



national
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Welcome



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Emily Clark

Chief Strategy & Regulation Officer
National Gas



Agenda

Part I 9:30

The future role of gas in a clean power system

Tom Glover UK Country Chair, RWE

A Sustainable Gas Grid: The opportunity, security and growth from biomethane

James Wiseman Chief Operating Officer, Future Biogas

Driving Progress in New Molecules Projects

Corinna Burger Programme Director for Hydrogen & CCS, National Gas

Break (10:45 – 11:15)

Part II 11:15

UK Power Outlook - From ambition to execution

Andrew Horstead Global Power & Utilities Lead Analyst, Ernst & Young

Gas Storage – market flexibility & security of supply

Franck Turmel-Joek Managing Director, Storengy

Beyond single-vector thinking: Reshaping regional energy planning

Michael Avant-Smith CEO Designate, BMA

National Gas Operational Update

Alison Tann Head of Operational Delivery, National Gas

Lunch (12:30 – 13:00)



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Part I



Part I Speakers



Tom Glover
UK Country Chair



James Wiseman
Chief Operation Officer



Corinna Burger
Hydrogen & CCS
Programme Director





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Tom Glover

UK Country Chair

RWE



RWE

The future role of gas in a clean power system

RWE in the UK

RWE is the **leading power generator** in the UK, directly employing over 3,300 people and supplying the equivalent of around **12 million homes** from a diverse portfolio including onshore wind, offshore wind, solar, hydro, biomass and gas.

Our footprint is set to grow even further, with **over 20 projects under construction**, including Sofia offshore wind farm, three onshore wind farms in Scotland and nine solar PV sites in England (six of which are co-located with a battery).



MW: pro rata, based on equity share. Operational capacity as of 31 December 2025.
 Site placing is approximate. Some sites have multiple assets. Numbers may not sum due to rounding. Portfolio information is accurate as of 31st March 2026. All other information is accurate as of 31st December 2025. BESS: Battery Energy Storage Systems in construction at 6 solar sites.
 O&M: Operations and Maintenance. *Map includes North Hoyle (60 MW) operated, but not owned by RWE. **The synchronous condenser in construction at our Pembroke site will not produce electricity, but will provide valuable grid stability services, including reactive power support, voltage regulation, and inertia (equivalent to ~500 MWs).

UK

In operation	MW
● 11 Gas	6,969
● 10 Offshore wind*	1,912
● 33 Onshore wind	754
● 4 Solar	185
● 1 Biomass	55
● 21 Hydro	78
● 3 Oil	253

Assets	Total installed capacity
83	10,206 MW

Under construction	MW
▲ 1 Synchronous Condenser**	
▲ 1 Gas	23
▲ 1 Offshore wind	1,400
▲ 3 Onshore wind	195
▲ 9 Solar	442
▲ 6 Solar with BESS	202

Assets	Total installed capacity
21	2,262 MW

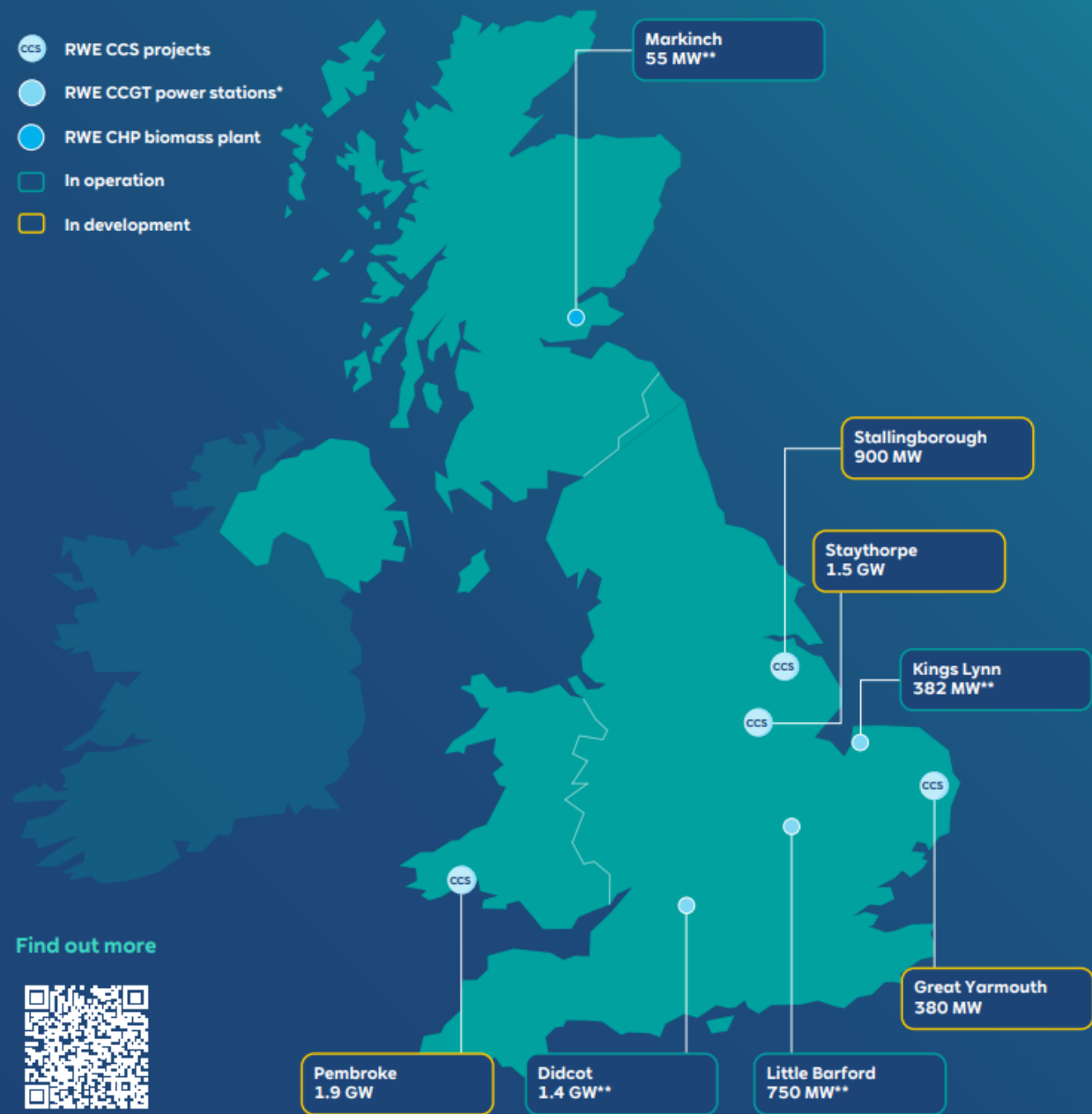
- Bases**
- 📍 Offices
 - 📍 O&M Bases

RWE's UK Gas Portfolio

RWE operates around 7 GW of modern and efficient gas-fired capacity in the UK, making us **one of the largest providers of firm, flexible generation.**

RWE annual gas volume (2024): ~19 TWh
~3% of total UK gas demand

-  RWE CCS projects
-  RWE CCGT power stations*
-  RWE CHP biomass plant
-  In operation
-  In development



Find out more



MW: pro rata, based on equity share. Operational capacity as of 31st December 2025. Site placing is approximate. Some sites have multiple assets. Numbers may not sum due to rounding. All information is accurate as of 31 December 2025. * Combined Cycle Gas Turbine (CCGT) power stations ** Estimated GW/MW output based on current operational capacity. The figures for Pembroke, Staythorpe, Stallingborough, and Great Yarmouth are based on expected output with CCS. This information may be subject to change, all projects are currently being assessed to determine the most appropriate decarbonisation options.

RWE

One potential future scenario

1

A scenario, not a prediction: electrification does most decarbonisation here, but other pathways could deliver the same outcome.

2

“Gas” mainly means methane: it may also include biogas and hydrogen depending on cost, policy and infrastructure.

3

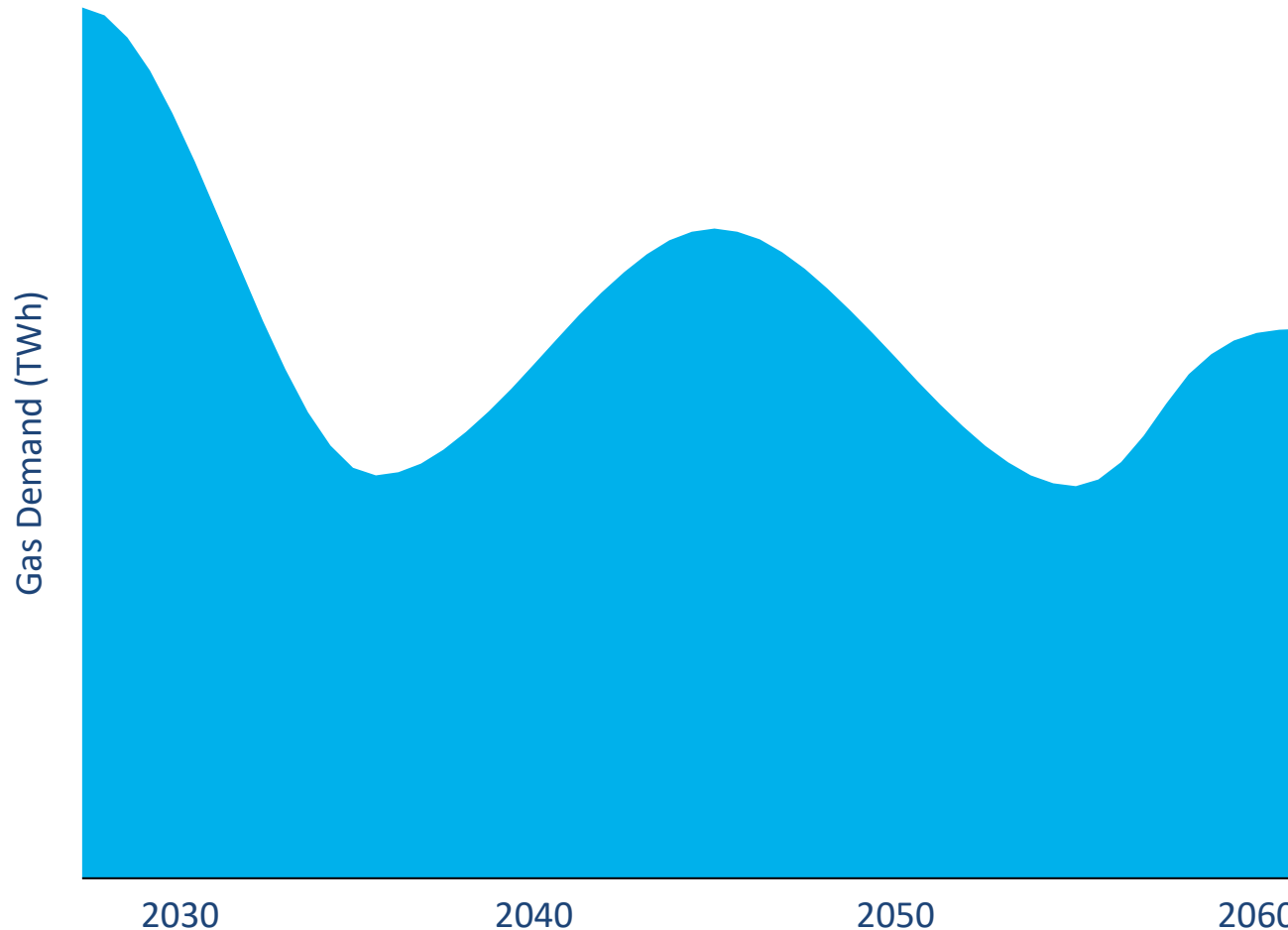
“Power from gas” includes abated and unabated technologies: the proportion of CC post-combustion or hydrogen pre-combustion will depend on cost, policy and infrastructure, the analysis doesn’t choose a single winner.

4

The numbers are uncertain: but the strategic question is robust – what gas system is needed when power demand rises and renewable vary.

In this scenario, annual gas demand for power generation does not materially decrease

Annual GB gas demand for power generation

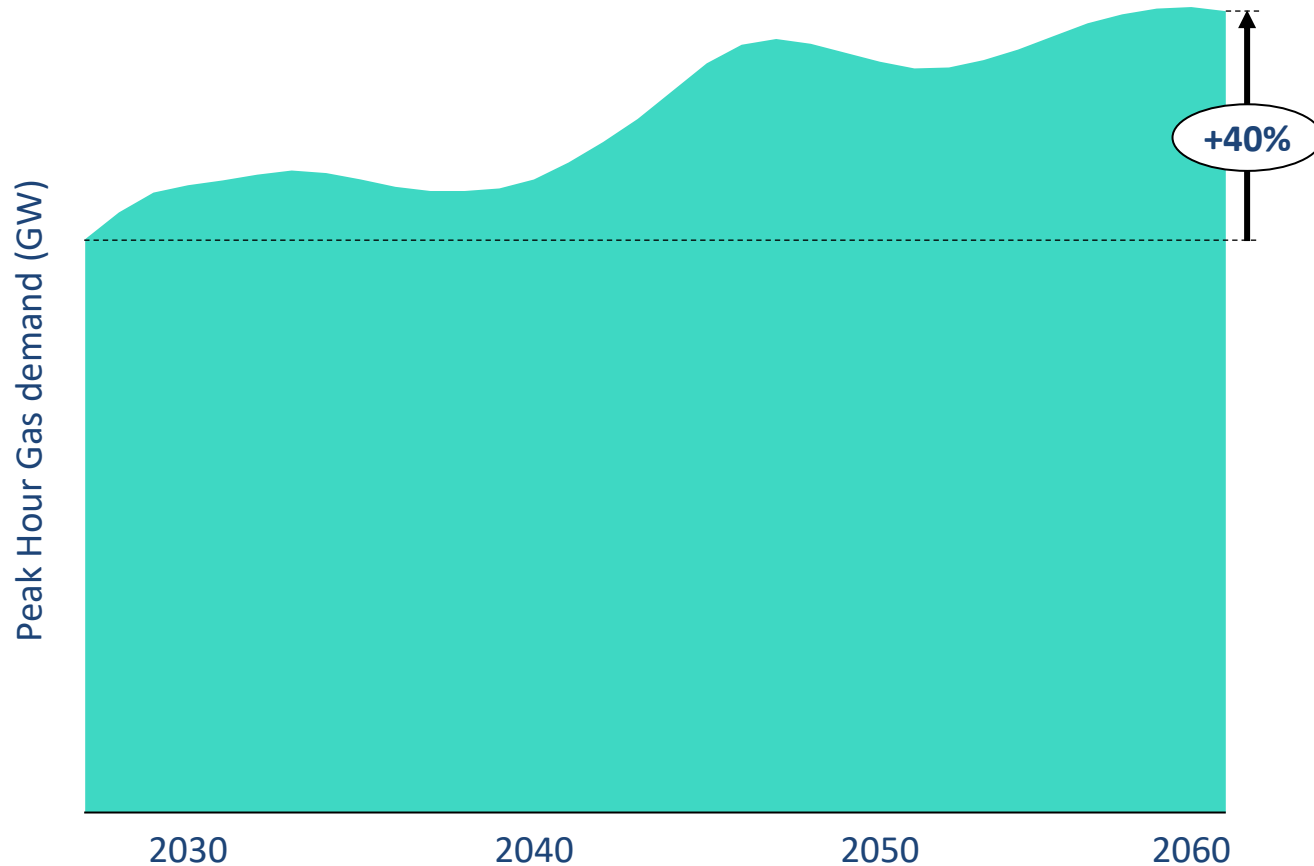


Comments

- ↑ Electrification raises power demand, putting upward pressure on gas use.
- ↓ Renewables and storage reduce average running hours for gas-fired plant.
- ? The net result depends on which moves faster: demand growth or clean buildout.
- ? Emissions depend on abatement choices – CCS, hydrogen and biomethane – not volume alone.

Peak demand is forecast to increase with electrification

Annual GB peak demand for power generation



Comments

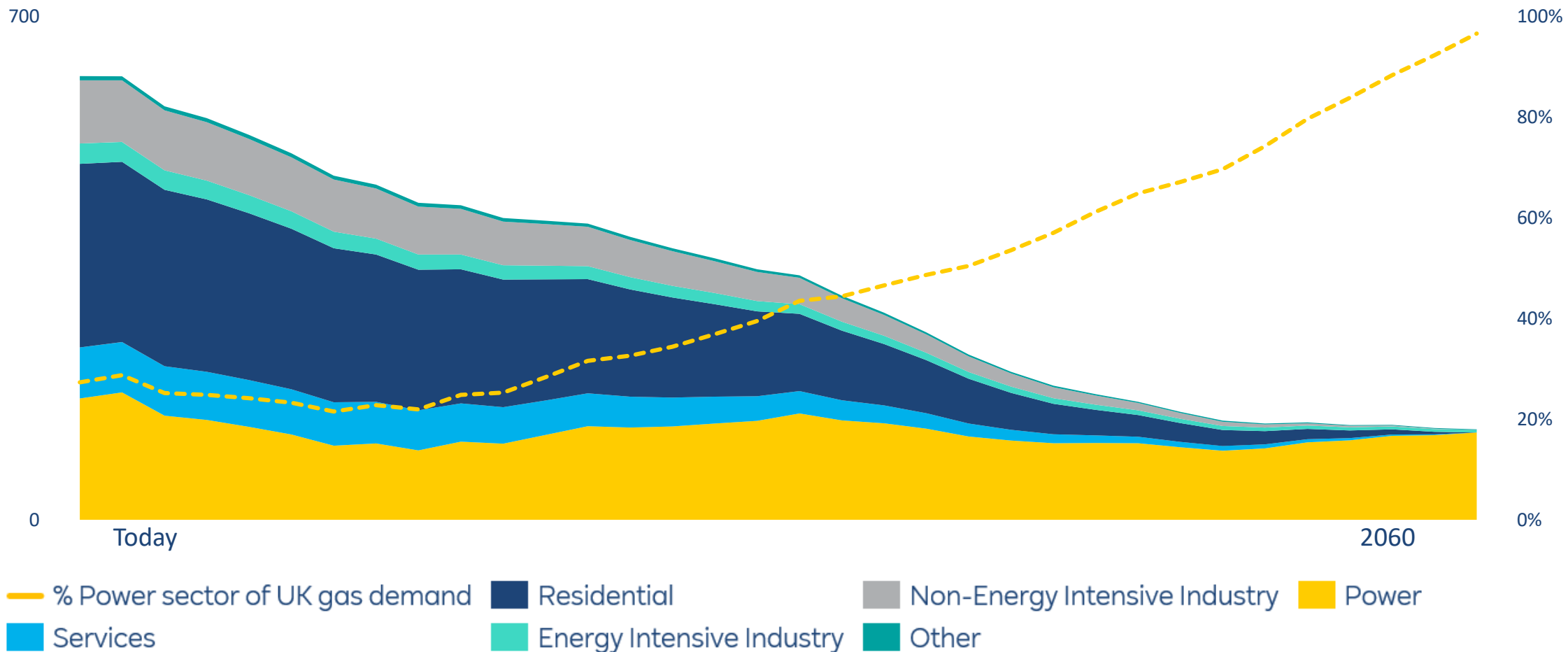
Most of the annual demand will be supplied by wind and solar energy.

The peak demand for power will also rise with increased electrification, and **in the infrequent long times of low renewable generation, gas-fired generation will be required to meet power demand.**



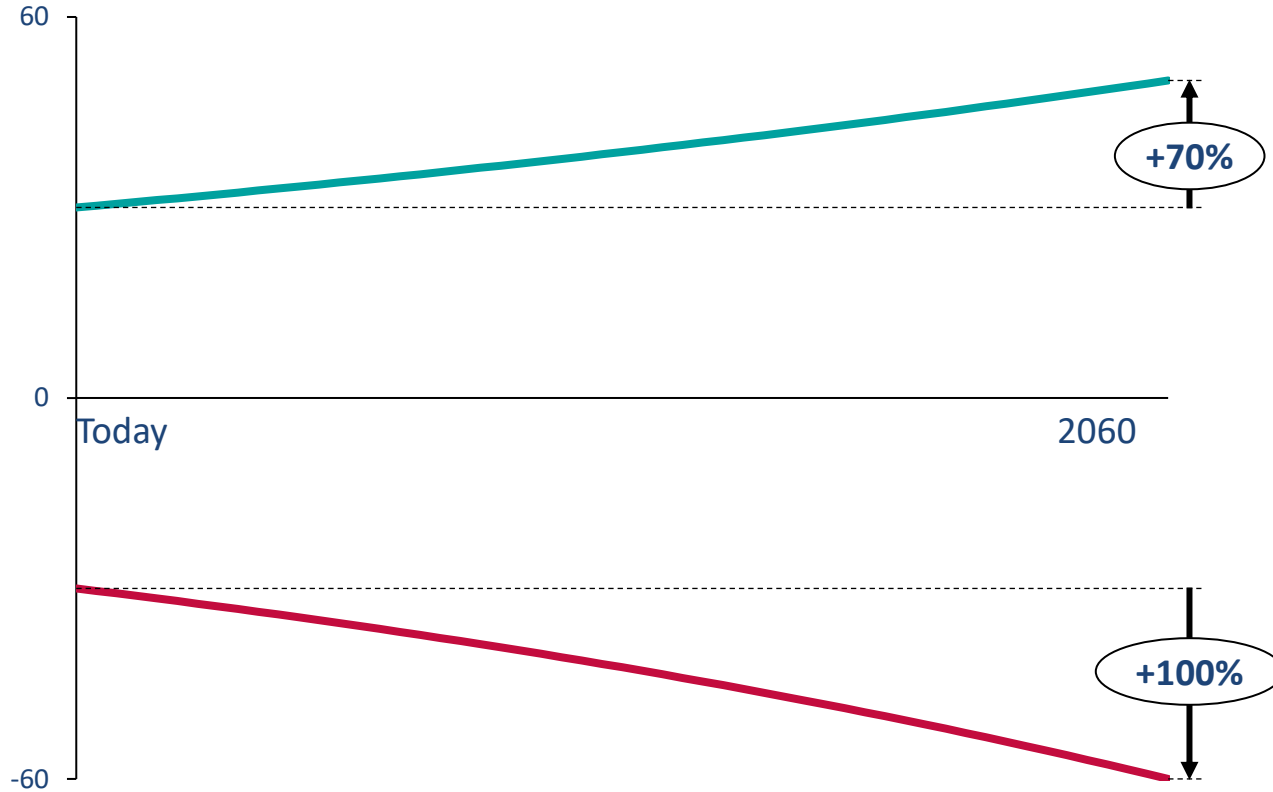
Power generation could become the gas sector's anchor demand

Forecasted UK gas demand by sector with electrification (TWh)



The challenge is volatility: gas swings faster and further

Forecast 3-hour gas demand for power largest rises/falls



Comments

The gas network may need to absorb **>50 GW swings** in demand within three hours.

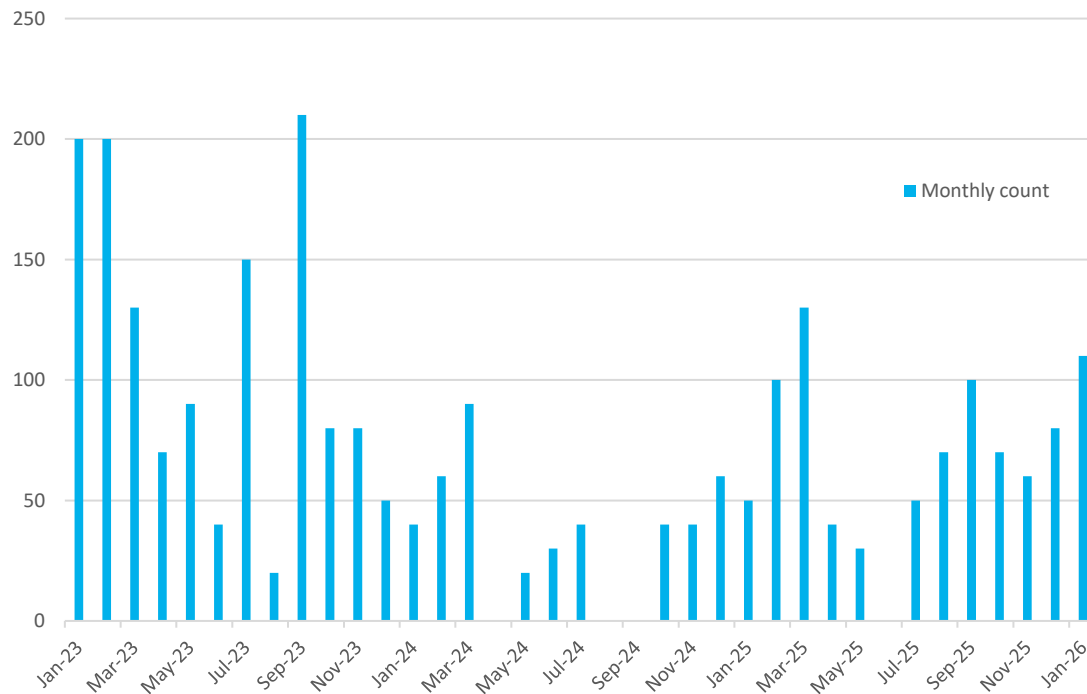
Higher peak electricity demand and variable renewable output drive those ramps.

Power becomes the swing customer for gas.

- Largest 3h gas demand increase for power
- Largest 3h gas demand decrease for power

Gas quality is becoming a power-system risk

RWE Power Station $\pm 5\%$ N₂ Fluctuations Monthly Count



Not Just About Legal Gas Quality Limits

Lower demand reduces diversity of gas supplies entering the system, limiting opportunity for effective blending and making gas quality less consistent.

Gas-fired power stations' operability issues are about **short-term (i.e. 5 mins) gas composition swings** and unpredictable $\pm 5\%$ fluctuations

- Gas quality within regulated safety limits can still be operationally unacceptable
- Gas generators would need to reduce load or turn off plant in future due to high variability/inconsistency of gas composition..

What this means for gas and power

1. Gas will remain essential for power generation
2. Gas demand for power generation will become more volatile
3. Power could become the anchor demand for gas
4. If electricity demand grows, the peak demand of gas for power will increase
5. Gas quality becomes a security of supply issue and needs managing

Emissions depend on which abatement routes scale: CCS, hydrogen, biomethane or a mix.

Key question: can the gas system deliver lower annual volumes but sufficient quality and larger, faster swings?



A cleaner power system does not remove gas-system risk – it shifts it from annual volume to flexible, high-quality deliverability.



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James Wiseman

Chief Operating Officer
Future Biogas



A Sustainable Gas Grid

The Opportunity, Security and Growth from Biomethane

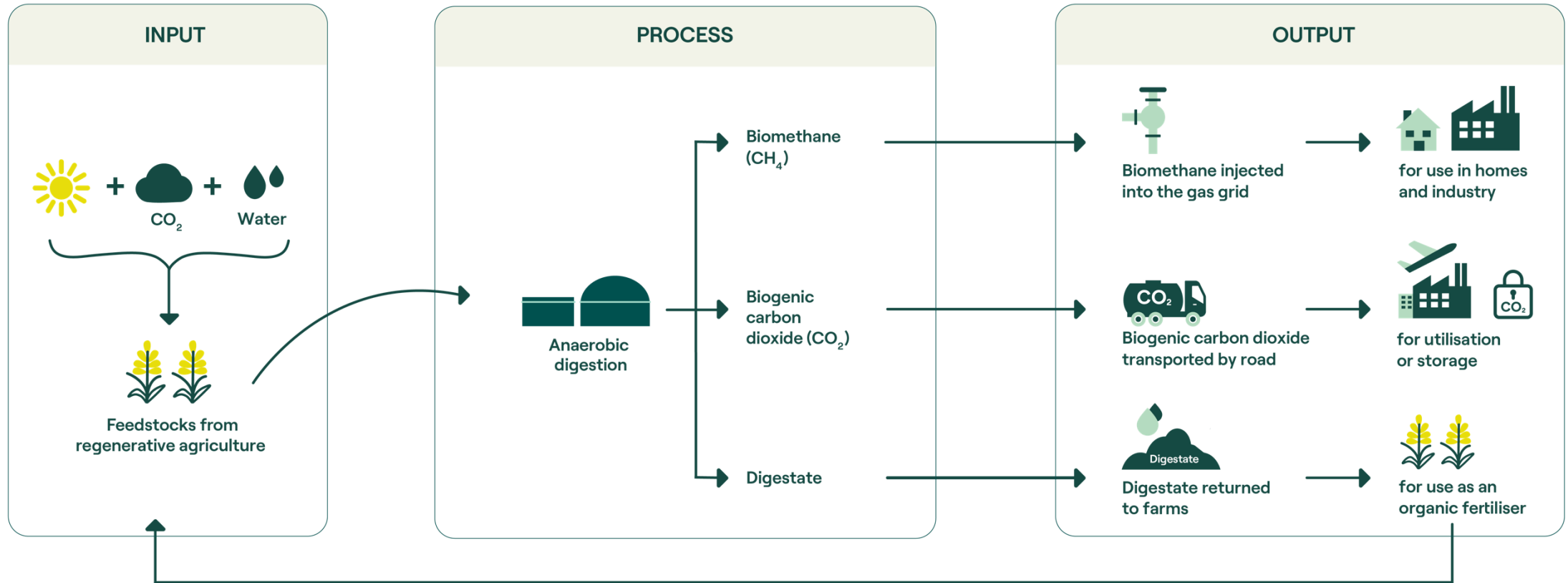
Contents

- The Anaerobic Digestion (AD) process
- Future Biogas at a glance
- Potential future expansion of the AD sector
- A sustainable gas grid
- Carbon life cycle assessment
- CCS opportunities from biomethane






The anaerobic digestion process




Feeding > Digestion > Upgrading > Injection



Leading UK operator

0.6  TWh
biomethane generated p.a.

11 
existing AD plants

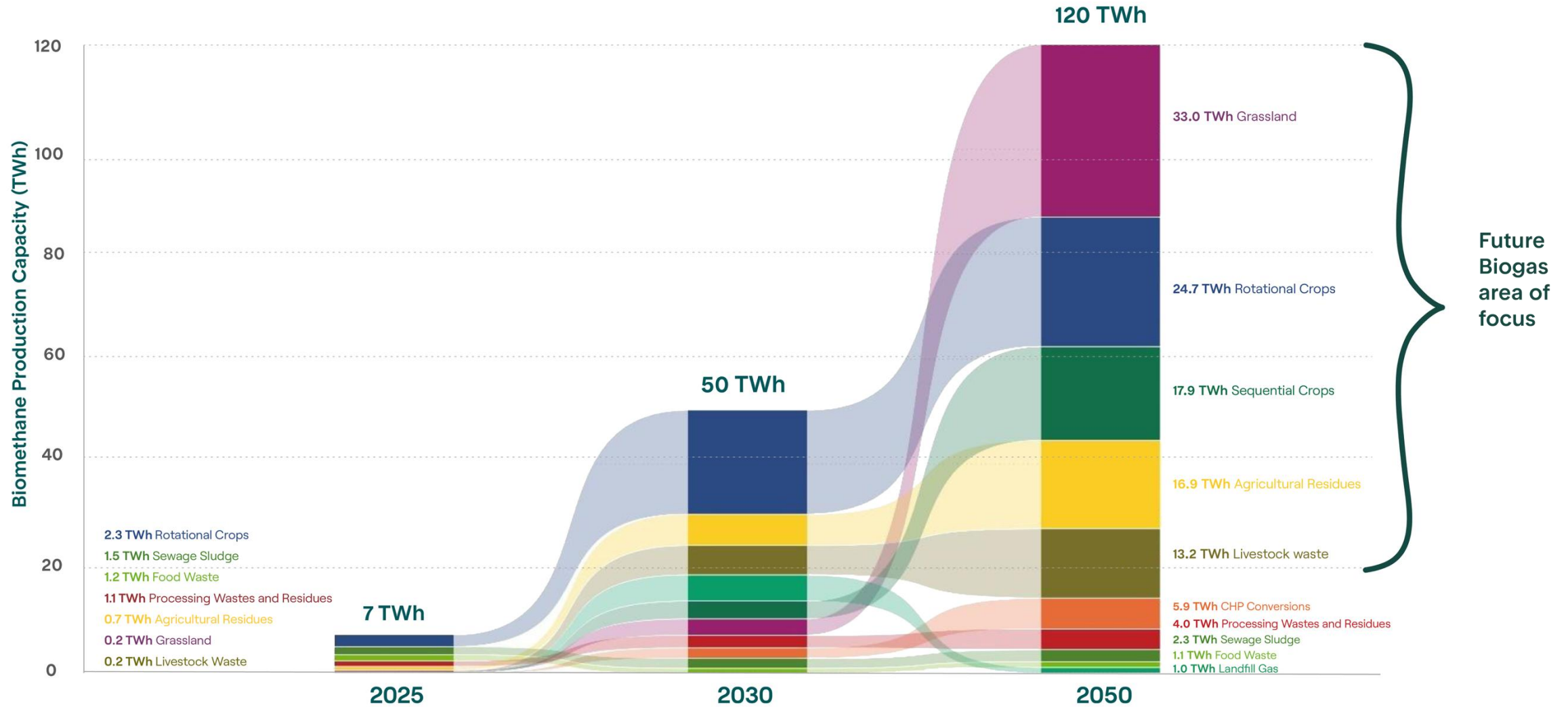
1.2  TWh
biomethane generation
p.a in planning.

400+ 
farmers working with us





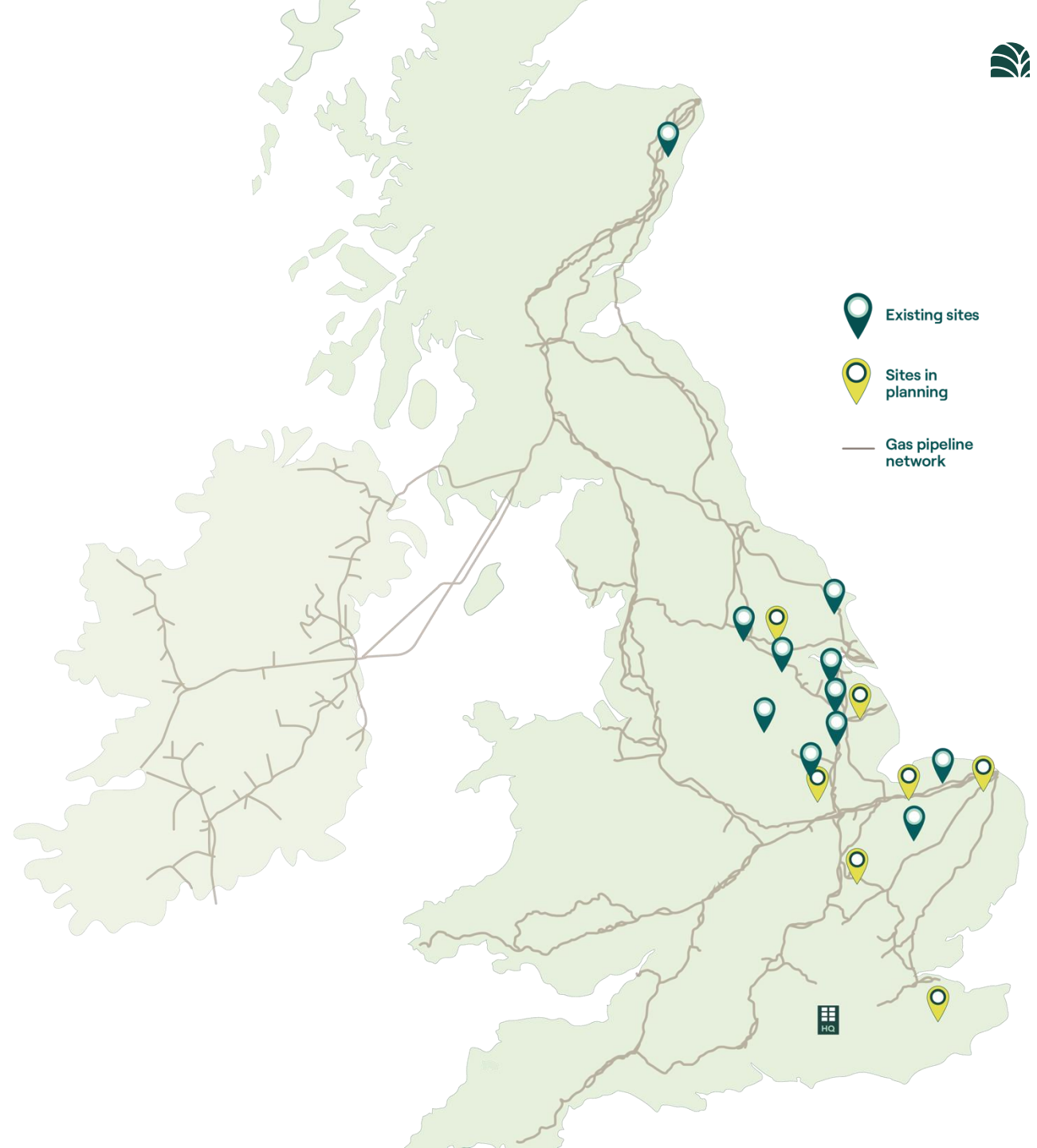
Biomethane Potential from AD Plants





A sustainable gas grid

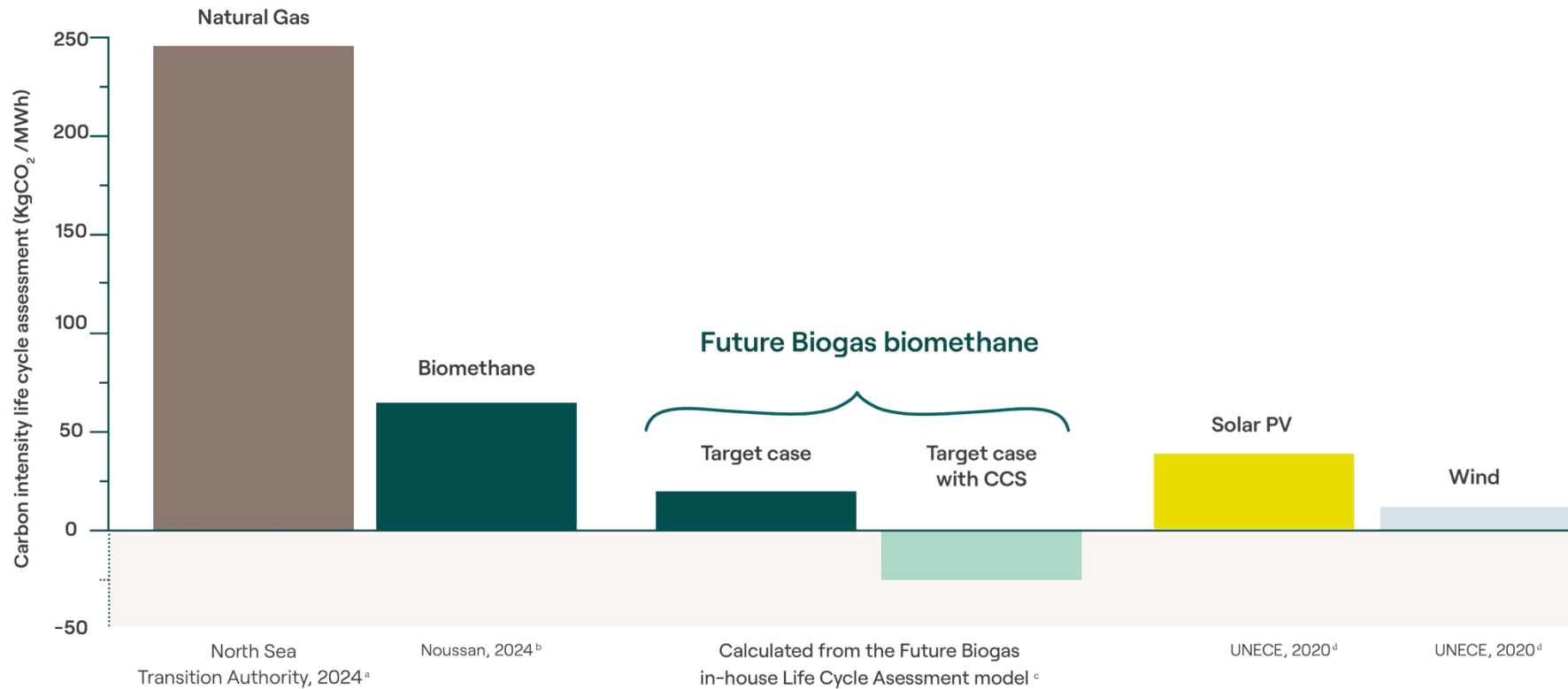
- A continued UK need for gas (flame, energy security, price stability, electricity baseload)
 - Counterfactual alternatives
- A fully utilised gas grid offering value for money for consumers
- Robust well-maintained network with sufficient capacity and capability of gas engineering support
- A manageable carbon intensity across the grid





Life cycle assessment

Carbon intensity across different energy sources.



^a <https://www.nstauthority.co.uk/media/nupk5sx/emissions-intensity-of-producing-natural-gas-factsheet-sept-2024.pdf>. (2023). (<https://theicct.org/recommendations-for-a-stringent-iso-standard-on-the-greenhouse-gas-emissions-from-blue-hydrogen-production/>)

^b Noussan, M., Negro, V., Prussi, M. & Chiaramonti, D. The potential role of biomethane for the decarbonization of transport: an analysis of 2030 scenarios in Italy. Appl. Energy 355, 113736 (2024). DOI: 10.1016/j.apenergy.2023.113736

^c FB LCA_BECCS Model v3.13

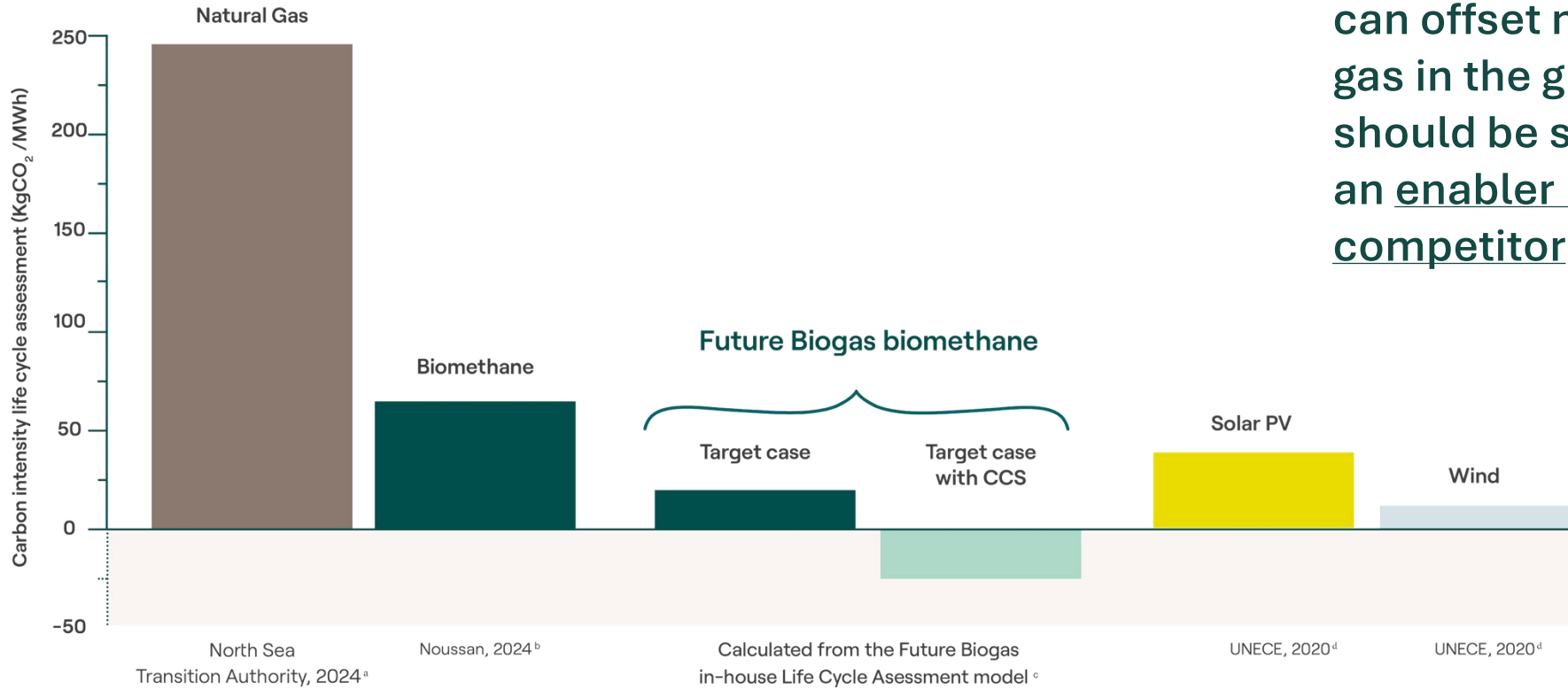
^d UNECE. Carbon neutrality in the UNECE region: integrated life-cycle assessment of electricity sources. United Nations Economic Commission for Europe (2020). (https://unece.org/sites/default/files/2022-07/LCA_0708_correction.pdf)





Life cycle assessment

Carbon intensity across different energy sources.



UK Energy Mix:

While biomethane can offset natural gas in the grid it should be seen as an enabler not a competitor

^a <https://www.nstauthority.co.uk/media/nupk5sx/emissions-intensity-of-producing-natural-gas-factsheet-sept-2023.pdf>. (2023). (<https://theicct.org/recommendations-for-a-stringent-iso-standard-on-the-greenhouse-gas-emissions-from-blue-hydrogen-production/>)

^b Noussan, M., Negro, V., Prussi, M. & Chiaramonti, D. The potential role of biomethane for the decarbonization of transport: an analysis of 2030 scenarios in Italy. Appl. Energy 355, 113736 (2024). DOI: 10.1016/j.apenergy.2023.113736

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^d UNECE. Carbon neutrality in the UNECE region: integrated life-cycle assessment of electricity sources. United Nations Economic Commission for Europe (2020). (https://unece.org/sites/default/files/2022-07/LCA_0708_correction.pdf)





CCS Opportunities

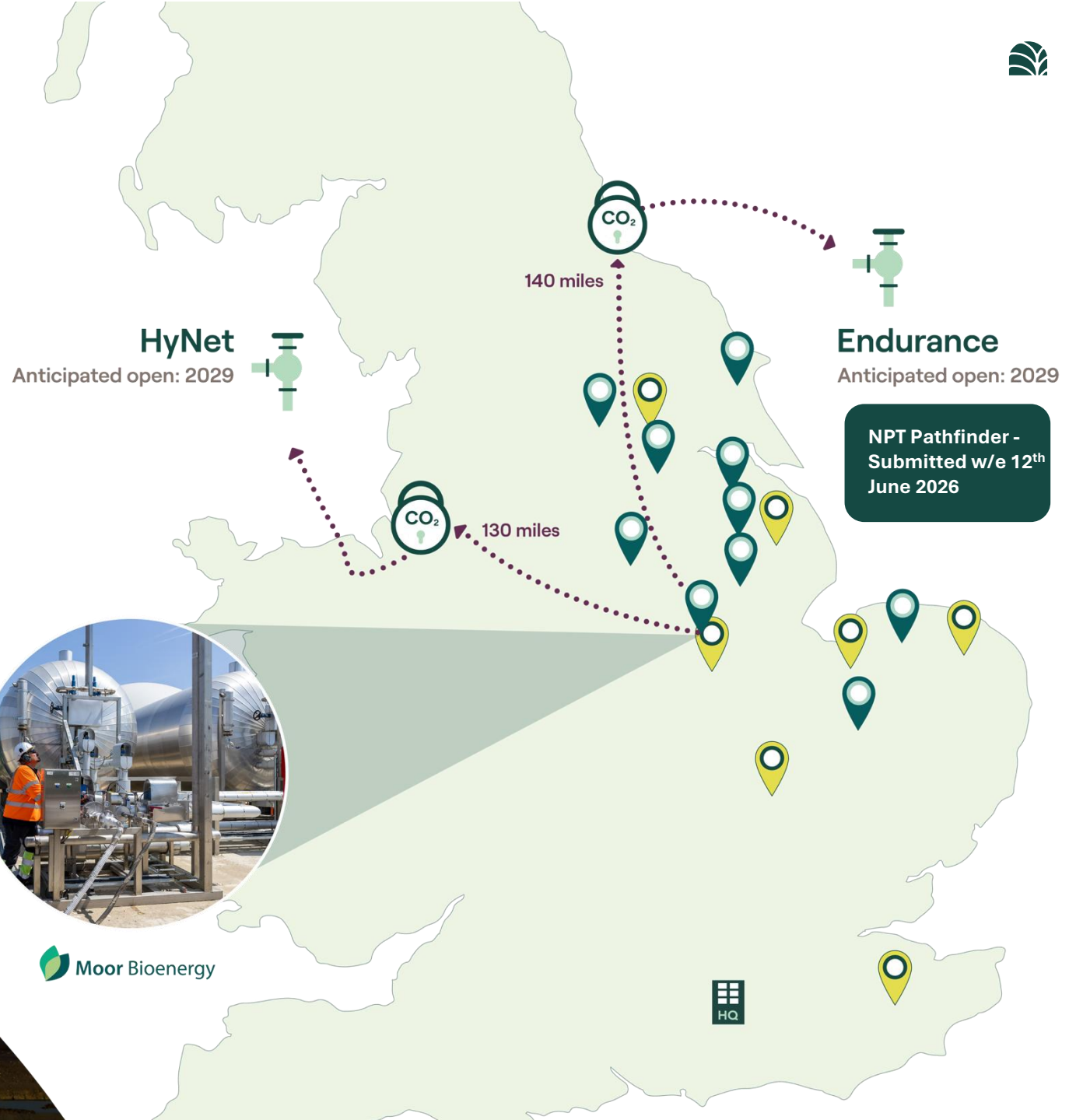
Future Biogas could capture >200 kt of biogenic CO₂

of BioCO₂ annually by 2030

-  Existing sites
-  Sites in planning
-  CO₂ terminal
-  CO₂ reservoir



 Moor Bioenergy





What Next

Continued growth of biomethane...

- FB working with policy makers, corporate gas offtakers and feedstock providers
- Continued FB focus on local planning and supply chain mobilisation
- Multiple new future connections
- Propanation forward strategy (notably for gas distribution)
- Grid pressure management (notably for gas distribution) – changes aligned to user and generator locations and volumes
- Open invite to come to our Gonerby site – Moor Bioenergy (just off the A1 at Grantham)





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Corinna Burger

Programme Director for Hydrogen & CCS
National Gas





Driving Progress in New Molecule Projects



Greening Natural Gas
Renewable Bio-gas or synthetic fuels for hard to electrify options could be used in the transition



CCUS
Alongside the use of Natural Gas and its derivatives this could enable us to be Net Zero



Continued Use of Natural Gas

Some users in the UK are hard to electrify, natural gas with carbon capture could support



Hydrogen
Green and Blue hydrogen along with Pink, Yellow etc... will have a role in the future decarbonisation



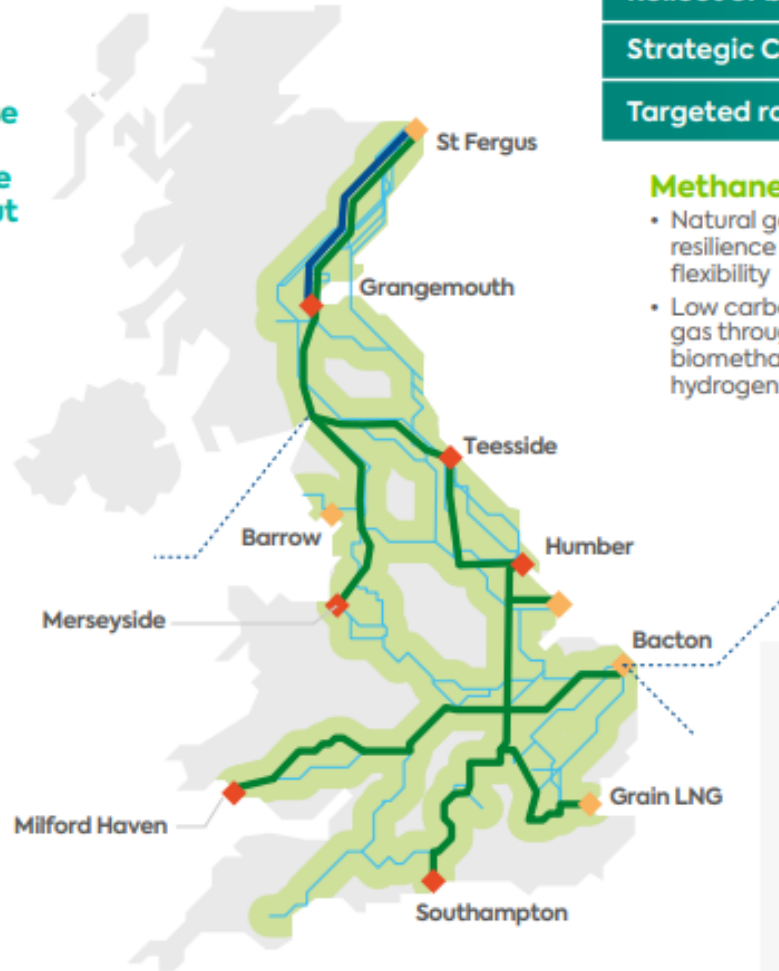
Electrification
Power generation using gas (natural gas or hydrogen) is required to fill the gap when renewables are not available

Net Zero Opportunities for the NTS

Pathways to Net Zero are expected to require a combination of approaches and technologies

The Three Molecule Approach

The three-molecule approach encompasses the continuation of natural gas delivery, while reducing the carbon content through biomethane and hydrogen blending with the use of Carbon Capture, Utilisation and Storage (CCUS) to capture emissions; alongside the rollout of 100% hydrogen pipelines as we transition to net zero.



Rollout of biomethane and hydrogen blending

Strategic CCUS connections

Targeted rollout of 100% hydrogen pipeline connections

Methane

- Natural gas resilience and flexibility
- Low carbon gas through biomethane and hydrogen injection



Carbon Dioxide

- Carbon capture and transportation of industrial blue hydrogen production emissions



Hydrogen

- Multiple hydrogen production routes will have a role in future decarbonisation
- Core hydrogen network through repurposed and new build transmission pipelines

National Gas flagship projects

Project Union: repurposing existing gas transmission pipelines and build new pipelines to create a hydrogen 'backbone' for the UK.

FutureGrid: providing vital insights into hydrogen transportation and blending, to support the full-scale conversion to hydrogen.

SCO₂T: supporting the development of Carbon Capture and Storage (CCS) in the Scottish cluster.

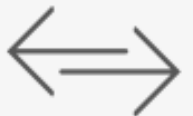
Net zero 2050



Levelling up, job creation



Global leader in green innovation

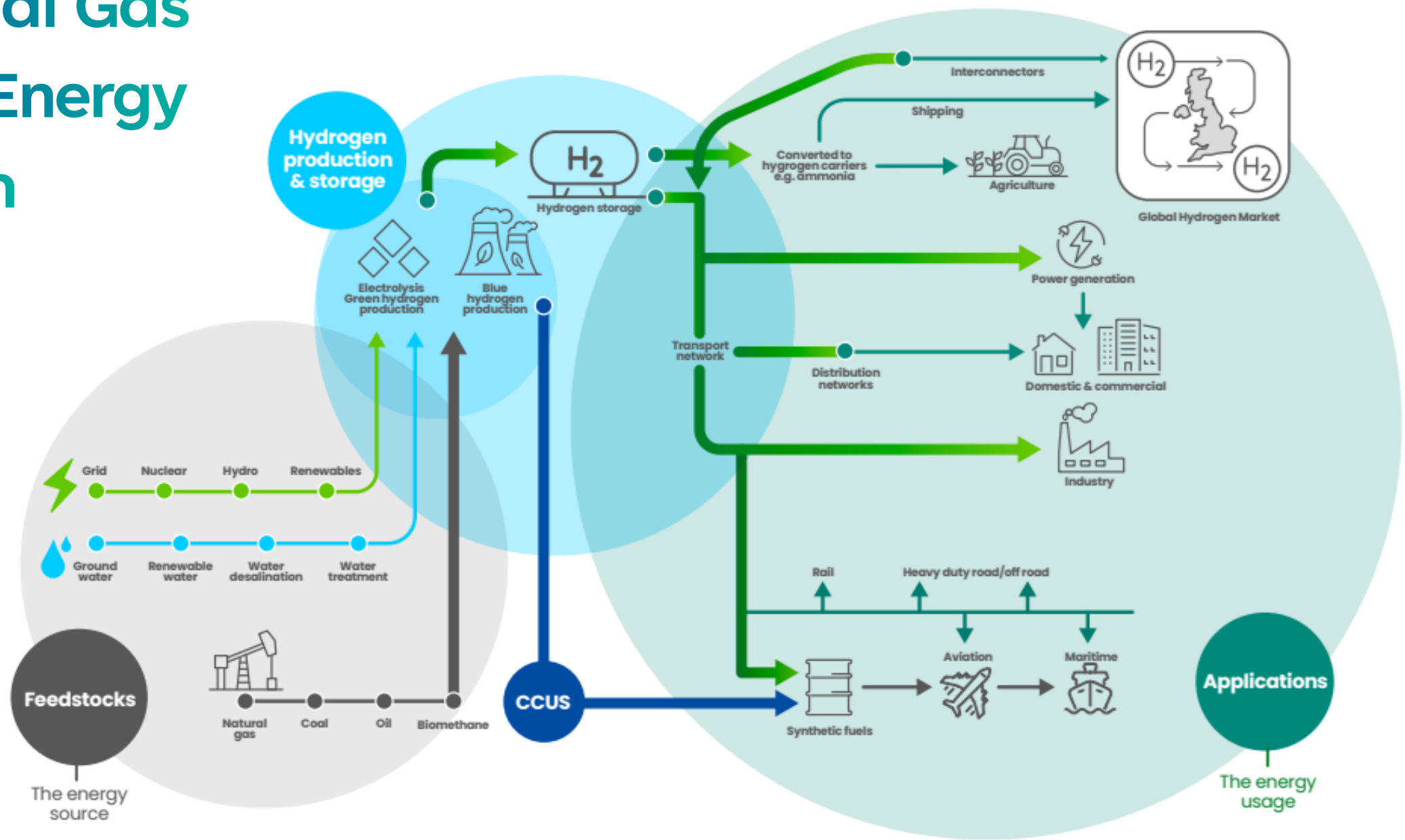


Providing flexibility and optionality

National Gas in the Energy System

Key

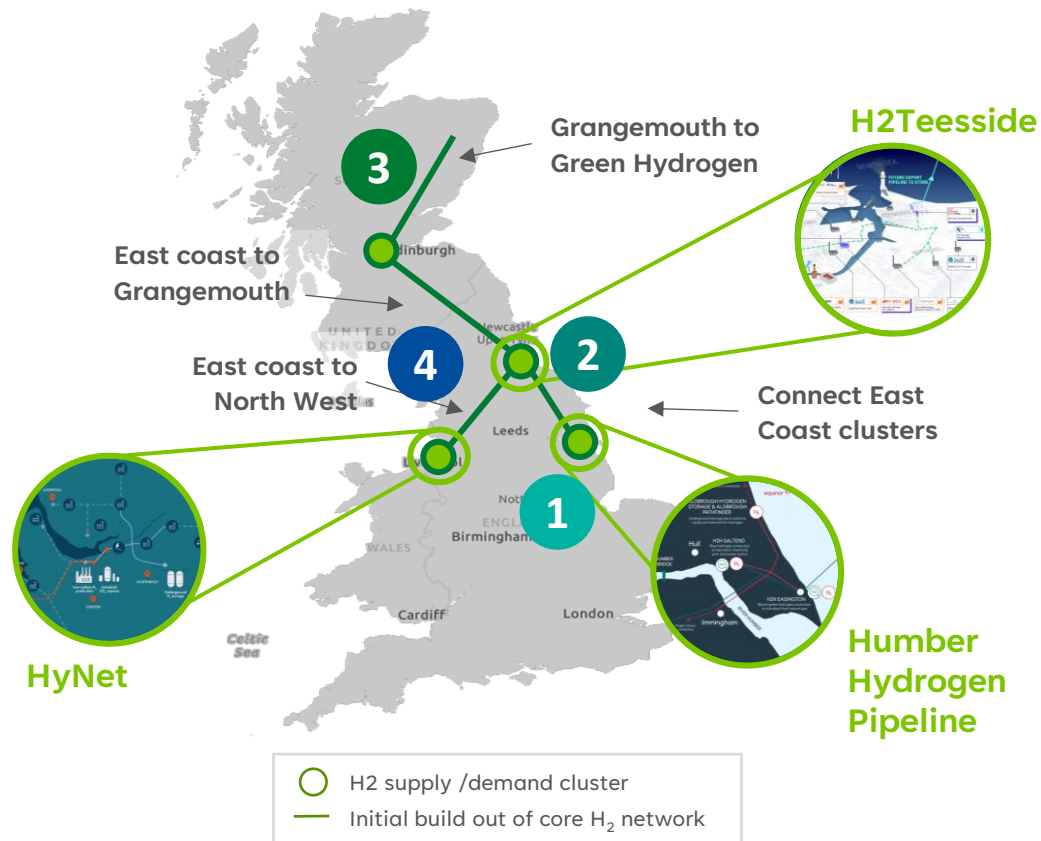
- Low carbon gas
- Carbon gas
- Hydrogen and hydrogen blends



Maximising the Value of Hydrogen Infrastructure

Connecting low-cost green H₂ production to high-demand and storage hubs in the Humber, unlocking system-wide value and accelerating delivery of the Clean Power 2030 mission

Initial build out of core H₂ network



Enabling a Phased Delivery of the UK Hydrogen Backbone

1. Deliver HHP

Establish core infrastructure to provide access to large-scale hydrogen storage, essential for hydrogen-to-power (H₂P) at scale.

2. Connect Teesside to Humber

Link Teesside hydrogen production with Humber storage and demand, enabling integration with other regional hydrogen hubs.

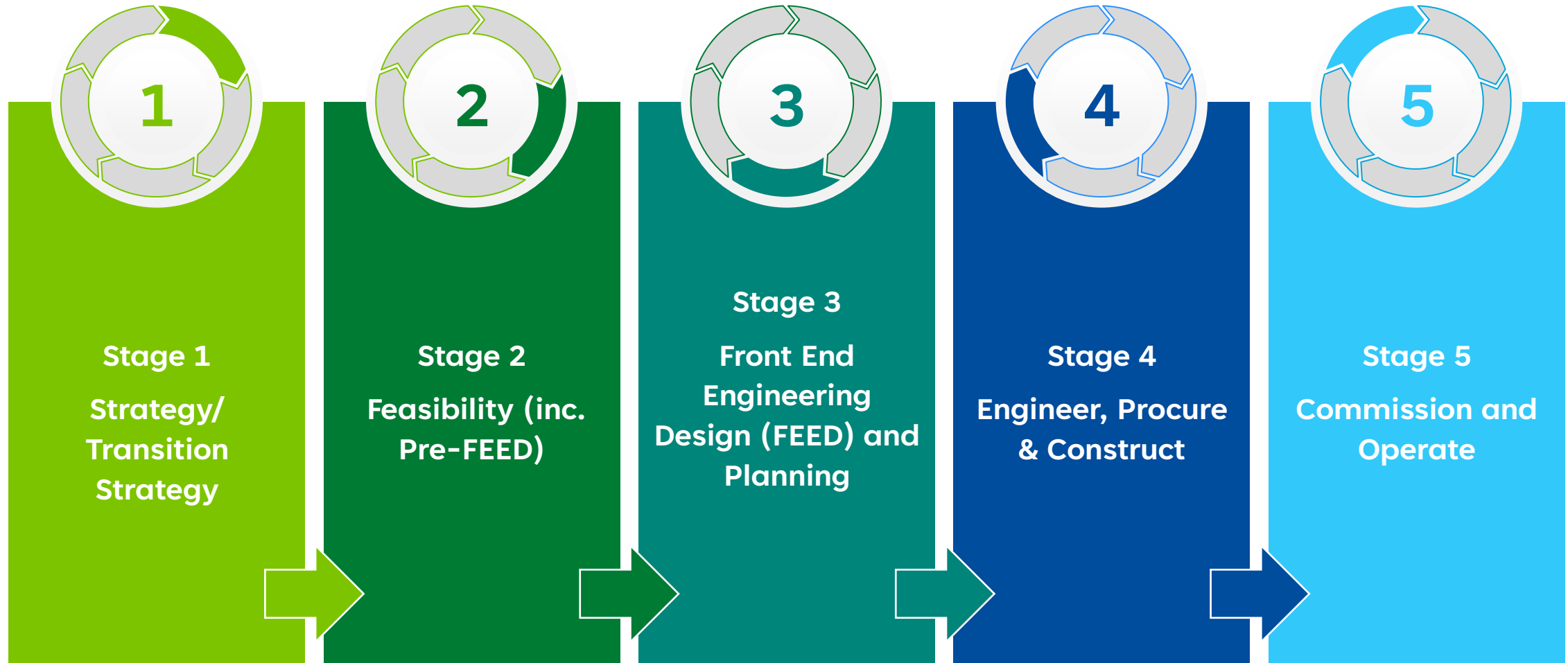
3. Integrate Scottish Green Hydrogen

Connect Scottish green hydrogen production to Humber storage and power generation, critical for full power sector decarbonisation.

4. Connect East and West Coast Clusters

Expand the network to link other major hydrogen clusters across the UK, enhancing system resilience and flexibility.

The project development process



Our focus for FEED

Our work during the 2-year Front End Engineering Design (FEED) stage will focus on developing the following aspects, with much of this already underway.



Uncertainty Drivers



Complex Regulations

- Evolving and often uncertain regulatory and policy frameworks create ambiguity in investment and delivery pathways
- High regulatory complexity and administrative burden can slow project approvals and increase cost
- Cross-jurisdictional and multi-regulator environments introduce complex approval processes and coordination challenges across infrastructure, safety, and environmental regimes



Market Volatility

- External influence on the market and approach to decarbonization
- High cost differentials between new molecules and current solutions
- Uncertain demand and supply signals due to funding uncertainty
- Potential for under utilization of infrastructure in early-stage delivery



Technology Risks

- First of a kind infrastructure projects and scale
- Lack of mature or consistent technical standards impacts design certainty, supply chain readiness, and contractor pricing
- Repurposing vs new build cost and technical risks
- Limited test data and operational track records
- Dependency in emerging supply chains
- Risk of late engineering changes



Uncertainty in Project Funding

- Funding models are reliant on unfinalized or evolving government mechanisms
- Competition for finite regulatory and public funding
- Investor confidence is highly sensitive to policy stability, demand certainty and long term revenue frameworks
- Customer changes and limited commitment

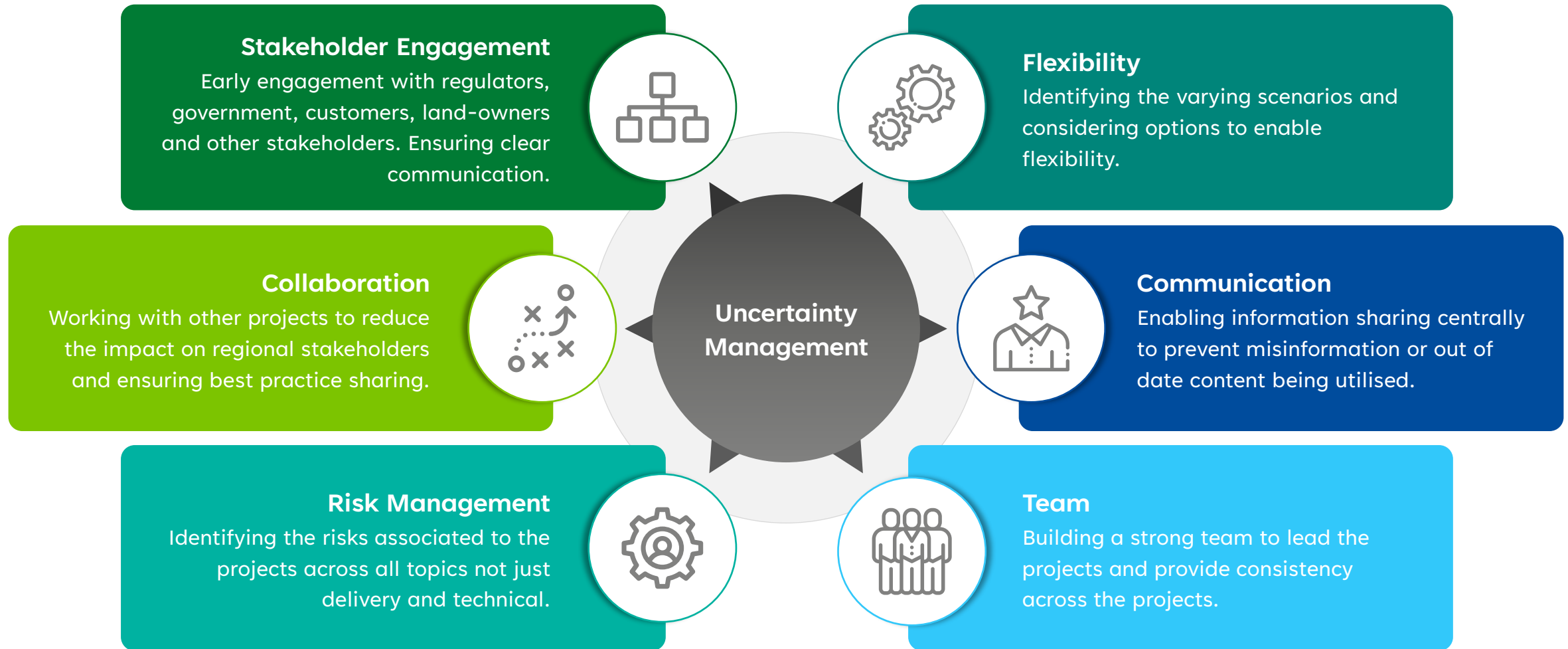


Government Engagement

- Dependency on government policy, incentives and strategic direction
- Frequent policy changes and political shifts can alter project assumptions, timelines, and stakeholder support mid-delivery
- Changes in political leadership and priorities through project delivery
- Effective engagement is required to shape policy frameworks, consultation outcomes and regulatory approvals

Managing the Uncertainty


New Molecules projects





Enabling the Following Outcomes

Successfully managed uncertainty will enable the following outcomes:


 **Robustly engineered infrastructure**
Delivering resilient, high-quality infrastructure designed for safety, performance, and long-term operability.

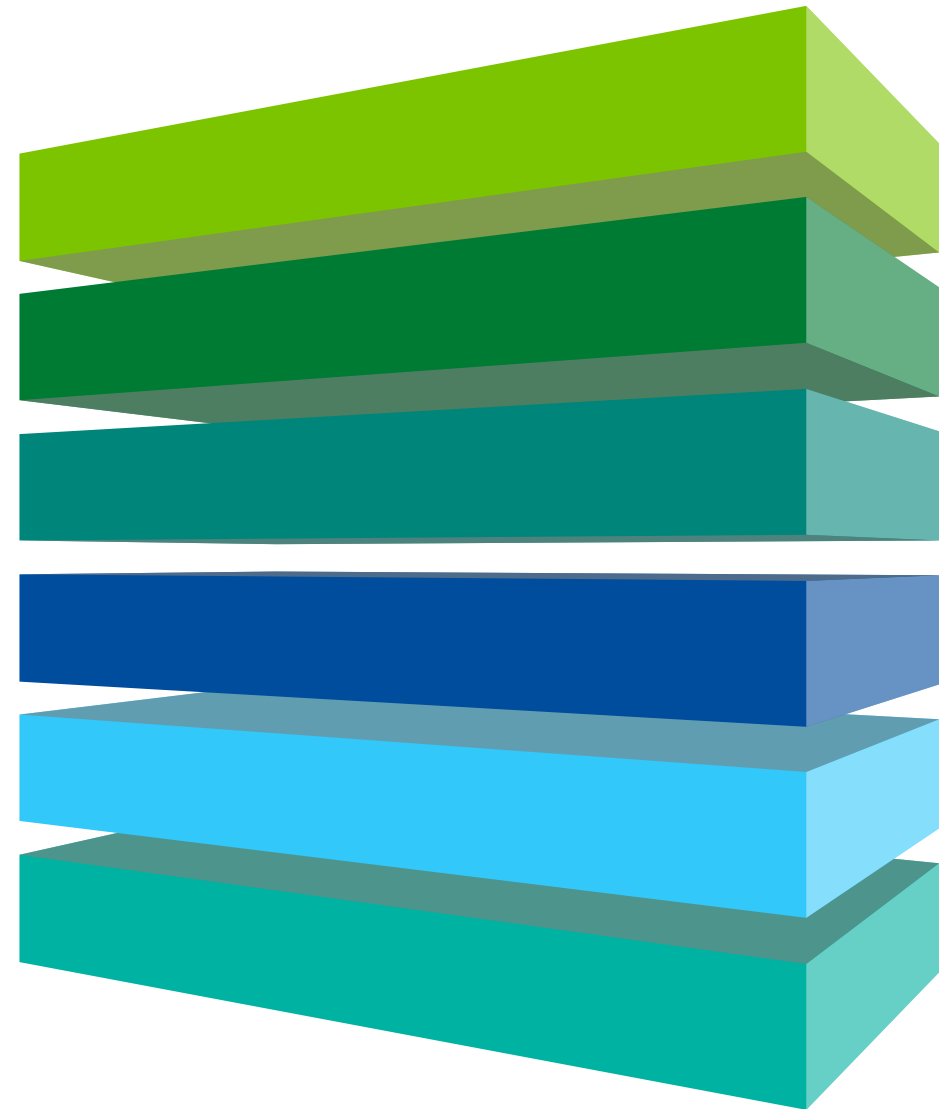
 **Evidenced cost estimates and assumptions**
Providing transparent, data-driven cost estimates underpinned by validated assumptions and clear methodologies.

 **Enabling on time delivery**
Establishing the controls and readiness required to ensure projects are delivered safely and to schedule.

 **Aligned projects and interests**
Ensuring all projects are strategically aligned with stakeholder priorities and programme objectives.

 **Project delivery and execution plans**
Developing comprehensive, integrated plans that clearly define scope, schedule, risks, and delivery approach.

 **Sustainability**
Embedding sustainable practices and low-carbon principles into design, delivery, and long-term operation.



Project Union: East Coast proposed route

The first phase of **Project Union** will be in the East Coast of England, where much of the country's hydrogen will be generated.

Proposed route corridor comprises over **300-miles** of repurposed and new build pipeline infrastructure connecting critical industries across Teesside, the Humber and East Midlands regions.

Project Union: East Coast will help to build **energy security** for the UK by enabling a transition to more **home-grown, low-carbon** energy for hard-to-decarbonise industries.

This is next stage in the **evolution of gas supply**.

We are currently in a **two-year development phase of design**, environmental assessment, consents and public consultation.

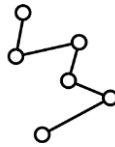
With the East Coast's industrial heritage at its core, Project Union aims to create a **robust supply chain**, unlocking opportunities for businesses across the entire **hydrogen value chain**.



Humber Hydrogen



Partnership between National Gas, Centrica, Equinor, and SSE Thermal to create the first regional hydrogen network



Will connect key hydrogen sites in the Humber region across East Yorkshire and North Lincolnshire



Aiming to secure funding (approx. £500m) through first HTBM allocation round





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Up Next: Part II – 11:15



Part II Speakers



Andrew Horstead
Global Power & Utilities
Lead Analyst



Franck Turmel-Josek
Manager Director



Michael Avant-Smith
CEO Designate



Alison Tann
Head of Operational Delivery





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Fr^{an}ck Turmel-Josek

Managing Director
Storengy



storengy

A company of  ENGIE

Gas Storage – Market flexibility and security of supply



Summary

Storengy 70 years of expertise

Assets in France, Germany and in the United Kingdom.

What is an underground gas storage?

Depleted, Aquifers and Salt Caverns serve different purpose.

Storengy UK – Stublach site is a flexible asset

Illustration of fast cycling and fast delivery. Flexibility!

UGS security of supply & wrap up

Storages are an essential part of the gas infrastructure

Hydrogen

Long-Term Energy storage.

Natural gas storage's leader for 70 years

1st



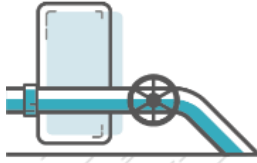
Gas storage operator in Europe

more than

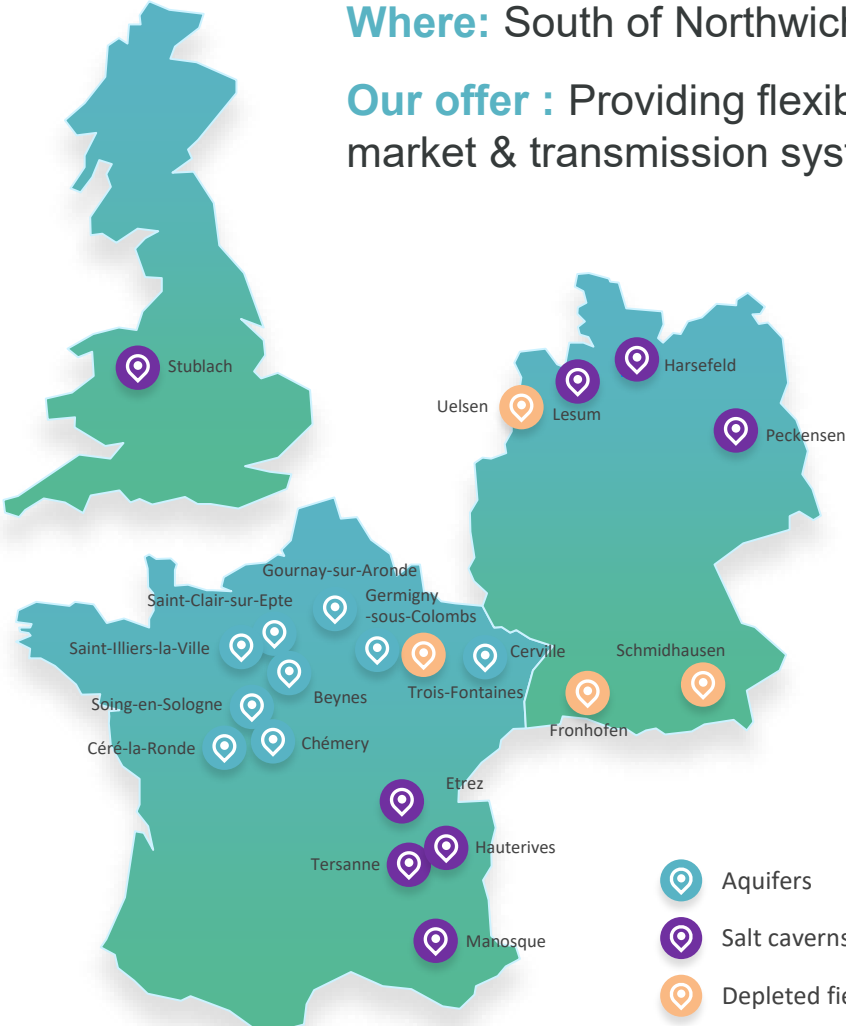


1,000 employees

21



storage sites in Europe



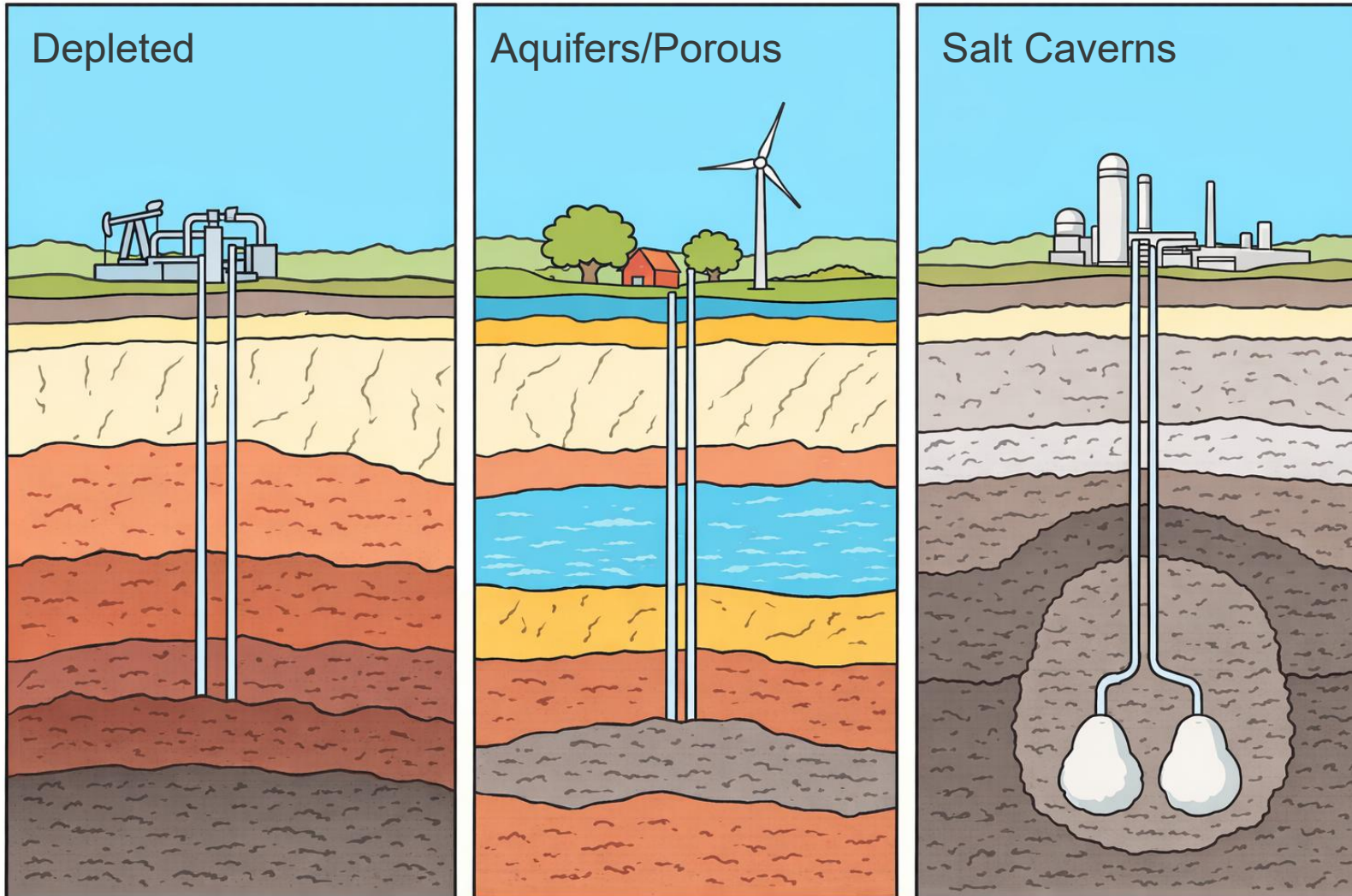
Stublach

The site: The largest salt cavern storage site in the UK – WGV around 5TWh

Where: South of Northwich, Cheshire.

Our offer : Providing flexibility to the UK gas market & transmission system

Underground gas storage different technologies serve different demand profile and offer different flexibility



Working Gas Volume (TWh)
Deliverability GWh/day
Injection and withdrawal speed

Depleted & Aquifers

Best use cases

- Seasonal large-volume storage
- Strategic long-term storage
- Can deliver significant flowrate during a long period of time

Salt Cavern

Best use cases

- Fast cycling flexibility
- Strategic long-term storage
- Can deliver massive flowrate during a shorter period of time

Stublach Flexible Fast Cycling Storage is 5 TWh with a 30/30 commercial offer

600 m (2000 ft)

Average cavern depth

20

Salt Caverns

**30 – 95 bar
(450 – 1400 psi)**

Cavern pressure range

400x10⁶ m³ (~14 BCF)

WGV storage capacity

15 Days In/Out

Time to empty/Fill Storage

12 Max SEC

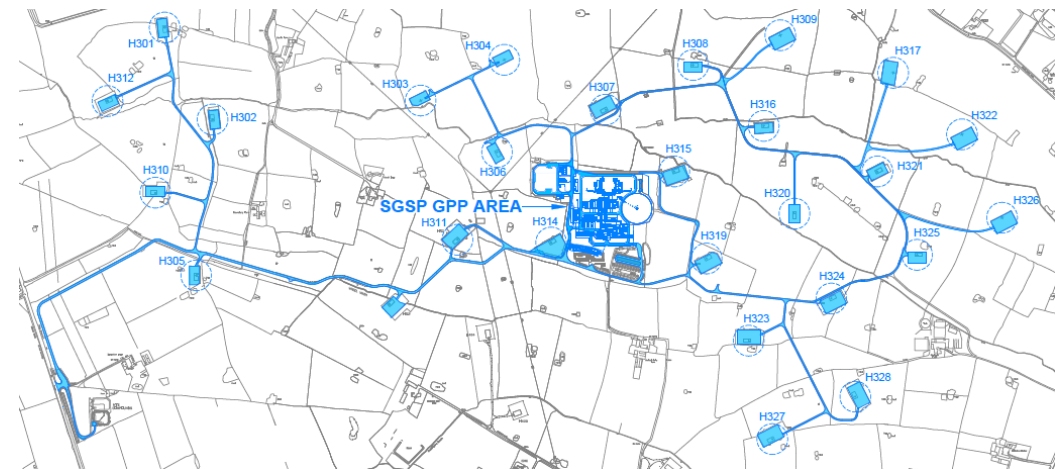
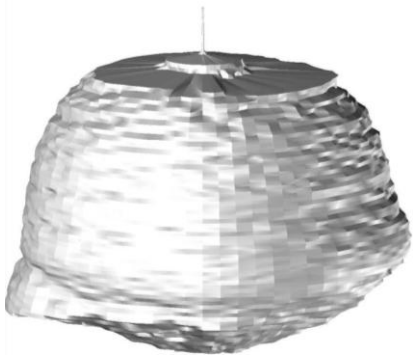
Original design

**343 GWh/d Withdrawal
323 GWh/d Injection**

Stublach records

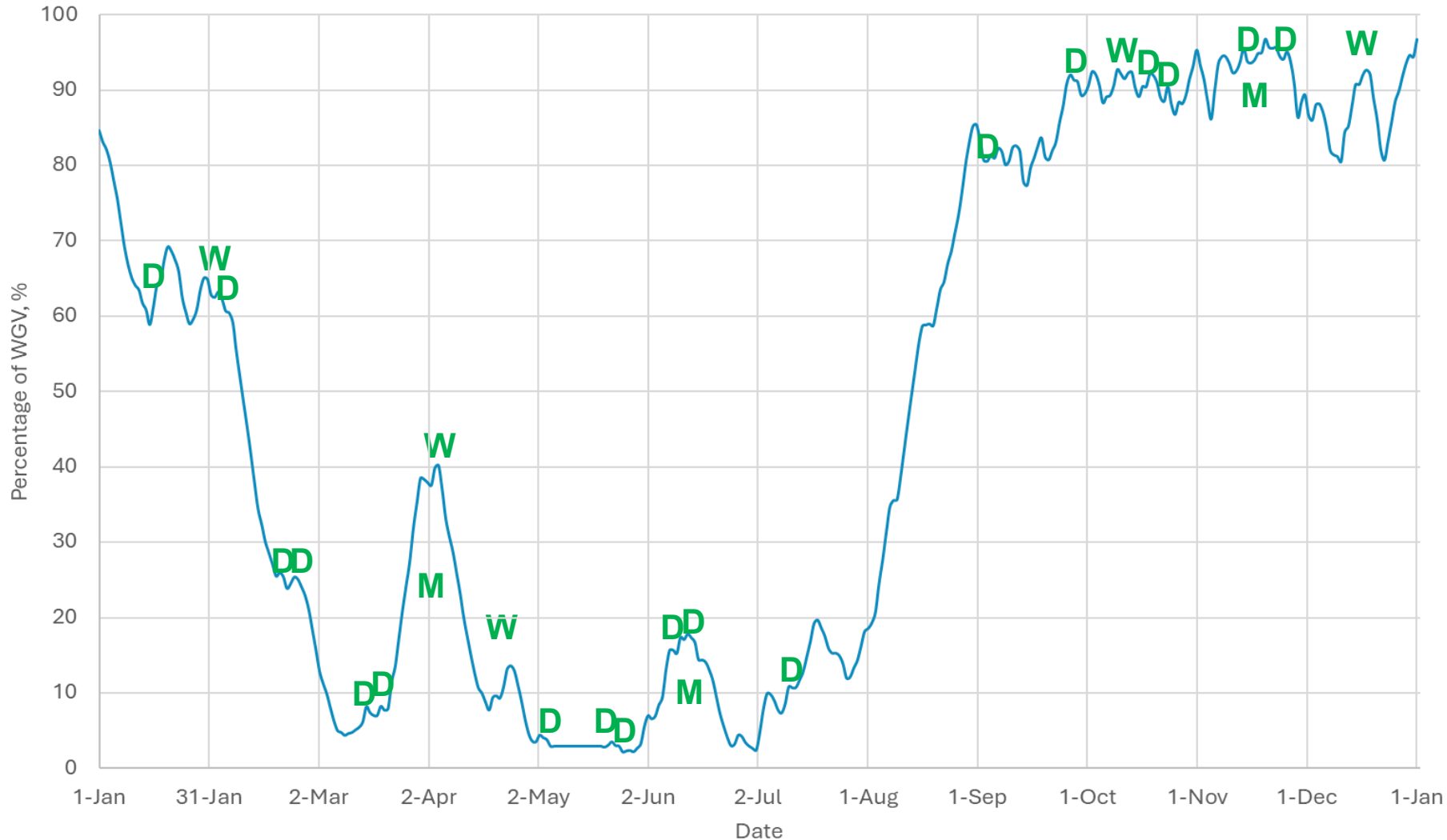
Each cavern is :

- 330,000 m³ (2.08 MMbbl)
- 80 m (260 ft) diameter
- 80 m (260 ft) high



Stublach's Storage Equivalent Cycle (SEC) demonstrates salt caverns flexibility with appropriate above ground equipment

Inventory evolution for the Stublach site (UK) in 2021

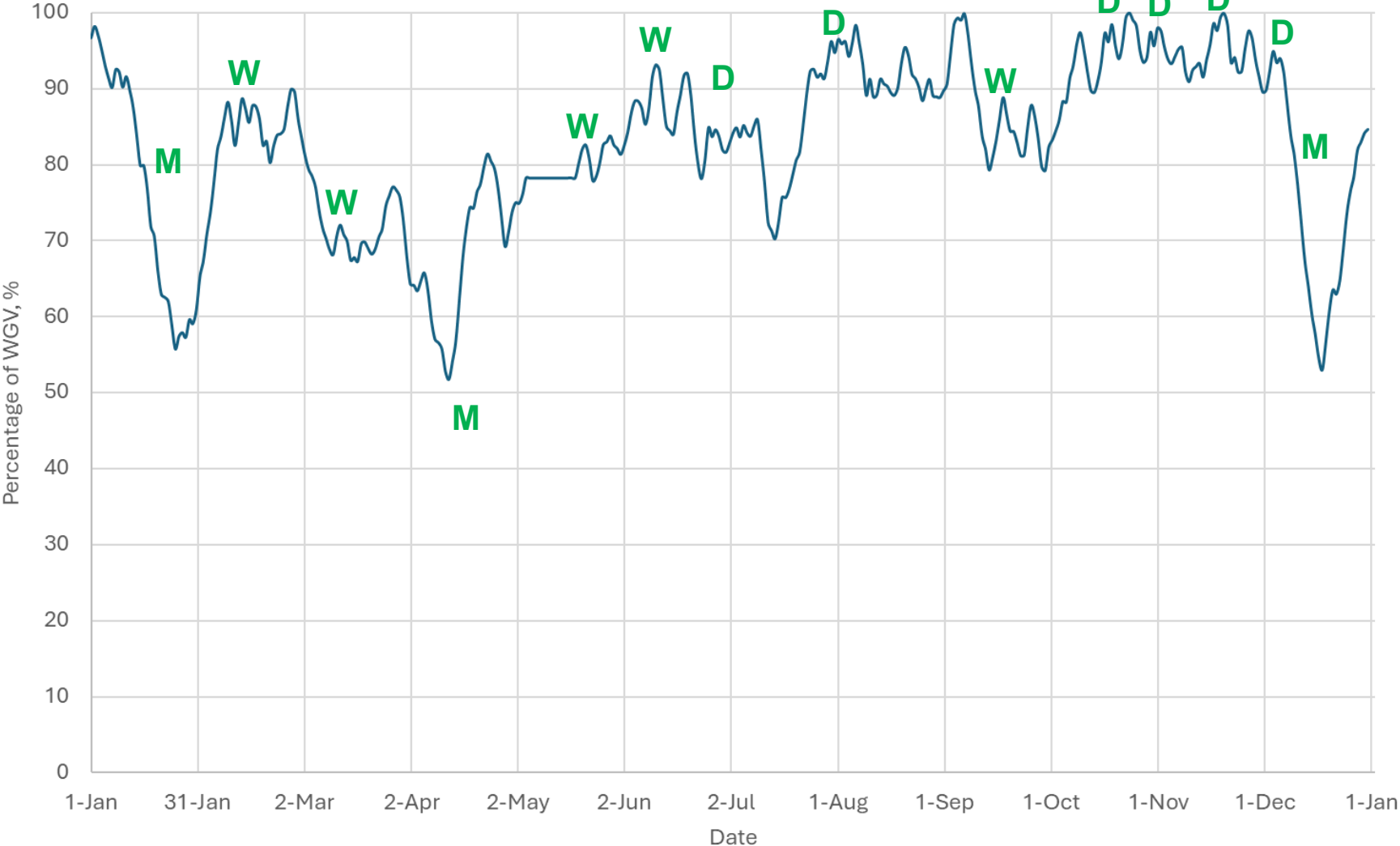


$$\text{SEC} = 2.7$$
$$(1 + 1.7)$$

Injection ~30%
Withdrawal ~30%
At rest 40%

And the seasonal demand can even fade under the short-term activities

Inventory evolution for the Stublach site (UK) in 2022



SEC = 3.5
(0.5+3)

Injection 33%
Withdrawal 33%
At rest 33%

UGS are a cornerstone of system resilience under Security of Supply shocks and will continue to be

A Gas Storage Europe & Artelys' study shows UGS remain essential throughout the energy transition – It considers the current operational assets as of 2026 in Continental Europe

Some key findings of the study between today and 2040

- A key role of UGS for security of supply is the ability to provide sustained peak capacity
- UGS are resilient by design, but their role is more crucial under security of supply shocks
- A high filling level only can guarantee UGS play fully their role

NESO's Gas Supply Security Assessment shows increasing importance of UGS, and the limits of the current portfolio

- Assess gas supply security at the five- and ten-year-ahead horizons, considering all supply sources
- Storage remains a critical flexibility tool
- Storage capability is constrained and structurally reduced. Deliverability declines during prolonged events
- Current UGS assets not sufficient to cover extreme risk scenarios

Natural Gas Storages are an essential part of the gas infrastructure. Storage is the only flexibility that is both fast and sovereign

Storage technology and above ground equipment define how the asset can address the various use cases.

Changing the original design is only possible if the limitations are from above ground equipment.

How Storage Supports Daily Network Operations

- Peak shaving and winter demand coverage
- Managing cold spells, infrastructure outages, LNG delays
- Reducing reliance on real-time imports
- Supporting pressure management and operational margins
- Nomination cycles and response times
- Emergency balancing actions
- System stress during prolonged cold periods

The Key Takeaways

- Storage is system insurance, not surplus capacity
- Different storage types serve different operational needs
- Network resilience is increasingly storage-dependent
- Long-term planning must treat storage as critical infrastructure

Converting Salt Caverns to hydrogen is technically feasible & would offer additional volumes when needed

In a future with natural gas fading away and hydrogen and electricity replacing it, salt caverns would be converted easily. It could be more challenging for other storage technologies.

When it will be appropriate and not too soon to avoid a chaotic transition would be converted to serve a growing network and demand

Storages will address the same use cases

- Power Generation – Hydrogen to power moving from a blend to full hydrogen
- Green Production – Storages compensate for intermittent production or back up
- Network Flexibility – Support network operations to adjust the line-pack (more challenging with H₂)

To find out more information

www.storengy.com

Storengy Hub

franck.turmel-josek@storengy.co.uk



storengy

A company of  **ENGIE**



**national
gas**

| energy
forum

Michael Avant-Smith

CEO Designate
Business Modelling Applications



Navigator

Whole Energy System Planning Platform

Planning Under Uncertainty

Introduction



The right decision.
In the right place.
At the right time.

AI-assisted connected infrastructure planning across time & place to unlock investment, streamline capital project delivery, and improve operational performance.

.energy **.water** **.resources** **.circularity** **.transport** **.industrial** **.digital**

What's the Problem we are Solving?

Resilient

Affordable

Low Carbon

Growth Driver

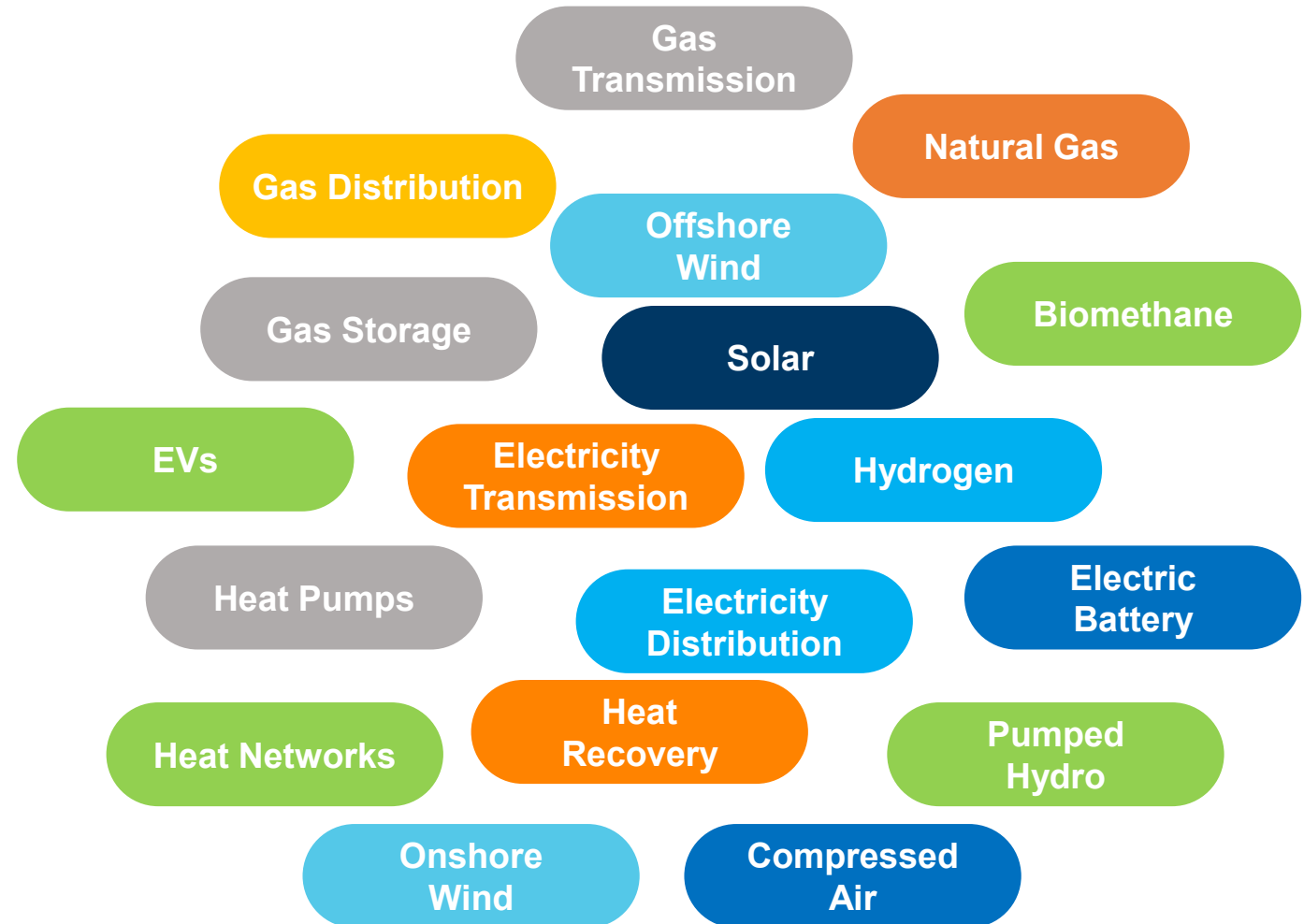
- Shared Energy System Destination
- Multiple Stakeholders & Many Routes to Get There

How to Align the Plans of Different Stakeholders?

Unpicking the Problem: Lack of Whole System View

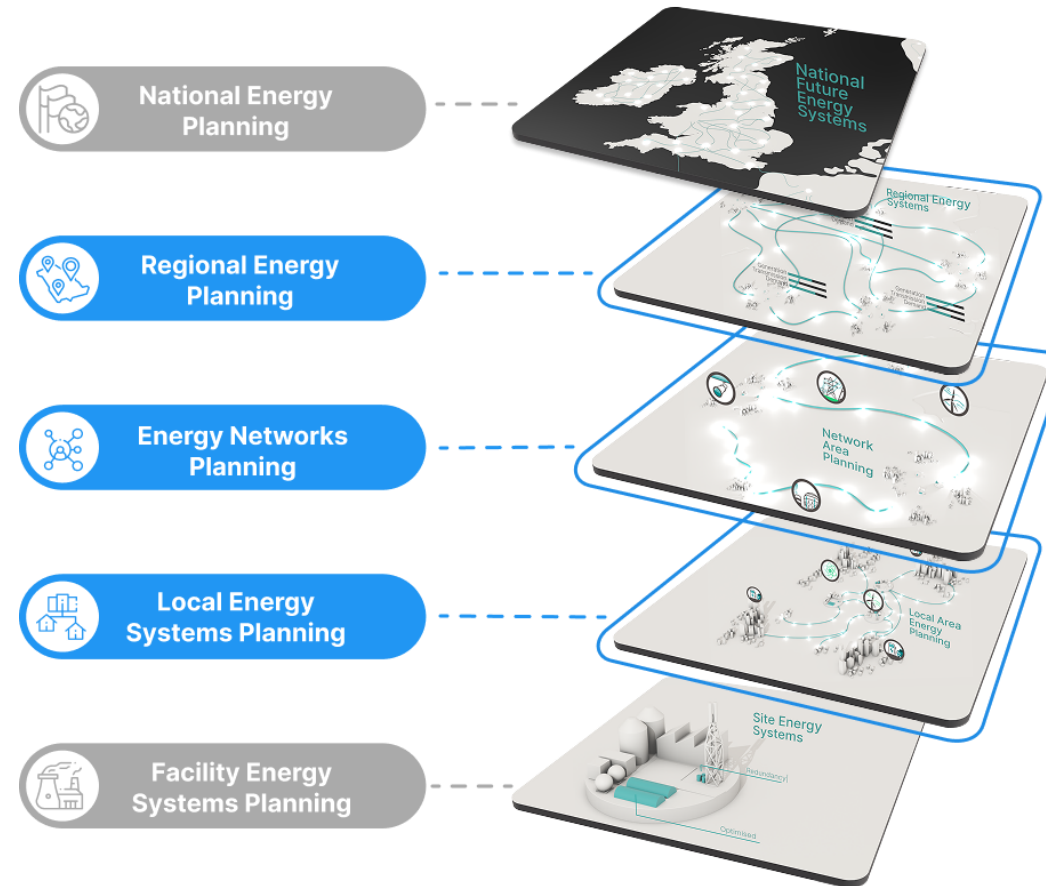
Complex system-of-systems:

- Variable demand forecast
- Multiple Energy Vectors
- Uncertain technology breakthroughs
- Variable technology uptake
- Connected value chains
- Different CAPEX & OPEX profiles



Unpicking the Problem : Lack of Spatial System View

Variable spatial resolution –
variable regional and local energy
demands & supply options



Unpicking the Problem: Multiple Stakeholders

Different perspectives & objectives – some shared and some competing



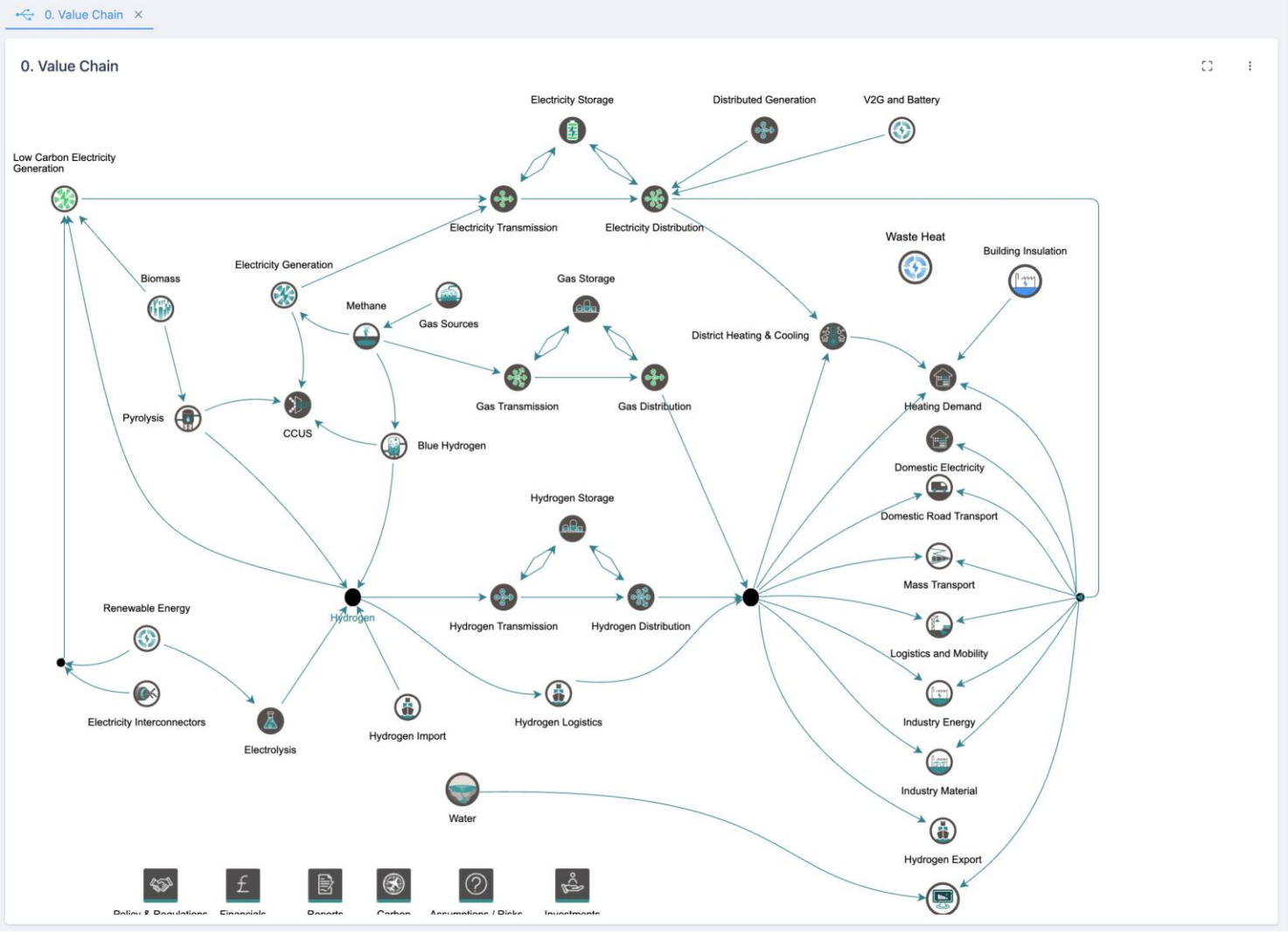
Shaping the Solution: Shared Digital Representation of Current System

C4ET - Regional Sc...
Cloud for Energy Tran...

Scenario: **Base**

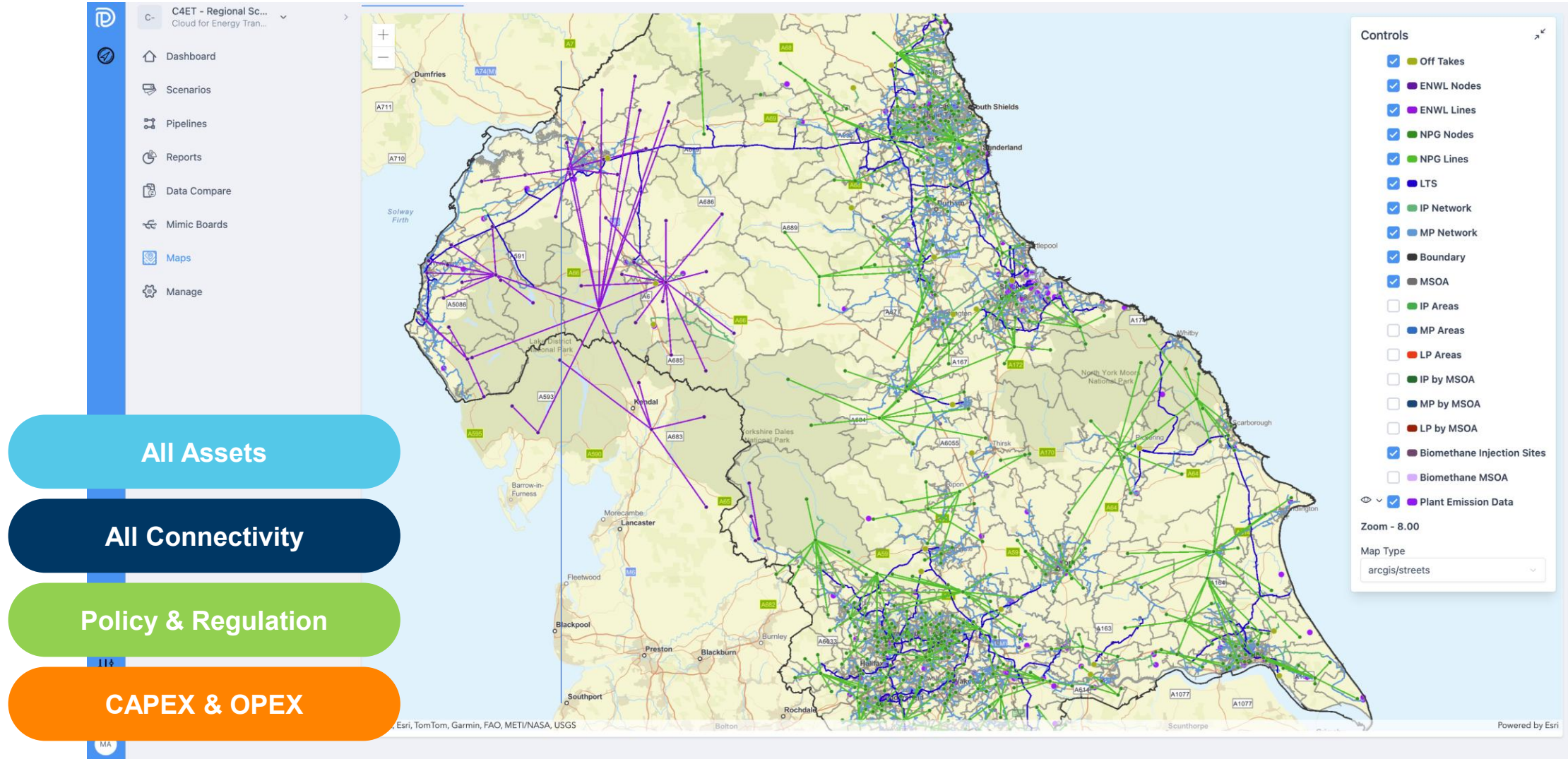
Search

- Dashboard
- Scenarios
 - > Bioresources
 - 0. National Value Chain
 - 0. Value Chain
 - 1. LAEP Value Chain
 - 2. Domestic Consumer Options
 - 3. I&C Heat Options
 - Distributed Generation Drill Down
 - Gas Export Drill Down
 - Gas Import Drill Down
 - Heat Demand Drill Down
 - Stakeholders and usage
 - Stakeholders and usage
 - Supply / Demand
- Pipelines
- Reports
- Data Compare
- Mimic Boards
- Maps
- Manage



- All energy vectors
- 100+ data sets & counting
- Clear Data Lineage
- Refreshed regularly

Shaping the Solution: Shared Digital Representation of Current System



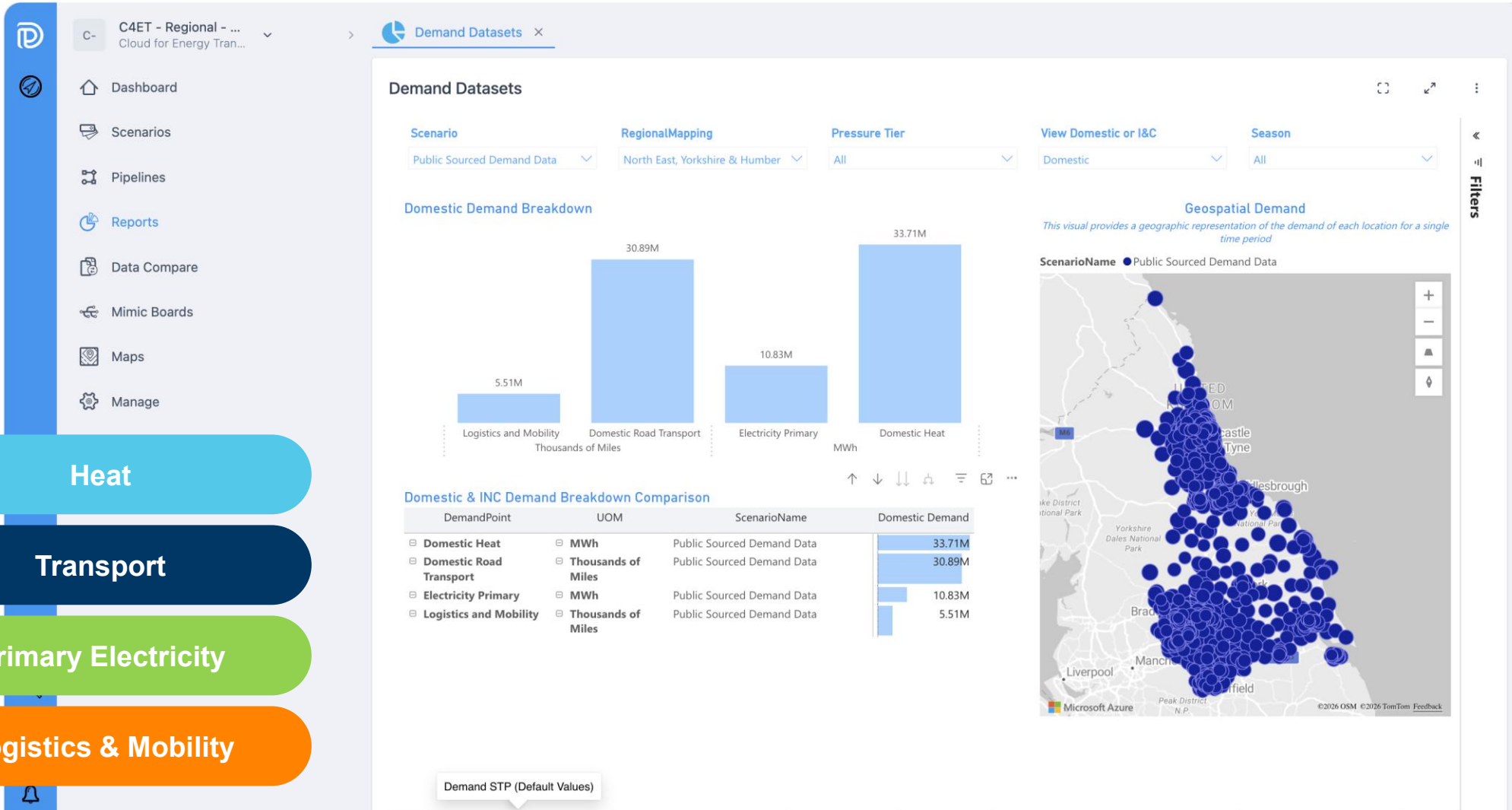
Shaping the Solution: Vector-Agnostic Energy Demand Forecasts

Heat

Transport

Primary Electricity

Logistics & Mobility



Demand Datasets

Scenario: Public Sourced Demand Data | Regional Mapping: North East, Yorkshire & Humber | Pressure Tier: All | View Domestic or I&C: Domestic | Season: All

Domestic Demand Breakdown

Category	Value
Logistics and Mobility (Thousands of Miles)	5.51M
Domestic Road Transport (Thousands of Miles)	30.89M
Electricity Primary (MWh)	10.83M
Domestic Heat (MWh)	33.71M

Domestic & INC Demand Breakdown Comparison

DemandPoint	UOM	ScenarioName	Domestic Demand
Domestic Heat	MWh	Public Sourced Demand Data	33.71M
Domestic Road Transport	Thousands of Miles	Public Sourced Demand Data	30.89M
Electricity Primary	MWh	Public Sourced Demand Data	10.83M
Logistics and Mobility	Thousands of Miles	Public Sourced Demand Data	5.51M

Geospatial Demand: This visual provides a geographic representation of the demand of each location for a single time period.

ScenarioName: Public Sourced Demand Data

Demand STP (Default Values)

Shaping the Solution: In-flight Projects + Auto Generated Options

Manually Generated Options

Auto Generated Options

Spatial Location of Options

Capacity / Temporal Ranges

Search

Investment Insights

13,735 Investment Options Considered

3 Committed Investments

0 Decommissioned Investments

Distribution Network: All

Process Asset: All

Investment Category	Investment	Average CAPEX	Locations Considered	LeadTime	Year Invested	Year Available	Source	Committed Investment	Confidence
Energy Storage	BESS	£6.0K	1	0.00	2025	2027	User Defined	✓	5
Electricity Generation	Onshore_Wind	£9.1K	1	256.00	2025	2026	User Defined	✓	5
Electricity Generation	PV_Large_Scale	£10.4K	1	128.00	2025	2025	User Defined	✓	5
Energy Storage	BESS	£300	937				Auto Gen	✗	3
Electricity Generation	Biogas_Generation	£5.0K	40	40.00			Auto Gen	✗	3
Electricity Generation	Biomass_Generation	£4.7K	31	62.00			Auto Gen	✗	3
Carbon Capture	CCS_retrofit	£2.5K	231	693.00			Auto Gen	✗	3
Carbon Capture	DACCS	£156.3K	4	16.00			Auto Gen	✗	3
Electricity Generation	Diesel_Generation	£435	11	11.00			Auto Gen	✗	3
Domestic Transport	Dom_Transp_Electric	£31.2K	880	0.00			Auto Gen	✗	5
Domestic Transport	Dom_Transp_Hydrogen	£121.0K	880	0.00			Auto Gen	✗	5
Domestic Heat	Electric_Heating	£150.0K	880	0.00			Auto Gen	✗	5
NonDomestic Heat	Electric_Heating_nonDom	£150.0K	880	0.00			Auto Gen	✗	5
Hydrogen Generation	Electrolyser	£677	25	50.00			Auto Gen	✗	3
Electricity Generation	Gas_Combustion_CHP	£758	27	40.50			Auto Gen	✗	3
Electricity Generation	Gas_Combustion_Non_CHP	£505	231	231.00			Auto Gen	✗	3
NonDomestic Heat	H2_Heating_COM_IP	£15.0K	15	0.00			Auto Gen	✗	3
NonDomestic Heat	H2_Heating_COM_LP	£15.0K	868	0.00			Auto Gen	✗	3
NonDomestic Heat	H2_Heating_COM_MP	£15.0K	376	0.00			Auto Gen	✗	3
Domestic Heat	H2_Heating_DOM_IP	£15.0K	12	0.00			Auto Gen	✗	2

Shaping the Solution: Mass Scenario Analysis

Navigator Scenario Analysis
3-Jun-2026 (04:19 PM)
Date of Last Refresh

Scenario

NGN IRESP Forced

Datasets Chosen For Scenario

Demand Set	Supply Set	Connectivity Set	Cost Set	Generation Set	Carbon Storage Set	Investments Set
NGN - Smeared - Hybrid_2-15	NGN Supply Set	NGN Connectivity v7 Gas Combustion Biomethane	Medium Tier Cost Profiles v5 TS GSP Opex	NGN Area Generation Assets v1	NGN - Carbon Storage v1	NGN - Investments 1

Scenario Parameters

Starting Year	End Period	Breakable Budget Constraint?	Non Pipe Carbon Storage Price	Biomethane CO2 Benefit [kg/KWh]	Discount Rate	Infeasibility Breaker Cost	Infeasibility Breaker Switch	NPV Analysis	Include Embodied Carbon?
2024	2050	No	0.00	0.18	0.00	5.00M	Off	Off	No

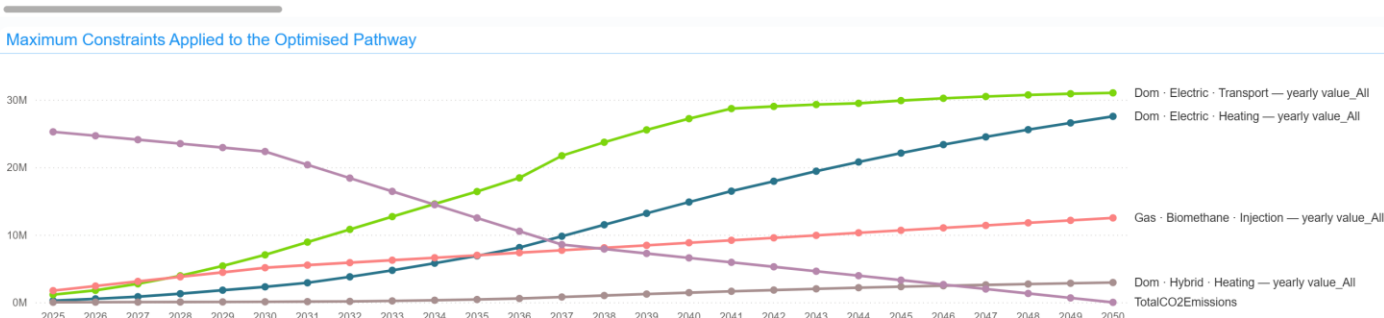
Energy Vectors Included

EnergyVector	Active
Biomethane	✓
Electric	✓
Gas	✓
Hydrogen	✓
Nuclear	✓

Assumptions Made

Scenario	Assumption 01	Assumption 02	Assumption 03	Assumption 04
NGN IRESP Forced	Carbon budget applied linearly to Net Zero by 2050.	Fossil Fuel Transport phased out exponentially to 5% by 2050.	Whole-system level cost optimisation (infrastructure/network and demand/consumer).	Hydrogen demand for Humber-side and Teesside Industrial Clusters included.

Maximum Constraints Applied to the Optimised Pathway



Scenario Configuration
Optioneering
Investment Decisions
Investment Comparison
CO2 Emissions
New SVC
New SVC Comparison Page
Automated Testing
Demand Validation - New
Input Generation Validation
Output Generation Validation

- Combine Different Data Sets
- Change Assumptions
- Test Sensitivities
- Re-run On Demand

Shaping the Solution: Optimal Pathway

Navigator Scenario Analysis

Scenario: NGN IRESP Forced | RESP: North East, Yorkshir... | Year: 2024 - 2050

Investment Insights

34,037
No. of Investments

£101.89B
CAPEX

75.19%
CAPEX % of TOTEX

£33.6B
OPEX

24.81%
OPEX % of TOTEX

£135.52B
TOTEX

Local Authority Share of Investment Portfolio

Local Authority	Share (%)
North Yorkshire	14.47%
Leeds	10.82%
East Riding of Yorkshire	10.40%
Wakefield	7.04%
Northumberland	6.53%
County Durham	5.80%
Bradford	5.27%
Newcastle upon Tyne	4.60%
Kirklees	3.76%
Sunderland	3.48%
Kingston upon Hull, City of	3.45%
North Tyneside	3.36%
York	2.71%
Stockton-on-Tees	2.50%
Hartlepool	2.40%
Gateshead	2.19%

CAPEX by RII0-GDx

Year Range	CAPEX (€B)
2024 - 2029	£75.48B
2030 - 2035	£12.88B
2036 - 2040	£7.63B
2041 - 2045	£3.09B
2046 - 2050	£2.81B

MSOA Investment Decisions

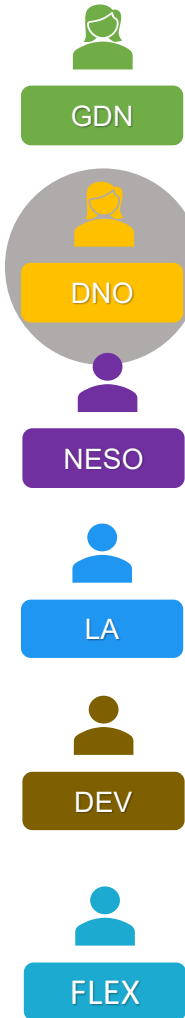
Bubble colour represents CAPEX spend. Red: High -> Green :low

ProcessAssetMapping	ProcessAsset	2024	2025	2026	2027	2028	2029	2030	2031	2032
Electricity	BESS		£866.77M	£205.41K			£79.27K	£362.44K	£147.95K	
	Dom_Transp_Electric			£163.02M	£925.11M	£1.07B	£1.13B	£1.03B	£1.07B	£917.25M
	Electricity_Heating	£14.44B	£12.88B	£105.71M	£159.21M	£532.05M	£422.89M	£466.41M	£214.16M	£221.92M
	Electricity_Heating_nonDom	£13.79B	£14.50B	£127.62K	£130.30K	£92.26K	£101.56K	£79.03K	£118.83K	£231.05K
	InC_Transport_Electricity		£69.52M	£275.08M	£244.46M	£168.97M	£150.16M	£132.01M	£78.32M	£76.94M
	Total	£28.23B	£28.31B	£544.14M	£1.33B	£1.77B	£1.70B	£1.63B	£1.36B	£1.22B
General	CCS_retrofit									
	Total									
Heat Networks	HeatDistribution									
	Total									

Shared Plans

Scenario Configuration | Optioneering | Investment Decisions | Investment Comparison | CO2 Emissions | New SVC | New SVC Comparison Page | Automated Testing | Demand Validation - New | Input Generation Validation | Output Generation Validation

Shaping the Solution: Shared Adaptive Pathways

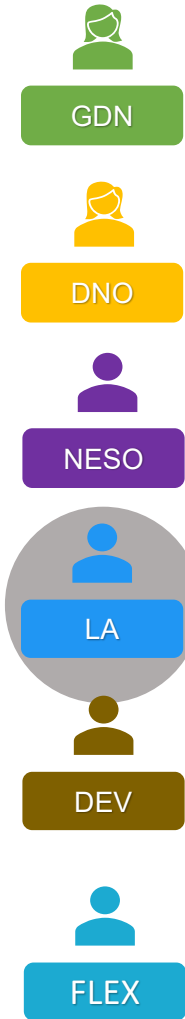


Network Reinforcement

The screenshot shows the 'Navigator Scenario Analysis' dashboard. At the top, it displays the scenario 'NGN IRESP Forced' and the region 'North East, Yorkshir...'. The 'Investment Insights' section shows key metrics: 34,037 No. of Investments, £101.89B CAPEX, 75.19% CAPEX % of TOTEX, £33.6B OPEX, 24.81% OPEX % of TOTEX, and £135.52B TOTEX. Below this, there are three main visualizations: a horizontal bar chart for 'Local Authority Share of Investment Portfolio', a waterfall chart for 'CAPEX by RIIO-GDx', and a map for 'Connectivity Investment Decisions'. A data table at the bottom provides a year-by-year breakdown of investment costs.

Process/Asset/Mapping	Process/Asset	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
General	Electricity_BSP_Primary	£54.52M	£57.67M	£10.65M	£11.88M	£10.82M	£11.21M	£13.62M	£17.81M	£27.03M	£65.35M	£15
	Electricity_GSP_BSP			£203.27K	£1.23M	£3.13M	£4.52M	£4.43M	£4.81M	£3.85M	£4.46M	£51
Total		£54.52M	£57.67M	£10.85M	£13.11M	£13.76M	£15.73M	£18.05M	£22.63M	£30.88M	£69.80M	£67

Shaping the Solution: Shared Adaptive Pathways



Local Area Energy Plan

Navigator Scenario Analysis

Scenario: RESP | Year: 2024 - 2050

EAB NGN Hull Dom Electrification 80pc | North East, Yorkshir...

Investment Insights: 656 No. of Investments, £3.56B CAPEX, 43.24% CAPEX % of TOTEX, £4.7B OPEX, 56.76% OPEX % of TOTEX, £8.23B TOTEX

Local Authority Share of Investment Portfolio

45.77% - 54.23% (50.00% midpoint)

Kingston upon Hull, City of: 54.23%

East Riding of Yorkshire: 45.77%

CAPEX by RIIO-GDx

Year	CAPEX
2024 - 2029	£1.01B
2030 - 2035	£1.15B
2036 - 2040	£691.91M
2041 - 2045	£336.77M
2046 - 2050	£364.51M

MSOA Investment Decisions

Bubble colour represents CAPEX spend. Red High -> Green Low

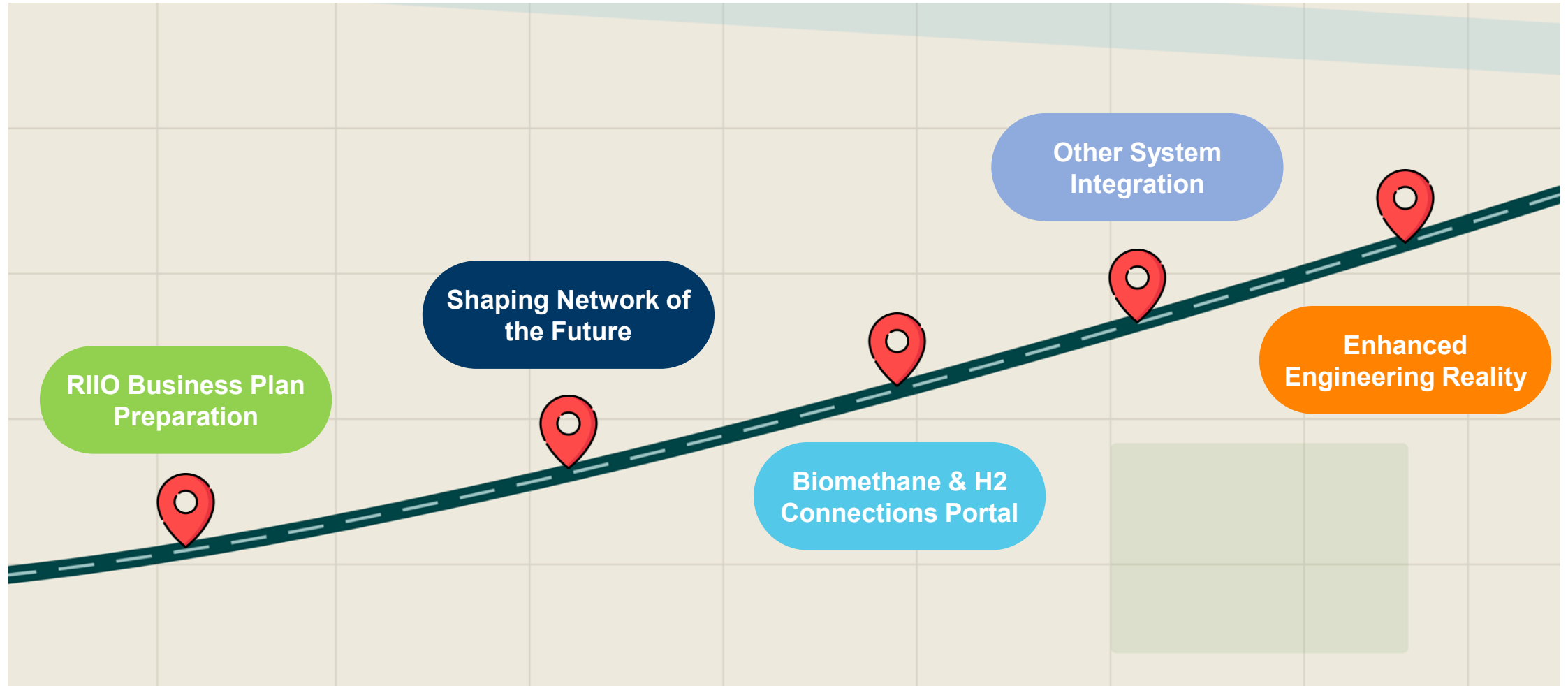
ProcessAssetMapping	ProcessAsset	2024	2025	2026	2027	2028	2029	2030	2031	2032
Electricity	Dom_Transp_Electric		£6.24M	£181.12M	£65.40M	£43.60M	£37.38M	£38.91M	£20.58M	£17.65M
	Electricity_Heating	£35.16M	£32.98M	£51.70M	£52.30M	£51.83M	£52.20M	£52.08M	£52.53M	£52.32M
	Electricity_Heating_nonDom	£17.89M	£5.60M							
	Total	£53.05M	£44.82M	£232.81M	£117.70M	£95.44M	£89.58M	£90.99M	£73.12M	£69.96M
Hydrogen	SMR_Hydrogen					£142.44M	£237.11M	£233.83M	£99.94M	£97.89M
	Total					£142.44M	£237.11M	£233.83M	£99.94M	£97.89M
Natural Gas	InC_Transport_NaturalGas							£791.32K		
	Total							£791.32K		
	Total	£53.05M	£44.82M	£232.81M	£117.70M	£237.87M	£326.69M	£325.61M	£173.06M	£167.85M

Navigation: CO2 Emissions New | Scenario Configuration | Optioneering | **Investment Decisions** | Investment Comparison | CO2 Emissions | New SVC | New SVC Comparison Page | Automated Testing | Demand Validation - New | Input Generation Validation | Output Generation Validation

So What?



Where to next?



Navigator

Whole Energy System Planning Platform

Thank You

Please reach out to us for more details



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Alison Tann

Head of Operational Delivery
National Gas



Since the last National Gas Energy Forum ...



UK records hottest ever May day as temperature climbs to 34.8C in west London

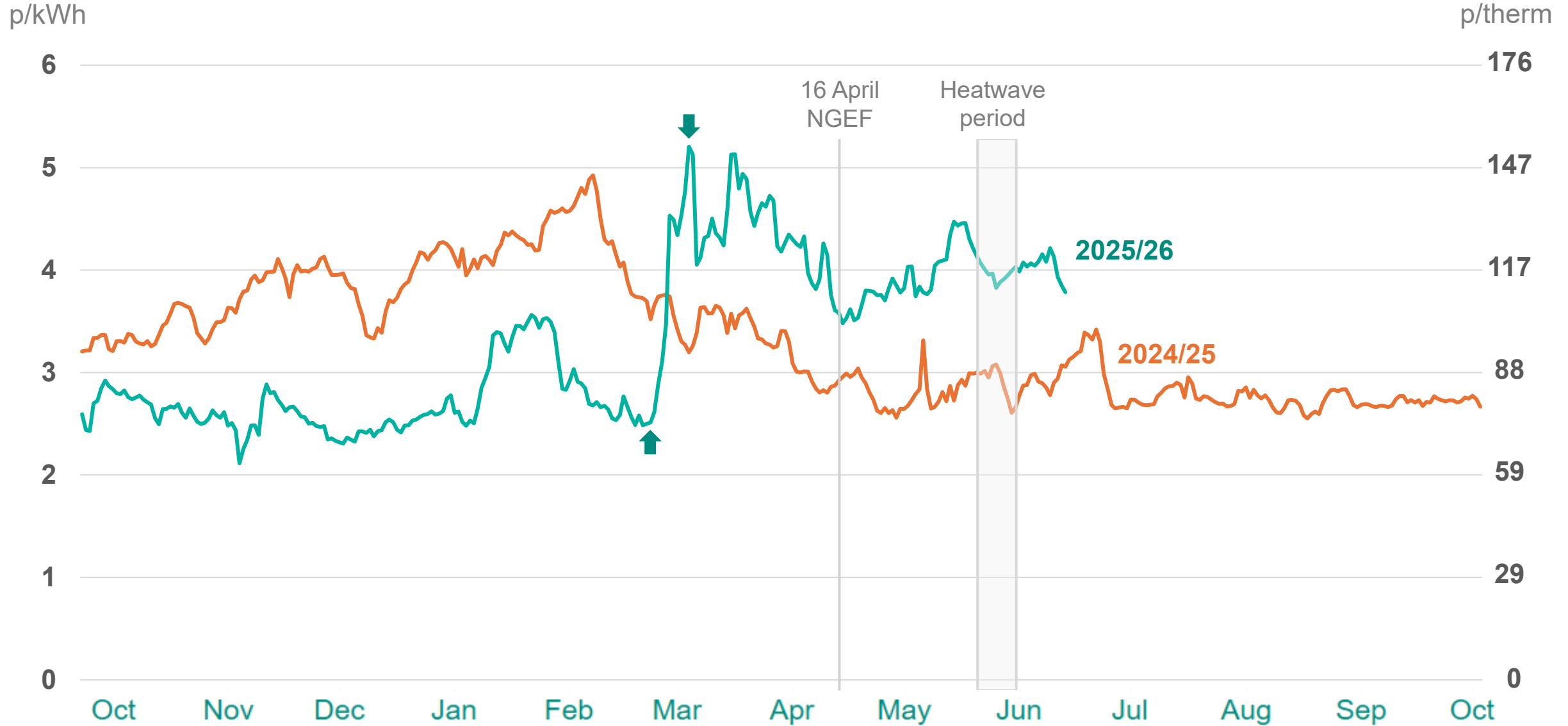


Trump insists Iran deal will open Strait of Hormuz 'toll-free' as he meets world leaders



System Average Prices

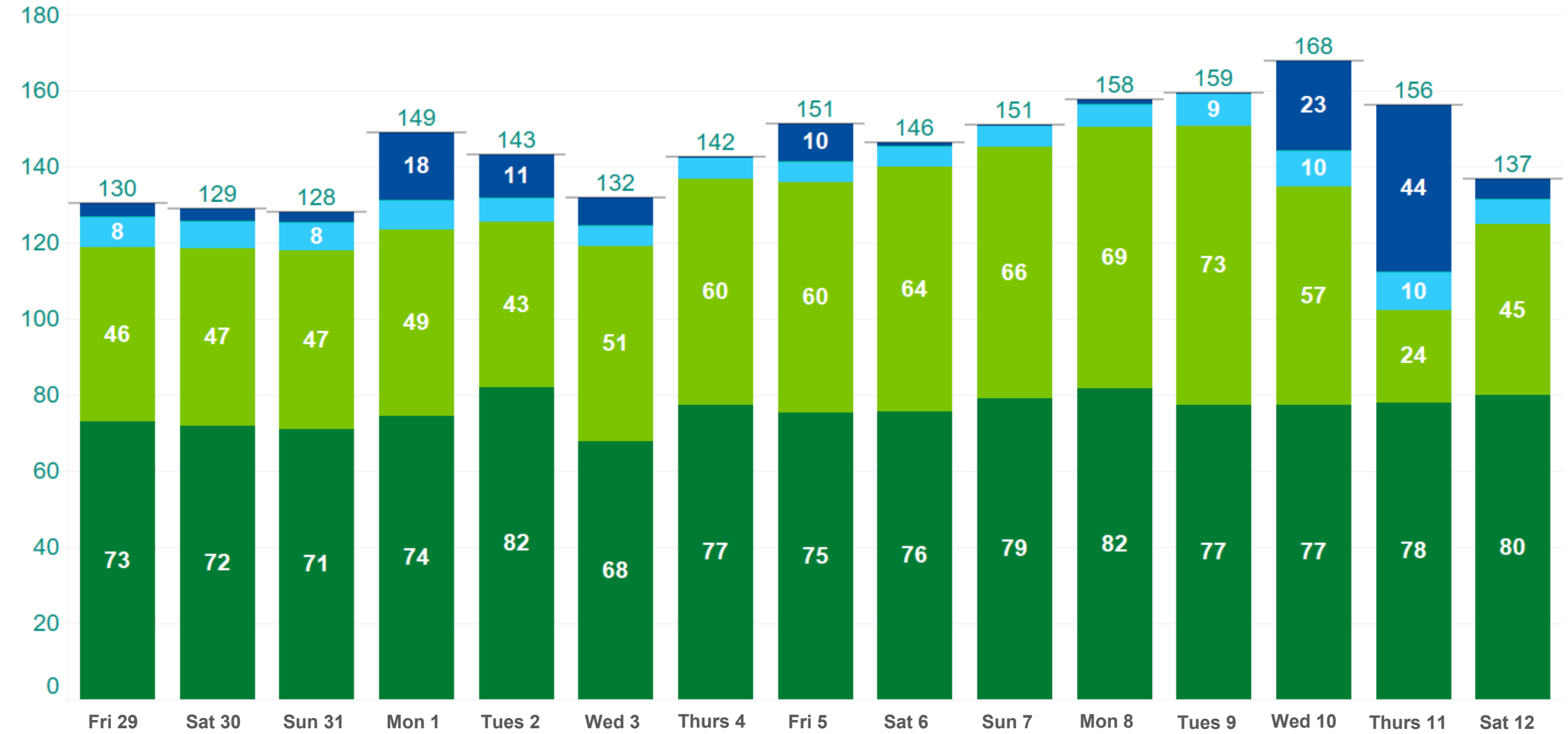
Current vs previous gas year



NTS Supply overview

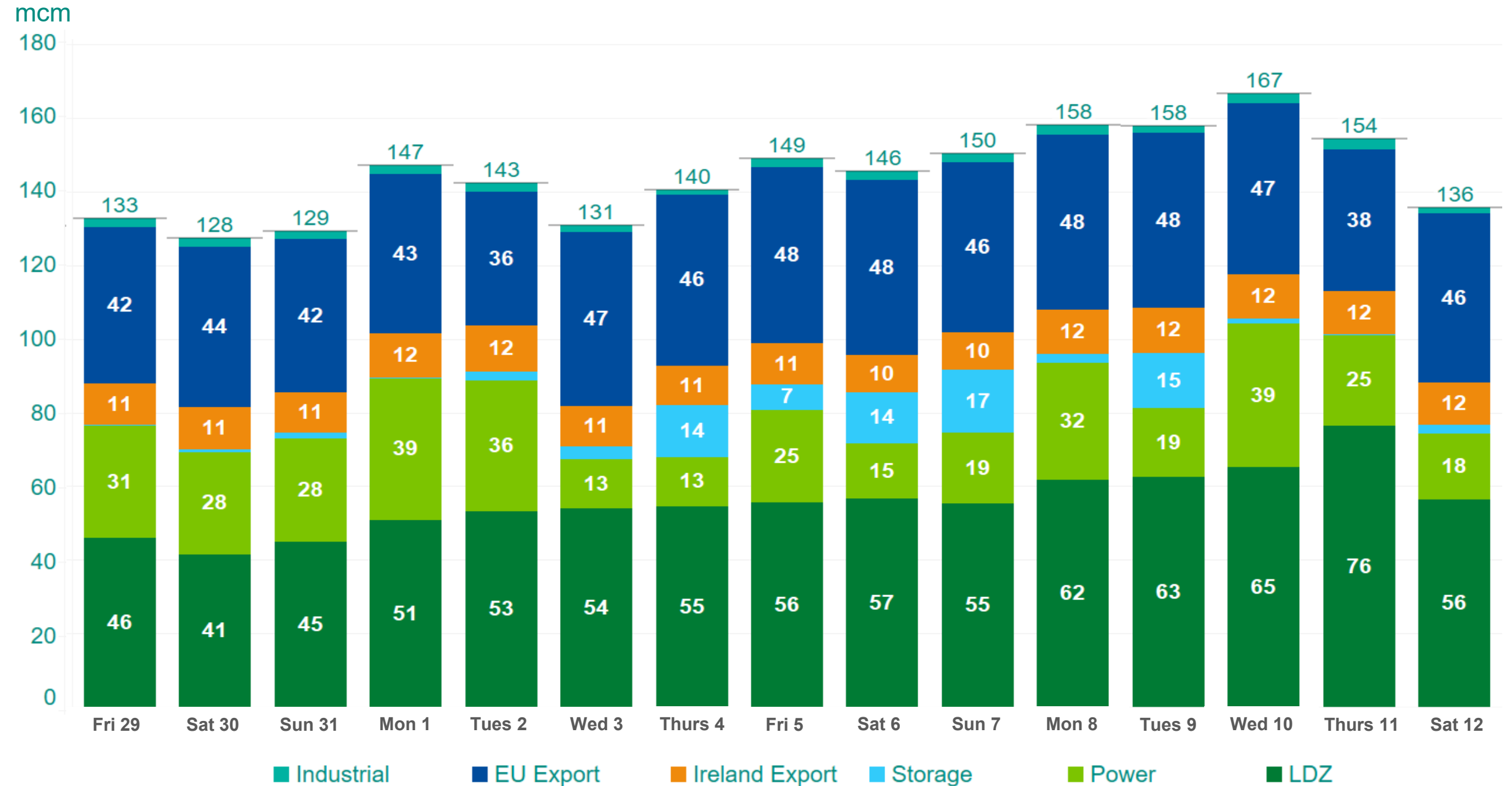
29 May – 12 June

mcm



NTS Demand overview

29 May – 12 June



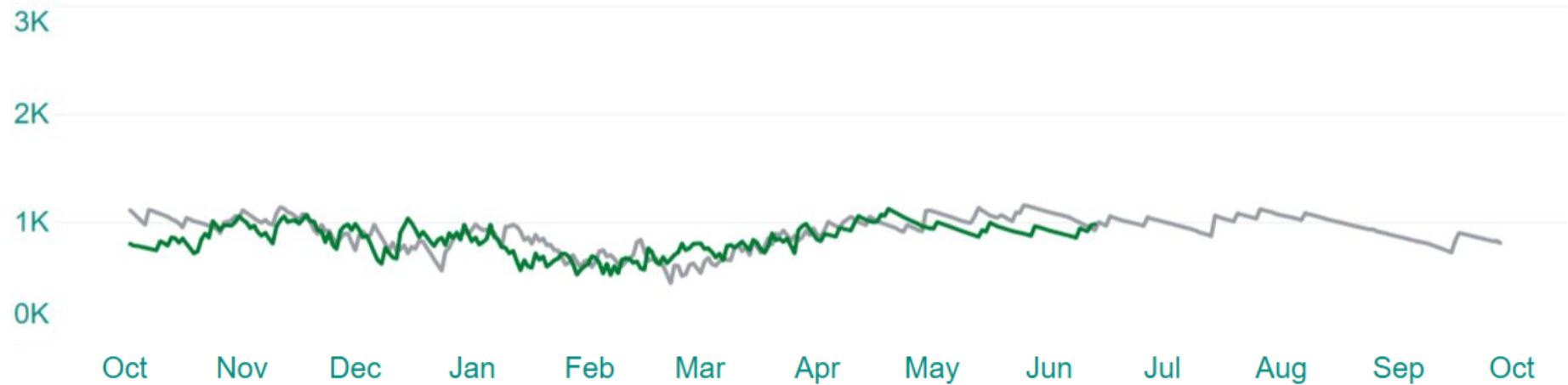
GB and LNG storage stock

Total GB Storage Stock
342 mcm
19% full (MRS)



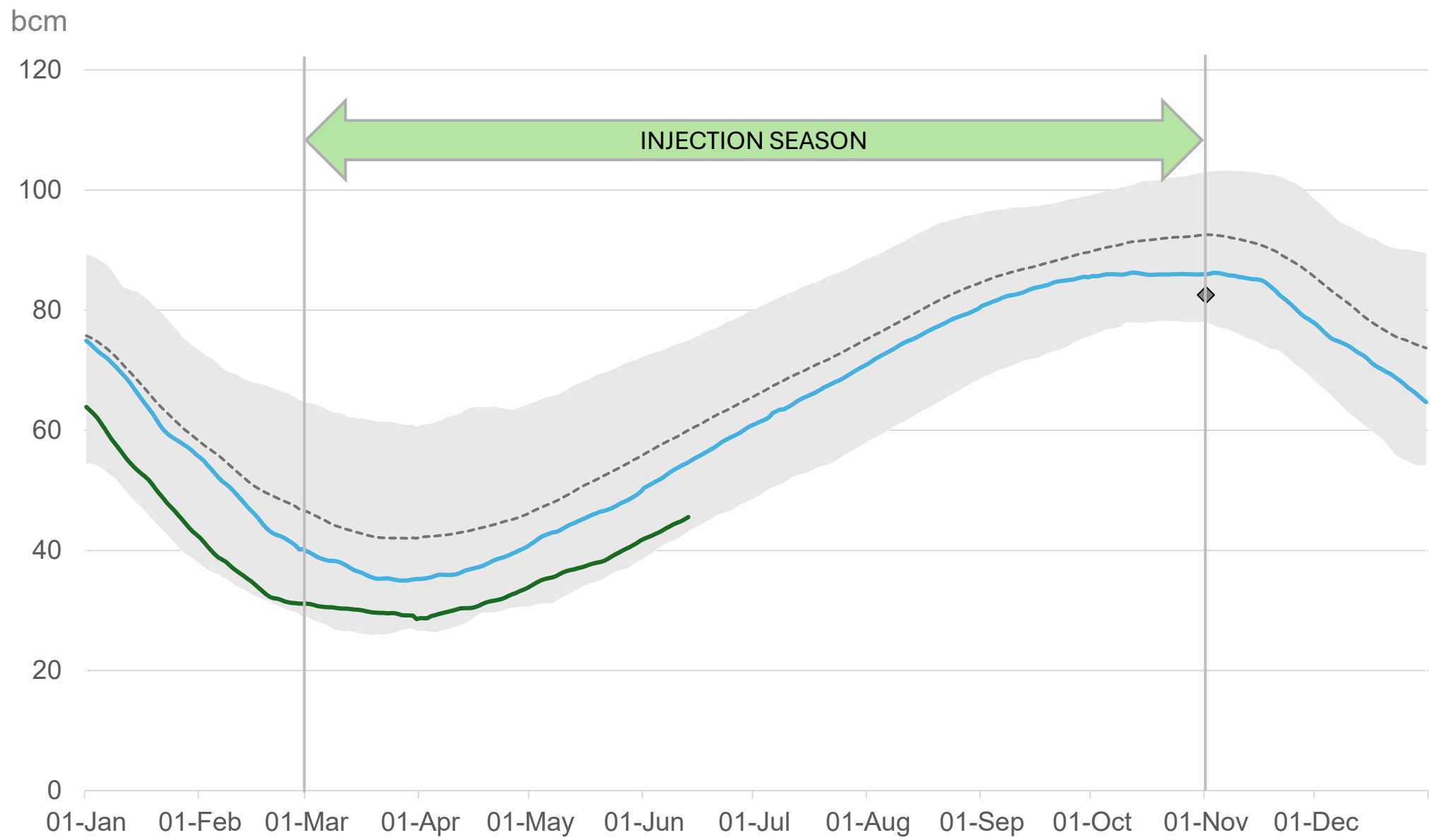
*Medium-range only, excluding Rough

Total LNG Storage Stock
944 mcm
73% full



All data as at 16:00 15/6

EU Storage Levels



Our Gas Data Portal



Summary

View the most up-to-date information about the current status of the National Transmission System.

Forecast Type	Value	Description
LATEST SUPPLY FORECAST	142.3 mcm	The latest forecast for supply of gas at the end of the current Gas Day.
LATEST DEMAND FORECAST	146.02 mcm	The latest end of day demand forecast for the current gas day.
MARGINS NOTICE TRIGGER	-- mcm	Margins Notices (MN) and Gas Balancing Notifications (GBN) will only be issued if the demand forecast is close to the Margins Notice trigger or higher.

More Information >



Thank you for attending!

We look forward to seeing
you on 16th July 2026 online

If you would like to provide any feedback on the forum, please email
Box.OperationalLiaison@nationalgas.com

