U.S. Department of the Interior
Bureau of Reclamation

John W. Keys III Pump-Generating Plant

The John W. Keys III Pump-Generating Plant pumps water uphill 280 feet from Franklin D. Roosevelt Lake to Banks Lake. This water is used to irrigate approximately 670,000 acres of farmland in the Columbia Basin Project. More than 60 crops are grown in the basin and distributed across the nation.

Congress authorized Grand Coulee Dam in 1935, with its primary purpose to provide water for irrigation. When the United States entered World War II in 1941, the focus of the dam shifted from irrigation to power production. It was not until 1943 that Congress authorized the Columbia Basin Project to deliver water to the farmers of central Washington State.

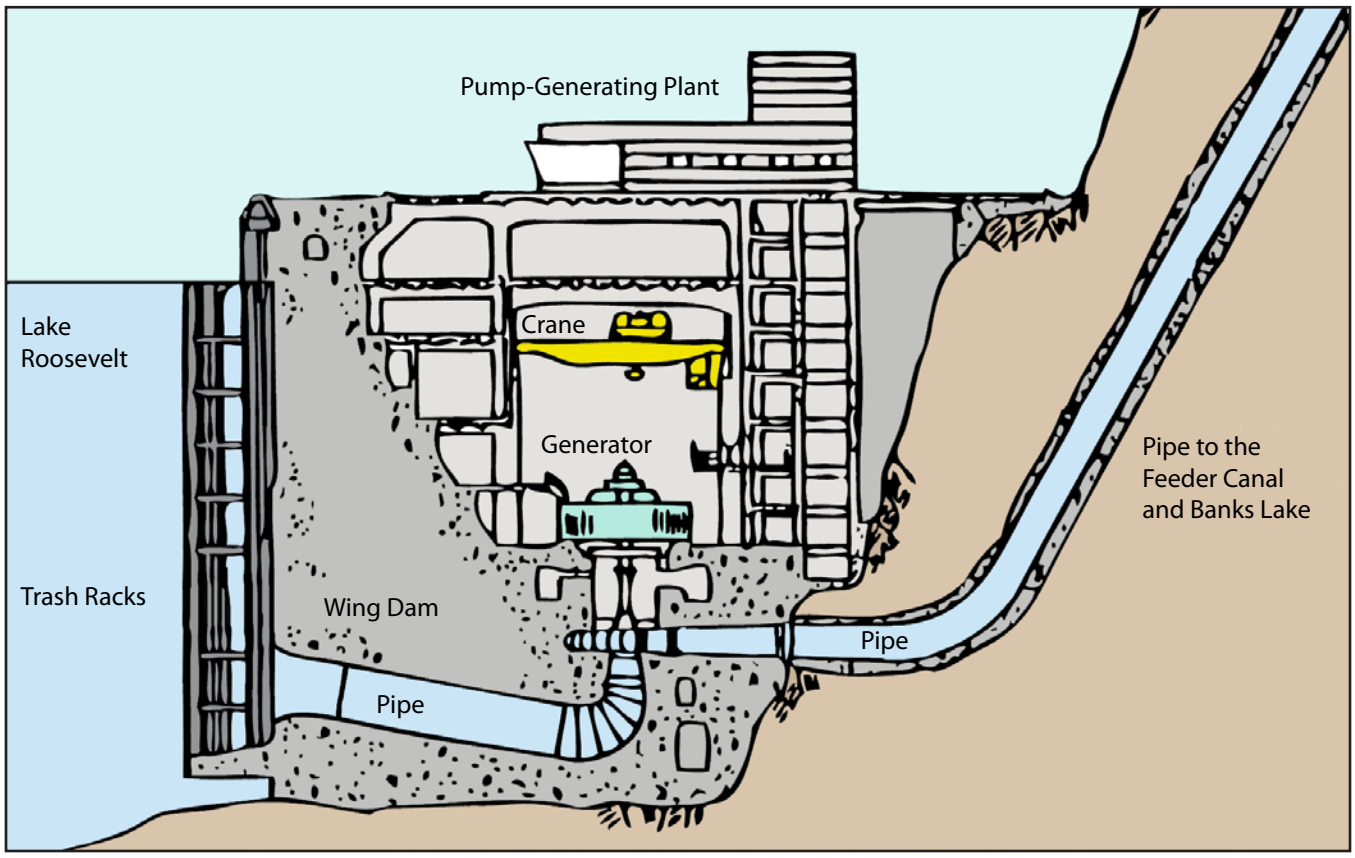
Construction of the irrigation facilities began in 1948. Components of the project include the pump-generating plant, feeder canal, and equalizing reservoir, which was later named Banks Lake.

Banks Lake was formed by damming the northern 27 miles of the Grand Coulee, and has an active storage capacity of 715,000 acre-feet. The lake stores water for irrigation and also provides important recreational benefits to the region.

The pump-generating plant began operation in 1951. From 1951 to 1953, six pumping units, each rated at 65,000 horsepower and with a capacity to pump 1,600 cubic feet per second, were installed in the plant.

In the early 1960s, investigations revealed the potential for power generation. Reversible pumps were installed to allow water from Banks Lake to flow back through the units to generate power during periods of peak demand. The first three generating pumps came online in 1973. Two more generating pumps were installed in 1983; the final generating pump was installed in January 1984. The total generating capacity of the plant is now 314,000 kilowatts.

In 2008, the pump-generating plant was renamed in honor of John W. Keys III. Keys was Commissioner of the Bureau of Reclamation from 2001 to 2006 and Pacific Northwest Regional Director from 1986 to 1998. He was killed in a plane crash in 2008.



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Making Electricity at Grand Coulee Dam

How a Turbine Works

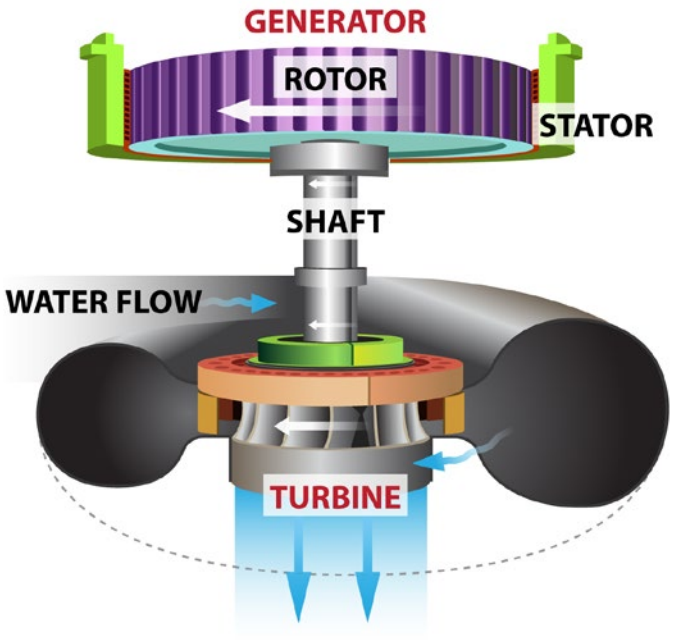
Electricity is made by spinning an electromagnetic field (rotor) through a stationary field of copper (stator). Falling water is the driving force; gravity ensures that water will always flow downhill.

The water flows through a large pipe called a penstock. The water pushes against the blades of the water wheel (turbine) causing it to spin.

The turbine is connected to the generator by a shaft. As the rotor in the generator spins, the magnetic field sweeps through the copper, inducing an electron flow, which becomes electricity.

The electricity passes through a system of controlling switches, voltage changing transformers, and miles of wire before it is delivered to homes, industries, and businesses.

Visit http://www.usbr.gov/pn/grandcoulee/index.html for more information.



Major Hydropower Dams on the Columbia River in the U.S.