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Nuclear Plant's Use of River Water Prompts \$1.1 Billion Debate With State

By [MATTHEW L. WALD](#)

BUCHANAN, N.Y. — Just beneath the wind-stippled surface of the Hudson River here, huge pipes suck enough water into the [Indian Point](#) nuclear plant every second to fill three Olympic swimming pools. And each second they take in dozens of organisms — fish and crabs, but mostly larvae — that are at the center of a \$1.1 billion debate: should the plant have to put in cooling towers that would vastly reduce the intake of water?

Yes, says New York State, which puts the annual death toll at nearly a billion organisms and is withholding a water permit that the plant would need to [extend](#) its initial 40-year operating license.

No, says [Entergy](#), the plant owner, which [argues](#) that more fish could be saved by installing a different water-intake system. It warns that, if built, the cooling towers would pump tons of pollution into the air of New York's northern suburbs — and that Westchester County already fails to meet national air quality standards for particulates.

But as with all things nuclear, the dispute transcends the issue immediately at hand, and some question whether the debate is really about water. New York State argued recently before the [Nuclear Regulatory Commission](#) that Indian Point poses such a safety risk that its two reactors should be shut down when their licenses expire in 2013 and 2015.

"We've had opposition here since we started up," said Joseph E. Pollock, the site vice president for the Indian Point plant, who disputes the idea that water is at the crux of the debate.

Water quality is "just an avenue being utilized," he said.

To hedge their bets, environmental groups like [Riverkeeper](#) are arguing for both a shutdown and the construction of cooling towers, which would eliminate the need for Indian Point to

take in a huge volume of water from the Hudson to condense steam from the power generation process back into water.

“We think the world would be a better place with cooling towers,” said Phillip Musegaas, Riverkeeper’s program director. “For us, that’s a separate question from ultimate closure.”

The debate over Indian Point’s water use takes physical form at the river’s edge.

In between the reactor domes and the shore sit the water intake structures, including big metal machines with thick windows that look a bit like subway cars and enclose a cluster of sprays and rotating parts, like a car wash.

Inside the structures, wire mesh screens rotate in a continuous loop in front of six intake pipes, each seven feet in diameter, for each reactor.

The screens undergo a gentle spraying that is intended to free animals that have “impinged” on them, releasing them back into the river, and then a stronger one that blasts off leaves and twigs, litter and whatever else came in with the water.

The machines were installed in the 1990s as part of an earlier compromise over cooling water.

There is some debate about how effective they are at returning fish to the river, but James Steets, a spokesman for the plant, demonstrated one recent morning that they returned at least some.

He opened a hatch on a white fiberglass chute that slightly resembled a water slide at a theme park. Inside, swimming vigorously upstream, was a dark fish about the size of a little finger that had been caught on the screen and rinsed off.

Then it turned and zipped down with the flow toward a pipe that would carry it out to the middle of the river.

A few seconds later, a small crab followed.

Smaller living things are sucked right through the screens and then into the plant’s condenser, a giant metal box crossed by rows of small metal tubes. The tubes carry steam that has come from the reactor building and has given off much of its energy to turn a turbine. The turbine spins a generator that makes electricity.

With the cool river water inside the box but outside the tubes, the steam condenses back into water that is pumped toward the reactor again to be reboiled into steam.

The river water then flows out of the box, through a canal, and eventually back into the river, its temperature, at this time of year, about 15 degrees higher than when it entered.

Some eggs and small fish survive their transit through the condenser, Mr. Steets said, but for regulatory purposes, they are assumed to be killed. Among the eggs and baby fish are the shortnose sturgeon, which is endangered.

The cooling towers would cut the water intake by about 97 percent and eliminate the threat to the marine organisms. But plant officials argue that the towers would dump salt particles from the Hudson into the air, lowering the area's air quality. Entergy's engineers also point out that Indian Point's two reactors are flanked by hills overlooking the Hudson. The cooling towers, which each would be the size of [Yankee Stadium](#), would have to sit near the level of the Hudson River, requiring extensive excavation, they say.

Advocates of the towers counter that Entergy is trying to make construction seem as complicated as possible.

Entergy is instead proposing an updated kind of water intake called a "wedge wire" system with a cigar-shape cage covered with a screen like the one on a screen door. It is proposing to install 144 of these cages, which would suck in water more slowly. Entergy argues that far fewer fish hit the screen this way.

But the state says Indian Point should use the "best technology available," which means cooling towers. In a letter denying Entergy's application for a new water permit, the state said the tower system would save more than 90 percent of the organisms that are now killed.

Entergy replies that the wedge wire system would be nearly as effective and could be built years earlier, allowing far more wildlife to be saved in coming years.

The view of Mr. Pollock, Entergy's senior executive at the plant, that the water permit is merely a surrogate for a bigger issue is shared by some industry observers. Some point out that the political outlook for Indian Point is not favorable; the New York attorney general, [Andrew M. Cuomo](#), who is running for governor, has made closing down the plant the most specific part of his [energy platform](#).

Shelby Tucker, an analyst at Oppenheimer & Company who follows utilities and independent power producers, attributes much of the opposition not to the fate of aquatic wildlife but to anxieties dating from the 1979 accident at the Three Mile Island nuclear plant near Harrisburg, Pa.

“There still persists a certain element that is very much against nuclear, for reasons they feel are appropriate,” he said. “But they might use other reasons to stop the nuclear plant from running.”

Yet the stakes are higher than simply the plant's future, he said.

If Indian Point is shut, something will have to take its place to ensure the reliability of the grid in downstate New York. And with the plant's output removed, Mr. Tucker says, electricity prices would rise for consumers around the state.