

## Art Rosenfeld, the 'godfather' of energy efficiency

Reprinted; [MercuryNews.com](http://MercuryNews.com)

By; Dana Hull



Energy efficiency guru Arthur Rosenfeld, lectures a group of scientists on the University of California campus in Berkeley December 2, 2009. (Maria J. Avila, Mercury News)

When U.S. Energy Secretary Steven Chu appeared on the "The Daily Show" in July, he bantered with host Jon Stewart about energy-efficient "*white roofs*," a powerful tool in the race to combat climate change.

Chu credited much of the research on *white roofs* to "Art Rosenfeld, one of my local heroes." "Rosenfeld. I love his energy stuff," cracked Stewart, who didn't appear to know who he is. "Top-notch weatherizing guy."

But Rosenfeld, 83, is getting a lot of credit these days — credit many feel is long overdue. Often referred to as the "godfather" of energy efficiency, Rosenfeld spent much of his career teaching physics at UC-Berkeley and at the Lawrence Berkeley National Laboratory. He has served on the California Energy Commission since 2000 and steps down Jan. 13, when his current term expires.

Rosenfeld has long championed energy efficiency as the "low-hanging fruit" in the battle against climate change, and it irks him that solar power has traditionally gotten more attention. He has dedicated his life to making homes, commercial buildings and appliances — including lighting, refrigerators and televisions — more energy efficient. And his ideas finally have political capital: President Barack Obama regularly stresses energy efficiency as key to reducing carbon emissions, saving consumers money and creating jobs.



"Art is admired the world over," Chu said in an interview with the Mercury News. "He's a very distinguished physicist who recognized that the energy problem is huge. Art was my example of someone who said, 'I have to stop staying on the sidelines, and get involved.' "

## Praise from colleagues

Several colleagues spoke of Rosenfeld with a mix of profound respect and deep affection. Many said one of his major contributions is simply the warmth of his personality.

"Egomania is not uncommon, particularly in physics," said Mark Levine, who leads the Berkeley Lab's China Energy Group, which analyzes and promotes energy efficiency in China. "But Art created an environment here at the lab that was accepting of people and ideas and collaboration. I consider Art to be the most generous man I know. He shares his work, he lends his car to people. He's just a wonderful guy."

Over clam chowder in his Berkeley hills home, where a sunroom outfitted with double-paned windows offers stunning views of the Golden Gate Bridge, Rosenfeld reflected on his long career.

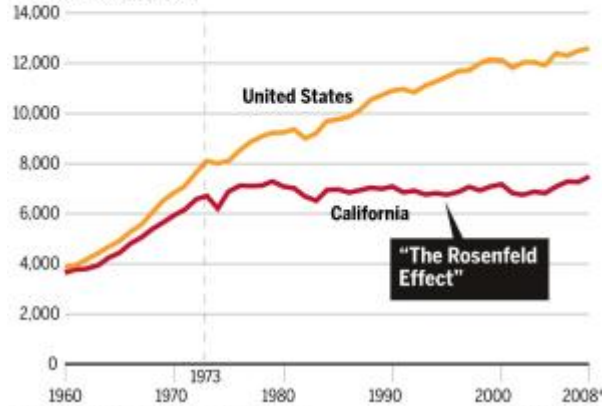
Born in Birmingham, Ala., he was a precocious student who was always interested in science and doing good. He took college courses while in high school and earned his bachelor's degree before turning 18, then headed to the University of

## "The Rosenfeld Effect"

Though electricity use has risen sharply in the United States, California's per capita electricity use has remained relatively flat since 1973 because of the state's strict efficiency regulations. This leveling is dubbed "The Rosenfeld Effect," after physicist Arthur Rosenfeld who has championed the energy conservation movement since the '70s.

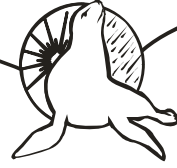
### Per capita electricity sales (not including self-generation)

In kilowatt hours per person



Source: California Energy Commission

MERCURY NEWS



Chicago for graduate school, studying under Enrico Fermi, the Nobel Prize-winning Italian physicist.

After earning his doctorate, Rosenfeld moved west in 1954 to teach physics at the University of California-Berkeley. But he spent much of his time up the hill at the Berkeley Lab. A workaholic, he'd arrive early in the morning, take a break to have dinner with his family, then return and work until 2 a.m.

The oil embargo of 1973 prompted him to make a career switch.

"I'd lived abroad, and it was a basic fact that the Japanese and the Europeans use a lot less energy than Americans," said Rosenfeld. "One Friday night I was in my office and I realized that all of the lights were on in the building. It took me half an hour to go around and turn them all off. Some of the light switches were hard to find; there were bookshelves in front of them."

His zeal for turning off lights is legendary.

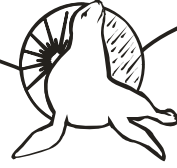
"Art would manually turn off all of the office lights in Building 90," said Chu, who first met Rosenfeld while a graduate student and later directed the Berkeley Lab. "One month the electricity bill for the building jumped, and we realized it was because Art was on vacation."

'Rosenfeld Effect'

Rosenfeld founded a group that became the lab's Center for Building Science. Research on the miniaturization of electronic ballasts in fluorescent lamps led to the development of the first compact fluorescent lamps. The center also developed low-emissivity windows as well as computer programs for the energy analysis and design of buildings.

Though electricity demand nationwide has risen sharply in recent years, California's per capita electricity use has remained relatively flat since 1973 because of the state's strict energy-efficiency regulations. Known as the "Rosenfeld Effect," it has saved California billions of dollars annually in energy costs.

"There's so many wonderful things he's done," said Richard Lyons, dean of the UC-Berkeley Haas School of Business, as he introduced Rosenfeld at a green building conference earlier this month. "He's also just a wonderful man."



Dressed in a tweed blazer, with pens neatly lined up in the pocket of his plaid shirt, Rosenfeld wowed the crowd with a PowerPoint presentation.

"I want to talk about my favorite topic: refrigerators," he said, launching into a detailed analysis of how energy-efficiency standards for refrigerators, first adopted by California in 1977, saved the need for the state to build additional power plants. It also drove the cost of refrigerators down because manufacturers retooled their assembly lines.

Though Rosenfeld is stepping down from the Energy Commission, retirement is not a word that suits him. His wife died unexpectedly in June, and working is a strong antidote to his grief. He plans to return to the Berkeley Lab and focus his attention on *white roofs*. His research has shown that white or light-colored roofs reflect sunlight and heat back into space, helping to cool the Earth's temperature. They also greatly reduce a building's air conditioning needs.

"I'd like to get the white roof business better recognized," he said, noting with pride that California added cool roofs to its Title 24 building standards in 2005. "I like it because it's so simple."

Joseph Romm, a climate expert and senior fellow at the Center for American Progress, said Rosenfeld's work has had a profound impact.

"He had reached the peak of the physics community, and he probably would have won the Nobel Prize in physics," said Romm. "But he walked away to do another career in energy efficiency. He has been tireless, and he has transformed the state of California."

## [Arthur H. Rosenfeld](#)

Age: 83

Birthplace: Birmingham, Ala.

Current position: Member,  
California Energy

Commission, retiring Jan. 13

Career: Received his Ph.D. in Physics in 1954 under Nobel laureate Enrico Fermi, then joined the Department of Physics at the University of California-Berkeley. Formed the Center for Building Science at the Berkeley Lab. Received the Enrico Fermi Award, one of the most prestigious science and technology awards given by the U.S. government, in 2006. Cofounded the American Council for an Energy Efficient Economy.

Family: Two daughters in Boston and Seattle; both are pediatricians.

Six grandchildren, ages 9 to 13.

Residence: Berkeley