

Resource Conservation Management

University Housing Operations
A Challenging Target Audience

Mission

- *To develop a department-wide energy and resource conservation plan for University Housing & Dining Services to reduce usage and decrease energy resource related expenditures. The plan addresses electricity, natural gas, steam, water, sewer and refuse. The safety, health and welfare of students and employees will not be compromised.*

The principal focus of RCM is to modify the behavior of the direct end users.

UHDS RCM Program

□ Operations

- Leader involvement & accountability
- Focus on energy intensive locations
- Build program identity, momentum and visibility
- Highlight personal communications
- Increase rewards and incentives
- Sustain ongoing evaluation and evolution of the awareness program
- Involve DOE – excellent resource

□ Residents

- Energy Awareness Week
- Hall Energy coordinators
- Energy Challenge
- Training Opportunities



RCM Specialist

- ❑ Conduct annual energy conservation training
- ❑ Monitor utility usage and track trends
- ❑ Conduct energy champion support meetings
- ❑ Coordinate with campus RCM activities



Annual Energy Conservation Training

- Presented by University Housing & Dining RCM Program Specialist, Residential Life Team Leadership & Oregon Department of Energy, School Program Specialist, Betty Merrill
- Resident Hall Directors
- Resident Assistants chosen to participate in the RCM program
- Distribute A Training Notebook for each University Housing & Dining Facility



SOLAR



WIND



HYDROPOWER



BIOMASS



GEO THERMAL



HYDROGEN

ONE PERSON CAN MAKE
A WORLD
OF DIFFERENCE

CREATE A FUTURE
where energy is
clean,
abundant,
reliable,
and
affordable



U.S. Department of Energy
Energy Efficiency and Renewable Energy
FEDERAL ENERGY MANAGEMENT PROGRAM
1-800-368-3732 www.eere.energy.gov/emp

Ten Ways to Be an



1. Lights Out When No One is There!

Make it your business to watch for lights left on in halls, meeting rooms, study areas, offices, etc. Reduce work area lighting. Do a little, save a lot!

2. Reduce Electricity: Only Use What You Need Right Now, Then Turn Everything Else Off!

Turn off computers, monitors, printers, scanners, lights, lamps, television, VCRs and DVDs, games, music, etc. when you are finished. Savings starts with you!

3. Switch Off Computers and Monitors at Night.

Only leave the computer on for remote access when you have a specific need to get to files or applications. *Monitor the Monitor*-when you are away turn off that 100 watt energy hog.

4. Use "Energy Star" Labeled Products.

Television, monitors, appliances, etc. that are designed to be energy efficient.

5. Use a Plug Strip With Smarts.

Office equipment and accessories such as printers, scanners, computer speakers, and rechargers use small transformers that continue to use energy even when the equipment is off. Use one switch to turn it all off. Plug strips are now available that combine a quality surge suppressor and an occupancy sensor to turn things off when no one is around.



This original artwork courtesy of the Federal Energy Management Program, Office of Energy Efficiency and Renewable Energy, U.S. Department of Energy.

OREGON STATE UNIVERSITY
UNIVERSITY HOUSING & DINING SERVICES

Earth Saver...



6. Avoid Using Electricity During Peak Demand Hours, 10:00 AM - 6:00 PM.

Avoid using clothes dryers during this time, because this drains the most electricity during the peak time and is the most expensive power we purchase.

7. Reduce Heating - Keep Your Doors and Windows Shut Tight.

Avoid propping open doors/windows. Dress for the winter and eat warm nutritional food. Report heating problems, so they can be corrected.

8. Exercise More Efficient Water Use.

Reduce shower times. Report any leaky faucets. Ask your RA Energy Champion about the November and February Energy Challenge in your hall!



9. Recycle and Reuse Cardboard, Bottles, Plastic, Cans and Paper.

Don't contaminate recycling areas and containers. Cut down on trash. Use *Waterless Hand Sanitizer* to save on using paper products.

10. Practice Community Support.

Work together – share resources, cut down on 2, 3 and 4 of the same appliances in the same living area. Double team printers and copiers. Use that on/off switch at night and on weekends. Watch out for each other when someone leaves a light on or a window open and is away.



Monitor utility usage and track trends

- The Black Hole
 - We never did that before
 - Change...
-
- DOE & Utility Manager (SMR)



Energy Champions

- Who
- What
- When
- How often
- Where

- Results

2003 RCM Program Theme

Thrifty Beaver

- **Symbolism: well constructed housing, resource conservation nut, loves to recycle, is industrious.**
- **He is an OSU Engineer, who builds a den that is insulated to the max and always searches to find best practices to manage his resources.**
- **Uses Energy Star Appliances**
- **Dresses warmly in sweaters, gloves and warm insulated shoes.**
- **Eats soup & other warm nutritional foods to stay healthy in winter.**
- **His cup says “refills for 25 cents.”**
- **He only has a light on in the room that he is occupying.**
- **He is a neat nut, always clean, recycles bottles, cans and cardboard.**

Wasteful Duck

- **A “*free loader*” who moves into someone else’s nest.**
- **Burned his insulation to stay warm and now doesn’t have any to build up the nest.**
- **He is a pack rat with trash everywhere, who never parts with anything.**
- **If he has visitors, he pushes everything in closets, under beds, out the back door or out the window.**
- **Plugs in everything and overloads the circuits all the time, using a mega plug.**
- **His electric meter is continuously spinning out of control.**
- **He uses wall heaters, wears t-shirts & shorts, sun glasses and sandals, while it is snowing all around him.**
- **Windows/doors are open, he keeps adding on to the nest with appliances to stay warm... more is better.**



THE THRIFTY BEAVER ENJOYS WARMTH AND COMFORT IN HIS ENERGY EFFICIENT DEN WHILE THE WASTEFUL DUCK FREEZES IN HIS NEST.

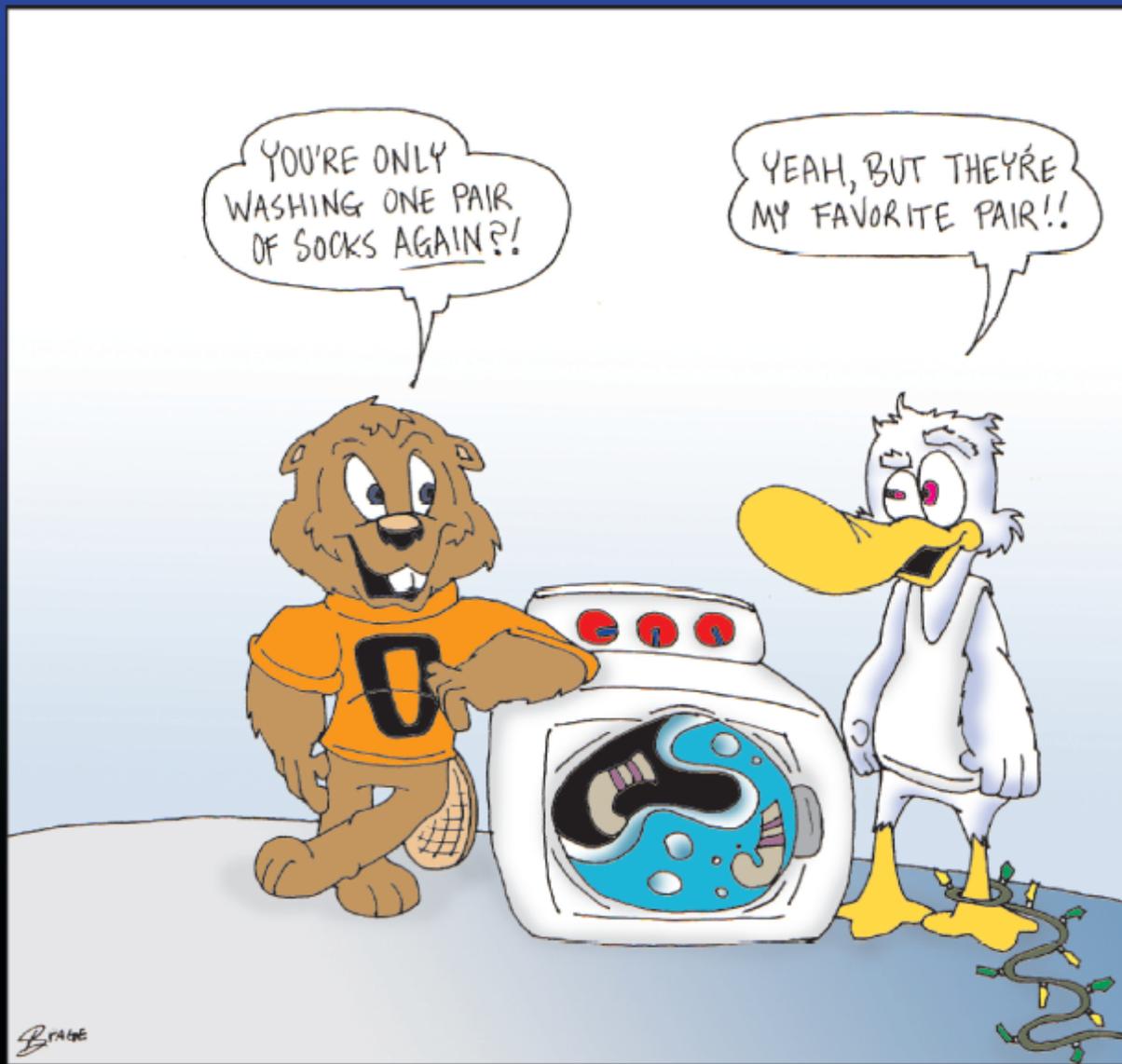
THE THRIFTY BEAVER

VS.

THE WASTEFUL DUCK



Who will win? You decide!



Washing a full load of clothes helps save both water and energy.



The Thrifty Beaver always puts his computer and monitor into standby mode to save energy.



The Thrifty Beaver always remembers to turn off the water when he doesn't need it.



The Wasteful Duck opens his window and runs the heater, while the Thrifty Beaver dresses warm to save heat and energy.

Stickers

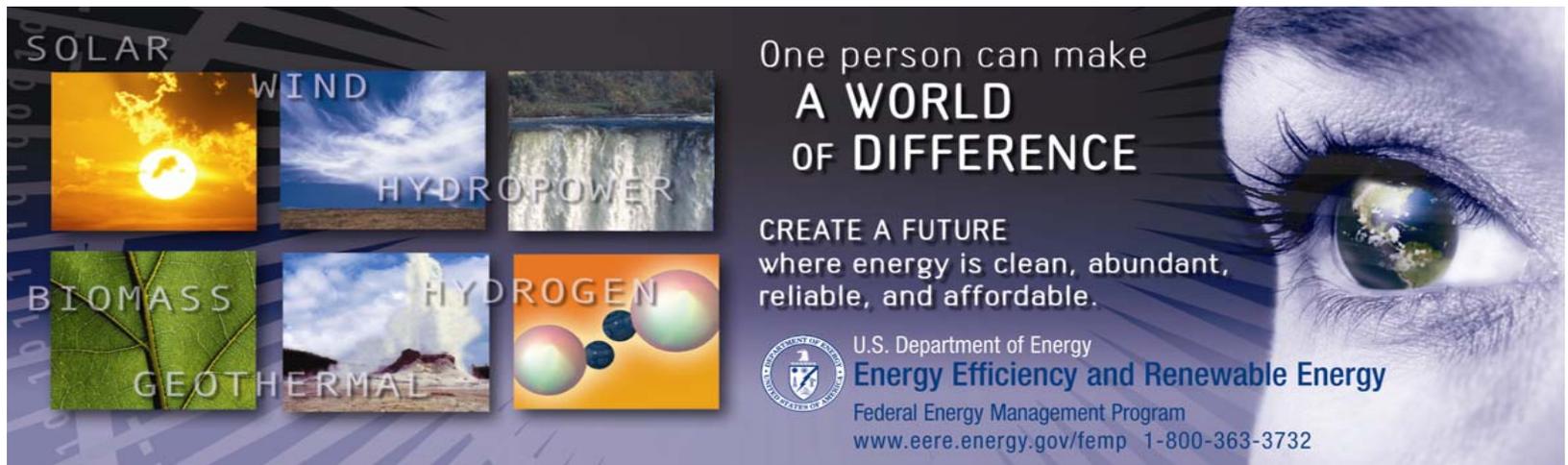


Got YA!



Beaver Badges for the Good Guys!

Book Markers



SOLAR

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Coordinate with Campus RCM activities

- Earth Week
- Sustainability Group
- Classroom Projects – Partnership w/
Academia



O&M Supervisor

- ❑ Energy Management System
- ❑ Lighting Program – Safety & Security
- ❑ Reliability Centered Maintenance
- ❑ Contract Support – Out Tasking
- ❑ Campus Energy Conservation Office
- ❑ State Energy Efficient Design Standards
- ❑ Coordinate Operational Requirements & Schedules



RCM Action Plan

1. Adopt the RCM Guidebook
2. Establish a RCM Team
3. Continuously develop RCM procedures
4. Continue Tracking Utility use and costs
5. Develop building use profiles
6. Perform targeted building audits
7. Implement low-cost/no-cost and behavioral measures
8. Develop plan for building equipment retrofits
9. Develop a public awareness campaign



Energy Conservation Actions

- Lighting Policy
- HVAC
- Doors & Windows
- Drop Ceilings and Ceiling Tiles
- Computers and Computer Equipment
- Office and Personal Equipment



Program Strategies

- ❑ Implementation and Measurement
- ❑ Improved Operations & Maintenance
- ❑ Life-Cycle, Cost-Effective Capital Investment
- ❑ Participation in innovative Public Utility Programs
- ❑ Energy Savings Performance Contracts
- ❑ Use of Energy Efficient Goods and Services
- ❑ Certifying new buildings for energy efficient design
- ❑ Using alternative, renewable and clean energy
- ❑ Water Conservation
- ❑ Balancing energy and environmental goals



The Energy Challenges

- Leadership Involvement and Facility Participation
 - UHDS Leadership
 - Resident Maintenance Staff
 - Custodial Staff
- Developing a resident awareness campaign each year
- Targeting peak resource usage months to rally students participation & enthusiasm and to accelerate the resident awareness campaign (Short window of opportunity)
- Achieving *Green Hall* objective using the *Top Ten* “How University Housing Residents Can Conserve Resources” list
- Offer short term incentives for residence hall *Energy Challenge*
- Long term incentives for residence halls demonstrating more than 10% savings - November through April



Low-Cost/No-Cost Water Conservation Strategies

Install low flow showerheads in all Residence Halls and Cooperatives.

Maintain/repair/replace valves and faucets for commodes, lavatories and showers.

Replace inefficient dish accumulator/conveyer systems with new efficient design.

Maintain/repair/replace hose bibs and landscape irrigation systems.

Develop a leak identification/control program



Waste Reduction Strategies

Coordinate for disposal of food waste from Dining Centers by means other than landfill.

Presently exploring composting or aerobic digestion through campus work group.

Replace paper towels in Residence Halls with waterless hand cleanser.

Investigating options with campus recycling coordinator.

Discussing options with Residence Hall energy conservation coordinators, Residence Life Leadership Team and Unit Leader groups.

Improve recycling program.

Working on marketing campaign and additional funding for campus recycling program.

Discussing possibilities and options with Residence Life Leadership Team and Unit Leader groups.

Types of food containers used by Dining Services for take-out orders.

Exploring different types of packaging materials.



Preventive/Predictive Maintenance Strategies

	<u>FY 2001</u>	<u>FY2002</u>
Insulate Steam Lines	150 lineal ft	200 lineal ft
Repair/replace Steam Traps	~ 5 Buildings	~ 5 Buildings
Repair/replace Steam Valves	~ 12 Valves	~ 12 Valves
Repair/replace Heat Exchangers	~ 4 Units	~ 4 Units
Repair/replace heating coils	7 Units	
Repair/replace refrigeration units	~ 3 Units	~ 3 Units
Maintain/repair/replace ventilation fan units	~ 15 Units	~ 15 Units
Maintain/repair/replace sump pumps	~ 5 each	~ 5 each
Maintain/repair/replace condensate pumps	~ 3 Units	*
Maintain/repair/replace interior light fixtures	~ 150 Units	~ 150 Units
Maintain/repair/replace exterior light fixtures	~ 40 Units	~ 40 Units

* Work with Facilities Services to identify and correct all condensate return problems.



Capital Project Strategies

Replace all single pane, aluminum frame windows with the tilt-turn, thermal pane, vinyl frame windows.

Replace all T-12 florescent light fixtures with T-8 or compact florescent.

Replace old absorption chillers with new, efficient centrifugal chiller units.

Replace old inefficient EMS system with the Siemens Apogee system.

Install motion sensor controlled light switches in common area rooms.

Replace old, failing heating systems with newer more efficient hot water systems.

Repair/replace membrane roof systems, wet insulation greatly increases heat loss.



Lessons Learned

- Corporate Culture
- Change - Persistence
- Repetition
- Customer Groups – Strategies
- Staff Turn-Over
- Operational Priorities

Corporate Culture

- “In reality, what management pays attention to and rewards is often the strongest indicator of the organization's culture. This is often quite different than the values it verbalizes or the ideals it strives for. The culture of an organization operates at both a conscious and unconscious level. Culture comprises the deeply rooted but often unconscious beliefs, values and norms shared by the members of the organization. Culture drives the organization and its actions. It is somewhat like "the operating system" of the organization. It guides how employees think, act and feel. It is dynamic and fluid, and it is never static.”

Corporate Culture / Organizational Culture: Understanding and Assessment

Richard Hagberg, Ph.D., Julie Heifetz, Ph.D.

Change & Persistence

- Change Happens. The “Cheese” keeps moving.
- Anticipate Change. Get ready for “the cheese” to move &
- Enjoy Change. Savor the adventure and enjoy the taste of the new “cheese!”
- *“Press on: nothing in the world can take the place of perseverance. Talent will not; nothing is more common than unsuccessful men with talent. Genius will not; unrewarded genius is almost a proverb. Education will not; the world is full of educated derelicts. Persistence and determination alone are omnipotent.”*

Calvin Coolidge

Repetition

- It has been said that repetition is "the mother of all learning." Do something enough times and eventually you'll get it no matter how hard-headed you are! You can actually get long-term memory by just doing the same thing enough times.
- The average person needs at least 15 repetitions of the same thing to begin to store it into long-term memory. That means that every new concept that you learn should be "cycled" through your brain at least 15 times if you want to remember it. If the concept is not truly stored in long-term memory, you will have trouble recalling it again after two weeks.
- You can do 20 repetitions of something over ten minutes or you can do 20 repetitions over five days. If you do it over five days it will store more easily into long-term memory than if you do it in ten minutes.
- Information is stored into long-term memory most easily in manageable bits and pieces. You don't want to try to "cram" things into long-term memory. It won't go there, it will go into short-term memory.

The Four Secrets to Long Term Retention...

By: Ricardo González, Founder and CEO of Bilingual America



Customer Groups

- Residence Halls
 - Mostly Freshmen, here for one year
- Cooperative Houses
 - Pay their own utilities, cohesive group
- Student Family Housing
- Dining Centers
 - High turn-over
- Conferences
 - Customer concerns
- Staff
 - Change & Corporate Culture shift



Staff Turn-Over

- High turn-over in Residence Life and Dining
- University culture
- Buy-in
- Training
- Accountability



Operational Priorities

- Limited funds and resources
- Doing more with less
- University culture
- Accountability
- Passion
 - Living/Learning
 - Dining

What Works?

- Must Have:
 - Leadership buy-in (support from the top & \$'s)
 - Shift in Corporate Culture (any shift is good)
 - Some attempts under your belt (CHANGE is slow)
- Small group training
 - Personalize training / find interested students
 - Staff have too much on their plate
 - Need an enforcer / champion in Residence Life
- Find individuals with talent, they are out there
- It's Fun and they see results

Summary

- Need to have a plan
- Demonstrate a need (save \$'s)
- Change the culture
- Be patient and persistent ... accept little steps & don't get discouraged
- Operational requirements will always take priority, you only get partial buy-in.
Make RCM a part of required operations
- Focus on your target audience (limited time – most bang for the buck)
- Get the appropriate Champions for your target audience
 - Prisoners – Vacationers – Players
- Marketing is very important... (sell the corporate culture shift)
- Find people who have a passion for the program
- Make it worthwhile for others to participate (rewards)
- Get as much outside help as possible * ... watch out for personal agendas
- Find a way to make it fun and interesting
- Next year you are going to start all over (just like the movie Groundhog Day)