CARIBBEAN HOTEL & TOURISM ASSOCIATION

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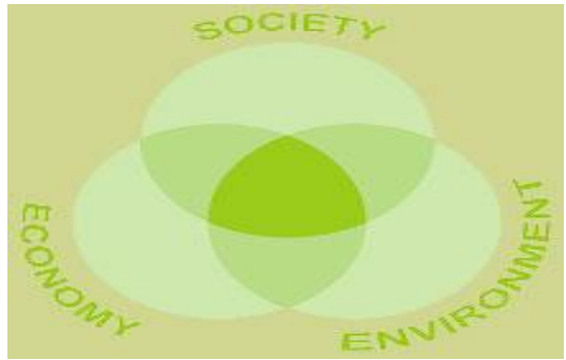

Sustainability Webinar Series

APRIL 21, 2015

SPONSORS & SPEAKERS

SPEAKER - Loreto Duffy-Mayers
Born in Dublin, Ireland and moved to Barbados in 1985, Loreto was educated at University College Dublin and the UK Institute of Marketing. Loreto is currently the Regional Program Manager for the Caribbean Hotel Energy Efficiency and Renewable Energy Action (CHENACT) Program . She held the position of Environmental Manager in several Green Hotels, including Coconut Court Resort, Casuarina Beach Club (Barbados) and the Almond Resorts (3 hotels in Barbados and 2 in St. Lucia). She is the former vice president of Caribbean Alliance for Sustainable Tourism (CAST) and currently a member of the Accreditation Panel of the Global Sustainable Tourism Council (GSTC).

The Caribbean Hotel Energy Efficiency and Renewable Energy Action (CHENACT) program is designed to improve the competitiveness of small to medium sized hotels (<400 rooms) in the Caribbean through greater Energy Efficiency and the use of Renewable Energy and Micro - Generation. Phase 1 of the Project ended in Mar 2012. The CHENACT Advanced Program was launched in July 2012.

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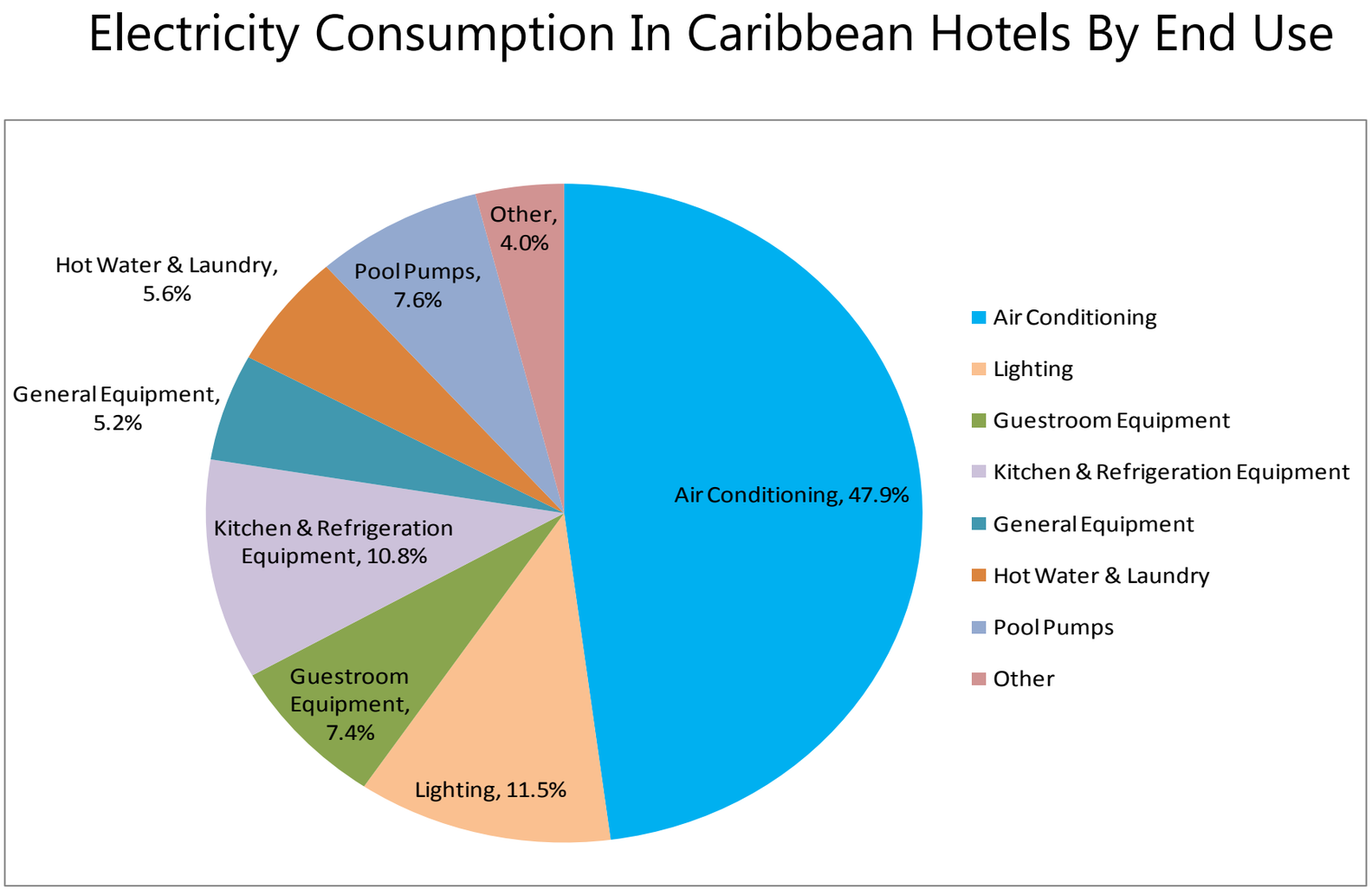
HOW TO SHAVE 10-30% OFF ENERGY AND WATER COSTS

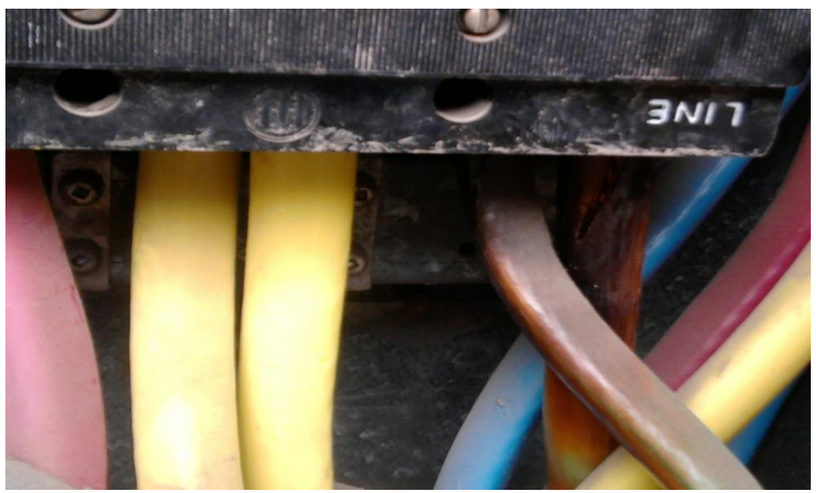


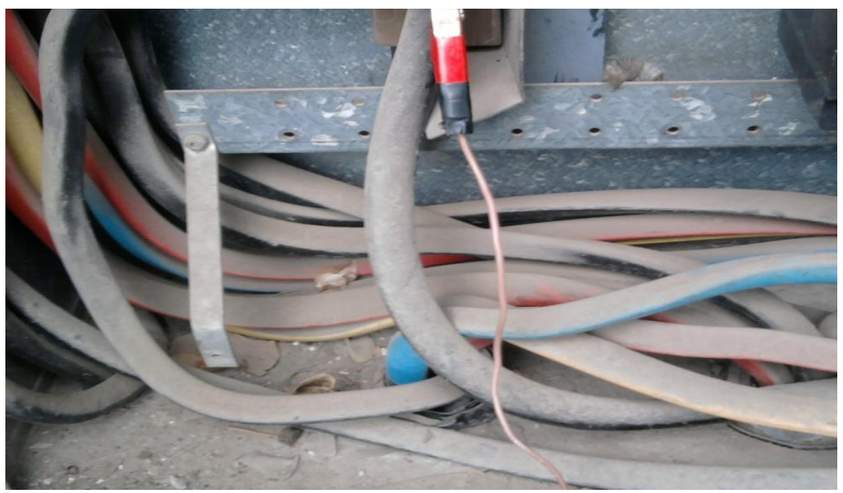
Issues arising

- Hotels are in the business of selling beds food and drinks and therefore more focussed on marketing than efficiency
- Most hotels do not see investment in EE as a priority
- There is always something “more important” to spend money on
- Maintenance contracts not taken out until something goes wrong
- Hotel staff/Management unaware of what is working and what is not
- Lack of training of hotel staff in maintenance issues
- Tendency to open as cheaply as possible and then retrofit

Maintenance Issues in Hotels

- There were some cases where the Electrical Rooms & Panels were not maintained to a safe level; there were rooms which were dangerous and as a result:
- Were too dangerous for the team to enter
- Could cause the hotel to be shut down if inspected.





Energy Audit Findings

Dirty Freezer Coils

Main Electrical Room

Energy Audit Findings

Kitchen Fresh Air Supply

Poor Split Unit Maintenance

Energy Audit Findings

EQUIPMENT

- Boilers
- Some hotels used boiler systems for the production of hot water.
- As seen in the photograph where a lack of proper maintenance resulted in a constant leak. This results in additional natural gas and water costs for the production of hot water.
- This equipment was found to be feasible for larger hotels that have a constant demand for hot water in comparison to smaller ones that can be supplied by a solar water heating system.

HOW TO SHAVE 10-30% OFF ENERGY AND WATER COSTS

This was an instance where the switches were left on for the entire duration of the audit.

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Hotel Room

Electricity Use Index – CHENACT Benchmarks

Smaller hotels, on average, consume more electricity than larger hotels. There is much more variation in the operations and amenities. Electricity benchmarks serve as one way to compare the relative efficiency of a hotel.

	Hotel Size (# of Guestrooms)			
	<=50	51-100	101-200	>200
High (kWh/Guest Night)	118	87	43	50
Average (kWh/Guest Night)	43	44	32	34
Low (kWh/Guest Night)	12	18	25	22
# of Hotels	13	8	5	4
GN/RN Ratio	1.63	1.79	1.79	1.90

Guest nights (GN) are the number of occupants in a hotel
Room nights (RN) are the number of occupied rooms

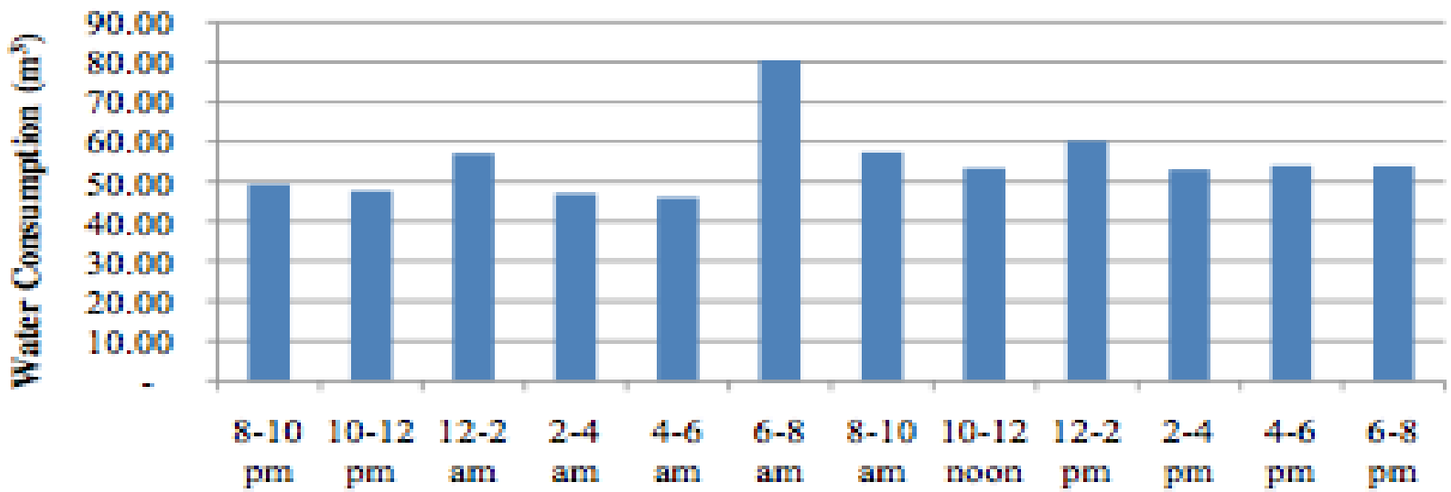
Energy Audit Findings

WATER

- The majority of hotels sustained water leaks which was costing them between 20-50% of their water bills.
- This was due to: leaking toilets, dripping faucets, leaking underground pipes, cooling towers and pools.
- The audit team found a leaks at 2 large hotel which was costing them approximately **US $250,000 and $330,000+/yr**
- In a number of cases proper water consumption analysis could not be done due to water meters that were not functional.
- Audits in hotels in Negril Jamaica found water NO leaks.

Water Audit Findings in a 200 room hotel

24 Hour Water Audit Results



Between 2.00am and 6.00am the water usage was almost 50cubic meters per hour. That's11,000 gallons of water per hour or 264,000 per day due to leaks and equivalent to 1 Olympic size swimming pool every 3 days!!!!

How To Save Water

- Read the meter every night at 2.00am and again at 4.00.
- CONSERVATION FIRST!!
- Analyze the findings, i.e. plot the readings. It should be ZERO or close at 2.00 am
- If the meter is not working contact the Water authority and report it!
- Train the maids to check for leaks in the rooms, toilets, dripping taps and REPORT them immediately
- Train gardeners to water plants before 10.00am and after 4.00pm and check the weather before watering!
- Train staff to fix leaking hoses and to change washers
- Train the kitchen staff to check for and REPORT leaks
- Train staff to wash dishes without running water.
- Maintain A/c units regularly
- Maintain ice machines to ensure that they shut off when they are full

A Full List Of Water Saving Tips Is Available From CAST

Some Low- Cost No – Cost Energy Saving Opportunities

- Most no – cost solutions simply require behaviour changes!
- Nominate an Energy Watchdog!
- CONSERVATION FIRST!!
- Read the meters and analyze the findings, compare with your bills
- Switch off, Turn off and unplug electrical appliances not in use
- Close doors when a/c is on!
- Keep A/Cs between 19° and 23°
- Close shades in rooms when not in use
- Always fill (not overfill) washing machines dishwashers ovens etc
- Check settings on fridges- set to normal

A Full List Of Energy Saving Tips Available From CAST

Staff Training

Hold a training workshop for staff:

- Teach them how to red their electricity bills and water bills
- Teach them the low-cost no-cost ESOs to implement in their own homes
- Teaching them to save money at home ensures that more likely to apply the principles at work.
- Don’t stop there – look at Paper re-use, hazardous materials and bulk purchasing!!

HOW TO SHAVE 10-30% OFF ENERGY AND WATER COSTS

Some Energy Saving Opportunities For A 111 Room Hotel

	Energy Saving Opportunities (ESO's)	Initial Cost US$	Annual Savings USD$	Payback (Years)	Tons of CO2 savings	kWh Savings per Year
1	Retrofit of 40W and 60W Incandescent Bulbs with 13W and 10W Compact Fluorescent Lamps.	$3,025.00	$5,018.50	0.64	13.4	22,843
2	Retrofit of T12 40W Tubes with 18W LED replacement	$8,470.00	$1,616.22	5.27	3.9	6,651
3	Installation of Guest Room Controls to setback A/C Temperature when room is Unoccupied	$55,000.00	$9,501.41	5.84	24.7	42,020
4	Installation of new Solar Water Heaters to replace existing Solar Water Heaters	$113,400.00	$38,221.03	2.97	93.1	158,208
5	Solar Photovoltaic System for Outdoor Lights	$34,000.00	$4,644.40	7.32	12.1	20,540
6	Natural Gas Absorption cooling system to replace electrical DX System	$312,533.00	$102,611.00	3.04	155.0	448,877
	TOTAL	$526,428.00	$162,103.37	3.25	302.3	699,140

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HOW TO SHAVE 10-30% OFF ENERGY AND WATER COSTS

Table 1 - Summary of the recommended energy saving measures

Equipment Retrofit Categories	Energy Saving Measures	% Savings (equipment)
Lighting	Incandescent to CFL	75%
	Incandescent to LED	85% - 91%
	T12 to LED	59% - 66%
Air Conditioning	Inverter based high efficiency (VRV) air conditioning units with hot water recovery	27%
Pool Pumps	Efficient Variable frequency drive (VFD) pool pumps	24%
Solar Hot Water	SHW units for hot water	27%
Exhaust Fans	Exhaust fans with variable speed drives and timers	86%
Facility-wide Categories	**Energy Saving Measures**	**% Savings (total facility electricity consumption)**
Maintenance	Automated door closers	2%
	Corporate Utility Management Program	5%
Control	Occupancy sensor on lights/exhaust fan	0.2%-1.3%
	Guest room energy controls (equipment is turned off when unoccupied)	up to 16%
	Timer on lights/exhaust fan	up to 3%
Solar PV	Solar Photovoltaic (PV) system to power outdoor lighting	5%-8%
Window Film	Low emissivity (low-e) window film	5%-10%

HOW TO SHAVE 10-30% OFF ENERGY AND WATER COSTS

If you decide to build rooms instead of investing in EE

- Detailed energy efficiency audits of various sized hotels showed savings potential of **20-30%,** with payback periods of less than **5 years** (depending upon the prevailing electricity tariffs).

- Assuming an average room rate of US$100, and electricity rates of $0.40/kWh, energy efficiency improvements would yield, over a 7 year period, the equivalent of:
    - **3,800 room nights revenue for small hotel (<50 rooms),**
    - **7,500 room night revenue for a medium hotel (50-100 rooms)**
    - **16,300 room night revenue for large hotel (>100 rooms)**

- The net revenue (total savings minus investment), would be **$280,000** for small hotel, **$300,000** for medium hotel, and nearly **$1 million** for a large hotel over 7 years.

Choosing A Vendor

- Talk to the local Hotel Association, CHTA or CHENACT, we can advise!
- Make sure the vendor has a reputable business and is not “a new kid in town”!
- Beware of “cheap” products, especially from China,
- Ensure that the products are specked properly for your country

Financing Challenges

- Bankers do not see the importance of EE, except in the case of new builds
- Many hotels are very heavily leveraged and cannot get loans
- Barbados has the Smart fund and Jamaica and Bahamas should have one soon
- IDB currently has a Risk Guarantee scheme which covers 80% of the loan from Commercial banks
- ESCOs, several are now looking to invest in the region.

CLOSURE

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Thank you for your kind attention – Questions or Comments?

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