

- [STORY](#)
- [INDEX](#)
- [\[News\]](#)
- [\[Business\]](#)
- [\[Features\]](#)
- [\[Sports\]](#)
- [\[Editorial\]](#)

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The Ewa Beach home of Todd and Karen Wenke is equipped with air conditioning.

They have a "ductless split system" with separate units around the inside of the house and a unit on the ceiling in the kitchen area.

Chilly isle trend worries HECO

More air conditioners are putting a strain on the electricity provider heading into summer

By Mary Vorsino
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Up until the mid-1990s, Hawaii homes with air conditioning were hard to find.

But today, with new developments popping up around the island and homes being built closer together and in warmer areas, air-conditioned homes are the majority, with about 54 percent of homes having some type of system in 2004.

The increase is causing concern for Hawaiian Electric Co. engineers, especially heading into the summer.

They say demand -- which has outpaced previous annual growth rates in recent years partly because of more air conditioning use -- is slimming their "margins," or electricity reserves used for scheduled maintenance or mechanical problems.

That could mean blackouts and other "challenges" if something goes wrong, said HECO spokesman Jose Dizon. "Is the use of air conditioning stressing our system? Yeah, it is," said Dizon, who is also an engineer. "As the load grows, and if we are not able to either add capacity by adding new generating units or reduce demand ... we will run into some challenges."

Evening energy consumption rates, he said, are growing faster than in years past -- partly because residents are coming home and turning their air

conditioners on.

Also, HECO's peak energy demand last year -- a record -- was reached on a hot, humid day in mid-October.

Islandwide, air conditioning use has increased by more than one-third since 1996.

That year, an estimated 40 percent of single-family homes on Oahu had air conditioning. By 2004 the percentage with window units, central air conditioning or split systems had jumped to 58 percent, according to HECO statistics.

To decrease electricity use from air conditioners, HECO has plans to introduce a series of comprehensive conservation programs, which include rebates for developers or homeowners who build homes without air conditioning or use the most energy-efficient systems.

"With education, and pointing out the fact that it used to be that nobody used it (air conditioning) ... we're trying to put together a program," said Keith Block, HECO Energy Solutions program manager.

But the proposals have been before the state Public Utilities Commission for about a year because they were submitted along with a rate increase, Block said.

To speed up a decision, HECO has plans to separate the two requests. Even after doing that, though, an approval of the energy conservation plans is not expected until late this year.

Also, Block pointed out that the concern is not just that more homes have air conditioners. He is also worried about how energy-efficient the systems are.

The home builder "is usually putting in the cheapest unit he can get, which is usually not very efficient," Block said, adding that it is important to correctly size an air conditioner for a home and get a unit with a good energy rating.

Developers, though, say they are doing that. "The proper sizing is more important than anything," said Kenneth Choate, executive vice president of HASEKO Construction Inc. "Just to throw a big unit in there is not going to solve the problem."

IT SEEMS like everybody in Ewa Beach has an air conditioning unit, says longtime resident Jeff Alexander, and they are running them all the time.

Alexander, a member of the Ewa Neighborhood Board, has lived in West Oahu for 18 years and says the trend toward air conditioning in the islands -- where air conditioning was virtually nonexistent just 20 years ago -- is disappointing.

His own wife, he added with a laugh, has turned on him, too.

She wants an air conditioning unit in her home office, and they will probably end up getting it.

"We got a nice airflow house," he said. "But if it makes her happy, fine."

Down the street from the Alexanders live Karen and Todd Wenke, air conditioning contractors who have had their home in Ewa Beach climate-controlled for 16 years, since they moved in.

"Ewa Beach is very, very hot," Karen Wenke said. "We've really enjoyed air conditioning. ... There are many days that I'm grateful to turn on that air conditioning."

The couple also say that they have seen the trend to air conditioning in the growth of their own business, TR Enterprise Inc.

"Everyone is good and busy," said Wenke with a laugh. "I don't think there's been a downtime for any of us."

The growth in air conditioning has been partly attributed to Hawaii's home construction boom and developers building in warmer parts of the island.

But architects say there are other factors involved. New homes, they say, are being built without enough attention paid to tradewind flow, shade and other natural coolers.

The close proximity of homes in new subdivisions is not helping, either.

Tips to keeping the house cool

Here are some tips for keeping homes with air conditioning cool, which were included in the state Department of Business, Economic Development and Tourism's "Field Guide for Energy Performance, Comfort and Value in Hawaii Homes":

- » Limit exposure to heat buildup by orienting longer sides of the home north and south. Also, orient buildings to maximize the cooling potential of prevailing winds.
- » Use existing or new landscape to shade the site and the roof, walls and openings.
- » Limit the area of unplanted and paved exterior surfaces.
- » Use porous paving materials to reduce thermal mass, heat gain and glare.
- » Use light-colored materials that will reflect the sun's heat rather than absorb and transfer it to the home's interior.
- » Install radiant barriers in the roof and walls. Also, ventilate the roof or attic.
- » Provide ample spacing between buildings in the direction of wind flow so that all structures have good airflow.
- » Design floor plans that provide effective cross-ventilation and good air circulation at body level.

Online resources

- » The field guide is available as a downloadable document on the Web, at www.state.hi.us/dbedt/ert/fieldguide/fieldguide.html.

"A lot of the housing in the state is built by commercial developers who do lots of houses, typically with some number of models," said Honolulu architect Nick Huddleston.

"They sprinkle on a bunch of roads and max out the lot."

Four years ago, Huddleston built an energy-efficient model home in Waianae with state grant money, making small modifications to a standard house kit approved by the state Department of Hawaiian Homelands, like shading walls and windows by the roof line and installing long louvers to keep the "GreenBuilt" home relatively cool.

The demonstration proved that it is not always more expensive to build with energy efficiency in mind. Several developers, though, say that it is land scarcity -- not the cost of adding more windows or lowering eaves -- that often trumps ventilation considerations in new home design.

"When you're laying out a subdivision," said Bruce Barrett, vice president of sales and marketing at Castle & Cooke Homes Hawaii Inc., "it's hard to plot each home in an ideal location for tradewinds."

But Stephen Mader, director of the University of Hawaii's newly formed Center for Smart Building and Community Design, says it can be done in many instances.

"In Hawaii we live in the closest thing to a perfect climate that we could find anywhere in the world," said Mader, an architect. "The opportunity is there to work with this climate in ways that we can find and deliver that comfort in a very cost-effective way."

He said designers should spend a little more time at the drawing board, coming up with innovative ideas to reduce energy consumption.

In the end, he said, it pays off because "you're creating a community that people are going to find more attractive."

Mader added that it will take consumers demanding alternatives to air conditioning for home builders to respond.

So far, though, the demand has been the other way.

"We're seeing more people ask for air conditioning than there was three or four years ago," said Mike Jones, president of D.H. Horton, Schuler Division. "People want ... some type of air conditioning as standard."

And Schuler has provided that in its developments in Hawaii Kai and Kapolei.

In other lower-priced subdivisions or apartments Schuler has built, air conditioning is becoming an option that is often asked for, Jones said. Meanwhile, every house HASEKO builds has air conditioning.

Castle & Cooke made air conditioning standard in their Waipahu and Waikele communities but made it an option in Mililani.

On Annette Kaohilaulii's street in Kaneohe, no one has air conditioning.

Most residents have been there for years, and it's not as if there aren't some months that they wish they could have it.

But Kaohilaulii, president of the Hawaii Ecotourism Association and fund-raising chairwoman for the Sierra Club, has no plans of caving in, even as, she says, the number of sweltering days seems to be increasing and the cost of air conditioning systems going down.

"I've considered it," she said, "but that's foolish because you're supposed to be considerate about the environment. ... We've got to put trees in our yard and open windows."

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