

Energy solution blowing in the wind

NREL software certified for turbine design

BY CAITLIN SMITH
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Arvada resident Marshall Buhl's office is littered with tangible images and models of the machines he simulates on computers.

A foot-tall model of a wind turbine rests on a shelf. A photograph of a turbine in a field is tacked to his bulletin board, and a real turbine blade is stashed in the corner.

Buhl works at the National Wind Technology Center, a branch of the National Renewable Energy Laboratory at the north edge of Jefferson County. Although he has spent hundreds of hours researching turbines, most of Buhl's work with the energy generators takes place on the two flat monitors attached to his Dell computer.

"It's not something that's sexy, but it's meaningful to guys like me," said Buhl as he starts to run computer software he helped write over the past decade.

The software recently became more meaningful to power compa-

nies and wind-energy advocates.

After Buhl enters a few keystrokes, the computer builds a virtual wind turbine and produces hundreds of measurements that hint at how a simulated wind blast impacts the turbine.

After years of work on the part of NWTC engineers, their software has achieved a higher standing in the wind world.

Germanischer Lloyd, a German company that certifies wind turbine designs, refused to certify designs tested by the NWTC software programs for many years.

To gain approval, designers often paid large sums for simulations to be run on proper software.

"It's tens if not thousands of dollars for a company like a General Electric for each turbine design," said Buhl.

Early this month it was announced that NWTC simulations will be accepted by GL.

"It will probably make it cheaper to design and produce new turbines and hopefully that will make it more economically viable to help people switch from coal and gas to wind,"



Photo by CHRIS STARK

Marshall Buhl, senior engineer of the National Wind Technology Center in Boulder, stands inside a wind turbine blade. Buhl and other engineers at the NWTC have been developing software to test wind turbines for years.

said Buhl.

Fellow Arvadan and NWTC engineer Jim Johnson agreed the changes could translate into fiscal benefits.

"Xcel and some of the other major wind farm operators buy ma-

chines from the best value manufacturers so it will drive the overall cost down," Johnson said.

Any reduction in the cost of wind power is appreciated locally after voters last year approved Amendment 37, which requires the largest

Colorado utilities to provide 10 percent of their energy from renewable resources by 2015.

Although 30,000 Colorado customers pay extra to have some or all of their energy generated through Xcel's Windsource program, only one percent of Xcel's output comes from renewable resources.

By the end of next year Xcel hopes to increase its wind power generation by 500 megawatts, said Xcel spokeswoman Margarita Alarcon.

"Wind energy is becoming part of Colorado's energy future at a very rapid rate," said David Conger, the designer behind 14 miniature wind turbines that power the parking lot lights in Lakewood's Belmar project.

Conger said the emissions-free nature of wind power as especially important.

"Fossil fuel-based generation is problematic in the long term so any clean, safe, nonpolluting, energy generating resource should be held up as a good thing," Conger said.

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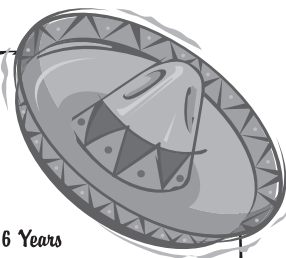
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