

HVDC and Climate Change:

What is HVDC and why is it important to achieving net-zero (1 of 4 webinars)

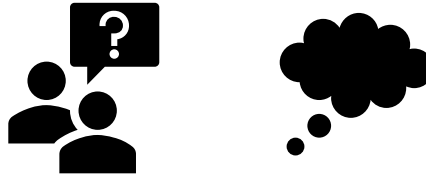
1st November 2021

Welcome to the HVDC and Climate Change: What is HVDC and why is it important to achieving net-zero Webcast, the first in our series of 4

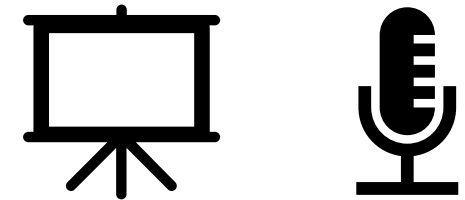
Due to large audience, please turn off video & put microphone on mute



Questions for speaker will be managed using MS Teams chat.



This webinar may be recorded. Link to slides will be shared after the webcast.



Considering a lot of participants are expected, it may not be possible to address all questions or comments live however we will do our best.

Agenda:

1. Introductions
2. Overview of the HVDC Centre
3. Video: What is HVDC and why is it important to achieving net-zero
4. Panel Discussion

Development of HVDC Connections in GB

Current HVDC in GB

7 HVDC Links - Totalling: 8 GW

Future HVDC in GB

Up to 34 HVDC Links - Totalling: 45.45 GW

Interconnectors:

- 1) Cross Channel (IFA)
- 2) Moyle
- 3) BritNed
- 4) EWIC

New Interconnector:

- 5) Nemo

New Embedded Links:

- 6) Caithness – Moray
- 7) Western Link

New Island Links

- 8) Shetland
- 9) Western Isles

New Interconnectors

- 12) ElecLink
- 13) NSL
- 14) Aquind
- 15) Viking
- 16) GreenLink
- 17) NorthConnect
- 18) IFA2
- 19) Fablink
- 20) NeuConnect
- 21) Gridlink

New Offshore Wind Connections

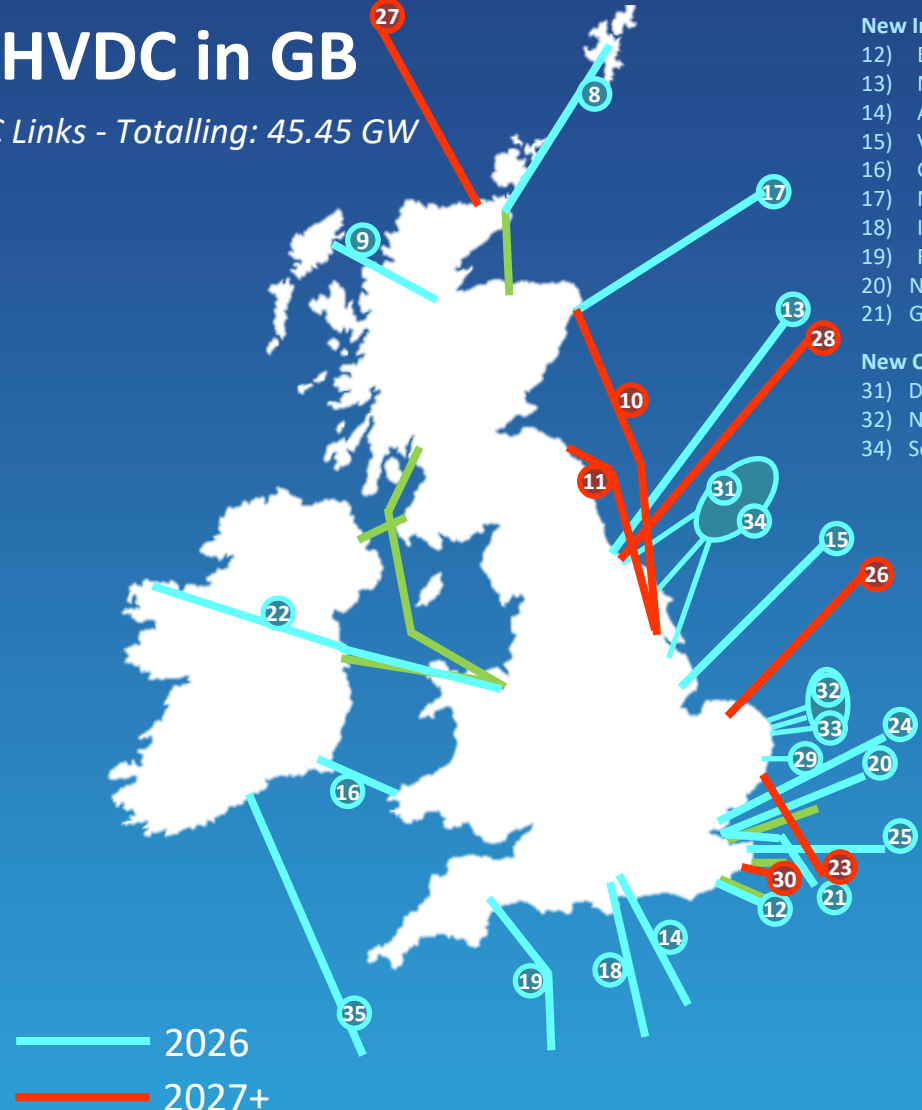
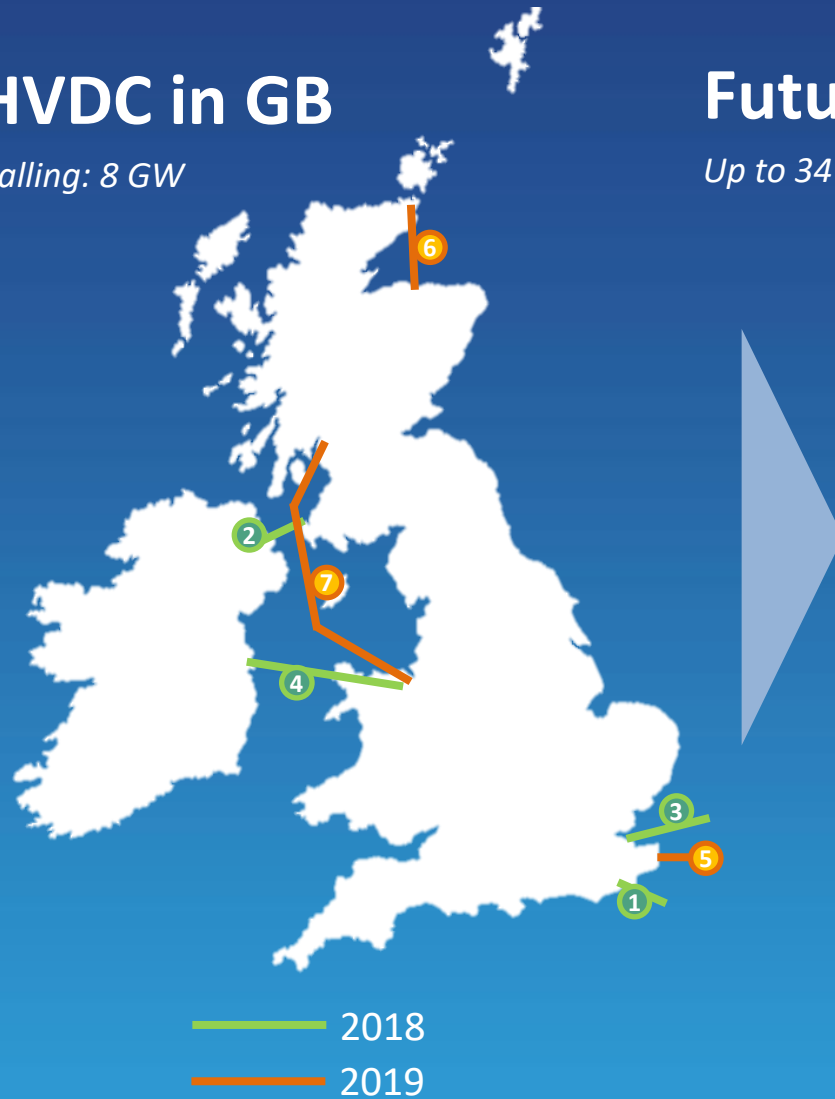
- 31) Dogger Bank
- 32) Norfolk Vanguard
- 34) Sofia

New Embedded Links

- 10) Eastern Link 2
- 11) Eastern Link 1

Additional Interconnectors

- 26) Aminth
- 27) Atlantic Super Connection
- 28) Continental Link



Source: National Grid Interconnector Register 01 08 2019

The National HVDC Centre is an Ofgem funded simulation and training facility available to support all GB HVDC schemes.

Ofgem determination takes us from Innovation to BAU for RIIO-T2

Tools

RTDS and HiL environment
 (Enhanced Testing, Multi- Device Grid Integration, Protection & Control system, modification acceptance, post event investigation validation analysis)

Simulation environment (RTDS->EMT->RMS)
 (Validation, Benchmarking, analysis)

Logos: RTDS Technologies, PSCAD, PSS[®]E, SILENT DIG

Systems

Collaboration
 (models, analysis, direction)

Codes, Standards, R&D
 (expert input, workstream support)

Logos: The National HVDC Centre, SP ENERGY NETWORKS, Scottish & Southern Electricity Networks, nationalgrid, nationalgridESO, Grid Code, entsoe, cigre, EPRI, PROMOTION

Skills

Structured Training
 (Webinars, Courses, Application & Implementation)

Control training
 (Operator Certification, Scenario Planning, Updates)

Research dissemination
 (Analysis Techniques, Risk Quantification, Solution Definition)

The National HVDC Centre

part of Scottish & Southern Electricity Networks

together with nationalgrid SP ENERGY NETWORKS

The National HVDC Centre is part of Scottish & Southern Electricity Networks and is funded through the Electricity Network Innovation Competition as the Multi-Terminal Test Environment (MTTE) Project. Scottish and Southern Electricity Networks is a trading name of Scottish Hydro Electric Transmission plc, Registered in Scotland No. SC213461, having its Registered Office at Inveralmond House, 200 Dunkeld Road, Perth, PH1 3AQ; and is a member of the SSE Group www.ssen.co.uk

Overview of the HVDC Centre: the Team

A team of HVDC experts; providing experience across: academia, system operator, power systems consultancy, transmission innovation and HVDC manufacturers.



Ben Marshall
HVDC Technology Manager



Simon Marshall
MA
Centre Manager



Ian Cowan MEng MIET
Lead Simulation Engineer



Bharath Ponnalagan
CEng
Senior Simulation Engineer



Colin Cameron
ICT Engineer



Dr Linda Rowan
Technical Project Officer



Habibur Rahman
Simulation Engineer



Nikhil Sharma
Simulation Engineer



Fabian Moore
Simulation Engineer



Recruiting
Simulation Engineers

Video: What is HVDC and why is it important to achieving net-zero

Panel members

Ben Marshall, HVDC Technology Manager, The National HVDC Centre

Joseph Awodola, Engineering Manager, SSEN Transmission

Colin Foote, System Analysis Manager, SP Energy Networks

Moderator: Ian Cowan, Lead Simulation Engineer, The National HVDC Centre

Future Webinars

2) Offshore Coordination: How a coordinated approach enables net-zero.

Date: Wednesday 3 November 2021

Time: 14:00-15:00 GMT

Click here to register: <https://forms.office.com/r/vmfY5q60Cs>

3) Building a Better Network: A technical discussion on how HVDC can enable a more stable network whilst integrating renewable generation.

Date: Friday 5 November 2021

Time: 13:00-14:00 GMT

Click here to register: <https://forms.office.com/r/P3mk00v4JD>

4) HVDC R&D Strategy for Coordinate Offshore: Exploring the innovations required to meet net-zero.

Date: Thursday 11 November 2021

Time: 13:00-14:00 GMT

Click here to register: <https://forms.office.com/r/0etQ5natdM>

Thanks for listening.
Any questions, please?

□ For further information, please visit www.hvdccentre.com ; OR email: info@hvdccentre.com



**The National
HVDC Centre**

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