



## TAKE AWAY

### Concept

- Replace central plant infrastructure without disrupting tenants
- Design the new systems
- Assemble bid package
- Select appropriate equipment and vendors
- Oversee construction
- Commission the systems
- Maximize rebate incentives

### Features

- (2) 800 Ton oil-free chillers
- (3) Forced draft cooling towers
- two-way valves for AHU's
- (6) Variable speed chilled water & condenser water pumps
- Upgraded BAS and control strategies

### Benefits

- 1.2 million kWh saved annually
- 148 kW demand reduction
- Increased sustainability of building operations
- Reduced operating costs
- Greater control and monitoring capability

## CENTRAL PLANT RETROFIT FOR PREMIER MIXED-USE SITE

Shidler Pacific Advisors engaged Chelsea Group to provide services including chiller plant and building automation system (BAS) replacement at Waterfront Plaza, located at 500 Ala Moana Boulevard in Honolulu, Hawaii. Waterfront Plaza is a premier, mixed-use property in Downtown Honolulu consisting of seven, five-story Class "A" office buildings and a ground floor plaza, which includes a variety of upscale restaurants, retail shops, and services.



*One of Seven Buildings at Waterfront Plaza*

## PROJECT GOALS

The project included the following goals:

- Determine optimal chiller plant sizing
- Scope the BAS system based on new chiller plant and existing equipment requirements
- Recommend the best option to balance capital investment to reduced operating costs and continuity of service requirements
- Provide engineering services necessary to complete the installation of the new chiller plant
- Develop implementation approach to maximize rebates from-and meet the criteria of the Hawaii Energy utility rebate program



*One of Two New 850 Ton Chillers*





## ABOUT CHELSEA GROUP

### Services

- Mechanical design
- Construction management
- Commissioning
- Energy audits
- IAQ investigations
- Utility incentive support
- LEED® Certification
- ENERGY STAR® support

### Qualifications

- 25-year track record of successful performance
- Winner of 2015 & 2016 AEE Energy Project of the Year for Region V
- Hawaii Energy Clean Energy Ally
- ENERGY STAR Executive Member of Certification Nation
- Over 15 million square feet of LEED certified projects

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See what we're up to:



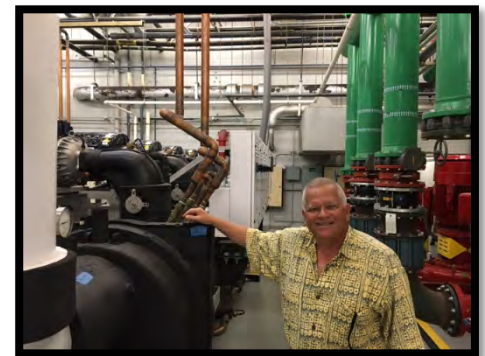
## BACKGROUND

The central plant replacement and upgrade was the culmination of a facility-wide assessment by Chelsea Group in 2011. Starting with low cost program elements, realization of savings started in 2012. The entire complex is served by a central chilled water plant, which is located at the service level below Buildings 3 and 4. Previously, chilled water was generated by two 575 ton and one 250 ton electrically driven centrifugal water-cooled chillers, with the majority of the complex's energy systems dating back to its original construction, with a few exceptions. The existing BAS was a Honeywell system that had exceeded its useful life. The BAS had monitoring capabilities, and minimal on/off controls via pneumatics



Zack Main, Project Manager

Zack Main, Building Scientist, acted as project manager, alongside George Benda, CEO of Chelsea Group, who oversaw the entire project.

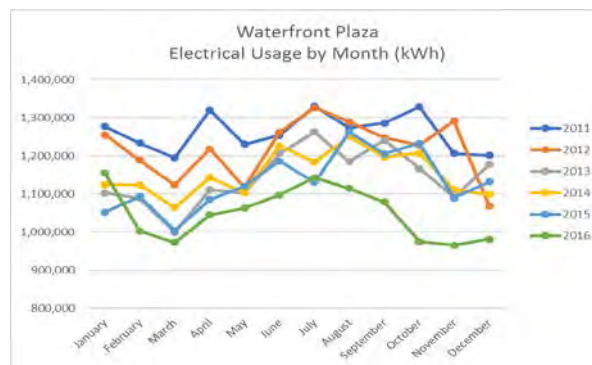


George Benda, CEO of Chelsea Group

## RESULTS

Three of the four chillers were replaced with two 800 ton chillers. The previously constant speed pumping system was replaced with a variable speed pumping system. The building automation system was also upgraded, and the valves for the air handling units were replaced with two way flow control valves. Automation systems bring the entire plant into coordinated control to take advantage of variable speed operations. There were no unplanned outages.

The calculated annual energy savings for the central plant upgrades, based on utility bills and corrected for Cooling Degree Days, is 1,228,000 kWh. Demand savings were calculated at 148 kW for the mid-day period. At a rate of \$0.22/kWh and \$24.34/kW, the efficiencies provide \$273,762 of savings a year. The savings from the project resulted in a rebate in almost \$250,000.



The five-year program transformed the infrastructure of the property. Despite a general warming in the Honolulu climate and a substantial increase in the intensity of tenant activity, raw utility data for the period 2011 through 2016 shows that Waterfront Plaza reduced its energy consumption from 15.1 million kWh per year to 12.5 million kWh per year. That represents an overall reduction of about 2.8 million kWh per year or 18%.