

## **Moeller Says FERC Hydrokinetic Approval Paves Way For Technology**

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FERC's first-ever unanimous approval of a commercial hydrokinetic electricity facility to be installed behind an existing dam has gone a long way in establishing the criteria the commission will consider when evaluating future hydrokinetic projects, according to FERC Commissioner Philip Moeller and the project's developer.

The approval of the new device that creates power using aquatic currents comes at a time when momentum is building in the United States for a variety of electricity-generating technologies that do not emit greenhouse gases. FERC currently has 3,000 MW of hydrokinetic permit applications pending for the Mississippi River alone, the equivalent of three large coal-fired power plants.

On Dec. 13 FERC signed off on the hydrokinetic device -- which will be located at a dam in Hastings, MN, on the Mississippi River -- and the model could be replicated at thousands of existing dams across the country, contributing significantly to a new form of emissions-free energy.

To generate hydrokinetic power, the dam's downstream currents will flow through an underwater turbine, which will produce the electricity as it rotates. The turbine is housed in a circular encasing, resembling a submerged jet engine. Two of these 35 KW devices will be suspended from a 68 foot wide floating barge trailing the existing 4.4 MW dam, according to Mark Stover, Vice President for Governmental & External Affairs at Hydro Green Energy, the project developer.

If all goes according to plan, one of the two devices will be on-line before the end of the year, adding to the capacity of the existing dam and optimizing the system's electrical infrastructure, says Stover.

Although the capacity of these devices is very small, FERC Commissioner Philip Moeller says, "I'm very excited" by the technology. The FERC approval is important "because it's the first," and if this project demonstrates this technology's productivity, he says, it could be implemented at other dams all over the country.

Indeed, Stover says Hydro Green is eyeing a 70 MW project on the deeper Niagara River and will begin to focus more on other projects once the Hastings device is submerged and begins generating power. The technology can also be used in open rivers, tidal areas, and ocean currents.

While the cost of electricity generated from the project will largely depend on how smoothly the installation and day-to-day operations go, Stover expects it to be cost-competitive with biomass and geothermal electricity, cheaper than solar but more expensive than wind.

Moeller says this first order has helped to lay out the rules of the road, informing other companies about what expectations the commission will have for future applications. "Every case is a bit different," he says, explaining that in the Pacific Northwest, for example, the aquatic life considerations will differ from those in the Mississippi. Nevertheless, applicants will have a better understanding of "what to do and how to do it."

The devices, about 12 feet in diameter, can be lifted above the surface within minutes and pulled completely out of the water in less than a day. The turbines spin at 21 revolutions per minute and Hydro Green's modeling predicts nearly no fish fatalities, which, if accurate in the real world, could go a long way in gaining environmental support for the new hydro power, according to Stover.

On FERC's approval, Stover says the commission "made it clear what it expects in terms of license applications." Beyond the initial installation requirements, he explains that FERC was detailed in how the administrator of the project must monitor and record details of the ongoing operations. "They want a lot of questions answered," he says.

The FERC order requires "the licensee to monitor potential impacts to environmental resources such as fish survival and entrainment, water quality, and avian resources," according to the order. The commission can require the project manager to remove the devices if the environmental impacts prove to be negative.

Hydro Green began scoping possible sites in Minnesota because of the state's renewable energy policies, particularly its renewable portfolio standard. The Hastings site was picked because the project could easily link into the electrical infrastructure, which lowered costs significantly, and because the dam provided a level of protection from unruly waters. "It's a safe place to deploy the technology," Stover says.

In addition, slotting the devices behind an existing dam cuts through a lot of regulatory red tape. Stover says amending the license of an existing dam is far faster (less than one year) and less expensive than obtaining a new license for a hydro facility (up to five years).

The power generated by the devices is eligible for the Sec. 45 renewable energy production tax credit for incremental hydro power.