

Exploring your Home's Energy Use

Thank you for checking out the City of Rochester's Home Energy Audit Kit! This kit contains various tools to help assess your home's energy efficiency, lighting, water use, and appliance performance. Below, you will find key points on how to use the tools, along with guidelines for ensuring their proper return:

Recommendation and Best Practices

- Follow this guide for the tool's specific instructions for accurate results.
 - All user guides for each tool are provided in a plastic bag for more detailed information or troubleshooting.
- Use the recommended settings and measurements in the guide for optimal performance.

Care and Return of Tools

- Handle all items with care to ensure they remain in good condition.
- Inform the Sustainability Division immediately of any issues, especially regarding batteries or damaged parts.
- For the EPA WaterSense Flow Bag, please allow it to dry overnight before returning it.
- Please return the kit to the front desk at 4001 West River Parkway during regular business hours: Monday through Friday, 8:00 a.m. to 4:30 p.m.

By returning the kit in its original condition, you help ensure it remains available and effective for other users. Thank you for your cooperation!

Questions or comments? Email Sustainability@RochesterMN.gov or call 507-328-2212.

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Water Thermometer

A water temperature reader checks the temperature of your home's water, helping to ensure it is not too hot or too cold. During an energy audit, it can help you find ways to save energy by adjusting the water heater settings for better efficiency.

How to use it:

1. ON/OFF button: Short press to turn on the power.
2. C/F: Switch between degrees C and F
3. Turn the faucet on, all the way to hot
4. Run water for about a minute to flush out any lukewarm water sitting in your pipes
5. Place water thermometer under water
6. HOLD Button: Press the HOLD button to lock the temperature for reading. Press HOLD again to unlock it.
7. ON/OFF button: Long press to turn the power off

Recommendations: The recommended temperature for water from the faucet is 120°F.

- If you adjust your water heater's temperature, wait 3 to 4 hours before checking again to allow the tank to fully adjust. Since most water heaters don't have exact temperature settings, it may take a few tries to reach your desired temperature.
- Setting your water heater to 120°F (for an average family of four) could save \$30 to \$80 per year on energy costs, depending on water heater efficiency and usage patterns.



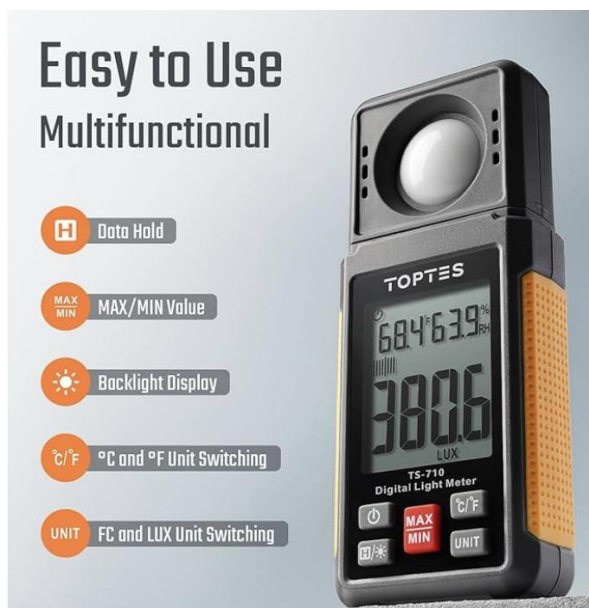
Light Meter

An illumination light meter measures the amount of light in different areas of the home, ensuring it is not too bright or dim. During an energy audit, it helps find ways to save energy by adjusting lighting levels and using lighting more efficiently.

The tests should be done during the day to assess both natural and artificial lighting levels. However, if you're focusing only on artificial lighting, the test can be done at any time, including at night.

How to use it:

1. Remove the sensor protector cover
2. Turn on the power
3. Hold the light sensor straight, directly facing the light source.
4. Ensure the light meter measures in LUX. You can change its measurement by pressing the UNIT button.
5. Press the button with "H/sun" to freeze and record the value.
 - a. If the screen is too dark to read, press and hold the "H/sun" button to activate the screen's backlight function.
6. When tests are complete, put the sensor cover back on and turn the power off.



Recommended Illumination		
Space & Activity		Illumination
Home	Doing Housework	750 - 1,5000 LUX
	Reading Room or Office	300 - 750 LUX
	Bedroom, Living Room, Restroom, or Game Room	150 - 300 LUX
	Wardrobe, Stairwell, or Walkway	75 - 150 LUX
Office	Conference or Reception Room	200 - 750 LUX
	Typing	1,000 - 2,000 LUX
	Clerical Work	750 - 1,500 LUX
LUX: LUX is a way to measure how much light is hitting a surface, with one lux being equal to one lumen of light spread over one square meter.		

Infrared Thermometer

A laser thermometer measures the surface temperature of objects in your home without touching them. During an energy audit, it helps identify areas where heat is being lost, such as through windows, walls, or ducts, allowing you to make energy-saving improvements.

How to Use it:

1. Point the laser toward the desired surface to measure
2. Press and hold the measurement trigger. The scan symbol will light up while you are taking your measurements.
3. Release the measurement trigger. The temperature reading will appear on the display and hold for 20 seconds before powering off.
 - a. The laser cannot measure the temperature of objects behind glass.
4. Press and hold the measurement trigger while scanning the surface for continuous measurement.



Recommendation: The test can be done at any time, but if you're measuring surfaces affected by sunlight (like windows), it's best to test during the day for more accurate readings.

Warning

- Do not look at the direct or reflected laser beams.
- Laser radiation may damage your eyes.
- Do not aim the laser beam at another person or animal.
- Never point any laser toward aircraft or vehicles.

To improve home insulation here are couple of affordable solutions

- Foam Insulation Tape – Seal window gaps to prevent drafts.
- Magnetic Window Insulation – Install magnetic inserts to create an airtight seal, improving insulation without permanent modifications.
- Plastic Window Film Kits – Apply plastic film to windows to form an insulating air layer.
- Close Curtains or Blinds – Close curtains or blinds during cooler periods to retain heat.

Item/ Area	Recommended Temperature Range
Wall Surface Temperature	65-75°F
Ceiling with Insulated Attic	1-3 °F of indoor air temperature
Ceiling without Insulated Attic	Closer to outdoor air temperature
Well Insulated Windows	Winter: within 5-10°F of indoor air temperature Summer: within 1 - 3 °F of indoor air temperature unless exposed to direct sunlight

Refrigerator Thermometer

A refrigerator thermometer checks the temperature inside your refrigerator and freezer to ensure they operate efficiently. Using one during an energy audit helps ensure your appliances are not using excess energy to cool food.

How to use it:

1. Place the thermometer in the middle of the refrigerator or freezer, ideally on a shelf near the center. Do not let it touch the walls or the door.
2. For an accurate temperature reading, leave the thermometer in place for several hours or overnight to allow the temperature to stabilize.
3. After waiting, read the temperature on the thermometer. For a refrigerator, the ideal temperature is between 37-40°F (3-4°C), and for a freezer, it should be at 0°F (-18°C).
4. If the temperature is too high or too low, adjust the refrigerator or freezer's settings accordingly and recheck the thermometer after a few hours.

Item/ Area	Recommended Temperature Range
Refrigerator	37-40°F (3-4°C)
Freezer	0 - 30°F (-18 - 0°C)



Temperature and Humidity Meter

Proper temperature and humidity levels can improve heating and cooling performance, reduce energy waste, and prevent mold growth, ensuring your home is energy-efficient and healthy.



How to use it:

1. Take off the protection cover of the meter
2. Press the power button to turn on
3. The ambient temperature, humidity, and dew point temperature (or wet bulb temperature) will be displayed automatically.
 - a. Read the measured value after the indicator becomes stable, usually takes between 30 – 60 seconds.
4. When tests are complete, put the sensor cover back on and turn the power off.

Measurement	Recommended Range
Ambient Temperature: Air temperature in a room	68-72°F (20-22°C)
Indoor Humidity: Amount of moisture in the air	Below 60% Ideally, between 30-50%

Watt Meter

The watt meter is an energy monitoring device that plugs into appliances to measure electricity usage. It helps track power consumption and estimate costs, allowing users to identify energy-hungry devices and make informed decisions to reduce energy waste. Many appliances, especially media devices or those with a red "off" light, continue to draw power even when turned off. This is called "phantom load." Be sure to check which devices may be using power when they're not in use.

How to use it:

1. Plug the watt meter into a wall outlet.
2. Plug your appliance or device into the watt meter.
3. Power on the appliance or device you want to measure.
4. The screen will show real-time power consumption, including voltage, current, wattage, and estimated cost.
 - a. Hit the cost button again to display cost by year, month, week, day or hour.
5. Once you identify high energy usage, you can make changes to save on electricity.



To Reset:

1. Press and Hold the KWH/Hour key for about 3 seconds until the screen shows rEST.

To Set the Correct Rochester Public Utility Rate:

1. Press and hold the cost key for about 3 seconds
2. Press the AMP/PF (UP) and Voltz/Hz (DOWN) keys to set your rate.

Rochester Public Utility Rates for 2025	
Energy Charge:	Non-Summer Energy / kWh 12.068¢
	Summer Energy / kWh 14.415¢
Definition of Season: Summer months are June through September. Non-summer months are January through May and October through December.	

3. Press the Cost Key again. "SAVE" will appear briefly on the display and return to measurements mode.

EPA Water Flow Bag

EPA WaterSense flow bags measure water flow rates and identify opportunities for reducing water usage through efficient fixtures and practices. By optimizing water flow, the kit helps conserve water and energy, contributing to environmental sustainability and cost savings.

How to Use it:

1. Turn on the fixture to be tested and adjust it to how you would typically use it
2. Hold the bag open and place it under the fixture for precisely five seconds
3. Remove from water flow
4. Hold the bag open, raise it to the eye level, and read the flow rate measurement.
5. Repeat the test to check your results
6. Please re-use the same test bag for all fixtures
7. We would appreciate you airing the EPA water Sense Flow Bag overnight and returning it.

Note: If it might be helpful for one person to hold the bag while another is in charge of timing the test to ensure accuracy and smooth operation.

Potential Savings:

- **Showerheads:** Standard showerheads use about 2.2 gallons per minute (GPM). Replacing a high-flow showerhead with a more efficient one (1.8 gallons per minute, or less) could save up to 2,700 gallons per year. For an average family, this could result in \$70–\$100 in annual savings on water and energy costs.
- **Faucets:** Standard faucets use about 2.2 gallons per minute, while more efficient models typically use 1.5 gallons per minute. Replacing high-flow faucets with more efficient models could save up to 700 gallons per year, leading to \$10–\$20 in savings annually.

By optimizing both showerheads and faucets, you can significantly reduce water usage, contributing to both environmental sustainability and cost savings.



Additional Resources

Rochester Public Utilities

Compressed Air Correction Rebate Program

If you:

1. Are a Rochester Public Utilities Program
2. With at least 10 horsepower air compressors
3. That operates 2,000 hours per year

You may be eligible for Rochester Public Utilities check out program if an ultrasonic leak detector.

To learn about program details and reserve leak Detection Camera, call your RPU Energy and Environment advisors at 507-208-1500 or email REBATES@rpu.org.