

Mississippi River Generation

CATCHING CURRENT

BY PAM RADTKE RUSSELL

■ ■ ■ SMALL TURBINES UP AND DOWN THE
■ ■ ■ Mississippi River could provide as much electricity as a nuclear power plant in the near future.

Earlier this year, the Federal Energy Regulatory Commission issued its first preliminary permits for in-river hydrokinetic projects that would be powered by river currents. One company, Free Flow Power, has nabbed the majority of the permits issued so far, with 57 on the Mississippi River from St. Louis, Mo. to the mouth of the Mississippi. The company plans to spend \$3 billion to develop the sites to generate 1,500 megawatts of electricity.

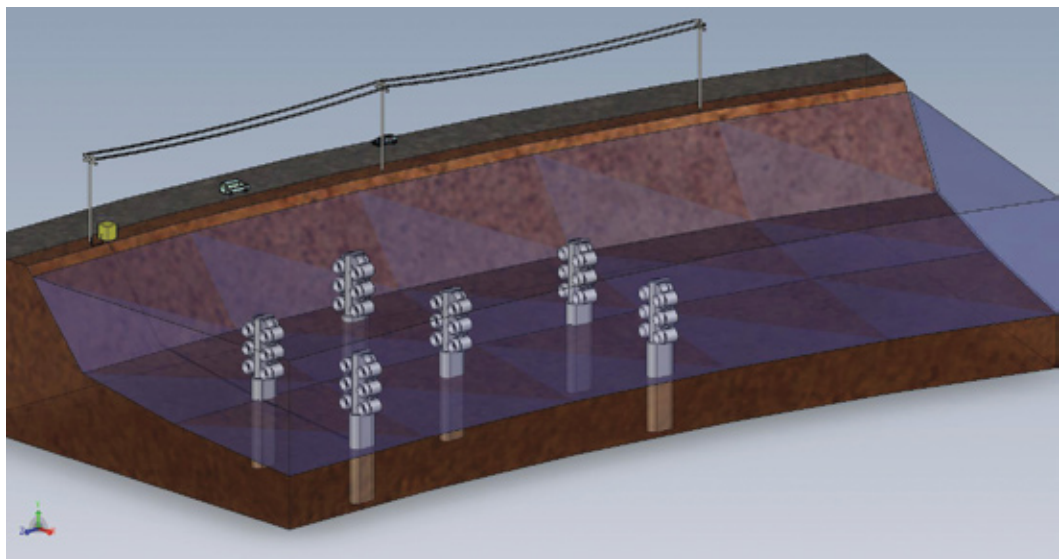
Another company, Houston-based Hydro Green Energy, has received two permits for in-river current turbines in the Yukon River in Alaska and has permits pending for two projects on the Mississippi totaling 20 megawatts. Both companies propose to put several small-diameter turbines in the water to capture the energy from a river's current.

"There's a tremendous opportunity in the area of in-stream projects similar to what those two companies have proposed," said Linda Church Ciocci, executive director of the National Hydropower Association (NHA).

The Electric Power Research Institute estimates that 3,000 megawatts of new power will be generated by in-river hydrokinetic technology by 2025. The NHA says that number is likely too conservative.

Dan Irvin, CEO of Gloucester, Mass.-based Free Flow, says he believes that others are likely to follow in Free

Flow's path, and the company plans to market its 1- and 2-meter turbines to small companies to develop their own in-river sites. Free Flow looked at 80,000 river sites across the nation, and found that the top 100 sites for flow were in the lower



Free Flow power plans to install small turbines on the bottom of the Mississippi to generate electricity.

ILLUSTRATION COURTESY OF FREE FLOW POWER

Mississippi River. But Irvin said that the currents could be tapped in just about any river. Free Flow has applied for a preliminary permit on the Niagara River and another on the Detroit River. The company hopes to sell power from those sites directly to an end user, Irvin said.

Free Flow is also in discussions with unnamed Midwestern utilities about partnering and installing river turbines in that region, Irvin said.

Free Flow chose its sites on the Mississippi based not only on river flow, but also on their proximity to end users. Heavy energy using refineries and chemical and processing plants pepper the banks of the Mississippi.

"We are interested in the possibility of partnering with energy users. We are pretty open as to who we sell power to. There's a shortage of renewable alternatives," Irvin said.

Free Flow has not yet talked with the region's

NewsFlash

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To handle all the new wind generation cranking up in the panhandles of Oklahoma and Texas, Oklahoma will need \$3.4 billion in transmission construction, according to the *Oklahoman* newspaper.

The estimate was included in a Southwest Power Pool study given to Oklahoma legislators.

largest utility, Entergy Corp., about selling its power to the company, but Entergy did intervene in many of Free Flow's preliminary permit applications.

While both Hydro Green and Free Flow plan on using similar-sized turbines, Hydro Green would suspend the turbines from the bottom of barges along the river. Free Flow would install them in pilings along the river bottom. Both companies say that the turbines will be out of the way of navigation. Neither river pilot associations nor the Army Corps of Engineers have voiced any formal objections to the projects.

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Free Flow is tackling such a large project because the end result must pay for the costly and lengthy five-year permitting process for hydropower, Irvin said. While the company hopes to get the turbines in the water before 2013, Irvin realizes the complexity of dealing with a new concept on such a large scale.

"We'd like to try to do it faster, but we're being realistic about the process," he said.

FERC is attempting to streamline the process by allowing pilot hydrokinetic projects to be launched, but the full-scale permitting process is still necessary for a project as large as the one proposed by Free Flow.

In addition to lessening the regulatory burden, Irvin said it's necessary to put hydrokinetic power on par with other renewable resources in terms of federal incentives and funding.

"It's clean, renewable power that's cost effective," he said. "If you level the playing field, this stuff will really take off."

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