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# Claire Mack

## Chief Executive

### Scottish Renewables



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# Richard Lochhead MSP

## Minister for Just Transition, Employment and Fair Work



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# Playing the long game – a cleaner, cheaper, more resilient UK energy system



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# Playing the long game – a cleaner, cheaper, more resilient UK energy system

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Chief Executive, Scottish Renewables

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Minister for Just Transition, Employment and Fair Work

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CEO and Founder, Ripple Energy

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# Tackling grid integration of clean energy assets

Chaired by: Morag Watson, Director of Policy,  
Scottish Renewables



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**Kate Mulvany**  
Senior Consultant  
Cornwall Insight



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# About Cornwall Insight

## Our insight

Our independent experts work across the energy market and provide high quality and actionable insights on which to base your business decisions. We look to facilitate positive market and policy change, whilst also advising customers on how to navigate and comply with energy market dynamics, rules and regulations.

## Our expertise

Our experts in-depth working knowledge of energy market design, including policy and regulatory changes, means we are perfectly placed to advise on changes to the future market design and help businesses achieve their net zero goals.



Energy net zero



Modelling



Training



Consultancy



Market engagement

*The information on this presentation is provided for information only and does not constitute, and should not be construed as, investment advice, or a recommendation to buy, sell, or otherwise transact in any investment including any products or services or an invitation, offer or solicitation to engage in any investment activity. We will not be liable in respect of any damage, expense or other loss you may suffer arising out of such information or any reliance you may place upon such information.*

# Kate Mulvany, Senior Consultant



[k.mulvany@cornwall-insight.com](mailto:k.mulvany@cornwall-insight.com)



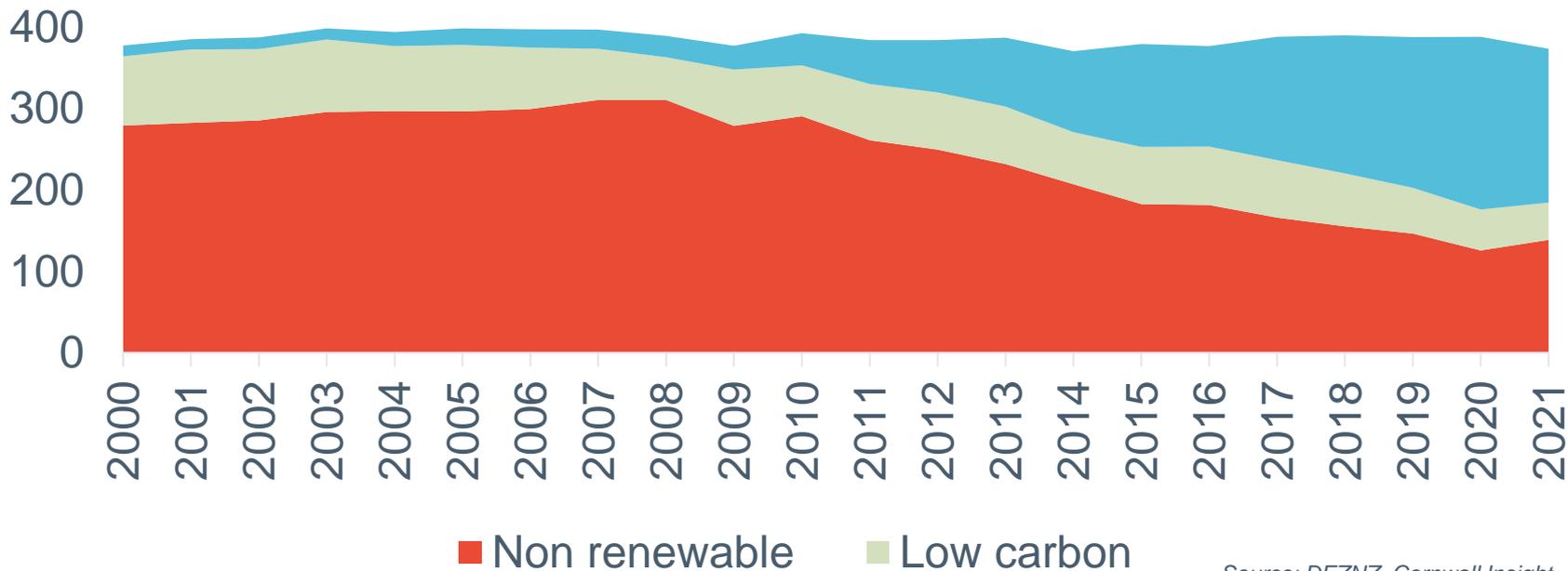
[@katemulvany](https://twitter.com/katemulvany)



[www.linkedin.com/in/kate-mulvany](https://www.linkedin.com/in/kate-mulvany)

# GB electricity generation by fuel (TWh)

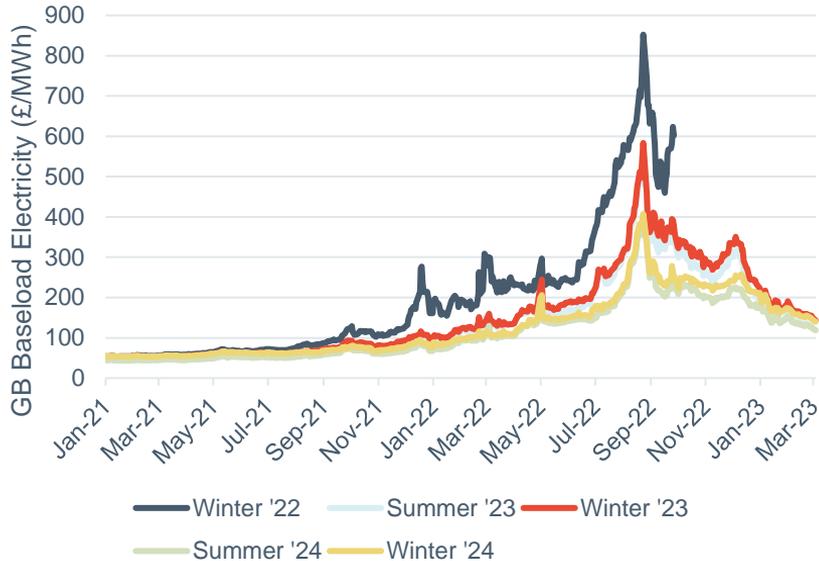
The rise of renewable generation is the most significant story in energy.



Source: DEZNS, Cornwall Insight

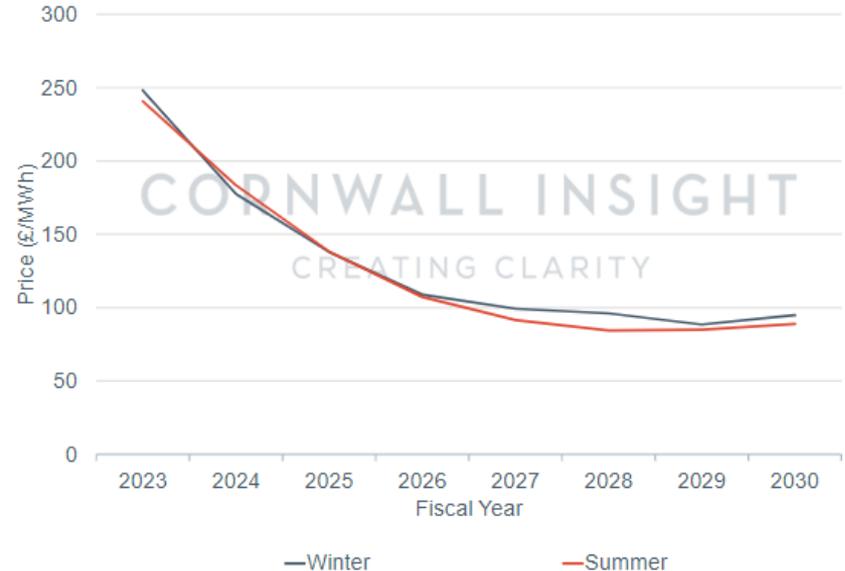
# High and volatile energy prices are sticking around

Selected seasonal UK Baseload electricity contracts (£/MWh), January 2021 to present



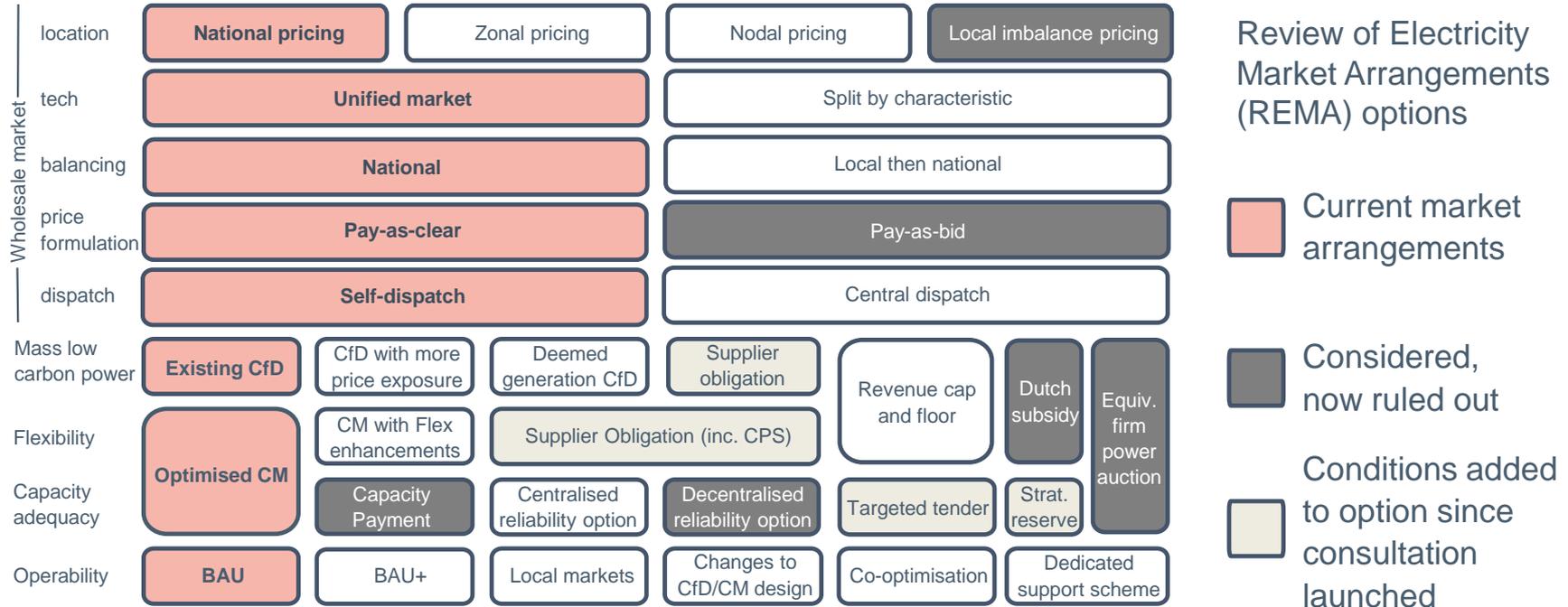
Source: InterContinentalExchange

Q4 2022 GB Power Market Outlook to 2030: Average seasonal prices per fiscal year



Source: Cornwall Insight

# DESNZ REMA options



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# Simon Gill

## Energy Consultant

### The Energy Landscape



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# Tackling grid integration of clean energy assets: The importance of flexibility in the future power system

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Scottish Renewables: Net Zero Energy Conference

22<sup>nd</sup> March 2023

Simon Gill,  
Independent Consultant: The Energy Landscape  
Associate with Regen

[simon@energylandscape.co.uk](mailto:simon@energylandscape.co.uk)

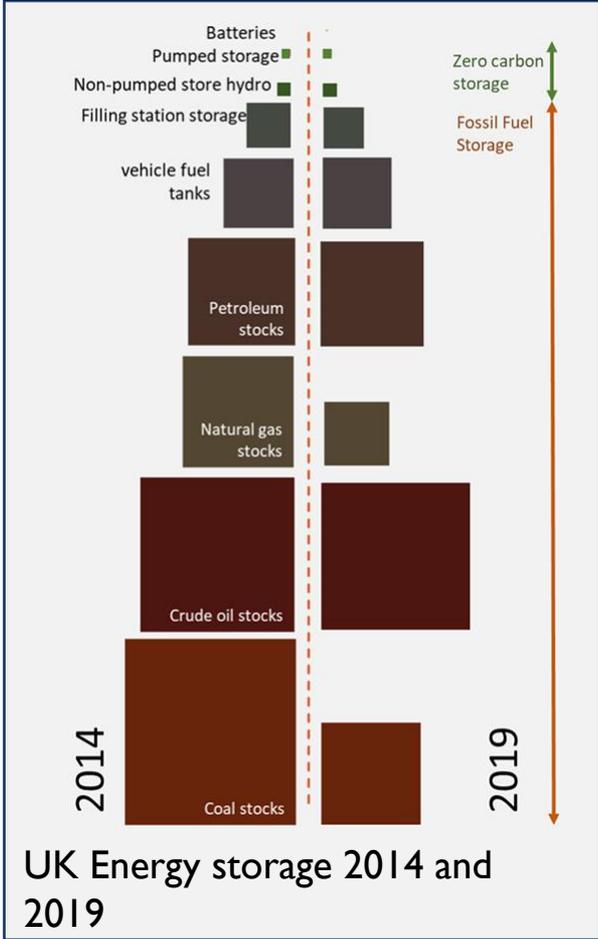
<https://www.linkedin.com/in/simon-gill-energy/>

<https://www.regen.co.uk/>

07990668445

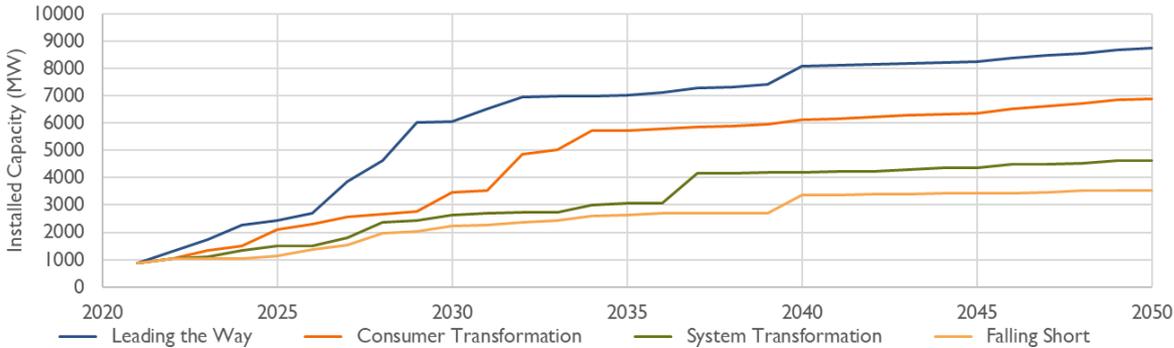
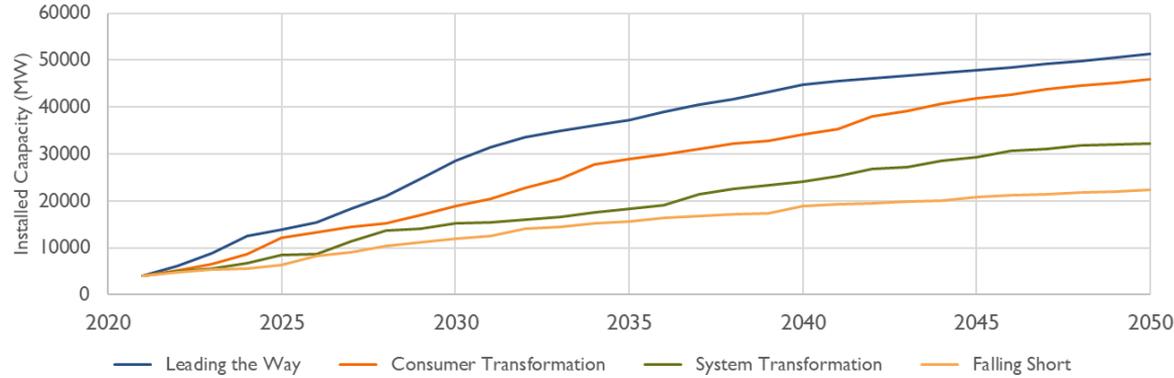


# The importance of flexibility



## Why we need low carbon flexibility

# The importance of flexibility



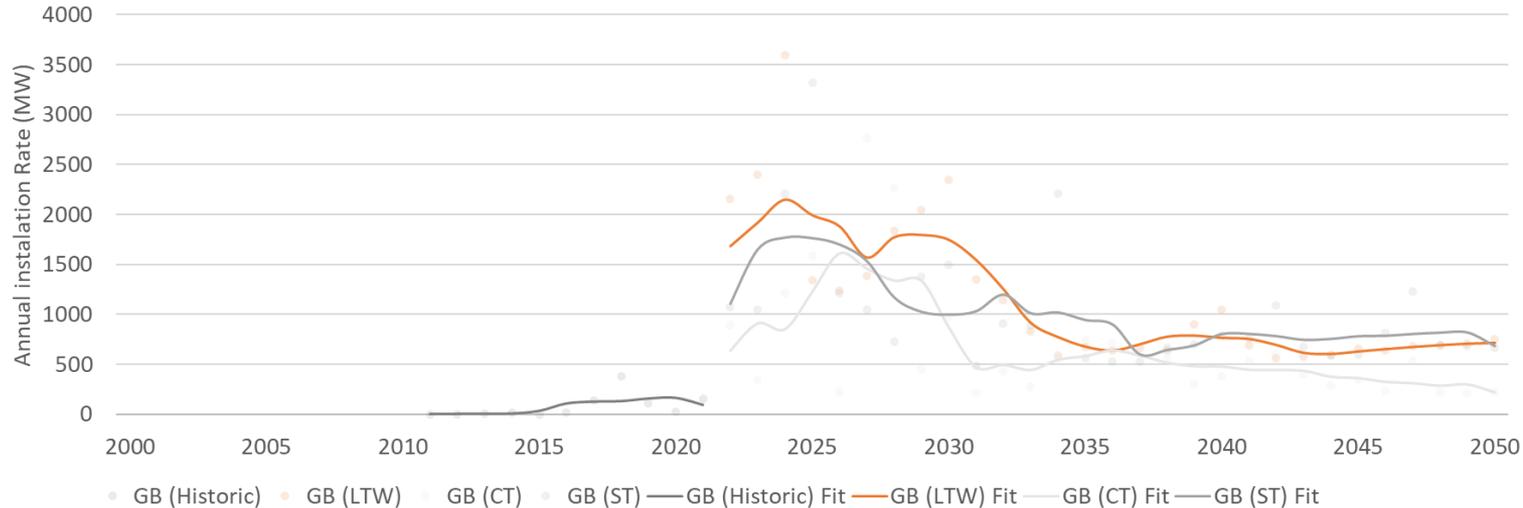
Future Energy Scenarios 2022:

Energy storage in GB and Scotland

Analysis based on [NGESO FES 2022](#) data workbook.

© Simon Gill, The Energy Landscape, 2023

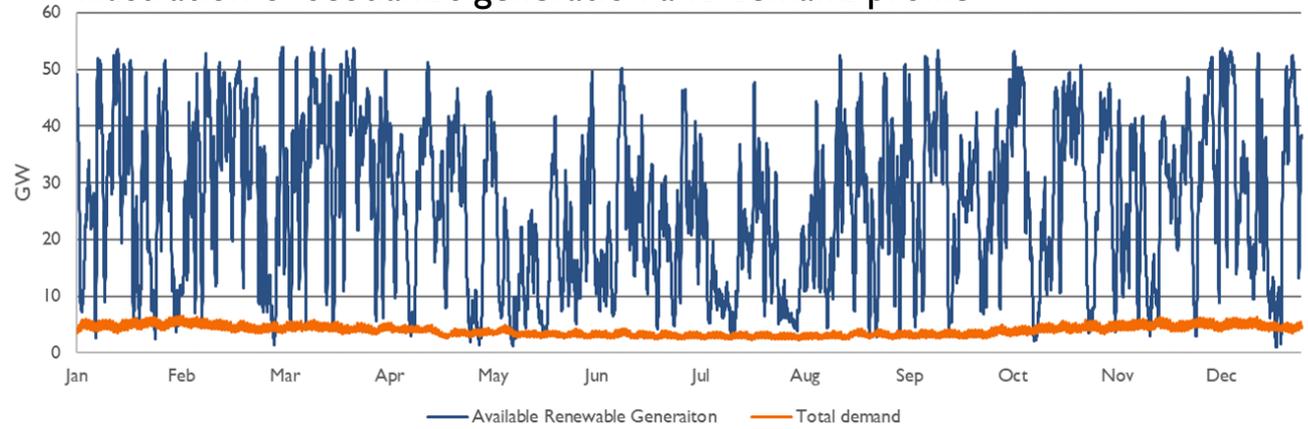
# The importance of flexibility



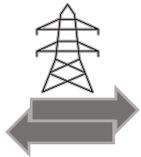
**GB-wide rate of development needs to dramatically increase for flexibility. There is a good pipeline of projects, we need to get them connected**

# The importance of flexibility

Illustration of Scotland's generation and demand profile



Energy Storage



Import / export

H<sub>2</sub>

Green Hydrogen



Generation flexibility



Demand side flexibility



Vehicle to grid

Balancing supply and demand, Scotland's contribution to GB decarbonisation and the facilitating role of flexibility



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# David Boyland

## Senior Commercial Policy Manager SSEN Transmission



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# Tackling grid integration of clean energy assets

Scottish Renewables Net Zero Energy Conference 2023



# About SSEN Transmission



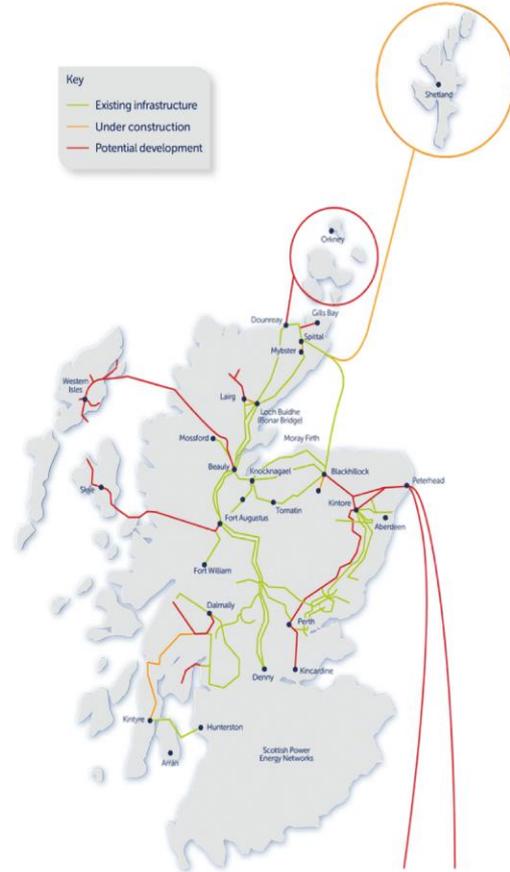
TRANSMISSION

SSEN Transmission, the trading name for Scottish Hydro Electricity Transmission

Following a minority stake sale which completed in November 2022, we are now owned 75% by SSE and 25% Ontario Teachers Pension Plan Board.

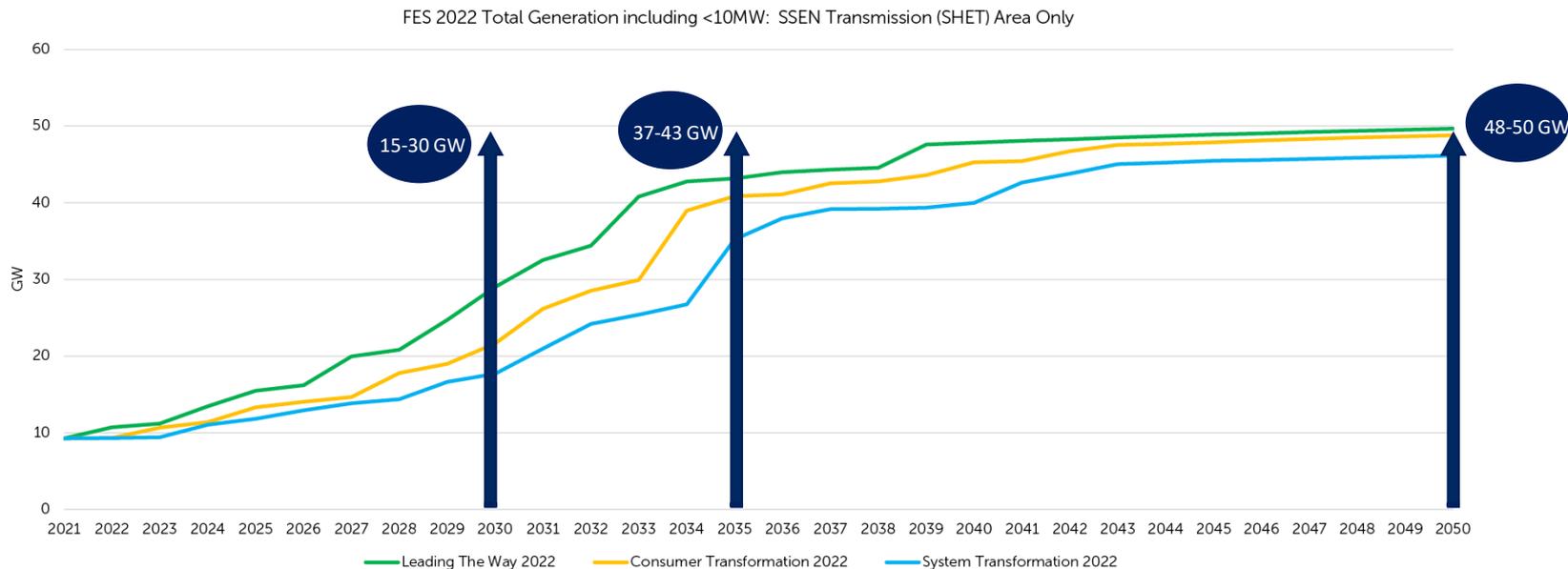


We are responsible for the electricity transmission network in the north of Scotland, maintaining and investing in the high voltage 132kV 220kV and 400kV electricity transmission network.



# North of Scotland is a key enabler of GB's energy transition

SSEN Transmission set to deliver 10% of GB total emissions abatement required for net zero



Source: [Future Energy Scenarios 2022 | National Grid ESO](#)

Scottish Hydro-Electric Transmission (SHET) is part of SSE plc and operates under licence as SSEN Transmission

# MAIN NORTH OF SCOTLAND ELECTRICITY TRANSMISSION NETWORK IN 2030

## Investments currently in discussion with Ofgem

1. Argyll 275kV strategy
2. Fort Augustus to Skye 132kV upgrade
3. Orkney 220kV AC subsea link

## Pathway to 2030 Investments

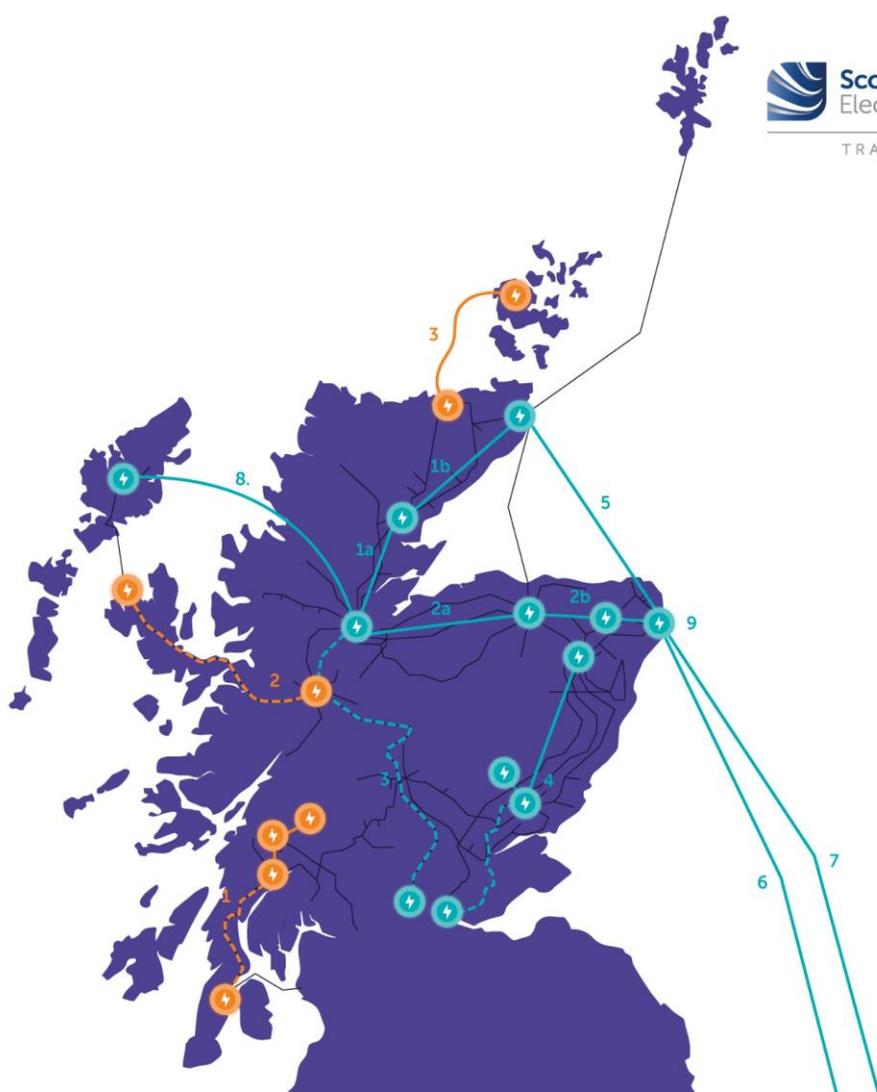
- 1a. Beauly to Loch Buidhe 400kV reinforcement
- 1b. Loch Buidhe to Spittal 400kV reinforcement
- 2a. Beauly to Blackhillock 400kV double circuit
- 2b. Blackhillock and Peterhead 400kV double circuit
3. Beauly to Denny 275kV circuit to 400kV
4. East Coast Onshore 400kV Phase 2 reinforcement
5. Spittal to Peterhead 2GW HVDC subsea link
6. Peterhead to Drax 2GW HVDC subsea link (EGL2)
7. Peterhead to South Humber 2GW HVDC subsea link (EGL4)
8. Arnish to Beauly 1.8GW HVDC Western Isle link
9. Aquila Pathfinder - Peterhead DC switching substation

## Public Consultation to Inform Project Development

All new reinforcements remain subject to detailed consultation and environmental assessments to help inform route and technology options

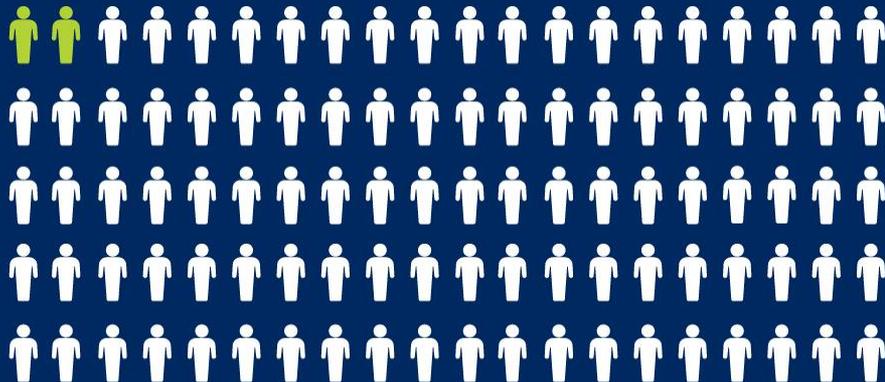
More detail on these projects, including how to sign up for updates, will be made available on SSEN Transmission's website, [www.ssen-transmission.co.uk](http://www.ssen-transmission.co.uk)

-  New Infrastructure (Routes shown here are for illustrative purposes)
-  Upgrade/Replacement of Existing Infrastructure
-  Existing Network



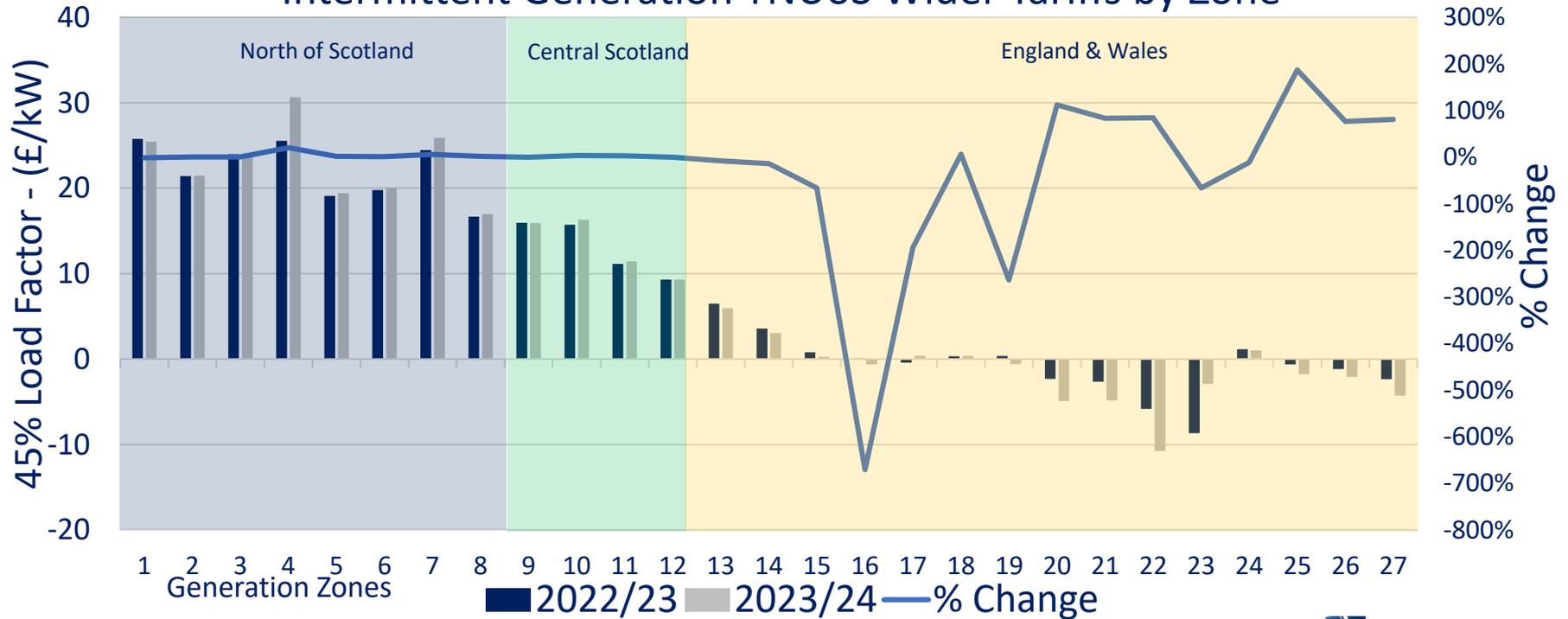


The region produces and exports low carbon electricity, and is home to **just 2% of the UK population.**



# TNUoS Remains A Huge Concern

## Intermittent Generation TNUoS Wider Tariffs by Zone



# The uncertainty of radical reform – Locational Marginal Pricing

FTIs modelling for Ofgem predicts 30% of wind generation would relocate as a result of the implementation of LMP



## New Zealand

- ❖ Anticipatory investment
- ❖ Limited Constraints
- ❖ Market failure on introduction
- ❖ Generation siting decision based on resources
- ❖ Strong financial mechanisms



## Texas

- ❖ Investment hiatus resulting in CREZ
- ❖ Significant wind investment sited per resources
- ❖ Weather events crashed the market



## PJM

- ❖ Long standing LMP model.
- ❖ Works well in the current system
- ❖ Renewable climbed only c.10% since 1999
- ❖ LMP has not assisted with decarbonisation



LMP does not create a natural pathway to Net Zero, potential investment hiatus of renewables in the north of Scotland.

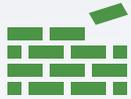


Regardless of market design: the fundamental reason for constraints is a lack of adequate network investment. There is no evidence that LMP would solve this.

# Our ask...



Promote the north of Scotland as a Net Zero power house



Evolution not revolution



Stability and confidence



Defined roles & responsibilities



Local communities must reap the rewards



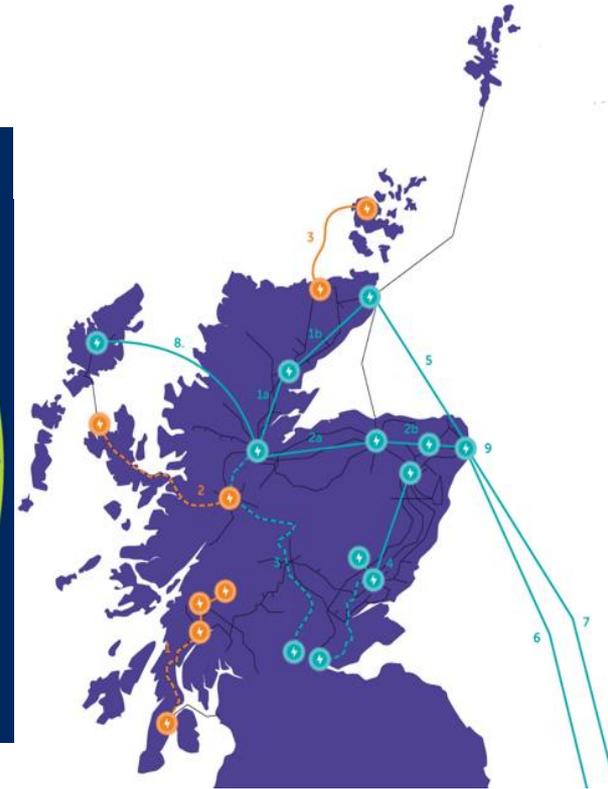
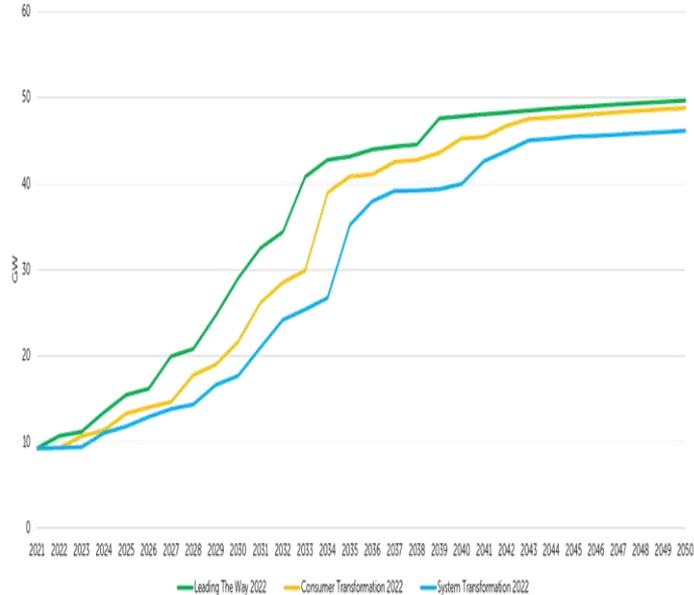
Proactive & Accelerated



Targeted approach

# We have a target, we know Scotlands worth and we have a plan

FES 2022 Total Generation including <10MW: SSEN Transmission (SHET) Area Only



Source: Future Energy Scenarios 2022 | National Grid ESO

Scottish Hydro-Electric Transmission (SHET) is part of SSE plc and operates under licence as SSEN Transmission



Thank you

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# Lynne Bryceland

## Head of Transmission Regulation and Policy SP Energy Networks



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# Tackling grid integration of clean energy assets

*Lynne Bryceland*

22 March 2023

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# An overview of SP Transmission (SPT)



Across our transmission network, we are looking to invest over £5bn in transmission projects in South and Central Scotland by 2030

# Transmission as an enabler for Net Zero

Major energy networks projects in central and southern Scotland are being driven by the need to deliver new connections, reinforce the MITS, modernise our assets and ensure security and system operability.

## 2022 Future Energy Scenarios



Onshore and Offshore  
Wind in Scotland:

Up to **60GW** by 2040

Increasing the transfer  
requirement between  
Scotland and England to:

Up to **40GW** by 2040

Current Transfer  
Capacity: **6.6GW**

## Historical B6 Capability and Maximum Required Transfer FES 2019 - FES 2022



Plans will see an increase in current B6 boundary capacity almost threefold, to 15GW by 2030, in half the time it took us to increase boundary capability [threefold] to 6GW

# HND Recommendations in SP Transmission's Area

The ESO's Holistic Network Design (HND) and Network Options Assessment (NOA7 Refresh), published in July 2022, identified **17 projects** in SPT's Licence Area required by **2037**, including uprating of existing routes and **7 major new routes**:

## HND Recommendations for SPT

12 SPT projects are identified as required to meet 2030 targets

2 of the 12 required projects will require acceleration to 2030 timelines

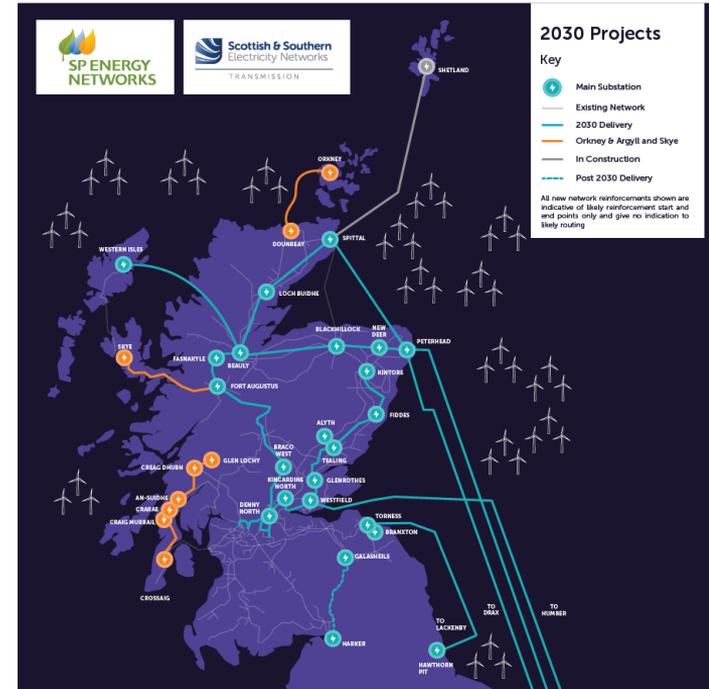
4 projects fall within Ofgem's Accelerated Strategic Transmission Infrastructure (ASTI) framework

5 SPT projects are identified as required post-2030

1 further project required by 2030, is likely to be added to ASTI for SPT delivery

## Next Steps

- The TOs are working with BEIS and Ofgem in relation to **key asks** regarding regulatory processes, consenting and enabling timely project delivery.
- SPT is working to accelerate analysis, design, development and delivery of **all 17 projects** identified in HND.
- The ESO's HND did not consider ~15GW of remaining ScotWind generation, which is being considered as part of the current **HND FUE** to be published in November 2023. This could move further SPT projects to 'required by 2030' status.
- Connection offers for in-scope generation are currently being reviewed and updated to reflect the HND recommendations.



# Accelerating Strategic Transmission Delivery

Ofgem's efforts to introduce the ASTI framework for accelerating delivery of strategic transmission infrastructure delivery is a good starting point but further action is needed.

The pace and scale of Transmission Investment required is unprecedented and the **focus must be on delivery** :

- We must accelerate outcomes, making efficient use of available industry resources and minimising time consuming abortive work.
- It is essential to develop the projects for completion before and after 2030 to meet Net Zero ambitions.
- ASTI is welcomed for the strategic projects but lower value enabling works projects are equally important and also require process acceleration.
- The potential for introducing 3<sup>rd</sup> party competition (CATOs) is a distraction and must not dilute the network planning and delivery responsibilities of TOs.
- Nick Winser, the Networks Commissioner is currently working with industry to consider how transmission delivery timelines could be accelerated by 3 years or halved. His work will be influential as to the future design of the transmission network.

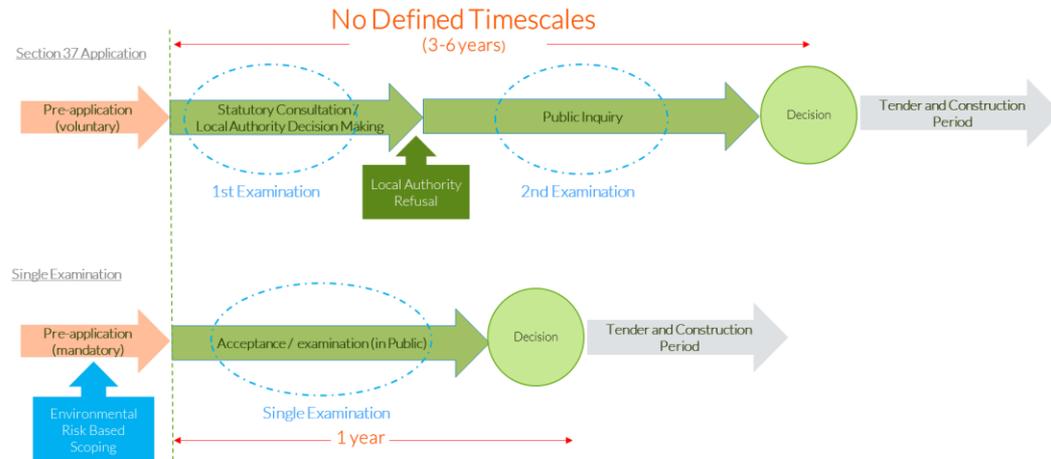


# The need for a 'Fast-Tacked' consenting process

- Reform of the planning system is required to deliver the HND timelines.
- The current consenting regime for transmission projects in Scotland takes too long and timescales are undefined.
- To meet 2030 timelines, we need a determination period of **one year** to fast-track strategic grid developments, which better balances national need and local concerns.
- This could be achieved through a form of Single Examination process, removing duplication and undefined timescales.
- A process that is appropriately resourced, in all the key impact areas, is needed:
  - Scottish Government Energy Consents Unit;
  - Local Authorities; and
  - Statutory Consultees.

- Engagement ongoing with the Scottish Government and SSEN-T to seek opportunities to expedite planning and land rights decisions under the current regime, with a view to meeting 2030 timelines.

- Representation to BEIS and Ofgem on the need for legislative change in the Electricity Act.



## To conclude:

To meet an unprecedented scale of Transmission Investment we must accelerate all aspects of our existing processes. Legislative change is required to accelerate the Planning Process in Scotland.

Regulatory change needs to align to the practical realities of planning and current supply chain challenges. ASTI is welcomed but we still require accelerated regulatory decision-making and the recognition that the enabling work projects are just as important as the strategic (>£100m) projects.

In order to deliver on Net Zero ambitions, we support wholesale reform of the GB Connections process. The connections queue must focus on those who are going to connect in a timely manner and will add the most value to the GB electricity system.

# Tackling grid integration of clean energy assets

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# Sustainable success – creating a marketplace that can deliver

Chaired by: Morag Watson, Director of Policy,  
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**Sustainable success – creating a marketplace that  
can deliver**

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Director of Policy, Scottish Renewables

**Niall Stuart**

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**Suzanne Clifton**

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**James Brabben**

Senior Manager Regulatory Affairs, RWE Renewables

**Mark Timmons**

Director of Bids UK & Ireland,  
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# Who, what, where and when – the pipeline, projects, people and supply chain

Chaired by: Adam Morrison, Country Manager UK,  
Ocean Winds



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**Who, what, where and when – the pipeline,  
projects, people and supply chain**

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**Adam Morrison**

Country Manager UK, Ocean Winds

**Chelsea Nickles**

Head of Market Development for UK and Ireland, Ørsted

**Rebecca McGraw**

Communications & Engagement Manager,  
Story Contracting

**Sophie Hartfield Lewis**

Head of Project Development Support  
and Consenting, bp



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