



Office of the Ohio
Consumers'
Counsel

Your Residential Utility
Consumer Advocate

CONSUMERS'
FACT
SHEET

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Consumers' Counsel

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Renewable Energy Sources

HYDRO

ELECTRICITY



What is hydroelectricity?

Hydroelectricity is the most widely used form of renewable energy in the world. Typically, moving water will spin turbines that generate electricity. This electricity is then sent to the power lines to be used. According to the US Geological Survey, hydropower represents about 17% of total energy production.

There are three types of hydroelectric power plants:

- ▶ **Impoundment** – typically a dam is used to store river water in a reservoir. Water is then released from the dam to operate the generators. This is the most common type of hydropower plant;
- ▶ **Diversion** – a portion of a river is channeled through a canal to turn the blades of a turbine and create electricity. It may or may not need the use of a dam to force water through the turbines; and
- ▶ **Pumped Storage** – energy is stored by pumping water from a lower reservoir to an upper reservoir when electricity production is high but the need for electricity is low. During periods of high electrical demand, the water is released back to the lower reservoir to generate additional electricity.

Ohio's current and future outlook

Per the U.S. Energy Information Administration, Ohio generated

RENEWABLE ENERGY SOURCES HYDROELECTRICITY

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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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54,000 MWh of hydropower in 2018. In Columbus, the city's Division of Power and Water uses hydropower to generate electricity for its residential and commercial customers. Water from the Scioto River rushes through the O'Shaughnessy Hydroelectric plant and spins two turbines, which generate electricity. The water is then discharged back into the river below the dam.

National outlook

The United States is the fourth largest producer of hydropower in the world, with China leading the way. Per the World Energy Council, 16.4 percent of the world's electricity was generated from hydropower in 2016. The U.S. Energy Information Association reports that the United States produced about 6 percent of its energy through hydroelectricity in 2016.

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. Since hydropower uses existing bodies of water to generate power, it has relatively low operations and maintenance costs.

In some cases, hydroelectric plants can harm the environment by blocking or altering fish migration patterns. 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. Like other forms of electric generation, hydropower has high investment costs.

Additional resources

For additional information on hydropower, visit these organizations:

[National Renewable Energy Laboratory](#)

[U.S. Department of Energy
Water Power Program](#)

[U.S. Energy Information Administration](#)