

## Construction begins on Holtwood hydropower project expansion

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HOLTWOOD, Pa., U.S. 4/30/10 (PennWell) -- Construction is under way on a US\$434 million expansion of the 108-MW Holtwood hydropower plant on Pennsylvania's Susquehanna River.

Preliminary construction of a new powerhouse began in January 2010. The project, which will add 125 megawatts of capacity, is expected to be completed in the spring of 2013.

The 100-year-old Holtwood plant is owned and operated by Allentown, Pa.-based PPL Corp. The plant was placed into service in October 1910.

The expansion, which was approved by the Federal Energy Regulatory Commission in November 2009, is expected to create 200 "green energy" construction jobs over the next three years. Additional jobs will be created at York, Pa.-based Voith Hydro, which is manufacturing the turbine-generators for the Holtwood expansion.

The expansion also calls for improvements to fish passage at Holtwood Dam, enabling more migratory fish to reach upstream spawning areas along the Susquehanna and its tributaries.

A ground breaking ceremony is scheduled for May 3, 2010. Pennsylvania Gov. Edward G. Rendell and U.S. Rep. Joe Pitts, R-Pa., are expected to attend.

# Competitive costs give hydropower new spark

HOLTWOOD, Pa. — The Holtwood Hydroelectric Dam on the Susquehanna River here hasn't changed much since it cranked up in 1910.

Outside, gulls perch on the crest of the dam wall above a picturesque waterfall as a lone boater skims across a serene lake.

Inside the long, narrow powerhouse lined with neoclassic arches and peeling green-and-white walls, 10 hulking, steel-encased generators emit a shrill hum. From below comes a steady, subway-train-like rumble — the cascade of water down the plant's sloping walls before it hurtles into turbines at 240,000 gallons per second.

Workhorses like the 109-megawatt Holtwood, which powers 90,000 homes in the region, have been criticized by environmentalists for the hazard they present to fish. They've been nearly forgotten amid the rush to trendier forms of renewable energy, such as wind and solar. But hydropower — the oldest and by far most widely used alternative energy — is quietly making a comeback spurred by a scramble for clean energy and the high costs of fossil fuels such as coal and natural gas.

Pennsylvania Power and Light is spending \$350 million to build a sleek new powerhouse at Holtwood, the first new hydroelectric plant in the East in two decades. It will house just two sets of larger turbines and generators but boast a capacity of 125 megawatts, enough to light 100,000 homes, thanks to new, more efficient technology.

### Old source of renewable energy

The addition is part of the nation's biggest hydropower expansion since the 1980s. Utilities are proposing more than 70 projects that would boost U.S. hydroelectric capacity by at least 11,000 megawatts, or 11%, over the next decade, according to MWH, a hydro engineering firm, and Hydro Review magazine.

"You're getting good, clean energy," says Linda Church Ciocci, head of the National Hydropower Association. "It's domestic, it's affordable, it's reliable."

In the early 1900s, hydropower was the dominant source of the country's electricity generation, a status solidified by massive federal projects such as Hoover Dam in the Southwest and Grand Coulee Dam in Washington state.

As recently as the 1940s, hydropower accounted for 42% of electricity production. But by the latter part of the century, developers had tapped the most mountainous regions — many in the Northwest — whose steep inclines supply the strongest river flows and permit more cost-efficient projects. Hydropower works when falling water spins turbines, which turn generators. Of the 80,000 U.S. dams, only 2,400 have hydro plants. Hydropower today provides

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10% of U.S. electricity generation.

But with coal prices doubling since last year, big hydropower additions "are now economically viable," MWH Vice President Donald Erpenbeck says. Rather than building new dams— which are expensive and time-consuming — developers are adding generators to dams that have none and expanding hydroelectric plants at others.

While construction expenses can be nearly twice those of wind, overall expenses are lower. "You have no fuel costs," Erpenbeck says.

Another impetus is the growing number of states with renewable energy mandates. Most states don't let existing hydroelectric plants qualify, but they recognize new capacity. And since 2005, utilities can get a tax credit for the new power, though it's half the benefit afforded wind and other renewables.

"We saw Holtwood as an opportunity to meet (Pennsylvania's) renewable" energy requirement, Holtwood manager Chris Porse says.

The Holtwood expansion will also lend a helping hand to migrating fish. Now, shad swimming upstream on the Susquehanna to spawn often can't find the dam's fish lift — a sort of elevator that hoists them above the dam and back into the river — due to strong currents.

By siphoning some water to the new turbines and widening the river channel, the project will ease the flow, letting more fish pass, Porse says.

### Existing dams as a resource

Environmental groups have opposed new dams because they trap sediment and often impede migrating fish such as salmon. But "if you have a dam that's clearly not going away, it makes a lot of sense to look at putting hydropower on" it, says John Seebach, head of American Rivers' Hydropower Reform Campaign.

What other developers are doing:

- Installing hydropower on existing dams. Power wholesaler AMP Ohio is adding 344 megawatts of hydropower to five locks and dams along the Ohio River. The \$500 million project is slated to be done by 2014.

AMP CEO Mark Gerken says hydro generation is more reliable than wind, which stops when the air is calm. And, he says, hydro equipment can generate for 75 years or longer.

- Replacing existing powerhouses. The Grant County Public Utility District in Washington is replacing all 10 turbines and upgrading generators at its Wanapum dam on the Columbia River. The \$350 million project will boost capacity 20%, partly because the angles of the new turbine blades can be adjusted to maximize power. That will help meet electricity demand that's growing 9% a year as giants such as Yahoo and Microsoft build big server farms in the region.

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•Adding water storage. Besides boosting capacity at its Iowa Hill hydroelectric dam, Sacramento Utility District is installing a pump. Excess grid power at night will be used to pump water that's already flowed through the turbines back to the top of the dam for storage.

Then, when wind turbines shut off because the air is calm, the district can use the stockpiled water to quickly rev up the hydro generators. Hydroelectricity can thus promote wind development.

Despite the advances, hydropower still can't shake its clouded image. Some states, for instance, allow only small projects to count toward a clean energy mandate to minimize environmental harm.

"It's sort of been relegated to the same position as nuclear," says Douglas Hall, manager of the water energy program for the Idaho National Laboratory. "It's really almost injurious to take that kind of attitude if we're seriously hurting for power."