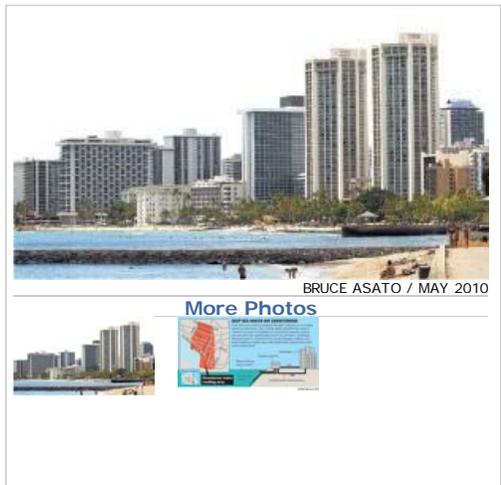


The cooling wave

By Alan Yonan Jr.

POSTED: 01:30 a.m. HST, Aug 09, 2010



Hotel owners in Waikiki are looking at the possibility of using cold sea water to air-condition their buildings in a move that could substantially cut electricity costs and help the tourism industry market the famed resort area as a green destination.

The project, spearheaded by Kyo-ya Hotels & Resorts, is in the planning stages, and those involved emphasize there are many hurdles that must be cleared before it becomes a reality. But there are a number of factors working in the project's favor, including Waikiki's highly concentrated customer base and the potential to use the Ala Wai Canal as a convenient access to route the intake pipe to the ocean.

In addition, planners could use lessons learned from a project that is much further along that proposes to use sea water to provide air conditioning in downtown Honolulu. Developers of that project say they hope to close their final round of financing within a month or

two and break ground nine months after that.

Kyo-ya, owner of such Waikiki landmarks as the Royal Hawaiian and Moana Surfrider hotels, began investigating alternative air-conditioning technologies several years ago, said Greg Dickhens, the company's executive vice president. Kyo-ya initially considered drilling a well on one of its properties to extract cold water but shifted later to a more comprehensive approach featuring offshore pipes drawing deep-sea water that could be used to cool the entire Waikiki area.

With 35 to 45 percent of a typical hotel electricity bill going to run conventional air-conditioning systems, using sea water could produce significant electricity cost savings for hoteliers, Dickhens said. That could potentially save customers 20 percent on their cooling bills.

"Another really interesting dynamic will be the ability to market Waikiki as a truly green destination. We would be the only resort in world with this distinction. It would be a huge marketing benefit for Waikiki," he said.

Kyo-ya is working on the project with the University of Hawaii Sea Grant program, which recently received \$200,000 in federal stimulus money to study the feasibility of using sea-water air conditioning in Waikiki. The Sea Grant program expects to raise another \$800,000 in federal and private matching funds for the project, said Ted Peck, administrator of the state Energy Office.

The Waikiki system would use technology similar to

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that being employed by Honolulu Seawater Air Conditioning LLC in its \$240 million project to tap frigid waters at a depth of about 1,800 feet and about five miles off the Kakaako coast. Both systems would pump up 45-degree water and run it through a heat exchanger that would in turn be used to chill a closed loop of fresh water. The fresh-water loop would pipe cold water to the buildings for their air-conditioning systems, while the sea water exiting the heat exchanger would be returned to the ocean.

However, there are several geographical and logistical differences that require a different approach to designing the Waikiki system, said Rob Iopa, an architect with WCIT Architecture.

While there is little ocean recreation activity on the Ewa end of Kakaako Waterfront Park where Honolulu Seawater Air Conditioning plans to have its intake pipe enter the water, the same is not the case in Waikiki.

One solution would be to run the Waikiki intake pipe through the Ala Wai Canal and out to sea through the boat channel at Ala Wai Harbor, Iopa said. The sea water exiting the heat exchanger, which would be slightly warmer than the incoming water, could be discharged into the Ala Wai Canal to help create better water flow in the canal.

Iopa said Kyo-ya is working with the state Department of Land and Natural Resources as well as the Army Corps of Engineers, which are studying storm water management in the area and ways to improve the water quality in the Ala Wai Canal.

One of the advantages of Waikiki as a location for a sea-water air-conditioning system is that due to the concentration of the potential customer base, it would take only four or five large users of the system to make it economically feasible, Iopa said.

The developers of the downtown project, by contrast, are having to negotiate a greater number of contracts with a more disparate group of customers to make the project commercially viable.

Bill Mahlum, president and chief executive officer of Honolulu Seawater Air Conditioning, said the company is currently in talks with a number of prospective customers, but he would not say how many.

"First Hawaiian Bank has signed a 25-year contract, and we have a pool of other potential customers who are waiting to see what our final pricing will be," he

said.

The company has raised \$10.75 million from private investors and is nearing completion of its final round of financing that will raise another \$4.6 million, he said. The bulk of the project's funding will come from bonds issued by the state. The state has authorized the issuance of \$145 million in tax exempt bonds and \$57 million in taxable bonds, Mahlum said.

"Realistically, we're looking at closing our financing in September and beginning construction nine months after that," he said. Once under way, the project will take about 18 months to complete, he said.

Honolulu Seawater Air Conditioning is owned by investors in Hawaii, Sweden and Minnesota. It is managed by Renewable Energy Innovations, a unit of Ever-Green Energy Co. of St. Paul, Minn., which runs that city's heating and cooling systems.

Mahlum said the company would be interested in developing the Waikiki project if it moves forward.

"We've invented the wheel here. We've worked with the labor unions and the Planning and Permitting Department, so we have a lot of valuable expertise to lend."

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