

Hydropower

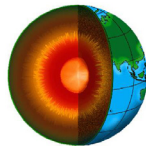
Hydropower
Hydropower transforms kinetic energy from moving water into electrical energy.



Advantages	Challenges
World's largest and most inexpensive renewable source	Available power depends on rainfall and yearly snowpack
Clean	Allowing fish passage past dams
Accessible and available in the Pacific Northwest	Some dams create reservoirs that alter the land behind them
Can be placed in areas that are already natural fish barriers such as above waterfalls	Allowing adequate river flow for fish, recreation, and power generation
Dams create reservoirs that store water and control flooding	Long regulatory process for permits

Geothermal

Geothermal energy uses Earth's core heat to generate steam to turn turbines to convert the thermal energy into electricity.



Advantages	Challenges
Renewable	Can require new transmission lines
Consistent and available source of power	Finding geothermal sites can be difficult
Very low pollution levels	Drilling is expensive
Requires a small amount of land on Earth's surface	

Wind Power

Wind power consists of using giant wind turbines to convert wind energy into electricity. The PUD currently has contracts with wind energy facilities in Oregon and eastern Washington.



Advantages	Challenges
Renewable	Wind is not constant
One of the most inexpensive renewable resources	Can require new transmission lines
Clean	Potential impacts on birds and bats
Often creates jobs in low populated areas	Currently no technology for storing wind power produced

Biofuel

Biofuel energy is the conversion of biological material into energy. The most common example is burning wood (remember, heat is energy). However, there are many types of biological material that can be converted into energy through burning such as crops grown specifically for burning and even animal dung (like cow manure)!



Advantages	Challenges
Renewable	May produce some air pollution
Less pollution than fossil fuels	Growing crops for electricity production may reduce crops used for food
Highly available	
Can convert waste into energy, rather than allowing it to go in the landfill	
Can be generated when it is needed	

Solar

Solar energy uses solar panels to transform the energy emitted by the sun directly into electricity. More than 1,150 PUD customers now produce part of their electricity through their own rooftop solar units.



Advantages	Challenges
Renewable	Purchasing solar panels can be expensive
Clean	Amount produced depends on weather, location and time of day/year
Solar panels tend to last for a long period of time needing little maintenance	
Can be built directly on homes without need for power lines	

Fossil Fuel/Coal

Coal means 'mineral of fossilized carbon' in Old English, which is what coal is! Coal also contains hydrogen, sulfur, oxygen, and nitrogen. Burning coal has been used throughout history to produce energy and heat.



Advantages	Challenges
Currently available in many regions	Nonrenewable
Inexpensive	Air pollution / dirty
	Land devastation from mining
	Has to be transported to locations for burning