

December 26, 2008

Solar Meets Polar as Winter Curbs Clean Energy

By [KATE GALBRAITH](#)

Old Man Winter, it turns out, is no friend of renewable energy.

This time of year, wind turbine blades ice up, biodiesel congeals in tanks and solar panels produce less power because there is not as much sun. And perhaps most irritating to the people who own them, the panels become covered with snow, rendering them useless even in bright winter sunshine.

So in regions where homeowners have long rolled their eyes at shoveling driveways, add another cold-weather chore: cleaning off the solar panels. "At least I can get to them with a long pole and a squeegee," said Alan Stankevitz, a homeowner in southeast Minnesota.

As concern has grown about [global warming](#), many utilities and homeowners have been trying to shrink their emissions of carbon dioxide — their carbon footprints — by installing solar panels, wind turbines and even generators powered by tides or rivers. But for the moment, at least, the planet is still cold enough to deal nasty winter blows to some of this green machinery.

In January 2007, a bus stalled in the middle of the night on Interstate 70 in the Colorado mountains. The culprit was a 20 percent biodiesel blend that congealed in the freezing weather, according to John Jones, the transit director for the bus line, Summit Stage. (Biodiesel is a diesel substitute, typically made from vegetable oil, that is used to displace some fossil fuels.)

The passengers got out of that situation intact, but Summit Stage, which serves ski resorts, now avoids biodiesel from November to March, and uses only a 5 percent blend in the summertime, when it can still get cold in the mountains. "We can't have people sitting on buses freezing to death while we get out there trying to get them restarted," Mr. Jones said.

Winter may pose even bigger safety hazards in the vicinity of wind turbines. Some observers say the machines can hurl chunks of ice as they rotate.

"It's like you throw a plate out there and that plate breaks," said Ralph Brokaw, a cattle rancher in southeast Wyoming who has 69 wind turbines on his property. When his turbines ice up, he stays out of the way.

The wind industry admits that turbines can drop ice, like a lamppost or any tall structure. To ameliorate the hazard, some turbines are painted black to absorb sunlight and melt the ice faster. But Ron Stimmel, an expert on small wind turbines at the American Wind Energy Association, denies that the whirling blades tend to hurl icy javelins.

Large turbines turn off automatically as ice builds up, and small turbines will slow and stop because the ice

prevents them from spinning — “just like a plane’s wing needs to be de-iced to fly,” Mr. Stimmel said.

Mr. Brokaw says that his turbines do turn off when they are too icy, but the danger sometimes comes right before the turbines shut down, after a wet, warm snow causes ice buildup.

From the standpoint of generating power, winter is actually good for wind turbines, because it is generally windier than summer. In Vermont, for example, Green Mountain Power, which operates a small wind farm in the southeastern part of the state, gets more than twice the monthly production in winter as in August.

The opposite is true, however, for [solar power](#). Days are shorter and the sun is lower in the sky during the winter, ensuring less power production.

Even in northern California, with mild winters and little snow, solar panels can generate about half as much as in the summer, depending on how much they are tilted, according to Rob Erlichman, chief executive of Sunlight Electric, a San Francisco solar company.

Operators of the electrical grid do not worry much about the seasonal swings, because the percentage of production from renewable energy is still so low — around 1 percent of the country’s power comes from wind, and less from solar panels. In addition, Americans use slightly less electricity in the winter than in the summer because air conditioners are not running. This is especially true in sunny areas, so solar panels’ peak production matches the spikes in demand.

But as renewable energy becomes a bigger part of the nation’s power mix, the seasonable variability could become more of a problem. Already, power developers are learning that they must make careful plans to avoid the worst impacts of ice and snow.

Trey Taylor, the president of Verdant Power, which has put small turbines in the tidal East River in New York City and plans more for the St. Lawrence River in Canada, said that ice chunks could slide over one another “like a deck of cards,” pushing ice below and harming turbines. That may rule out parts of otherwise promising sites like the Yukon River in Alaska, he said.

Kevin Devlin, the vice president for operations of Iberdrola Renewables, a wind developer, said that winter was probably the hardest time of year to maintain turbines, because workers must go out in snow and ice. Occasionally, he said, the turbines will shut down or set off alarms if it is too cold, and workers must brave the elements to fix them.

For homeowners, the upkeep of their power sources can also be a bother.

Mr. Stankevitz keeps his panels tilted 40 degrees or higher, but they still become covered with snow — and experts say that if even one cell in a panel is covered, the panel will not produce power.

On the other hand, the panels can get extra power from sunlight reflected off nearby snow. And like other electronic gear, solar panels work better when cold.

Mr. Stankevitz said that on some rare winter days, when the Minnesota sky is clear, the weather is freezing and the sun is shining brightly, his panels can briefly churn out more electricity than they were designed to

produce, more than on the balmiest days of summer.

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