Look, no carbon!

Two US labs have gone further than just using efficient energy, and have become 'carbon neutral'. The National Renewable Energy Laboratory (NREL) in Golden, Colorado (see right), and the Robert Kerr Environmental Research Centre in Ada, Oklahoma, think that they are the only labs in the world to have reduced and offset their carbon emissions to zero — blazing a trail for others to follow.

NREL, which researches everything from photovoltaics to biomass energy, has just completed its first carbon-neutral year by balancing its power use and emissions generated from staff flying to conferences and commuting to work with various energy saving initiatives and offsets. The lab uses ethanol-fuelled vehicles and has designed or refitted its buildings to Labs 21 principles (see main story). It also uses energy generated from its experiments to power the facility, although this accounts for only about 5% of the lab's needs. "If we can capture power like on our wind experimental site — then we will use it," says Robert Westby, who oversees sustainability at the facility. But the experiments are experiments first, practical generators second.

Burning tree thinnings from the nearby forest, NREL should be able to generate as much as 20% of its own energy this year, Westby estimates, thanks to a plant being paid for, designed, installed and operated by a private company. "The private sector sees that it can make money doing this," explains Westby, "so the lab doesn't have to make the investment."

The Robert Kerr lab, which does mostly groundwater research, decided to go 'zero emission' in April 2003. Like NREL, the lab supplements energy efficiency measures and renewable-energy sources with the purchase of green-energy certificates — though travel is not offset. The 1960s lab has replaced its former natural-gas use with a ground-source heat pump. A series of wells (also run as a public-private partnership) tap into the ground's constant temperature, cooling the lab in summer and warming it in winter. A variable air-volume system also reduces the amount of air and electricity required.

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Two-way systems

Mike Dockery, a UK-based consultant who designs laboratory systems, argues that Britain can teach the United States a thing or two — specifically on 'FlexiLab' methodology. First developed by the drug giant GlaxoSmithKline for its UK facilities, the FlexiLab system is now being rolled out at the company's sites in the United States.Portable variable-air-volume fume cupboards connect into prefabricated, standardized ducting and service 'spines'. It makes it possible to change the type of science a lab is doing over the weekend, says Dockery, adding that reusability also means less wasted equipment when the lab's function changes. James says that in Britain, public labs are playing a game of catch-up with private companies.

But are scientists really ready to embrace sustainability in their own backyards? A recent online survey by the UK Department for Environment, Food and Rural Affairs had revealing results. Of 400 scientists across a wide range of disciplines questioned in August 2006, 95% agreed that science and technology were important if sustainable solutions were to be developed for the future, but only 40% said that they always or often considered the effect their work would have on the environment when planning their research. Of those who didn't think about the environmental impact of their research, 50% said it was because they felt it wasn't relevant to their area of science.

The results don't surprise Bell. "Scientists tend to be in their own little world most of the time. They are not necessarily belligerent or disrespectful, they are just very focused people... and they really don't understand how they might be knocking things over in the process." "But," he adds, "at some point in time you have to pull them out of that blinkers-on attitude to say, 'Look — you did great science over here and you made this new wizard medicine — but look what you did over here.'"

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This week, Geoffrey Bell will be answering questions about this subject on the Naturenewsblog (http://d3nry1.com/333d4/), where you can tell us what your lab is — or isn’t — doing about energy efficiency.