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Alaska Is a Frontier for Green Power

By **STEFAN MILKOWSKI**

TOKSOOK BAY, [Alaska](#) — Beyond the fishing boats, the snug homes and the tanks of diesel fuel marking this Eskimo village on the Bering Sea, three huge wind turbines tower over the tundra. Their blades spin slowly in a breeze cold enough to freeze skin.

One of the nation's harshest landscapes, it turns out, is becoming fertile ground for green power.

As interest in cleaning up power generation grows around the country, Alaska is fast becoming a testing ground for new technologies and an unlikely experiment in oil-state support for renewable energy. Alaskans once cast a wary eye on anything smacking of environmentalism, but today they are investing heavily in green power, not so much to reduce emissions as to save cash.

In remote villages like this one, where diesel to power generators is shipped by barge and can cost more than \$5 a gallon in bulk, electricity from renewable sources like wind is already competitive with power made from fossil fuels. In urban areas along the state's limited road system, large wind and hydroelectric projects are also becoming attractive.

Alaska produces more oil than any state except Texas, but most of it leaves the state. Small markets and high transportation costs have kept local fuel prices high. As oil prices spiked last year, the state's coffers overflowed with oil tax revenue, but the rising cost of diesel and other fuels became a local crisis.

Gov. [Sarah Palin](#) and state lawmakers responded last year by pledging \$300 million over five years in renewable energy grants to utilities, independent power producers or local governments. It is a substantial sum for a state with only 670,000 residents.

"Oil used to be cheap and convenient," said Steve Haagenson, appointed last year by Ms. Palin as statewide energy coordinator. "Today, it's just convenient."

Advocates of renewable energy here say Alaska, with its windy coasts, untapped rivers and huge tidal and wave resources, could quickly become a national leader. The state already generates 24 percent of its electricity from renewable sources — almost exclusively hydroelectric — and Ms. Palin last month announced a goal of 50 percent by 2025. "Today's current low oil prices should not lull Alaskans into a false sense of security, as if these low prices are going to last," she said.

Environmentalists concerned about the impacts of [climate change](#), already widely apparent in Alaska, have strongly backed the state investments in renewable energy. But the driving force among politicians was economic.

In many rural areas of the state, high fuel costs have resulted in electricity prices of up to 75 cents or more per kilowatt-hour, five to 10 times the prices common in the Lower 48. Despite high installation costs and the need for cold-weather engineering, wind turbines can often produce power at a lower cost than diesel generators by eliminating the need for fuel.

The Kotzebue Electric Association in northwest Alaska first demonstrated the value of utility-scale wind power in Alaska in 1997. Since then, nine other rural communities have added turbines, and dozens more are pursuing projects.

A state review completed in 2008 found that wind power was technically and most likely economically feasible in more than 100 Alaska villages, according to Martina Dabo, who oversees wind power programs at the Alaska Energy Authority, a public corporation whose mission is to reduce the cost of energy.

Northern Power Systems, a small turbine manufacturer in Barre, Vt., has capitalized on Alaska's new interest in wind. The company initially designed its 100-kilowatt turbine for operation at the South Pole, not a huge market. "We said, 'Hey, there's a market in Alaska — let's go after it,'" said Brett Pingree, the company's vice president for sales.

Northern Power now has turbines in eight Alaska villages, including Toksook Bay, and is working on projects in 45 others.

Renewable energy is also becoming attractive along the Railbelt, the area stretching from Seward to Fairbanks where most of the state's residents live. While electric prices are lower than in the remote villages, renewable power would help guard against future price spikes. A wind farm is under development for an island near Anchorage, and other projects are being studied, including a pair of dams that could meet the entire Railbelt demand.

"I think the Railbelt's waking up to the reality that the era of cheap natural gas is over," said Chris Rose, who oversees a coalition of public and private groups called the Renewable Energy Alaska Project.

While remote locations and limited demand hamper their development, Alaska's renewable resources are vast and diverse compared with those of other states. According to Roger Bedard of the Electric Power Research Institute, Alaska has more than half the country's ocean wave energy resources and more than 90 percent of its river current and tidal resources.

In Toksook Bay, residents credit the wind turbines with keeping electric bills from rising as fast as the price of oil.

"I think the turbines are very, very helpful," said Alexie Jimmie, who owns Bayview, one of the two stores in Toksook Bay. "Otherwise, we probably would pay way more than what we are paying."

The state subsidizes electricity for residential customers in rural areas, but only to a degree. Mr. Jimmie's recent monthly bills came to \$371.14 for his house and \$713.12 for the small store where he sells items like cereal and spark plugs.

Officials with the Alaska Village Electric Cooperative, which serves Toksook Bay and 52 other communities, estimate the turbines in Toksook Bay will pay for themselves through fuel savings in about 17 years, and will

last 20 to 25 years.

To make the most of the resource, the cooperative and other power providers are developing systems with electronically controlled diesel generators that can rapidly adjust their output, electric heaters that can absorb excess power and other tools for dealing with the variability of wind. The result is hybrid power systems that generate 25 percent or more of their power from wind on an annual basis.

“Right now Alaska is really the front-runner in wind-diesel applications,” said Ms. Dabo of the Alaska Energy Authority. “We take the steps from an engineering drawing board and really put those systems into place.”

The Chena Hot Springs Resort near Fairbanks is testing new [geothermal](#) technologies, and villages along the Yukon River are experimenting with using river current to make power.

The plunge in oil prices has caused some lawmakers to question the state’s ambitious investments in renewable energy, but Ms. Palin and others argue it is critical to push ahead. The Alaska Energy Authority released a hefty report last month assessing the feasibility of alternative energy projects in every rural community in the state.

Village residents, who are still paying high prices because of the spike in fuel costs last summer, like the idea of expanding the wind farm there.

“Jobs are scarce,” said Francis Sipary, assistant manager at the Nunakuiak Yupik Corporation store, “and members can’t afford to pay so much dollars the way the economy’s going.”

Mr. Sipary, who like many people here hunts and fishes, added that the turbines were nice for another reason. They can be seen from a boat 20 miles at sea, so the people of Toksook Bay now use the wind turbines to find their way home.

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