



Raising freezer temperatures lowers energy use.

PETER MACDIARMID/GETTY

Cobb is part of an initiative to draw attention to fume cupboards, which account for much of lab energy use. Variable-air-volume models, however, automatically decrease airflow when the sash is fully closed, reducing the energy consumed by ventilation. In a pilot study<sup>8</sup> at Harvard University in Cambridge, Massachusetts, a team found that shutting fume cupboards in the chemistry department saved as much as US\$250,000 a year and prevented emissions of 300 tonnes of greenhouse gases.

Cobb learnt about the Harvard study from a student project in a class that she teaches. She saw that helping people remember to close fume cupboards could offer major benefits for minimal effort, and so she tasked her lab manager with leading an initiative in her building this summer. She says that another effort, focused on undergraduate chemistry labs, will start in late August. She hopes that the idea will soon spread to the school's thousands of fume cupboards and beyond.

### LOW-IMPACT LABS

Green-lab experts such as Kathy Ramirez-Aguilar, who runs the Green Lab programme at the University of Colorado Boulder, recommend that scientists buy or upgrade to energy-efficient equipment whenever possible. Sustainability offices such as hers, she says, can help scientists to research options and secure funding to subsidize the costs.

Researchers can also share equipment, she says. Ultra-low-temperature freezers, for instance, consume huge amounts of energy, but many teams don't need a full unit. Her university launched a programme in which scientists can rent space for their samples, starting at \$0.25 per month for a 5-centimetre-tall freezer box. (Scientists with their own freezers can reduce their impact by setting them at  $-70^{\circ}\text{C}$  instead of  $-80^{\circ}\text{C}$ , which may be just as

safe for many samples, and keeping the filter and coils clean and removing built-up frost, defrosting if necessary.)

Energy reductions also come from sharing lab space — a green perk of efforts aimed at encouraging collaboration and innovation. Ramirez-Aguilar points to the cell-culture lab at her university as a flourishing example. It has 70 active users from 16 lab groups and is staffed by full-time technicians, which, Ramirez-Aguilar says, is key. “It places upkeep, repairs, training responsibility on an equipment manager, rather than on the researchers,” she says. But the biggest benefit is that it makes efficient use of space in lab buildings, which are three to five times more energy intensive than office buildings, according to the US Department of Energy.

Labs at the University of California, Davis, take up one-third of the university's floor space, but account for two-thirds of its energy use, says Allen Doyle, the university's sustainability manager. He advises researchers to work with the limitations of their buildings or campaign to have them upgraded. Depending on the building, that might mean situating high-heat-output instruments away from thermostats or putting energy-intensive machines in a room with extra cooling capacity.

Doyle's office helps teams with questions such as these, and conducts sustainability audits to certify their labs as a Green Lab. Those audits include questions such as whether teams turn off equipment when not in use, and whether they measure their energy consumption. Such certification programmes exist at many universities. Scientists can also contact My Green Lab, a non-profit organization in Los Gatos, California; join the online Green Labs Planning Group; or attend workshops on lab sustainability, through groups such as S-Lab in the United Kingdom.

Doyle says that however they accomplish it, researchers must get serious about sustainable science. “It's a personal level of being consistent with why they are a scientist in the first place,” says Doyle, who began as an Earth scientist. “It doesn't make sense to be wasteful if you're interested in the arithmetic of nature.” ■

**Julia Rosen** is a freelance writer in Portland, Oregon.

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### WOMEN IN SCIENCE

## Finding consensus

US female deans, provosts and other academic administrators gave higher ratings than did their male counterparts to policies and strategies aimed at improving the professional lives of women in science, a study finds (W. Williams *et al.* *Front. Psychol.* <http://doi.org/b8m7>; 2017). And they disagreed with male administrators about the value of some strategies for retaining female faculty members in science, technology, engineering and mathematics (STEM).

US universities have considered dozens of ways to bolster the number of women in senior academic posts, yet women hold less than 20% of combined tenured and tenure-track posts in such fields as physics, chemistry and computer science, notes the study, published in *Frontiers in Psychology*.

Researchers analysed responses from 344 provosts, deans, associate deans and department chairs in STEM fields at 96 public and private US research universities. They asked about the quality and feasibility of 44 strategies for recruiting, retaining and promoting women in STEM.

Women and men strongly endorsed two ways to increase the number of female administrators in academia — providing on-campus day care and offering equal opportunities for women to lead committees and research groups. “There is common ground here,” says study co-author Wendy Williams, director of the Cornell Institute for Women in Science at Cornell University in Ithaca, New York. Women and men also both rejected gender quotas for promotion.

But more men than women eschewed expanding the role of service and teaching — obligations historically shouldered more by female than by male academics — in tenure decisions. “Women see it as more important to broaden criteria for tenure, so that tasks traditionally excelled at by women receive more weight,” says Williams.

Men were also less keen on policies that would enable mothers to use grant funds to take children and carers with them to conferences, or that would provide grant funding so that women could hire postdocs for cover during leaves of absence for family reasons.

“Women endorse policies that reflect the world of being a woman in STEM. It's different from the world men inhabit,” says Williams. “When men and women department chairs, deans and provosts disagree, we should carefully consider women administrators' wisdom about policies for retaining women in STEM.”