Strategic Infrastructure

East of England Energy Group SNS Conference 2025

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Director, EEEGr

nationalgrid

The Great Grid Upgrade

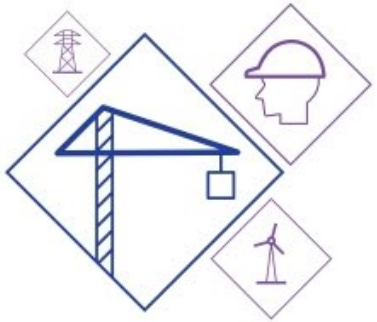
National Grid in the UK

nationalgrid
In the UK

National Grid Electricity Transmission

Owns and manages the high voltage electricity transmission system in England and Wales.

National Grid Strategic Infrastructure

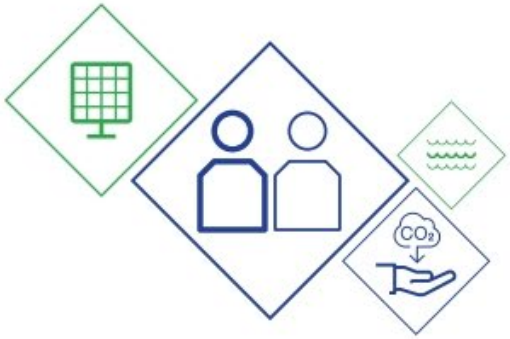


Delivers major strategic UK electricity transmission projects, focused on connecting more clean, low-carbon power to England and Wales.

National Grid Electricity Distribution

Owns and operates the electricity distribution networks for the Midlands, the South West of England and South Wales, with 8m customer connections serving a population of over 18m people.

National Grid Ventures



Operates a mix of energy assets and businesses to help accelerate the development of our clean energy future (such as undersea interconnectors that allow the UK to share energy with other European countries).

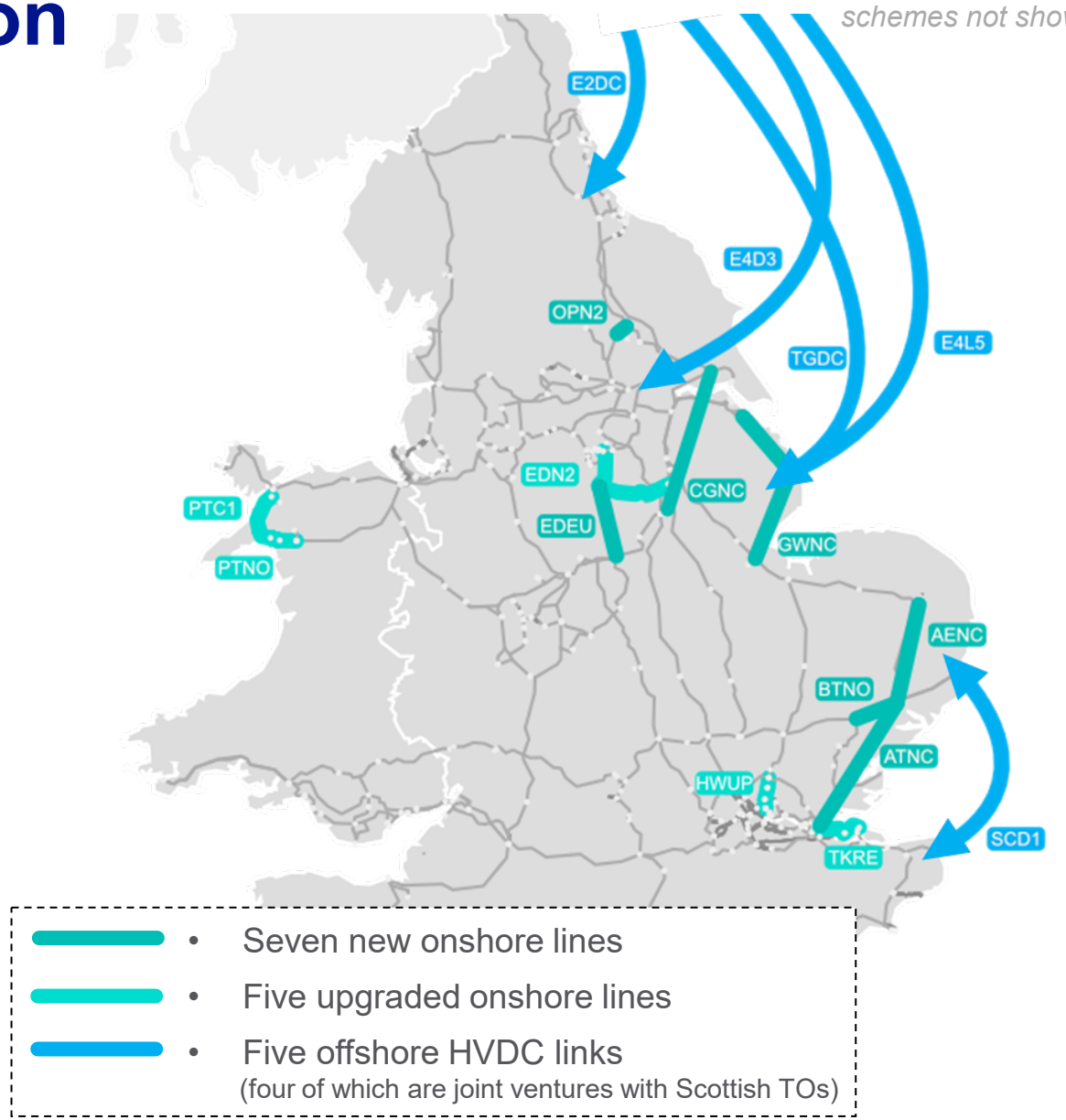
Britain’s electricity transmission network

The existing network

- was largely built to take power from power stations built on coalfields in the north to regional networks, cities and industry.
- has limited transmission capacity between Scotland and central England or from coastal areas to the central region.

The future network

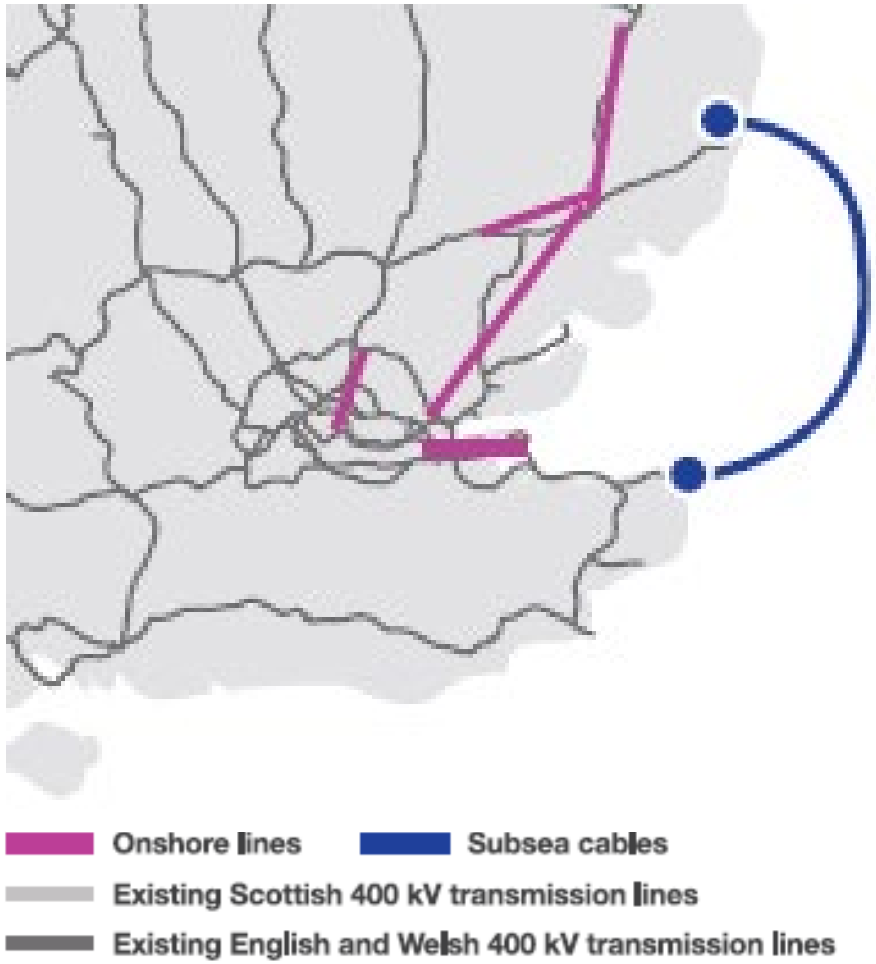
- needs to take more power from windfarms off the coast and connect it to the same population centres
- needs more lines to connect the coast to the central region.



The Great Grid Upgrade in East Anglia

To address network capacity issues in East Anglia, we are developing new transmission projects

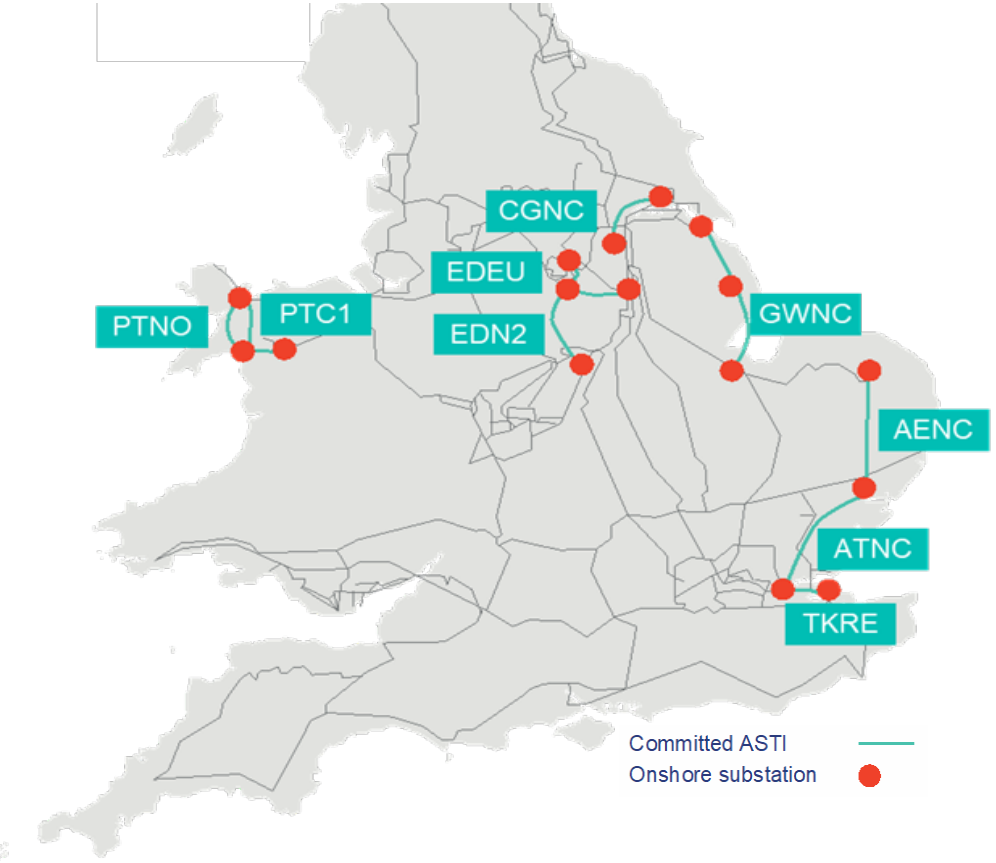
- **Bramford to Twinstead –** network reinforcement between Bramford Substation in Suffolk and Twinstead Tee in Essex.
- **Norwich to Tilbury –** network reinforcement between the existing substations at Norwich Main in Norfolk, Bramford in Suffolk, and Tilbury in Essex, as well a new substation to as connect new offshore wind generation.
- **Grain to Tilbury –** a new cable under the Thames between Kent and Essex to reinforce the local network.
- **Sea Link** - reinforcing the electricity transmission network between Suffolk and Kent through building a new, primarily offshore, 2GW high voltage direct current link.



LionLink: National Grid Ventures - connecting Netherlands offshore wind to Dutch and GB markets via subsea electricity cables called interconnectors.

The Great Grid Partnership

The Great Grid Partnership will initially deliver the following nine projects. These nine projects are critical projects within the ASTI Onshore portfolio, with the scope expanding as the programme progresses. These critical ASTI projects will be delivered across three regions: East Anglia, Lincolnshire and Humber, and Wales.



Onshore ASTI projects in scope

Norwich to Tilbury (North)
AENC

A new 400 kV double circuit in Northeast Anglia.

Delivery Date: 2031

Norwich to Tilbury (South)
ATNC

A new 400 kV double circuit in southeast Anglia.

Delivery Date: 2031

Grimsby to Walpole
GWNC

A new 400 kV double circuit between Creyke Beck & South Humber.

Delivery Date: 2031

North Humber to High Marnham
CGNC

400 kV upgrade of Brinsworth to Chesterfield & Chesterfield to High Marnham double circuit. New 400kV substations.

Delivery Date: 2031

Brinsworth to High Marnham
EDEU

New Chesterfield to Ratcliffe-on-Soar 400 kV double circuit.

Delivery Date: 2029

Chesterfield to Willington
EDN2

A new 400 kV double circuit between the south Humber and south Lincolnshire.

Delivery Date: 2031

New Pentir to Trawsfyndd
PTNO

Pentir to Trawsfyndd cable replacement.

Delivery Date: 2030

Pentir to Trawsfynydd cable replacement
PTC1

North Wales Reinforcement.

Delivery Date: 2029

Grain to Tilbury
TKRE

Tilbury to Grain and Tilbury to Kingsnorth upgrade.

Delivery Date: 2029

The regulatory parameters

We are bound by Government policy, legislation, regulation and industry rules, which inform the balance we need to strike when developing proposals and ultimately will determine whether individual proposals should proceed:

- **Technology**
- **Environment**
- **Socioeconomic**
- **Cost**
- **System Benefits**
- **Community Feedback**

EN-5 Electricity Networks National Policy Statement

2.11.13

Although it is the government's position that overhead lines should be the strong starting presumption for electricity networks developments in general, this presumption is reversed when proposed developments will cross part of a nationally designated landscape (i.e. National Park, Broads, or Area of Outstanding Natural Beauty)

The government's planning policy advises that overhead lines should be the starting presumption for electricity network developments in general, except where a proposed development will cross part of a nationally designated landscape (for example a national park). The costs of alternative technologies to overhead lines can be significantly higher, with the undergrounding of cables around five to ten times more expensive.

The costs of upgrading the Grid are paid by consumers through our electricity bills. The UK Government and our regulator Ofgem require us to develop proposals which represent the best value for money for electricity bill payers.

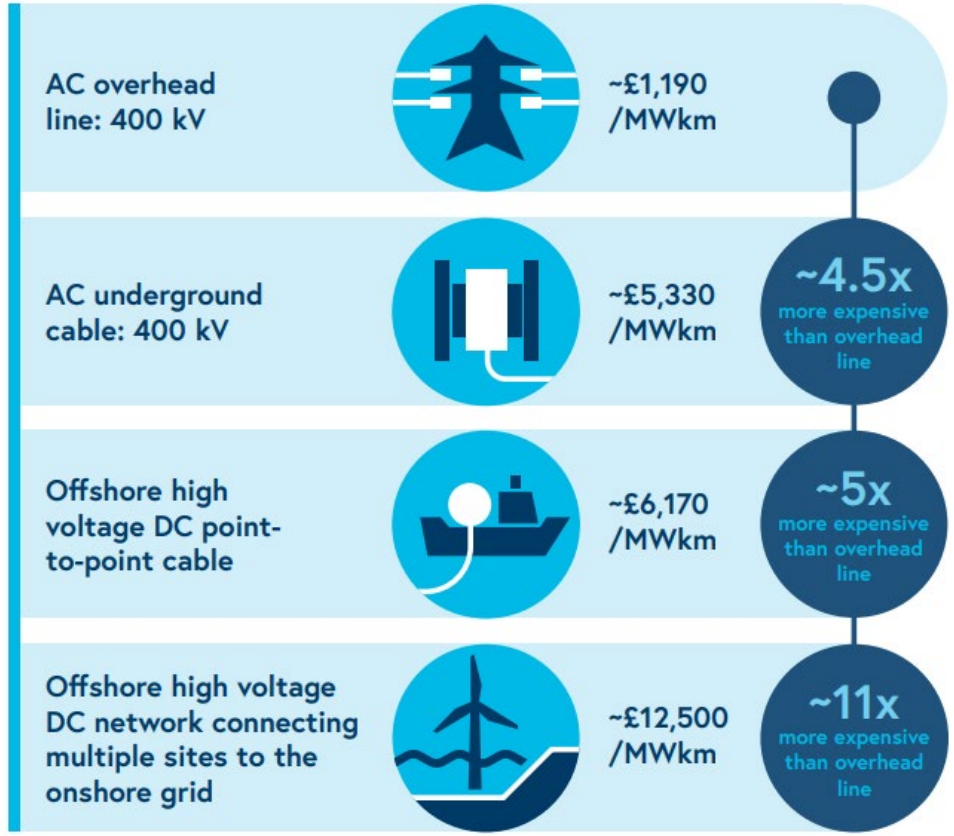
The Institution of Engineering and Technology report

A major new report (April 2025) from the Institution of Engineering and Technology (IET) has outlined the costs of different transmission approaches as the UK targets net zero.

The independent and comprehensive report found that:

- Underground cables are, on average, **around 4.5 times more expensive** than overhead lines.
- An offshore high voltage direct current (HVDC) point-to-point cable is **around 5 times more expensive**; and
- An offshore HVDC network connecting multiple sites to the onshore grid is **around 11 times more expensive**.

Alongside costs, it is important that each technology is judged on its merits in each specific grid development context considering environmental impact, engineering challenges and local impacts.



Stakeholder Advisory Group: an overview

Working together since 2013:

National Landscapes Association

National Parks England

Independent Chair:
Chris Baines

RAMBLERS

WILDEAST

nationalgrid

PARCIAU NATIONAL CENEDLAETHOL PARKS

CAMPAIGN for NATIONAL PARKS

National Trust

CPRE The countryside charity

Cyfoeth Naturiol Cymru Natural Resources Wales

NATURAL ENGLAND

Historic England

Cadw

YDCW CPRW Elusen Cefn Gwlad Cymru The Welsh Countryside Charity

coastal partnerships network

RSPB

Landscape Institute Inspiring great places

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