Cold Ocean Water to be Turned Into A/C

November 8, 2009

Associated Press

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HONOLULU—The plan to pump frigid waters from the ocean's depths to air condition downtown Honolulu isn't a pipe dream, and it could reduce the state's dependence on fossil fuels while slashing power bills that are the highest in the nation.

The long-studied cooling project by Honolulu Seawater Air Conditioning would extend plumbing nearly 5 miles offshore, suck 45-degree water from 1,800 feet deep, circulate frosty water into buildings' existing A/C systems and then dump it back into the sea.

Hawaii's government recently approved an environmental study of the project, and the company said it plans to begin construction next year, with the 40-building system expected to come online in early 2012.

"We'll save so much energy for the buildings. It's a real benefit when you don't have to go out and buy foreign oil and you get to keep the money in Hawaii," said Frederic Berg, project director for the company.

Hawaii gets about 90 percent of its power from foreign sources, resulting in the highest retail electricity prices of any state in the nation, according to an October report by the federal Energy Information Administration.

If the $200 million undertaking is successful in downtown, it could later be extended a couple of miles down the road into tourist-filled Waikiki hotels.

According to Honolulu Seawater Air Conditioning, buildings using the system would save up to 75 percent of the electricity they currently use on air conditioning. Berg said the savings include the electricity it will take to power the vast pumping system.

The premise is that the buildings will no longer be using their power-hungry chillers, which are the machines that reduce water temperatures in order to cool the air in a standard A/C system.

While the seawater A/C system is innovative, it's not revolutionary. This technology is already being used around the world in locations that have easy access to cold water, including Toronto, Stockholm, Bora Bora and Hawaii's Big Island.

"It takes a very special place to do a seawater air conditioning system because you need to have deep water close to shore, you need to have a large air conditioning load to make it feasible, and you need to have fairly high electricity rates," said Dale Jensen, senior engineer for Waimanalo-based Makai Ocean Engineering, which is handling design of the deep-ocean pipe installation.

An early version of seawater air conditioning began nearly 30 years ago at the National Energy Laboratory of Hawaii Authority at Keahole Point, which initially used a truck radiator and box fan system, said operations manager Jan War. That rudimentary system lasted about six months, and the three-building system has since been upgraded to a system similar to the one planned for Honolulu.

"Everything they say about it is true," War said. "It's probably one of the most underrated renewable energy technologies available to us today. I'd like to see more of it."

Honolulu Seawater Air Conditioning plans to cover downtown buildings including the 30-story First Hawaiian Center, the tallest building in Hawaii. Others include the federal courthouse, state government offices and the four-story headquarters of the state's main electric utility, Hawaiian Electric Co.

Although seawater air conditioning will reduce electricity consumption, Hawaiian Electric supports its effort to conserve energy and make the state more independent, said Executive Vice President Robbie Alm. Honolulu Seawater Air Conditioning predicts its system will save 174 million barrels of oil annually.

"The local utility isn't fighting them, but it is one of their customers," Alm said. "It's like a 'Good Housekeeping' seal of approval. This is good technology that isn't a risk."

It also will help the state and Hawaiian Electric reach their joint goal of cutting electricity use by 30 percent and obtaining 40 percent of Hawaii's power from renewable sources by 2030, he said.

The project will eliminate the equivalent of 84,000 tons of carbon dioxide from the air annually, according to the company. That's roughly equal to

15,000 cars staying off the road.

Installation costs to customers can be offset by a $300 per ton rebate approved by the state Public Utilities Commission last year.

"It fits in very well in Hawaii. It's one our natural resources," said Ted Liu, director of the Department of Business, Economic Development and Tourism. "For the visitor industry, it could really improve their bottom line."

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On the Net:

Honolulu Seawater Air Conditioning: http://honoluluswac.com/

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