



COOL.
GREEN.
CLEAN.™



DISTRICT COOLING
Hawaii's solution and
cooling alternative to
imported fossil fuels.



The alternative that goes above and beyond.

As Hawaii's most abundant natural resource, seawater can reduce electricity consumption used for air conditioning by up to 75%. When used for district cooling, it will efficiently produce chilled water at a central plant with a capacity of 25,000 tons – equaling 12.5 million square feet of air conditioned area. It will then be piped to air conditioning systems in individual buildings, resulting in the elimination of chillers and other expensive equipment.

DISTRICT COOLING BENEFITS AT A GLANCE

FOR OUR CUSTOMERS

- Provides reliable 24/7 convenience and comfort
- Reduces and stabilizes cooling costs
- Eases operation and maintenance
- Enhances corporate reputation
- Increases energy efficiency
- Improves LEED and Energy Star ratings
- Offers environmental peace of mind

FOR OUR COMMUNITY

- Generates over \$200 million in construction project spending
- Creates more than 900 new construction jobs
- Promotes a sustainable future using clean, local and long-term renewable energy resources
- Promotes a higher quality of life due to efficient and effective use of local resources
- Places Hawaii on the world map as a leader in renewable energy solutions

FOR OUR ENVIRONMENT

- Reduces Hawaii's dependency on oil and conserves up to 178,000 barrels of oil/year
- Saves more than 77 million kWh/year
- Minimizes greenhouse gas emissions by avoiding approximately 84,000 tons of carbon dioxide/year (this equals emissions from 15,000 cars)
- Decreases potable water usage by more than 260 million gallons/year
- Cuts down sewage discharge by up to 84 million gallons/year



Maintaining environmental responsibility.

Designed to minimize any negative environmental, recreational, and cultural impacts, the district cooling system will also reduce the use of refrigerants, potable water, sewage and chemicals for air conditioning. Furthermore, it will provide reliable and comfortable cooling for the buildings of downtown Honolulu while being environmentally sound.

Once constructed, the only visible part of the system will be the cooling station located in Kakaako. The seawater pipes will be placed in micro-tunnels, deep under the

shoreline with no added chemicals or other substances. When the water returns, it will be slightly warmer than its original temperature. It will then be released back into the ocean



in an environmentally safe manner through a diffuser that mixes with ambient water meeting our State's water quality standards. When installed, the concrete anchor collars on the submerged pipe will provide a habitat for coral and fish.

In addition to meeting State and Federal EIS requirements, the cooling system will undergo a detailed archeological and cultural impact assessment with an archeological monitoring plan to be approved by the State Historic Preservation Division.

Change is on the horizon.



Times are changing. Technologies are evolving. Our need for greener solutions is growing. With opportunity in hand, Honolulu Seawater Air Conditioning, LLC is currently developing a 25,000-ton seawater air conditioning district cooling system for commercial and residential properties in downtown Honolulu. Cost-effective and smart, this renewable energy source is Hawaii's answer to cooling buildings in the core of downtown using fresh, deep, cold seawater.

SETTING A NEW STANDARD.

Hawaii is the nation's largest per capita consumer of electricity. Air condition is the most substantial component found on the average electricity bill. On Oahu alone, 20% is used for the sole purpose of cooling commercial buildings year-round. In order to decrease consumption and dependency of energy by 2030, the State and Federal governments have set

higher standards for energy efficiency.

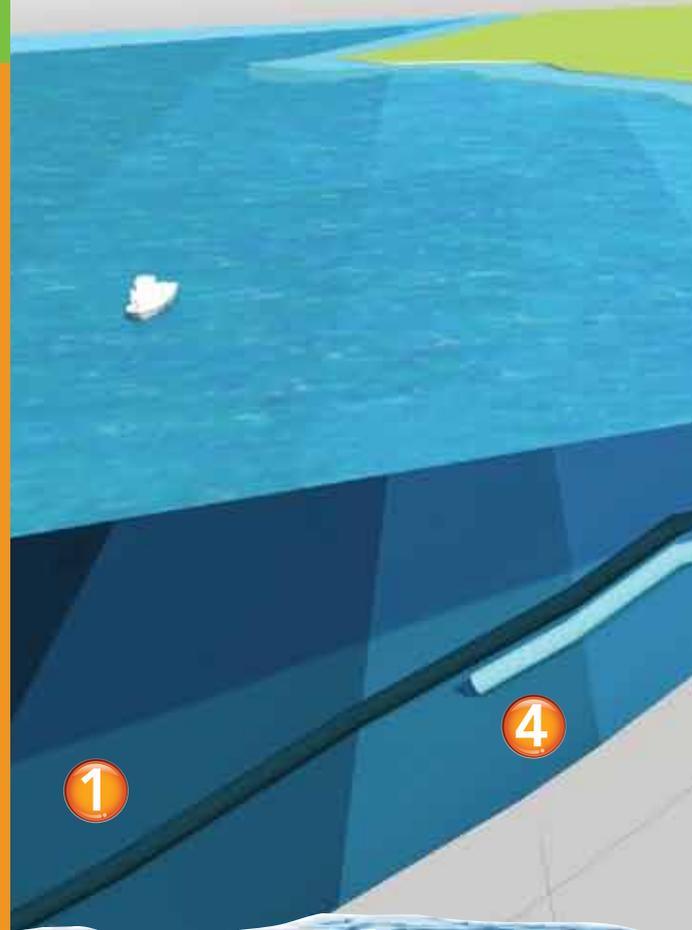
By using natural resources, Honolulu Seawater Air Conditioning's downtown cooling system will have numerous positive impacts for the community. Not only will it reduce Hawaii's need for traditional air conditioning methods, it will decrease our environmental footprint and, ultimately, our state's oil dependency.

District cooling in downtown Honolulu will even boost Hawaii's economy by generating over \$200 million in construction project spending. This will create more than 900 construction jobs while promoting a sustainable future using clean, local and long-term renewable energy resources. The system will also save 178,000 barrels of oil per year. Service to customers is expected to begin in 2013.

An inside look at district cooling.

A typical SWAC district cooling system is quite simple and can be explained in four parts.

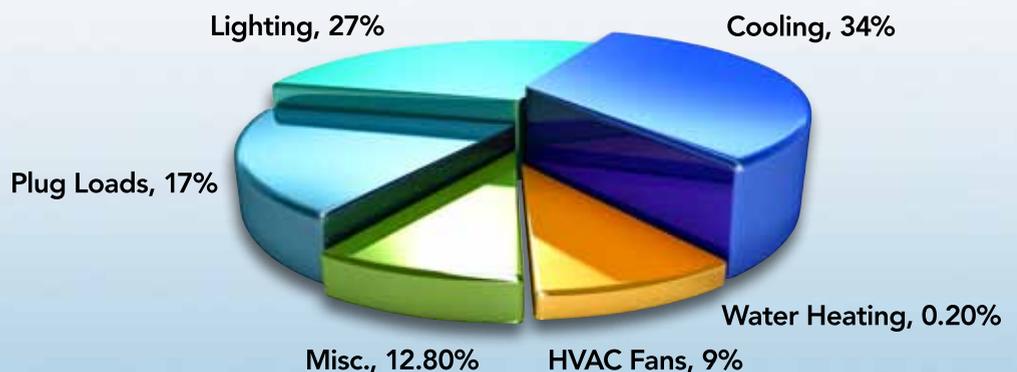
- 1.** Cold (44°F-45°F), deep seawater from more than 1,700 feet below sea level is pumped through an intake pipeline located more than four miles off the Kakaako shoreline to a cooling station on shore.
- 2.** The cold seawater is passed through a heat exchanger at the cooling station, which transfers the coldness to freshwater that circulates in a closed loop pipeline system (district cooling). This chilled water (air conditioning service) is then provided to customer buildings. The heat exchangers ensure that seawater and the freshwater delivered to the buildings never mix. Chillers in the cooling station supplements the cooling provided by the cold water to maintain a consistent 44°F for the chilled water distributed to customers' buildings.
- 3.** The chilled freshwater is provided to customer buildings through underground pipes that are connected to each building's existing chilled water air conditioning system.
- 4.** The slightly warmed seawater is returned in an environmentally safe manner back to the ocean and released through a diffuser located at a depth of 120 to 150 ft.



TRADITIONAL COOLING COMES WITH A PRICE.

Comfort has become a necessity and for Hawaii's commercial buildings, air conditioning costs have come to represent more than one third of total electricity use. Approximately 70% of a building owner's cost goes towards operating expensive on-site equipment including chillers, condenser pumps, and cooling towers. This cost depends on the volatile and increasing costs of electricity, water, sewage and other operating costs. A smaller portion, approximately thirty percent, is attributed to relative stable capital costs for replacement and maintenance of air conditioning equipment.

ENERGY END USE FOR TYPICAL HAWAII OFFICE BUILDINGS



Source: Report to the 2009 Hawaii State Legislature. Lead by Example. State of Hawaii Agencies' Energy Initiatives. FY 2007-2008. Department of Business, Economic Development & Tourism. Strategic Industries Division.



"HSWAC would help reduce Hawaii's dependence on imported fossil fuels, help meet Hawaii's renewable energy goals and would be environmentally beneficial."

- Hawaiian Electric Co., Inc

THE COOL, GREEN, CLEAN SOLUTION.

Cold seawater – a sustainable and natural energy resource – can offer building owners stable and predictable costs. Compared to an on-site conventional air conditioning system, costs for district cooling are made up of 2/3 generally more stable capital costs – while only 1/3 represents operating expenses. This will greatly reduce a building owner's dependency on fossil fuels and their rising costs as well as eliminate the need for expensive on-site equipment currently used to create a building's own chilled water.

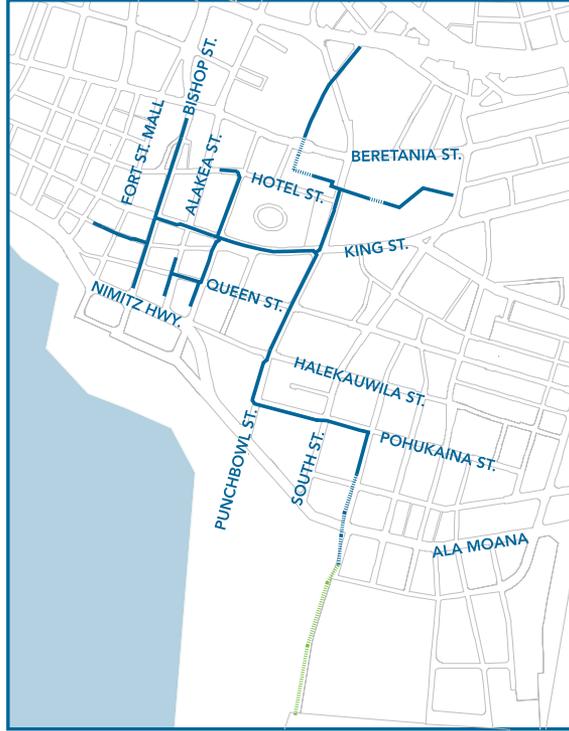
HISTORICAL OIL DEVELOPMENT

Fossil fuel – oil – is a limited, non-sustainable and volatile resource used in the creation of electricity for conventional on-site air conditioning.





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with biodegradable inks.



Deep seawater air conditioning is the answer to Hawaii's increasing cooling costs, and an alternative solution to Hawaii's increasing dependency on foreign fossil fuels. Honolulu Seawater Air Conditioning is making Honolulu a better place to do business, live and thrive.



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