every value assessment must compare activities against a clearly defined reference point. This ensures that benefits attributed to our activities are measured consistently and transparently.

We have selected a post-separation baseline which is based on Year 1 operational data post-separation (FY25). Reflects current service levels and regulatory compliance, with no proactive system evolution or capability enhancement. This option was chosen because it provides a regulatory-aligned, transparent, and documented benchmark for assessing incremental value. Adjustments were made where necessary to reflect updated assumptions (e.g., demand forecasts, policy changes) while maintaining consistency with the original intent.

This provides a clear reference point for assessing the marginal benefit of additional investment in NESO's products and services. As with other options for baseline, this comes with some limitations and implications:

- **May not capture full value delivered since inception:** the analysis may underestimate our total contribution to date because the baseline assumes current service levels as the starting point. This trade-off was accepted to maintain a forward-looking perspective.
- **Conservative where value has not been measured historically:** for activities without historical data, high-level proxy assumptions or zero additional value will be applied. These assumptions are sense-checked to ensure they are reasonable and defensible.
- **Static baseline may not fully capture external factors:** the baseline is treated as static and may not fully capture external factors (e.g., market trends). This is considered reasonable given the focus on tracking year-on-year changes in measures of value relative to a defined and transparent baseline.

### What is a theory of change?

A theory of change is a structured framework that shows how activities are expected to deliver outcomes and impacts. It sets out a clear chain of cause and effect, from inputs and activities through to outputs, outcomes, and wider system benefits.

It describes the logical sequence of change, from inputs and activities through to outputs, outcomes, and system-level benefits. It also makes explicit the assumptions that link each stage. This ensures the pathways to impact are not only described, but also testable.

The purpose of a theory of change is to provide clarity on how an organisation contributes to outcomes. It helps stakeholders understand not only what an organisation does, but also why those actions are expected to create value.

The core components of the theories of change used to assess our impact are shown below.


Figure 11: Core components of a theory of change

These stages should be read in sequence from left to right. They show how activities generate outputs, which enable outcomes, and in turn contribute to wider impacts.

The process is rarely linear. One activity may generate multiple outputs, and one outcome may depend on several outputs. Recognising these one-to-many and many-to-one linkages is essential to understanding our contribution within an interconnected energy system.

## Challenges and limitations

This section outlines key limitations of our approach used to define and measure value.

- **Extent of NESO's influence over outcomes and value measures is complex:** the complexity of the energy system means that there are dependencies (e.g., networks, market participants, Government policy) and external factors (e.g., interest rates, global energy prices, weather) which will influence the extent to which NESO activities deliver its expected outcomes. Although value metrics have been selected based on our relative influence, we have relied on proxies where suitable.
- **Limitation on monetisation of benefits:** the monetisation that done on a role-by-role basis and doesn't fully allow for the calculation of a total value measure for the whole of NESO. This is because our actions won't solely add the calculated monetised value, and thus there is a need for attribution factors and have a broad assessment of value that includes quantitative and qualitative assessments.
- **Interconnectedness and complexity of benefits:** benefit evaluation is influenced by multiple and complex factors: the different types of activities, time horizons for operational-focused and advisory-focused roles, the shared impact of multiple roles in most metrics and the stakeholders to whom we directly and indirectly deliver value. Operationally focused roles, such as System Operations, are execution-driven with clear accountability, frequent outputs, and short to medium-term responsibilities (real-time to 3–5 years). These roles lend themselves to more immediate and tangible performance assessments. In contrast, advisory-focused

roles, such as Energy Insights or Strategic Energy Planning, are designed to inform policy and investment decisions over medium to long-term horizons (5+ years). These roles act as enablers, shaping outcomes that materialise over time. This distinction is important when considering how NESO's value for money is measured—operational roles can demonstrate near-term impact, while advisory roles contribute to longer-term strategic value.

- **Different roles drive common measures of value:** our activities, outputs, and outcomes are highly interconnected. Many activities contribute to multiple outcomes, such as improving system reliability, enabling decarbonisation, and reducing costs. This complexity reflects the real-world nature of energy system operation but makes it challenging to isolate the value of individual activities or present NESO's impact in a simple, linear way.

The table below describes our approach and alternative approaches that could have been used and a justification as to why we went for our preferred approach.

Table 19: **Shared outcome framework**

| Approach adopted | Alternative approaches | Justification |
|---|---|---|
| Outcome-based contribution | Activity specific CBA | NESO's value arises from interdependent roles and activities. Isolating them risks double counting and misrepresents systemic impact. |
| Role-level value mapping with marginal impact assessment | NPSV calculation | NPSV oversimplifies complex, qualitative contributions. Data limitations also hinder effective analysis. Our approach aligns with performance management and Success Measures described in the plan. |
| Post-separation business plan as counterfactual | Activity-level counterfactual | "Do Nothing" isn't viable for most activities. The business plan provides a realistic baseline for assessing marginal benefits. |
| Mixed benefit types (monetisable, quantifiable, qualitative) | Monetisable only | Many NESO benefits (e.g. trust, resilience) are qualitative. Sole monetisation under represents impact. Our approach aligns with Green Book and Magenta Book guidance. |
| Embedded value measurement existing performance management processes | One-off modelling at submission | Enables ongoing tracking and accountability, supporting continuous improvement throughout the business plan period, avoiding the use of broad assumptions for calculations of monetisable value and reinforces the use of quantifiable metrics to demonstrate value for money. |

Table 20: **Shared outcome framework**

| Shared outcome | Description | Why it matters |
|---|---|---|
| Reliable energy system and networks | A system that consistently delivers electricity where and when it's needed, minimising unplanned outages and ensuring operational continuity even as the grid becomes more complex and renewable-heavy. | Reliability underpins public trust, economic activity, and national security. |
| Quality of power supply | Maintaining the technical quality of electricity delivered – such as frequency, voltage, and stability – within statutory and operational limits, even as the system integrates more renewables and distributed resources. | Poor quality can damage equipment, disrupt industry, and reduce consumer confidence. |
| Effective modelling and forecasting | Providing accurate, timely forecasts of demand, generation (including wind/solar), and system needs, supporting both operational decisions and long-term planning. | Better forecasts reduce balancing costs, improve investment signals, and support efficient market operation. |
| Better strategic use of grid capacity | Maximising the use of existing network assets through smarter planning, operational coordination, and market signals – reducing constraints and deferring costly reinforcements. | Optimises consumer value, supports decarbonisation, and enables more connections. |
| Optimal long-term planning | Developing and delivering strategic, whole system plans that ensure the right infrastructure is built at the right time, aligned with net zero, security, and affordability goals. | Reduces risk of stranded assets, supports investor confidence, and ensures system resilience. |
| Sector digitalisation and cyber resilience | Accelerating digital transformation across the energy sector, enabling open data, smart standards, and robust cyber security to support innovation, transparency, and system resilience. | Digitalisation unlocks new value streams, while cyber resilience is critical for national infrastructure. |
| Market efficiency and effectiveness | Designing and operating competitive, transparent markets that deliver efficient investment, operation, and innovation – minimising costs and supporting decarbonisation. | Efficient markets lower consumer bills, attract investment, and enable new technologies. |
| Sector policy enabling | Providing trusted, evidence-based advice and analysis to inform government and regulatory policy, ensuring that sector frameworks support net zero, security, and consumer value. | Policy alignment is essential for coordinated action and long-term certainty. |

| Shared outcome | Description | Why it matters |
|---|---|---|
| Cost and efficiency of our operations | Delivering our core functions at lowest sustainable cost, through process optimisation, digital tools, and efficient resource allocation. | Directly impacts consumer bills and our ability to justify investment. |
| Cost and efficiency of market participant operations | Reducing barriers and costs for generators, suppliers, and other market participants through streamlined processes, transparent data, and efficient market design. | Supports competition, innovation, and consumer value. |
| Future proof and adaptable energy system | Ensuring the energy system can flex and adapt to future needs without costly overbuild or stranded assets. | Protects long-term consumer interests and system resilience. |
| Better coordination across the energy system | Enhancing collaboration and information-sharing across networks, markets, and stakeholders to deliver joined-up solutions, reduce duplication, and unlock system-wide efficiencies. | Whole-system coordination is essential for net zero, resilience, and cost-effectiveness. |

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