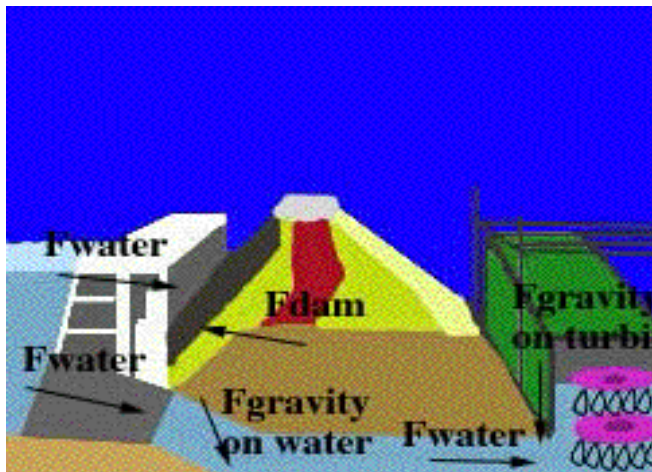


## Hydroelectric Systems

This diagram shows the forces that are involved in a hydroelectric system. The force of the water pushes against the gates and some water flows through the gates. The force of the dam is equal and opposite that of the water pushing against it according to Newton's laws. The force of gravity pulls the water down the river and to lower elevation. After the gates, the water drops down and accelerates due to gravity. This motion causes the water to have a high amount of kinetic energy. The turbine takes the water's kinetic energy and rotates. The energy conversion is then to mechanical energy. As all other objects, the force of gravity pulls the turbine downward.



A hydroelectric system is very similar to some of the other systems discussed at this site. To see these, click on the corresponding links to the [nuclear power system](#), the [wind power system](#), or the [solar power system](#). The medium that passes through the turbine in water power systems is water, of course. As the turbines rotate they turn the generator, causing mechanical energy to be converted into electrical energy. The amount of water that goes through the gates and down to the turbines must be exact so that the turbines are not crushed by the force of the water, while the turbine can still utilize the maximum kinetic energy of the water.

The control house is where more generators, and extra electrical equipment is held. Above the control house but not labeled are electric lines that come away from the hydroelectric system. A hydroelectric plant will connect to the electrical grid directly, or through some equipment held inside the control house. In a home powered water system, the electric lines would go to the batteries of the home, rather than the electrical grid.

