



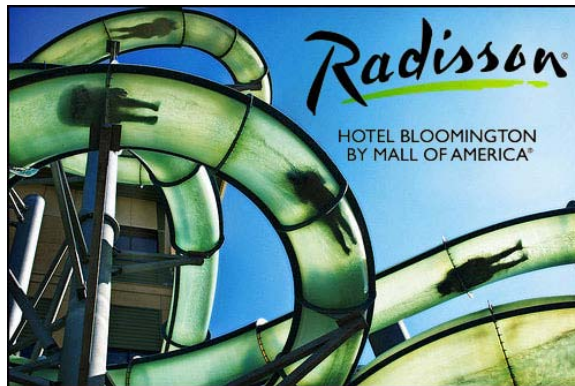
# Hospitality Energy Efficiency: Radisson Hotel & Water Park of America

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# Company Overview

- Hotel: Lodging for leisure and business travel
  - 403 rooms
  - 77% annual occupancy
  - 2.1 people/room
  - 305,800 people/year
- Water Park: Amusement for families and kids



# Motivations for Change

- Large annual utility bills
  - Energy efficiency directly impacts the profit margin
- Corporate social responsibility
  - Reduce environmental and health impacts on the local community

# Reasons for MnTAP Assistance

## Identify new opportunities for energy reduction

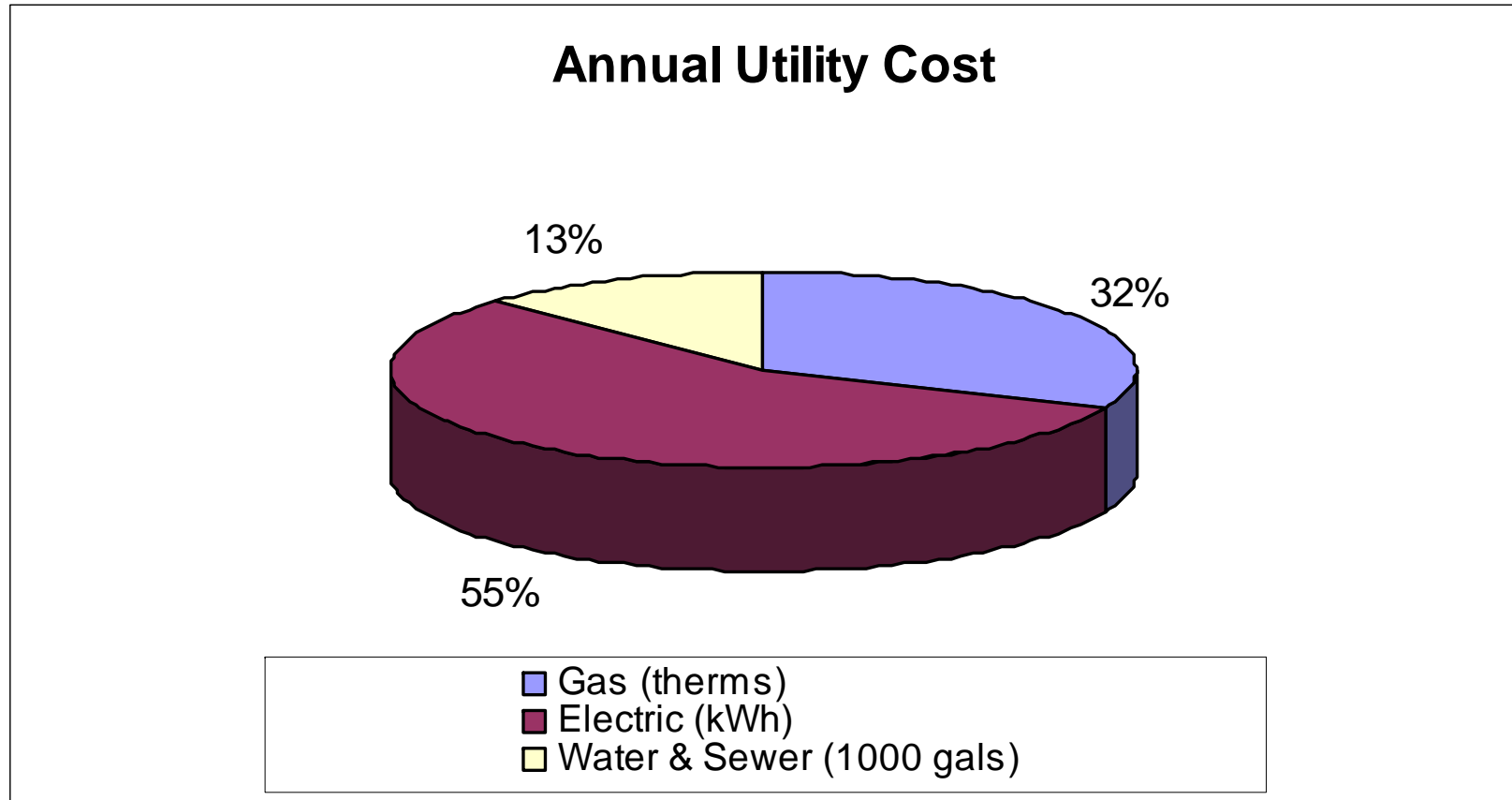
- Many energy conservation practices exist
  - Energy management system (EMS)
  - Variable frequency drives (VFDs) on water pump/motor combos
  - Compact florescent lighting (CFL) in guest hallways and rooms
  - Low flow shower and sink fixtures in guestrooms



# Approach

1. Analyzed utility bills to determine high energy processes
2. Interviewed staff regarding processes
  - Determined maintenance and efficiency practices
  - Identified gaps & “nuisances”
3. Researched and identified energy efficient opportunities

# Approach



# Public Lighting

- Background: Common areas use incandescent, halogen and CFL bulbs
- Problem: High electrical bills & constant maintenance with light bulb replacement



# Public Lighting

Implementation Cost	Annual Saving		Payback (months)	Status
	Dollars	kWh		
\$10,300	\$18,000	183,600	7 months*	Implementing 8/11

\*Includes Xcel rebate

## Solution: Upgrade current lighting

- LEDs have longer life, no mercury, and greater efficiency
- CFLs with lower watt & less mercury



# Energy Management System

- Background: EMS in place to control humidity, CO<sub>2</sub>, Chlorine, temperature, and pressure in the water park
- Problem:
  1. Energy Management System
    - altered settings
    - faulty sensors & control boards
  2. Building Damage
    - peeling paint
    - inability to adequately cool spaces

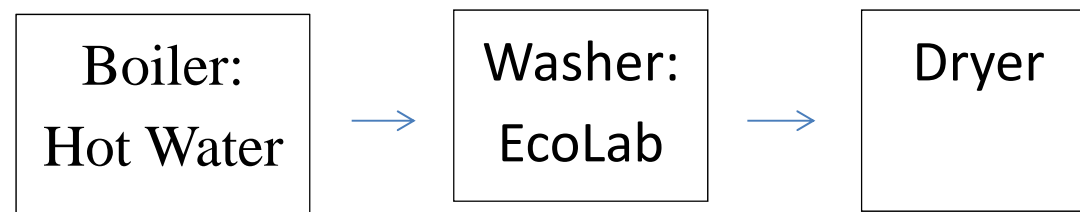
# Energy Management System

Implementation Costs	Annual Energy Savings		Annual Cost Savings	Payback Period (months)	Status
	Dth	kWh			
\$4,400	16,500	328,000	\$105,000	<1	Implementing 8/11

- Solution: Re-commission equipment using third party engineers

# Laundry Dry-Time

- Background: Processes before dryer influence dry-time
  - Boiler functionality
  - EcoLab test pilot
- Problem: Over-drying linens wastes natural gas



# Laundry Dry-Time

Adjust Dryer Time				
Implementation Cost	Annual Saving		Payback (months)	Status
	Dollars	Dth		
\$0	\$13,500	2,800	Immediate	Implemented 7/11

- Solution: Reduce overall dry time based on current laundry room conditions

# Boiler Tune-Ups (8)

- Background: Manufacturers recommend annual tuning
- Problem: Systems had not been serviced in approximately 3 years

# Boiler Tune-Up

One Time Boiler Tune Ups				
Implementation Cost	Annual Saving		Payback	Status
	Dollars	Dth		
\$3,170	\$30,000*	6,300*	2 months*	Fall 2011
*includes Centerpoint Energy rebate				
Annual Boiler Tune Ups				
Implementation Cost	Savings/minute reduced		Payback	Status
	Dollars	Dth		
Subject to annual change	\$3,000-\$7,000	700-1,500	~1 year	annual

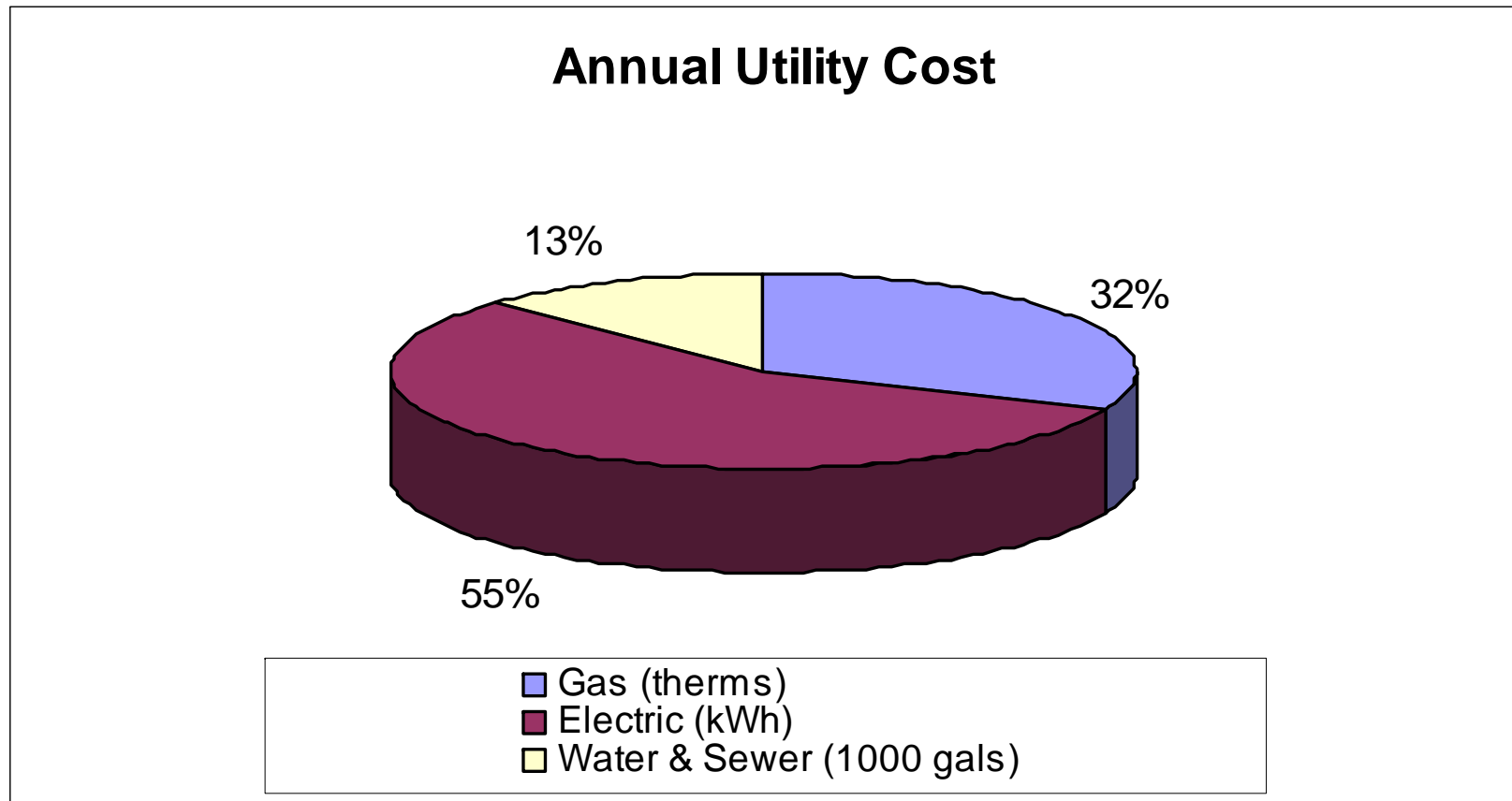
- Solution: Hire third party to perform tune-ups

# Presentation Summary

Project	Implementation Costs	Annual Energy Savings		Cost Savings	Payback
		Dth	kWh		
Lighting	\$10,300	-	183,600	\$18,000	7 mo
EMS	\$4,440	16,500	328,000	\$105,000	<1 mo
Dry Time	\$0	2,800	-	\$13,500	Immed.
Boilers	\$3,170	6,300	-	30,000*	<2 mo
<b>Total</b>	<b>\$17,910</b>	<b>25,600</b>	<b>511,600</b>	<b>\$166,500</b>	<b>&lt;2 mo</b>

- 29,500 ton reduction of CO<sub>2</sub>e emissions
- 13% reduction in annual utility costs

# Summary





# Additional Recommendations

Project	Implementation Costs	Annual Energy Savings		Cost Savings	Payback	Status
		Dth	kWh			
Ozone	\$190,680	455	-	\$60,900	~3 yr.	Recom.
Acid Wash	\$850	-	50,000	\$4,000	<3 mo.	Recom.
Room Lighting	Unknown	-	149,500	\$12,000	unknown	Recom.
<b>Total</b>	<b>\$209,570+</b>	<b>26,055</b>	<b>711,100</b>	<b>\$244,000</b>	<b>-</b>	<b>-</b>

- 29,650 ton reduction of CO<sub>2</sub>e emissions
- 18% reduction in annual utility costs

# Bonus: Framing Sustainability

- Employees
  - Cooling tower water quality
  - EMS basic controls
  - Recycling
- Guests
  - Marketing magnets

**Radisson**  
HOTEL BLOOMINGTON  
BY FALL OF AMERICA

**RECYCLING and SUSTAINABILITY**

- Up to 8 gallons of water per day per person can be saved by turning off the faucet while you brush your teeth in both the morning and evening. Another 4 gallons per person per day can be saved by shutting off the faucet while shaving. These small actions can save 3,500 gallons of water per person annually.
- Recycling newspaper, cardboard, glass, and metal can reduce carbon dioxide emissions by 850 pounds a year per household. Most refuse companies and many municipalities offer curbside recycling pick-up or drop-off.
- The average American uses 140-170 gallons of water per day. Shortening a shower by just 1 minute can save 2-4 gallons of water per shower. This can save over 500 gallons of water per person per year.
- Maintaining proper air pressure in vehicle tires saves \$0.08 per gallon of gasoline. The two most critical times of year to check tire pressure is during large temperature changes in fall and spring.
- If the average homeowner reduces residential electrical consumption by 15%, annual savings would be \$90 which is equivalent to 500 pounds of coal. Electrical consumption can easily be reduced by switching to LED lighting and many utility providers offer rebates for increasing lighting efficiency.
- A programmable thermostat can save as much as 20% on heating cost by automatically turning your heating system up or down to coincide with your daily routine.
- A household can save \$25 a month in the summer by raising the thermostat temperature from 72 to 78°F off.
- One drop per second from a leaky faucet wastes up to 400 gallons of water a year. Conserve water by fixing leaky faucets and remembering to turn the faucet completely off.
- Every time you turn off lights when they're not needed, you're saving energy and money. Keeping one 75 watt bulb off for one hour per day saves \$2.50 a year.
- One CFL can save \$55 and one LED can save \$65 over the life of the bulb. Just a couple bulbs around the house can make a noticeable reduction on the electrical bill.
- Watering the lawn early in the morning allows for greater moisture penetration into the soil, prevents water evaporation, and minimizes grass diseases which reduce the need for pesticides.
- Most fresh fruits and vegetables travel an average of 1,500 miles to reach Midwest grocery store shelves. Support your local farmer's market. Eating local food supports local communities, reduces transportation impacts, and often tastes better because they are allowed to ripen on the stem.
- "Phantom Energy" represents 5% of residential energy use and occurs when electrical devices draw power even when they are turned off. A surge protector or power strip is an easy strategy to preventing phantom energy use.

EVERY LITTLE BIT HELPS! START RECYCLING AND CONSERVING ENERGY TODAY!

Implementation Cost	Saving		Payback (months)	Status
	Dollars	lbs paper		
\$130	\$570	10,000	7 months*	Implemented

# Personal Benefits

- Time management
  - Scheduling
  - Multitasking
- Networking in a professional atmosphere
- Accomplishment
  - Find root problems

# Questions

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