

# Equinor: Dogger Bank Wind Farm Teacher Guide

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## Overview

These resources have been developed in partnership with [Equinor](#) and science teachers at [Marden High School](#) and can be used as individual resources to explore careers in the energy sector or as a sequence of activities to enhance KS3/4 science curriculum delivery.

The resources draw on the work of Equinor at the Dogger Bank Wind Farm and provides a challenge derived from past GCSE exam context questions. Learners will find out about the work of Equinor as well as a range of jobs roles and associated information including, important skills and career pathways.



## Curriculum Links

Key Stage 3 - 4 science

## Working Scientifically

- Explaining everyday and technological applications of science; evaluating associated personal, social, economic and environmental implications; and making decisions based on the evaluation of evidence and arguments.

## Content

- Much of the energy that is transferred in our homes is supplied by electricity.
- Energy resources are used to generate electricity.
- Some energy resources are renewable and some are non-renewable.
- Changes in how renewable and non-renewable energy are used.

## Careers Education

- Gatsby Benchmark 4 Linking curriculum learning to careers.
- Throughout their programme of study (and by the end of their course) every student should have had the opportunity to experience how their subjects help people gain entry to (and be more effective workers within) a wide range of occupations.

## Prior Learning

Students may have previously covered renewable and non-renewable energy resources comparing advantages and disadvantages of different resources.

Students may also have or as part of their learning planned or carried out a practical investigation into wind turbine design and output.

## Toolkit Resources

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### 1. Equinor: Dogger Bank Wind Farm

- [Dogger Bank Wind Farm](#) is located more than 130KM off the North East coast of England. The wind farm will have an installed capacity of 3.6GW and will be capable of powering up to 6 million homes annually. The turbines being installed, the GE Haliade-X, are one of the world's most powerful, with one rotation able to power a UK household for 2 days.
- **Video** - [An Introduction to Equinor \(2min10s\)](#) - A quick intro to Equinor for teachers and or as a lesson starter.

### 2. Introduction to Equinor and Dogger Bank Wind Farm

- **Video** - [Dogger Bank Overview Presentation \(6min40s\)](#) - Tom talks about the work of Equinor and uses presentation information, diagrams, and maps to give an overview of the development of Dogger Bank Wind Farm and provides information useful for students who complete the challenge.
- **Presentation** - Introduction to Equinor and Dogger Bank Wind Farm - The presentation that is used in the video can be downloaded for reference.
- **Introduction to Equinor Student Worksheet** - Questions can be displayed or the sheet can be downloaded or printed to accompany the video. Answers are also included at the bottom of the document.

### 3. Dogger Bank Wind Farm: Curriculum Challenge

- **Video** - [Designing Dogger Bank D: a challenge set by Equinor \(0m39s\)](#) An Equinor employee introducing the challenge students can work on.
- **Presentation Dogger Bank Wind Farm Curriculum Challenge** - The presentation can be downloaded and edited to suit different learners / branded by school. The presentation includes the challenge, knowledge recall, technical questions, application of maths skills.

### 4. Linked Curriculum Resources

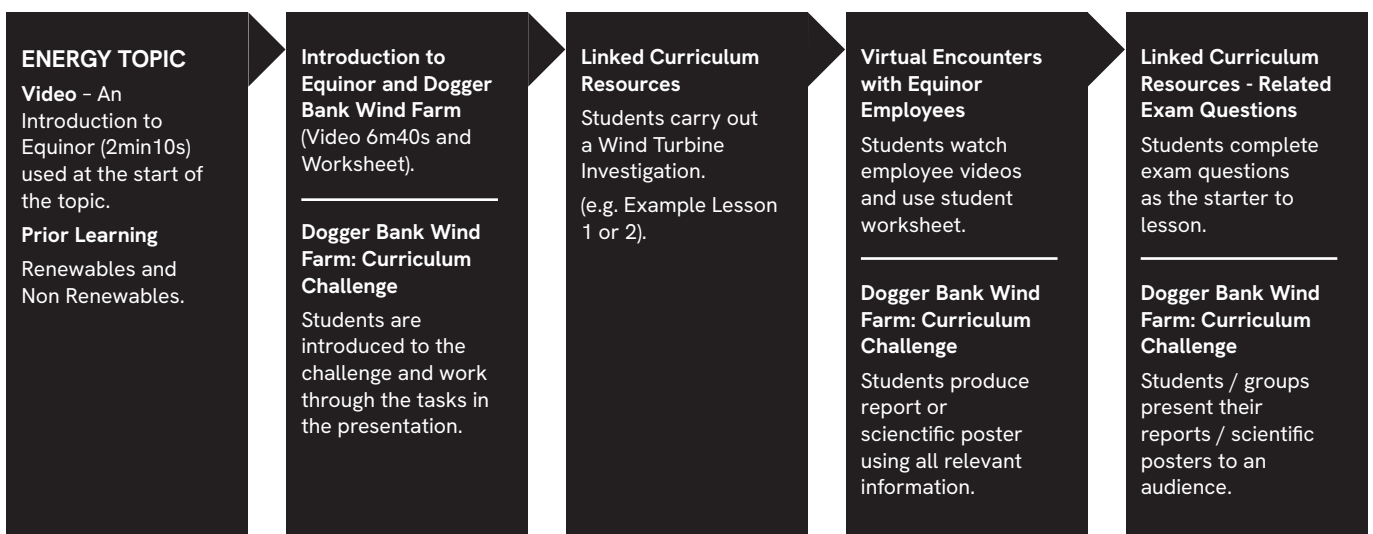
- **Wind Turbine Investigation Example Lesson 1**
  - The lesson presentation can be downloaded and edited to suit your school / learners. It includes some recall tasks and planning process for an Investigation into the design and electrical output of model wind turbines (suggested practical equipment linked below p3). Information they gain can be used in response to the challenge set by Equinor.
- **Wind Turbine Investigation Example Lesson 2**
  - The lesson presentation can be downloaded and edited to suit your school / learners. It includes some recall tasks and planning process for an investigation into the design and electrical output of model wind turbines. A video enables students to complete the planning without practical equipment. Questions provide data to analyse and evaluate. Information they gain can be used in response to the challenge set by Equinor.
- **Related Exam Questions** - A selection of previous GCSE questions related to renewable energy and wind turbines.

### 5. Virtual Encounters with Equinor Employees

- **A series of 6 short videos** hosting a range of employees from Equinor who discuss their role, important skills and career pathway.
- **Encounters with Equinor Employees Student Worksheet**
  - Questions can be displayed or the sheet can be downloaded or printed to accompany the videos. Answers are also included at the bottom of the document.

## Example Curriculum Delivery

Marden High School in partnership with Equinor have delivered these learning activities for 2 years over a series of lessons as part of the Energy topic. The sequence of delivery is summarised below:



## Additional Information – Practical Investigation

Students plan an investigation to analyse the effect of changing design features of a model wind turbine. The independent variable(s) may include; number of blades, position of blades, pitch of blades or length of blades. Using multi-meters (or volt / ammeters) students measure the dependent variable(s) current / voltage output.

As some equipment is required for the practical where this is not possible students could:

- Go through a planning process using the video in Example Lesson 2 resource presentation.
- Be provided with some hypothetical results for analysis (included in Example lesson 1 and 2).

### Technical Information

Simple method of making and testing a model wind turbine, requires small motor, multi-meters and wind source (fan / hairdryer):

[Wind Power! Designing a Wind Turbine - Activity - TeachEngineering](#)

Example wind turbine Investigation model kit (will require multi-meter and wind source):

[B8R07831 - Wind Turbine | Philip Harris](#)