Cx Easter Egg Hunt

True Cost of LEED

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Key West City Hall

Building Commissioning

Systematic quality control process for building construction and management.

LEED Rating System

Commissioning required for all LEED projects.

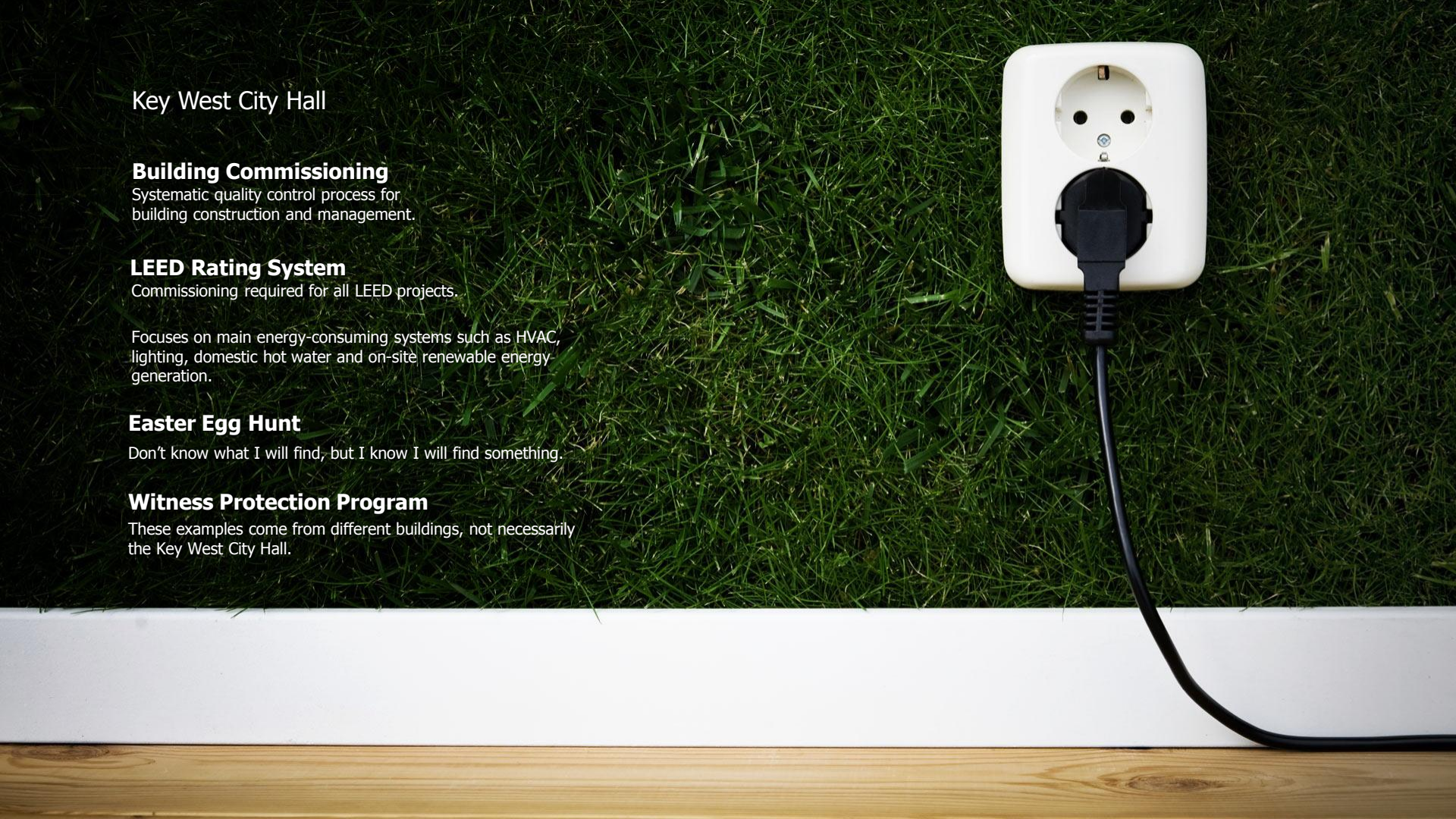
Focuses on main energy-consuming systems such as HVAC, lighting, domestic hot water and on-site renewable energy generation.

Easter Egg Hunt

Don’t know what I will find, but I know I will find something.

Witness Protection Program

These examples come from different buildings, not necessarily the Key West City Hall.



Key West City Hall

LBNL Study from 2009

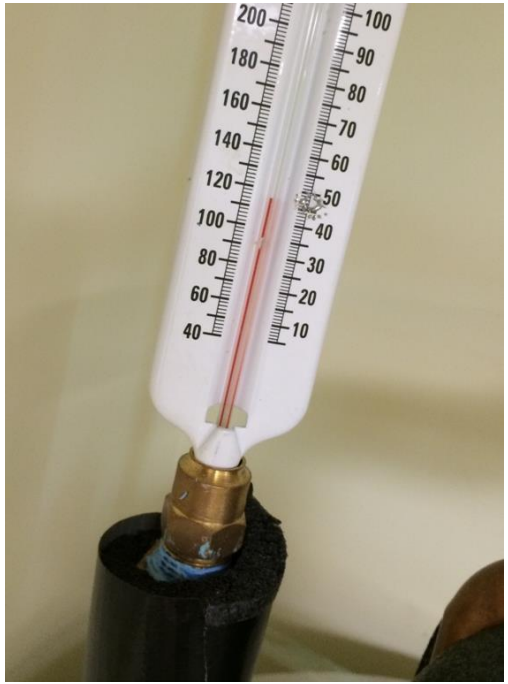
Cx costs about 0.4% of overall construction budget.

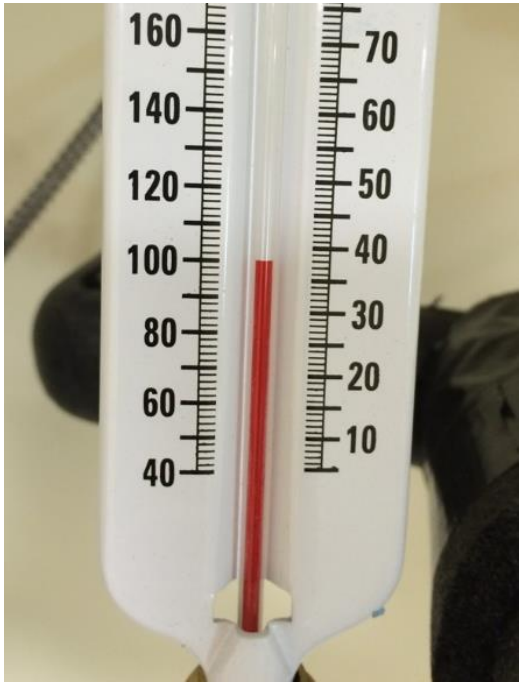
Cx saves about 13% of annual whole-building energy cost.

www.cx.lbl.gov.cx.html

Example #1: Water Heater vs. Refrigerated Warehouse

Hot water recirculation loop in facility reduces wait for hot water at faucets, saving water



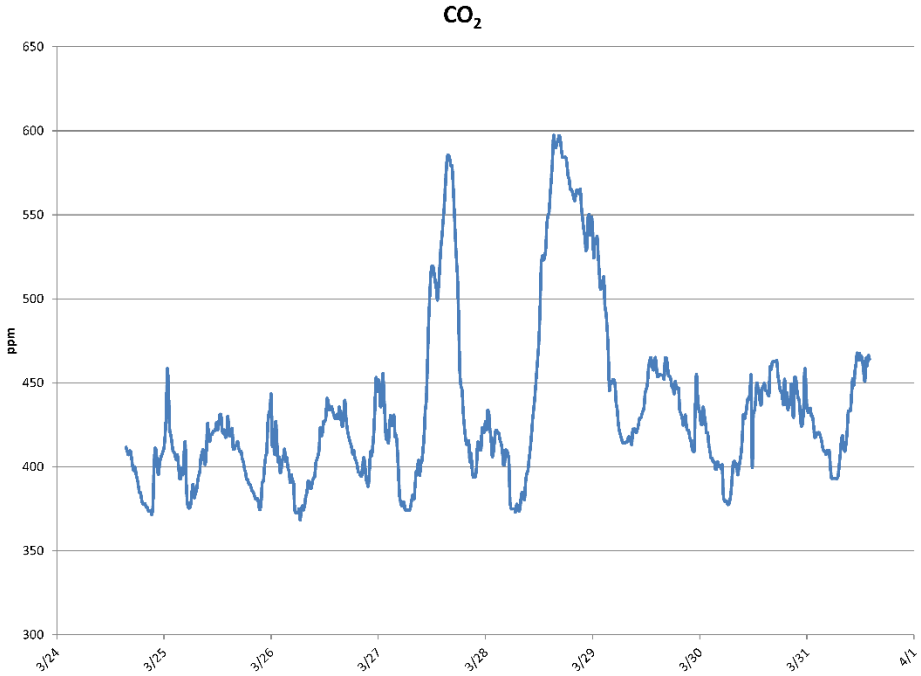


- Testing found 18 F drop in water temperature from water heater outlet to return.
- Water temp available at faucets was too low (about 100 F).
- Discovered hot water recirculation pipe running through refrigerated warehouse (45 F ambient) WITHOUT insulation.
- Domestic water heater essentially operating as heating element for warehouse.

SAVINGS: > $3,000 annually

Example #2: So Much Fresh Air!

Facility with active control of fresh air

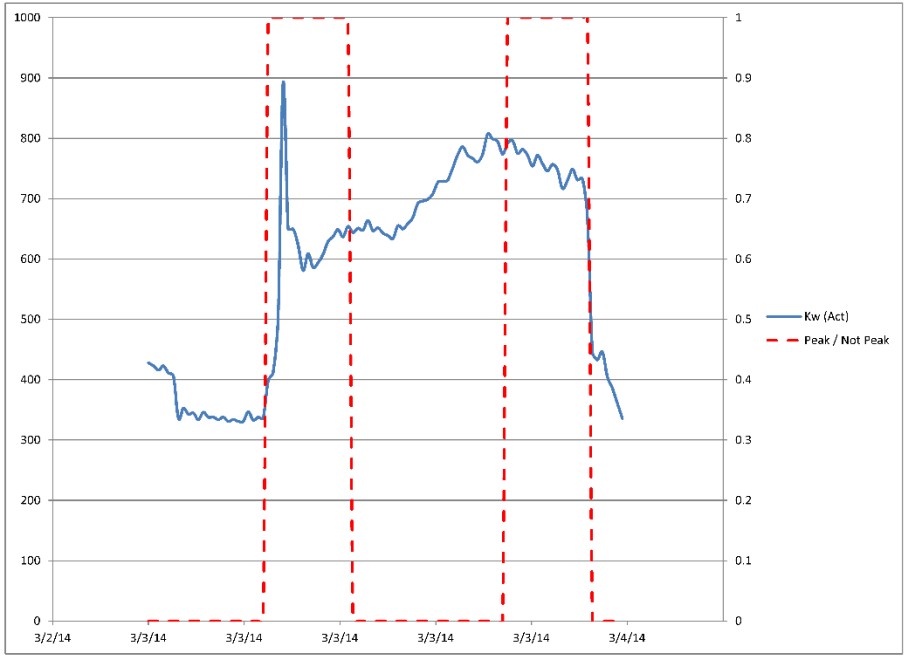


- Bringing fresh air into a facility ensures good indoor air quality.
- Fresh air in south Florida is expensive to condition because of moisture.
- Goal is to bring in as much fresh air as you need AND NO MORE.
- Measure of indoor CO_2 shows how effective the system is.
- With this facility, CO_2 was very low, indicating excessive fresh air intake.
- Testing showed that system designed to control intake of fresh air was not set up properly, resulting in increased cost.

SAVINGS: > $10,000 annually

Example #3: Bad Timing

Facility where the operators were starting the systems manually early in the morning

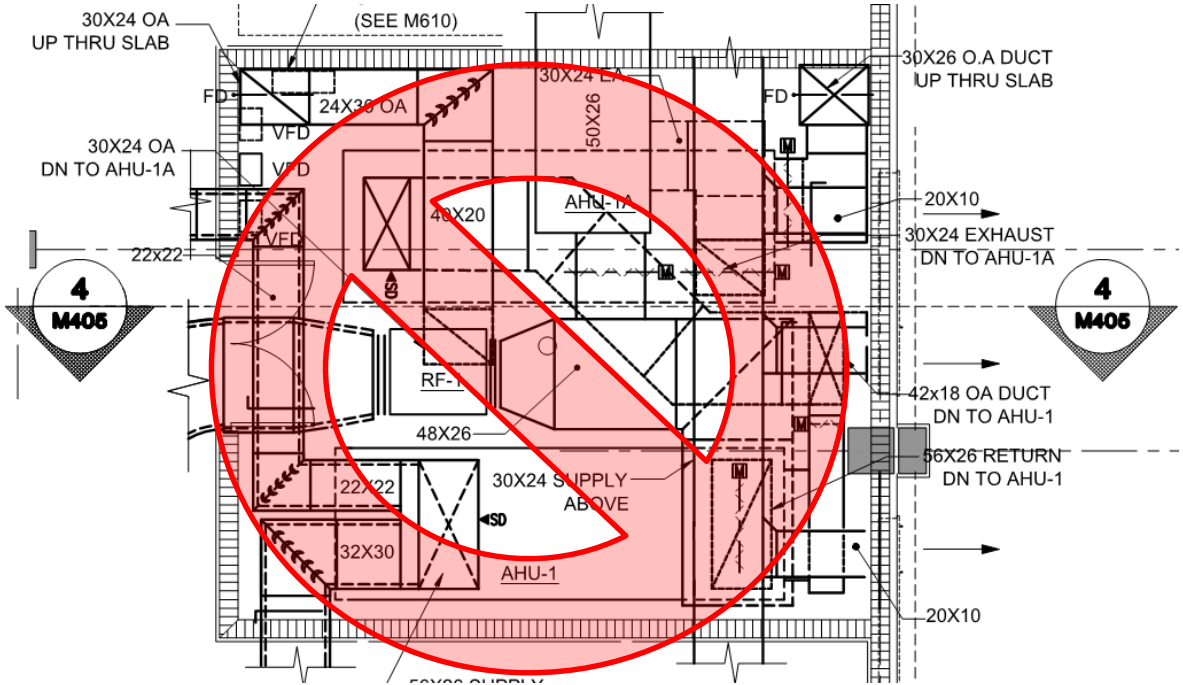


- Utility companies charge large consumers for the maximum on-peak energy consumption each month.
- This client was manually starting their chilled water system early in the morning, hitting the utility's peak window.
- Starting up the system in a smarter manner would avoid a crippling demand charge.
- Recommended a "staged start-up" algorithm to reduce the peak.

SAVINGS: > $13,000 annually

Example #4: Great Moments in Poor Planning

Major piece of HVAC equipment installed in blind corner



- Large government facility.
- Due to changes in equipment selection, major air handling unit installed in blind corner.
- Impossible to maintain the equipment.
- Without maintenance, the equipment would have failed within 5 years (and likely sooner).
- Solution: install an interior door.

EQUIPMENT COST: $6,000