



GREENING YOUR NEW HOME

Simple tips for saving water, gas & electricity

**City of Minneapolis
Regulatory Services
Construction Code Services**

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Agenda

- Introductions
- Energy & Water
- Humidity Control
- Break with the Green Institute
- Heating & Cooling
- Appliances
- Questions



Energy & Water

- How to read your water bill
- Water ~ \$3.05/Unit
 - One Unit = 748 Gallons
- Sewer ~ \$2.93/Unit
 - Unit calculation based on ave. winter water use
- Storm Water Fee ~ 3 varying fees
 - Depends on lot size and amount of "hard" surface



Energy & Water cont...

- Ave. USA water use per day/person = 140-170 gallons
 - In your home = 74 gallons/day
- Showers = 18%
 - 10 minutes = 40 gallons (conventional)
 - Bathtub = 36-60 gallons
- Toilets = 20%
 - Pre-1980 = 5-7 gallons/flush
 - Post 1980 = 3.5 gallons/flush
 - 1994 regulation = 1.6 gallons/flush
- Brushing your teeth = 5 gallons
- Automatic Dishwasher = 10-20 gallons/load
- Hand-washing dishes = 20+ gallons



Energy & Water cont...

- Water wasted through leaks = 8%
- Minneapolis cost per 10 gallons of water = 8 cents
 - Supply and sewer combined
- Basic storm sewer cost for ave. single family home = \$10.77/month
 - (<1530 sq ft impervious surface)



Energy & Water cont...

Area	Description	Reduction %
Kitchen Sink	Install an aerator	25-40%
Bathroom Shower	Install a low-flow shower head (\$5-\$80)	30-60%
Toilet	Ultra low flush-gravity toilet (\$100+)	50%
Toilet	Install a dual flush mechanism (\$30) or a dual-flush toilet (\$175+)	60%
Toilet	Pressure assisted flush (\$150+)	65%
Washing Machine	Front loading washing machines (\$700_)	40-75%



Energy & Water cont...

- Resources:
 - Showerheads:
<http://www.energyhawk.com/waterheater/waterheater7.php>
 - Toilets:
<http://www.mwra.com/publications/ulftoilets.pdf>
- More on fixtures, ratings and water management:
 - Water fixtures product information:
<http://www.epa.gov/WaterSense/pp/index.htm>
 - Water management plans -
<http://www1.eere.energy.gov/femp/pdfs/29267-6.1.pdf>
 - Energy Star info
http://www.energystar.gov/index.cfm?fuseaction=find_a_product



Energy & Water: Outside the Home

- Plant **climate-hardy** grasses & gardens
 - <http://www.extension.umn.edu/distribution/horticulture/DG6065.html>
- Use a rain barrel
 - <http://www.ci.minneapolis.mn.us/stormwater/green-initiatives/rain-barrel.asp>
- Place mulch



Energy & Water: Outside the Home

- Implement a Storm Water management plan
- Storm Water Credit Systems provide:
 - Up to 50% reduction in your fee that addresses quality
 - 50-100% reduction in your fee that addresses quantity
- **Minneapolis Storm Water Credit:**
 - www.ci.minneapolis.mn.us/stormwater/fee/



Energy & Water: Outside the Home

- Minimize storm water runoff
 - Pavements
 - Roofs
 - Rain Gardens
- Green Roofs
 - City of Minneapolis:
<http://www.ci.minneapolis.mn.us/ccs/greenbuilding.asp>
 - State of Minnesota:
<http://www.state.mn.us/portal/mn/jsp/home.do?agency=Energy>



Humidity Control

- Signs of too much humidity
 - Wet windows & walls
 - Wet pipes & metal surfaces
 - Mold or mildew smell or visible
 - Peeling paint or stains on surfaces



Humidity Control cont...

- Sources of humidity
 - People (breathing, perspiring, etc)
 - Cooking
 - Bathing & clothes drying
 - Pets
 - Improperly installed exhaust fans
 - Plumbing leaks

Excess moisture combined with headaches and sore throats may indicate a hazardous situation



Humidity Control cont...

- Sources of humidity – outside the home
 - Poor drainage
 - Leakage from roof or windows
 - High humidity in outdoor air (summer)



Humidity Control cont...

- Controlling the humidity in your home:
 - Use exhaust fans when cooking or bathing
 - Exhaust fans are vented all the way outside
 - Clothes dryer is vented to outside
 - Keep pots covered when cooking liquids
 - Limit the number of houseplants
 - Limit the number of aquariums and use covered ones
 - Fix any plumbing leaks
 - Make sure the ground outside slopes away from the house and that gutter downspouts discharge water from the roof away from the house
 - Use an air conditioner or dehumidifier in the summer as needed to reduce humidity (and temperature)



Good Winter Habits

- Set your thermostat back
- Lock all your windows
- Forced Air Furnace Tips
- Boiler-Radiators or Baseboards Tips



Good Winter Habits

- Change battery in smoke alarm
- Install CO detector
- Change battery in CO detector
- Never heat with gas over or stove top burners
- Using an electric heater in an emergency
- Keeping the pipes from freezing



Flue gasses and CO

- Furnaces, boilers and water heaters are the appliances you should pay special attention to in the fall when the house is going to be sealed up for the winter. A cracked heat exchanger or a back-drafting flue can bring products of combustion into your home.



Hazard signs to watch for...

- Watch for **light brownish-orange colored stains at hot air supply registers (furnaces)**. If there is a register on the furnace plenum - check it for staining as well. This can be an indicator of a cracked heat exchanger which means the gases from the flames are leaking through into the plenum and then to the supply ducts rather than all going up the chimney.
- Note: Generally, when the heat exchanger cracks on a boiler you get water on the floor.



Hazard signs to watch for...

- Noticeably **high humidity** in the home, but accompanied by **irritated eyes or sore throats and possibly nose bleeds** (especially prevalent in children). Flue gasses are slightly acidic so the humidity will NOT improve the comfort of your throats and noses the way using a humidifier might. Even though there is excessive condensation the air will 'feel' dry.
- **Headaches** that are most prevalent when you've been in the house several hours and when it's extra cold out with the furnace running a lot. Typically this happens over night. You would tend to feel better upon leaving the house.



Hazard signs to watch for...

- **Lethargy (tiredness)** that is worst when you've been in the house several hours and when it's extra cold out with the furnace running a lot. Typically this happens over night. You would tend to feel better upon leaving the house.
- Finding little (or bigger) piles of crumbly crud that looks sort of like coffee grounds on the top of the water heater or by the diverter on an atmospherically* vented heating system is a sign of stuff coming down the chimney rather than going up.



Worst Case Draft Testing

- A lot of newer and more efficient heating systems have induced draft or power draft exhaust systems these may vent up the chimney or through a side wall and this test does not apply.
- This is for furnaces, boilers and water heaters that are **atmospherically** vented. You can recognize these by the open draft diverter where the flue going to the chimney is connected to the combustion system or by an open box-diverter which is in the flue part way to the chimney.
- Turn on your exhaust fans (bathrooms and kitchen) and exhausting appliances (dryer and possibly oven fan).
 - Note- for now do not do this test with a fire going in a fireplace or woodstove and make sure the damper of either one is closed.
- First turn the appliance ON (water heater - run hot water or heating system - turn up the thermostat) Wait two minutes before doing the test.
- Then go to the draft diverter on the heating system or water heater, light a match then blow it out. Hold the smoking match about 2 inches away from the diverter and watch which direction the smoke goes.
- It should be drawn onto the diverter and **up** the chimney.
- If the smoke from the match is being 'pushed' away from the diverter and into the room it is a sign of active back-drafting.
- The exhaust fans in your house will draw replacement air though the path of least resistance.



Call a professional if...

- Your CO detector goes off
- In case of Back-Drafting
- If you have ALL of the signs of fumes (symptoms)



Electric bills & savings

- Turn off lights when not needed
- Use efficient light bulbs
 - LED lights are the most efficient
 - May last 30 times longer; \$30 each; no mercury
 - Compact fluorescents use 75% less energy than incandescent
 - May last 10 times longer; \$4 each; have a small amount of mercury



Electric bills & savings cont...

- Precautions when using CFL's
- Cleaning up a broken fluorescent bulb
 - Before clean up: Air out the room
 - Carefully scoop up glass fragments and place them in a glass jar with a metal lid or sealed plastic bag
 - Use sticky tape (duct tape) to pick up remaining pieces
 - Wipe up the area with a damp paper towel; add to plastic bag or jar
 - Do not use vacuum or broom

Compact Fluorescent Lights (CFL) can now be recycled at Menard's or Home Depot. Only CFL are accepted. It is illegal to throw CFL's in the garbage due to the presence of a small amount of mercury.



Phantom Load

- Standby power
- DVD players, stereos, microwaves, phone chargers, TV's
- Ave. American home has 40 of these products = about 10% of energy use
- May use more energy turned "OFF" than "ON"



Phantom Load cont...

- What You Can Do
 - Unplug devices
 - Use a power strip or a Smart Strip
 - Measure with a kilowatt meter to determine biggest users
 - Replace energy hungry devices with newer, low standby power Energy Star models



Energy Star Appliances

- Can save families about 1/3 of their energy bill
- Saves greenhouse gas emissions
- Look for ones that have ENERGY Star
 - EPA and US Department of Energy guidelines
- Not all appliances qualify for tax credit, but long term will save you \$



Financial Resources

- Federal Tax Credits
 - Energy efficiency credits
 - Equipment and products eligible for credits include:
 - Heating, Ventilation & Air Conditioning (HVAC) systems
 - Insulation
 - Roofs
 - Windows and doors



Financial Resources

- For information on tax credits and rebates:
 - <http://www.energystar.gov/index.cfm?c=home.index>
 - <http://www.state.mn.us/portal/mn/jsp/home.do?agency=Energy>
 - Or call the Minnesota Office of Energy Security at 651-296-5175
- Utility rebates
 - Center Point 612-321-3011
 - Xcel Energy 1-800-895-4999

Questions?

