



Hawaii State Judiciary

JOHNSON
CONTROLS

Performance Contracting Services for Lighting Systems in State of Hawaii Judiciary Facilities



November 3, 2005

The Judiciary – State of Hawaii *Completed September 2004*

Courthouse Buildings – 3 Oahu / 2 Maui – 556,000 sq. ft.

Financial: \$ 1.5 M Cost \$ 253,000/yr Savings

\$ 85,000 Utility Rebates 10 year Financing

FIMS: T8 lamps – High 86 CRI, 3,500K (Convert 8ft to 4ft, T12 to T8U)

Electronic Ballasts – High / Normal / Low Output

LED Exit signs

Occupancy Sensors – Ultrasonic / Infrared / Dual

Down light Can Mercury to CFL Retrofit Kits

Metal Halide to T5 Retrofits

Delamping with Reflectors

Honeycomb to Prismatic Lenses & Flat to Drop Lenses

Repair damaged Wiring

Over 15,400 Fixtures and Sensors

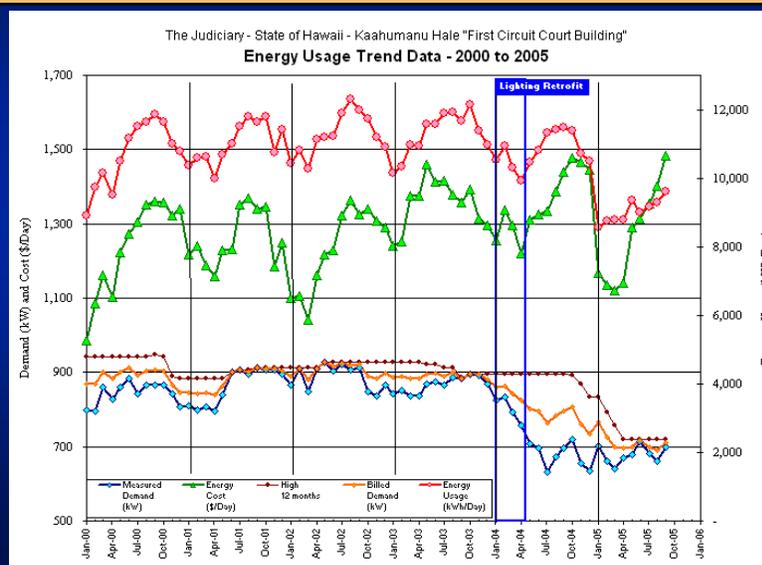
Project Savings

- ◆ **Energy Cost Reduction - 16% savings of \$253,000/yr**
- ◆ **Demand Savings - 12% Reduction of 333 kW**
- ◆ **Energy Savings - 16% Reduction of over 2,000,000 kWh**

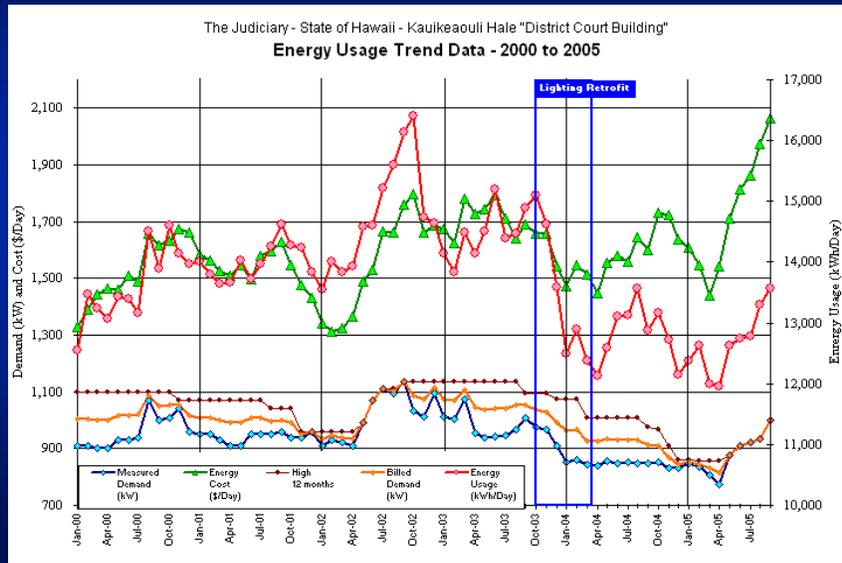


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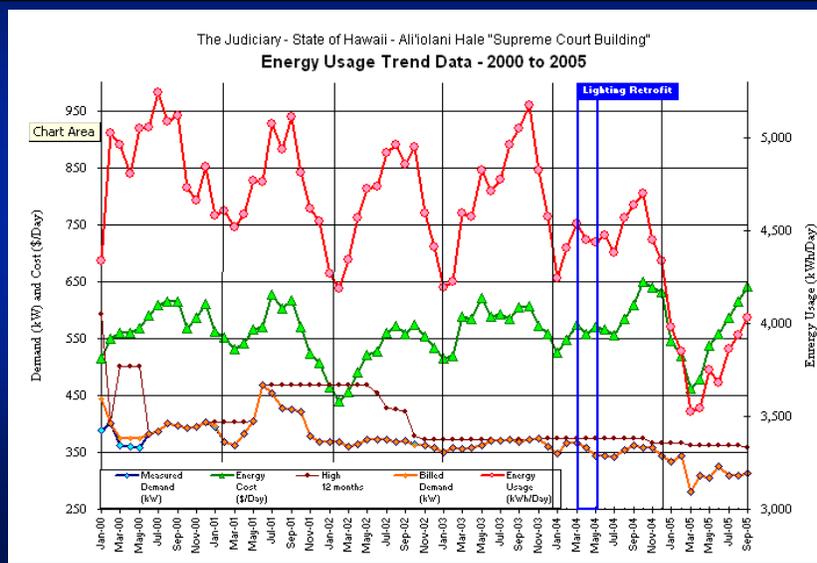
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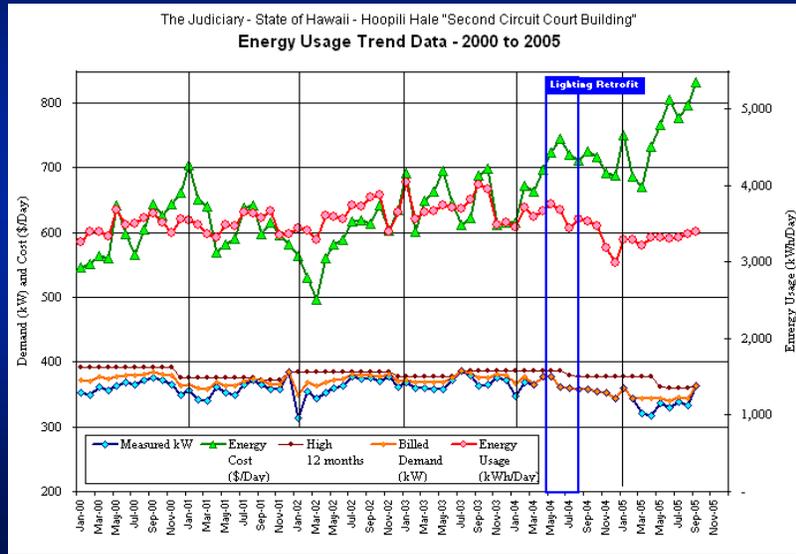
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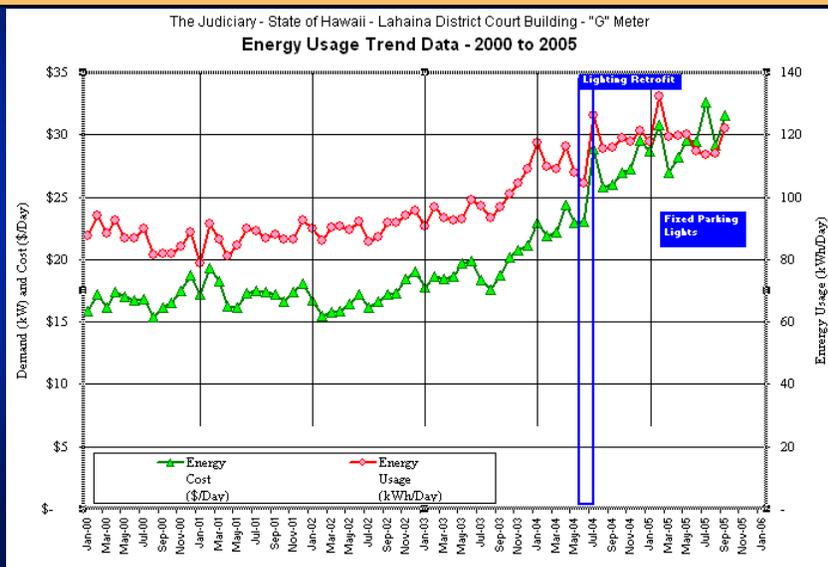
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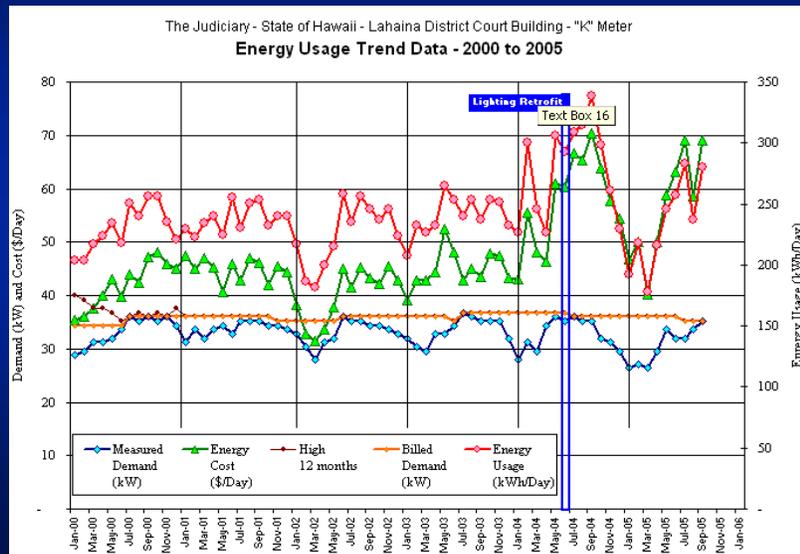
Hoopili Hale



Lahaina District Court – G Meter



Lahaina District Court – K Meter



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Mahalo

Are there any Questions?

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ECM 1 - Courtroom Areas

Task Areas -

- Gallery Seating
- Bench/Attorney/Court Reporter Area

Source of Problems -

Fixture output and design causing “cave” feeling with dark ceilings & lower walls

Proposed Retrofits -

Strip Lights - T8, 800 series, 3500K lamps boost lighting output by 15% and visually brighten up the lower walls.

Recessed Cans –CFL, 26W, 2700K provide a light that is more dispersed, falling more on the walls with less useless “pooling” on the floors.



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ECM 2 - Public Areas - Plaza

Task Area -

- Plaza

Source of Problems -

- Poor maintainability of lamps
- No controls
- Low light output

Proposed Retrofits -

Lamp Retrofit - High Pressure Sodium or Metal Halide lamps.

Control - Photo-cells to turn lights off during the day to provide both energy savings as well as to extend the time between lamp failures improving maintenance of the area.



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ECM 2 - Public Areas - Security

Task Area -

- Security Checkpoint

Source of Problems -

No fixtures lighting inspection area

This area was pressed quickly into service and is not adequately lit for the important activities performed.



Proposed Retrofits -

New Fixtures - Surface mounted 2-lamp wraps with T8 lamps & Electronic Ballasts.

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ECM 2 - Public Areas - Elevator

Task Areas -

- Elevator Lobbies

Source of Problems -

- Inconsistent lamp/fixture conditions
- Poor Control (Security Switches)
- Removed lamps / dark fixtures causing safety concerns



Proposed Retrofits -

Surface Mount Lights - T8, 800 series, 3500K lamps with low light output electronic ballasts to maintain current light levels and to provide safe lighting output.

Recessed Cans - CFL, 23W, 2700K provide illumination of elevator/lobby area. This will increase safety of ingress/egress of elevators and persons passing through the area.

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ECM 2 - Public Areas - Hallway

Task Areas -

- Hallway / Transaction Areas

Source of Problems -

The main lighting issue here is to update the lighting technology to electronic ballasts and T8 lamps, maintain current light levels and improved color rendition.



Proposed Retrofits -

Soffit Lights - T8, 800 series, 35K lamps powered by 75% ballast factor ballasts to maintain current light levels.

Tandem wire fixtures to minimize ballast count.

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ECM 3 - Office Areas - Open

Task Areas -

- Data Entry "Open" & Cubicle
- Filing Cabinet / Storage

Source of Problems -

The main lighting issue is the need to maintain current light levels, reduce energy consumption and improve the quality of light.



Proposed Retrofits -

Fluorescent Lights - T8, 800 series, 3500K lamps powered by 75%-ballast factor ballasts to maintain current light levels and improve color rendition. Maintaining 50-70 foot-candles on the desk surfaces.

Tandem wire fixtures to minimize ballast count.

Option: Specular reflectors can be installed in 3 and 4 lamp fixtures to delamp them to 2 lamps.

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ECM 3 - Office Areas - Private

Task Areas -

- Private Offices

Source of Problems -

The main lighting issue is the need to maintain current light levels, reduce energy consumption and improve the quality of light.

Proposed Retrofits -

Fluorescent Lights - T8, 800 series, 3500K lamps powered by 75%-ballast factor ballasts to maintain current light levels and improve color rendition. Maintaining 50-70 foot-candles on the desk surfaces.

Occupancy Sensors – Automatic lighting control in these areas would be desirable. Perimeter offices typically have 1 – 3 hours each day of unoccupied time. If these lights are not locally switched, the savings would probably be in the 6 – 7 hours per day range.



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ECM 3 - Office Areas - Halls

Task Areas -

- Hallways

Source of Problems -

The main lighting issue is the need to increase current light levels and visually “open” up the hallways. This will increase comfort and safety.

Proposed Retrofits -

Fluorescent Lights - T8, 800 series, 35K lamps powered by 75%-ballast factor ballasts to increase light levels, improving safety, comfort and still reducing energy consumption.

OPTION - New Prismatic Lenses –The installation of new drop-in prismatic lenses to bring the lenses below the ceiling height allowing the fixtures to throw more light onto the walls and brighten the ceiling. The new optics will greatly improve the “feel” of the hallways by brightening and opening up the area.



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ECM 3 - Office Areas - Garage

Task Areas -
• Garage

Source of Problems -

The main lighting issue is the need to increase current light levels, reduce energy consumption and improve the quality of light.



Proposed Retrofits -

Fluorescent Lights - T8, 800 series, 3500K lamps powered by standard ballast factor ballasts to increase current light levels and improve color rendition.

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