**Energy Innovation – Presenter Notes**

**Slide 1 – North East Energy Innovation**

Class Question - What do you think we mean by energy innovation?

**Slide 2 – Session Agenda**

**Slide 3 – Presenter Introduction**

Please provide an overview of yourself, your role, career journey, qualifications. Please fill this slide with any relevant images and content.

**Slide 4 – North East Energy Innovation**

Question - Does anyone recognise any of the images on this slide?

As a region, we are pioneering low carbon heat technologies including river source heat networks, geothermal heat from mine workings, hydrogen for heat, and heat pumps.

Northern Gas Networks – Successfully piloted a blend of Hydrogen and Gas over a 10-month period in Winlaton – 21/22, 668 houses, a school and some small businesses received the blend. More recently a similar pilot in Redcar were scrapped in December 2023 due to resident concerns.

Sofia Wind Farm/ Offshore Wind – will discuss shortly

Northumbrian Water is the only wastewater company in the UK to use 100% of its sewage sludge (the left over material at the end of the wastewater treatment process) and convert it into gas and electricity – so literally producing power from poo!

The ‘Power from poo’ production, more formally known as Thermal Hydrolysis Advanced Anaerobic Digestion (AAD), started in 2009 with the company generating electricity and furthermore, a second plant followed in 2012 where it began to produce electricity. In 2015, the company invested further in a gas cleaning plant to clean the gas from the AAD process and produce high quality gas at one of their site’s, feeding directly into the National Gas Grid so meaning customers were now cooking on poo.

Cragside Northumberland – uses the lakes on the estate to power the building through Hydro- Electrity

NGN – Successfully piloted a blend of Hydrogen and Gas over a 10-month period in Winlaton – 21/22, 668 houses, a school and some small businesses received the blend. More recently a similar pilot in Redcar were scrapped in December 2023 due to resident concerns.

Gateshead Council District Heat Scheme – will discuss shortly

**Slide 5 – Energy**

The lists show examples of renewable and non-renewable types of energy, what is the difference between renewable and non-renewable?

**Slide 6 – Offshore Wind**

Task – please watch the video and answer the following questions, students can work in groups to complete this task.

**Slide 7 – Offshore Wind in NE**

Dogger Bank sits approximately 130km (80 miles) off the coast of Yorkshire and will occupy an area almost as large as Greater London and nearly twice the size of New York City. When fully complete, its 3.6 GW capacity will comprise 277 offshore turbines capable of producing enough energy to power the equivalent of six million British homes annually.

When complete, Dogger Bank will be the world’s largest offshore wind farm, more than two and a half times the size of the largest offshore wind farm currently in operation. The windfarm is owned by Equinor, SSE and Vargron.

**Slide 8 – Dogger Banks**

Task – please watch the video and answer the following questions, students can work in groups to complete this task.

**Slide 9**

This slide shows the length of the development process for an onshore and offshore wind farm, from its initial conception to it becoming operational.

**Slide 10 – Environmental Consenting**

From the pictures on the slide, does anyone know what environmental consenting is?

Environmental consenting for offshore wind projects involves comprehensive process to ensure that the development does not adversely affect the environment. This includes obtaining necessary permits, conducting environmental impact assessments (EIA), and ensuring compliance with environmental standards and legislation. The process is crucial for protecting wildlife habitats, water quality and other environmental resources. It also helps in managing risks and avoiding project delays, contributing to smooth delivery of offshore wind projects.

**Page 11 – Roles in Offshore Wind**

Slide is to showcase the wide variety of roles available in the sector

**Page 12 – District Heat/ Geothermal**

**Page 13 – District Heat/ Geothermal**

Task, please watch the video and answer the following questions, students can work in groups to complete tis activity.

**Page 14 – District Heat Scheme**

In the north east (North East Combined Authority Area and Tees Valley Combined Authority) there are currently over 30 heat networks now in development, equating to £11bn - £13bn of investment and creating potentially over 5,500 jobs. The imagines show some of the regions biggest district heat schemes: Gateshead District Heat Scheme, Newcastle’s District Heat at the Helix and Seaham Garden Village which is currently in construction: [UK's first district heating scheme using mine water energy now in development - GOV.UK](https://www.gov.uk/government/news/uks-first-district-heating-scheme-using-mine-water-energy-now-in-development)

**Page 15 – Skills Employer Want**

**Page 16 – Skills Employers Want**

This list has been compiled using the 2 x LSIP reports for the North East Region, Skills 4.0 and Skills Builder and then confirmed by a series of industry representative groups. These skills are key skills sought by industries across the region, skills they would like new entrants into the workplace to have.

Task – students in groups, to work through the questions and feedback to the class.

**Page 17 – NetZero North East Celebration Video**

**18- Final Slide**