

# AN INTRODUCTION TO HYDROELECTRIC ENERGY



Srisailem Dam with Gates Open by Chintohere (click on image for source)

Hydroelectricity is energy produced from movement of water. Most hydroelectricity is generated by dams that block the flow of rivers, creating reservoirs upstream. An intake on the dam can open and let in water, which flows through a pipeline until it hits a turbine. The force of the water turns the turbine and this turns magnets in a generator, creating electricity. As Canada has a wealth of rivers, we are dependent upon hydroelectricity to generate most of our electricity. In 2008, hydroelectric power accounted for 60% of Canada's electricity production (Statistics Canada, 2009). This is primarily generated by larger dams, but there is a movement towards using smaller dams with less environmental impact, especially in remote areas to replace fossil fuels.

Smaller dams do not need to block off an entire river to be functional, and can still generate from 1 to 50MW in installed capacity, which is the theoretical annual capacity of a plant (Canmet ENERGY, 2009). It has been estimated that smaller hydroelectricity plants could generate 15000MW annually (Canmet ENERGY, 2009). These types of technologies would be very useful for isolated areas, where currently a primary source of energy is expensive and polluting fossil fuels.

Hydroelectricity produces significantly fewer greenhouse gasses than fossil fuels, though some methane gas is produced when portions of forest are flooded because trees release methane when they decay underwater. There are a few social and environmental concerns associated with hydroelectric power. The construction of dams adversely impacts fish and other wildlife, as well as agriculture downstream. They have also caused an increase in water-borne diseases. With the creation of larger dams in modern times, often thousands of people are displaced when the land upstream of the dams is flooded. These kinds of consequences are not a significant concern with smaller hydroelectricity plants, as they do not block water flow.

Source : <http://www.sassweb.ca/3bb3/volume1-0/features-volume1-0/an-introduction-to-hydroelectric-energy>