THE DO-IT-YOURSELF ENERGY AND WATER SAVINGS GUIDE

This toolkit is designed for library patrons and will help you save money on your utility bills while conserving vital resources.

Sonoma Clean Power

COUNTY OF SONOMA ENERGY AND SUSTAINABILITY

SONOMA - MARIN SAVING WATER PARTNERSHIP

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Dear Sonoma County Residents,

When community agencies work together, we can produce much more than we could alone. The Do-It-Yourself Home Energy and Water Savings Toolkit is a perfect example of just such a partnership. Energy and Sustainability of the County of Sonoma, Sonoma Clean Power, the Sonoma-Marin Saving Water Partnership, and Sonoma County Library have come together to offer this resource to our residents.

These DIY kits represent the Library's commitment to environmental sustainability and are both an excellent addition to our collection and an important resource for our community. Hopefully this tool will help you better understand the energy and water usage areas of your home and provide you with information to make changes that could save energy, water, and money.

Many thanks to our partners and we hope this resource serves you well.

Thank you,
Sonoma County Library

Table of Contents

Introduction

Do-It-Yourself (DIY) Home Energy and Water Savings Toolkit Program

The Sonoma County Library, Sonoma Clean Power (SCP), the Sonoma-Marin Saving Water Partnership (SMSWP), and Energy and Sustainability at the County of Sonoma have partnered to bring you a DIY Home Energy and Water Savings Toolkit. The kit will help you take charge of your home's energy and water use in order to reduce your utility bills.

This savings guide will provide additional tips for "going green" in your daily life. Whether your goal is to save money, protect the environment, or embark on a fun home project, we invite you to turn the pages and learn all you can.

Energy and Sustainability at the County of Sonoma

Increasing the efficiency of your home is more than switching out light bulbs or buying new appliances. It's approaching your home as a complete system with building shell (walls, ceiling, and floor), insulation, heating/cooling equipment, water, and other energy features working together to reduce energy use and help lower your utility bills. Energy and Sustainability at the County of Sonoma connects you to the experts and resources you need to take a "whole house" approach. To learn more, visit **www.sonomacountyenergy.org**.

Tips & More

These symbols indicate steps where you will use the Toolkit tools and equipment seen in the DIY Toolkit (see next page for complete list of tools).

QR Codes link to instructional videos. To view the videos, scan the QR code with a smart phone or manually insert the link into your preferred web browser.

DIY Toolkit Contents

Equipment - For you to keep and install in your home

Drip Emitters

Place emitters near root system of a plant for efficient watering.

Drip Tube Couplings

Extends existing drip lines or repair a severed line.

3 Efficient Faucet Aerators

Replace your current bathroom and kitchen faucet aerators with efficient aerators. These aerators are standard (15/16") and will fit most faucets.

Efficient Showerhead

Replace your current showerhead with an efficient showerhead.

Figure 8 hose closure

Used to close the end of a drip line.

Goof Plugs

Used to plug any unwanted holes in your drip system.

4 Light-Emitting Diodes (LEDs) bulbs

Replace incandescent bulbs and CFLs in high-use fixtures with LEDs.

Outlet Gaskets

Used to seal your outlets and prevent heat loss.

Rubber Bands

Wraps around pliers to help prevent scratching the aerators or showerhead during installation.

Water Flow Rate Bag

Measures gallons per minute for faucets and showers.

Water Leak Detection Dye Tablets

Identify leaks in your toilet tanks. (not for consumption)

Weatherstripping

Helps seal air gaps in windows and doors.

Tools - For you to use and return to library once finished with kit

Drip Pressure Testing Tool

Used to confirm adequate pressure in drip lines and can help locate leaks by detecting a drop in pressure.

Hole Punch

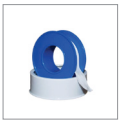
Creates a hole when adding drip emitters to the drip line.

Infrared Laser Thermometer

Checks for heat loss in trouble spots such as windows, vents, and door jams.

Kill-A-Watt® Meter

Measures the energy use and "plug load" of appliances and equipment.



Pipe Thread Seal Tape (plumber's tape)

Prevents leaks in your faucets and showerheads.

Pliers

Helps replace old faucet aerators and showerheads with new ones.

Refrigerator Thermometer

Monitors the temperature in your refrigerator and freezer.

Thermometer

Checks the temperature of your hot water supply.

Universal Battery Tester

Checks if your AA or AAA batteries still have energy.

Introduction To Energy Use

Average Household Use of Energy in California

Knowing how energy is used in your home will help you take steps to reduce your use. The following are the largest energy uses in homes:

Highest Electricity Uses at Home	25% Refrigerators	13% Air Conditioner	10% Lighting
Highest Gas Uses at Home	59% Water Heaters	32% Space Heating	5% Cooking

Source: 2019 California Residential Appliance Saturation Study.

How Much Energy Will This Toolkit Help Me Save?

We all use our homes and appliances differently, so predicting the precise amount of energy savings that you can achieve by using this Toolkit is difficult. For example, EnergyStar® estimates that replacing one incandescent bulb with an LED bulb can save you anywhere from $40 to $135 in electricity costs over the bulb's life — the actual amount depends on how often you use the light, your electricity rate, and more.

Energy Literacy: Understanding Units That Measure Energy

Watt (W) - A watt is the basic unit of power used to measure electricity capacity. Incandescent light bulbs are rated on their capacity to produce light — the higher the rating (e.g., 40, 60, 100W), the brighter the light. LED bulbs use far fewer watts to produce the same amount of light.

Kilowatt (kW) - A kilowatt is 1,000 watts.

Kilowatt hour (kWh) - A kilowatt hour is 1,000 watts used for one hour (power x time). It is the unit of energy most commonly used on household electricity meters. For example, a 100W incandescent bulb left on for 10 hours is equal to 1 kWh (100W x 10 hrs = 1,000 Wh = 1 kWh). In 2022, the typical Sonoma Clean Power residential customer used 666 kWh per month per household.

Therm - A therm is the energy equivalent of burning 100 cubic feet of natural gas. The PG&E residential customer uses an average of 34 therms per month per household.

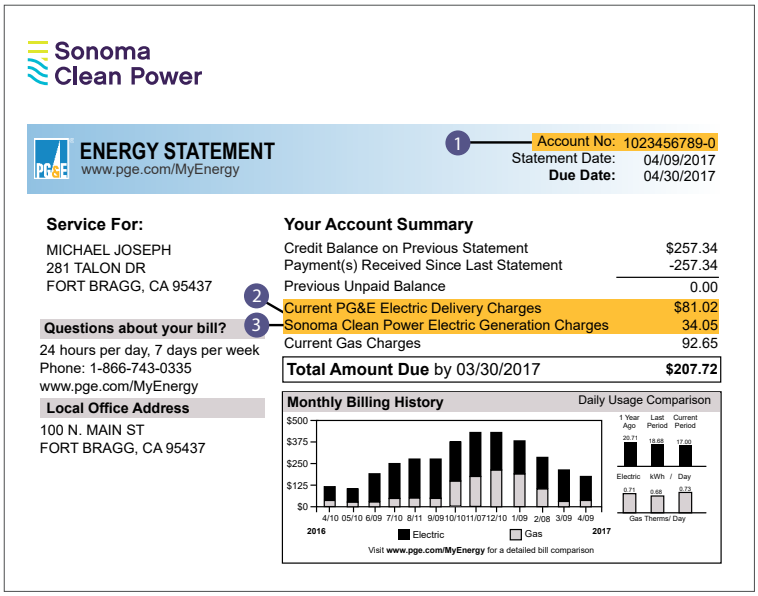
Understanding Your Energy Bill

Who is Sonoma Clean Power (SCP)?

As your local electricity provider, Sonoma Clean Power (SCP) offers residents and businesses clean energy sourced from more renewable resources, such as geothermal, wind, and solar — all at competitive prices. This cleaner energy is then delivered to your home or business through transmission lines ("the grid") maintained by PG&E. We are proud to provide a sustainable energy option while supporting our community with cleaner power.

Understanding Your Energy Bill

(1) Account Number
This 10-digit number is unique to your PG&E account. You will need this number in order to upgrade to SCP's 100% renewable energy service, EverGreen, or make any other changes to your account.


Sonoma Clean Power

ENERGY STATEMENT
www.pge.com/MyEnergy

1 Account No: 1023456789-0
Statement Date: 04/09/2017
Due Date: 04/30/2017

Service For:
MICHAEL JOSEPH
281 TALON DR
FORT BRAGG, CA 95437

Questions about your bill?
24 hours per day, 7 days per week
Phone: 1-866-743-0335
www.pge.com/MyEnergy

Local Office Address
100 N. MAIN ST
FORT BRAGG, CA 95437

Your Account Summary

Credit Balance on Previous Statement	$257.34
Payment(s) Received Since Last Statement	-257.34
Previous Unpaid Balance	0.00
2 Current PG&E Electric Delivery Charges	$81.02
3 Sonoma Clean Power Electric Generation Charges	34.05
Current Gas Charges	92.65
Total Amount Due by 03/30/2017	**$207.72**

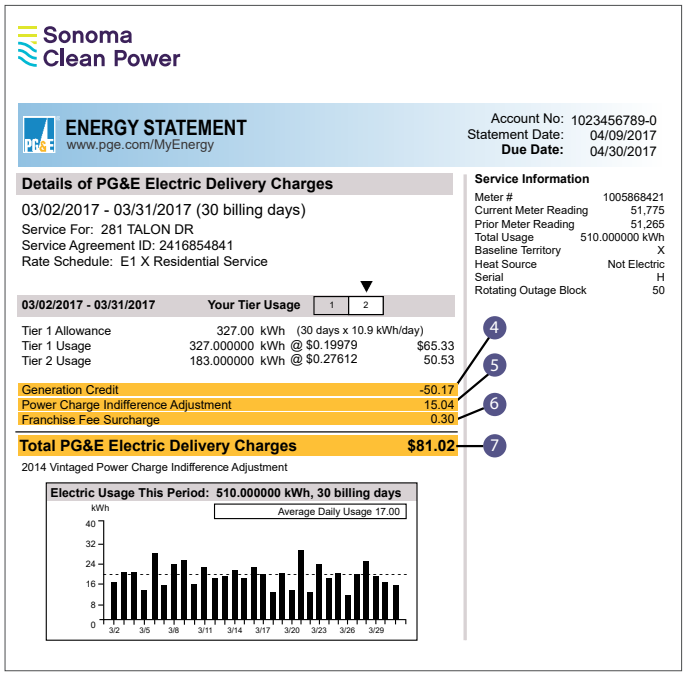
Monthly Billing History
Daily Usage Comparison
$500 $375 $250 $125 $0
4/10 05/10 6/09 7/10 8/11 9/09 10/10 11/07 12/10 1/09 2/08 3/09 4/09
2016 2017
Electric Gas
1 Year Ago: 20.71 Electric kWh / Day; 0.71 Gas Therms/ Day
Last Period: 18.65 Electric kWh / Day; 0.68 Gas Therms/ Day
Current Period: 17.00 Electric kWh / Day; 0.73 Gas Therms/ Day
Visit www.pge.com/MyEnergy for a detailed bill comparison

(2) PG&E Electric Delivery Charges
This is PG&E's charge for the delivery of electricity. It includes transmission, distribution, and a variety of other fees. It does NOT include generation charges if you're an SCP customer.

(3) Sonoma Clean Power (SCP) Electric Generation Charges
This is SCP's charge for generation – the cost of procuring the electricity you use.

(4) Generation Credit

This number is the amount that PG&E would have charged you for electric generation. This number is helpful in comparing SCP's electric generation cost to PG&E's electric generation cost.


Sonoma Clean Power

ENERGY STATEMENT
www.pge.com/MyEnergy

Account No: 1023456789-0
Statement Date: 04/09/2017
Due Date: 04/30/2017

Details of PG&E Electric Delivery Charges

03/02/2017 - 03/31/2017 (30 billing days)
Service For: 281 TALON DR
Service Agreement ID: 2416854841
Rate Schedule: E1 X Residential Service

03/02/2017 - 03/31/2017	Your Tier Usage	1	2
Tier 1 Allowance	327.00 kWh (30 days x 10.9 kWh/day)		
Tier 1 Usage	327.000000 kWh @ $0.19979	$65.33	
Tier 2 Usage	183.000000 kWh @ $0.27612	50.53	
Generation Credit		-50.17	
Power Charge Indifference Adjustment		15.04	
Franchise Fee Surcharge		0.30	
Total PG&E Electric Delivery Charges		**$81.02**	

2014 Vintaged Power Charge Indifference Adjustment

Electric Usage This Period: 510.000000 kWh, 30 billing days
Average Daily Usage 17.00
kWh
40
32
24
16
8
0
3/2 3/5 3/8 3/11 3/14 3/17 3/20 3/23 3/26 3/29

Service Information

Meter #	1005868421
Current Meter Reading	51,775
Prior Meter Reading	51,265
Total Usage	510.000000 kWh
Baseline Territory	X
Heat Source	Not Electric
Serial	H
Rotating Outage Block	50

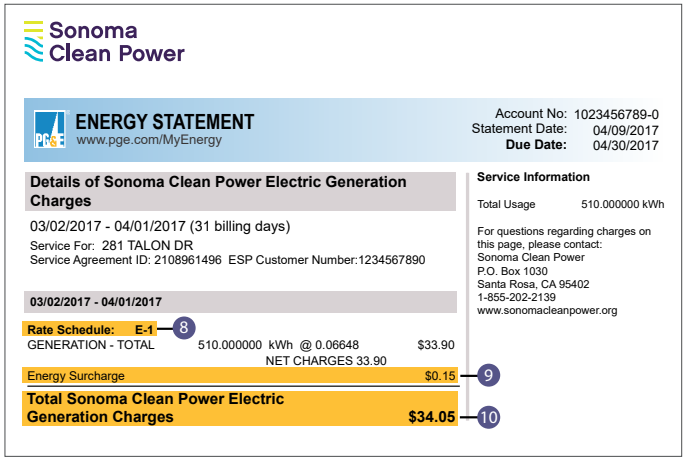
4 5 6 7

(5) Power Charge Indifference Adjustment

The fee is required of all PG&E and SCP customers. It is intended to ensure that customers who switch to SCP pay for the above-market cost of energy that PG&E bought on their behalf prior to the change in service.

(6) Franchise Fee Surcharge

This fee is collected by PG&E to pay for the right to use public streets to provide utility services.


Sonoma Clean Power

ENERGY STATEMENT
www.pge.com/MyEnergy

Account No: 1023456789-0
Statement Date: 04/09/2017
Due Date: 04/30/2017

Details of Sonoma Clean Power Electric Generation Charges

03/02/2017 - 04/01/2017 (31 billing days)
Service For: 281 TALON DR
Service Agreement ID: 2108961496 ESP Customer Number:1234567890

03/02/2017 - 04/01/2017		
Rate Schedule: E-1		
GENERATION - TOTAL	510.000000 kWh @ 0.06648	$33.90
	NET CHARGES 33.90	
Energy Surcharge		$0.15
Total Sonoma Clean Power Electric Generation Charges		**$34.05**

Service Information

Total Usage 510.000000 kWh

For questions regarding charges on this page, please contact:
Sonoma Clean Power
P.O. Box 1030
Santa Rosa, CA 95402
1-855-202-2139
www.sonomacleanpower.org

8 9 10

(7) Total PG&E Electric Delivery Charges

This is the sum of PG&E's charges for electric delivery, which matches the "Current PG&E Electric Delivery Charges"on the first page of your bill.

(8) Rate Schedule

This indicates what rate plan your account is on and how your electric generation and delivery charges are calculated. Check that your household is on the lowest cost rate plan by logging into your PG&E online account and getting a personalized rate comparison.

(9) Energy Commission Surcharge

This fee is collected on behalf of the California Energy Commission and applies to all customers, regardless of service provider.

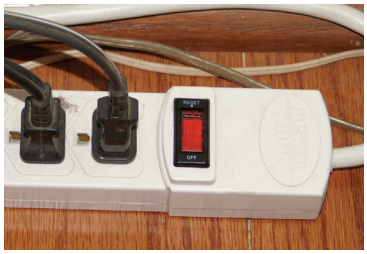
(10) Total Sonoma Clean Power Electric Generation Charges

This is the sum of all electric generation charges from SCP and matches the Sonoma Clean Power Generation Charges on the first page of your bill.

More questions? Visit SCP's Customer Center at 741 4th Street, Santa Rosa, CA 95404. Call local call center at (855) 202-2139. Or visit: www.sonomacleanpower.org

Appliances

Consumer electronic products account for up to 15 percent of electricity consumption in a typical California household. Many small appliances and electronics use energy even when they are turned off — as much as 75 percent may be consumed in standby or off mode! This is known as "vampire" or "phantom" loads, and eliminating them is a great way to save energy.



STEP #1: USE THE KILL-A-WATT® METER

The Kill-A-Watt® meter measures the energy drawn by appliances and electronics in both operating and standby modes. Follow these steps:

1. Plug the meter into an outlet and plug an appliance or electronic device you'd like to measure into the meter. You may need to wait a couple seconds for the energy to register.
2. Push the "Reset" button until "Watt" appears on the unit.
3. Measure the wattage when the appliance is both on and off.
4. The meter can also help you estimate the cost of electricity used by the appliance or device over time. See the video to the right for instructions.

How to use a Kill-A-Watt® EZ Meter: bit.ly/DIYtoolkitvideos

Tips & More

- Unplug phone and battery chargers once they are fully charged.
- In your entertainment and computer areas, plug equipment into a smart power strip, which will shut off equipment when in standby mode. NOTE: Unplugging your cable box may reset the system; be sure to consult the operation manual.
- Always look for the EnergyStar® logo when buying new appliances.

Average Energy Consumption of Standard Appliances*	
Appliance	**Watts**
Clothes Dryer	1,800-5,000
Clothes Washer	350-500
Clothes Iron	1,000-1,800
Computer	270 awake 60 asleep
Dishwasher	1,200-2,400
Heater	750-1,500
Microwave	750-1,100
Refrigerator	725
Toaster	800-1,400
Flatscreen TV	120
Vacuum Cleaner	1,000-1,440
DVD Player	20-25

Smart Power Strip

*Actual energy usage depends on the age and model of the appliance

Major appliances may account for a quarter of your household energy costs, and your refrigerator is likely to be the single biggest plug load in your home. Using the Kill-A-Watt® meter, you can compare the energy use of your appliances to the average use as outlined in the table on page 11. Then follow the tips below.

STEP #2: MEASURE THE REFRIGERATOR TEMPERATURE

Use the refrigerator thermometer to help set optimum temperatures for your refrigerator and freezer:

1. Place thermometer in refrigerator between several food items. After 20 minutes, check thermostat reading.
2. Look and test for cracks in the refrigerator door seal using an incense stick: bit.ly/DIYtoolkitvideos
3. Repeat these actions with the freezer.
4. Adjust temperatures if they are outside the target range: 36-40°F for refrigerator and 0-5°F for freezer

Tips & More

REFRIGERATOR

- Regularly clean the coils on your refrigerator.
- Leave your refrigerator plugged into a Kill-A-Watt® meter (included in the kit) for 24 hours to find how much energy it uses per day.
- Keep contents organized so you can quickly get what you need; minimizing the amount of time the doors are open will save energy.
- If you have a second refrigerator, consider donating it or having it properly disposed of by your waste hauler.

WASHER & DRYER

- Wash full loads and use short wash cycles for mildly dirty laundry.
- New clothes washers are highly efficient and work well on the cold water setting.
- Use the washer's high spin cycle to reduce drying time, and try a clothesline instead of the dryer, which is a big energy user.
- Clean the lint trap after every use to ensure safe, efficient drying.

HEATING & COOLING SYSTEMS

- Clean and replace filters regularly.
- Set your winter heating temperature at 68°F; set your summer cooling temperature at 78°F.
- Use window coverings to prevent heat gains during the summer and heat loss during the winter.
- Circulate air with ceiling or portable fans.
- Replace older A/C units (more than 10 to 15 years) with EnergyStar® appliances that could reduce your costs by 20 to 40 percent!

Lighting

Lighting represents as much as 25 percent of your home's electrical use. You can reduce your energy bill significantly by switching to energy-efficient lighting. The LEDs provided in this kit use roughly 10 percent of the energy of an incandescent bulb and last 25 times longer. While LEDs are slightly more expensive than incandescent, they more than pay for themselves over time because of the savings on your energy bill.

STEP #3: SWITCH LIGHTBULBS TO LEDS

LEDs screw into place the same as incandescent bulbs. Follow these steps as you set out to switch over to LEDs:

1. When shopping for LEDs, choose an LED with the same amount of lumens as the old bulb. You should be able to find how many lumens on the packaging.
2. Read the packaging to see where the bulb should be used; not all Energy Star qualified LEDs are designed to work in every socket.
3. First replace the incandescent bulbs in fixtures that have the highest use; this will result in the greatest savings for you.

LED Light Bulb

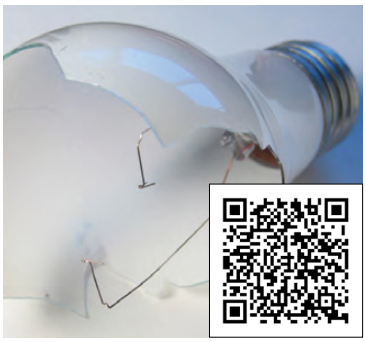
Tips & More

- If you want a dimmable light, look for the "dimmable" label on your LED.
- Pay attention to the color you are getting. LEDs are available in a variety of colors from warmer to cooler as indicated on the package. The higher the temperature listed on the bulb, the cooler the light.
- Make sure to dust your bulbs awt least every six months; a dirty bulb is an inefficient bulb.
- As your less efficient lightbulbs burn out, replace them with LEDs. You can find LEDs in many sizes and shapes at any major hardware store.
- Replace your outside lights as well. LED flood lights are available.

How to Handle a Broken Bulb

Incandescent

1. Turn off and unplug the fixture.
2. Put on protective work gloves.
3. Grip metal lip of the bulb with pliers or wrench.
4. Turning counterclockwise, gently unscrew the bulb base.
5. Place bulb and broken glass in a paper bag and place in the trash.



Removing Broken Incandescent Bulbs: bit.ly/DIYtoolkitvideos

CFL

1. Turn off and unplug the fixture.
2. Open a window or door to the outside environment and leave the room, letting it air out for 10 minutes to let the hazardous chemicals from the bulb dissipate.
3. While continuing to air out room, carefully scoop up glass pieces and powder using stiff paper or cardboard; place into a thick plastic bag.
4. Use sticky tape to pick up remaining fragments **(DO NOT VACUUM)**.
5. Wipe area clean with a damp paper towel; dispose of towel in the trash.
6. Place each CFL in a separate, clear, and sealed plastic bag; bring to a hardware or lighting store that recycles CFLs (typically this service is provided free of charge).
7. For CFL recycling locations, visit zerowastesonoma.gov or mendorecycle.org.

Cleaning Up Broken CFLs and Disposing of Spent CFLs: bit.ly/DIYtoolkitvideos

LEDs

LED bulbs and lights can be disposed of through Household Hazardous Waste programs. They are not currently recycled in Sonoma County.

Fun Fact

Broken incandescent bulbs can be removed from the socket using a potato. Simply cut the potato in half, push the flesh into the broken section of the bulb, and twist counterclockwise.

Home Envelope

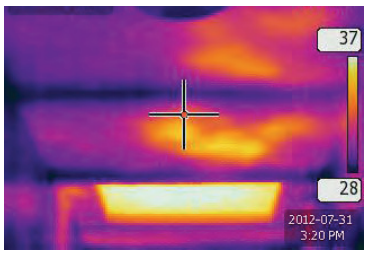
Sealing cracks, gaps, and leaks and improving the insulation in your home can save up to 20 percent of your heating and cooling costs. The infrared laser thermometer will help you detect where you may be losing or gaining heat through windows, lighting fixtures, outlets, vents, door jambs, and heating and cooling systems.

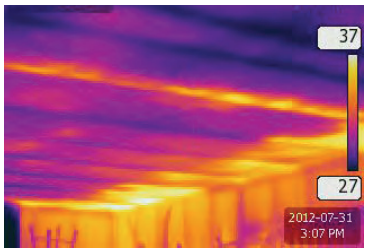
How to Use an Infrared Laser Thermometer: **bit.ly/DIYtoolkitvideos**

STEP #4: USE THE INFRARED LASER THERMOMETER

The infrared laser thermometer detects heat gain and loss. Turn on and point the thermometer at potential trouble spots in your home. Note any temperature fluctuations that may be caused by air leaks.

The images on the right (taken from an infrared camera) show examples of a home with a poor thermal envelope. The spots in yellow are places where little or no insulation are present. On a warm day, heat is being conducted through the ceiling and walls, making these areas hot.





Tips & More

Heating and cooling can account for up to 50 percent of home energy use; a properly insulated home will reduce this cost and keep your home more comfortable — cooler in the summer and warmer in the winter. Take these steps to reduce leakage in your home envelope:

- Caulk windows (see video).
- Schedule a professional audit or contact a local contractor to address insulation needs around your light fixtures, vents, or other spots.
- Insulate ceilings, walls, attics, floors, crawl spaces, and basements to recommended standards for optimum savings.
- Common types of insulation are fiberglass, cellulose, rigid foam board, and spray foam.

How to Caulk Windows: **bit.ly/DIYtoolkitvideos**

You pay for heating your home, so don't just let that heat leak out through gaps in your doors, windows, and outlets. Follow these steps to stop those leaks!

STEP #5: INSTALL WEATHERSTRIPPING

Use weatherstripping to seal gaps in your doors and window jambs.

1. Check for drafts around external doors and window jambs. Use the Infrared Laser Thermometer, or if you can see light or slide a piece of paper through an area, then it needs weatherstripping. The entire door or window usually doesn't need weatherstripping. Focus on the sections where you feel air or can see light.
2. Clean the application area to ensure a good seal.
3. Cut a length of weatherstripping to match the length of door or window where the strip will be applied. Peel back adhesive strip and apply.
4. Please return whatever you do not use in the Toolkit.

How to Apply Weatherstripping:
bit.ly/DIYtoolkitvideos

STEP #6: INSTALL OUTLET GASKETS

Outlet gaskets help prevent air leaks that can result from poor wall insulation.

1. Identify exterior walls with the most exposure to draft.
2. Choose an outlet or switch plate to upgrade, preferably on an external wall.
3. Carefully loosen the face plate screw with a screw driver (not provided) and remove faceplate.
4. Place gasket over internal area. If necessary, trim the gasket to fit around the outlet.
5. Replace faceplate cover and tighten screw.
6. Repeat for other outlets or switches throughout your house.

How to Install Outlet Gaskets:
bit.ly/DIYtoolkitvideos

Tips & More

A door without weatherstripping may not look like a problem, but the amount of exposed area from different locations can add up to a big hole! Consider installing a door sweep to help keep out drafts; you can pick one up at your local hardware store.

Introduction To Water Use

As a necessity for life itself, water is one of our most precious natural resources. In Sonoma County, we get most of our primary water supplies from the Russian River watershed, which includes the Russian River, Lake Sonoma, and Lake Mendocino. With a changing climate and a growing population, conserving and protecting our water resources is essential. While state and local leaders work on long-term solutions, saving water at home helps preserve supplies and can also save you money.

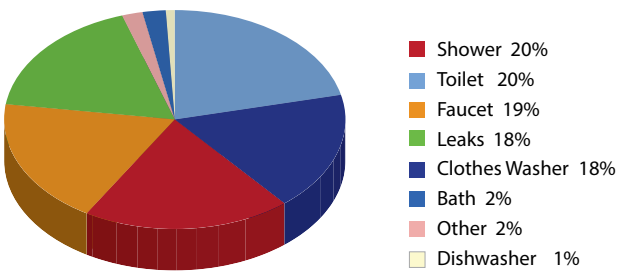
When You Save Water, You Also Save Energy

That's because a good chunk of California's electricity (20 percent) and natural gas (30 percent) consumption is used simply to pump, transport, and treat water around the state. Up to 59 percent of a typical home's gas usage goes to heating water. Therefore, reducing water use can help lower your energy bills.

Fun Fact

On average, U.S. residents use 69 gallons of water a day per person for indoor use. That's 25,000 gallons a year per person — enough to fill an average home swimming pool!

Indoor Water Use in a Typical Single Family Home



At the Tap

STEP #7: MEASURE THE FLOW RATE OF FIXTURES

Using the water flow rate bag, you will measure the rate that water flows from your faucets and showerheads.

Water Flow Rate Bag

1. Determine if your existing fixtures are already efficient; this should be printed on the side of the device. Efficient fixtures are marked as follows in California:
    - Bathroom sink: 1.2 gallons per minute (gpm)
    - Kitchen sink: 1.5 gpm
    - Showerhead: 1.8 gpm

Note: The imprinted flow rate may not be the actual flow rate. We recommend using the flow rate bag to double check. If the existing fixture is not marked as above, continue with the following steps.

2. Turn on faucet fully and fill the water flow rate bag for 5 seconds.
3. If the flow rate is greater than noted in the 1st step, then install one of the Toolkit aerators (see below).
4. Test the flow rate again after the installation and note your findings.
5. Dry the bag with a towel before putting it back in the Toolkit.

*Before you dump captured water, make the most of it by giving it to your indoor or outdoor plants.

STEP #8: REPLACE THE AERATORS

Check the imprint on the aerator for flow rate, or use the flow rate bag to measure. If the faucet flows at more than 1.2 gpm (bathroom) and 1.5 gpm (kitchen), then you should replace the current aerators with the aerators provided. The aerators provided are more efficient than California standards. Note: Some kitchen faucets are custom sizes and cannot be replaced with the Toolkit's aerator. You can still measure the flow rate and seek alternatives at a local hardware store or online.

1. Close or plug your drain.
2. Unscrew old aerator counterclockwise; if needed, use the pliers supplied in the Toolkit to loosen the aerator. Wrap the teeth of the pliers with a rubber band or a towel to avoid scratches to the existing equipment.

3. Screw on new aerator clockwise by hand.
4. Turn on faucet to test for leaks, and tighten with pliers.

Faucet Aerator

Pliers

Bathroom

STEP #9: REPLACE THE SHOWERHEAD

Check the imprint on the showerhead for flow rate, or use the flow rate bag to measure. If the showerhead flows at more than 1.8 gpm, then you should replace with the showerhead provided. Instructions are identical to Step #8. Before screwing on the new showerhead, add a couple turns of thread seal tape to the pipe threads, wrapping the tape in a clockwise direction to eliminate leaks.

Pipe Thread Seal Tape

Efficient Showerhead

STEP #10: USE THE TOILET LEAK DETECTION TABLETS

Leaking toilets can contribute to high water bills if undetected. The Detect-A-Leak Toilet Tablets are a simple and inexpensive way to test for leaks on a regular basis.

1. Carefully remove tank lid.
2. Drop 1-2 tablets into exposed tank.
3. Wait 20-30 minutes. Do not flush the toilet during this time.
4. If blue color appears in the toilet bowl you have a toilet flapper leak. Typically, a leaky flapper is the cause for toilet leaks and needs to be replaced. This is relatively simple and inexpensive and may not require a plumber.

Toilet Leak Detecting Tablets

Faucet Aerator

bit.ly/smswpvideolibrary

Showerhead

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Water Saving Tips

- Avoid running water while brushing your teeth and shaving.
- A constantly running toilet can waste up to 200 gallons of water per day. That can cost you $250 over the course of a year! Contact your local water provider to find out what free water audit services might be available to you.
- Upgrade your old, inefficient toilet (3.5 gallons per flush or more) to a high-efficiency toilet that uses 1.28 gpf or less.
- Make use of a shower timer, which helps you use less water and save energy at the same time. Try to set it for five minutes or less.

Water Heater

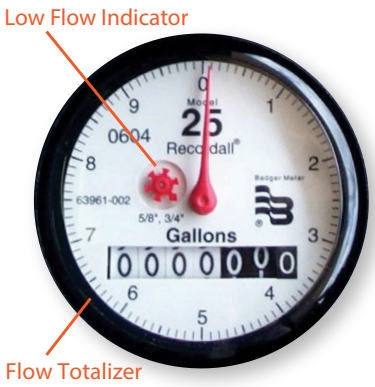
Heating water typically accounts for 59% of the gas usage in the household.

STEP #11
ADJUST THE WATER HEATER

1. Locate your water heater.
2. Locate adjustment dial and mark current setting with a pencil or masking tape.
3. Locate the faucet closest to the water heater.
4. Run water until hot and capture a cupful in a mug. You can catch cold water in a bucket for outdoor use while waiting for the water to get hot.
5. Insert thermometer and wait for it to reach its highest point.
6. Adjust setting so that your hot water runs at 120°F. If your water heater does not have specific temperature settings, this step might take a few tries.

How to read your water meter

Water meters in the U.S. typically measure volume in gallons or cubic feet. One cubic foot = 7.48 gallons and 100 cubic feet = 748 gallons. Water charges are typically based on 100 cubic feet or on 1000 gallon units. Finding your water meter can be a challenge. Look for it near the sidewalk or even in the sidewalk. The cover is often labeled “Water.”



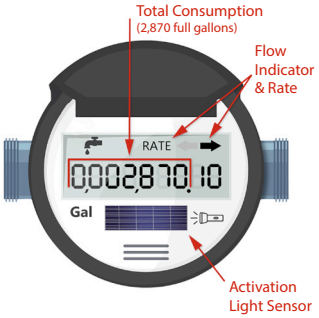
Tips & More

- Insulate the hot water pipes leading from the water heater. This helps conserve energy.
- Set your water heater to "Vacation Mode" when you are away for long periods of time to conserve energy.
- Check the EnergyGuide sticker when purchasing a new hot water heater. It provides the estimated cost to run the equipment.
- Make sure to check out heat pump water heaters, which are up to four times more efficient than standard models.

Leaks

Find Water Meter and Monitor for Leaks

- Turn off all water-using appliances inside the house (e.g., faucets, washing machine, dishwasher, icemaker).
- Locate water meter which is typically located in an in-ground box near the curb in front of your house with a lid marked Water.
- Remove the lid and flip open the cover on the meter dial.
- You may find either an analog or a digital water meter. Both types of meters usually have some sort of low-flow indicator (small red triangle, asterisk shaped feature, water droplet, or faucet symbol).
- Note the starting position of the low-flow indicator relative to some other mark on the dial, like a number, hashmark, or letter, then start a timer for 5-minutes and watch continuously for movement.
- If the low-flow indicator displays movement during the 5-minute test, then there is water flowing through the meter, which suggests a potential leak.



Determine the Location of the Leak

Test the Main Shut-Off Valve:

- Locate the main shut-off valve, typically near an outside faucet along the side of your house.
- Turn off the main valve and then go inside the house and turn on a faucet. If the shut-off valve is working properly, no water should flow from the faucet once the residual water in the pipes finishes draining. If the water doesn't stop flowing, the main shut-off valve is likely faulty and can't be relied on to isolate the source of the leak.

Check the Water Meter Again:

- With the main shut-off valve turned off, re-check the low-flow indicator on the water meter for movement. If the indicator has stopped moving, the leak is coming from inside the house (plumbing pipe, fixtures, etc.). Toilets are frequent sources of leaks, but a licensed plumber may be needed to further diagnose the issue.
- If the indicator moves while the main shut-off valve to the house is off, the leak may be in the underground water service line between the meter and the shut-off valve, or due to a faulty irrigation valve where automated irrigation valves exist upstream of the house shut-off.
- Inspect the area outside for surface water or wet spots along the water line's direction of travel between the meter and the pipe's entry to the house. Similarly, look for wet areas or overly green growth in the landscape that would indicate an irrigation valve leaking water continuously into the irrigation system.

If the Leak Cannot Be Found

If the leak persists but cannot be located, it is recommended to contact a licensed plumber.

Tips & More

- Never use the shut-off valve located in the water meter box. This is maintained, owned and should be handled by your water provider only. Call them for assistance if needed.
- Many water providers are installing Advanced Metering Technology. Make sure to follow-up with your water provider to learn more if this technology is available.

Leaks Can Hide Outside: Look for Bright Green or "Soft" Areas

Whatever irrigation equipment you have – manual, sprinkler or drip – be aware that not all leaks are obvious. First check for overly green or soggy spots, where broken spray heads or bubblers or underground pipe cracks will tell on themselves. Buried pipes, hoses or drip lines leaking into sandy, porous soil may not show up clearly. Automatic sprinkler and drip systems that generate a hissing sound are likely leaking. Also, remember to check drip systems for damage from foot traffic or gnawing pets or pests. Got leaky hoses? Repair them with waterproof tape or hose repair parts. Dribbling hose nozzle connection? Wrap the hose threads with thread seal tape.

Read Your Meter – Often! One way to find out the 'why' of high water consumption is to determine the 'what' and 'when' consumption is occurring. Read your meter every day or every week and keep a log of the readings. Is your consumption consistent or is it higher on some days? If your sprinkler system has a timer, read the meter the day before and the day after an irrigation cycle. How much water is going into the garden? How does that compare to the days without irrigation? If available, sign up for your water provider's free online water use dashboard for your home to make it easier to track your water use.

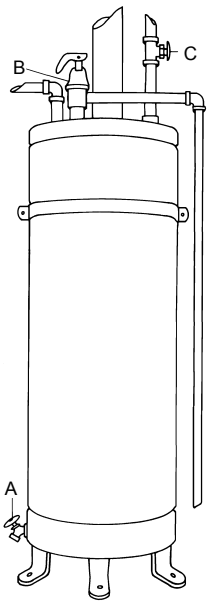
Intermittence

Leaks that may occur intermittently (like a leaking toilet flapper or irrigation sprinkler leak) will not always continuously register at the meter. These are all early steps you can take to locate the problem yourself before calling a plumber or leak detection specialist.

Water Heater Leaks: Small Leaks Can Mean Big Problems

Most people visit their water heaters only if the hot water stops. Check yours. If you notice a puddle of water around the bottom of the tank, it probably indicates a leak caused by corrosion – a sure sign of old age, and the most common reason for replacing the tank. If the tank wall is corroding, more problems are coming, and it's time to retire the tank and get a new energy saving model.

Water heaters last about 15 years with proper care. To clear out any sediment, flush a few quarts of water from the drain valve at the bottom of the tank into a bucket about every six months – maybe when you change fire alarm batteries around the house. Also operate the pressure-relief valve at the top of the tank. Don't worry if a little water leaks out; that means it's working. Also close and reopen the cold-water inlet valve at the top, so you're sure it's easy to operate in an emergency.



A: Drain valve
B: Pressure relief valve
C: Cold-Water inlet valve

Shower diverter leaks: An Overlooked Water and Energy Waster

If you have water coming out of a tub spout when the shower is running, your diverter is no longer working properly and you have a leak. This wastes both water and the energy used to heat water.

Studies have shown that 34% of the diverters leak more than 0.1 gpm. Some diverter leaks can be as high as 3.0 gpm. The average diverter leak, 0.8gpm can waste 7,200 gallons annually per family of three (8 minute showers). If you add the cost to heat the water, diverter leaks can cost up to $100 per year. Check with your local hardware store or your plumber for a replacement. This may require a plumber or handy person.

Outdoor Water Use

Water Savings Tips

- Regularly check for and fix leaks in your irrigation system; leaks can waste thousands of gallons of water annually. Run each station of your automatic irrigation controller and do a visual inspection. Water shouldn't be running into the gutter and should only be spraying the landscaping.
- Consider switching to a drip irrigation system to save water.
- Water between sunset and sunrise when temperatures and wind are the lowest; this reduces evaporation and allows water to soak deeper into your soil
- Pool filters are energy intensive. Consider reducing your filter times in the fall and winter and set timers to avoid peak utility rates. Using a pool cover will save even more energy and water.
- To view water-saving tips and rebates, visit www.savingwaterpartnership.org.
- Change your irrigation schedule with the season and with local weather conditions. Better yet, consider upgrading to an EPA WaterSense Smart controller for automatic adjustments that coincides with the weather.
- Make sure sprinklers are pointed at landscape and are not watering concrete.
- Consider a switch to drought tolerant landscaping.

Car Washing

A home car wash uses 80-140 gallons of water whereas most commercial car washes use 30-45 gallons and many recycle water. Washing your car on your driveway or in the street sends dirty water, soap, heavy metals, oil, and grease into the gutter, which flows to local creeks and waterways. If you wash your car at home, park it over the lawn or a gravel area.

Rebates!

Rebates may be available for water-efficient fixtures through your local water provider. Visit www.savingwaterpartnership.org for more information.

STEP #12: USE THE DRIP KIT TO STOP AND PREVENT LEAKS

The greatest water-savings can be achieved outdoors! Just like any garden, a low water use landscape requires continual maintenance. Ensure you maximize your outdoor water savings while maintaining plant health with these drip kit resources. The kit includes items to optimize your drip irrigation system, make repairs, and test for optimal efficiency. Whether you need to plug a hole or test water pressure in your drip lines, the drip kit simplifies creating a water-efficient drip system.

Goof plugs: Sometimes the location of drip emitters change, like when plants are moved, leaving a hole in the drip line that needs fixing. You can use these goof plugs to plug up any unwanted holes in your drip lines.

Hole punch: Before installing new drip emitters in a drip line, you must create a new hole where the emitters will be inserted. Use this tool to create a hole when adding drip emitters to the drip line.

Drip emitters: When you purchase a new plant, or relocate an existing plant, you might need to add emitters to water it. After you have used the hole punch to make a hole in your drip irrigation line, insert an emitter into the hole. Emitters should be located near a plants root system to apply water only where the plant needs it.

Drip tube couplings: Use couplings to reconnect or extend drip lines by adding new sections after cutting out damage or to repair a severed line.

Figure-8 hose closure: When running a drip line, the end of the line needs to be closed. Use the figure-8 hose closure to close the end of a drip line.

Drip pressure testing tool: Most drip irrigation requires a minimum operating pressure of 20 psi to run correctly and can experience parts failures or other problems at pressures above 50 psi. This tool can be used to test pressure in your drip lines to verify minimal needed pressure for optimal performance and avoid damage from overly high pressure.

How to use a Drip Kit

bit.ly/smswp videolibrary

Cooking and Eating

Kitchen activities often require large amounts of energy. Use these tips to reduce energy use:

Efficient Cooking Habits

- Thaw frozen meats and seafood in the fridge to reduce cook times.
- Double your recipe, freezing half for later.
- Heat only as much water as needed.
- Cover pans to reduce cook time and energy.
- Use fewer pots to reduce dish washing needs.
- Use your toaster oven, air fryer, or microwave for small items; unplug appliances when not in use.
- Avoid opening the oven door.

Efficient Dishwasher Habits

- Dishwashers use less water than washing by hand.
- Scrape, don't pre-rinse, dishes.
- Use the short cycle.
- Air dry dishes by turning off the heat setting and opening the door.
- Upgrade to an EnergyStar® model, saving up to $10 per year.
- Use during non-peak utility rate times.

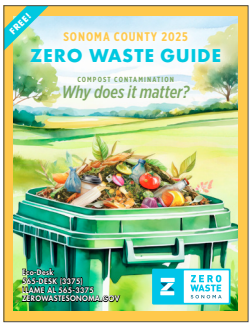
Eating Habits That Help the Planet and Your Health

- Look in your refrigerator first. In the U.S., 40 percent of our food goes uneaten. Eat what you have before shopping for more. Take the EPA's Food Recovery Challenge. Visit: www.epa.gov/sustainable-management-food
- Eat locally. Reduce the miles your food travels and support local farmers.
- Opt for organic. Avoiding pesticides is better for the environment and your health.
- Try the veggie option. Meat production uses an enormous amount of water and energy. On average, it takes 28 calories of fossil fuel energy to produce one calorie of meat, versus 3.3 calories of fossil fuel energy to produce one calorie of protein from grain. Similarly, it takes 4,200 gallons of water daily to support a meat-based diet, versus 300 gallons to support a vegan diet. Going meatless once a week will make a difference.
- Prepare balanced meals. Provide meals loaded with fruits and veggies to promote healthy eating habits for you and your kids.

Compost and Recycle

Composting not only provides healthier soil and plants but can save you money by not having to buy soil conditioners, mulch, and fertilizer. Home composting also reduces yard trimming collection and processing; keeps kitchen waste out of the landfill; and turns organic material into a valuable product for gardens and house plants.

For information about recycling programs for each city in Sonoma County, visit www.zerowastesonoma.gov. This site includes a recycling guide and information about disposing of toxics, reducing junk mail, drop-off recycling locations (buy-back), the carryout bag ordinance, and much more.



Battery Check

Use the battery tester to check if your AA or AAA batteries still have some energy stored. For use:

- Adjust the level to the size of the battery.
- Insert the battery in the correct position, as indicated in the tester.
- Check the level needle. If it is on the yellow, it means the battery has a low charge. If it is on the red, the battery has no charge.
- Please dispose of your unusable batteries properly. Visit zerowastesonoma.gov/calendar to view the Household Hazardous Waste collection calendar or check-in with your waste hauler for battery disposal instructions.

Transportation

Get Better Gas Mileage

- Regularly maintain your vehicle — a happy car is a more efficient car.
- Under-inflated tires will decrease your car's efficiency, so check the tire pressure when refilling your car. Proper tire pressure levels can be found on the inside of the driver's side door.

Or, Ditch the Car!

- Consider using alternatives to driving at least a couple times a week.
- Walk or bike whenever possible.
- Try public transportation. Visit www.sctransit.com for local routes and schedules.
- Safe Routes to School — teach your kids to cut fossil fuel use on the commute to school by walking, biking, scootering, or taking the school bus. Visit www.sonomasaferoutes.org to learn the ways to create a fun, healthy, and safer way to get to school.

Switch to an Electric Vehicle

- Reduce your greenhouse gas emissions.
- Save money on fuel costs and maintenance.
- Enjoy a quieter and cleaner ride.

Final Steps

Return the DIY Toolkit to the Library

Now that you've used the Toolkit and accomplished the steps to a more water and energy-efficient home, you have just a few things left to do:

1. Make sure all tools (see list on page 2) are in your kit before returning it to the library. Please return the Toolkit as soon as you can so other library patrons can make use of it.
2. Want more energy saving tips? Contact the Sonoma County Energy and Sustainability team at energy@sonoma-county.org or call (707) 565-6470.
3. Want more water saving tips? Contact the Sonoma-Marin Saving Water Partnership at www.savingwaterpartnership.org or call (707) 524-1165.
4. Want more information on switching to an EV? Visit sonomacleanpower.org/electric-vehicle-resources.
5. Thinking about going solar? Energy efficiency steps should be done first, enabling you to drive down your total energy demand so that you don't buy a bigger solar system than you need. Contact Energy and Sustainability at the County of Sonoma for a free and unbiased solar consultation at (707) 565-6470.
6. Spread the word about this DIY Toolkit.
7. Visit Sonoma Clean Power's Customer Center at 741 4th St. Santa Rosa.
8. Enjoy the savings from all of your DIY actions!