

Question: Where on earth would be the best place to harness tidal power to generate electricity? Answer: Right here in our own back yard. Along our border with Canada is Nova Scotia's Bay of Fundy with the highest tidal range anywhere on earth. According to Canadian government statistics, 100 billion tons of water is emptied from the bay every day; that's more fresh water than all the rivers on earth combined.

Unlike the wind, tides are predictable. It is that predictability that has visionaries struggling with ways to harness the tide's enormous power into electrical energy. During the Great Depression, President Franklin Roosevelt wanted to create a series of dams in Canada's Passamaquoddy Bay area north of Eastport. Roosevelt's vision was not realized and some 40 years later Sen. Edmund Muskie also floated the idea of harnessing the untapped tidal energy. But the time was not right. The high cost of research and development could not compete with the low cost of oil and coal fired generators.

Flip the page of the calendar to 2008. The staggering cost of \$4-a-gallon gas and heating oil has turned attention again to America's most eastern town, Eastport. Tidal power off the coast of Maine could generate electricity for as little as 4.2 to 6.5 cents per kilowatt-hour, according to a recent study by The Electrical Power Research Institute. Currently, the standard offer from Central Maine power is 7.95 cents.

There are highs and lows when it comes to the development of tidal energy to produce electricity. Last week in Bath, the Maine Tidal Energy Company, owned by Oceana Energy Company headquartered in Washington, D.C., halted their plans to put fan like electric generators in the three constrictions of the Kennebec River. Just last year Maine Tidal had received a preliminary permit from the Federal Energy Regulatory Commission (FERC) to study the feasibility of the project.

Ed Friedman, the chairman of the Friends of Merrymeeting Bay, says the tactics by Maine Tidal Energy are quite threatening: "A good analogy would be if someone put their hands around your throat and choked you. This was nothing more than a land grab, they used basically the same application in about 11 different areas around the country."

Mr. Friedman faults Maine Tidal Energy had no reasonable plan to protect marine life and points out all of Maine's 12 migratory species, among them striped bass and Atlantic salmon, must pass through these narrows to spawn.

"These fish are vital to the health of the river and more importantly to the Gulf of Maine," he said. Efforts to contact representatives of Oceana Energy Company for this report have gone unanswered.

But engineers at the Ocean Renewable Power Company (ORPC), researchers at the University of Maine and the people of Eastport believe it is "High Tide" to take another look at the rapid waters rushing along their coastline.

ORPC is currently testing Eastport's coastal waters. The Portland-based company has tested scale model generators and has proven electricity can be produced from tidal power. The possibility of a permanent, commercial electrical tidal power station appears to be close at hand. This May, a series of legislative measures authorized larger scale tests scheduled for this summer.

"We have a goal of installing our first commercial module by the last quarter of 2010. Late this summer, early fall we're going to be testing our commercial design of our turbine generator unit," said John Ferland, the director of Projects for ORPC.

Working closely with the researchers at the University of Maine in Orono, ORPC's generators, made of composite materials, look more like massive push lawn mower blades than cutting-edge technology. Nevertheless, each of these generators is expected to produce 250 kilowatts of electrical power.

"If you stack four of those you get a mega-watt. We can stack them vertically or horizontally depending on the site," Ferland said.

This September, the ORPC will be taking the first step toward that goal. Having obtained the necessary licensing from the Federal Energy Regulatory Commission, ORPC will begin testing a commercial size generator to be lowered from a barge to a depth of 30 feet. Then in October 2010, ORPC plans to install a commercial 1-megawatt module. A megawatt will run about 350 homes.

"Our project's goal in the Eastport area is approximately one hundred megawatts. That's 35,000 homes," he said.

The Eastport site is only the beginning.

"There are probably 10 sites that are the most prominent. There are sites particularly in the Western Passage, which are among the two or three best sites in North America. We need to look at the big ones first, and look at the economics of those and so when we learn from that we can look at the smaller sites. But there are actually hundreds of potential sites," said Michael Peterson, PhD, a professor of mechanical engineering at the University of Maine.

There is a concern these blades churning underwater might devour various forms of sea life. Peterson believes there are many factors to be considered in preserving the safety of marine life.

"It depends on where you are locating the turbines in the water column and how the water columns are being used by the fish. So obviously a sturgeon on the bottom would not be affected by a device not on the bottom. We also need to understand seasonal migration patterns and finally the design of the turbine," he said.

Here along the Maine-Canada border, the Ocean Renewable Power Company, University of Maine researchers and the people of Eastport appear to have found an acceptable balance between the need to produce alternative energy, protect marine life and create jobs. Eastport Town Manager George "Bud" Finch is excited about the development of alternative energy and the jobs it is already generating for the people of Eastport.

"We are very pleased that additional work has been given locally to a number of support businesses during the initial testing that fit into what I would estimate to be more than 12 created or retained jobs," Finch said. As the next phase of development occurs Finch expects that number to grow 25 locally supported jobs.

"Ultimately these units are going to have to have barges and maintenance crews and these types of things and

who's better equipped than our local fishermen? They've employed numerous people locally. They are in the process getting ready to build a barge by a local contractor, a lot of stuff is being done by local contractors, electricians, plumbers and so forth," he said.

Eastport may be a small town of just 1,750 people but they are thinking big.

"We're looking forward to the industry growing here, and hopefully one day not only generating power but building the generators that will be shipped out because we have the port right here," Finch said.

In the next report, we'll take a look at how some communities see large wind turbines as ugly eyesoars and others view them as the vision of the future.