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Integrated Water & Energy
Solutions for the Hospitality
Industry:([PDF](#))

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[Hotel Sustainability Solutions]

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Integration & Collaboration

=

Energy and Water Sustainability Results

Charles A. Smith, CEO

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SUSTAINABILITY



Sustainability is an Integral Component of Value Creation Through the Application of Sound Business Practices to Systems, Products and Technologies!



THE OBJECTIVE MANDATES

- ◆ **Establish Sustainability Leadership in the Competitive Market and Beyond**
- ◆ **Reduce Operating Cost**
- ◆ **Create Added Asset Value**
- ◆ **Transferability**
- ◆ **Develop Maximum Integrated and Collaborative Program**
- ◆ **Combine Renovation & Development of Sustainability Platform**

THE PROJECT BACKDROP

- ◆ **Branded Hotel Built in 1980**
- ◆ **329 Guest Rooms**
- ◆ **Full Service**
- ◆ **11 Stories**
- ◆ **Work in Progress**
- ◆ **Prototype for Global Rollout**
- ◆ **Sustainability Flagship**



INTERSTATE
HOTELS & RESORTS



Hilton
CONCORD

THE PROGRAM

PHASE I

**ANALYSIS
&
FEASIBILITY**



**PRESENT FINDINGS
&
RECOMMENDATIONS**



**DESIGN
&
IMPLEMENTATION**



PHASE III

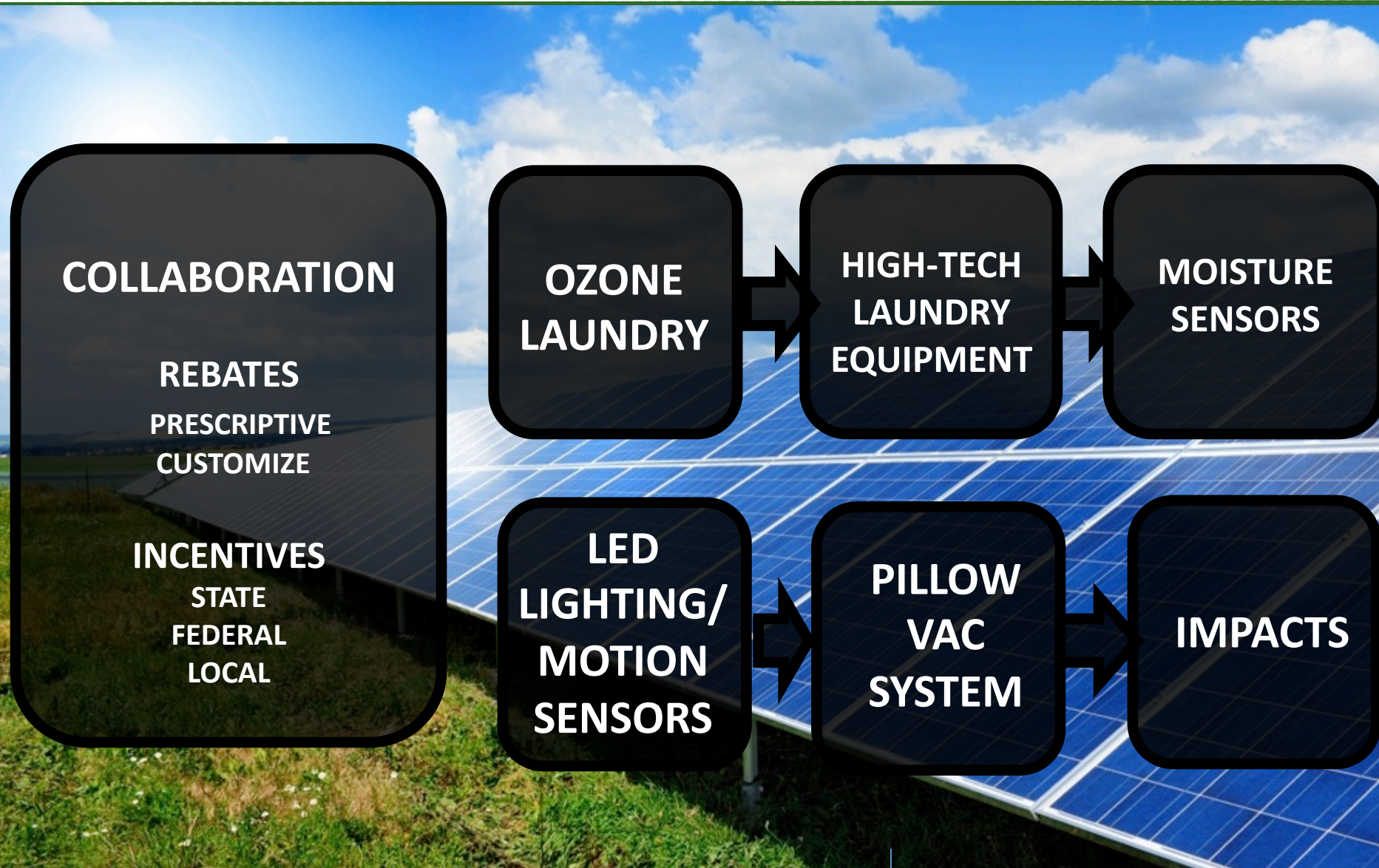
**MONITORING,
REPORTING
& NEW
TECHNOLOGY
OPTIONS**



**RESEARCH AND DEVELOPMENT OF
PRODUCTS, TECHNOLOGIES
AND SYSTEMS**

How Integration and Collaboration Practices Significantly Impact a Sustainability Platform

SAMPLE ILLUSTRATION OF COLLABORATION & INTEGRATION



SAMPLE ILLUSTRATION OF COLLABORATION & INTEGRATION REDUCTIONS

COLLABORATION

REBATES

PRESCRIPTIVE
CUSTOMIZE

INCENTIVES

STATE
FEDERAL
LOCAL

OZONE
LAUNDRY

WATER
GAS THERMS

LAUNDRY
EQUIPMENT

ELECTRIC
GAS THERMS
WATER
LABOR

MOISTURE
SENSORS

WATER

LED
LIGHTING/
MOTION
SENSORS

ELECTRIC
LESS INVENTORY

PILLOW VAC
SYSTEM

LANDFILL
DIVERSION

IMPACTS

REDUCING CO2
EMISSIONS
CARBON FOOTPRINT
REDUCTION
GHG REDUCTION
ROI

Sustainable Initiatives Implemented at Hilton Concord

ENERGY REDUCTION INITIATIVES

GAS AND ELECTRIC

- ◆ **LED LIGHTING**
- ◆ **HI EFFICIENCY LOW WATTAGE TUBE LIGHTS**
- ◆ **ENERGY MANAGEMENT SYSTEM (HVAC)**
- ◆ **ADVANCED TECHNOLOGY LAUNDRY SYSTEM**
- ◆ **OZONE LAUNDRY SYSTEM**
- ◆ **LED LAUNDRY CEILING RETROFIT**
- ◆ **LED MEETING ROOMS / BALLROOM / PUBLIC AREA CEILING LIGHTS**
- ◆ **PLATE & VINE RESTAURANT – ALL LED LIGHTING**
- ◆ **PORTE-COCHERE LED RETROFIT**

ENERGY REDUCTION INITIATIVES

GAS AND ELECTRIC

- ◆ REFRIGERATION DOOR SEALS AND CURTAIN REPLACEMENTS
- ◆ FOOD PREPARATION EQUIPMENT
- ◆ LOW TEMP DISHWASHER
- ◆ PARKING LOT LED RETROFIT & MOTION SENSORS
- ◆ PERIMETER BUILDING SECURITY LIGHTING
- ◆ INCLUDING PLATE & VINE ENTRANCE
- ◆ WINDOW FILM
- ◆ ENERGY STAR OFFICE EQUIPMENT
- ◆ HVAC ROOFTOP UNITS – ECONOMIZERS

WATER REDUCTION INITIATIVES

- ◆ **LOW FLOW TOILETS**
- ◆ **LOW FLO SHOWER HEADS**
- ◆ **AERATORS THROUGHOUT HOTEL**
- ◆ **LANDSCAPE IRRIGATION**
- ◆ **OZONE LAUNDRY**
- ◆ **NATURA WATER SYSTEM**
- ◆ **HIGH TECHNOLOGY LAUNDRY SYSTEM**



TRASH/WASTE INITIATIVES

- ◆ **BIOHITECH ORGANIC WASTE DECOMPOSING FOOD**
- ◆ **INTERNAL RECYCLING**
- ◆ **PILLOWVAC – RECYCLING / LANDFILL DIVERSION**
- ◆ **DYSON AIR HAND DRYING SYSTEMS**
- ◆ **PAPERLESS CHECK IN**
- ◆ **NATURA WATER SYSTEM**
- ◆ **CONSTRUCTION DEBRIS RECYCLING**

FULLY INTEGRATED OPTIONS AND INITIATIVES



ONSITE WASTE MANAGEMENT SYSTEM

High Volume Organic
Waste-to-Energy
Waste Composting System

REBATES, INCENTIVES, GRANTS

Off Balance Sheet Financing
Power Purchase Agreement PPA
Lease Agreement
Utility Financing Agreements

OZONE LAUNDRY/ POOL/SPA SYSTEMS

Aquawing Ozone Systems

GUEST ROOM ENERGY MANAGEMENT SYSTEM

HVAC
Motion Sensor /PIR / Smart Outlets

KITCHEN SUSTAINABILITY PROGRAMS

Dishwashers

LED LIGHTING PROGRAM

Indoor - Outdoor

PILLOW RESTORATION PROGRAM

PillowVac System

RENEWABLE ENERGY SYSTEMS FOR POWER GENERATION

Fuel Cell
Cogeneration
Solar
Micro Turbine
Geothermal / Biomass / Biofuel

WATER ANALYSIS

Water Purification System

REFRIGERATION EFFICIENCIES

Motors, Curtains, Seals

PARKING LOT, POOL, COURTYARD, RC TOP & BUILDING PERIMETER LIGHTING ALTERNATIVE

Induction Lighting System
Led Lighting System

ELEVATOR EFFICIENCIES

Motor, Lighting

IRRIGATION SYSTEM

Drip and Controlled
Moisture Sensors
Gray Water Systems

SOLAR THERMAL HOT WATER SYSTEM

Building
Pool

FUNDING PROGRAMS

EPAAct 179D Energy Depreciation IRS
Cost Segregation
Self Funding

INTEGRATION WITH PIP

ELECTRIC VEHICLE CHARGER
Hydraulic Hybrid

SUSTAINABILITY PUBLIC PROCEDURES
PROCEDURES PURCHASING

RELATIONS LOCAL NATIONAL

PRODUCTS/ SUPPLIES RECYCLING
STAFF PARTICIPATION

PRIMARY INITIATIVES

SECONDARY INITIATIVES

CENTRALIZED ENERGY MANAGEMENT SYSTEM

Common areas, meeting Rooms. offices
Metrics modeling

HOW MANAGEMENT GOALS HELP SHAPE A SUSTAINABLE PROJECT

- ◆ Establish ROI Thresholds
*Incorporate **ROI Blending***
- ◆ **Rebate Reinvestment**
- ◆ Approvals for Maximum Incentives
- ◆ Response Time Sensitivity
- ◆ Corporate Commitment and Program Support
- ◆ Promotional Support



A Well Integrated Hotel Sustainability
Program Can Typically Achieve

8-10%

(or greater)

Reduction of TOTAL
Current Operating Budget 

ANTICIPATED SUSTAINABILITY SAVINGS BY HOTEL SIZE

Number of Hotel Rooms	Anticipated Annual Savings From	Anticipated Annual Savings To
1000-1500	\$661,658	\$1,654,145
900-1000	\$502,860	\$1,257,150
800-900	\$449,927	\$1,124,818
700-800	\$396,995	\$992,487
600-700	\$344,062	\$860,155
500-600	\$291,129	\$727,824
400-500	\$238,197	\$595,492
300-400*	\$175,207	\$438,018
200-300	\$132,332	\$330,829
100-200	\$79,399	\$198,497

Values are theoretical only. Actual results will vary by initiatives undertaken, rebates, incentives and other factors

ECONOMIC IMPACT

COLLABORATIVE RESULTS TO DATE

HILTON CONCORD REBATES

- ◆ **Contra Costa Water District**
2 Rebates
\$49,380.40



- ◆ **PG&E**
9 Rebates
\$54,088.09



- ◆ **Smart Lights/ Lodging Savers**
6 Rebates
\$27, 112.81

Rebate Categories Detailed in
Online Supplement

TOTAL OF ALL REBATES

\$132,887.63

REBATES RECEIVED TO DATE

\$131,718.33

REBATES YET TO BE RECEIVED

\$1,169.30

RESULTS TO DATE

Savings
\$151,000

Net Cost
\$632,932

**Integrated
Payback**
4.1 Years

Added Asset Value
\$1,800,000

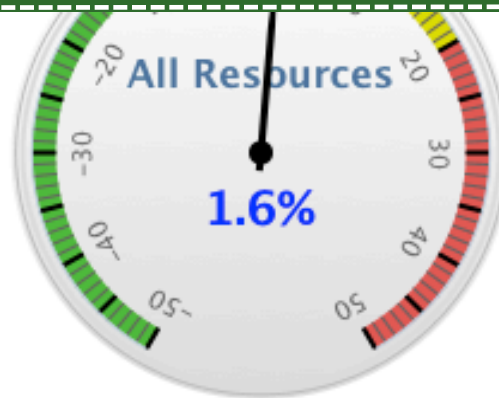
using 8% capitalization rate

WATER CONSERVATION

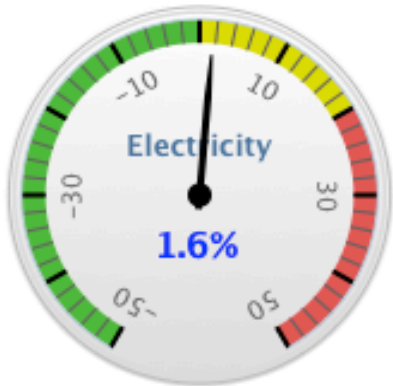
- ◆ **High-Efficiency Toilets**
- ◆ **Bathroom Sink Faucets with Aerators in Taps**
- ◆ **Landscape Irrigation Service - Reuse of Gray**
- ◆ **Weather or Sensor-Based Irrigation Control Technologies**
- ◆ **Showerheads: Low Flow Rate-Air Ejection**
- ◆ **Waterless Urinals**
- ◆ **Laundry: Rinses Water Re-Use for Wash Cycle**
- ◆ **ENERGY STAR qualified – Clothes Washer, Dishwasher and Ice Makers**



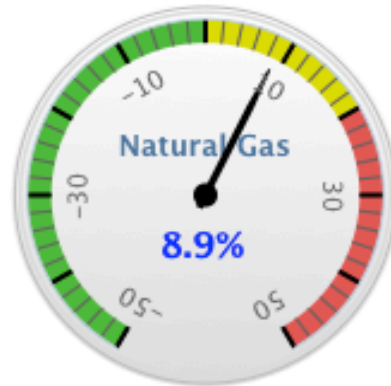
METRICS MODELING



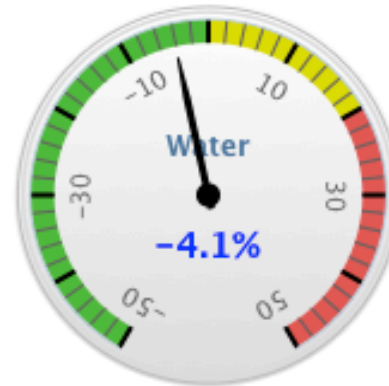
All Resources Cost \$1,330/day for Year Ending May-2013 **↑ 1.6% (\$20.83/day)** compared to the prior year



Electricity
\$922/day



Natural Gas
\$197/day



Water
\$139/day



Waste
\$72/day

WATER

USAGE SUMMARY FOR A ROLLING 12 MONTHS COMPARED TO THE BASELINE

This is your Usage summary for a rolling 12 Months compared to the

- Electricity
- Natural Gas
- Water**
- Waste
- Carbon

19.4%
(-8.67 ccf/day)



-19.4%

(-8.67 ccf/day)

for the Year Ending May-2013

WATER

USAGE SUMMARY FOR A ROLLING 12 MONTHS COMPARED TO THE BASELINE

Usage for May-2013:
38.1 hcf/day

Change from Baseline:
-18.1% (-8.41 hcf/day)

[View Facility](#)

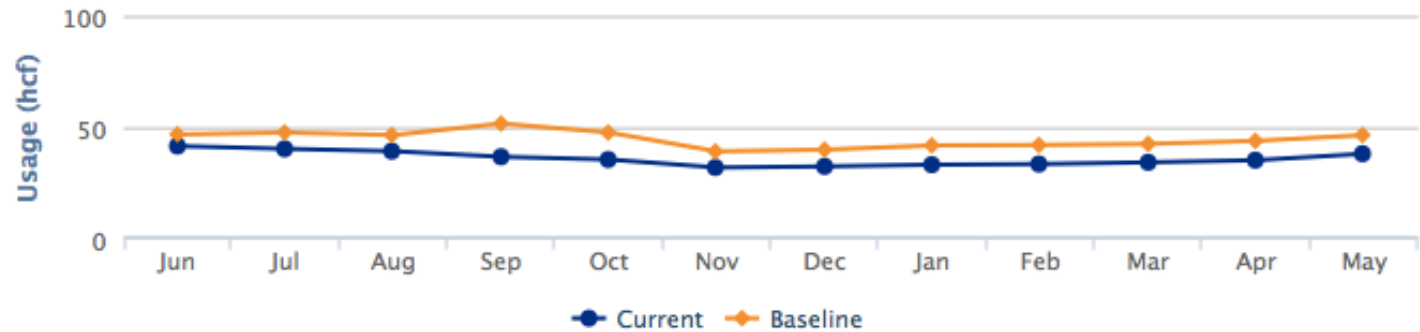
Compared to the same Month last year the
Largest Decrease
was

Sep: ↓ -15.0 hcf/day

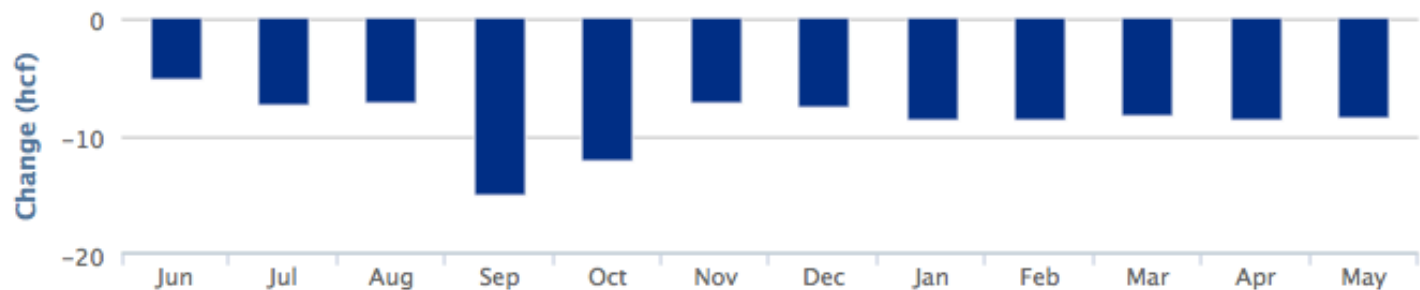
Latest Month was

May: ↓ -8.41 hcf/day

Average Daily Usage for Jun-2012 to May-2013 versus the Baseline



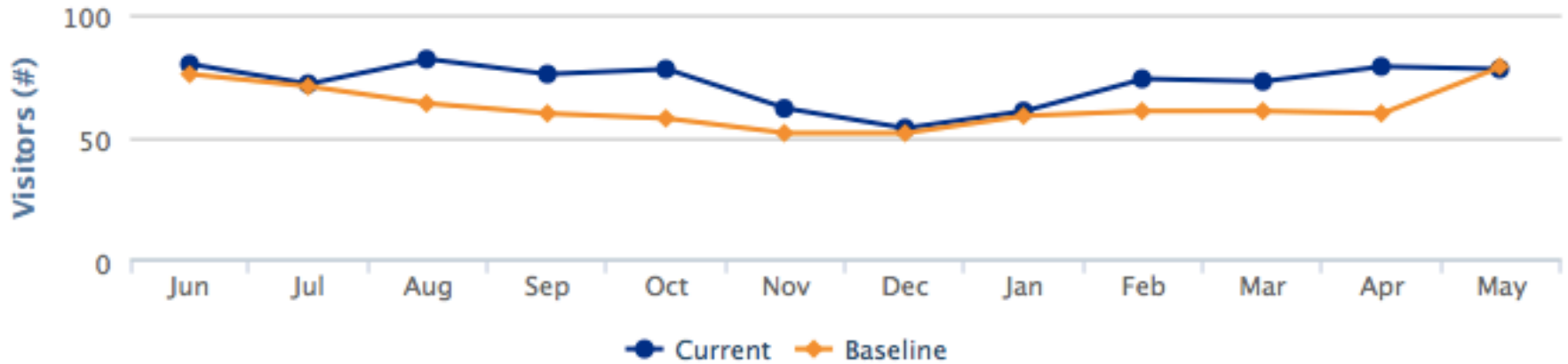
Change in Average Daily Usage for Jun-2012 to May-2013 versus the Baseline



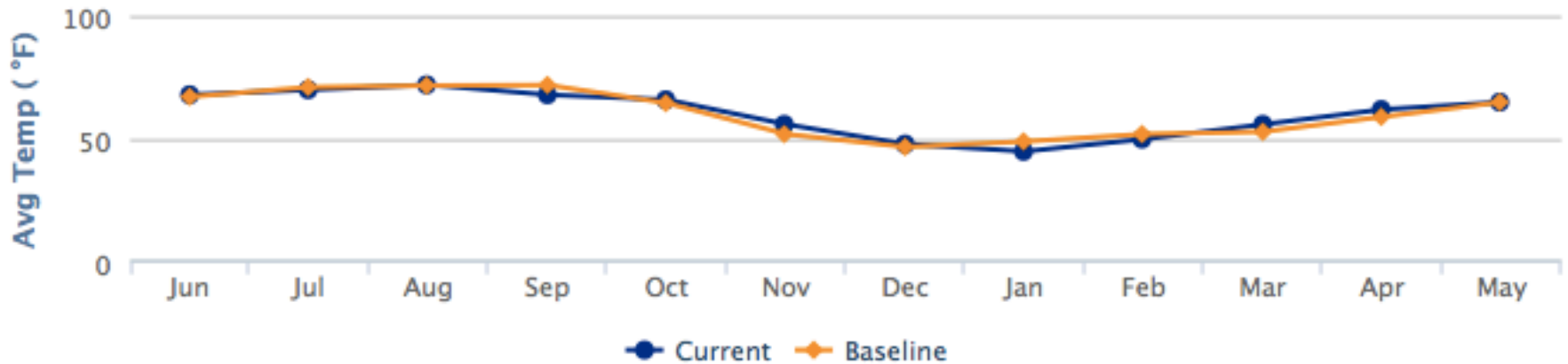
WATER

USAGE SUMMARY FOR A ROLLING 12 MONTHS COMPARED TO THE BASELINE

% Occupancy for Jun-2012 to May-2013




Average Temperature for Jun-2012 to May-2013




WATER

USAGE SUMMARY FOR A ROLLING 12 MONTHS COMPARED TO THE PRIOR YEAR

This is your summary for a rolling 12 Months compared to the

 **-9.8%**
(-4.12 ccf/day)

for May-2013

 **-8.8%**
(-3.50 ccf/day)

for the Year Ending May-2013

WATER

USAGE SUMMARY FOR A ROLLING 12 MONTHS COMPARED TO THE PRIOR YEAR

Usage for May-2013:
38.1 hcf/day

Change from Prior Year:
-9.8% (-4.12 hcf/day)

[View Facility](#)

Compared to the same
Month last year the

Largest Increase
was

Sep: ▲ 1.21 hcf/day

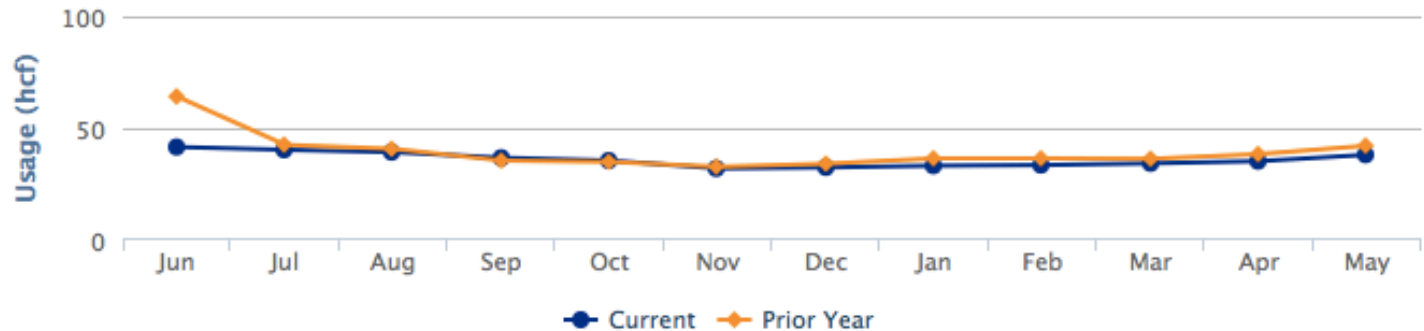
Largest Decrease
was

Jun: ▼ -22.5 hcf/day

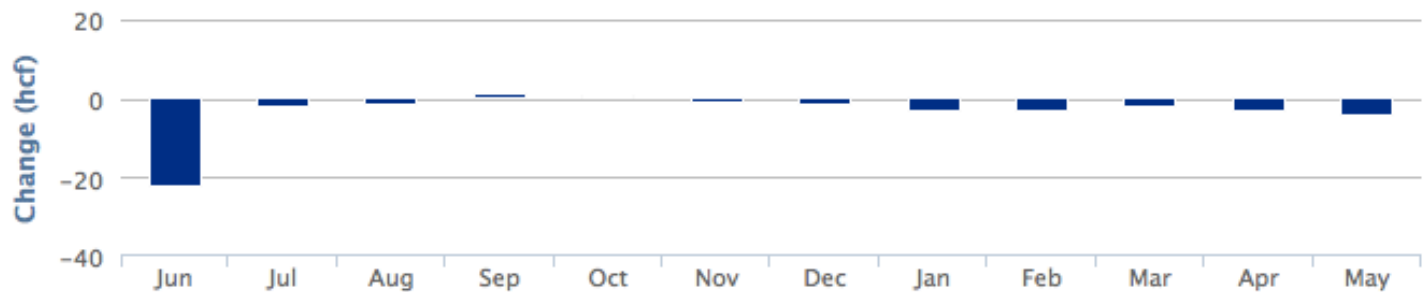
Latest Month was

May: ▼ -4.12 hcf/day

Average Daily Usage for Jun-2012 to May-2013 versus the Prior Year



Change in Average Daily Usage for Jun-2012 to May-2013 versus the Prior Year



WASTE USAGE

is your summary for a rolling 12 Months compared to the



-21.4%

(-0.15 tons/day)

Diversion Rate: 37% (0.33 tons/day)

for May-2013



-19.4%

(-0.12 tons/day)

Diversion Rate: 32.4% (0.24 tons/day)

for the Year Ending May-2013

WASTE USAGE

Usage for May-2013:
0.56 tons/day

Change from Baseline:
-21.4% (-0.15 tons/day)

Diversion Rate:
37% (0.33 tons/day)

[View Facility](#)

Compared to the same Month last year the

Largest Increase was

Nov: ▲ 0.08 tons/day

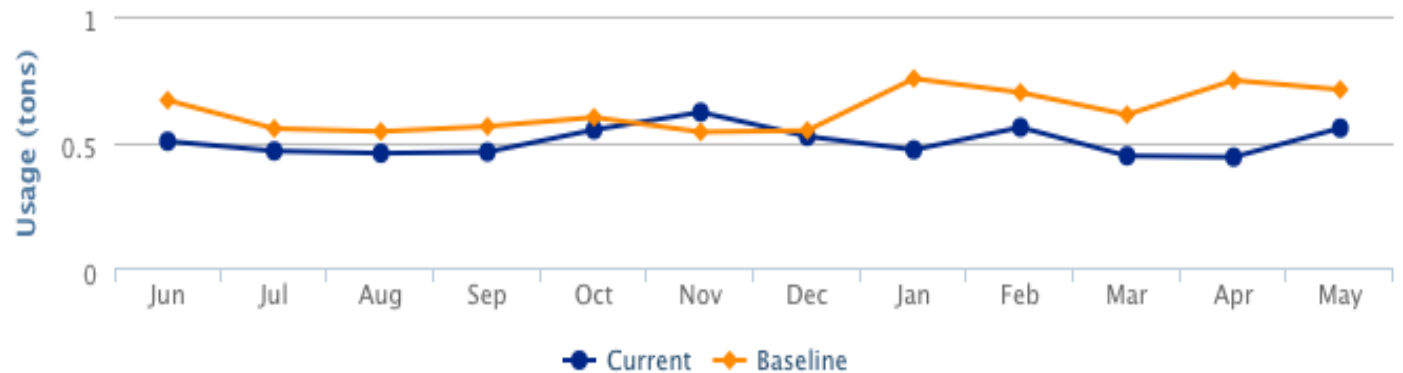
Largest Decrease was

Apr: ▼ -0.30 tons/day

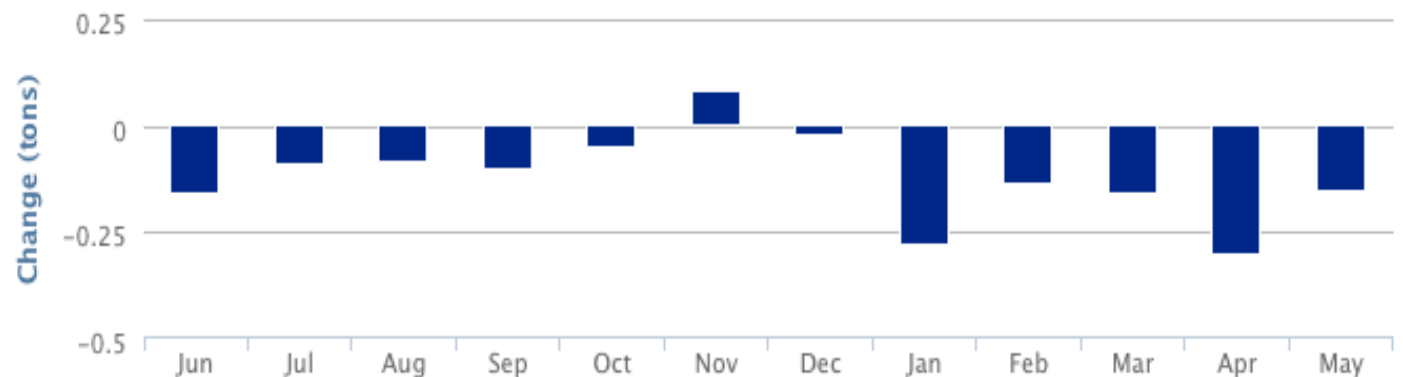
Latest Month was

May: ▼ -0.15 tons/day

Average Daily Usage for Jun-2012 to May-2013 versus the Baseline

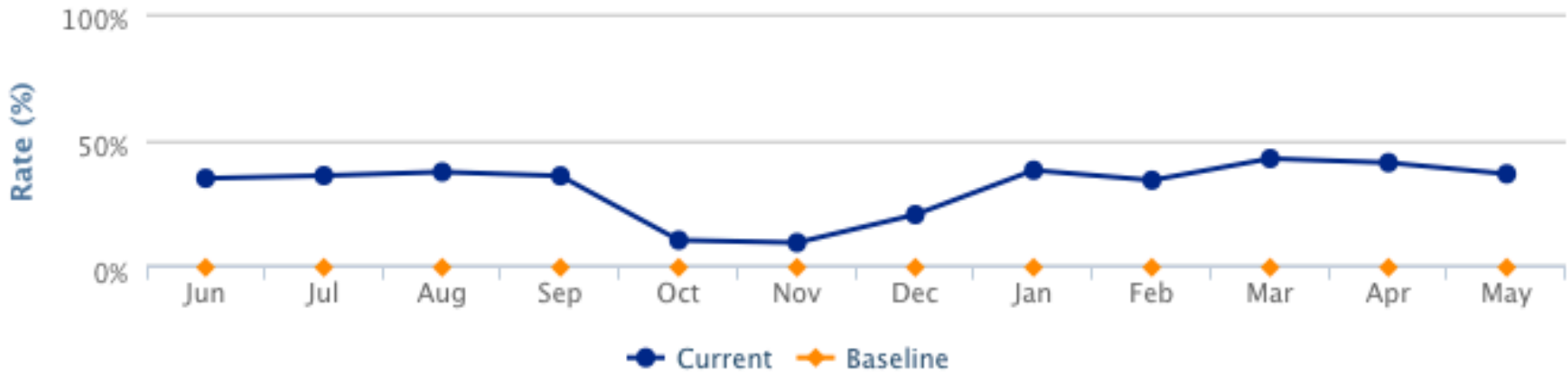


Change in Average Daily Usage for Jun-2012 to May-2013 versus the Baseline

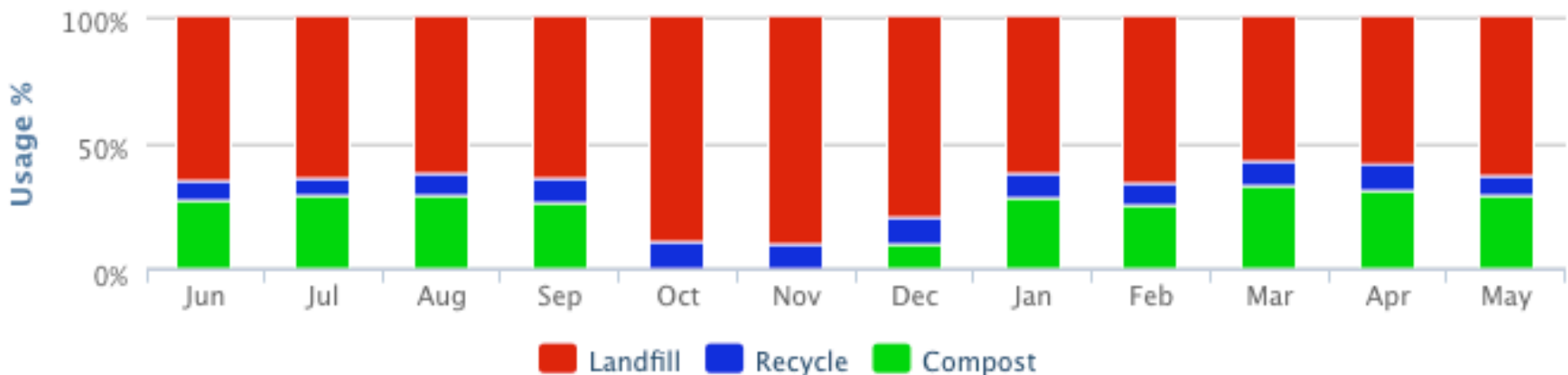


WASTE USAGE

Diversion Rate for Jun-2012 to May-2013



Waste Separation for Jun-2012 to May-2013



COGENERATION = HEAT + POWER

USAGE = REDUCTIONS + CONSERVATION

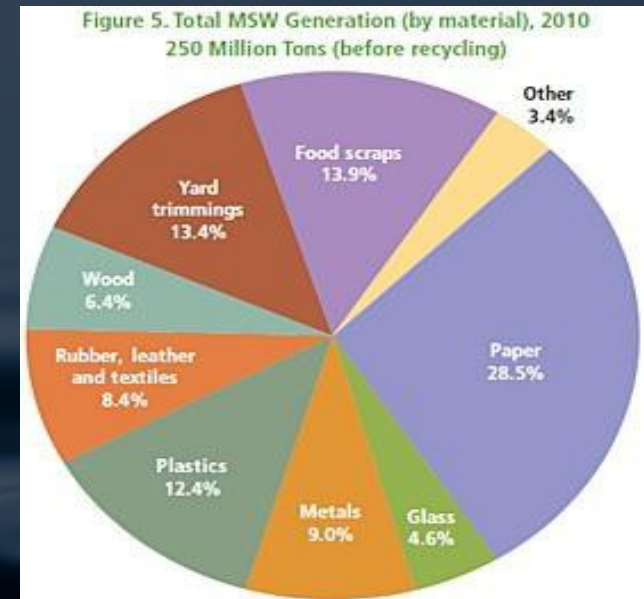
- ◆ **Usage** Reductions = Gas, Electric, Water, Waste, Carbon Footprint and GHG
- ◆ Onsite Power **Generation** = Cost Reduction Using Micro turbines
- ◆ kWh at \$0.10 Less Than Current Rates + Escalation
- ◆ Annual use of 2,530,000 kWh = \$250,000 Annual Cost Reduction
- ◆ Adjusted for utility charges = \$175,665 Annual Savings
- ◆ **FREE** Hot Water up to 89% Occupancy

LAS VEGAS ENERGY PARK MSW PROJECT PHASE II

Energy-Inc

1,500 TONS PER DAY of **MSW** PRODUCES

- ◆ Synthetic Diesel – 13,830,000 gallons per year
- ◆ Metals – 40,000 Tons per year
- ◆ **Potable Water – 200,000,000 + Gallons Per Year**

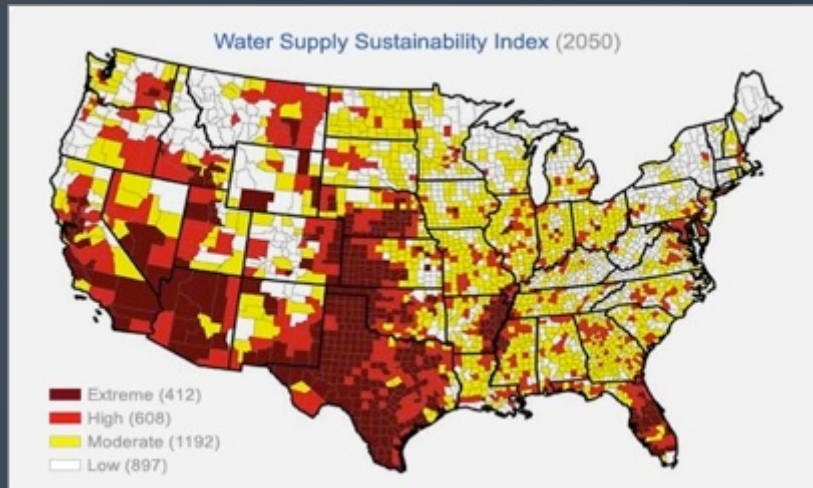


SLUDGE = WATER/POWER/FUEL/BIOCHAR

Energy-Inc

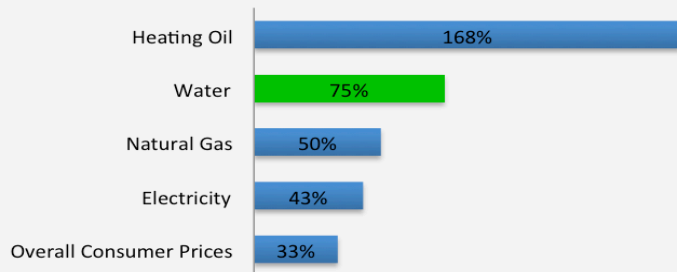


WATER IS AN INCREASINGLY SCARCE AND EXPENSIVE COMMODITY



USA Today Study of US Utility Rate Increases

■ % Price Increase (2000 - 12)



- ◆ 65% of water used in the US is for irrigation.*
- ◆ *USGS report on Estimated Use of Water in the United States
- ◆ **Population growth**, particularly in sunbelt states, is putting unsustainable pressure on scarce natural resources.
- ◆ **Climate change** is estimated to make weather patterns and water supply more unpredictable.
- ◆ **Water costs** will continue to rise far above the rate of inflation.
- ◆ **Water conservation** initiatives have proved they can make a major difference in reducing the human impact on water sources.

A study by the University of Florida estimates that up to **80%** of landscape irrigation water is typically wasted through inefficiency or **overwatering**.



Solution Provided by UgMO

Using patented wireless technology that actually measures the moisture content in the soil, thereby automatically preventing overwatering or waste, UgMO is able to save users between **30%** and **60%** of their irrigation water.

PROVEN TRACK RECORD OF REAL & MEASURABLE SAVINGS

- ◆ Marco Island, FL residence saved **47%**
- ◆ Fulton County, GA residence saved **51%**
- ◆ Westchase complex, Houston, TX saved **55%**
- ◆ Pebblebrook HOA, Fort Meyers, FL saved **76%**
- ◆ Ocean Grand townhouses, Jupiter, FL saved **60%**
- ◆ Hammock Creek HOA, Fort Meyers, FL saved **50%**
- ◆ Golden Bear Plaza, West Palm Beach, FL saved **39%**
- ◆ The Heights community, Woodstock, GA saved **77%**
- ◆ 21 McDonalds in Athens, GA saved **40%**

ENVIRONMENTAL BENEFITS

- ◆ Studies prove UgMO **saves more than 2 days/wk restrictions**
- ◆ Customers have **received exemptions** from restrictions
- ◆ Stress free watering
- ◆ Preserves healthy/lush landscapes

Other Environmental Advantages:

Reduce water usage 30-50% across communities (save millions of gallons per year)

Saving water saves money and it saves the environment

Helps Communities:

- ◆ **Achieve mandated reductions**
- ◆ Balance water usage (hotels, commercial, education, golf, HOA, homes and cities)
- ◆ Facilitate development/expansion
- ◆ Address run off and environmentally sensitive areas
- ◆ Maintain lush community look & feel (versus xeriscaping)

SWAT tested and approved (rebates)

Deploying UgMO contributes to LEED points

**Details of Technologies, Systems and Products
Implemented Available on Conference Site
Within Supplemental Data**

ALTERNATE FUNDING OPTIONS FOR SUSTAINABILITY PLATFORMS

There are **multiple funding options** that can be considered:

- ◆ Grants/Incentives - Federal, State Local
- ◆ Rebate Providers Highest Rebate Availability
- ◆ Lease Options
- ◆ Power Purchase Agreements (PPA)
- ◆ Utility Financing (off balance sheet)
- ◆ Vendor Financing
- ◆ IRS Programs-EPAct 179D Energy Depreciation
- ◆ Self Funding
- ◆ Cash Awards

SUSTAINABILITY FUNDING ALTERNATIVES



- ◆ *Cost Segregation at the Hilton Concord = \$3.4M of deductions = **\$1.2M tax savings***
- ◆ *Projecting to six properties = **\$7.2M of funding for sustainability initiatives.***
- ◆ *EPA Act 179D = \$1.80 per sq. ft.*
- ◆ *Hilton Concord benefits equates to \$686,476 from Lighting, HVAC and Building Envelope*
- ◆ ***Additional tax savings \$200-300K***

IMPORTANCE OF CORPORATE SUSTAINABILITY

- ◆ **Sustainability is Quickly Becoming Obligatory**
- ◆ **Ownerships Must Address Compliance and Rethink Budget Allocation**
- ◆ **Non-Compliance Penalties are Expected to be Significant and when Avoided Equal Revenue**
- ◆ **Penalties and Savings** Should be Dually Weighed Against Corporate Risk Register
- ◆ **New Mandates are Emerging from Employees, Investors, and Governmental Groups**
- ◆ **Products, Systems and Technologies Allow Management to Develop Cost Effective Strategies, Planned Responsiveness and Transparency**

HILTON CONCORD SUSTAINABILITY

LEADERSHIP FREE RECOGNITION IN THE MEDIA

**WALL STREET
JOURNAL**



green lodging news™
the lodging industry's leading environmental news source

Forbes


Business Wire
A Berkshire Hathaway Company



Smartmeetings

**Eyewitness
News** KBK
FOX KBFX


Concord


Hotel News Resource

American
LAUNDRY NEWS

**Hotel
interactive**

YAHOO!
FINANCE

CoolCalifornia.org
Simple steps for a sustainable future


tripadvisor

SUMMARY

Sustainability Once a **Whisper** is Now a **Global Voice**

Creating a Sustainability Prototype Demonstrates to Stakeholders:
Social Responsibility + Global Commitment

Continued Public Recognition Demonstrates
Market Strength + Competitive Edge

Shifting Your Thinking + **Taking Action**
Offers Great Opportunities



Integration & Collaboration

=

Energy and Water Sustainability Results

Charles A. Smith, CEO

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www.hotelsustainabilityinc.com

PG&E VIDEO

CLICK LINK TO VIEW VIDEO
to view high definition please visit our website:



<http://www.hotelsustainabilityinc.com/pge-video/>