Wind and water: choosing an electricity resource

Teacher / technician

YEAR 10 / LESSON 32 / PHYSICS ONLY

Staff preparation and answer guidance. Keep separate from student sheets. Record actual measurements separately from labelled practice examples.

Coverage and delivery

Physics only: 4.18P, 4.19P. Wind, hydroelectric, tidal and wave resources.

Allow about 60 minutes. Follow the student sequence and use the answers to check reasoning.

Requisition • class of 30, working in 15 pairs

Item	Per pair / setup	Class total
Booklets	1 per learner	30
Diagram-card sets and calculators	1 each per pair	15 of each

Immediate safety

Desk-based modelling only. No rotating fans, elevated water tanks, mains circuits or moving-water apparatus are needed.

Preparation and delivery

Read alongside the student method

YEAR 10 / LESSON 32 / PHYSICS ONLY

1. Prepare the original practice data and 15 card sets. Keep units of power and energy distinct.

2. Do not treat all hydroelectric stations as instantly controllable; reservoir and environmental constraints matter.

Close of lesson

• Return cards and calculators.

Check before teaching

Check the cards, reference data and quantities against this requisition. Keep the staff answer guide separate until the checking stage. Supplied numerical practice datasets are labelled examples; they are not class measurements.

Answers and teaching notes

Expected explanations • do not give as experimental observations

YEAR 10 / LESSON 32 / PHYSICS ONLY

- A turbine turned by moving air.
- Gravitational potential energy of elevated water.
- 4 MWh.
- No; there is a shortfall in hour 1 and surplus in hour 3.
- Tides follow predictable astronomical cycles; waves depend mainly on wind conditions.
- Shift some supply to another time, with capacity and efficiency limits.

References and provenance

Pearson Physics specification

EIA: electricity generation

Prepared 22 November 2026. Original wording, tables and questions. Sources inform the concepts and technique; the lesson scope and classroom quantities are explicitly described here. No laboratory trial or final school risk approval is claimed.