Gas Advisory Council

Second meeting
14th May 2025 – Solihull
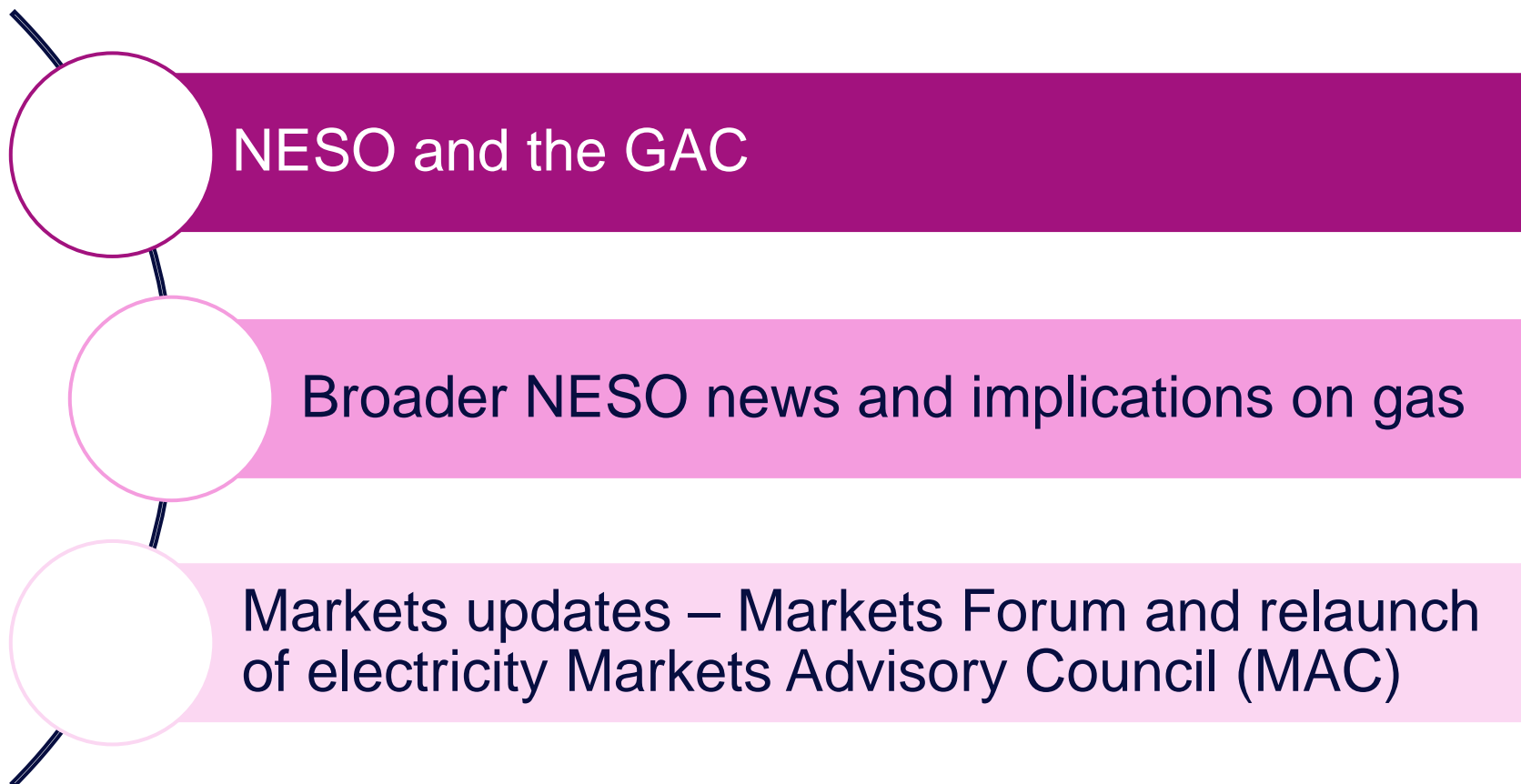
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02 GAC Agenda
14th May 2025 – Solihull (Xoserve offices)

Time	Topic	Lead	Category
10:00 – 10:15	Welcome	NESO (Rebecca/Sakhi)	Information
10:15 – 10:25	Introduction	Chair	
10:25 – 10:50	Context (presentation + Q&A)	DESNZ	Discussion
10:50 – 11:15	Objectives of 02 GAC / Framing	Chair / Tech Sec	
11:15 – 11:30	*Break*		
11:30 – 12:15	Introduction to FES 2025	NESO (Energy Insights)	Information
12:15 – 12:30	GAC Project Charters – presentation	Tech Sec	
12:30 – 13:15	*Lunch break*		
13:15 – 14:15	Breakout session 1: Project refinement – outcomes and viability	Tech Sec	Discussion
14:15 – 14:30	*Break*		
14:30 – 14:45	Breakout session 2: Project ranking and assessment	Tech Sec	Discussion
14:45 – 15:45	GAC Projects prioritisation	Chair	Approval
15:45 – 16:15	AOB+ *	All	Information
16:15 – 16:30	Conclusions and next steps	Chair	

* The 'AOB+ session' will allow members to share any non-GAC related updates or communications

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Welcome

NESO and the GAC

Broader NESO news and implications on gas

Markets updates – Markets Forum and relaunch of electricity Markets Advisory Council (MAC)

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NESO gas publications

GNCNR Gas Network Capability Needs Report
NESO's independent view of GB's gas transmission system, the NTS, and its capability to meet current and future network requirements.

Strategic Planning Options Proposal

national gas transmission

GOA Gas Options Advice
NESO's independent assessment of NGT's preferred reinforcement options for NTS; where appropriate, to present a more suitable option to Ofgem.

Gas Network Capability Needs Report
December 2024

SPOP Strategic Planning Options Proposal
Required by NGT's Gas Transporter Licence Special Conditions, SPOP identifies the options which could meet the capability need(s) identified in the GNCNR so that NESO fulfil their obligations in the Gas Options Advice Document(GOA).

Gas Options Advice
December 2025

Introductions

Dr Grant Wilson –
University of Birmingham

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Based at the University of Birmingham since 2018 (previously Sheffield and Strathclyde), now a Co-Director of Birmingham Energy Institute
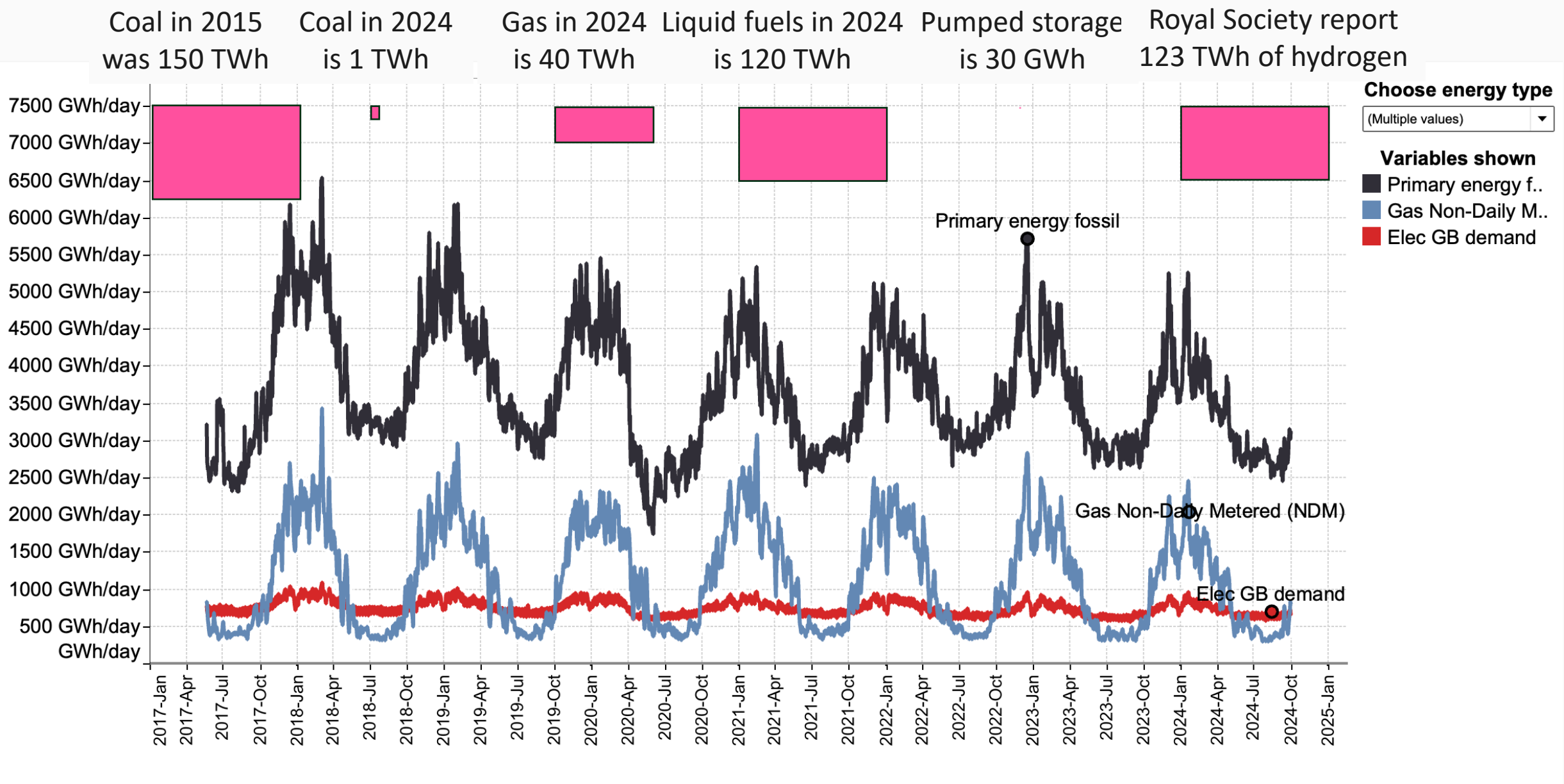
Academic project experience across various areas including:

- PhD in energy storage and market index prices for electricity

- Carbon Capture and Utilisation (before it joined with CCS to become CCUS)

- Local gas system sub-daily demand, and multi-vector energy supply and demand at different geographical levels
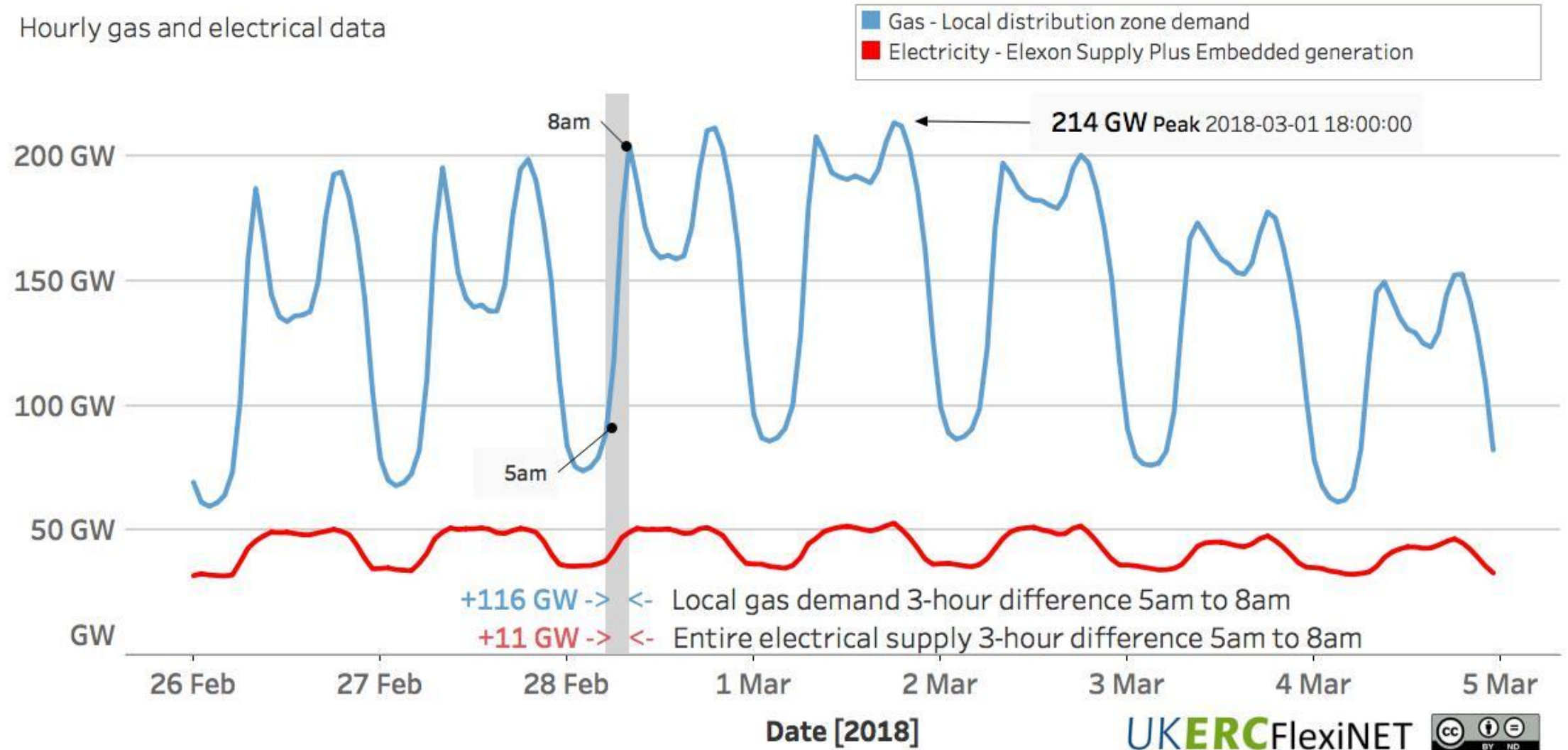
Ongoing research interests in the digital transformation of energy systems, particularly on evidencing the current starting point in greater detail (particularly after diversity)

Experience of wearing a range of different hats both internally and externally in the University of Birmingham, and am delighted to be the independent chair of the Gas Advisory Council

Visualising energy storage

Coal in 2015 was 150 TWh

Coal in 2024 is 1 TWh

Gas in 2024 is 40 TWh

Liquid fuels in 2024 is 120 TWh

Pumped storage is 30 GWh

Royal Society report 123 TWh of hydrogen

Choose energy type

(Multiple values) ▾

Variables shown

- Primary energy f..
- Gas Non-Daily M..
- Elec GB demand

Primary energy fossil

Gas Non-Daily Metered (NDM)

Elec GB demand

3-hour difference in demand starting at 5am

Hourly gas and electrical data

Legend:
- Gas - Local distribution zone demand
- Electricity - Elexon Supply Plus Embedded generation

214 GW Peak 2018-03-01 18:00:00

8am
5am

+116 GW -> <- Local gas demand 3-hour difference 5am to 8am
+11 GW -> <- Entire electrical supply 3-hour difference 5am to 8am

Date [2018]: 26 Feb, 27 Feb, 28 Feb, 1 Mar, 2 Mar, 3 Mar, 4 Mar, 5 Mar

UKERCFlexiNET

- Aim of the independent chair role is to help NESO convene and facilitate the Gas Advisory Council meetings, primarily to help the NESO team deliver the Future Market Plan

- Also, a hope that everyone can learn something new from each council meeting, so the structure of meetings may evolve to allow this. In terms of raising new things back to the advisory council – we have an AOB at the end of the day

DESNZ Key Updates

~ Ben Holley

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Framing GAC 2

Today's objectives and look ahead

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Your feedback matters

You said

We will

Membership. Having all sectors and molecules represented is a real strength. We need to cultivate this diversity under NESO's whole system approach and ensure all voices are heard. DESNZ and OFGEM's role should be better defined.
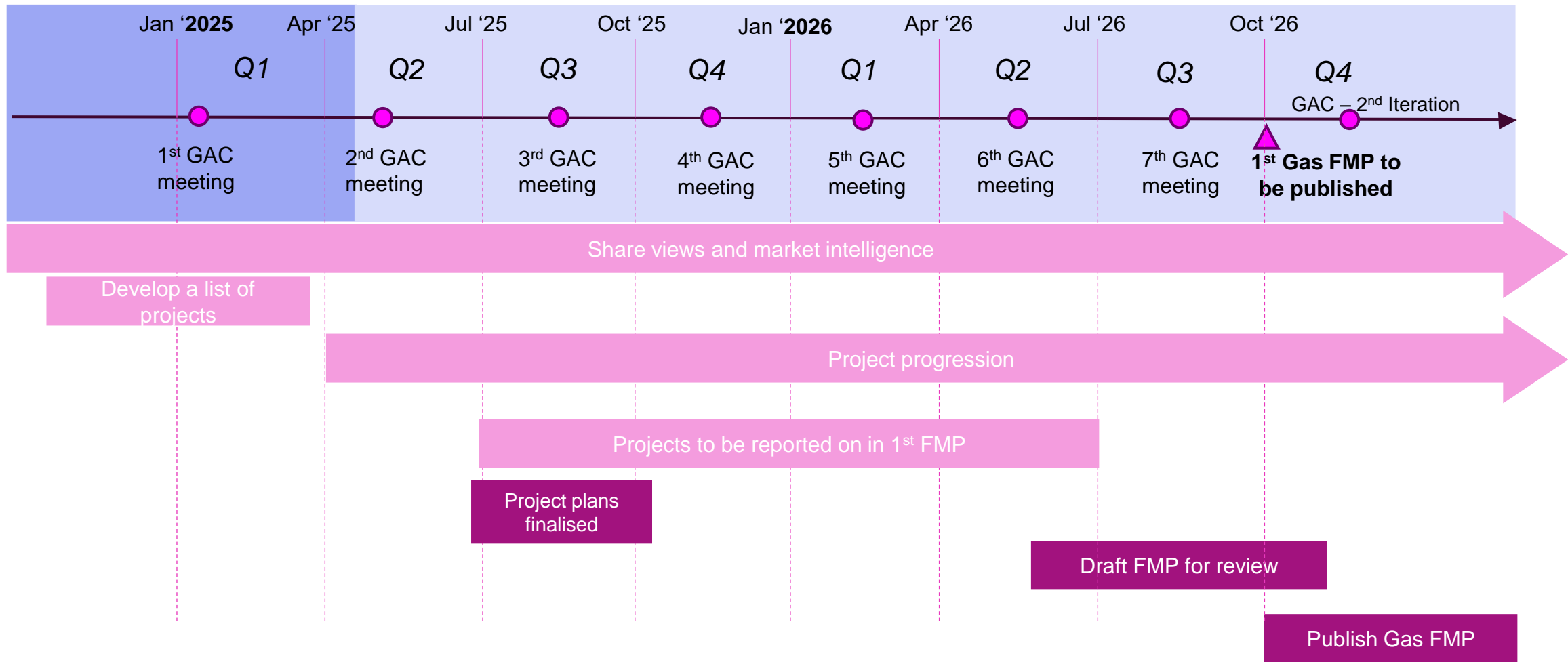
- Ensure the independent chair enables effective collaboration and that all voices are heard equally.
- Adjust DESNZ and Ofgem involvement (speaking slot and opportunity for Q&A)
- Create an AOB+ section at the end of the meeting

Meeting preparation. Very useful to have pre-read sent ahead of the meeting to prepare. However, next steps should be clearly explained at the end of the meeting.

- Send Pre-Read at least before the meeting in advance
- Set clear expectations for between meetings as well as for the next meeting.

Scoping. We need to define overarching principles for the GAC work and assess what we are able to achieve by the end of 2026.

- Clarify GAC Projects' Guiding principles
- Ensure Project plans accurately define the scope of the project.

Breakout sessions. Having such sessions gives space to speak and brainstorm but make difficult to have the cross-molecule view. These sessions also needs to be carefully framed and prepared.

- Ensure breakout sessions have clear outcomes and that all groups are working to the same brief.
- Ensure guidance is provided by the Chair

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GAC objectives reminder

The Terms of Reference list two main objectives for the 2025-2026 GAC mandate:

1 **"Identify areas where improvement might be needed and policymaker recommendations developed"**

Share views and market intelligence
→ Two-way sharing of views and market intelligence between NESO and members during and between meetings.

Define a list of GAC Projects
→ Develop a list of priority projects, agree on actions/timeline in order to propose recommendations and solutions

2 **"Assist NESO to develop the Gas Future Market Plan by Q4 2026"**

Assist in shaping the first Gas FMP
→ The Gas FMP will be scoped by NESO and Ofgem however members will feed into this to ensure the document is meaningful to the market.

Review and refine the draft versions
→ TBD (process to review the draft versions circulated by NESO)

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Look ahead

	Jan '**2025**	Apr '25	Jul '25	Oct '25	Jan '**2026**	Apr '26	Jul '26	Oct '26
	Q1		Q2	Q3	Q4	Q1	Q2	Q3	Q4

GAC – 2nd Iteration

1st GAC meeting

2nd GAC meeting

3rd GAC meeting

4th GAC meeting

5th GAC meeting

6th GAC meeting

7th GAC meeting

1st Gas FMP to be published

Share views and market intelligence

Develop a list of projects

Project progression

Projects to be reported on in 1st FMP

Project plans finalised

Draft FMP for review

Publish Gas FMP

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Project Guiding Principles

Explore gas market changes needed to support the energy transition.

Understanding the role of all molecules and their role in current respective markets

Understanding the role of new vectors and what is needed to develop a market

Understanding cross vector interactions (WEMs approach)

NESO Primary and Secondary Duties

Reference NESO publications

Clean Power 2030

WEMS Report

FES 25

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Future Energy Scenarios

Gas Advisory Council
14th May 2025

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An introduction to FES

Gary Bateman

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Pathways to net zero

Net zero brings a huge amount of change to the energy system.

We need to understand the challenges and opportunities and inform the big decisions.

Yesterday   Today   Tomorrow

Climate Change Act 2008

The Fourth Carbon Budget
Reducing emissions through the 2020s

The Fifth Carbon Budget
The next step towards a low-carbon economy

December 2020
The Sixth Carbon Budget
The UK's path to Net Zero

February 2025
The Seventh Carbon Budget
Advice for the UK Government
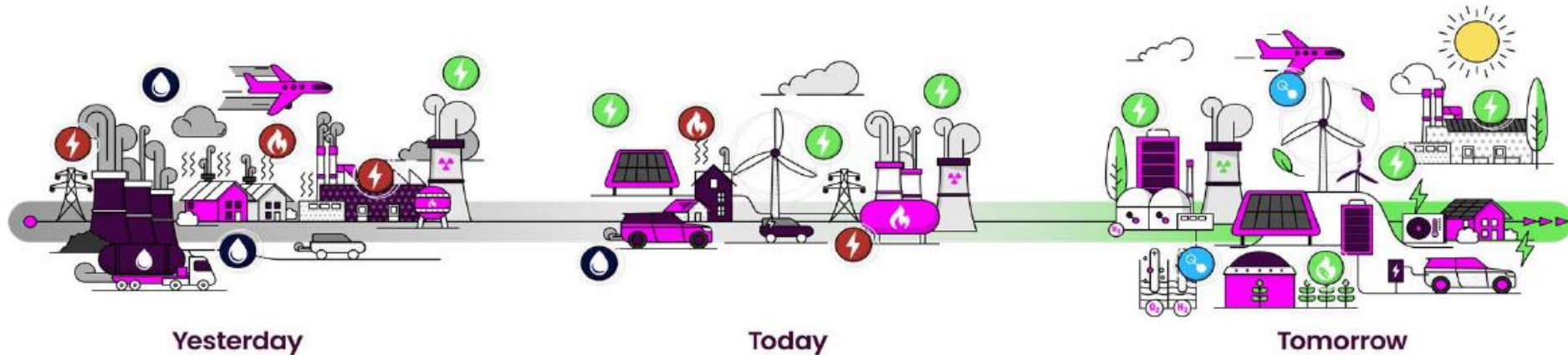
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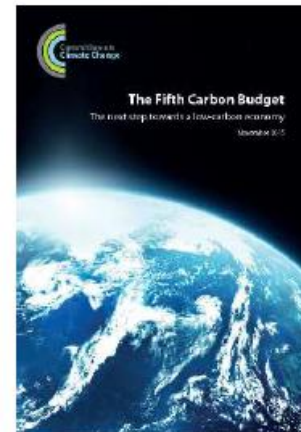
Future Energy Scenarios

NESO's whole energy system publication

National view: Great Britain's route to net zero 2050

Meets Carbon Budgets and Nationally Determined Contribution targets along the way

Pathways, <u>not forecasts</u>, and no longer scenarios

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Who uses FES?
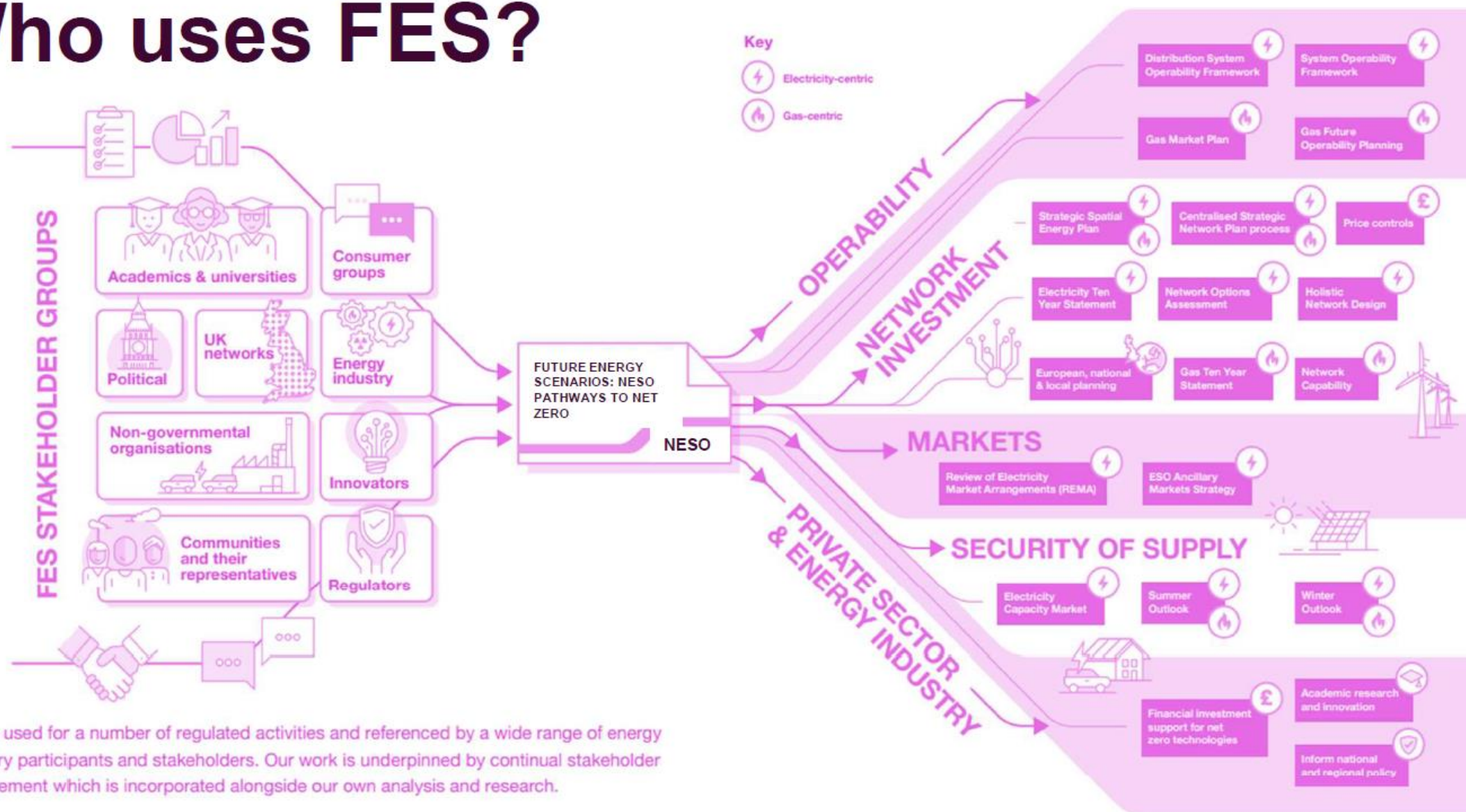
What does FES model?

FES models supply and demand to build whole energy system pathways to net zero.

We model these sectors...

Demand
- Road transport
- Residential heat
- Appliances
- Commercial
- Industrial
- Demand side flex

Supply
- Electricity generation and flexibility
- Hydrogen supply
- Gas supply
- Engineered carbon removals
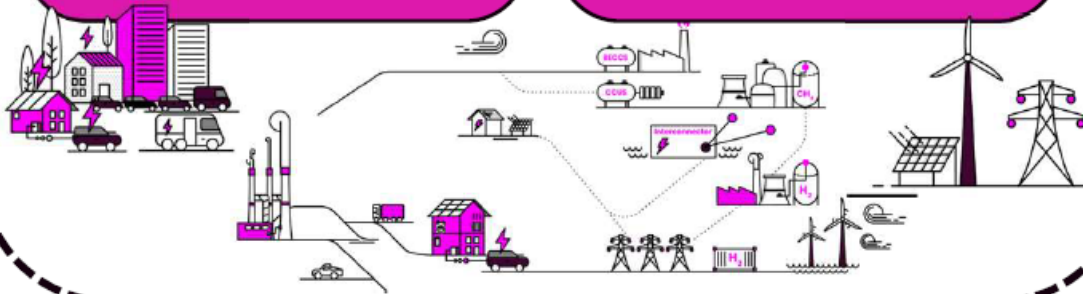
We don't model these sectors – but do use values from the Climate Change Committee

- Aviation & shipping
- Biomass supply (as a benchmark)
- Land use, land use change & forestry
- Agriculture
- Fluorinated gases
- Fuel supply
- Industrial process emissions
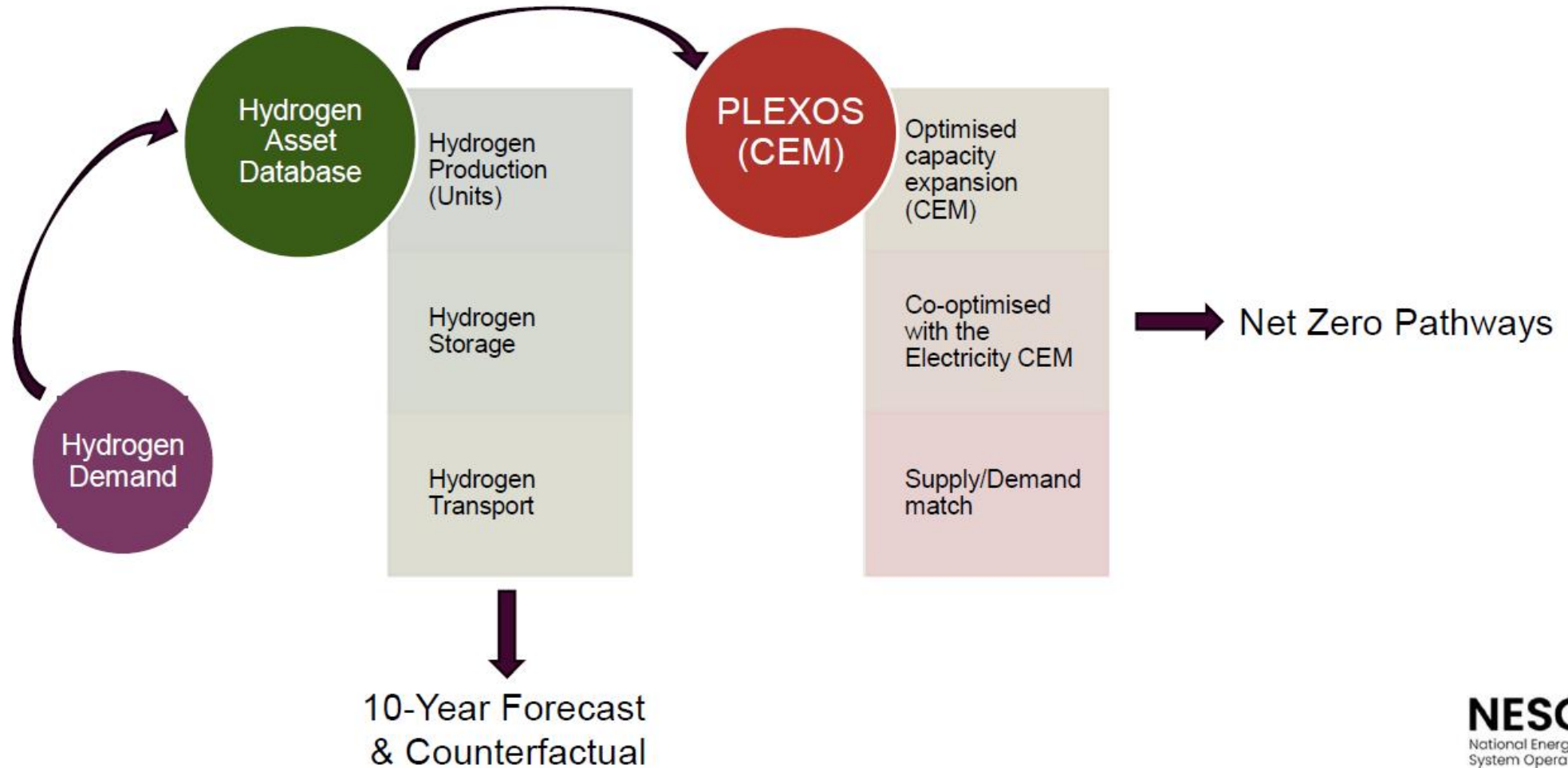- Northern Ireland "FES" Sectors

"FES Sectors"

"Non-FES Sectors"

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FES 2025 Pathway Framework (DRAFT)

Future Energy Scenarios outputs

- ◯ Holistic Transition
- ◯ Electric Engagement
- ◯ Hydrogen Evolution
- ◯ Counterfactual

Scale of consumer engagement

Electrification

Dispatchable energy sources*

Renewable energy sources*

EE
HT
HE
CF

Low
High

Low carbon fuels

Unabated fossil fuels

*Includes electricity and hydrogen production

High
Medium
Low

Net Zero

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Hydrogen Supply and Carbon Capture

Hydrogen Supply

How do we build a hydrogen network for FES?

Hydrogen Demand → Hydrogen Asset Database → PLEXOS (CEM) → Net Zero Pathways

Hydrogen Asset Database:
- Hydrogen Production (Units)
- Hydrogen Storage
- Hydrogen Transport

→ 10-Year Forecast & Counterfactual

PLEXOS (CEM):
- Optimised capacity expansion (CEM)
- Co-optimised with the Electricity CEM
- Supply/Demand match

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Hydrogen Demand (FES2024)

Hydrogen demand (total %) in 2050 across NZ pathways

Holistic Transition (182 TWh)

- Shipping 39%
- Power 11%
- Industrial 27%
- Aviation 8%
- Commercial 3%
- Road Transport 3%
- Rail 1%
- Heating 8%
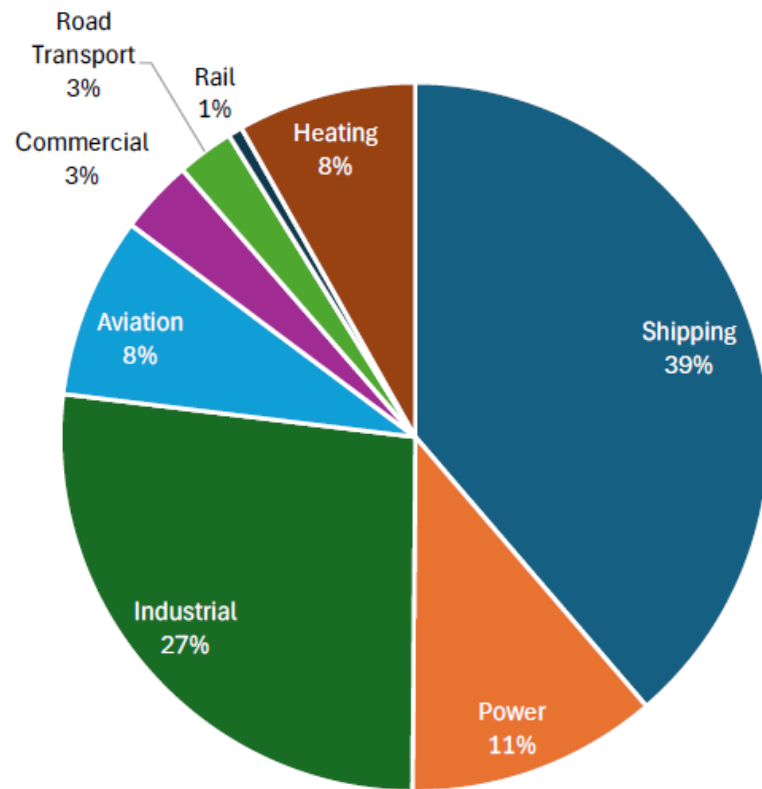
Electric Engagement (138 TWh)

- Shipping 49%
- Power 26%
- Industrial 11%
- Aviation 11%
- Commercial 1%
- Road Transport 1%
- Rail 1%
- Heating 0%
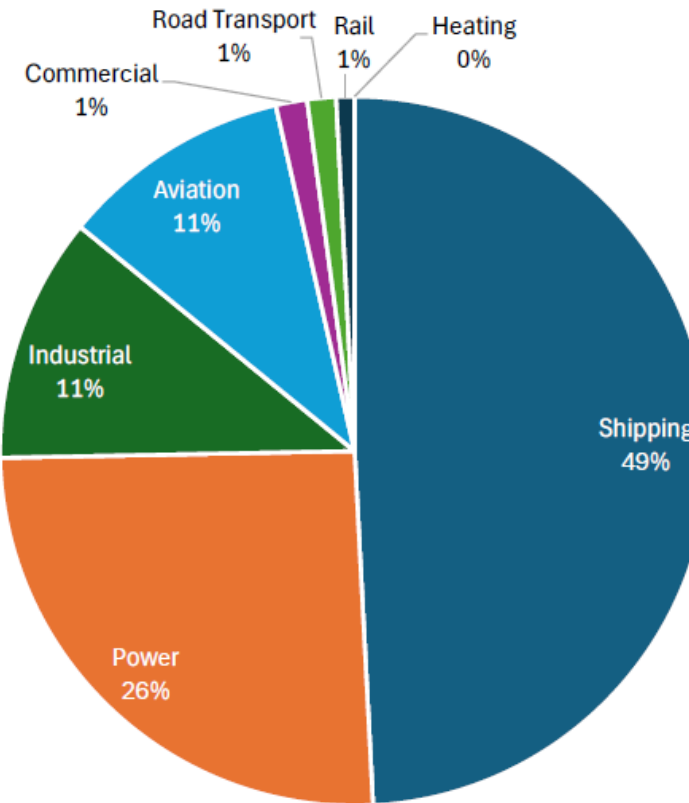
Hydrogen Evolution (393 TWh)

- Shipping 18%
- Power 21%
- Industrial 20%
- Aviation 4%
- Commercial 4%
- Road Transport 13%
- Rail 0%
- Heating 20%

10

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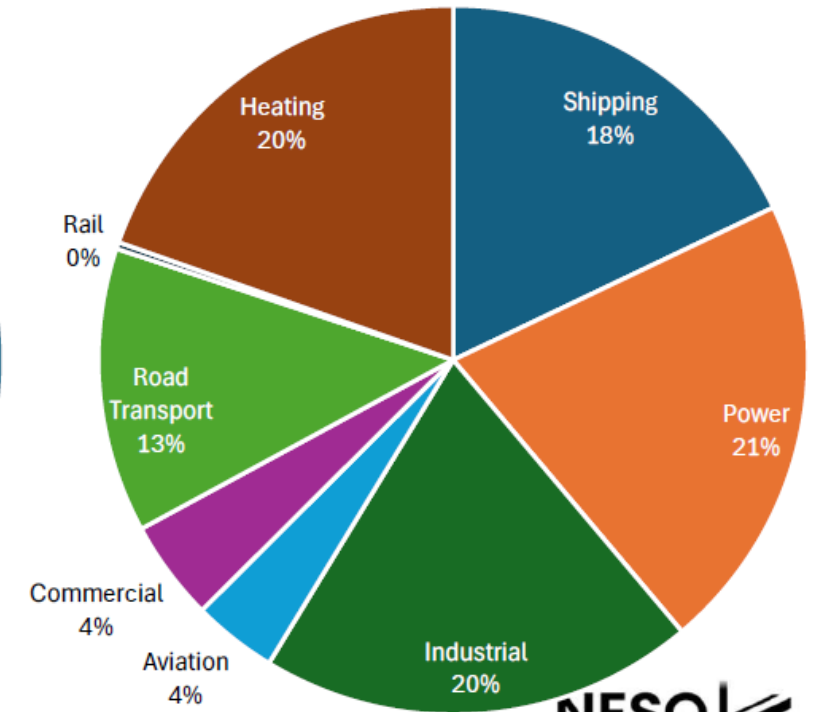
Hydrogen Supply (from FES2024)

Hydrogen supply (TWh) per production type across NZ pathways

Holistic Transition (TWh)

- Methane reformation with CCUS
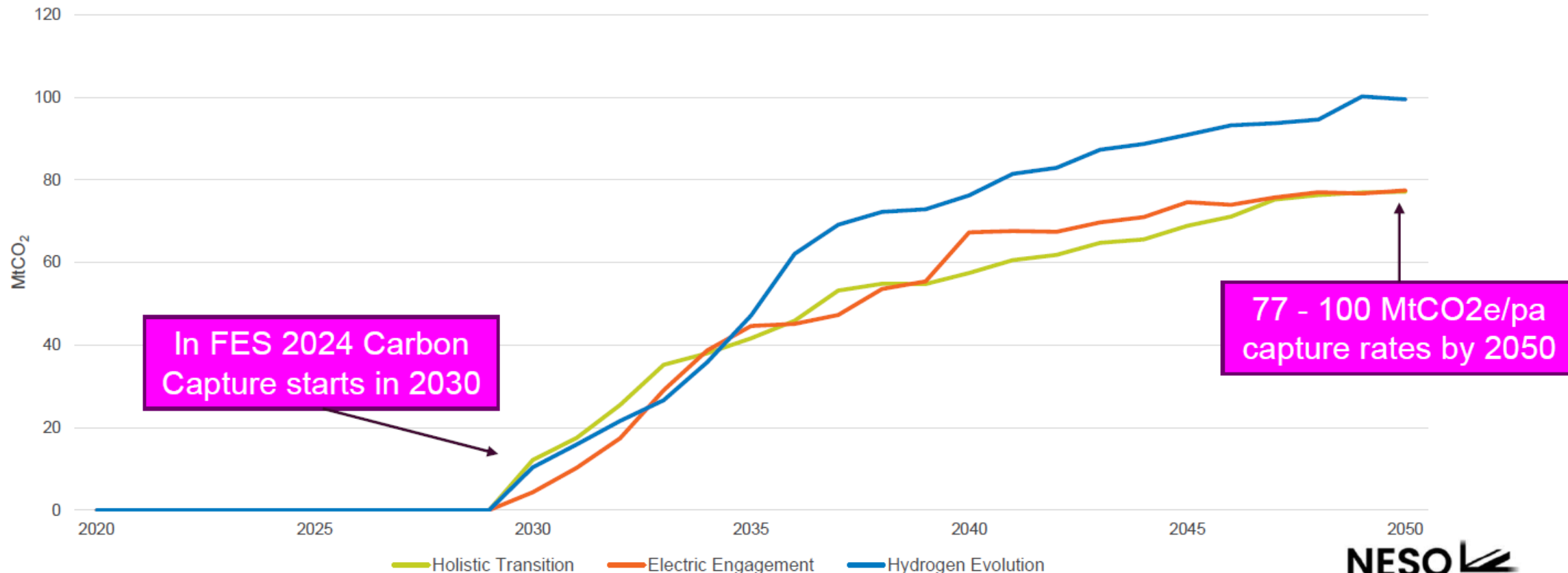- Networked electrolysis
- Non-networked electrolysis
- Biomass gasification

Electric Engagement (TWh)

- Methane reformation with CCUS
- Networked electrolysis
- Non-networked electrolysis
- Nuclear electrolysis

Hydrogen Evolution (TWh)

- Methane reformation with CCUS
- Networked electrolysis
- Non-networked electrolysis
- Biomass gasification
- Nuclear electrolysis

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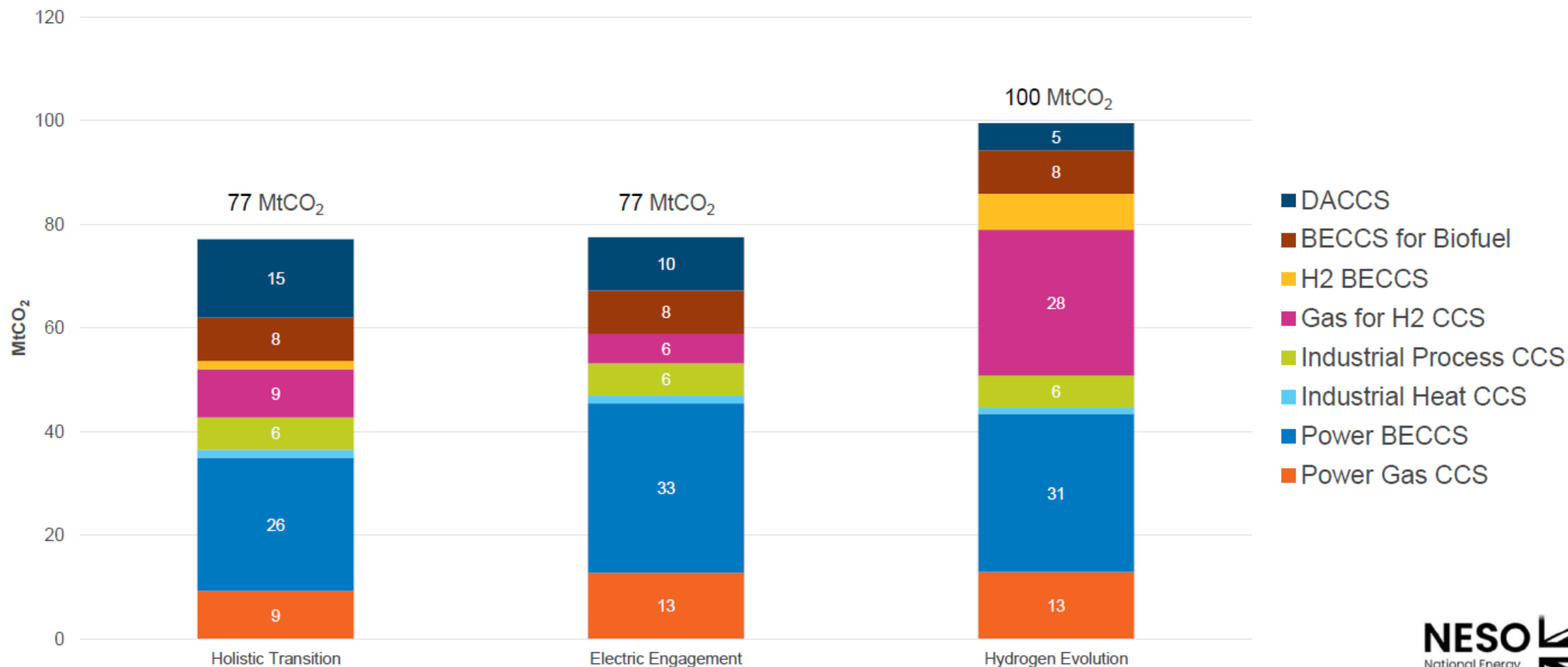System Operator
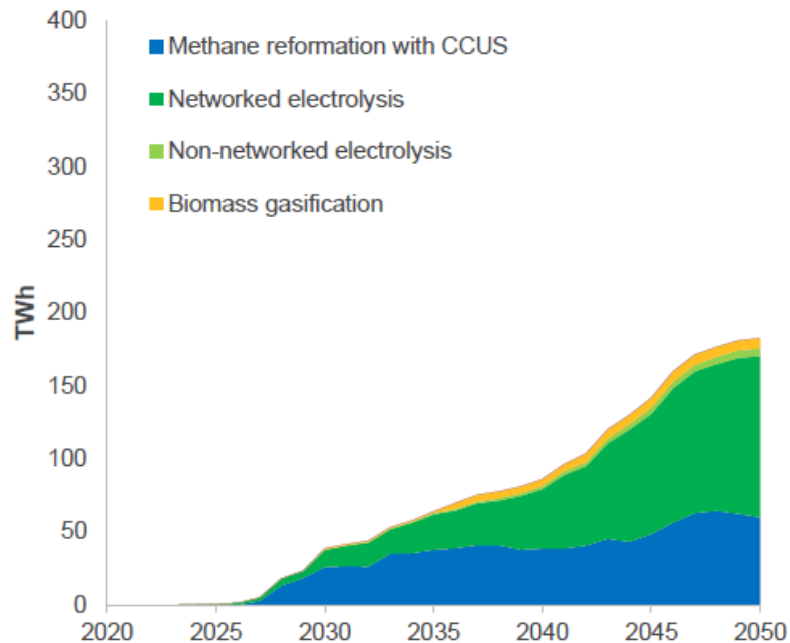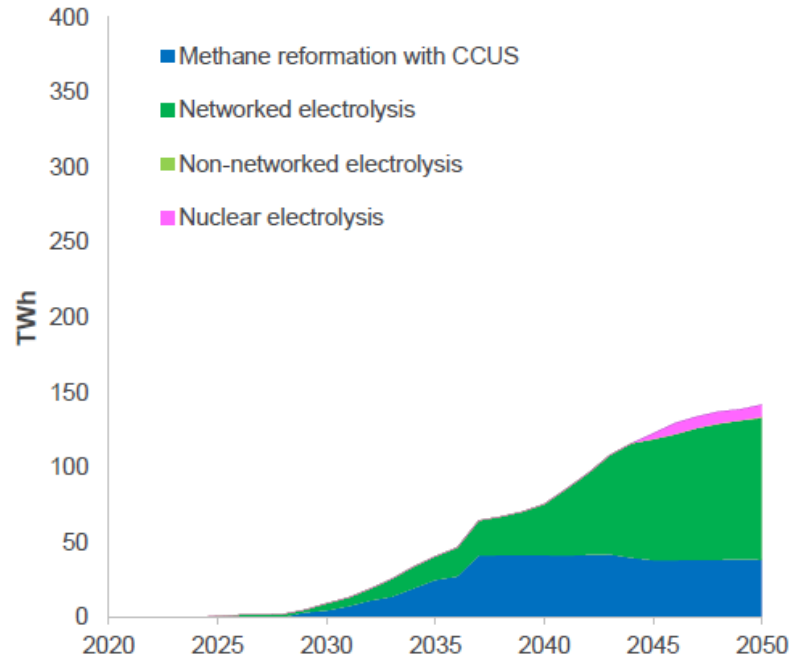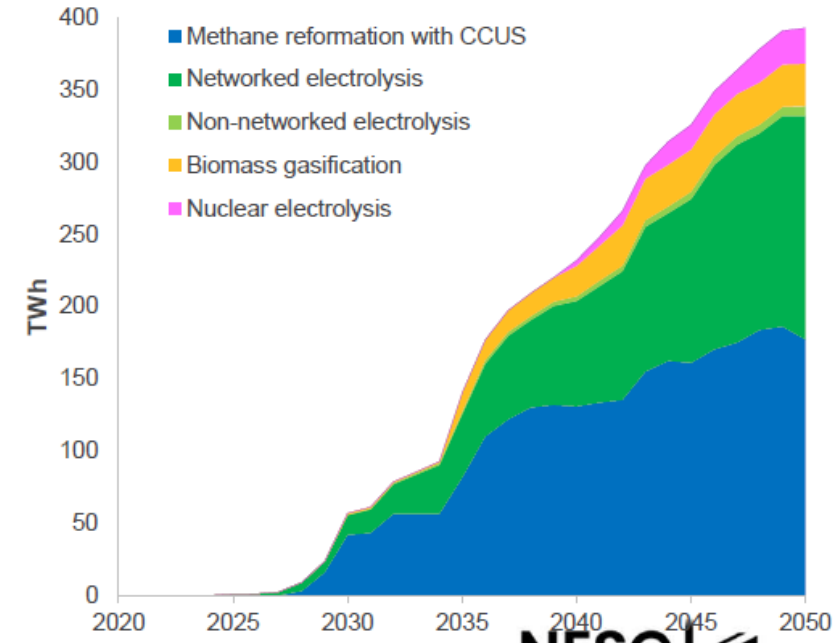
Carbon Capture (1)

To meet Carbon Budgets and Net Zero by 2050,
Carbon Capture technologies must be used to remove process, and residual emissions

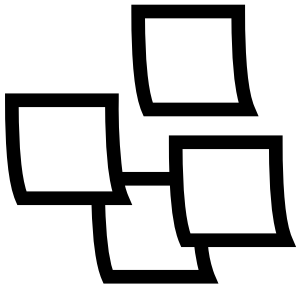(FES 2024) Annual Carbon Capture Rates
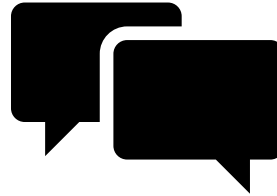
In FES 2024 Carbon Capture starts in 2030

77 - 100 MtCO2e/pa capture rates by 2050

Holistic Transition — Electric Engagement — Hydrogen Evolution

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Carbon Capture (2)

(FES 2024) Carbon Captured in 2050

Projects

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Refining the GAC Projects list

Initial brainstorming

121 feedback sessions

Prioritisation

**January
(01 GAC)**

March-April

**May
(02 GAC)**

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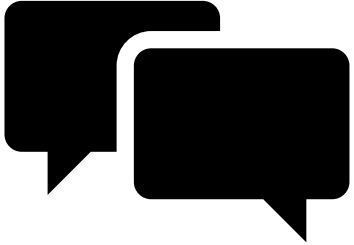System Operator

121 feedback sessions

"We need to assess what we are able to do by end of 2026"

"We should spend more time thinking about the overall governance"

"Useful to illustrate what the impact of the GAC could look like"

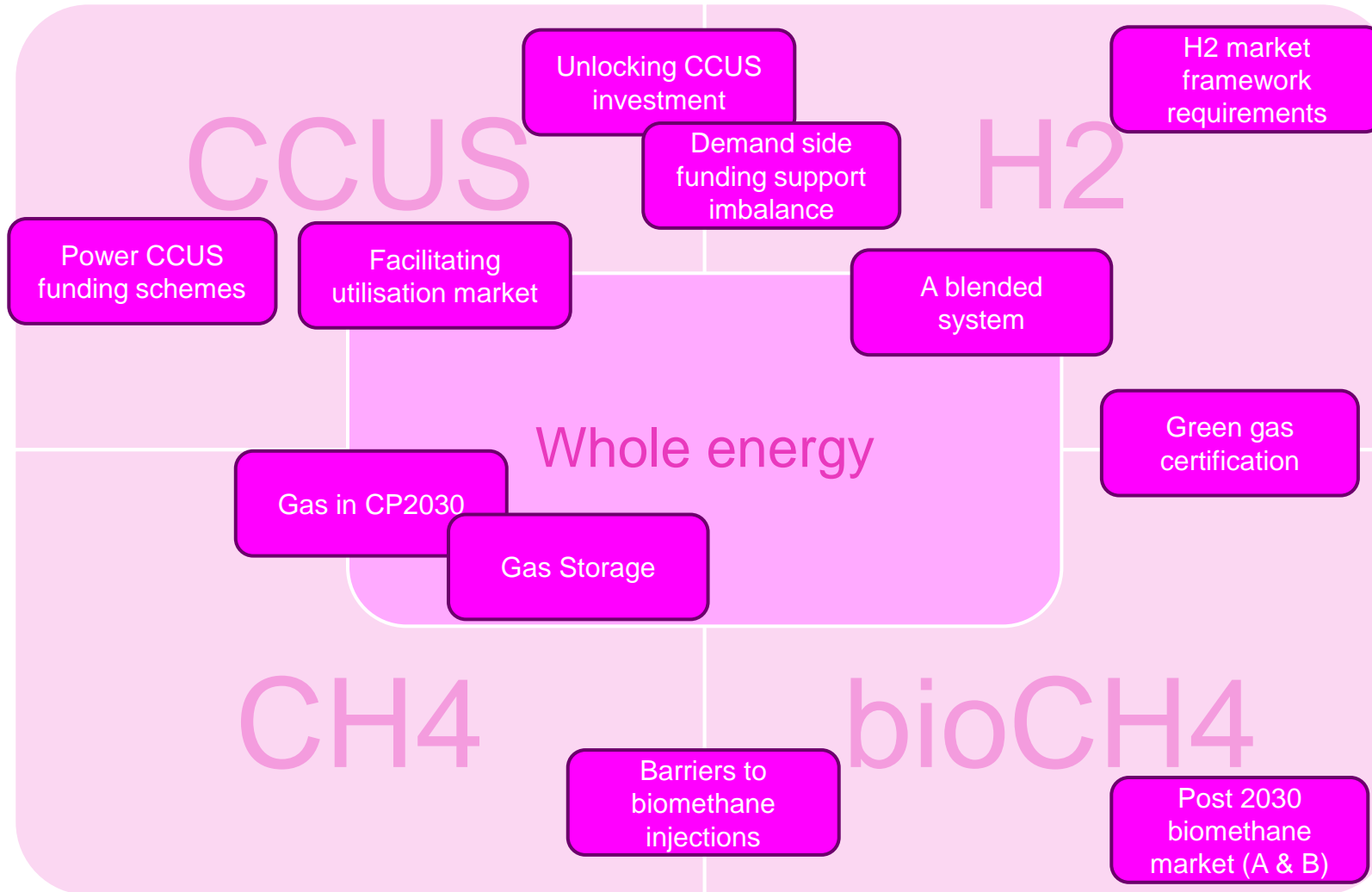"We should define overarching principles for the GAC work"

We should consider how we maintain progress between meetings

"We need to be mindful of duplication: some projects might be happening in other places"

"Projects that look at things on a more overall, medium to long-term strategic level, would be more welcome"

"The GAC should be used as a 'cabinet meeting' and focus the discussion on key points and decisions"

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Introduction to the proposed GAC Projects

CCUS

- Unlocking CCUS investment
- Demand side funding support imbalance
- Power CCUS funding schemes
- Facilitating utilisation market

H2

- H2 market framework requirements
- A blended system
- Green gas certification

Whole energy

CH4

- Gas in CP2030
- Gas Storage
- Barriers to biomethane injections

bioCH4

- Post 2030 biomethane market (A & B)

On Hold

- Domestic Heating Roadmap
- Just Transition in the North Sea
- Methane leakage
- Decommissioning/ repurposing

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Breakout Session Outcomes

1

Feasibility & Refinement

The first breakout session will look to review project charters and collate feedback

2

Initial ranking

Once project charters are agreed, we will run a ranking exercise to help identify projects to target first.

3

Identification of first projects

Following the initial ranking exercise, we will validate with the group and come to single conclusion on the first wave of projects to commence.

Lunch Break

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Breakout session 1

Validate the Project charters

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Objectives for the second GAC meeting

Identify
a list of Projects

Based on discussions held during the 01 GAC and the 121 Feedback sessions, the Tech Sec has developed a list of proposed Project Charters.

GAC are invited to get familiar with this list ahead of the 02 GAC and prepare any additional Project proposal.

Validate
the Projects scope

GAC Members will evaluate the feasibility of the proposed Project Charters and provide their inputs to consolidate them if identified as relevant.

How?

Breakout session 1
30 min

Breakout session 1
30 min

Members to be allocated a Core Group and work on 2-3 Projects

Opportunity to join another group and provide contribution to a specific Projects

Prioritise
the most relevant Projects

Under the guidance of the Chair and the Tech Sec, GAC Members will agree on a clear priority list of GAC Projects to initially focus on.

How?

Breakout session 3
20 min

Plenary session
40 min

Core Groups assess the level of priority of its allocated projects

Each Core Group reports back to the whole GAC helping to identify the Projects that needs to be prioritised

Before the meeting

During the meeting

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Group Allocation

Groups have been randomly allocated for the first 30 minutes, during the second 30 minutes, please input to other groups as you feel fit

Group 1	Group 2	Group 3	Group 4
Power CCUS funding schemes	Facilitating utilisation market	Green gas certification	Barriers to biomethane injections
A blended system	Post 2030 biomethane market (A & B)	Unlocking CCUS investment	Gas in CP2030
Gas Storage	H2 market framework requirements	Demand side funding support imbalance	

Key questions to answer:

- Does the problem statement and outcomes aptly describe the project? Is there anything missing?
- Do you know of overlap or area's where this project is being discussed elsewhere in industry?
- Is there any other reason why this project shouldn't go ahead as a project?
- What other stakeholders may be involved in the project?
- What timeline is appropriate for this project?

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Breakout session 2

Prioritise Projects and identify the first series of GAC Projects

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Prioritisation 2

For 20 mins, each group should assess the level of priority of its allocated Projects using the following ranking schemes

Ranking based on a rating (Red – Amber – Green) of various parameters:

Ranking projects as Priority 1-3:

1. What is the potential level of impact of this project – how much change is needed, and would this project facilitate the change? (high impact projects as priority 1 through to lower priority projects as priority 3)

2. What is the level of urgency for this project – is this project needed urgently to unlock markets (priority 1) or is there more time available to look into this project (priority 3)

Ranking as Red-Amber-Green:

1. What is the time requirement to deliver this project (green for a quick win through to red as a complex task)

2. How complex would this project be to undertake – for example number of stakeholders, data availability, external analysis requirements etc (less complexities green through to more complexities as red)
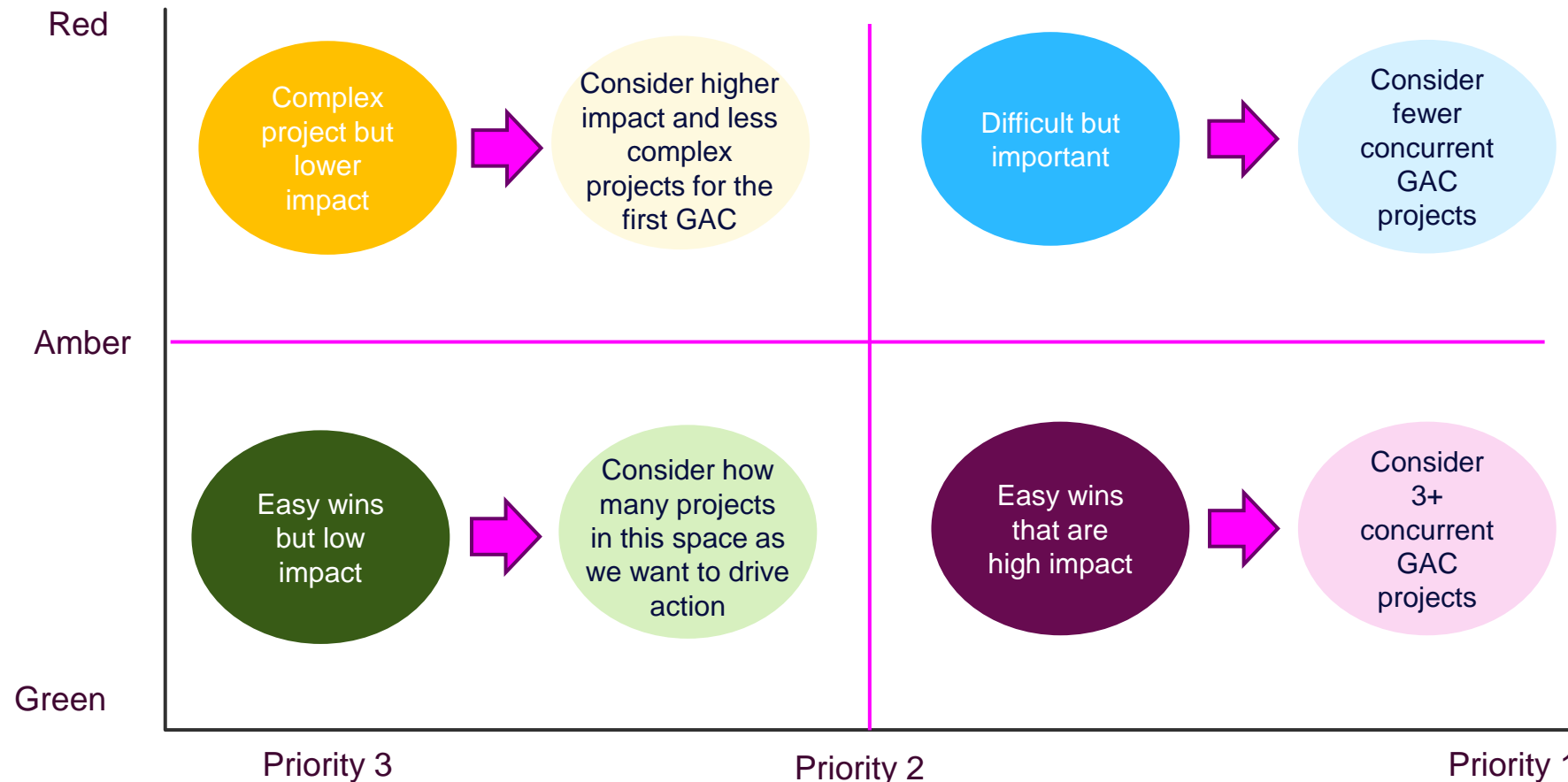
Individual groups will rank 2-3 projects in their original groups which will then be discussed in a plenary session to get agreement from the whole GAC.

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Breakout Session Plenary

Prioritisation exercise

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Prioritisation

Once ranking for projects has been agreed we will discuss and identify which projects should be taken forward using the following:

Red

Complex project but lower impact → Consider higher impact and less complex projects for the first GAC

Difficult but important → Consider fewer concurrent GAC projects

Amber

Easy wins but low impact → Consider how many projects in this space as we want to drive action

Easy wins that are high impact → Consider 3+ concurrent GAC projects

Green

Priority 3   Priority 2   Priority 1

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Prioritisation

Once ranking for projects has been agreed we will discuss and identify which projects should be taken forward using the following:
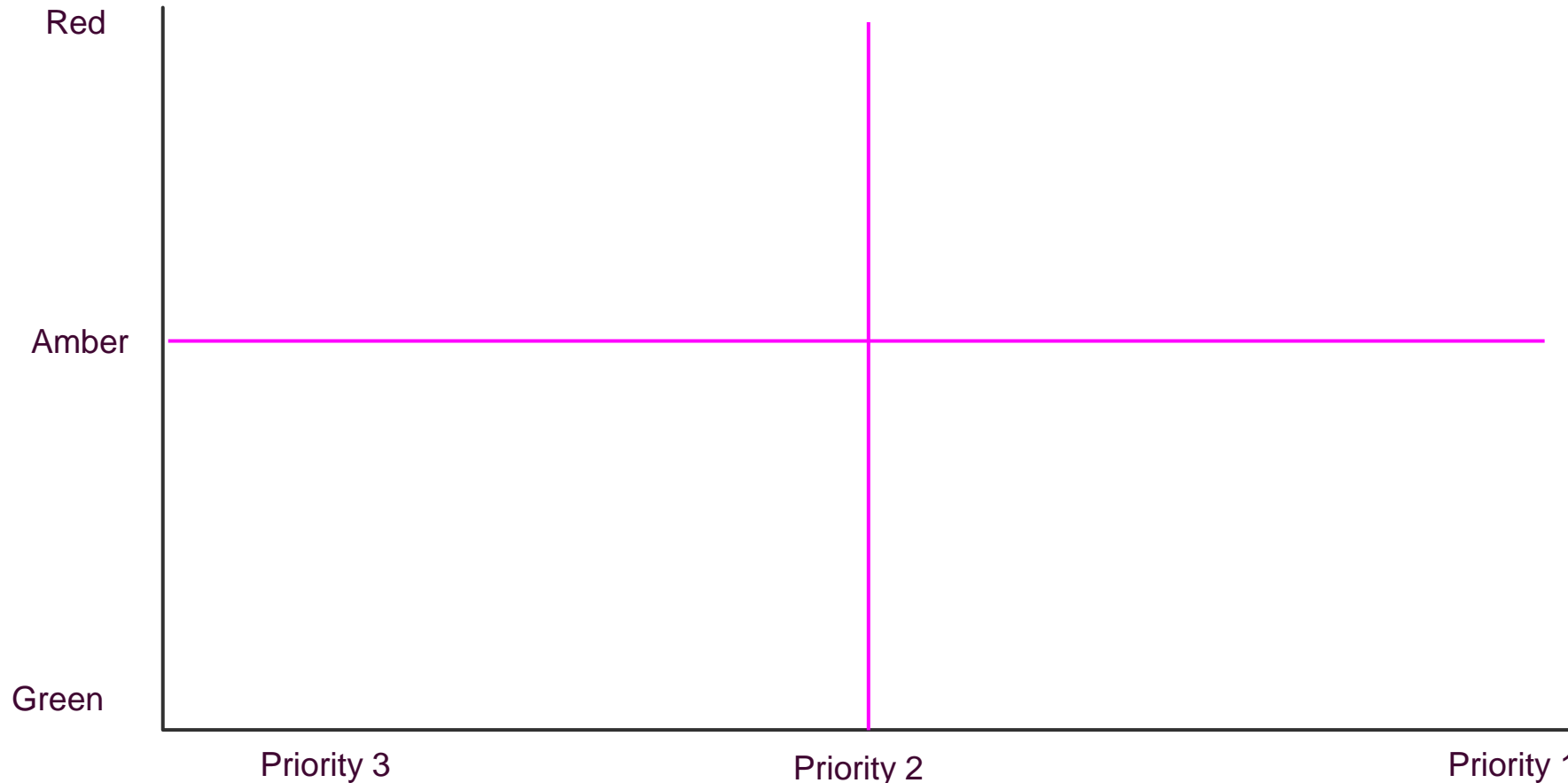
Next Steps

Next Steps: Between GAC 02 and 03

02 GAC
14th May

Feedback sessions with GAC Members

03 GAC
~ July

Identify
Project scope working groups

Draft
Project scopes and project plan documentation

Finalise
Project plan approval and next steps

Identify and form project scoping working groups, prioritising availability and relevance to help define project scope and work on projects

1. Project goals (objectives)
2. Project deliverables
3. Resource plan and additional requirements plan
4. Project risks
5. Define project tasks and activities
6. Define project exclusions (out of scope)
7. Project timeline

1. Formal agreement on project plans
2. Project progress review
3. Discussion on future market plan

Note: Projects will begin before GAC 03, given project plans are finished

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AOB+

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