


School Energy Information

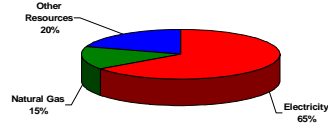
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Typical Energy Costs

- Typical school districts spend \$2 to \$3 million per year
- Energy is about \$1.00 /sq. ft.
- RCM program targets a 5% reduction per year
 - For a school district, a 5% reduction in total energy can be enough savings to power a whole school



PUGET SOUND ENERGY

Energy Conservation Activities

RCM CHECKLIST

Summer Shutdown for Staff

- HVAC Systems**
- Remove all materials from heating vents.
- If you are responsible for your area thermostat, turn it down all the way or to OFF.
- Take all plants and animals home.
- If you have a fan or air cleaner, take them home.
- Lighting**
- Turn off all lights in your area, including any display or task lighting.
- Water**
- Check that faucets in your classrooms, restrooms, and break rooms to make sure they are turned off tightly.
- Report any leaks to your head custodian.
- Windows/Doors**
- Make sure all windows and doors in your area are shut tight.
- Close your drapes and/or blinds.
- Power Safety**
- Turn off and/or unplug all unnecessary electric appliances (copiers, computers, monitors, printers, scanners, TVs, VCRs, fax machines, radios, instant heaters, etc.).
- Empty, turn off, and unplug personal refrigerators. Take the refrigerator and items home with you.

End of Day Shutdown Checked for the Classroom

- Heating System**
- Heat is turned off or set down to 50°F.
- Portable heaters are unplugged.
- Lighting**
- All overhead and task lighting turned off.
- All lights in the classroom and hallway turned off.
- Window Blinds**
- Make sure all windows and doors are shut tight.
- Drapes and/or blinds are closed.
- Power Safety**
- All computers and monitors have been turned off.
- All appliance (copiers, scanners, TVs, VCRs, radios, etc.) turned off or unplugged.
- Water**
- Faucets are turned off tightly. Report any leaks to your head custodian.

Thank You!
Have a nice evening!

Energy Saving Opportunities

- **Off-Hour Opportunities**
 - First round savings when building is unoccupied
- **Unnecessary Lighting**
 - Classroom
 - Common Areas
 - Display
 - Exterior
- **Computers and Office Equipment**
 - Computers
 - Monitors
 - Printers
 - Scanners
- **Door and Window Operation**
 - Blinds closed at night
 - Close doors and windows
 - Weatherstripping
- **Water Usage**
 - Temperatures
 - Aerators
- **Heating, Ventilation & Air Conditioning (HVAC) Systems**
 - Temperature Settings
 - System Scheduling
 - Ventilation

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How to Save? Focus on Simple First

1 Turn off lights in unoccupied rooms
FACT: leaving the lights on in a room that is not being used can cost more than \$20 a year.

2 Turn off office equipment at the end of each day
FACT: one computer can use as much as 100 watts of power. If you have 10 computers, that's 10,000 watts. If you leave them on for 24 hours a day, that's 240,000 watts. That's a lot of energy!

3 Use windows
FACT: windows are the best way to let in natural light and fresh air. They also let in heat and cold. Make sure your windows are weatherstripped and that you have curtains or blinds to help control the temperature.

4 Take your personal responsibility
FACT: a single person can save 100 watts of energy. If you have 10 people, that's 1,000 watts. That's a lot of energy!

5 Turn off energy saving devices
FACT: energy saving devices like power strips and surge protectors can save you a lot of money.

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Locate & Evaluate Energy-Using Systems

- Lighting
- Plug Loads
- Building Envelope
- HVAC Locate & Evaluate Energy-Using Systems

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Classroom Lighting

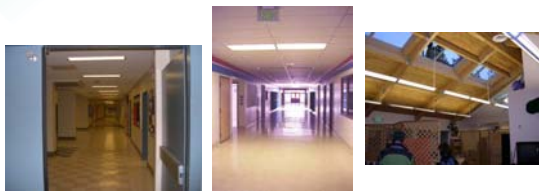
- Check if they are off when you arrive
- Turn on only enough lighting to do the job
- Turn them off when you leave the room



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Common Area Lighting

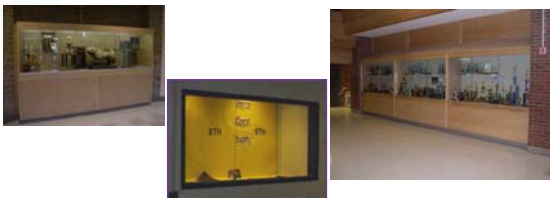
- Reduced levels when classes are out
- Turn off when you leave the area
- Report lamp and ballast failures



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Display Case Lighting

- Should be off during non-school hours at a minimum
- Potential to be off or reduced all times unless local events are being held at school






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Lighting Controls


- Occupancy sensors
- Photo sensors
- Timers
- Combination switches



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Plug Loads

- **Computers**
 - Activate power management, shut down after hours
- **Printers / Scanners**
 - Shut down after hours, and when not needed
- **Personal Equipment:** heaters, coffee pots, refrigerators
 - Minimize use, check w/ fire codes, insurance agents
- **Specify energy efficiency in purchasing equipment**
 - Energy Star, CEE (Consortium for Energy Efficiency)



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Building Envelope


- Keep doors & windows closed when HVAC system is operating
- Repair / replace missing panes, weather-stripping
- Maintain / improve insulation



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Windows

- At the end of the day, close drapes, blinds, and shades to reduce heat loss at night, weekends and holidays.



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Weather-stripping

- Exterior Doors
- Classroom Windows
- Damage or missing seals











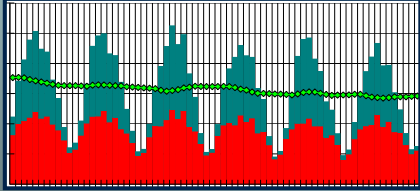

HVAC Systems

Maintenance/facilities staff is key to success ✓

- Unit Ventilator obstructions to air flow
- Temperature settings
- Night set-back temperatures
- Ventilation dampers closed

Benchmarking



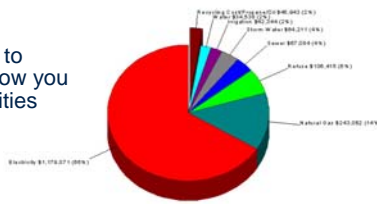
"You can't manage what you can't measure"

Benchmarks

- Baseline measurement used to compare performance of facilities
- Comparisons commonly made:
 - Facility's own historical performance
 - Like facilities to each other
 - Across your organization
- Describes efficiency using a common unit
 - Energy
 - All energy fuels typically converted to BTU's
 - Energy Use Index (EUI) = kBtu / square foot

Establishing Your Target

- Where would you focus to achieve the most?
 - Energy is typically the largest share of utility costs
 - Potential for savings?
- Important for management to understand how you set your priorities




PSE RCM Program



"One person can impact millions of square feet"


The RCM Concept

- Dedicate staff to manage the resources used in an organization's facilities
- Focus on **occupant behavior** and **building operations and maintenance**
- Savings across all resources:
 - Electricity □ Water & Sewer
 - Electrical demand □ Irrigation
 - Natural gas □ Garbage
 - Fuel oil □ Recycling
- Money saved pays for cost of position




RCM Grant Package

- 3-year Memorandum of Agreement (MOU)
- Suite of services based on customer need and cost-effective savings for PSE
 - Resource accounting software
 - 3 years of database maintenance
 - Downloads of PSE data
 - Startup and performance grants
 - Support for program development
 - Training for RCM and other staff



RCM: King County School Districts Involved

- Auburn
- Bellevue
- Federal Way
- Highline
- Issaquah
- Kent
- Lake Washington
- Mercer Island
- North Shore
- Renton
- Tukwila
- Vashon



Success in Energy Conservation

Additional strategies...

- **Continual evaluation** of past performance
- **Build strong network** of people to engage
- **Integrate resource conservation into daily operations!** ☺



KSD Real-Time Resource Consumption

	Total Use	Cost
kWh of electricity used	14,624,573	\$1,084,123.50
Cubic feet of natural gas used	49,398,164	\$1,492,262.25
Gallons of water used	14,402,303	\$129,763.89
Gallons of garbage produced	1,526,813	\$106,763.89
Total Cost		\$1,812,853.53

(cumulative - since December 31st, 2008)

• [Click here to view ending total usage for the 2008/2009 fiscal year](#)



Thanks and good luck!

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