

Some Advantages of Hydroelectric Power

Dams and hydroelectric generating stations are expensive to build. Once built, however, they require only a skeleton crew to operate. In fact, many smaller dams are computer operated from remote locations. They require little ongoing maintenance until they begin to wear out, and consume no raw materials that must be purchased and transported. Energy costs vary from site to site for all forms of generation, so it is difficult to provide average costs for each type of energy source. But it has been estimated that operating a hydroelectric power plant costs 0.6¢/kWhⁱ of electricity, vs. 2.2¢ and 2.1¢ for nuclear and coal, respectively.ⁱⁱ As a result, electrical costs per kWh in Washington State, where they derive most of their electricity from hydroelectric, are approximately 50% less than the national average.ⁱⁱⁱ

The resource that provides the power in a hydroelectric plant, the flowing water, never runs out. The rate at which water is delivered is, of course, limited by the flow of the river. However, the water is not consumed by the generating process, and it is renewed indefinitely by rain and snow. Thus, it provides a measure of geopolitical energy security that cannot be provided by oil or natural gas. In addition, it prevents dollars from flowing overseas to foreign energy producers, a transfer of wealth that has many negative consequences for the U.S.

Because nothing is burned and there is no nuclear reaction, hydroelectric power releases no smokestack pollutants, and creates no solid or liquid waste that must be disposed of safely. This advantage is huge. The waste products produced by other forms of energy endanger our planet in ways that hydropower doesn't.

Many hydropower plants are considered scenic treasures. A million people per year tour Hoover Dam, and its photo is iconic.^{iv} In addition, the reservoirs behind the dams have high value, and are used for fishing, boating, skiing, and to provide habitat for many species of animals (but typically displace even more species that lived in the river and valley before the dam was built). It is no accident that the two main recreational communities in Missouri—Lake of the Ozarks and Branson—grew on the shores of large reservoirs. The reservoirs behind dams also control flooding and provide regulated water flow. For instance, before it was dammed, the Colorado River was a raging torrent in the spring, during snow melt. But later in the year, it was a mere trickle.^v Now it doesn't flood in spring, and it flows year round. The Aswan High Dam along the Nile in Egypt has shown that controlling a river's flooding can have unanticipated negative effects, yet even along the Nile there have also been tremendous benefits.^v

The cost and environmental advantages of hydroelectric power are compelling, to say the least.

ⁱ kWh = kilowatt-hour, the energy in a kilowatt of electricity supplied for an hour.

ⁱⁱ *Hydropower: Licensed to protect the environment*. Oak Ridge National Laboratory Review, 2/13/2007. Retrieved online 12/11/2007 at <http://www.ornl.gov/info/ornlreview/rev26-34/text/hydmain.html>.

ⁱⁱⁱ *Washington state energy profile*. Energy Information Administration. Retrieved online 12/11/2007 at <http://tonto.eia.doe.gov/state>.

^{iv} *Tour information, Hoover Dam*. Bureau of Reclamation. Retrieved online 12/11/2007 at <http://www.usbr.gov/lc/hooverdam/service/index.html>.

^v Nersesian, Roy. (2007) *Energy for the 21st Century*. Armonk, NY: M.E. Sharpe.