



HAWAII PRINCE HOTEL WAIKIKI

AND GOLF CLUB



Background:

On Ala Wai harbor, this high-rise hotel is an 11-minute walk from Ala Moana Beach Park and 7.6 miles from Honolulu International Airport. Through its enrichment programs, (Lokomaika'i and No Na Mamo), the hotel constantly strives to develop new ways to assist in the commitment to preserve Hawaii's culture and environment.

Reduction of Energy Usage:

- ✚ Replaced the hotel's original (3) 50 HP (hi speed) and (3) 15 HP (low speed) Baltimore Air Coil forced draft cooling tower motors with new Evapco Stainless Steel Cooling Towers (2) 4 Cell 800 ton induced draft with (2) 30 HP fan motors with Variable frequency drives.
- ✚ Chiller and Domestic Water System Energy Feasibility Study Michael Chong - June 2010 (Hawaii Energy \$14,500.00)
- ✚ Replaced hotel's original (3) 500 ton Trane Chillers with (3) York High Efficiency Chillers (R-134a) with new Metasys Energy Management controls. Replaced original 60HP condenser and 40 HP chill water pumps with 50HP high efficiency condenser pumps and 40HP high efficiency chill water pumps with variable frequency drives.
- ✚ Complete preventive maintenance (clean coils and replace air filters) on all 17 air handler units and 2-4 cell cooling towers to increase cooling efficiency and reduce chiller load.
- ✚ Standard policies and procedures adhered to for thermostat settings in all public areas including restaurants. All areas have locked thermostat covers to also prevent tampering.
- ✚ Energy Management System (Metasys) schedules on/off times for all air handler operations following Banquet Event Orders (BEO), restaurant hours of operations and back of the house operations to control chill water supply.
- ✚ (6) Observation elevators air conditioning units were set at 5:30am on to 10:30pm off and changed to 7:30am on to 8:30pm off.
- ✚ Replaced the 10 year old cooling tower fill grates (4 cells) to increase maximum water circulation to maximize cooling for the chillers condenser water.

Lighting:

- ✚ Completed installation of Magna Lumen reflectors and remove (104) T-8 fluorescent light fixtures for the Diamond Head tower and Ala Moana tower fire stairwells.
- ✚ Replaced (230) fire exit 2-20 watt incandescent light bulbs with LED 2 watt light bulbs which will reduce kWh consumption and eliminate interior heat load surface temperature 100 degrees
- ✚ Replaced existing (670ea) T-12 fluorescent light fixture in the guest corridors with energy efficient LED light fixtures
- ✚ Replaced Prince Court, Hakone Restaurants 90 watts flood light with 11 watts LED, perimeter lights 30 watts incandescent to 11 watt LED. Main and Hakone Kitchens, Bake

- Shop, Room Service and Employee Cafeteria lighting retrofit from T-8 32 watt fluorescent to T-8 25 watt fluorescent. This project was fully funded by Hawaii Energy.
- + Replaced (554 ea) original T-12 40 watt fluorescent light bulb with magnetic heat producing ballast for the guestroom tub light with 15 watt LED no ballast light fixture that will reduce the wattage and eliminate the heat producing ballast.
 - + Replaced Valet Lot and Loading Dock (40 fixtures) from 175 watt Metal Halide light fixtures with the 52 watts LED lighting.
 - + Replaced (10) landscape light fixtures from 175 watts Metal Halide to 39 watts LED lighting.
 - + Main Lobby ceiling lights automatically turns off at 9:30am to reduce energy consumption and heat load from the 400 watt light bulbs. Scheduled to retrofit 400 watt Halogen lights LED lighting.
 - + Replaced Diamond Head Tower lobby high ceiling cold cathode lighting to T-8 25 watt fluorescent.
 - + Replace Hawaii Prince Golf Course lighting Pro Shop, Cart Barn, Golf Maintenance completed and BOP Restaurant (Hawaii Energy labor and bulbs-no cost to the hotel)
 - + Completed the DHT guestrooms replacement of (550ea) original T-12 40 watt fluorescent lighting with heat producing magnetic ballast (118 degrees surface temp) for our guestroom tub light with 15 watt LED lighting with no ballast and we will received \$2,700.00 rebate from Hawaii Energy. We will reduce wattage and eliminate interior heat load.
 - + Completed changing out 10 landscape metal halide 175 watts lighting fixtures on the Ala Moana Blvd side and reduced to 39 watts LED fixtures. They run 12 hours per day. We will also get a \$990 Hawaii Energy rebate.
 - + Landscape lights came on at 5:30 pm and off at 6:45 am and changed to on at 6:15 pm and off at 6:30 pm (1 hour reduction)
 - + Installed an occupancy sensor for Hakone Men's restroom, which monitors movement in the restroom. If no movement is detected in 15 minutes, the lights will turn off. There are 1-2 light fixtures that will remain on from the emergency power, so the restroom will have lights if someone is in the toilet stall longer than 15 minutes. We plan to install the occupancy light sensors for all public and back of the house restrooms for the hotel and golf course to continue our energy conservation program. Hawaii Energy will provide us an energy rebate of \$20.00 per sensor (purchase price \$74.00ea).
 - + Restrooms:
 - + Basement
 - o Ladies room: 12 fixtures x 50 watts each
 - o Men's room: 13 fixtures x 50 watts each
 - + Engineering Back Office:
 - o 6 fixtures x 50 watts each
 - + Lobby
 - o Ladies room: 7 fixtures x 13 watts each
 - o Men's room: 7 fixtures x 7 watts each

- ✚ Unisex: 2 fixtures x 13 watts each
 - Marina front kitchen: 3 fixtures x 50 watts each
- ✚ 3rd Floor
 - Hakone Ladies restroom: 8 fixtures x 13 watts each
 - Hakone Men's restroom: 8 fixtures x 13 watts each
 - Prince Court Ladies restroom: 15 fixtures x 13 watts each
 - Prince Court Men's restroom: 10 fixtures x 13 watts each
- ✚ Cafeteria – Ladies & Men's restroom: 13 fixtures x 50 watts each
- ✚ Banquet Dishwasher room: 3 fixtures x 50 watts each
- ✚ Banquet Kitchen: 6 fixtures x 50 W each and 6 fixtures x 100 watts each
- ✚ Back Hallway Ladies & Men's restrooms: 2 fixtures x 50 watts each
- ✚ Main Kitchen:
 - Chef's Office 200 watts (2 fixtures/100 watts)
 - Garde Manger 400 watts (4 fixtures/100 watts)
 - Bake Shop 500 watts (5 fixtures/100 watts)
 - Butcher Shop 200 watts (2 fixtures/100 watts)
 - Banquet AV Storeroom 120 watts (3 fixtures/40 watts)
 - Chocolate room 50 watts (2 fixtures/25 watts)
- ✚ 4th Floor
 - Restroom: 1 fixture x 50 W each
- ✚ 5th Floor
 - Ladies restroom: 2 fixtures x 50 watts each
 - Men's restroom: 2 fixtures x 50 watts each

- ✚ We have completed Captain's Room lighting retrofit project:
 - Replace existing 114 ea 30 watt incandescent light bulbs (perimeter) with 6 watt LED light bulbs which will reduce watts and remove the heat load from the room.
 - Replace existing 35 ea 90 watt incandescent flood lights (ceiling) with 9 watt LED light bulbs which will reduce watts and remove the heat load from the room.
 - We will receive a 100% lighting rebate from Hawaii Energy (\$1,898.00).
- ✚ Swimming Pool and Jacuzzi
 - Pool - 3 ea 500 watt flood lights and Jacuzzi 2 ea 100 watt flood light to 75 watt LED
- ✚ Boardroom replaced (16) T-8 32 watt fluorescent with 15 watt LED
- ✚ Retrofit Cart Barn bulbs from 175w down to 52w
- ✚ Retrofit existing 5 fixtures with 100 watt Halogen bulbs (heat producing) with 5 7 watt LED (no heat) at the 3rd floor Prince Court area (display cases).
- ✚ Completed our lighting retrofit project replacing our existing (2) 32 watt fluorescent light bulbs to (2) 14.5 watt LED bulbs for a total of 120 light fixtures for DHT and AMT Service landings. These lights are on 24 hours a day, 7 days per week.

Reduction of Water Usage:

- ✦ Redesign and reconstruction of the hotel's waterfall filtration and discharge system including replacing all pool equipment to comply with current State and Federal regulations related to the discharge of water.
- ✦ September 2011 - Waterfall Renovation – replaced original recirculating 75 HP recirculating pump motor with ½ HP filtration pump motor, 3/4 HP bubbler pump motor and 5 HP recirculating pump motor to reduce kWh consumption.
- ✦ Reduced the height of the waterfall from 51' to 24'-9" and reduced the volume and size of the pool approximately 80% and converted to landscaping, with planting such as Rhapsis palms, Plumeria and Macarthur palms and smaller shrubs such as spider lily and red Ti.
- ✦ New waterfall designed with battered walls, so the water does not free fall and is less susceptible to overspray in order to reduce the amount of overspray onto the pedestrian walkways below.
- ✦ Install Flood Safe water supply hoses on the basin and toilet hot and cold water supply to prevent guestroom flooding for ruptured water hoses that waste water and causes costly water damages and water removal, de-humidification services.
- ✦ Worked closely with the Board of Water Supply and partnered with them for their Maddaus Water Management seminar and hotel operations tour.
- ✦ The Board of Water Supply has replaced the original main water meter and we continue to log daily water meter readings. We monitor increased water consumption and locate and fix water leaks and follow water saving tips and best management practices that can save thousands of gallons every year.
- ✦ Replace existing (54) 4.6 gpf (gals per flush) public and employee restroom toilets with new 1.6 gpf low flow toilets to reduce water consumption.
- ✦ Work closely with Water Treatment Solutions to conduct monthly water tests and analysis on our cooling tower and steam condensate water blow downs to conserve water and water treatment chemicals. Valuable water treatment training by Water Treatment Solutions for engineers provides the working knowledge and importance our accurate and consistent water treatment program to control scaling and other concerns which will increase electric and water consumption.
- ✦ Install water meter on the waterfall auto fill supply to monitor water fall water consumption.
- ✦ All guest rooms and kitchens have low flow faucet aerators (2.0 gpm – 1.5 gpm had resulted in water spouting problems and guest complaints).
- ✦ Low flow shower heads and hand held shower units (2.5 gpm) in guest rooms.
- ✦ Irrigation of landscape during the evening hours to eliminate evaporation.

Solid Waste Reduction and Recycling Effort:

- ✦ Utilization of monthly recycling services of Honolulu Recovery. Recycle the following: white paper, colored/brochure papers, magazines, newspaper,

cardboard, glass bottles, and plastic bottles to reduce the trash tonnage that is sent to the landfills and H-power.

- ✚ Use of recycled paper.
- ✚ Photocopiers produce two-sided copies to minimize paper consumption
- ✚ Discarded linen is donated to various charitable organizations such as the Next Step shelter, Habitat and Goodwill annually.
- ✚ Purchased recycled plastic materials to fabricate projects at the golf course to protect against the extreme weather conditions and termite damage.
- ✚ Purchased recycled plastic speed bumps.
- ✚ Housekeeping is collecting Hi-5 plastic bottles from the guest rooms. They are averaging around \$100 monthly through HI-5 efforts.

Guest Participation in Conservation Effort:

- ✚ Since 2001, guests participate in water conservation program through the green program in guest rooms (changing of sheets and towels).
 - On average 50% of beds are remade with existing sheets and 30% of towels are reused daily.
 - Saving laundering costs such as electricity in machines, water consumption and chemicals used to sanitize linen.

Pollution Prevention Effort:

- ✚ Installation of filter screens on loading dock sump to prevent solids from going into the drains.

For more information on the hotel, visit <http://www.princeresortshawaii.com>