

Home Remedy

2012/2013



Energy and Water Conservation Manual

Instructor Training Manual

An educational program designed to increase community conservation awareness. This program will teach community members a plethora of no to low cost ways to save hundreds of dollars per year while saving the environment at the same time!



Southwest Minnesota
Housing Partnership



WELCOME TO HOME REMEDY

Home Remedy is an energy and water conservation education and demonstration program designed to increase awareness of environmental concerns and teach community members conservation practices they can use at home.

Concepts that will be brought into the demonstration:

- Personal contribution of wasting resources in the home
- Strategies and initiatives that change habits and behaviors
- Low-cost to no-cost solutions that will decrease consumption and waste
- A room-by-room guide with free to low cost techniques and technologies
- A how-to knowledge of reading utility bills
- Resources for more information and regional rebate programs

This manual will contain symbols indicating actions for the instructor. The key is as follows:

 Hands-On Demonstration

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Section I: INTRODUCTION TO HOME REMEDY

Water and energy are cheap. A gallon of water costs less than a penny out of the faucet and to power most of our devices it could cost pennies a day. When the utility bill comes in it sometimes it can seem outrageous that energy and water can be so cheap but our bills are so high. Water and energy consumption adds up quickly when habits and outdated or neglected facilities and appliances are in play.

Home Remedy is a course designed to show the consumer how simple behavior changes can conserve resources and reduce their monthly payments on their utility bills. Simple habit changes such as shortening the length of a shower and turning off the lights when a room is empty when exercised as a household makes a few hundred dollar difference in your utilities every year. The more habits changed and the more people on board in your household, the more your savings will be. Habits are free but can save a lot of money.

This course also encourages low-cost technology changes that can supplement your habit changes and increase savings even more. Comfort does not have to be sacrificed. For example when making the switch to a low-flow shower head, you can end up with a shower that you wouldn't believe is using half the water of a standard showerhead or you could end up with a gym locker shower that feels like needles or a shower without the satisfaction of feeling the water like you did with the standard shower. Comparison shopping is incredibly important when making new purchases and this is something that consumers must be reminded of. However, increased upfront costs of the low-cost changes often are made up in a matter of months, then its money in the pocket savings.

Consumers should keep in mind that when making capital investments in appliances and fixtures, the purchase of energy and water efficient appliances is optimal for keeping monthly costs down. However, this demonstration is a way to show people that it can be free, cheap and easy to save money and you don't have to sacrifice your comfort to do it.

In order to keep participants thinking about saving by conserving they need to know how to track their bills. Included in this manual is a lesson in understanding how to read your utility bill. We will show consumers how to make sense of all of the numbers that show up on a utility bill. Then we will demonstrate that through simple math each device in the household can be broken down into hourly rates. When consumers can visualize how much it costs to run a device per hour it will help clarify how every little bit adds up to a whole lot.

The underlying benefit to us all is that when communities work together on conservation, we alleviate the stress on our natural resources. This will ensure that there is enough to go around for us all and for future generations. We can demonstrate this to consumers by showing them that saving now means keeping costs down today and in the future.

Section II: WATER CONSERVATION DEMONSTRATION

This demonstration will present a variety of water saving tips that homeowners and renters can use immediately at no cost and some at low-cost. This demonstration will give participants tips that get them started on thinking about ways in which their habits can be adjusted to minimize their water consumption. The theme of this program is to get people thinking of ways that they can save. This will guide strategies for future purchases on appliances and even possibly lead the way to more forward thinking in the future.

Kitchen

A lot of water is wasted in the kitchen. It comes from running the tap waiting for cold or hot water to rinsing foods to washing dishes. There are habits you can change and acquire that may mean saving a cup or a gallon here and there that add up to a lot. Habits in the kitchen are the easiest to change and you might find that they are more convenient.

Water Filter Installation

- Using a filter instead of buying bottled water saves a lot of money in your household budget. 1 gallon jug of water can cost anywhere from .85 cents to \$2.00 depending on the brand. A gallon of water costs less than a penny from the faucet.
- The costs of drinking water can be reduced more by storing water in the fridge. There is no wait time for cold water to come from the tap.
- A 2 gallon per minute (gpm) aerator on the kitchen faucet is typical. Filling pots, sinks etc. is going to use the same amount of water.

Dishwashing

- Do not rinse off dishes and silverware, just scrape the food into the trash or compost.
- Do not use the pre-rinse cycle. It does not help get dishes any cleaner.
- Only run full loads of dishes.

Hand-washing Dishes

- Fill the sink a few inches. Wash a load and let the water used for rinsing fill the sink.
- Do not use fresh water between loads.
- Use less soap for less rinsing time.

A dishwasher uses about 4 gallons of water per full load while washing by hand can use 10-20 gallons depending on how you wash.

You can reduce the amount of water used hand-washing down to 2 gallons with proper techniques and habits.

- Rinse full loads at a time or fill the second sink with a few inches of cold water. Cold water will use less energy and it inhibits the growth of bacteria.

Other Habits

- Filling pots enough to cover the foods being cooked saves water and also helps the foods retain some of their nutritional value since boiling foods takes displaces vitamins and minerals.
- Instead of rinsing foods in a strainer, scrubbing the foods in the bowl of water can save gallons of water at a time.
- Use hand sanitizer instead of soap and water.
- If soap and water are required, open faucets partially and turn off the water when lathering.

Bathroom

The bathroom is where the most water consumption happens with the toilet being the biggest user of water.

Installation of Retrofit Kit in Toilet

- Dual flush retrofit kits are installed in the back of the toilet. Many kits are ‘no tools needed’ and are simple to install.

By using a retrofit kit or water displacement, 2-4 gallons of water are saved per flush.

Water Displacement with Bottles

- This is a no-cost and recyclable alternative to a retrofit kit. Placing two 20oz bottles full of water or sand can displace some of the water needed to flush. Be careful not to use too many or it will affect the pressure which will cause a weak flush.

Installation of Faucet Aerator

- Even with an aerator it is still important to save even more water by turning off the water when washing up, shaving and brushing your teeth.

👉 Installation of Low-Flow Showerhead

- Low-flow showerheads can sometimes feel a little less comfortable.
- A 1.5-1.75 gpm showerhead is ideal. Standard showerheads are 2.5 gpm. Increase the savings by limiting shower times to 10 minutes.

Savings can increase even more by turning the shower off while lathering with soap. Think of it like this; a 20 minute shower with a 2.5 gpm showerhead uses 50 gallons of water while a 10 minute shower using a 1.5 gpm showerhead will use only 15 gallons of water. This could mean 1050 less water used every month (one shower every day in a 30 day month). In this example at a rate of \$0.0041 per gallon, it is a \$4.31 savings a month.

ENERGY CONSERVATION DEMONSTRATION

The energy conservation demonstration is an attempt to create habit changes as well as technology updates in the household that will conserve energy to create savings in budgets as well as decrease demand for natural resources. It is an effort to raise awareness about where their energy comes from and where it is going in the future. Upgrades to public utilities such as wind generators will have an increased cost to consumers. However it will preserve our environment substantially. The central theme in this segment of the program is to give tips that the participants can bring home and put to work immediately. This will potentially lead to forward thinking about investments in the future that will bring about further savings in energy and budgets.

Household

Power Strips

- By bundling electronics and devices on a power strip you can easily cut off the electricity to them. When electronics are plugged in they are still using energy. Bundling saves a lot of time and hassle of unplugging every device.

Check for Drafts

- Using a piece of ribbon and running it around the outsides of the window sills and frames will give an indication of drafts. The drafts that come in on cracked or deteriorating window frames mean a loss of heat and air. Sealing the cracks with caulk is ultimately the best, but most importantly in the winter a temporary seal with rope caulk will do the trick. Where ever there is a draught enough to cause disruption in the ribbon, a sealant should be in place.

The biggest energy sucker is in the heating and cooling system. If you can manage the amount of energy you have to use to heat and cool your house the more money you will save. By sealing your house air tight you lose less energy out of cracks from draughts. This is going to give you the most savings

Plastic Sheets/Bubble Wrap

- Placing plastic wrap or bubble wrap over the windows and unused doors during the winter means big savings. The most heat is lost because of draught from doors and windows. By placing an extra barrier on these heat loss sources, heat is held in the house more effectively.

Draft Snake or Towel Placement

- Placing a draught snake or a towel across the bottom of the door stops heat from escaping.
- Many doors already have a draught guard which is a rubber strip that is permanently in place or a foam strip which is removable. Check for condition and replace if needed.

Temperature Control

- Winter- Dial down the thermostat to 67 degrees. Wear an extra layer of clothes or cover up with a blanket for extra warmth. Before you go to bed, dial down to 65 degrees. When not at home during the day, dial down even further to 60 degrees. When on extended leaves from home, turn the heat down to 55 degrees as to save energy as well as prohibiting pipes from freezing.
- When company is around, you can turn down the temperature and utilize their body heat for temperature
- Summer- Dial the thermostat up to 72-74 degrees. When not at home during the day turn it up to 78 degrees. When on extended leaves from home turn the temperature up to 84 degrees.

You can purchase and install a programmable thermostat which makes temperature control easier. It allows you to schedule temperature settings throughout the day and week.

Natural Light and Heat

- Winter- Open the curtains in the daytime to let the sun warm the household and close them at night to keep the warm in and the cold out.
- Summer- In the summer close the curtains in the daytime to keep sunlight out and open the windows in the night and turn off the air conditioner.



Ceiling Fan

- Winter- Turn the ceiling fans on clockwise, heat rises and this will circulate the heat back down and around the room.
- Summer- Turn the ceiling fans on counter-clockwise to create a breeze and circulate the air. Ceiling fans have a switch on the side the motor that either indicates “clockwise” or “counter-clockwise” or some explicit “summer” or “winter”.

Water Heater

- Set the temperature on your water heater to 110-120 degrees. 120 degrees is a normal setting and if you can go 10 degrees lower it is even more cost effective.
- Insulate with a water heater jacket to hold in the heat.

Furnace

- Forced air heating systems should have their filters changed on a monthly basis for maximum efficiency. Many people change it every 3 months to save money on filters but the savings are higher for your heating system if they are changed monthly. This is true for central air, too.

Registers

- To get maximum efficiency out of the heating system, clean off the registers or vacuum the vents. Keep curtains away from registers while in operation and pull furniture at least a foot away.

Shutting Doors

- Shut the doors to unoccupied rooms. If each room is individually heated, only use the heat when the rooms are in use. By shutting the door the system doesn't have to work harder to heat rooms that aren't being used.

TURN IT OFF!

- Turn off the lights when the room is not occupied. Turn off the radio when not being listened to. Turn off the television when it is not being watched. Turn off all unused electronics and devices. The next step for further savings is unplugging the devices.

Electronics use energy even when they are turned off. Up to 40% of the energy an electronic or device uses is wasted. That is why it is important to bundle electronics on a power strip. This makes it easier to cut electronics off from the power source saving energy and money. If you think about the amount of electronics plugged into your sockets you can imagine the amount of energy that is being wasted. That wasted energy is wasted money.

Making the Incandescent Light Bulb Switch to CFL or LED Bulbs

- At the end of 2012 some incandescent light bulbs will be banned from production and sale. While the upfront cost of the CFL and LED is higher, especially the LED which can be upwards of 25 dollars a light bulb, the savings are worth it.

	LED	CFL	Incandescent
Light bulb projected lifespan	50,000 hours	10,000 hours	1,200 hours
Watts per bulb (equiv. 60 watts)	10	14	60
Cost per bulb	\$35.95	\$3.95	\$1.25
KWh of electricity used over 50,000 hours	300 500	700	3000
Cost of electricity (@ 0.10per KWh)	\$50	\$70	\$300
Bulbs needed for 50k hours of use	1	5	42
Equivalent 50k hours bulb expense	\$35.95	\$19.75	\$52.50
Total cost for 50k hours	\$85.75	\$89.75	\$352.50

Energy Savings over 50,000 hours, assuming 25 bulbs per household:

Total cost for 25 bulbs	\$2143.75	\$2243.75	\$8812.50
Savings to household by switching from incandescents	\$6668.75	\$6568.75	0

Remember to recycle CFLs, there are hardware stores and other reciprocals that accept the bulbs as they do contain mercury. LED bulbs do not contain any toxic substances and are much more durable. Handle CFL bulbs with caution.

Kitchen

Refrigerator

- Check Seal on Refrigerator
- Close a sheet of paper in the refrigerator door and if it pulls out easily then the seal needs to be replaced. If there is not a tight seal then the cold air in the refrigerator is being lost.

Temperature Control the Refrigerator

- When the refrigerator is less full the temperature should be set to a “cooler” degree. When it is fuller it can be set to “warmer” degree. Some refrigerators have one control for both the fridge and the freezer. This can be complicated if the fridge is full but the freezer is not vice versa. If the fridge is less full place the items further back in the fridge so that they remain close to the source of cool and you can set it a little warmer, when it is more full you will want to pull the food away from it so the food

isn't absorbing the cool air flow or freezing and set it a little cooler. Each refrigerator is different so you have to get to know how each one works to get the best setting for your needs.

Freezer Air Displacement

- If the freezer is less full, by placing 2 liter bottles of water inside the freezer it displaces the area inside the freezer. When the water freezes it becomes another source of cold which takes some of the work away from the motor. If the fridge is less full too you can take one of the frozen bottles of water and place it in the fridge which adds cold air, also giving the motor a break.

Refrigerator placement

- Do not place the refrigerator next to the stove, it makes the system have to work harder to stay cool because of the heat coming off of the oven. Pull the refrigerator 4-6 inches from the wall to allow air circulation behind and around it. This will prevent overheating. Try to keep the top of the refrigerator clean and free of clutter. This too will prevent overheating.

Other Energy Saving tips for kitchen

- When working with the stove, keep drip pans clean. The drip pans reflect heat back to the cookware but if they are dirty they absorb more heat than reflect.
- Don't use the fan in the winter, let the oven be an extra heat source since the fan will suck out the heat. In the summer turn it on to take the heat out of the kitchen.
- Reheat foods in a microwave rather than on the stove and use a toaster oven for smaller meals or single serving foods.
- Do not open the oven door when cooking. Every time the door is opened, it drops at least 25 degrees.

Bathroom

Lighting

- There is no need to put a light bulb in every socket. By using only the amount of lighting that suits your needs you can save the energy it would need to create excessive light.

Bedroom

Lighting

- Use a low-wattage bedside lamp instead of the installed lighting to reduce energy needs.
- If possible, turn off the heat in the bedrooms when they are not occupied.

Staying warm

- Dial down the thermostat to 65 degrees overnight. Use an extra blanket for warmth. Space heaters or electric blankets will allow you to dial down even further.
- An alternative to an electric blanket and space heater would be to warm a wet towel in the microwave for 15-25 seconds, checking and rotating every 5 seconds to avoid scalding, and placing it in a large seal freezer bag and placing it under the blankets.

Section III: Getting to Know Your Utility Bill

Every utility bill looks different. Some come bundled in one utility bill while others are separate entities that deliver utilities apart from one another. The information is the same however which makes it easy to read a utility bill when learning what the information means and how to understand the contents.

This section will clarify and define what the numbers mean and how they add up. It is also important to remember that depending on your utility company, rates can change during seasons and sometimes at different times of the day. These are called peak rates.

- 1) First determine the sources of your utility bill. It is important to know where your energy and water is coming from because some utility companies will give you the option of receiving energy from renewable resources.
- 2) Next, get familiar with what your charges are. If your utilities are bundled, the numbers can sometimes seem overwhelming so understanding what you are being charged for is essential to understanding the costs of running the household.
- 3) Then understand the contents of the bill. Water and electricity are measured by meters. You can locate the meters outside of your house and get familiar with the displays. The utility bill will display the previous reading and the present reading. Most utility bills will display how much each gallon or kilowatt costs while others don't. If you want to know you can call your utility company and ask or do the math yourself.
- 4) Cost in \$/gallons or kilowatt= price per gallon or kilowatt
- 5) Both of the water and energy beginning meters and end meters will be displayed with a total number of usage displayed separately. You can use this number to track your savings by watching the number of total usage decrease.

Now that the numbers and costs are clarified conservation can be monitored!

ACTIVITY

Here is a fun activity that can be done around the house to understand how much it costs to run each electronic or device. Costs of running a device are determined by the price per kilowatt hour. Your devices will either display the watts needed to run the device or the amps and volts. These three measurements (amps and volts, and watts) are how much electricity is needed to power the device. If your device displays the wattage skip Section A.

Section A

Amps and volts to watts:

$$\text{Amps} \times \text{Volts} = \text{Watts}$$

Section B

Multiply the watts by the hours you use the device (a). Now take 1000 and times it by the price per kWh (b). Then you can take (a) and divide it by (b).

$$\text{Watts} \times \text{Hours (device is used)} / 1000 \times \text{Price per kWh}$$

These formulas are simple math and define the costs it takes to watch television, keep the lights on and run the electronic devices in the household. Here are some examples.

Conventional Dryer

1 load

\$0.15 per kWh

Cost = \$0.50

Conventional Refrigerator

1 hour

\$0.15 per kWh

Cost = \$0.03

32" LCD Television

1 hour

\$0.15 per kWh

Cost = \$0.02

19" CRT Television

1 hour

\$0.15 per kWh

Cost = \$0