



Office of the Ohio Consumers' Counsel

Your Residential Utility Consumer Advocate

CONSUMERS' FACT SHEET

Office of the Ohio Consumers' Counsel

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Renewable Energy Sources

HYDRO ELECTRICITY



What is hydroelectricity?

As the most widely used form of renewable energy in the world, hydroelectricity is the process of using moving water to generate electricity. Dams are often built to gather water which is released to operate a generator. The generator creates electricity and sends it to power lines to be used.

There are three types of hydropower plants:

- ▶ **Impoundment** – typically a large system that uses a dam to store river water in a reservoir. This is the most common type of hydropower plant;
- ▶ **Diversion** – a facility that channels a portion of a river through a canal to turn the blades of a generator, also called a turbine, to create electricity.

It may or may not need the use of a dam to force water through the turbines; and

- ▶ **Pumped Storage** – pumped storage facilities store energy by pumping water from a lower reservoir to an upper reservoir when the need for electricity is low. During periods of high electrical demand, the water is released back to the lower reservoir to generate electricity.

Ohio's current and future outlook

Ohio currently has the capacity to generate 128 megawatts of electricity with hydropower. In Columbus, the city uses hydropower to generate electricity for its residential and commercial customers. More than 10,000 gallons of water a minute are forced through the

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The Office of the Ohio Consumers' Counsel (OCC), the residential utility consumer advocate, represents the interests of 4.5 million households in proceedings before state and federal regulators and in the courts.

The state agency also educates consumers about electric, natural gas, telephone and water issues.

For more information, please visit the OCC website at www.occ.ohio.gov.



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O'Shaughnessy Hydroelectric plant, operating two turbines, which generate electricity. The water then is discharged back into the Scioto River below the dam.

The Stockport Mill Inn located along the Muskingum River between Zanesville and Marietta, Ohio, has two rebuilt antique turbine engines which provide all the power the inn needs. Surplus electricity is sold to American Electric Power. The two generators provide about 800,000 kilowatt-hours of electricity per year, according to the inn.

National outlook

The United States is the fourth largest producer of hydropower in the world, with China leading the way. About one-fifth of the world's electricity is generated from hydropower. As of 2010, the United States was producing about 6.3 percent of its energy through hydroelectricity.

The potential for hydroelectricity is still significant in the United States. According to the U.S. Department of Energy, about 30,000 megawatts remains undeveloped at more than 5,600 sites throughout the United States.

Pros and cons of hydroelectricity

Hydroelectricity is a renewable resource that does not emit any hazardous byproducts. In many cases, the water that has been used to generate electricity may be cleaner when it leaves the turbines because of the sediment being separated out in the turbine. The National Hydropower Association estimates that by using hydroelectric generation nearly 200 million metric tons of carbon pollution is avoided each year. That is the equivalent of pulling more than 38 million passenger vehicles from the road.



In some cases hydroelectric plants can harm the environment by blocking or altering fish migrations. When an area is designated for a hydroelectric plant, some residents may be displaced because of the necessary flooding required to create a reservoir for water. Also, in times of droughts, there may be limited amounts of water to be used for the generation of electricity.

Additional resources

For additional information on hydroelectricity, visit these websites:

National Hydropower Association:
www.hydro.org

**U.S. Department of Energy
Water Power Program:**
www.eere.energy.gov/water/

Green Energy Ohio:
www.greenenergyohio.org