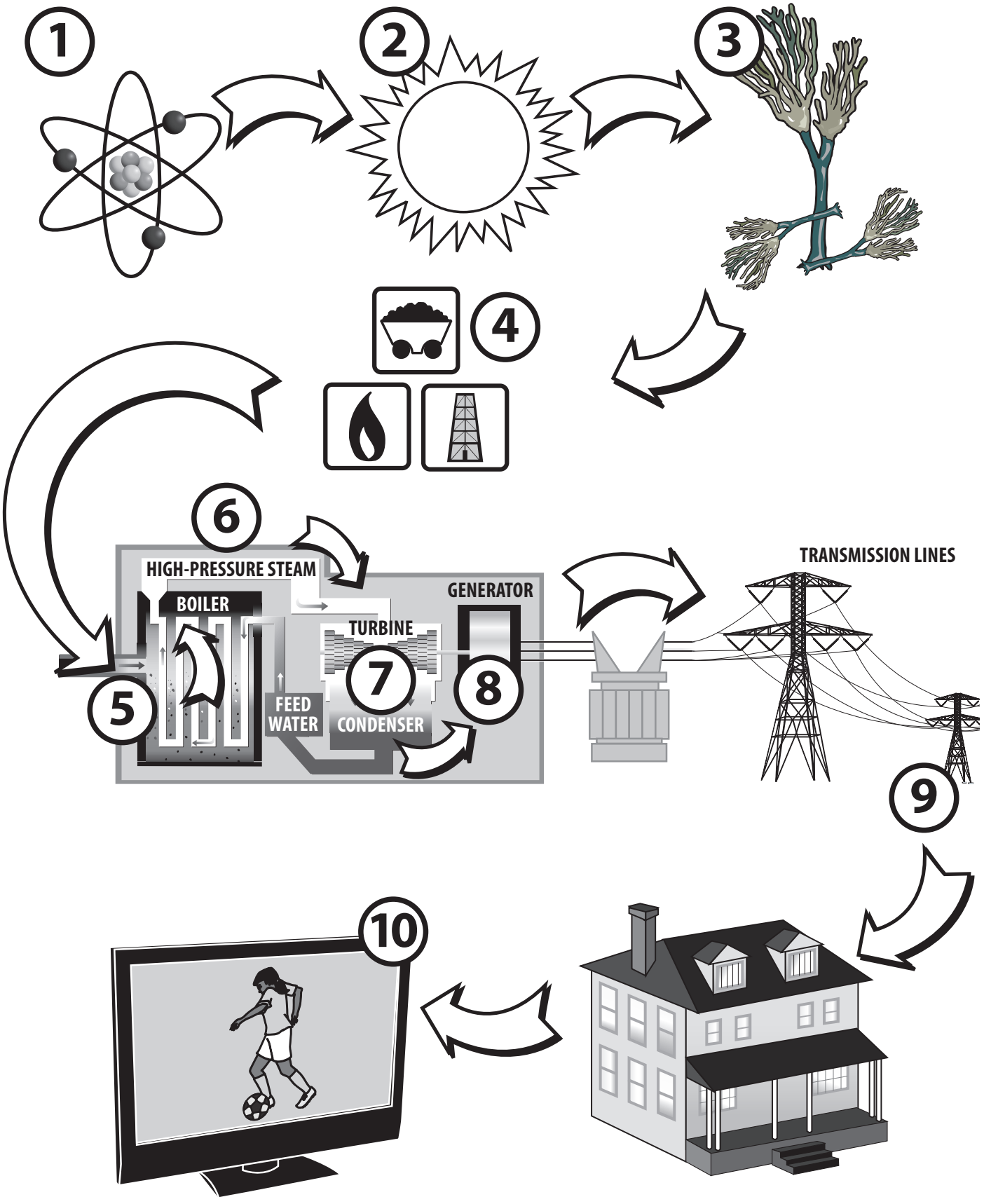
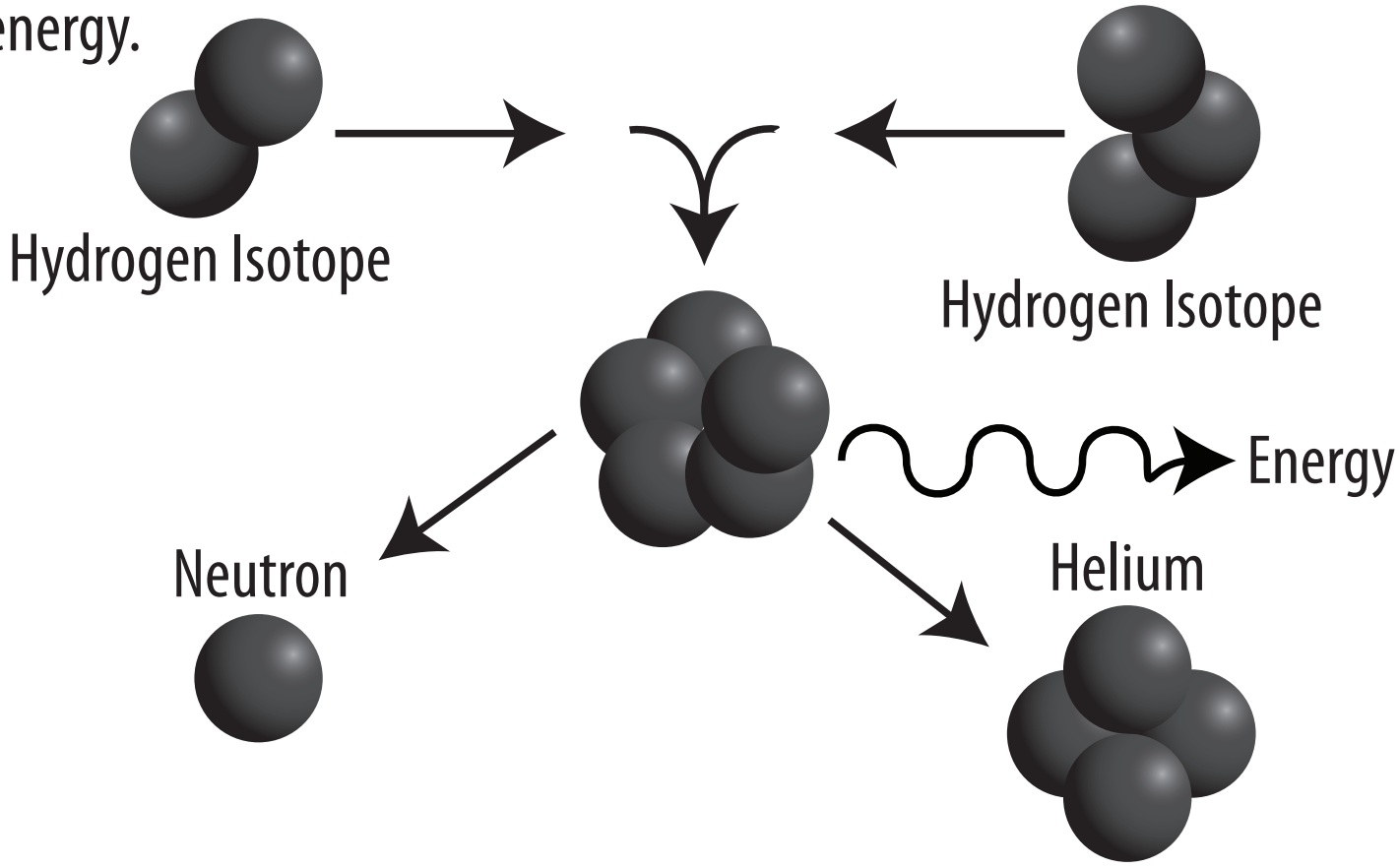
Fossil Fuel Energy Flow

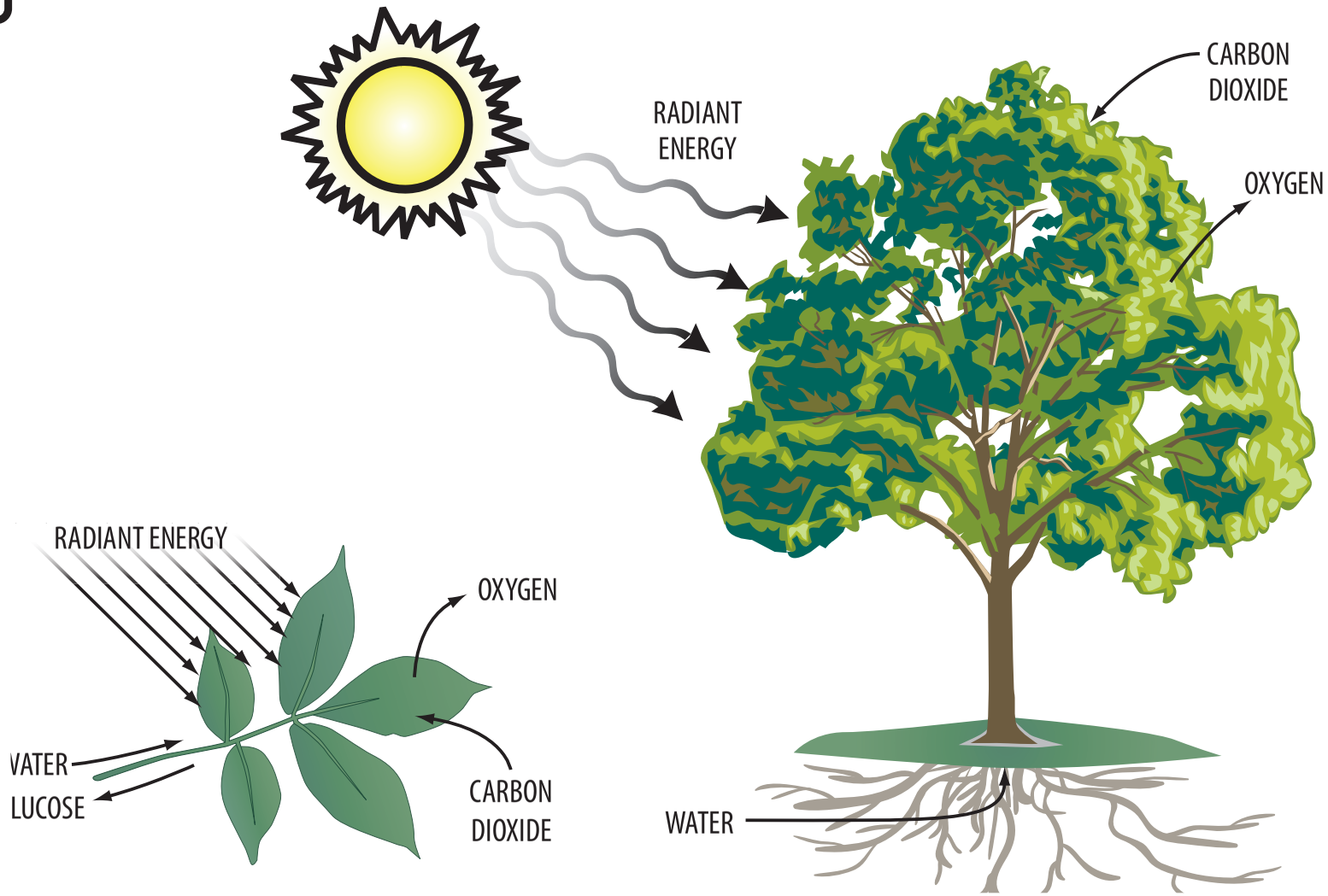


Fusion

The process of fusion most commonly involves hydrogen isotopes combining to form a helium atom with a transformation of matter. This matter is emitted as radiant energy.



Photosynthesis

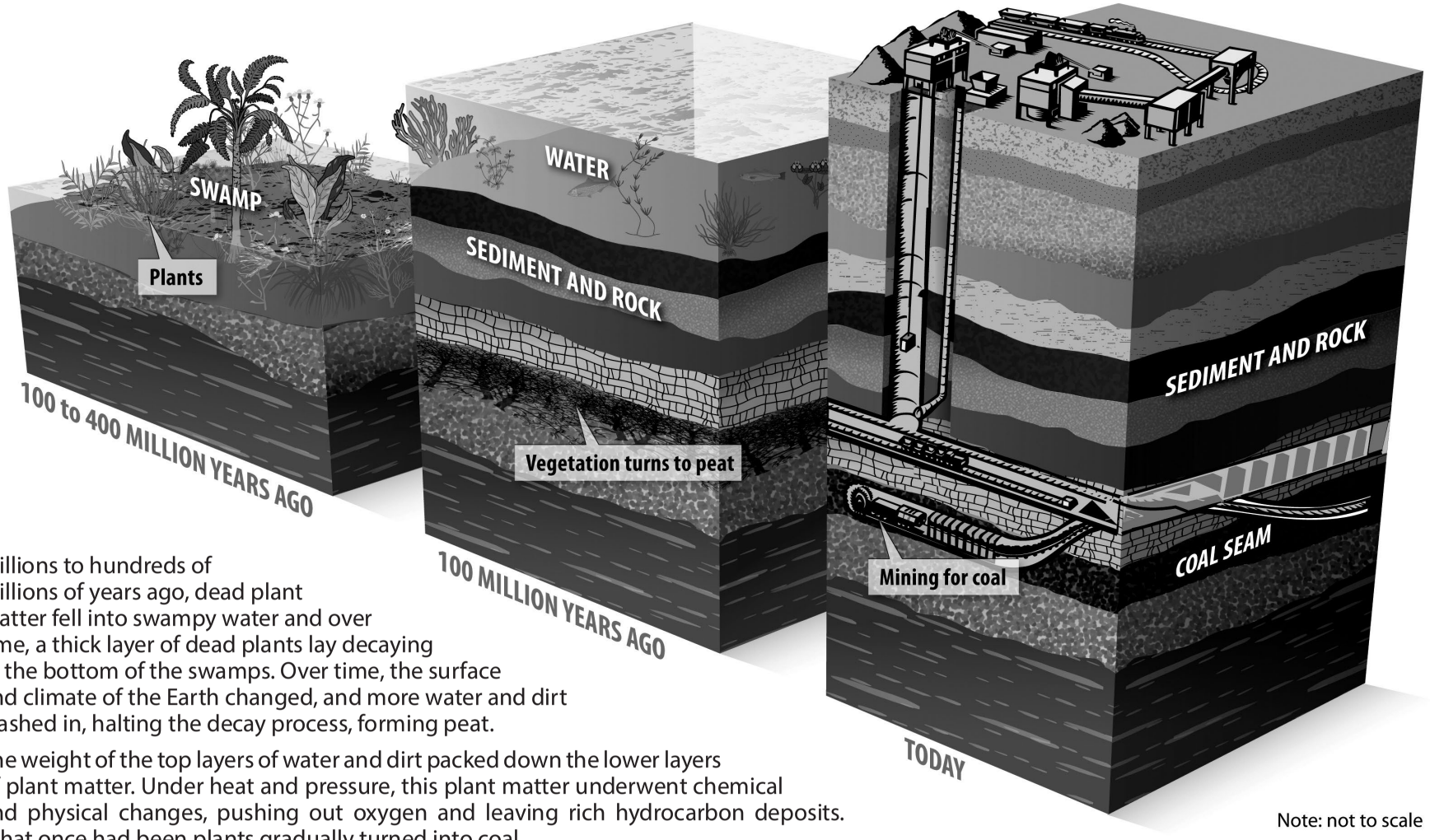


In the process of photosynthesis, plants convert radiant energy from the sun into chemical energy in the form of glucose (or sugar).

water + carbon dioxide + sunlight ⟶ glucose + oxygen

$6\ H_2O + 6\ CO_2 +$ radiant energy $\longrightarrow C_6H_{12}O_6 + 6\ O_2$

How Coal Was Formed



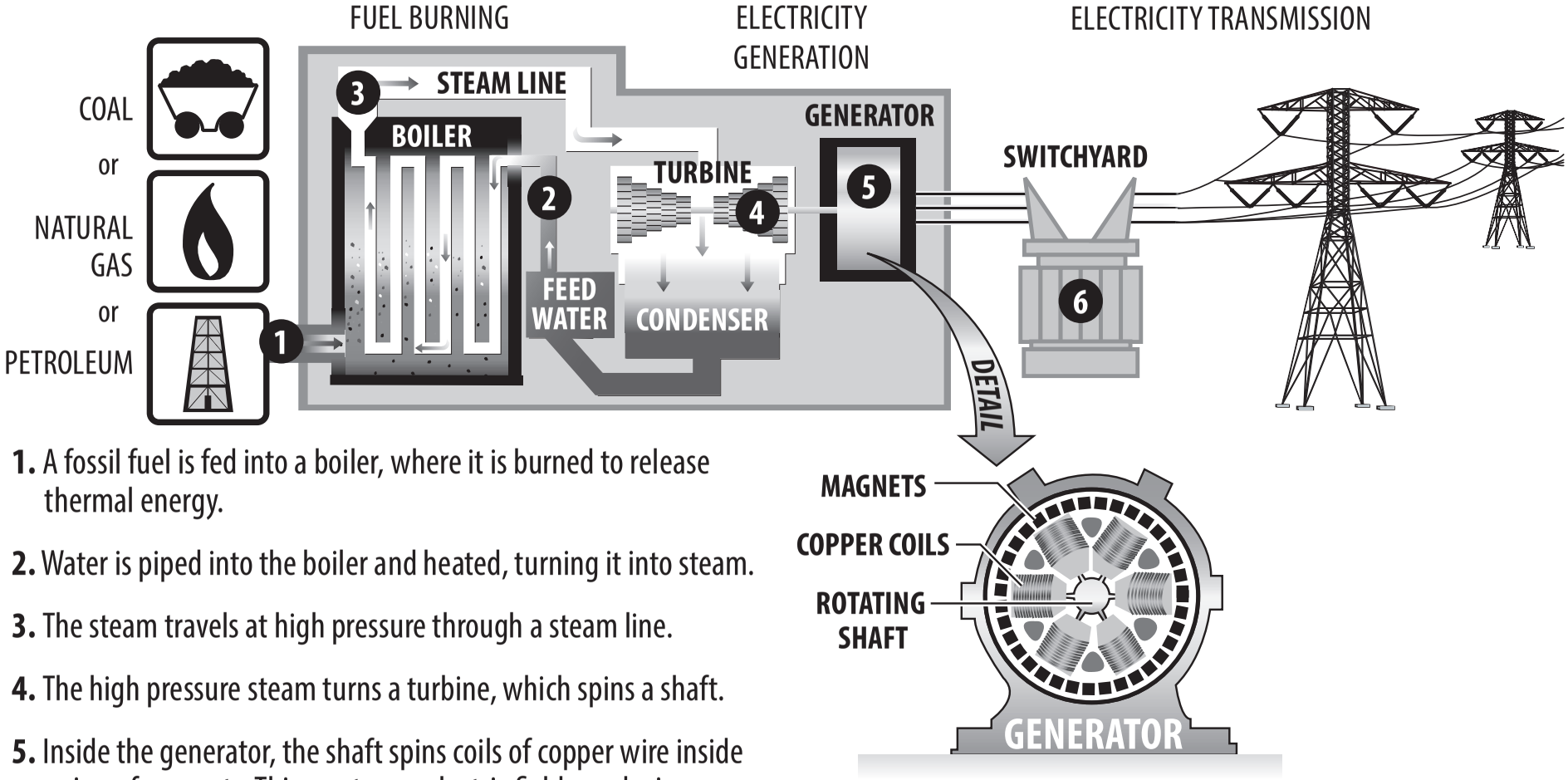
Millions to hundreds of millions of years ago, dead plant matter fell into swampy water and over time, a thick layer of dead plants lay decaying at the bottom of the swamps. Over time, the surface and climate of the Earth changed, and more water and dirt washed in, halting the decay process, forming peat.

The weight of the top layers of water and dirt packed down the lower layers of plant matter. Under heat and pressure, this plant matter underwent chemical and physical changes, pushing out oxygen and leaving rich hydrocarbon deposits. What once had been plants gradually turned into coal.

Coal can be found deep underground (as shown in this graphic), or it can be found near the surface.

Note: not to scale

Burning Fossil Fuels to Generate Electricity



1. A fossil fuel is fed into a boiler, where it is burned to release thermal energy.

2. Water is piped into the boiler and heated, turning it into steam.

3. The steam travels at high pressure through a steam line.

4. The high pressure steam turns a turbine, which spins a shaft.

5. Inside the generator, the shaft spins coils of copper wire inside a ring of magnets. This creates an electric field, producing electricity.

6. Electricity is sent to a switchyard, where a transformer increases the voltage, allowing it to travel through the electric grid.