

1. Select the energy forms which does **not** have solar radiation as their primary energy source

☐ Wind power

☐ Hydro power

☒ Tidal power

✓ **Correct**

The primary energy source for tidal power is movements of the planets as the Moon and Earth exert tidal forces on each other.

☒ Nuclear power

✓ **Correct**

The uranium used for nuclear power has its origin in supernovae explosions before the formation of Earth.

2. **Direct radiation vs fossil fuel**

Calculate how many days it would take for the amount of energy coming as direct radiation to equal the amount of fossil fuel available.

Assume that 26,000 TW ($2.6 \cdot 10^{16}$ W) of power is available as direct radiation and that the total reserve of fossil fuel is 1355 TWy (or $1.187 \cdot 10^{19}$ Wh).

Please provide the answer in days (example answer 14).

19

✓ **Correct**

That is correct

The sun delivers in 457 hours or **19 days** the same amount of energy that we have available as fossil fuel.

3. What is the energy payback time of a conventional coal fired power plant?

- ☐ Typically 2.1 years
- ☐ Over 100 years
- ☒ There is no meaningful answer to the question

✓ **Correct**

A conventional power plant never produces more energy than is used for their production and operation as ever more primary energy in the form of coal must be provided.

The energy payback time is therefore meaningless for any non-renewable power plant.
