

Scottsdale home uses Earth's temperature for heating, cooling



Jerry Meek, president of Desert Star Construction, points out parts of a geothermal heating and cooling system, which is installed in the first LEED-certified home in DC Ranch's Silverleaf community in Scottsdale. PHOTOS BY ROB SCHUMACHER/THE REPUBLIC

GOING GEOTHERMAL

By Michael Clancy

The Republic | azcentral.com

A luxury home in Scottsdale's DC Ranch has taken environmental design to the next level, using geothermal cooling and heating to greatly reduce the owner's utility bill.

Operating quietly and mostly out of sight and out of earshot, the geothermal heat-pump system takes the energy of the Earth and uses it to cool and heat the home, nestled in the foothills of the McDowell Mountains.

"Geothermal is not new, but it is the last great frontier for environmental awareness," said Jay Egg, an expert in the field. "The fact that there is nothing to see is one of its greatest qualities."

Around the country, geothermal is a growing but underutilized means of heating and cooling homes, said Egg, author of two books published by McGraw-Hill on the subject and a consultant to the industry.

The western United States



Other energy-efficiency features help to enhance the Silverleaf home's geothermal system.

HOW GEOTHERMAL WORKS

- » Air-handling units extract coolness from water-filled piping and replace it with warm air from the house.
- » The warm water leaves the air handlers and moves into 10 "wells." Underground, the water inside the pipes sheds its heat and returns to 70 to 75 degrees.
- » The cooled water moves into a set of four cooling towers, where evaporation further cools the water in the pipes. Pumps to circulate the water through the pipes are located in the cooling towers.
- » The system reverses in the wintertime.

has been especially slow to adopt the technology, he said, while in the Midwest and East, at least a dozen entire neighborhoods are tied into geothermal technology.

The home is about 3 miles east of the intersection of Pima Road and the Loop 101 freeway. It is cut into the hillside overlooking the DC Ranch golf course, with views toward downtown Scottsdale and Phoenix interrupted only by Camelback Mountain.

The amenities of the upscale home include the finest equipment in the kitchen and laundry room, a butler's pantry, at least two large gathering spaces, numerous fireplaces, high ceilings, hardwood and tile floors.

Upgrades are everywhere — sizable rooms, exposed beams in the ceilings, large windows to the west that overlook an infinity-edge swimming pool and pool house.

But what is not seen or heard is what makes the 13,000-

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City targets some 'spiking' of pensions

Council leaders reject practice for future Phoenix manager

By Dustin Gardiner and Craig Harris

The Republic | azcentral.com

When Phoenix hires a new city manager in the next several months, city leaders say they plan to curtail the lucrative, pension-boosting perks expected to push outgoing City Manager David Cavazos' annual retirement payment to an estimated \$220,000.

Phoenix Mayor Greg Stanton and Vice Mayor Bill Gates released a joint statement Wednesday saying they will eliminate "pension spiking" in the next manager's contract.

They said they will not support a contract for Cavazos' replacement if it includes provisions allowing unused sick and vacation time to be counted toward his or her pension payout upon retiring.

The announcement came after *The Arizo-*

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Police in Tempe crack down on parties, drinking

By Jim Walsh

The Republic | azcentral.com

Four or five lime-green taxis rolled up to a house near Arizona State University early Sunday morning, carrying would-be partygoers apparently lured by a Twitter feed announcing the get-together.

But the party was over.

Tempe police and Maricopa County sheriff's deputies tracked down young attendees jumping over a fence and checked their identifications. They cited underage drinkers and residents at the house on suspicion of creating a nuisance.

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COMING UP IN THE REPUBLIC

An uptick in loud-party disturbances and violence in Tempe last year coincided with changes in fraternity life: It was the first year in which fraternities had no on-campus home at Arizona State University.

Sunday: A look at how and why fraternities left campus and what went wrong.

Monday: The fraternity discipline records you won't find on ASU and Northern Arizona University websites.

Pensions

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na Republic reported on Wednesday that Cavazos can increase his pension when he retires next month by cashing in council-approved perks and roughly \$200,000 in unused sick leave, a practice known as pension spiking.

Spiking elevates an individual's annual pension payment by inflating his or her end-of-career compensation, a key factor in the formula used to calculate the annual pension benefit.

"As I've said before, pension spiking undermines the public's trust that compensation for our employees is fair — it needs to end," Stanton wrote, adding in an interview that the city will still offer its next manager a "very, very competitive (compensation) package."

Cavazos, 53, is retiring to become city manager in Santa Ana, Calif., a move that allows him to start collecting a pension from Phoenix while he earns a \$315,000 salary in his new role.

His total annual compensation package from Santa Ana, which includes a housing allowance, will exceed a half-million dollars.

On Wednesday, the City Council voted unanimously to appoint Assistant City Manager Ed Zuercher, a 20-year veteran of City Hall, to serve as interim city manager when Cavazos leaves Phoenix's helm on Oct. 16.

But the city is just beginning a national recruitment process to find a permanent replacement. The council plans to hire an executive headhunting firm, with the advertising and hiring process expected to take three to six months.

Zuercher and several other internal candidates also have been discussed as contenders.

Meanwhile, Phoenix officials, under Cavazos' directive, have refused to disclose the total value of his pension package, citing a sealed divorce agreement with his ex-wife, Julie Ann, who will receive part of his pension benefits.

A city spokeswoman has said the city will disclose the full amount when Cavazos retires.

Cavazos has declined to be interviewed in depth about his pension. He has, however, released a memo stating that his annual pension from the City of Phoenix Employees' Retirement Systems will be \$117,000 to \$127,000.

Cavazos noted that he, like other city employees, has made financial concessions to help the city's budget and led a turnaround after the city faced a record deficit.

But his memo did not disclose how much of his additional pension payments his ex-wife will receive under their divorce settlement.

The Republic estimates the total annual pension payout for Cavazos and his ex-wife together will be at least \$220,000, based on a review of his contract, other public records and an interview with Jackie Temple, the city retirement pro-

CC Pension spiking undermines the public's trust that compensation for our employees is fair."

GREG STANTON
Phoenix mayor

gram's interim administrator.

Cavazos can boost his pension by cashing in unused sick leave and vacation, which his contract with the city allows, and adding in other perks.

He also received a \$78,000 pay raise from the council last fiscal year, retroactive to July 2012, which boosted his salary to \$315,000 and increases the amount he will be paid for unused sick and vacation leave.

The furor over Cavazos' pension comes just six weeks after city leaders asked him to end pension spiking.

A July memo from Stanton and council members Thelda Williams and Daniel Valenzuela called on Cavazos to find a way to end pension spiking for public-safety employees.

Their memo took to task "executive level" employees who have abused the pension system and "given a bad name to all employees."

Stanton's office has said that city staff members are working on issues raised in his memo and that the council is expected to discuss the issue during a closed-door session in the coming weeks.

However, some council members have called on Stanton to take more immediate action to end pension-spiking citywide, though no potential reforms would affect Cavazos' retirement benefits.

Council members Sal DiCiccio, Jim Waring and Williams sent the mayor a letter late Wednesday afternoon asking him to schedule a vote to end pension spiking at their next meeting.

DiCiccio, who supported Cavazos' raise along with most of the council, has publicly pressured Stanton to act more swiftly, displaying a sign outside his council office declaring that it has been 612 days "since Mayor Stanton promised to end pension spiking."

The councilman said he is starting an online petition demanding that the city stop the practice now.

"It has been 612 days since the public was promised an end to pension spiking," DiCiccio said in a statement. "It is time for the council to act."

Stanton suggested the city tread lightly because of ongoing litigation it faces over the issue.

When asked if he would support a vote to immediately end pension spiking, he said, "We're going to get legal advice on that issue because of the ongoing litigation."

The Goldwater Institute, a conservative taxpayer-watchdog group, is suing Phoenix to stop pension spiking for public-safety officers.

Stanton has said he wants to change the practice, which was put in place at least a decade ago by city management, through labor negotiations that will begin later this year between city management and public-safety unions.

Geothermal

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square-foot house special and has folks interested in energy efficiency taking notice.

Using the Earth

The system features 10 geothermal wells sunk beneath the driveway, protected by a 20-foot-high retaining wall from the hillside above, wide enough only to accommodate two runs of flexible pipe.

In back, hidden by the natural slope, are four cooling towers, which resemble standard air-conditioning units. Inside, behind closed doors, sits a room full of equipment.

Taking advantage of the constant temperature of the Earth, about 70-75 degrees, it is clear how little supplemental heating or cooling will be needed to keep the home comfortable.

Not only can geothermal cut electric bills in half, it lasts longer, requires less maintenance, does the job better and takes away the clunky look of rooftop air-conditioning units and solar panels, advocates say.

But with fewer than 10,000 homes nationwide using it, geothermal needs better marketing, Egg said.

Although energy efficiency may work for some potential buyers, the fact that it is out of sight and silent, hygienic and reliable, is the best way to sell it to others, he said.

Egg said the efficiency of a geothermal system is remarkable.

Even though it might cost more than a standard system to install, it can cut in half a home's energy consumption.

At the Scottsdale home, on a 110-degree day in the desert, the temperature inside was a reasonable 78 degrees.

No thermostats were visible because it was all controlled electronically and wirelessly from an iPhone or iPad.

Jeremy Meek, president of Desert Star Construction, which built the home and installed the system, said the installation cost for the house was comparable to a standard heating and cooling system when federal tax incentives for the geothermal system were taken into account.

It will save the homeowner 57 percent on his energy bills, he said.

The home has many other energy-efficient features: good insulation, advanced air filtration, and walls and roofs sealed against the desert heat.

In this particular house, there are four cooling towers and four air handlers.

Without the geothermal boost, the large structure would require 13 air handlers, Meek said.

The Meeks, father Jerry and son Jeremy, note that the geothermal system would not be as efficient without the other energy-saving features, such as upgraded air filtration, advanced insulation and well-sealed doors, windows and other openings in the house.

Jeremy Meek said the homeowner, who asked to remain unidentified, was able to knock 40 percent off the cost of the



The Silverleaf homeowner can expect geothermal to save him 57 percent on energy bills, one expert says. ROB SCHUMACHER/THE REPUBLIC

MORE ONLINE

To take a video tour of the geothermal home, visit azcentral.com.

system through government incentives.

Cost is a factor

Meek would not disclose the cost of the home or the geothermal unit, but numerous studies have been done on the value of such systems.

One technical book, "Geothermal HVAC," by journalist Brian Howard and Egg, the geothermal specialist, laid out the following example for a standard home of 2,000 square feet:

The geothermal system would run about \$43,000. A standard home-heating and -cooling system would cost about \$23,000, a difference of \$20,000. Federal incentives covering 30 percent of the system's cost would make up about \$13,000 of the difference, leaving \$7,000.

With reduced energy and system-maintenance bills, the homeowner would make up that difference in three to five years.

Meek said that, for the Silverleaf home, "after the incentives, up-front costs are on par with a normal heat-pump system, but the long-term savings are significant."

"Choosing to pursue geothermal was a bottom-line decision," the homeowner said. "With the federal and local incentives available, it made good financial sense for us to pursue."

Anthony Floyd, manager of Scottsdale's Green Building Program, said the Valley does not have many geothermal systems set up, especially in private homes where costs can be prohibitive.

He said costs can increase because drilling can be difficult in the Valley's soil. Some systems forgo the cooling towers, Floyd said, and others can use the water in a swimming pool as a place to deposit excess heated water.

Arizona Public Service's Damon Gross said the utility has 146 residential customers and five non-residential customers who use geothermal heating and cooling. The Silverleaf house did enough in terms of energy savings that it qualified for LEED certification.

LEED, which stands for Leadership in Energy and Environmental Design, is a program of the U.S. Green Building Council, which establishes standards for energy efficiency.

SAVING ENERGY

Here is an overview of energy-saving features at the Scottsdale home at Silverleaf:

» Geothermal heating and cooling.

» Advanced insulation, with foam used to coat the underside of the roof and cellulose in the walls. The ceiling remains uninsulated, keeping attic-level ductwork cool.

» Thick exterior walls to protect against outdoor extremes.

» Low-flow plumbing fixtures, helping to minimize water usage.

» An irrigation system that adds fertilizer to the water, also minimizing water usage. The irrigation heads send out rotating streams of water, which reduces the amount lost to evaporation from standard spray heads.

» Advanced technology to manage lighting, heating and cooling, shading and other features. Lights, many of them LEDs (light-emitting diodes), never are turned above 90 percent illumination, extending bulb life. The LEDs minimize the amount of heat lost in the light.

» Reclaimed lumber used for doors and some cabinetry.

» Recycling of waste, including drywall, concrete and wood.

» Energy-recovery ventilation for fresh air. It also ties in to the heating and cooling system.

» Energy Star-rated appliances.

Energy Star is a government program to identify the most efficient home products, from building products like roofing to personal electronics. Energy Star-rated products use 30 to 40 percent less energy, or save that amount.

LEED certification is a goal for many new buildings in Arizona, but few of them are private homes.

In Arizona, geothermal has attracted the attention of high-end custom homebuilders but not production builders, said Spencer Kamps of the Home Builders Association of Central Arizona.

"Custom builders blaze the way because their customers can afford it," he said. "There are a lot of good, energy-saving technologies out there, but not a lot that are financially feasible."

Even those that are feasible take time to win public support, Kamps said. That is changing as energy bills increase.

Connie Wilhelm, president of the homebuilders group, has had a geothermal system at her home in central Phoenix since she built the place in 2010.