

Energy Source Information Sheet



FOR
STUDENTS

COAL

Source & Production – Typically extracted from surface mines; processed to remove particles like dirt occurring naturally with coal; transported by train; and burned to produce electricity.

Positives – Easily extracted, has occurred abundantly in nature, and is extremely cheap to use.

Negatives – Produces significantly more carbon dioxide (CO₂) than any other fossil fuel to create electricity and produces other harmful byproducts.

Impacts on Wildlife – Significantly reduces livable habitat through strip mining and mountaintop removal; combustion creates unhealthy byproducts.

NATURAL GAS

Source & Production – Extracted through the use of wells, similar to oil; processed to remove and separate other products; transported typically by pipeline; and combusted for energy.

Positives – Exists in abundance underground and underwater, is cheap to use, and is a relatively clean fossil fuel when combusted to create electricity.

Negatives – Requires expensive transportation like pipelines and processing at compressor stations; still produces harmful air pollution and contaminates large quantities of water.

Impacts on Wildlife – Negatively affects habitat at the well and the pipeline through clearing for construction; pollutes nearby waters during the drilling process.

HYDROELECTRIC

Source & Production – Generated by constructing dams, creating lakes or reservoirs, and funneling water to spin turbines.

Positives – A very cheap source of energy and provides a consistent amount of electricity, unlike other renewable sources such as solar and wind.

Negatives – Alters the local terrestrial and aquatic environment when habitats are flooded, which can also affect people living in the area who may have to move after an area is flooded.

Impacts on Wildlife – Presents problems for wildlife such as fish who rely on rivers to migrate and reproduce, and obstructs flow of nutrients and sediment downriver. Dams can also cause the downstream temperature of the river to change, making the habitat unsuitable for some native species. On the other hand, the creation of deep lakes provides habitat for other species.

SOLAR

Source & Production – Produced through either thermal or photovoltaics, the first of which uses concentrated heat to create steam and the latter which contains silicon solar cells to directly convert light into energy. Photovoltaic solar, which accounts for 90 percent of solar generation, converts light into energy by utilizing silicon, a rare and expensive mineral used in solar cells (photovoltaics), which are constructed into panels and transported by freighters, trains, or trucks to the installation site.

Positives – Does not produce air pollution during operation, is a renewable source of energy (uses the sun as fuel), and can be used on any scale, even on rooftops.

Negatives – Solar technology is still very new, and the cells in photovoltaics are still relatively expensive. Solar technology relies on the sun, so it only produces electricity during the day.

Impacts on Wildlife – Destroys habitats at silicon mines (for solar cells); large-scale solar installations tend to injure and even kill birds and other flying wildlife through collisions and concentrated sun rays.

WIND

Source & Production – Produces electricity from spinning turbines that are exposed to the environment, instead of spun by steam from a fuel source.

Positives – Like solar in that it does not produce pollution during operation and is a renewable source of energy; also a relatively cheap source of energy in areas with lots of wind.

Negatives – Relies on an intermittent fuel source (wind) so does not consistently generate electricity; also creates noise and impaired views for those living nearby.

Impacts on Wildlife – Collisions and near-collisions with rotating blades kill birds and bats, especially during migration.

NUCLEAR

Source & Production – Produced from mined uranium by enrichment; transported by train or truck to a reactor; and, using fission, creates heat and produces steam and electricity.

Positives – Differs from fossil fuels in that it does not produce any air pollution while operating, only water vapor.

Negatives – Produces radioactive waste that requires special handling, safety concerns of a possible meltdown, and significant costs during enrichment, operation, and disposal.

Impacts on Wildlife – Uses cooling water, which is used during power generation to prevent overheating, and sometimes kills aquatic wildlife such as fish and microorganisms from local water bodies.

