



# Clean Power 2030: Our Next Steps

NESO's portfolio of work supporting  
the Clean Power Action Plan



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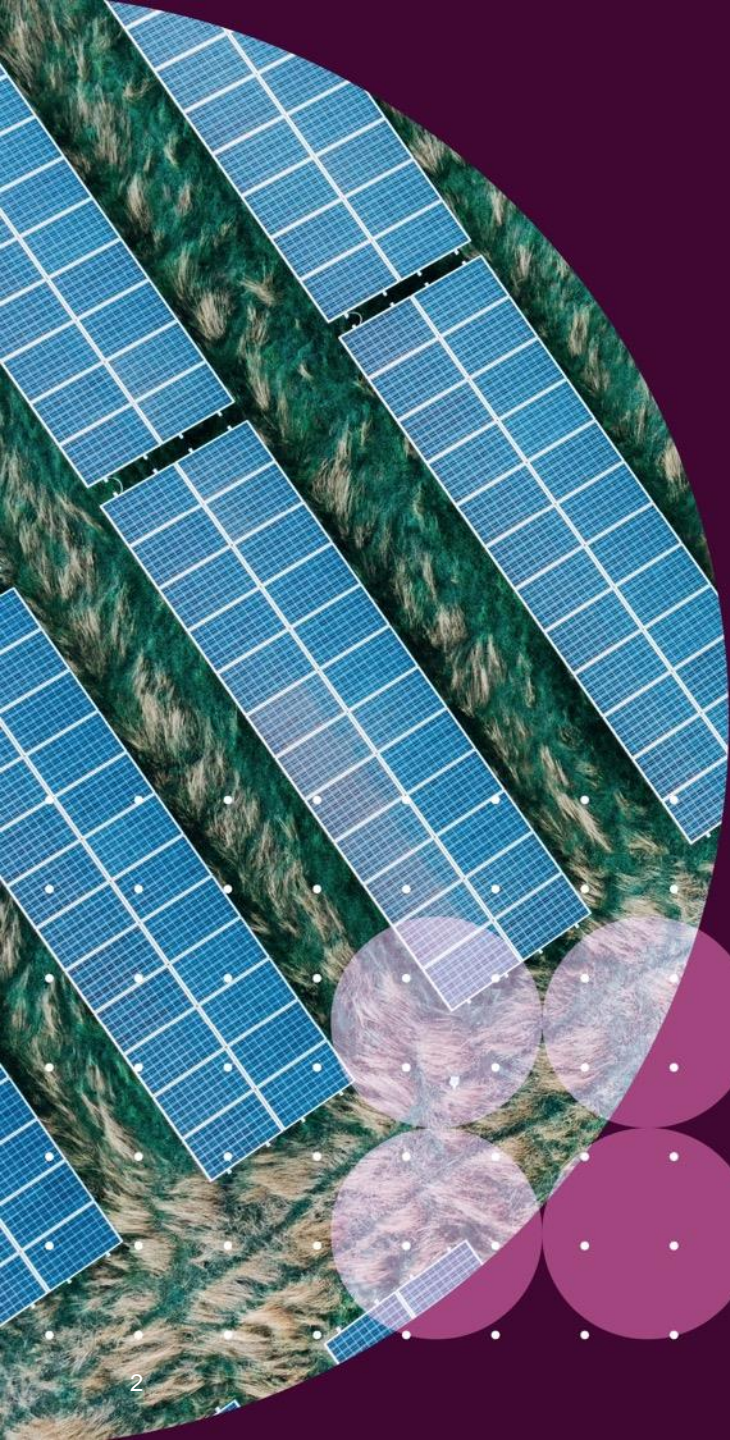
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# Executive summary

# Executive summary

The aim of this report is to bring together in one place all the activities that we as National Energy System Operator (NESO) are taking now and in the coming years to support the delivery of the Clean Power Action Plan.

## Introduction

The [Clean Power 2030 Action Plan](#) was published by the Government in December 2024 and built on the [Clean Power 2030 Advice](#) that NESO provided. It outlines actions that Government, Ofgem, NESO and industry will take to deliver the Clean Power 2030 Mission (CP30). In this document we focus only on the NESO actions and how they support and enable CP30.

A significant aspect of the CP30 challenge involves building and connecting the required infrastructure, whether that is generation, network or flexibility. While these are not direct NESO activities, we recognise how our central role in the industry enables us to support and assure delivery of this infrastructure.

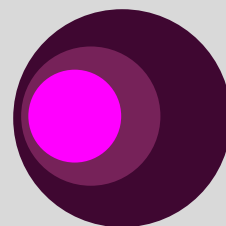
Also, we are aware that the challenges of operating a clean power system will be different, but we know what is required, we have the necessary plans in place and are ready to be flexible depending on exactly what infrastructure is delivered.

## Stakeholder engagement

We are conscious that broader engagement across industry will be vital to deliver CP30 and so this document also sets out our proposed stakeholder engagement approach which includes annual readiness reports and quarterly industry updates.

## Role and responsibilities

Our NESO activities in relation to CP30 can be described in one of three ways:



- 1. NESO accountable for delivery**
- 2. NESO working alongside other delivery partners**
- 3. Outside of NESO's direct scope but could interact with NESO activities**

# Executive summary

As NESO, one of our primary objectives is to enable the government to deliver on its legally binding Net Zero targets which means that many of our current and future activities were already aligned to the CP30 ambition. However, CP30 also introduced new work that wasn't previously envisaged as well as requiring accelerating or re-scoping of work that was already underway or planned.

## NESO CP30 portfolio of work

In this report we provide an overview of 6 NESO focus areas that directly support the delivery of CP30. For each one, we set out its main actions and goals and how it links to the CP30 Mission, the Clean Power Action Plan and the NESO Clean Power Advice. More detail on this linkage can be found in Section 2.



1. **Networks:** Ongoing monitoring and analysis of network reinforcement progress



2. **System Access:** Industry transformation of the electricity transmission outage plan approach



3. **Connections:** Industry transformation of the process to connect to the grid



4. **Operability:** Ongoing work to ensure that the electricity system remains operable as it decarbonises









5. **Markets:** Ongoing work to ensure that market reform initiatives align with CP30



6. **Operational capability:** Digitalisation of the energy sector and transformation of NESO's operational capabilities

# Executive summary

Each of our CP30 focus areas includes actions that we as NESO are responsible for as well as actions that we work with other delivery partners on. A corresponding [implementation plan](#) will be published on the Clean Power page of the NESO website alongside this report and will be regularly updated.

Focus area	Relevance to CP30	NESO actions (lead)	NESO actions (delivery partner)
 <b>Networks</b>	CP30 requires the delivery of 88 transmission projects plus extensive enabling and distribution projects	<ul style="list-style-type: none"><li>• Produce CP30 Delivery Tracker</li><li>• Perform cost benefit analysis of network project changes</li></ul>	<ul style="list-style-type: none"><li>• Monitor network and connection projects</li></ul>
 <b>System Access</b>	Delivery of the network reinforcements will require a very significant increase in system access requests (outages) which current processes cannot support.	<ul style="list-style-type: none"><li>• Design and implement required changes to system access arrangements</li></ul>	<ul style="list-style-type: none"><li>• Support Transmission Owners in identifying alternative ways of working</li></ul>
 <b>Connections</b>	Reform of the connections queue, and delivery of revised offers, is an essential enabler for CP30	<ul style="list-style-type: none"><li>• Design and implement reformed connections process</li></ul>	<ul style="list-style-type: none"><li>• Aiding developers to navigate the connections process</li></ul>
 <b>Operability</b>	The system must remain secure and operable as the generation portfolio changes and more variable renewables connect	<ul style="list-style-type: none"><li>• Address operability challenges associated with changing nature of the system</li></ul>	<ul style="list-style-type: none"><li>• Support industry / market initiatives related to operability</li></ul>
 <b>Markets</b>	Long term market reform is necessary and must be implemented in a way that continues to enable the significant investment needed for CP30	<ul style="list-style-type: none"><li>• Design and launch network services tenders</li><li>• Promote demand side flexibility</li></ul>	<ul style="list-style-type: none"><li>• Support REMA outcomes</li></ul>
 <b>Operational Capability</b>	Improved digitalisation and sharing of data is required to ensure that NESO and industry can operate effectively and efficiently into the future	<ul style="list-style-type: none"><li>• Continue to enhance operational tools and capabilities</li><li>• Deliver Data Sharing Infrastructure</li></ul>	<ul style="list-style-type: none"><li>• Support creation of Sector Digitalisation Plan</li></ul>





# 01

## The CP30 Challenge

# Where are we trying to get to?

The UK Government's "[Clean Power in 2030 Action Plan](#)" (December 2024), outlines how Great Britain will ensure that, over the course of a year by 2030:

- Clean sources produce at least as much power as Great Britain consumes in total,
- Clean sources produce at least 95% of Great Britain's generation, and
- Average carbon intensity is <50 gCO<sub>2</sub>/kWh.

This clear and ambitious target sets an urgent deadline for the transition to a clean power system, which is essential in supporting Great Britain's Net Zero target by 2050 given how decarbonisation of heat and transport will involve significant levels of electrification.

Achieving this goal will be challenging and will require substantial changes across the energy sector, encompassing technological advancements, policy shifts, and collaborative effort across industry and government.

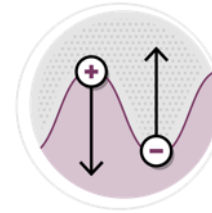
However, if successful it will put Great Britain in a strong position by providing opportunities for local growth and good jobs in the clean power investment programme as well as positive impacts on the environment and public health.

## What does a clean power system look like?



### Renewables:

- 43–50 GW of offshore wind
- 27–29 GW of onshore wind
- 45–47 GW of solar power



### Flexibility:

- 23–27 GW of battery capacity
- 4–6 GW of long-duration energy storage
- development of gas carbon capture utilisation & storage and hydrogen to power
- 10–12 GW of consumer-led flexibility



### Network

- rapid delivery of 80 transmission network reinforcement projects (plus 8 projects which would be beneficial if accelerated)
- associated delivery of enabling and distribution reinforcement projects



## Where are we now?

Great Britain is the first of the G7 economies to have removed coal from the electricity generation mix whilst deploying the second largest offshore wind fleet after China, both of which have led to a significant reduction in the carbon intensity of electricity in GB.

In 2024, we successfully ran the electricity system at 95% zero carbon for a short period of time. This was a significant milestone in our ambition to have the ability to operate the system with clean power for short periods of time in 2025, when the market delivers a zero-carbon generation mix.

In May 2025, gas still provided 20% of Great Britain's electricity (wind was our largest source of generation, providing 27%)<sup>1</sup>. Annual carbon intensity meanwhile averaged 127gCO<sub>2</sub>/kWh over the period from April 2024 to March 2025 which, while a reduction compared to historic levels, is significantly above the CP30 target<sup>2</sup>.

Clean power by 2030 represents a huge delivery challenge but is also an unprecedented opportunity for innovation and collaboration across the energy sector. As NESO we are committed to the CP30 target and will continue to work with stakeholders on delivering the actions needed to meet it.

<sup>1</sup> <https://neso.energy/energy-101/great-britains-monthly-energy-stats>

<sup>2</sup> These metrics are for indicative purposes only and are not directly comparable to the CP30 figure





# 02

## **NESO's CP30 Role**

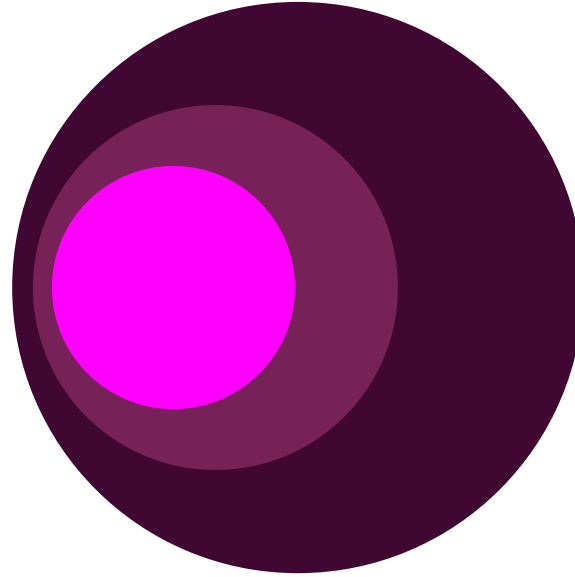
# Roles and responsibilities

As NESO, we are committed to being a key partner in delivering clean power, working closely with Government, Ofgem and industry.

This will involve continuing to deliver elements of the Clean Power 2030 Action Plan for which we are solely responsible. For instance, we appreciate the importance of ensuring that our own operations, processes and systems are prepared for the drive to clean power.

It will also involve working alongside other delivery partners from other parts of the industry where our input is required.

In addition, there will also be other activities related to CP30 where we are not directly involved in delivery, but which could interact with our activities.



- 1. NESO accountable for delivery**
- 2. NESO working alongside other delivery partners**
- 3. Outside of NESO's direct scope but could interact with NESO activities**



# NESO CP30 Focus areas

Our CP30 implementation planning approach involved identifying **focus areas** across our activities which directly support the delivery of CP30 and which, if delayed, could potentially put the wider CP30 target at risk.

- Most of the work within these focus areas was already in progress before the Government launched the Clean Power 2030 Action Plan as part of our pre-existing commitment to work towards zero-carbon grid operation in 2025<sup>3</sup> and to reaching Net Zero by 2050.
- However, some existing programmes have required re-scoping (e.g. reform of our Connections and System Access processes) and accelerating (e.g. solving operability challenges).



Our clean power advice introduced the concept of **core elements of a clean power system** as well as **critical enablers** which address challenges common across many of these core elements of the system, as well as more generally across the energy sector.



In addition, the Government's Clean Power Action Plan introduced a number of **action areas**.

## NESO CP30 focus areas



1. **Networks:** Ongoing monitoring and analysis of network reinforcement progress



2. **System Access:** Industry transformation of the electricity transmission outage plan approach



3. **Connections:** Industry transformation of the process to connect to the grid



4. **Operability:** Ongoing work to ensure that the electricity system remains operable as it decarbonises



5. **Markets:** Ongoing work to ensure that market reform initiatives align with CP30



6. **Operational Capability:** Digitalisation of the energy sector and transformation of NESO's operational capabilities

By linking our CP30 focus areas to the core elements of the clean power system and/or critical enablers set out in our advice, and the action areas from the Clean Power Action Plan, we created a framework that contextualises how our CP30 delivery portfolio aligns to our initial CP30 advice and aligns to the government's CP30 Mission and corresponding Clean Power Action Plan. *This framework is shown on the following page.*

<sup>3</sup> Our ambition is to have the ability to operate the system with clean power for short periods of time in 2025, when the market delivers a zero-carbon generation mix

# NESO CP30 Framework

**CP30 Mission:** Make Britain a Clean Energy Superpower by being on track to achieving at least 95% of low carbon generation by 2030 in line with advice from the National Energy System Operator (NESO)

**Clean Power Action Plan:**  
Identified areas where government is taking rapid action to accelerate delivery



**NESO Clean Power Advice:**  
Identified the core elements and critical enablers to a clean power system that need to be delivered



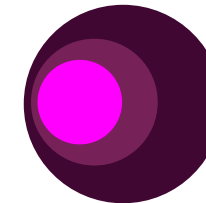
Electricity networks and connections	Networks [1.]		System Operations Digitalisation & innovation [6.]
Renewable and nuclear project delivery	Network Access [2.]		
	Connections [3.]		
Short-duration energy storage and flexibility	Electricity demand and demand flexibility	System Operability [4.]	
Long-duration flexibility	Electricity supply and system flexibility		
Electricity market reform	Markets & Investment [5.]		
Planning and consenting	Planning, consenting & communities		
Supply chains and workforce	Supply Chain & Workforce		
How we will work, as government and with everyone involved, to deliver	NESO as a partner		

Critical Enablers

Core Elements

Applying a framework in this way can help to clarify CP30-related roles and responsibilities as:

- The core elements of a clean power system are more closely aligned to actions for which we are responsible as NESO or working alongside other delivery partners.
- The critical enablers tend to be more closely aligned to actions which could introduce interdependencies between our actions and those of other industry parties.



1. NESO accountable for delivery
2. NESO working alongside other delivery partners
3. Outside of NESO's direct scope but could interact with NESO activities

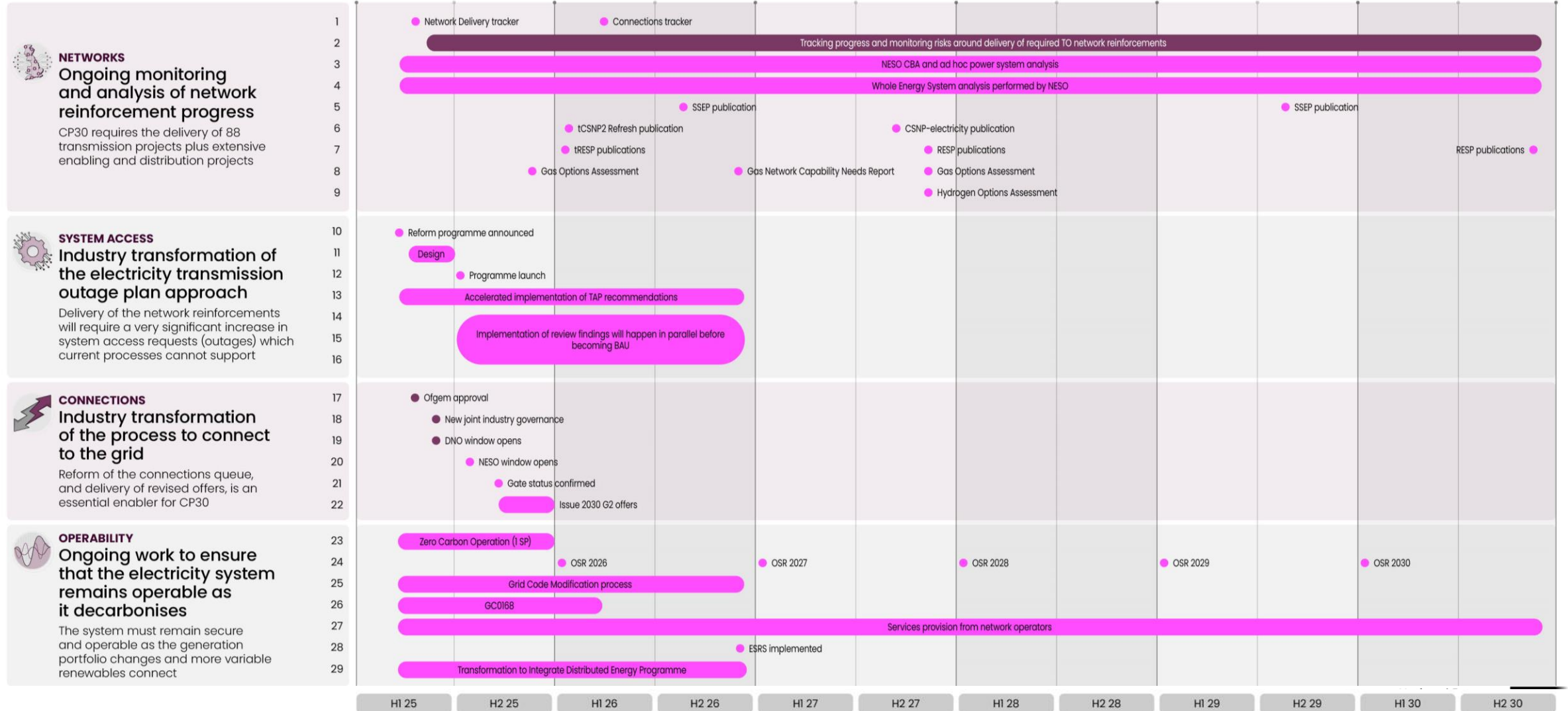
As a result of the overview slides presented later for each of our focus areas are largely based around the **core elements of the power system**.

However, these overview slides show how the focus areas are dependent not only on other core elements but also on the **critical enablers** as well.

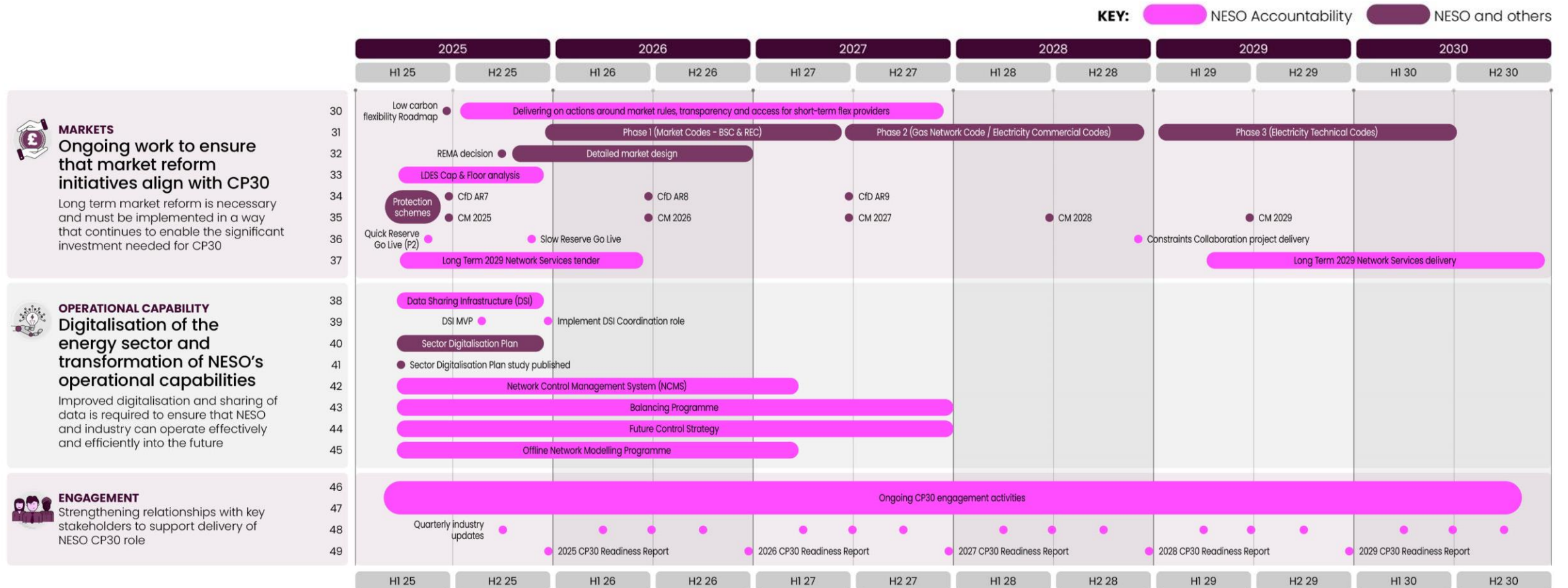
# NESO CP30 Implementation Plan

KEY: NESO Accountability NESO and others

[Click here](#) to view the current interactive implementation plan.



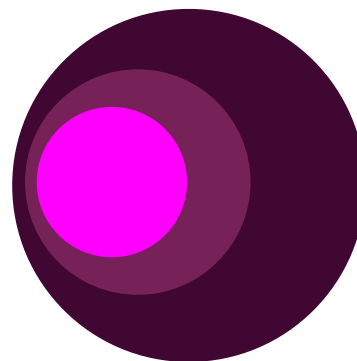




[Click here](#) to view the current interactive implementation plan.

At an individual action level, it is also possible to highlight those that are the responsibility of NESO to deliver, and which involve working alongside other delivery partners. As this is our implementation plan, there is naturally more emphasis on the actions and sub-actions for which we are responsible.

While not captured on this plan, the Government's Clean Power Action Plan includes actions which are outside of our direct scope of activity. It is important that we remain aware of progress on these actions so that potential interdependencies can be understood and managed.



- 1. NESO accountable for delivery**
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- 3. Outside of NESO's direct scope but could interact with NESO activities**



# 03

**How it all  
comes together**



# Interdependencies

As NESO, our CP30 approach must ensure that our work is part of, and contributing towards, the overall objectives of the Government's Clean Power 2030 Action Plan. This means carefully managing the activities under each of our focus areas, ensuring coherency internally as well as being responsive to stakeholder feedback and aware of the interdependencies between our actions and those of others.

For example:

- operating a clean power system by 2030 is dependent on the delivery of new network infrastructure by Transmission Owners and connections of new generation and flexibility assets,
- implementing changes to industry processes is dependent on regulatory approvals, and
- accelerating connections is dependent on legislative change to land planning and consenting (such as through the Planning and Infrastructure Bill, currently being considered by Parliament).

**There are also some key externalities and risks to the delivery of the wider clean power ambition, which could equally affect our work as well as other organisations' activities. These include:**

- global demand for the required electrical components such as HVDC cable, transformers and switchgear causing supply chains issues
- other geo-political events which could impact investor confidence, either on a national or international scale.

These interdependencies necessitate flexible governance and programme management, as delivery of our CP30 portfolio is likely to evolve over time in response to them.

In addition, a coherent governance and stakeholder engagement approach is required to facilitate transparency and awareness across the energy sector and to ensure that risks to the delivery of CP30 can be identified and escalated appropriately.



# Governance and joint working



Department for  
Energy Security  
& Net Zero



## How we are working with DESNZ and Mission Control

DESNZ has established the Clean Power Commission and Mission Control to oversee progress in delivering the Clean Power Mission. We are supporting this by:

- providing data, information and updates into Mission Control to support their monitoring and tracking of project milestones.
- contributing as a member of the Clean Power Commission (Delivery) Group.

This top-level engagement via the Clean Power Commission (Delivery) Group is in addition to the already well-established, working-level relationships with DESNZ and Ofgem, which ensure coherency between our respective work programmes. Given the high level of interdependency between the CP30 actions, these different points of contact will help keep our delivery actions aligned.

## How are we working with Ofgem

Recognising that NESO will play a pivotal role in securing clean power for Great Britain by 2030, on the path to net zero by 2050, we have worked with Ofgem to establish a dedicated Performance Objective for CP30 delivery within our Business Plan. This sets out how we will build on our 2024 advice to government and move to implementation of a clean power system in line with the government's CP30 action plan.

Furthermore, implementation of our CP30 portfolio will be central to the management, delivery, and reporting of the CP30 Performance Objective included in our Business Plan. This includes high-level upcoming milestones for some CP30 elements, with others still captured within the relevant business unit. Over time, more detail will be incorporated into the CP30 Performance Objective.

## Our internal NESO governance

To support the management and delivery of our CP30 activities we have established a dedicated CP30 Portfolio Delivery Function. This is consistent with management of other large NESO work programmes and, by taking a portfolio view, will ensure a comprehensive approach to delivery, which includes managing risks and reporting within our organisational structures, up to and including our Board.

It will also coordinate associated reporting to DESNZ and Ofgem and the multi-year delivery schedule managed by this new function will effectively form the enduring NESO implementation planning approach that this document introduces, and which will be regularly updated to provide transparency to our stakeholders.



# Stakeholder engagement

Stakeholder engagement is vital for the ongoing delivery of CP30 for several reasons.

1. It ensures that the perspectives and needs of all relevant parties are considered, leading to more comprehensive and effective solutions. Engaging stakeholders such as local communities, industry experts, government bodies, and environmental organisations helps build trust. Our stakeholders can also provide valuable insights, identify potential barriers, and suggest innovative solutions, enhancing the overall quality and feasibility of the CP30 implementation plan.
2. Stakeholder engagement promotes transparency and accountability. By involving stakeholders in the decision-making process, we can ensure that the Clean Power Plan is developed and implemented as agreed. This also allows stakeholders to monitor progress, provide feedback, and hold us accountable for its commitments.
3. Stakeholder engagement facilitates the identification and mitigation of potential risks. By engaging with a diverse range of stakeholders, we can gain a better understanding of issues such as environmental impacts, community concerns, and technical feasibility of proposed solutions. This helps identify and address potential risks early in the planning process, reducing the likelihood of delays or obstacles during implementation.

**We received positive feedback on the extensive engagement we undertook as we developed our Clean Power 2030 Advice, and we propose to build on this as we move into implementation by continuing to use similar engagement approaches.**



## Engagement approach used to develop NESO Clean Power advice



Bilateral & roundtables with market participants & experts



Open written feedback submissions



Policy and analysis literature review



Industry and societal stakeholder forums established



Public webinars and operational transparency sessions

# Stakeholder engagement

In addition to this, we will continue to engage via existing stakeholder forums. We will endeavour, wherever possible, to coordinate this engagement in an efficient manner and would appreciate feedback on how best to achieve this. We ask interested stakeholders to engage with us as we undertake this work, to share their insights, and to contribute to shaping a future where clean power by 2030 is a reality for Great Britain.

We intend to use this document as the starting point for quarterly updates on delivery of our CP30 portfolio between now and 2030. Critically, each six-month period represents approximately 10% of the time available to achieve our clean power goal and, considering this, we recognise that we may occasionally need to prioritise pace over perfection.

As part of our engagement with stakeholders, we commit to producing an annual “NESO CP30 Readiness” report. This report will provide an update on the status of the portfolio of work outlined in this document, to demonstrate openly and transparently how we are delivering on our CP30 actions.

We expect the first such report to be produced in Q4 of 2025, to align with the anniversary of the publication of government’s Clean Power 2030 Action Plan in December 2025.







04

## **NESO CP30 portfolio overview**



# Navigating the portfolio

Section 2 introduced a **framework** that set out which action areas our CP30 portfolio supports. In the following deep dive pages, we aim to give a comprehensive overview of each of the NESO CP30 focus areas making up the portfolio, and the actions that we will be reporting on in our implementation plan.

## Focus area overview

- **Scope:** this sets out which of the “core elements of a clean power system” and “critical enablers” that the focus area relates to (based on the earlier framework slide)
- **Context:** this sets out at a high level what the focus area involves and how it relates to CP30
- **Challenge:** this sets out why this activity may be difficult to deliver and therefore why it requires focus
- **Target solution:** this sets out how the challenge could be overcome (depending on the focus area this could be a NESO solution or one that spans other industry parties)
- **NESO role and involvement:** this sets out NESO’s role in the target solution as well as clarifying where other parties are directly responsible for delivery
- **NESO’s actions:** this builds on the NESO role and sets out examples of specific NESO actions in our CP30 implementation plan (splitting these into “accountable” and “working with other delivery partners”)
- **Interdependencies:** this again uses the framework to identify what is at stake if delivery of the relevant focus area is delayed and also what this focus area relies on to be delivered. This could be other “core elements of a clean power system” (i.e. potentially in NESO’s control) or other “critical enablers” (i.e. which are relatively less likely to be in NESO’s control).

## Focus area set-up

- **Timeline:** this is the section of the CP30 implementation plan for the relevant focus area setting out NESO actions
  - *The complete [NESO CP30 implementation plan](#) (i.e. containing all of the focus areas together) will be published on the Clean Power page of the NESO website and regularly updated to provide transparency around our progress and to highlight any delays or risks to delivery.*
- **Supplementary details:** this adds detail around the actions as well as further information if required on why the focus area is important to CP30
- **DESNZ / Ofgem collaboration:** this sets out existing areas of where we are already working as partners in each of the focus areas



## Focus Area overview – Ongoing monitoring and analysis of network reinforcement progress

### Context

- Network reinforcement is required to facilitate generation connections necessary for CP30 and to manage associated power flows
- 88 required “wider works” projects have been identified by NESO and agreed with Transmission Owners (TOs) with many more “enabling works” and DNO reinforcement required to facilitate connections

### Challenge

- Delivering these projects requires double the level of onshore and offshore network build seen in the last 10 years, in the next 5 years
- This will not be possible without transparent, accurate and up-to-date visibility of progress, interdependencies, and cross-project risks

### Target solution

- Create a dashboard to track project progress and flag any risks to delivery early enough to allow intervention
- Carry out system studies and cost-benefit analysis to ensure impacts of any changes to TO projects are understood

### NESO's role and involvement

- TOs are responsible for delivery (DNOs for distribution reinforcement) but we have developed a portal system that allows TOs to share project updates with DESNZ, Ofgem, and NESO
- We are responsible for carrying out CBA analysis

### NESO's actions

#### Accountable for:

- Producing CP30 Delivery Tracker tool for Network Projects and Connection Projects (incl., interdependencies between projects)
- Performing cost-benefit analysis to support network reinforcement decisions impacting CP30 target

#### Delivery partner:

- Monitoring and analysing network and connection projects to identify risks and, if necessary, course-correct

## Interdependencies

### What's at stake?



- Connections
- Electricity supply
- Electricity demand
- System flexibility
- System resilience



- 95% clean generation metric:
- Delayed connections
  - Transmission constraints



- Network Access
- Operability (management of constraints)



### What does it rely on?

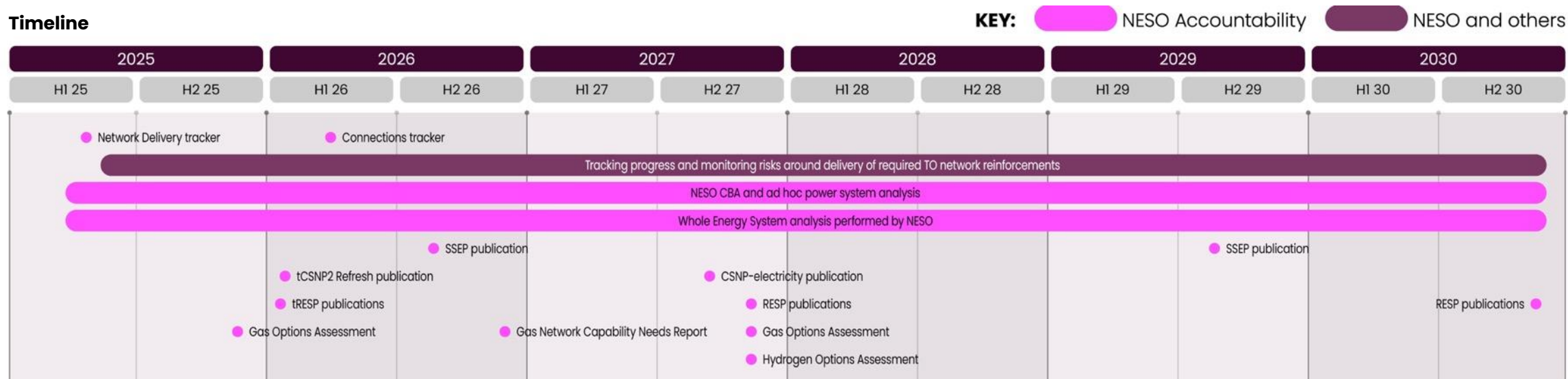
- Planning & consenting
- Supply chain & workforce
- Working as partners to deliver
- Digitalisation & innovation





# Focus Area setup – Ongoing monitoring and analysis of network reinforcement progress

## Timeline



## Supplementary details

- If network reinforcement is delayed, not only are associated connections projects also delayed but the increase in constraints could increase the need to dispatch gas-fired generation (and potentially fail to meet the 95% clean power target).
- In addition to continual analysis in relation to electricity transmission, electricity distribution reinforcement and connections will require monitoring as will the development of new hydrogen and CO2 storage and transportation assets.

- While new Strategic Energy Planning approaches such as SSEP, CSNP, and RESP take the CP30 position as a baseline and focus on the period after 2030, teams working in these areas are well placed to monitor progress towards the upgraded and new network assets required to deliver CP30.
  - tRESP covers the period 2028 to 2033.
  - More generally, it is also very important to ensure that clean power metrics continue to be met throughout the 2030s and 2040s.

## DESNZ / Ofgem collaboration

- DESNZ, NESO and Ofgem come together as the Electricity Networks Delivery Insights Group to monitor delivery of network infrastructure. This is a sub-group of a broader Networks Steering Group.
- Development of strategic energy planning initiatives (e.g. SSEP) is carried out under a governance model including DESNZ, Ofgem, Devolved Administrations and other relevant industry bodies.



# Focus Area overview – Industry transformation of the electricity transmission outage plan approach

## Context

- Typically, in a 7-year outage planning cycle, only 15% of the outage plan is created in the first 5 years. This leads to only 50% of the plan being agreed by 12 months ahead of delivery, with the remaining 50% requested and agreed in-year.
- Approximately 8,000 outages take place on the electricity transmission system each year and around 8000 outage plan change requests are made in addition to this.

## Challenge

- Due to the number of transmission reinforcement and connection projects required in the years between now and 2030, the demand for network access will be significantly higher than in recent years presenting a risk that the short-term planning process will be overwhelmed.

## Target solution

- Establish a more strategic approach to system access planning across industry to provide assurance around the deliverability of CP2030 and to address access challenges early on, when there are more options to minimise costs

## NESO's role and involvement

- We have initiated a System Access Reform programme to deliver this strategic approach and will lead the work alongside Transmission Owners

## NESO's actions

Accountable for:

- Launching of the System Access Reform Programme
- Implementing findings from the System Access Reform Programme

Delivery partner:

- Providing support to Transmission Owners (and DNOs where appropriate) in identifying less intrusive ways of working, such as off-line build and temporary circuits

## Interdependencies

### What's at stake?



- Networks
- Connections
- Electricity supply
- Electricity demand
- System flexibility



- 95% clean generation metric:
- Delayed connections
  - Transmission constraints

### What does it rely on?



- Working as partners to deliver
- Digitalisation & innovation



## SYSTEM ACCESS

# Focus Area setup – Industry transformation of the electricity transmission outage plan approach

### Timeline



### Supplementary details

- We recently launched a public consultation on 'Transmission Acceleration' which was initiated by the 2023 Electricity Commissioners report.
  - This consultation covered the recommendations made and actions required by NESO and the Transmission Owners to accelerate reform of transmission networks by allowing the additional system access required for connections and for system upgrades to facilitate CP30.
- Included in the proposals are:
  - specific relaxations to the Security and Quality of Supply Standard (SQSS),
  - a more robust long term planning process which pays more consideration to forecast constraint costs,
  - working with Transmission Owners to maximise amount of work that can be delivered per outage, as well as finding most economic phasing of outages,
  - working with industry to improve the approach to unplanned asset outages, and
  - modifications to established processes for system access through the winter months.
- All these initiatives are now being absorbed into a new System Access Reform programme which aims to deliver its goals alongside the Transmission Owners.
  - This in turn will focus all the relevant parties on the uplift in system access needed to meet CP30.
- Network Access is a key risk for CP30 and, if the required outage plan is not delivered, the network reinforcement required to connect new clean generation capacity and reduce constraints will not be possible.





# Focus Area overview – Industry transformation of the process to connect to the grid

## Context

- The current connection queue has a greater volume of projects to 2030 than is required to meet CP30, across the key technologies

## Challenge

- Projects that are not ready to connect ahead of 2030, and/or are not aligned to strategic needs, are ahead of more developed projects in the queue that could contribute to CP30
- There are also imbalances in both the types of project (i.e. technology type) and suitable location as well as connection date
- Without a reform to the queue, the current connections process will not deliver the clean power capacity required by 2030

## Target solution

- Reform the connections process to:
  - enable only projects that are sufficiently advanced (e.g. in terms of consents) to receive a connection date
- create a direct link between the technology and capacity needed, by location, in the government's Clean Power 2030 Action Plan, and the connection offers that are made

## NESO's role and involvement

- We have proposed a reformed connections process and, now that this has been approved by Ofgem, will be responsible for implementing it (alongside TOs and DNOs)
- Developers are responsible for bringing forward the generation and flexibility infrastructure required to meet the CP30 target

## NESO's actions

### Accountable for:

- Development of the reformed connections process
- Implementation of this process

### Delivery partner:

- Aiding developers to navigate the connections process as well as the wider planning and consenting process

## Interdependencies

### What's at stake?



- Connections
- Electricity supply
- Electricity demand
- System flexibility



- 95% clean generation metric:
  - if not enough clean generation
  - If not enough flexibility



- Networks
- Network access

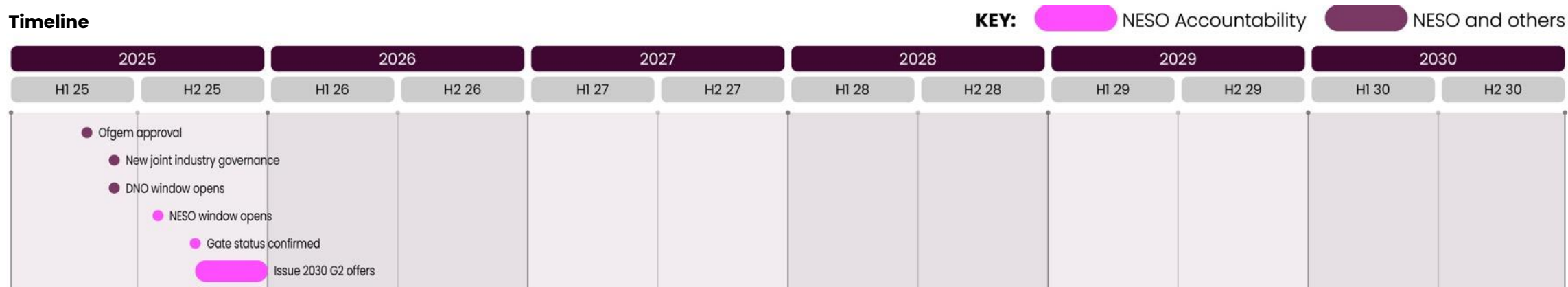


- Planning & consenting
- Supply chain & workforce
- Digitalisation & innovation



## Focus Area setup – Industry transformation of the process to connect to the grid

### Timeline



### Supplementary details

- In December 2024 we submitted our connections reform proposals to Ofgem for decision. The proposals are that the reformed connections process:
  - prioritises and supports delivery of 'ready' projects that are progressing towards completion, and
  - aligns the reformed queue with government strategic energy plans (firstly the CP30 Action Plan, then the first Strategic Spatial Energy Plan (SSEP) in due course) to ensure efficient transition towards net zero by 2050 whilst promoting growth and investment.

- This will ensure that future projects will be connected more quickly and efficiently. It will also ensure that the future connections queue is made up of viable, strategically aligned projects, that support long-term objectives such as enhancing grid security and reliability, integrating renewable energy sources and facilitating economic and efficient system operation.
- Now that Ofgem has approved the proposals, we are starting to implement the reformed connections process.
  - The first stage is to reorder the current connections queue in line with the above objectives, with revised connection offers starting to be issued from autumn 2025 and a goal to have issued all 2030 Gate 2 offers by early 2026.

### DESNZ / Ofgem collaboration

- Our modelling and data will feed into Mission Control to help provide wider system understanding of connections and network interactions.
- We have worked closely with Ofgem on the wider framework of changes required to reform the connections process.



# Focus Area overview – Ongoing work to ensure that the electricity system remains operable as it decarbonises

## Context

- The tools and technologies historically used by system operators to successfully manage secure and safe electricity systems are built around the technical characteristics of traditional fossil-fuelled generation

## Challenge

- As the share of this type of generation decreases, system operators need new technologies and solutions

## Target solution

- To operate a clean and resilient power system safely, securely, economically and efficiently requires different and innovative approaches to resolution of operability challenges across:
  - stability, thermal constraints, voltage, and restoration

- frequency, within-day balancing and generation adequacy

## NESO's role and involvement

- We have begun identifying required changes and are working collaboratively with industry in developing and implementing them

## NESO's actions

Accountable for:

- Operating a zero-carbon system in 2025 (if the market provides)
- Identifying operability challenges associated with a clean power system and sharing a plan to tackle them in annual Operability Strategy Reports (OSR)
- Identifying and implementing changes to industry codes required to operate a clean power system
- Implementing network and market solutions to operability challenges

## Interdependencies

### What's at stake?



- Network access (unable to manage constraints)
- Networks (knock-on from Network Access)
- Connections (knock-on from Networks)



- 95% clean generation metric:
  - if not enough clean flexibility
  - if gas generation required to run (for operability reasons)

### What does it rely on?



- Networks
- Network access
- Electricity supply
- Electricity demand flexibility
- System flexibility

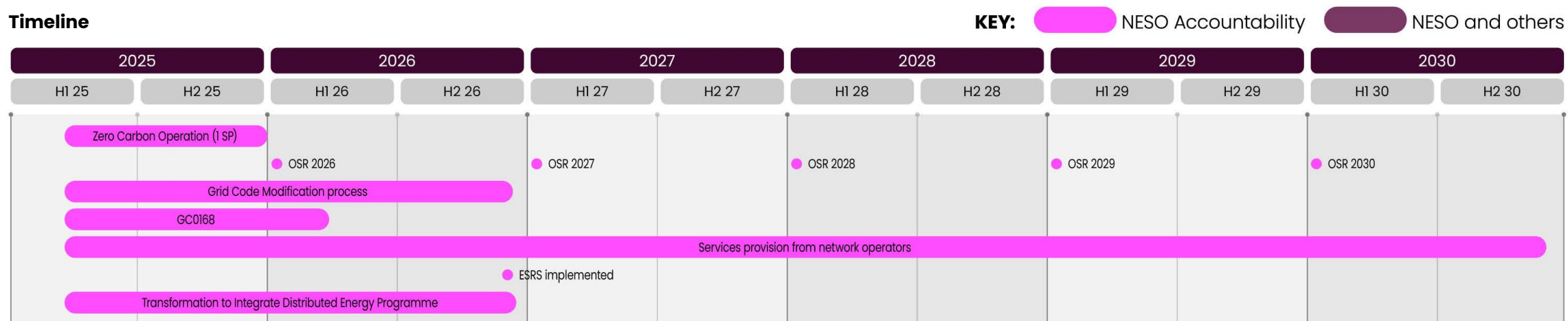


- Digitalisation & Innovation
- Market reform



## Focus Area setup – Ongoing work to ensure that the electricity system remains operable as it decarbonises

### Timeline



### Supplementary details

- Every year we publish the Operability Strategy Report (OSR) to communicate with industry the operability challenges we see ahead of us, and the work we are doing to manage them.
  - The OSR focuses on the period two to ten years ahead and as such, the Clean Power in 2030 target is a key milestone in that period and features prominently in the analysis.
- The solutions to operability challenges are delivered via:
  - Modifications to industry codes (e.g. Grid Code),
  - Network Services tenders to the market,
  - Additional network assets (e.g. reactors),
  - New NESO processes or systems.
- Our Zero Carbon 2025 ambition represents a first step towards having the capability to operate a safe and secure system using clean power sources.
  - Through this ambition we have already put in place some of the tools, processes, and strategies needed to operate the system using clean power more often and for longer periods of time – supporting the Government's ambition for Clean Power by 2030.
  - We will use this experience to inform what else we need to do to enable CP30.





## Focus Area overview – Ongoing work to ensure that market reform initiatives align with CP30

### Context

- Current market arrangements underpinning our electricity system were designed for large, centralised dispatchable generators
- Long term market reform options are being considered to address the ever-higher constraint costs and inefficient market outcomes

#### Target solution

- Design and deliver market solutions to operability challenges
- Ensure sufficient demand-side flexibility and generation is brought forward to meet CP30
- Design longer-term market reform solutions in a way that provides clarity and certainty to CP30 investors and supply chain

#### NESO's role and involvement

- We are responsible for market tenders to provide network services
- We must ensure our markets are open and accessible for all technologies including demand flexibility
- We have a key facilitation role in relation to wider design and implementation of market reform across wholesale and balancing markets



### Challenge

- Market reform has to be implemented in a way that does not risk delivery of investments required to achieve clean power in 2030

#### NESO's actions

Accountable for:

- Launching new Ancillary Services required to support operation of a clean power system (e.g., operability and constraints management) and ensuring our markets are inclusive to all technologies
- Producing the Long Term 2029 Network Services tender (simultaneous procurement includes provision of stability and

reactive services at 0MW as well as restoration services)

Delivery partner:

- Support design change considerations for REMA and Code Reform
- Co-author of Low Carbon Flexibility Roadmap (also accountable for corresponding NESO delivery actions)
- Implement CP30-related policy changes to CfD and CM processes

### What's at stake?



- Connections
- Electricity supply
- Electricity demand flexibility
- System flexibility



- 95% clean generation metric:
- If not enough clean generation
  - If not enough clean flexibility
  - If gas generation required to run (due to system constraints)

### Interdependencies



- Digitalisation & Innovation
- Market reform
- Working as partners to deliver

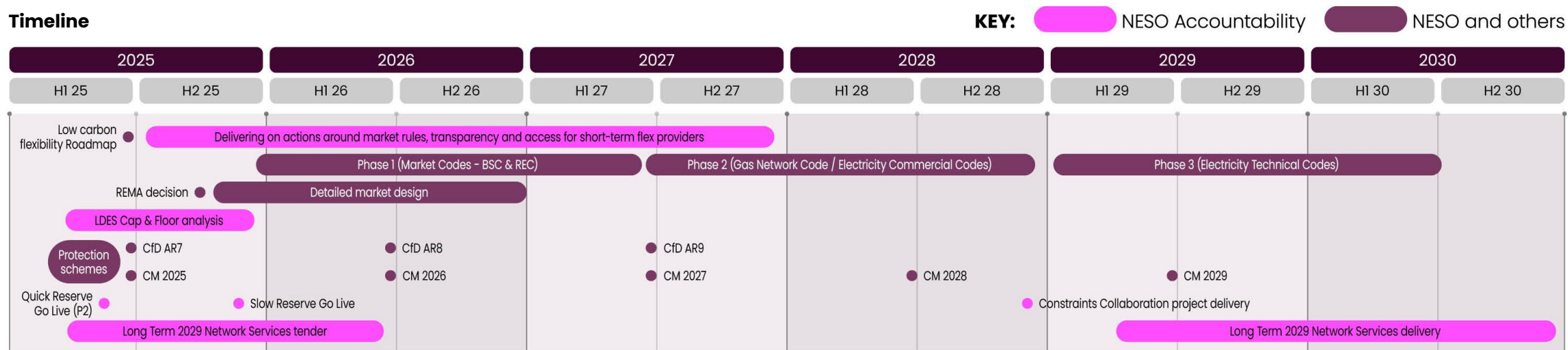
### What does it rely on?



## MARKETS

# Focus Area setup – Ongoing work to ensure that market reform initiatives align with CP30

## Timeline



## Supplementary details

- We are reforming our existing electricity markets to enable CP30, and more detail can be found in our electricity [Markets Roadmap](#), which focusses on balancing and ancillary service markets.
- Alongside our administrator roles, we are implementing changes to Contracts for Difference (H2 25–H2 27) and Capacity Market (H2 25–H2 29) regimes to facilitate the levels of investment required to achieve Clean Power 2030.

## Ofgem / DESNZ collaboration

- As part of the Review of Electricity Market Arrangements (REMA) programme, we have been advising DESNZ and Ofgem about the impact of changes on both system operability and the potential interactions with CP30 in relation to CfD and Capacity Market changes.
- As co-author of DESNZ's Low Carbon Flexibility Roadmap, we are integrating our action plan for demand-side flexibility into this sector-wide roadmap to deliver more flexibility by 2030.



## Focus Area overview – Digitalisation of the energy sector and transformation of NESO's operational capabilities

### Context

- Sector digitalisation and improved data sharing is key to delivering clean power
- Enabling the efficient operation of the system in line with CP30 ambition will require a significant acceleration of developments to how the NESO control room (i.e. ENCC) operates this considerably changed system

### Target solution

- Applying a digital-first mindset means we will use and share data more effectively across the sector and our systems, processes and people will leverage the right tools, technologies and training to operate a clean power system

### NESO's role and involvement

- We are responsible for ensuring that our systems and capabilities are fit for purpose as the system decarbonises
- We also have key roles in data transparency and sector digitalisation



### Challenge

- We recognise that we have not always been able to take full advantage of new technologies connected to the network as quickly as the industry needs, for example batteries, due in part to legacy IT systems

### NESO's actions

Accountable for:

- Developing an integrated approach to data standards, transparency and sharing across industry
- Accelerating investment to enhance our data analysis & operational co-ordination capabilities

- Ongoing reviews of all Control Room processes and capabilities to enhance efficiency of operational co-ordination with our customers
- Enhancing our balancing, network control and offline study capabilities

Delivery partner:

- Creation of Sector Digitalisation Plan

## Interdependencies

### What's at stake?



- Operability
- Electricity demand flexibility
- System flexibility
- System resilience
- Digitalisation and innovation



- 95% clean generation metric:
- If gas generation required to run (for system operation reasons)

### What does it rely on?

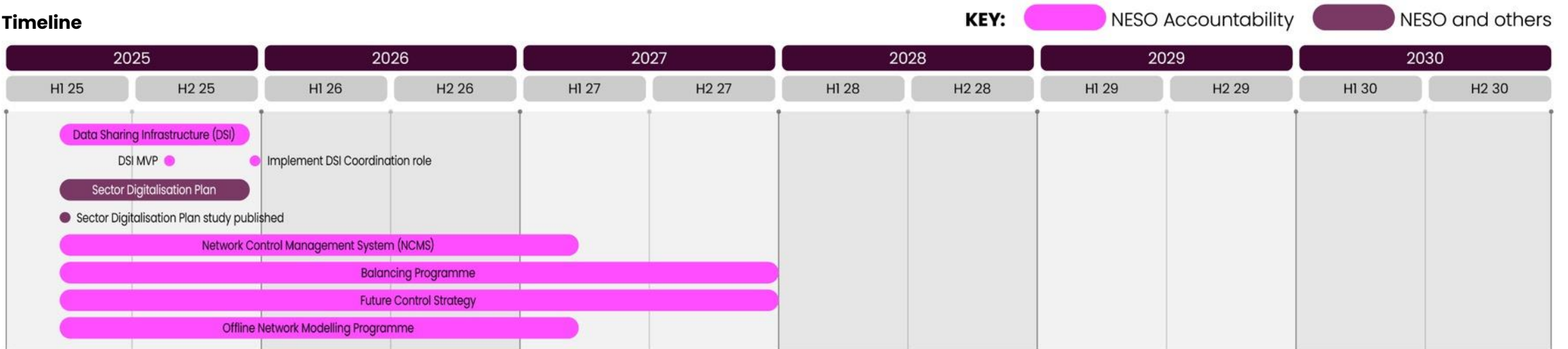


- Digitalisation & Innovation
- Markets & Investment



## Focus Area setup – Transformation of NESO's operational capabilities and digitalisation of the energy system

### Timeline



### Supplementary details

- Digital and Data underpins everything in our implementation plan for CP30.
- As published in our BP3 plans, we have an active program of works (e.g. OBP, Connections Platform, SEP, REMA etc.) to drive transformation of Digital and Data capabilities – powered through AI that enables our CP30 implementation plan.
- We also have a programme specifically reviewing the systems, processes and capabilities (including our people) required to operate the control room of the future

### Ofgem / DESNZ collaboration

- As the interim Data Sharing Infrastructure (DSI) Coordinator, over the next 4 years we will be orchestrating data sharing infrastructure facilitating a secure and resilient energy system, enabling improved simulation, forecasting and decision-making, whilst supporting a zero-carbon energy system.



The background is a solid dark purple. In the top-left corner, there is a cluster of overlapping circles of varying sizes. A grid of small, light-purple dots is arranged in a pattern across the middle and right portions of the image.

**NESO**

National Energy  
System Operator

