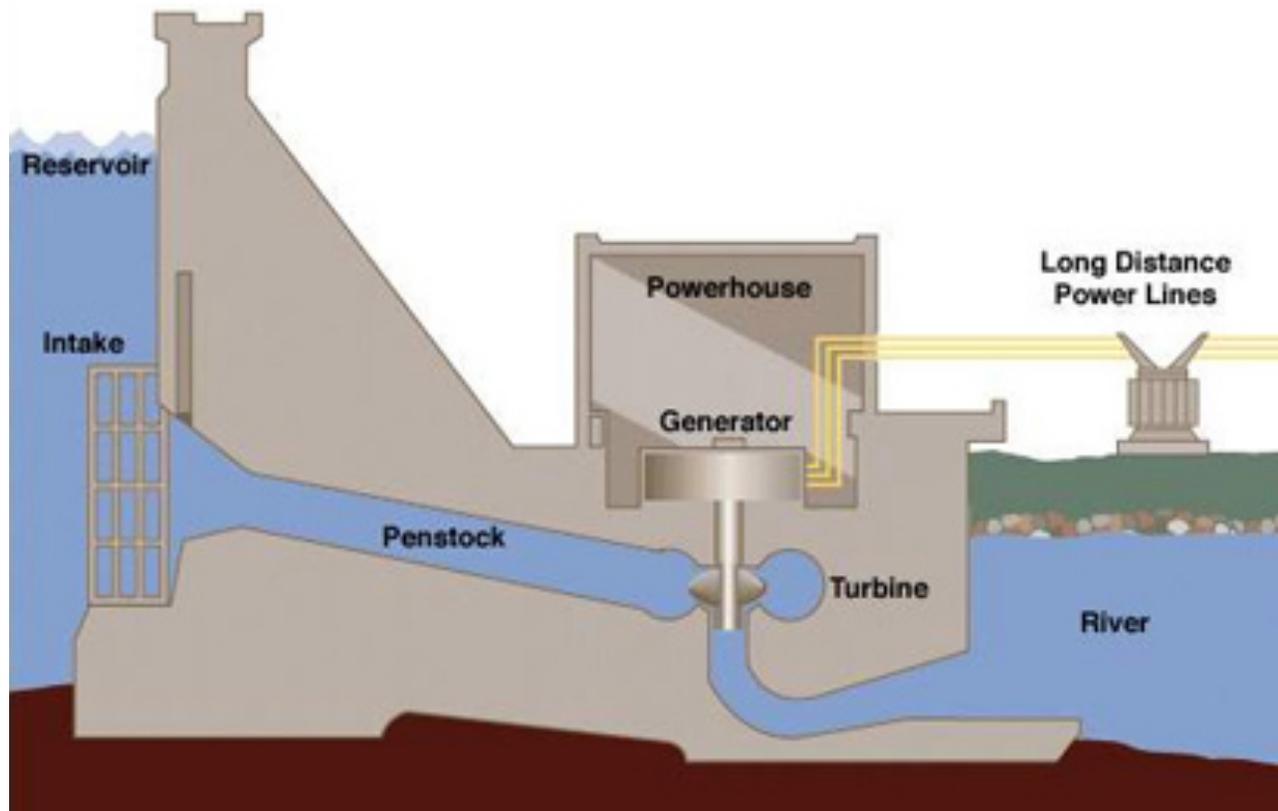


Hydro Electric Dams

Hydroelectricity provides Michigan with 35-40 percent of its **renewable** energy. Hydro power is one of the oldest and most reliable sources of renewable energy. Water accumulates potential energy as it builds up in a reservoir behind a dam, which is built on a river. Once it falls into the dam, it is then transformed into mechanical energy as it strikes turbine blades, which spin electromagnets that generate electric current. This current is then transmitted to power lines nearby.



Use this paragraph to fill in the chart on the next page.

Consumers Energy operates 13 different hydroelectric dams on five river systems throughout Michigan. There are advantages and disadvantages to this technology, according to the U.S. Department of Energy. The advantages include little to no pollution, the source of the energy (water) is renewable, operation and maintenance costs are low and the technology is reliable and proven over time. The disadvantages include high investment costs, dependency on precipitation, entrapment or restriction of fish and in some cases it can flood land or wildlife habitats, destroy or modify fish habitats, change reservoir or stream water quality and displace local populations.

Hydroelectric Power

Advantages

Disadvantages

Ausable River Dams

A world-famous trout stream and popular northern Michigan canoe destination, the AuSable River runs about 120 miles from Grayling to Lake Huron. Consumers Energy operates six hydroelectric dams: Mio, Alcona, Loud, Five Channels, Cooke and Foote. The hydros were built between 1911 and 1924. Together, they can generate 41,000 kilowatts of electricity, enough to power a community of about 20,500 people.



The Mio Dam, named after the nearby city, has a capacity of 4,900 kilowatts, the hydro was built between 1914-16 and is the company's hydro furthest upstream (49 miles from Grayling) on the AuSable River.



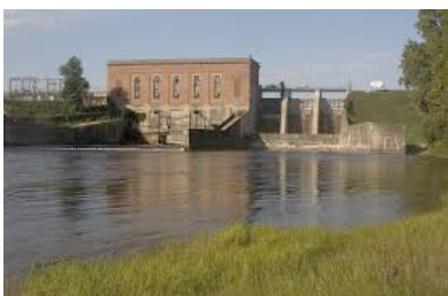
The Alcona Dam is capable of producing 8,000 kilowatts. Work began in 1917, but the project stalled due to unstable sand and World War I. Construction resumed in 1923, and Alcona Hydro, named after the county where it is located, began commercial operation in 1924.

The Loud Dam is capable of producing 4,000 kilowatts, the hydro was completed in 1913. It is named for Edward Loud, who had done extensive lumber business along the AuSable between 1900-06, then later partnered with company founder William Foote and others to build the Au Sable hydros.



The Five Channels Dam is capable of producing 6,000 kilowatts, the hydro was completed in 1912. This hydro is named for the nearby location on the AuSable River where there were once five distinct river channels.

The Cooke Dam had an original capacity of 9,000 kilowatts, the hydro began generating electricity in December 1911, making it the first of the six AuSable River hydros. Cooke is named for banker Andrew Cooke, who helped secure financing for the project. Interestingly, the hydro's transmission of 140,000 volts, 125 miles to Flint, establishing a world record.



With a capacity of 9,000 kilowatts, the Foote Dam was completed in 1918. It is located 9 miles upstream from Lake Huron and is named for William A. Foote, the founder of Consumers Power, which later became Consumers Energy.