PIDP & East-West Center in collaboration with PECC

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Oceans as a Source of Renewable Energy

Presented by

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Imagine Our Future…

…less dependent on oil.

SEAWATER AIR CONDITIONING
COOL GREEN CLEAN™
Honolulu

Setting a New Standard.

- Now is the time to take advantage of the renewable resource that surrounds us…

…Seawater.

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Setting a New Standard.

- Over ¾ of the world is covered by water...

…Let's put all that water to good use.

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The Alternative That Goes Above and Beyond.

- Seawater Air Conditioning is the **solution and cooling alternative** to imported fossil fuels.

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What is Seawater Air Conditioning?

- SWAC is an environmentally optimized cooling solution.
- It uses the local, 100% renewable and natural, energy resource – seawater – to cool buildings through an underground piping system.

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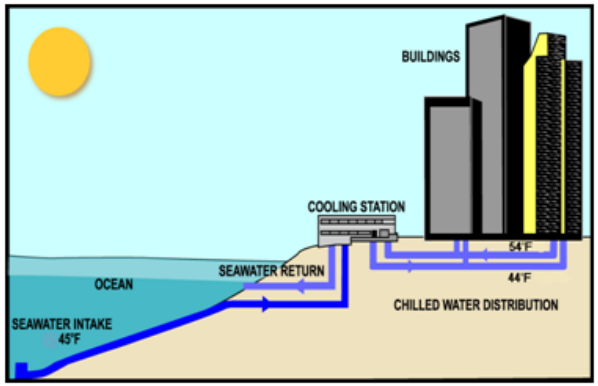
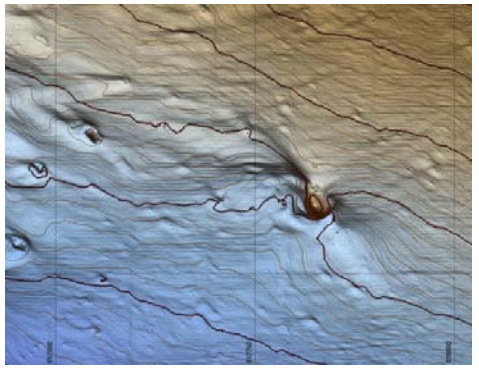
Seawater Pipeline.





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Seawater Air Conditioning.

- …is **environmentally friendly,** and ideal, for dense urban areas located close to the deep, cold ocean.

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Basic Concept.

- SWAC takes advantage of deep, cold seawater to cool the chilled water in one centralized building as opposed to using more energy intensive refrigeration systems.
- Due to its large scale energy efficiency, it requires significantly less electricity.
- Reduces electricity consumption by up to 90%.

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Sustainable Solution.

- While reducing each building's need for maintenance and operation, SWAC systems also signficantly reduces each buildings carbon footprint while promoting a local, 100% renewable and 'green' energy solution.

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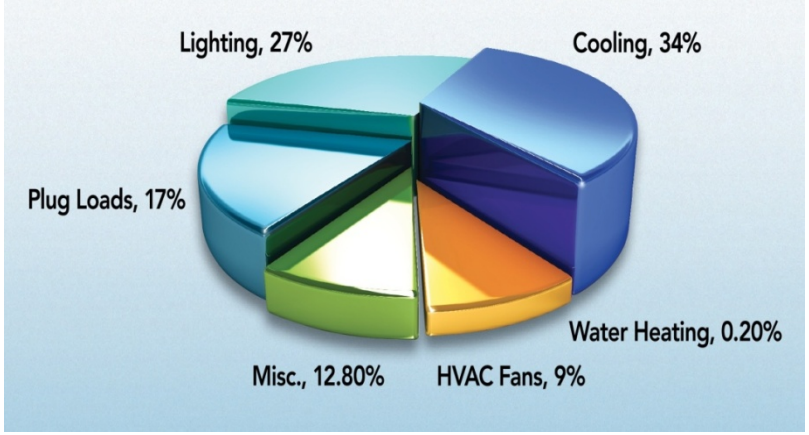
Traditional Cooling Comes With a Price.

- Air conditioning can account for up to 40 percent or more of a big building's electric bill.

Energy End Use for Typical Hawaii Office Buildings



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Benefits
For Customers.

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

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Benefits
For Customers - cont.

- Stable and competitive rates.
- No need to finance or maintain chillers or cooling towers.
- No noise or vibrations from cooling towers.
- Makes space available for non-cooling purposes.
- Major step towards clean and renewable energy targets.

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Honolulu System.

- The downtown Honolulu seawater air conditioning (HSWAC) system is designed to provide up to 25,000 tons of air conditioning, equaling 12.5 million square feet of air conditioned area.

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SWAC Worldwide.

- SWAC has been implemented in:
  - Sweden (Stockholm and dozen of other cities)
  - Netherlands (Amsterdam)
  - Canada (Halifax and Toronto)
  - Finland (Helsinki and Hamina)
  - USA (Cornell University)
  - Bora Bora

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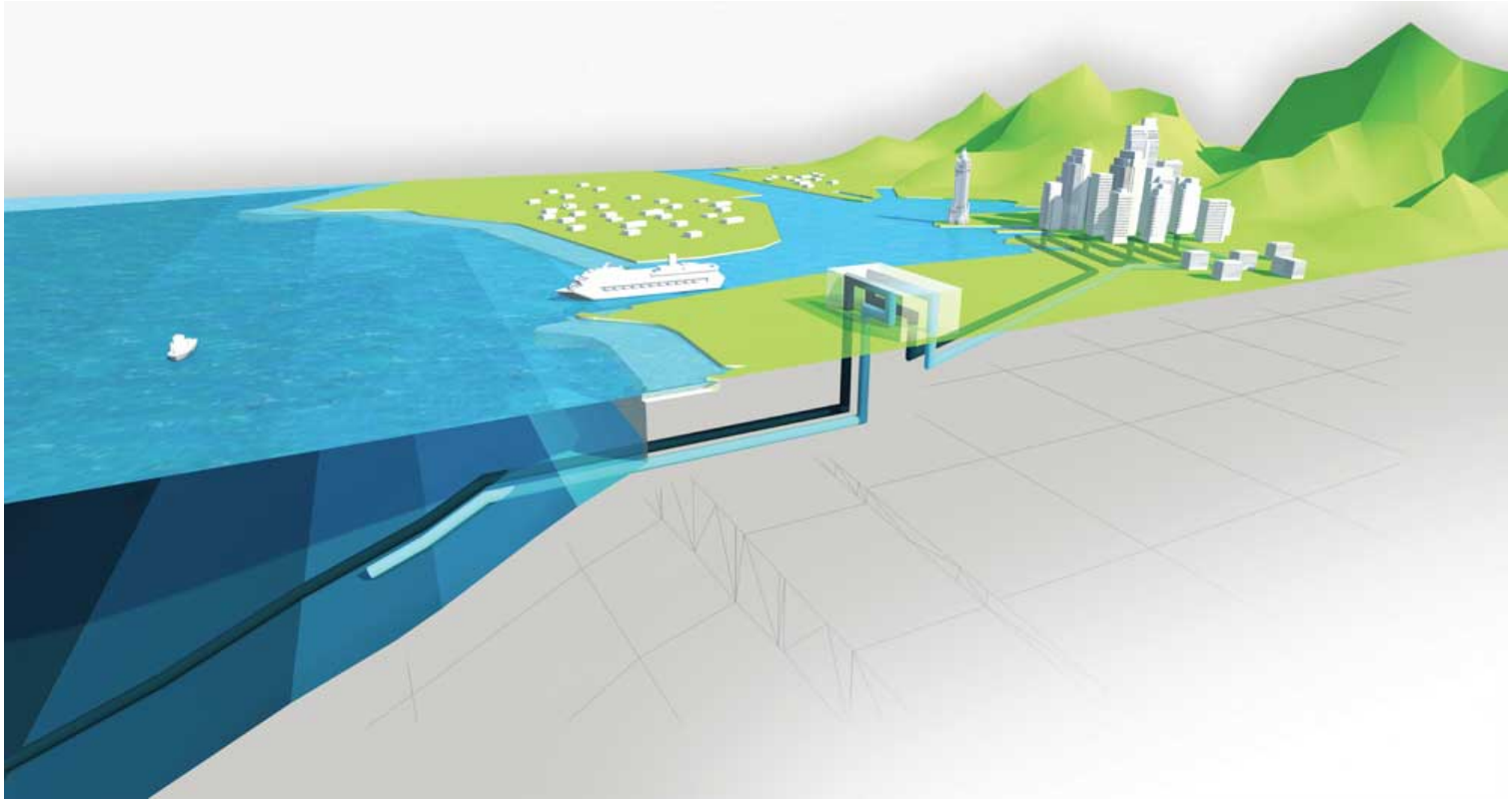
Reliable, Stable & Affordable.

- Honolulu Sewater Air Conditioning provides **reliable** (24 hours a day, seven days a week, 365 days per year), **stable**, and **affordable** chilled water services to commercial and residential buildings in downtown Honolulu.

The Honolulu SWAC System.



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Benefits
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.

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Benefits
For Our Environment.

- Reduces Hawaii's dependency on oil and conserves up to 178,000 barrels of oil/year (this equals a 30 feet high wall of oil barrels from Aloha Tower to Diamond Head).
- Saves more than 77 million kWh/year.
- Reduces greenhouse gas emissions by approximately 84,000 tons of carbon dioxide/year (this equals emissions from 15,000 cars).
- Decrease potable water usage by more than 260 million gallons/year.
- Cuts down sewage discharge by up to 84 million gallons/year.

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Cooling Station.

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Distribution Area.

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Development of SWAC System in a City Environment.

- Key to success:
  - Public / Private partnership.
  - Educate and involve all stake holders early in the process.

- Stakeholders:
  - State
  - County
  - City
  - Environmental community
  - Business community
  - Community groups
  - Building owners & tenants
  - Other utilities (electric, water, sewage, telephone, etc.)
  - Local architect & engineering companies

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Our Future.

Together, let us work for a sustainable energy future

Cool. Green. Clean.™

For generations to come.

www.honoluluswac.com

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