

Greening Your Home: Rehab - Greening Electricity and Water

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Presented by
the **Nature Center**
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and
Environmental Health
Watch



Greening Your Home: Rehab

- Green or sustainable building means construction or rehab of our living spaces so there is little or no harm done
 - to the natural environment,
 - to the workers who extract the raw materials and manufacture the product,
 - to the health of the residents.

Buildings that Connect People to Nature

- Biophilia which means “love for nature”; human beings have an innate and evolutionarily based affinity for nature.
- It is the connections that human beings subconsciously seek with the rest of life.
- We connect to nature via our windows, our landscape, our gardens, our buildings.
- **The Biophilia Hypothesis - Designing and Understanding the Human-Nature Connection**, Island Press, 2005

Greening Electricity

- The Electricity Dilemma:
 - electricity cannot be stored,
 - so it is generated based on demand,
 - but that is complicated by many factors:

Electricity Crisis Points

- There are increasing incidences of blackouts because of greater demand than capacity.
- Deterioration of the grid system and infrastructure requires expensive repair/replacement.

Electricity Crisis Points

- Coal burning power plants are contributing to global warming and deposit of mercury on surface water.
- Nuclear power plants are at risk of failure when not effectively managed and what to do with the nuclear waste is a problem.

Electricity Crisis Points

- There is a tendency to rush to increase supply before seriously considering demonstrable conservation measures.
- There is continuing debate over electromagnetic fields and potential harm to humans/animals.

Electricity Crisis Points

- Coal burning plants have enormous ash waste (some fly ash can be used in concrete).
- There is a growing need for the political will to use alternate energy sources like the sun and wind.

How Residential Demand Contributes to the Crisis

- There is more and more housing stock and bigger and bigger units.
- There are still few requirements to create and use more efficient electrical fixtures, appliances and equipment.

How Residential Demand Contributes To The Crisis

- There are an increasing number of electronic products that have phantom loads.
- There is an increase in luxury or recreational equipment which require high levels of electricity because they are continually heating or lighting:

Luxury and recreational equipment cont....

- Hot tubs
- Swimming pools
- Driveway heaters
- Aquariums
- Water beds

Understanding Our Electric Bill

- Watts: amount of power used
- Kilowatt: 1,000 watts
- Kilowatt Hours: amount of power (kilowatts) used in an hour. The utility bills on the basis of kilowatt hours.

Understanding Our Electric Bill

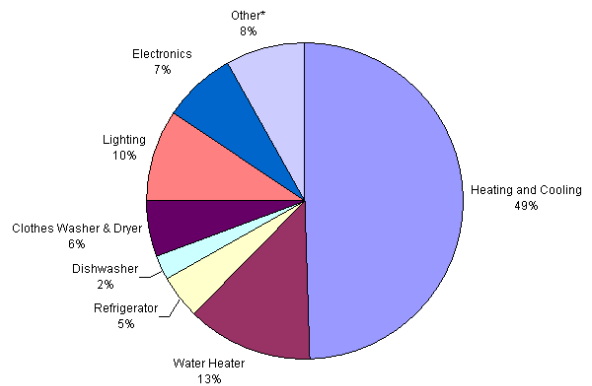
- Price per kilowatt: your bill gives a price per kilowatt, but the real price per kilowatt includes additional charges which doubles the actual cost. These include:

Charges for Electrical Service

- Customer charge
- Delivery Charge
- Transition Charge
- Generation Related Component
- Non-basic charges: added service programs (insurance for repairs).

How much electricity do we actually use?

- The pie chart that follows gives an average view of how our electrical usage stacks up against our other fuel costs.



What is the actual cost of operation of our appliances or other electrical equipment?

- A Kill A Watt electricity monitor can tell you exactly what a particular appliance is costing to operate.



Make A Friend of the Energy Star Program



- One of the most helpful websites you can visit for information related to energy savings and effective use of equipment requiring electricity and/or water.

www.energystar.gov

Use Energy Efficient Equipment and Use Them Effectively



- Lighting:
-identify most used lights in your house and install CFL's in each one.

Space Cooling

- Select most efficient unit.
- SEER rating of 13 or more is good.



Space Heating



- Use most efficient and heat only immediate space required.



Electronic Equipment

- Attach all equipment with phantom loads (still draws power when turned off) to a power strip that can be turned off.



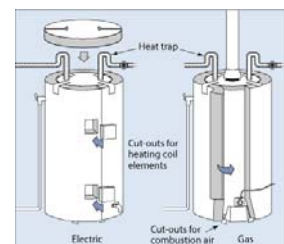
Cleaning Appliances



- Purchase most efficient you can afford.
- Front end washers are most efficient and use much less water.

Water Heating

- Insulating older water heaters can save energy costs.



Kitchen Appliances



- Purchase most efficient refrigerator you can afford.
- Recycle old ones as they are too expensive to use.

Moisture Control Equipment



- Dehumidifiers can be expensive to operate.
- Size it properly and set it to address your particular moisture condition.

Some additional electric resources:

- Home Energy Briefs, Rocky Mountain Institute, www.rmi.org.
- Consumer Guide To Home Energy Savings, American Council for Energy Efficient Economy www.acee.org

Alternative Energy Options

- Do solar panels on our roofs for electricity generation or water heating make sense for our climate? www.rePOWERsolutions.com.
- What progress is being made on electricity generation with wind turbines? www.windustrious.org

Greening Water Usage

- Drought conditions in some parts of the country (most recently Atlanta region) have stressed water supplies to the limit.
- Water/sewer infrastructure in older cities can no longer handle all the water/sewage/storm water required.

Greening Water Usage

- The debate over water quality and the chemicals used in our water to protect us continues.
- More and more persons buy bottled water to drink.
 - large amount of embedded energy from manufacture and transport
 - disposal problems

Conserving Water

- Two government regulations have dramatically reduced water usage:
 - 1.6 gallon per flush toilets
 - 2.5 gallon/min faucet controls

Conserving Water: Toilets



- Dual flush toilet uses only
 - 0.8 gal of water for liquid waste
 - 1.6 gal. for solid waste
- Dramatic reduction in water usage.

Conserving Water: showers



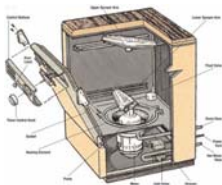
- There is a 2.5 gal/min limit on showerheads,
- but plumbing manufacturers now producing multi-head shower units.

Conserving water: clothes washers

- Horizontal axis clothes washers use much less water.
- Use load size control on clothes washers to reduce water usage.



Conserving Water: Dishwashers



- Buy one that requires low amount of water for each use.
- But one with a "dishes now clean" sensor.

Conserving Water

- Sometimes if water pressure is very high, water is wasted.
- Installing a water pressure reducer can eliminate this problem.



Conserving Water: speeding hot water to taps



- An on-demand water circulation device that speeds the availability of hot water to tap. (see GreenSpec for further info).

Conserving Water

- (see Greening Home Maintenance for resident behaviors that can affect water conservation positively or negatively.)

Water Quality

- Millions of people now drink bottled water because of uncertainties regarding drinking water from our faucets.
- There is concern about pollutants from rivers and lakes and the chemicals used to treat the water. Now there is even concern about the quality of water in bottled water.

Water Quality: contaminated water pipes

- Early copper plumbing used solder with lead to seal seams.
- Some faucets are still being made with some lead in the metals.
- Lead service lines are found in many older homes.

Water Quality: contaminated water pipes

- PVC water lines use adhesives to join piping that can get into the water and the piping itself may release some of its content into the water.
- PVC may include fire retardants that can leach into the water.

Water Quality: Contaminated Water Pipes

- The gradual development of mineral films on the interior of water lines serves as a protection from some of the potential contaminants just described.

Water Quality: new water piping



- A new water piping used in Europe for more than 30 years is now available and does not leach into water. "Aquatherm"

Water Quality: Residential Filtration

- In-house filter systems can be effective at reducing odors and tastes from water,
- but if not regularly maintained, can be a source of problems as organisms grow on/in them and affect the water.

Water Quality

- One of the more effective in-house filtration systems is the reverse-osmosis system, which is usually installed at primary use points like the kitchen and/or bathroom sinks.

Water Quality: Reverse Osmosis –'s



- Produces limited amount of water per day
- Wastes some water in process of creating filtered water.

Water Quality: Resources

- www.epa.gov/safewater
- www.awwa.org (consumer water center)
- www.clevelandwater.com