Hydro facilities

TURBINES
Two 1,300-kilowatt Francis turbines that contain water’s flow and harness its power.

GENERATORS
480-volt generators and controls

POWERHOUSE
3,000-square-foot turbine facility next to building for energy dissipation valves

CONNECTIONS TO TOWER & CANAL
250 feet of pipeline to outlet; connection to St. Vrain Supply Canal

CONNECTION TO POWER
600-foot power line to Poudre Valley REA

Why hydro?
It produces clean power by harnessing energy that is already created by water’s movement within existing facilities.

Hydro supports Colorado’s renewable energy ethic, which has been demonstrated by state standards and officials’ directives.

It is a reliable option, with a track record that extends well beyond a century.

Robert V. Trout

Northern Water’s Board of Directors passed a resolution in 2012 naming the plant after Bob Trout, Northern Water legal counsel for more than 35 years.

Just like many other initiatives, Bob was instrumental to the hydro project, from creation of its money management fund to negotiations with key agencies.

The resolution affirms his work: “Bob has been a true warrior in his efforts to protect and defend, as well as promote, the interests of Northern Water.”

Financing

CAPITAL COSTS
$6 million

LOANS
$2 million through the Colorado Water Resources and Power Development Authority’s low-interest hydro program

Remainder from Northern Water district to its hydropower enterprise fund

REVENUE
$600,000 (annual gross); defrays construction and maintenance costs

Robert V. Trout
Hydropower Plant
Carter Lake, CO
Hydropower Plant

The plant, attached to the tower outlet at Carter Lake, started generating power in May 2012. It is the first power structure built, owned and operated by Northern Water.

Hydro

Northern Water, which under state law can pursue hydro projects, designed Carter Lake’s second outlet with the possibility of adding future power in mind and began planning hydro facilities soon after outlet completion in 2008.

This was the first project in the region to receive a Lease of Power Privilege from the U.S. Bureau of Reclamation, granting the ability to pursue hydro on the federally-owned facility.

In 2011, the Poudre Valley Rural Electric Association signed an agreement with Northern Water to purchase the project’s projected output of 7 to 10 million kilowatt-hours a year, or enough to power about 1,000 homes.

Construction began in fall 2011 and power generation started in May 2012.

Carter Lake

The plant is connected to Carter Lake’s second outlet, which Northern Water and Reclamation built as a second water release structure for Carter Lake, a Colorado-Big Thompson Project reservoir near Loveland.

The C-BT Project, completed in 1957, diverts snowmelt runoff from the Colorado River and transports it to Northeastern Colorado cities, farms and businesses. Carter Lake is one of C-BT’s primary eastern storage facilities; the other is Horsetooth Reservoir.

Northern Water operates and maintains C-BT reservoirs and other water features. Reclamation owns most of the project’s facilities and operates its six original hydropower plants.

Carter Lake’s original outlet, in the reservoir’s southern dam, was built to deliver water during the crop irrigation season and came offline each winter. But the outlet began making year-round deliveries in 1995, when Northern Water completed the Southern Water Supply Project, a 110-mile underground pipeline that serves municipalities. The switch to all-season operation made repairs and maintenance difficult.

The $12 million outlet, completed in 2008, has a three-level intake tower and connects to the St. Vrain Supply Canal using 1,200 feet of tunnel and pipeline. It offers additional reliability to those who depend on reservoir deliveries.