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## Recycling Gives Old Computers New Lives

Millions are becoming obsolete, and officials fear they'll clog landfills. But Santa Ana Goodwill, among others, will refurbish them.

By JOHNATHON E. BRIGGS, [DAVID HALDANE](#), Times Staff Writers

At 18, Kenny Melendez already has years of experience with computers. Ever since the age of 5, he said, they have been his ambition and his passion. So he was more than pleased eight months ago when he landed a job as lead salesman and technician at Goodwill Computer Works, a 3-year-old computer recycling program run by Goodwill Industries in Santa Ana.

"It's great," Melendez said of the store, which sells donated and refurbished computer systems for \$250 to \$795. "It helps a lot of people who can't afford to go out and buy new systems. And it's good for the environment."

Indeed, environmental officials say that California faces a new challenge at the beginning of the 21st century--what to do with the masses of personal computers discarded daily by their owners. They hope the state's landfills won't be choked by the obsolete electronic equipment and the harmful chemicals hidden within them. But they have been put on alert by the blistering pace at which technological innovation is dramatically shortening the useful lives of millions of personal computers.

In 1998 alone, about 21 million personal computers became obsolete in the United States, studies show. Of that number, only 11%--about 2.3 million--were recycled. And by 2004, it is estimated that 31.5 million more will become obsolete. But what's an owner to do when a computer is showing its age? Most consumers, it seems, are clueless.

About three-quarters of all computers ever bought in the United States are currently stored in warehouses, attics, basements, office closets and cupboards, experts say. The rest have met their end in municipal landfills or incinerators, according to the Chicago-based, nonprofit National Safety Council.

Under U.S. Environmental Protection Agency regulations, it has been illegal for businesses throughout the country to dump computers in the trash, but Massachusetts recently became the first state to ban individuals from disposing of computer monitors, TV sets and other glass picture tubes in landfills and incinerators.

The real targets of the law are cathode ray tubes, or CRTs, the technical name for the glowing screens used in computer monitors and televisions. The average tube contains 5 to 8 pounds of lead that can leach into the ground water under landfills or, if the tube is incinerated, get into the air.

Environmental hazards are also posed by toxic chemicals--cadmium, mercury and chromium--found on computer circuit boards, and by the presence of brominated flame retardants in computers' plastic housing.

"It's a huge environmental burden," said Ted Smith, executive director of the Silicon Valley Toxics Coalition, a grass-roots advocacy group that tracks the environmental hazards of the high-tech industry. "If we're talking about 31.5 million computers, the amount of toxins is enormous."

It is not clear how big a problem so-called "e-waste" is for California. But a Carnegie Mellon University study estimates that 2 million tons of scrap electronics goes into landfills nationwide each year. It also indicated that--unless recycling catches on--more than 150 million computers are headed for U.S. landfills by 2005.

#### Agencies Here Choose to Urge Recycling

But California is not considering a ban similar to the one enacted in Massachusetts. Instead, environmental agencies are encouraging consumers to donate or recycle their unwanted computer equipment.

"People are not throwing them out. You would feel funny doing that," said Mary Keil, an environmental specialist with the state Office of Solid Waste Management in San Francisco. "They are storing them for now, but sooner or later they are going to want to get rid of them."

That's where computer recycling programs like the one run by Goodwill Industries in Orange County come in. Now in its third year, the program receives 150 to 200 donated computers a week, spokeswoman Denise Kim said. The best ones are refurbished and resold--at a rate of about 20 a week--to customers at the Goodwill computer store on West 5th Street in Santa Ana. The rest, according to Melendez, are taken apart and either sold piece by piece or used to help refurbish other systems.

"Nothing gets wasted," he said. "Whatever we can't sell goes to a recycler. Most of these systems people consider junk--they'd get dumped if we weren't around."

Other areas have similar programs. Mid-City resident Cathy Thomas didn't know what to do with her 9-year-old Macintosh Performa 430. She had owned the computer since her college days, but with the recent purchase of her sleek and portable Macintosh iBook, she no longer needed the bulky desktop.

It collected dust in her apartment for nearly a month before she got her friend Matt to help her drop it off at a Goodwill store in West Los Angeles, along with two printers, an old pair of sneakers and a box of dishware. "This probably would have ended up in the trash," Matt said, pointing to one of the printers that had belonged to him.

Goodwill Industries is just one of a growing number of charitable groups that accept old computer equipment and refurbish it for resale or donate it to schools and nonprofit groups. Since Goodwill started its computer recycling program in Los Angeles County two years ago, donations have streamed in from businesses, individuals, schools and hospitals.

The charity gets nearly 4,000 pieces of discarded computer equipment each week, about 85% of which it is able to fix and resell at its four computer retail stores. Computers are sold with warranties and retail for between \$50 for a basic 386 computer and \$500 for a low-end Pentium II, complete with 56K modem, CD-ROM, sound card and speakers.

Of course, what's available depends on what's donated. The West Los Angeles Goodwill started receiving donations of laptop computers during the last days of the Y2K countdown. But that pool of donations dried up when the year rolled over without any glitches.

Computers that are disassembled are thoroughly salvaged. Sound and video cards are inspected. Hard drives that don't work are valued for their aluminum content. The copper is harvested from computer wires and cables. Monitors that don't work are shipped to companies who recycle the glass tube and use smelting techniques to rid it of lead.

Computer recyclers recover and sell gold and other precious metals like copper and silver that are present in trace amounts on computer circuit boards. They're lucky if they get 10 ounces of gold out of 2,000 pounds of boards.

The most common materials reclaimed are steel, plastic, aluminum and copper, which make up about 95% of the computer, according to the National Recycling Coalition.

#### 'Take It Back' Policies Urged

Many computer manufacturers say they are designing cleaner products and are increasing the life of computers by making them easier to upgrade.

But some consumer groups are urging so-called "take it back" initiatives that would require computer manufacturers to take back their products after they become obsolete. They believe such steps would encourage recycling and toxic-free product design.

"Local municipalities will start to get tired of having to clean up the junk generated by manufacturers' shortsightedness," said Smith of the Silicon Valley Toxics Coalition.

"I wish they could do that for cars," John Engman of the Computer Trade Industry Assn. said of the consumer initiatives. He said the association, which represents more than 8,000 computer hardware and software manufacturers and distributors, including IBM and Apple, has not yet discussed such take-back proposals. For now, the trade group is pushing donations for reuse or

recycling.

"We have to think of how to get these devices in the hands of those that can't afford it," said Engman, who is director of the association's work force development program.

That's exactly what seemed to be happening in Santa Ana recently as dozens of customers meandered among stacked rows of computer processing units, monitors, printers, cables and software at Goodwill Computer Works.

"I bought my first computer here," said Rafael Luna, 38, a landscaper. "Now I'm looking for one for my kids."

Delbert Nott, 59, of Garden Grove said he was seeking a "junk computer" with which to tinker and learn. "I want to take it apart. Junk can be very simple."

Joe Darveaux, 55, of Huntington Beach, who had bought a \$250 system at the store as a Christmas present for his son, returned with a carload of used computer equipment to donate.

"They get some nice stuff here," Darveaux said. "A lot of people can get stuff here that they could never otherwise afford. It allows people to break into the computer world."



