

Building a better trash can

March 20 2013, by Cathy Cockrell



To improve upon previous bins, a campus design team created the model at right. Credit: Greg Ryan

What does it take to create a trash can? Ask Theron Klos. He's Berkeley's central-campus grounds manager, the guy beaming like a proud parent as dozens of large, hexagon-shaped black receptacles – with color-coded and distinctly shaped openings for different waste streams – debut on Sproul Plaza, along with a new, one-of-a-kind electric trash-collection vehicle.

Designed largely by campus students and staff; bankrolled by Workers' Compensation, Risk Services, and students' Green Initiative Fund; fabricated locally – the new refuse-collection system is in every sense homegrown.

Ergo challenges

The quest for a better bin started in 2009, following a spate of shoulder surgeries among Klos' staff.

Having had two rotator-cuff surgeries himself, "I know what it takes to recover," he says.



ReUSE coordinator Claire Porter gives the new bins a try. Credit: NewsCenter photos

The Physical Plant-Campus Services manager began to suspect that the workers' refuse-collection routine – lifting heavy trash-can liners to above-shoulder height, then lifting, twisting and tilting the containers to empty them into a collection vehicle – was the culprit.

Those body mechanics "put a lot of strain on the shoulder and lower back," says University Health Services ergonomist Greg Ryan, with

whom Klos consulted. "Both tasks are quite risky."

Ryan was also able to confirm the costs for the crew's [workplace injuries](#) : between 2004 and 2009, more than \$320,000 in worker's compensation, he informed Klos. Not to mention 700 lost work days, nearly 300 modified work days and whopping indirect costs.

It takes a village

Klos at first imagined it would be simple to find a more ergonomic, side-access-only bin for purchase on the market. But additional campus stakeholders – students; Environment, Health and Safety; the campus landscape architect and others – kept adding to the wish list.

Sustainability-minded students were concerned that – due to design flaws in existing bins – a large amount of recyclable paper was getting contaminated, while recyclable cans and bottles were ending up as landfill. The dream bin also needed to be rain-tight and vermin-resistant (as in closed on the top, smooth-sided and well-sealed), durable and economical.



Gardener Juan Casanova transfers trash to a one-of-a-kind vehicle equipped with a tipping mechanism and hopper.

Nothing on the market fit this ambitious bill, so it seemed that UC Berkeley would have to build its own.

Star players on the project team were students, mostly from environmental design, who created eight design alternatives, "amazing shop drawings" and to-scale cardboard mockups, Ryan says.

Envisioning a new trash pick-up vehicle – to make the cart-to-truck transfer safer – presented "a whole other line of research," Ryan adds

"The Berkeley campus is big and hilly," with lots of pedestrian traffic, so "we wanted something small and electric, with very good visibility," he says. It also had to be "very thin" (to navigate between upright bollards on campus roadways) and light enough to meet weight restrictions on

Sproul Plaza.

The resulting vehicle, designed by engineers at three different companies, looks like a mini-Hummer. Its back end is equipped with a unique trash hopper and tipping mechanism, for attaching and emptying a trash cart, sans wear and tear on a worker's body. By night, the vehicle gets a recharge.

"It's the first vehicle of its kind," says Klos. "It's electric and very green."

A new standard

In recent weeks, several dozen new trash and recycling receptacles, at \$875 each, have been installed on Sproul Plaza. More than 250 others will be added throughout campus as new lots are delivered.

It's Klos' hope that – between redesigned bins and educational outreach efforts, spearheaded by students – UC Berkeley will see its recycling-to-landfill ratio improve significantly. And, as the campus's ambitious zero-waste-by-2020 goal approaches, he anticipates that landfill-designated bins will gradually be relabeled "compost."

Campus building managers looking for new receptacles for their vicinities are encouraged to order the new "campus standard," he says, rather than purchasing models that "look nice on a website" but have the design flaws of the bad old days.

Last week, out on Sproul, environmental-science major Claire Porter staffed a ReUSE table just steps away from the first pod of new bins. The third-year student says that when she first landed on campus, she was deeply disappointed to find a dearth of recycling options on Sproul Plaza, a symbol of progressive change.

Ultimately, "there's no 'away' in 'throw away,'" Porter insists. "This is a step in the right direction.... It's a joy to see recycling on [campus](#), especially Sproul."

Provided by University of California - Berkeley

Citation: Building a better trash can (2013, March 20) retrieved 2 May 2024 from <https://phys.org/news/2013-03-trash.html>

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