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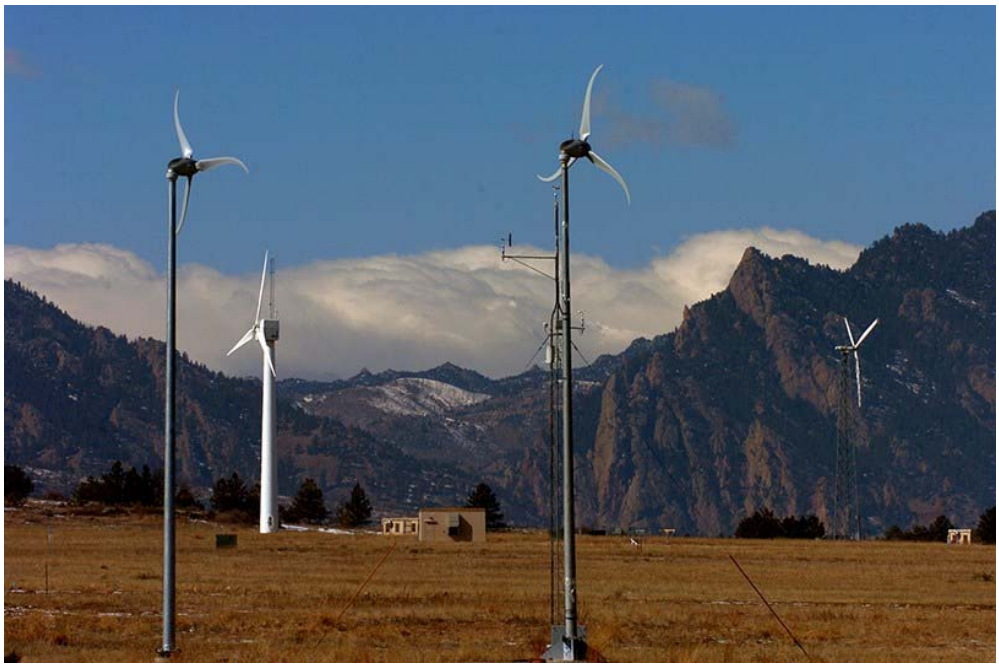
NREL is a driver of cutting-edge research and industry

By **GREG DOBBS** |
April 16, 2017 at 5:00 pm



Helen H. Richardson, Denver Post file

Wind turbines operate at NREL's National Wind Technology Center south of Boulder.

What you might already know is, America is closer to energy independence than we've ever been in modern times. What you might not know is, that's thanks in part to a federally funded lab, right here in Colorado, doing cutting-edge energy-increasing research. So it's a shock that in the president's proposed budget, it is on the chopping block.

Of course if you don't want better gas mileage and cheaper electricity and more efficient buildings and sustainable sources of energy that will never melt away (not to mention the economic impact of what Fortune magazine measures as more than 4 million renewable energy jobs), it doesn't much matter. But like it or not, our fossil fuels won't last forever. Renewables — sun, wind, biomass, hydropower and others — will be around as long as we live, and beyond. Which is why research at the National Renewable Energy Laboratory in Golden — you can see it against the mesa, just north of Interstate 70 — does matter. It's a story of public-private partnerships.

Take cars, for example. Since its formation 40 years ago, NREL has partnered with most of the big automakers, including America's Big Three. These private companies, strapped for research and development money, give their vehicles to the federal lab to work with, looking for innovative efficiencies. Out of that, for one example, came the first production-feasible hybrids. For another, they're experimenting to extract more than the 20 percent of gasoline's power that we get from gas today.

Solar energy? Same story. Private industry makes incremental improvements in the efficiency and flexibility of solar panels. But NREL's scientific brain trust has developed what its director, Martin Keller, calls "the game-changers," creating new materials at the cellular level. For example, with components that absorb different frequencies of sunlight and convert them to energy, they have produced panels that soak up more than 40 percent of the sun's power, versus 5 percent to 10 percent before. They cost less and last longer, too. Eventually this should bring the solar supply chain back from China.

And wind? Well, take a look next door: wind provides more than 20 percent of the energy they use in Kansas. And those huge wind turbines off Colorado 93 between Golden and Boulder, some almost 300 feet tall, are not a commercial wind farm. They are NREL's test tract, placed there because gusts run up to 120 mph. The turbines take a beating. Partnering with the biggest U.S.-based manufacturer, General Electric, and others, NREL is experimenting with everything from composite materials in the blades, to spacing between the towers, to the irksome issue of noise (they are studying the quiet flight of owls). GE alone couldn't necessarily scale new heights to extend the turbines' power generation and lifespan. With NREL, it can.

I took the public tour at NREL. A highlight is its main three-wing building. It's a laboratory of energy efficiency, a model for builders. More south-facing glass than north-facing, horizontal and vertical louvres to maximize or minimize sunlight, windows that lighten or darken with the sun, motion sensors to save electricity, underground concrete columns that carry the Earth's geothermic temperatures into the system that heats and cools workers' cubicles. Hewlett-Packard and Intel built a water-cooled supercomputer, from which NREL then circulates the super-heated water, saving $1 million a year.

A letter-writer to The Denver Post last week wondered where we'd be today if cellphone research in the 1990s had been cut and developers just tried to make old rotary phones better. That's what we're talking about now with renewable energy. We can accept incremental improvement, or insist on innovation. That's not quixotic, it's practical.

NREL is a national asset. And by attracting top-flight scientific talent — 2,100 people work there — it's a Colorado asset.

Every member of Congress should oppose these budget cuts, especially the members from Colorado. As NREL's Keller told me, if money runs short, "The next big innovations will happen in other countries." Hear that, President Trump?

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By Adtaxi

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