

SILICON VALLEY ENERGY WATCH

DO-IT-YOURSELF

# HOME ENERGY SAVING TOOLKIT

USER GUIDE

The energy and water-saving toolkit is designed for Santa Clara County residents and can help you save money on your utility bills while conserving vital resources.



## Participating Libraries



Brought to you by:



As a part of the State's energy efficiency portfolio funded by California utility customers, Silicon Valley Energy Watch (SVEW) exists to help residents, businesses, and public agencies throughout Santa Clara County save energy easily and cheaply. SVEW is implemented by the City of San José Environmental Services Department in partnership with Ecology Action. This program is funded by California utility customers and administered by PG&E under the auspices of the California Public Utilities Commission. "PG&E" refers to Pacific Gas and Electric Company, a subsidiary of PG&E Corporation.

Thank you for checking out the DIY Home Energy and Water Savings Toolkit! This handbook will help guide you through using all the tools and items contained in this kit as well as provide information on other ways you can save energy, water, and track your use over time.



Let's get started!

If you are interested in tracking your energy and water savings, there is a Data Tracking Sheet available at <http://sanjoseca.gov/DocumentCenter/View/65240>.

Note: To use the Quick Response (QR) codes in this handbook you need a smartphone app that has a QR code scanner. If you are unable to scan the QR code, you can type the associated URL into your web browser.

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## Additional Resources and Information:



### Rebates!

Rebates for turf replacement and water-efficient fixtures may be available; visit [goo.gl/tNpjEV](https://goo.gl/tNpjEV) or call the water conservation hotline at 408-630-2554 for more information. Additional water conservation program information may be found at the website of Bay Area Water Supply and Conservation Agency [bawsca.org](http://bawsca.org).

Check with PG&E for rebates on your EnergyStar® appliance purchase. Call 1-800-933-9355 or visit <http://goo.gl/jTb2Vq> for eligibility and pickup.



### Waste: Trash, Recycling, and Composting

Visit <https://goo.gl/IcU06p> for the latest Composting Workshops in Santa Clara County.

For information about recycling programs for each city in Santa Clara County, visit <https://goo.gl/iYD5PY>. This site includes information about landfills, transfer stations, curbside recycling programs, and key contacts for each city.

The Recycling & Waste Reduction Commission at the County of Santa Clara has a Recycle search to find places to recycle and reuse stuff: [recyclestuff.org](http://recyclestuff.org).



### Other

For small and medium businesses, find information on rebates, financing, workshops, and other resources from PG&E: <https://goo.gl/AvEzRU>.



For information on household disposal and health & wellness, visit [hhw.org](http://hhw.org).



If you want additional information about energy programs in San José, including the the DIY Home Energy Savings Toolkit Program, visit [sanjoseca.gov/energy](http://sanjoseca.gov/energy).

Santa Clara Valley  
Water District



# DIY Toolkit Contents

INTRO

TOOLKIT

ENERGY

WATER

RESOURCES



## Equipment - For you to keep and install in your home



**LED (Light Emitting Diode) Light Bulb** – Replace incandescent or compact fluorescent bulbs (LED) in high-use fixtures.



**Weatherstripping** – Seal air gaps in windows and doors.



**Outlet Gaskets** – Seal the void around your outlets and prevent heat loss.



**Low-Flow Showerhead** – Replace your current showerhead with the provided 2.0 gallons per minute (gpm) showerhead to save water.



**(3) Low-Flow Faucet Aerators** – The Toolkit provides two 0.5 gpm aerators for your bathroom sinks and one 1.5 gpm aerator for your kitchen sink. These aerators are a standard size (15/16") and will fit most faucets.



**Water Leak Detection Dye Tablets** (not for consumption) – Use to identify leaks in your toilet tanks.



## Tools - To be returned to the library once you are finished with the kit



**Kill-A-Watt® Meter** – Measure the energy use of appliances and equipment to better understand your home's "plug load" as a share of overall energy use.



**Drip Gauge** – Measure how much water a leaky faucet is wasting each day and year.



**Infrared Laser Thermometer** – Check for heat loss in trouble areas such as windows, vents, and door jams.



**Water Flow Rate Bag** – Measure the true rate of flow in gallons per minute of your faucets and showers.



**Refrigerator Thermometer** – Monitor the temperature in your refrigerator.



**Pliers** – Use to replace old faucet aerators and showerheads with new ones.



**Painter's Tape** – Wrap around the pliers to help prevent scratching the aerators or showerhead during installation.



**Pipe Thread Seal Tape** (plumber's tape) – Help prevent leaks in your faucets and showerheads.



**Thermometer** – Check the temperature of your hot water supply.



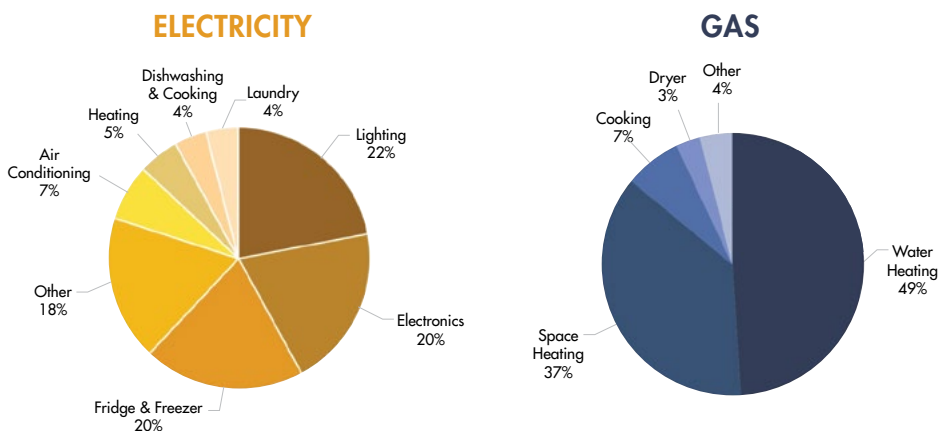
**Leaky Faucet and Toilet Guide** – Follow this guide to fix water leaks in your home.

# 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. These pie charts show how the average household in California uses electricity and natural gas.



## How Much Energy Will This Toolkit Help Me Save?

We all use energy in our homes 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 EnergyStar® Certified CFL or LED bulb can save you anywhere from \$40 to \$135 in electricity costs over the bulb's life\*—but the actual amount depends on how often you use the light, your electricity rate, and the specific bulb and fixture.

\*Based on national averages



## Energy Literacy: Understanding Units That Measure Energy

**Watt (W)** – Power is a measure of the rate at which energy flows, and in electrical systems it is measured in watts (W). Watts are basically the miles-per-hour measurement of the electrical world—they tell you how fast the electrons are speeding down the highway. The higher the rating (e.g., 40, 60, 100W), the brighter the light. LED bulbs use fewer watts (e.g., 9 to 14W) to produce the same amount of light.

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

**Kilowatt hour (kWh)** – This is the measure of electricity you have used. A kWh is a measure of energy, and energy is defined as the capacity to do work, such as creating heat, light, or motion. If you run a 60-watt light bulb for one hour, you've used 60 watt-hours, or 0.06 kilowatt-hours. In other words, 0.06 kWh is the amount of energy you need to run a light bulb for an hour. In 2011, the typical PG&E residential customer used 540 kWh/month/household.

**Therm** – A therm is the energy equivalent of burning 100 cubic feet of natural gas. The typical PG&E residential customer uses an average of 34 therms per month per household. It takes approximately 0.0089 therms to heat a gallon of water or 0.356 therms to heat a 40-gallon hot water tank.

# Understanding Your PG&E Bill

INTRO



## PG&E Bill Features

- 1 Account Summary**  
A snapshot of your bill, including an overview of charges incurred, payments received, and your total amount due.
- 2 PG&E Contact Information**
- 3 Savings Alert**  
Notes about your account and any special programs you participate in that may affect your total charges.
- 4 Monthly Billing History**  
A chart of your monthly energy charges over the past year.
- 5 Important Definitions**  
Define key terms.

TOOLKIT

ENERGY

WATER

RESOURCES

**ENERGY STATEMENT**  
www.pge.com/MyEnergy

**Important Phone Numbers - 24 hours per day, 7 days per week**

**Customer Service (All Languages; Relay Calls Accessible)** 1-800-652-4777

**Service in Spanish (Spanish)** 1-800-660-6789

**普通话服务 (Chinese)** 1-800-688-9555

**Rules and rates**

You may be eligible for slower rates. To learn more about optional rates or view a complete list of rates and rates, visit [www.pge.com](http://www.pge.com) or call 1-800-743-5000.

If you believe there is an error on your bill, please call 1-800-743-5000 to speak with a representative. If you are not satisfied with our response, contact the California Public Utilities Commission (CPUC), Consumer Affairs Branch, 305 Van Ness Avenue, San Francisco, CA 94102, 1-800-649-3700 or 415-773-0202 (TDD/TTY).

To avoid having service turned off while you wait for a CPUC decision, enclose a deposit check (payable to the CPUC) for the disputed amount and a description of the dispute. The CPUC will only accept deposit for matters that relate directly to billing accuracy. If it is not possible for you to pay your deposit, you must advise the CPUC. PG&E can not turn off your service for nonpayment while it is under review by the CPUC; however, you must continue to pay your current charges to keep your service turned on.

If you are not able to pay your bill, call PG&E to discuss how we can help. You may qualify for reduced rates under PG&E's CARE program or other special programs and services may be available to assist you. You may qualify for the Energy Savings Assistance Program which is an energy-related program for income-qualified residential customers.

**Important definitions**

Resisting outside factors are subject to change without advance notice due to operational conditions.

**Tier 1 (Baseline) allowance:** All residential customers are given a Tier 1 allowance - a CPUC approved percentage of average customer usage during summer and winter months. Your Tier 1 allowance provides for basic needs at an affordable price and an average conservation. Your allowance is assigned based on the climate where you live (baseline territory), the season and your heat source. As you use more energy, you pay more for each kilowatt-hour.

Electric Tier	% of Baseline
1	0% - 100%
2	100% - 130%
3	130% - 200%
4	> 200%

**Gas Tier % of Baseline**

1	0% - 100%
2	> 100%

**ENERGY STATEMENT**  
www.pge.com/MyEnergy

Account No: 1023456789-0  
Statement Date: 09/12/2013  
Due Date: 10/03/2013

**Service For:**  
Residential Customer  
1234 Main Street  
Extra Address Line  
Anytown, CA 00000

**1 Your Account Summary**

Amount Due on Previous Statement	\$144.70
Payment(s) Received Since Last Statement	-144.70
Previous Unpaid Balance	\$0.00
Current Electric Charges	\$96.91
Current Gas Charges	49.20
<b>Total Amount Due by 10/03/2013</b>	<b>\$146.11</b>

**2** Questions about your bill?  
24 hours per day, 7 days per week  
Phone: 1-800-743-5000  
[www.pge.com/MyEnergy](http://www.pge.com/MyEnergy)

**Local Office Address**  
800 W 2ND ST  
ANTIOCH, CA 94509

**3** Current charges include a discount of \$50.17 for Winter Gas Savings.

**4 Monthly Billing History**

Daily Usage Comparison

**Important Messages**

**CARE Program** You may qualify for a monthly discount with the California Alternate Rates for Energy (CARE) Program. To find out more and apply online, visit [www.pge.com/care](http://www.pge.com/care).

Usted podría reunir los requisitos de un descuento mensual con el California Alternate Rates for Energy Program (CA). Más información y hacer su solicitud en Internet, visite [www.pge.com/espanol/care](http://www.pge.com/espanol/care).

Please return this portion with your payment. No staples or paper clips. Do not fold. Thank you.

99901234567890100000XXXXX000000XXXXXXX

**Account Number:** 1023456789-0  
**Due Date:** 10/03/2013  
**Total Amount Due:** \$146.11  
**Amount Enclosed:** \$

**RESIDENTIAL CUSTOMER**  
1234 MAIN STREET  
ANYTOWN, CA 00000  
EXTRA ADDRESS LINE

PG&E  
BOX 997300  
SACRAMENTO, CA 95899-7300

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\*PG&E refers to Pacific Gas and Electric Company, a subsidiary of PG&E Corporation. © 2013 Pacific Gas and Electric Company. All rights reserved. Please do not mark in box. For system use only.

**Update My Information (English Only)**

Please allow 1-2 billing cycles for changes to take effect.

Account number: 123456789-0

Change my mailing address to:

City \_\_\_\_\_ State \_\_\_\_\_ ZIP code \_\_\_\_\_

Primary \_\_\_\_\_ Email \_\_\_\_\_

**Ways To Pay**

- Online at [www.pge.com/mytopy](http://www.pge.com/mytopy)
- PG&E's Mobile Bill Pay
- Automatic Payment Service: Sign up to authorize automatic payments sent from your bank account each month.
- By mail: Send your payment along with this payment stub in the envelope provided.
- By debit card, Visa, MasterCard or Discover: Call 1-877-764-9470 at any time. (Our independent service provider charges a fee for each transaction.)
- As a PG&E payment center or local office: To find a payment center or local office near you, please visit [www.pge.com](http://www.pge.com) or call 1-800-743-5000. Please bring a copy of your bill with you.

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# Understanding Your PG&E Bill



## PG&E Bill Features

- 6 Electricity Usage**  
Notes your electricity usage during a given timeframe.
- 7 Tier Indicator**  
Shows the highest tier in which you are being charged.
- 8 Total Electric Charges**  
Total electricity charges, including taxes and fees.
- 9 Daily Usage Chart**  
**Your electricity usage this month.**
- 10 Details of Gas Charges**  
Information regarding your rate plan.
- 11 Gas Usage**  
Notes your usage by tier during a given timeframe.

- 12 Tier Indicator**  
Shows the highest tier in which you are being charged.
- 13 Total Gas Charges**  
Total gas charges, including taxes and fees.
- 14 Daily Usage Chart**  
**Your gas usage this month.**

Reference charts shown in **4**, **9** and **14** to track your energy use over time and see if you have made any significant energy use reductions.



To see how your energy use compares to your neighbors, check your Home Energy Report on [pge.com](http://pge.com).

**ENERGY STATEMENT**  
www.pge.com/MyEnergy

Account No: 1023456789-0  
Statement Date: 09/12/2013  
Due Date: 10/03/2013

**Details of Electric Charges**  
08/13/2013 - 09/12/2013 (31 billing days)

Service For: 1234 Main Street  
Service Agreement ID: 5007654321  
Rate Schedule: E1 S6 Residential Schedule

08/13/2013 - 09/12/2013	Your Tier Usage	1	2	3	4
Tier 1 Allowance	474.30 kWh (31 days x 15.3 kWh/day)				
Tier 1 Usage	474.300000 kWh @ \$0.13230				
Tier 2 Usage	142.290000 kWh @ \$0.18040				
Tier 3 Usage	40.410000 kWh @ \$0.31114				
Energy Commission Tax					0.19
<b>Total Electric Charges</b>					<b>\$96.91</b>

**9** Electricity Usage This Period: 657.000000 kWh, 31 billing days

Bar chart showing daily electricity usage (kWh) from 08/13 to 09/12. Average Daily Usage is approximately 21 kWh.

Visit [www.pge.com/MyEnergy](http://www.pge.com/MyEnergy) for a detailed bill comparison.

**ENERGY STATEMENT**  
www.pge.com/MyEnergy

Account No: 1023456789-0  
Statement Date: 09/12/2013  
Due Date: 10/03/2013

**Details of Gas Charges**  
08/13/2013 - 09/12/2013 (31 billing days)

Service For: 1234 Main Street  
Service Agreement ID: 5007654321  
Gas Schedule: G1 S Residential Agree

08/13/2013 - 09/12/2013	Your Tier Usage	1	2
Tier 1 Allowance	5.74 Therms (19 days x 0.46 Therms/day)		
Tier 1 Usage	5.740000 Therms @ \$1.53134		
Tier 2 Usage	14.552000 Therms @ \$1.34824		
Gas PPP Surcharge (\$0.06551 /Therm)			1.53
<b>Total Gas Charges</b>			<b>\$49.20</b>

**10** Details of Gas Charges

**11** Gas Usage

**12** Tier Indicator

**13** Total Gas Charges

**14** Gas Usage This Period: 38.000000 Therms, 31 billing days

Bar chart showing daily gas usage (Therms) from 08/13 to 09/12. Average Daily Usage is approximately 1.2 Therms.

Visit [www.pge.com/MyEnergy](http://www.pge.com/MyEnergy) for a detailed bill comparison.

## Reducing Energy Use: Plug Loads



Household electronics account for up to 15 percent of electricity consumption in a typical California home. Many small appliances and electronics use as much as 75 percent of energy when off or in standby as they do while on! These are known as “vampire” or “phantom” loads, and eliminating them is a great way to save energy.



### Action #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. Using the Kill-A-Watt® meter, you can compare the energy use of your appliances to the average use as outlined in the table at the bottom of this page.



#### Follow these steps:

- 1 Plug the meter into an outlet; then plug an appliance or electronic device you'd like to measure into the meter. You may need to wait a couple seconds for the reading to display.
- 2 Push the “DOWN” button until “Watt” appears as the unit.
- 3 Measure the wattage when the appliance is both on and off.
- 4 Check your PG&E bill for your electricity rate. You can estimate the cost of electricity used by the appliance or device over time.

#### Instructional Video:

How to Use a Kill-A-Watt® EZ Meter



<http://goo.g1/3Mv1Ku>



### Tips



- Unplug small appliances (toasters, coffee pots, etc.) when not in use or plug all appliances into a power strip and be sure to turn that off when not in use.
- Unplug phone and battery chargers once they are fully charged.
- In your entertainment and computer areas, plug equipment into a Smart 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.

#### Average Energy Consumption of Operating Standard Appliances\*

Appliance	Watts
Clothes Dryer	1,800-5,000
Dishwasher	1,200-2,400
Clothes Iron	1,000-1,800
Vacuum Cleaner	1,000-1,400
Toaster	800-1,400
Heater	750-1,500
Microwave	750-1,100
Refrigerator	725
Computer	270 awake 60 asleep
Flat-screen TV	120
DVD Player	20-25

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



# Reducing Energy Use: Appliances

Major appliances account for a quarter of your household energy costs, and your refrigerator is likely to be the largest plug load in your home.



## Action #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, record the temperature.
- 2 Adjust temperatures if it is outside the target range: 36-40°F for refrigerator and 0-5°F for freezer.
- 3 Look and test for cracks in the door seal: Close the door on a piece of paper and tug. If the paper moves easily, then you need to replace the seal.
- 4 Repeat these actions with your freezer.



## Tips:

### Refrigerator

- Regularly clean the coils on your refrigerator.
- Turn off the condenser feature in the refrigerator.
- If you have a second refrigerator, consider donating it.

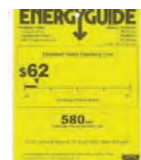
### Washer & Dryer

- Wash full loads and use short wash cycles for mildly dirty laundry. This goes for your dishwasher too!
- Use cold water whenever possible.
- Use the washer's high spin cycle to reduce drying time, and try a clothesline instead of the dryer.
- Clean the lint trap after every use to ensure safe, efficient drying.

### Save With EnergyStar® Appliances!

EnergyStar® appliances typically use up to 50 percent less energy and water than standard models. Look for the EnergyGuide label which provides an estimated yearly operating cost and the range of operating costs for similar models.

If you live in San José and are disposing of a large appliance, you can have it picked up for free (for more information visit <https://goo.gl/b7W89q>). If you live outside of San José, look online for programs in your area; not all are free but most are under \$50.



# Reducing Energy Use: Lighting

Lighting represents as much as 22 percent of your home's electrical use. You can reduce your energy bill significantly by switching to energy efficient lighting. The LED Bulbs provided in this kit use at least 75% less energy than incandescent bulbs and last 25 times longer.



## Action #3: Switch Lightbulbs to LEDs

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

- 1 Replace the incandescent bulbs in fixtures that have the highest use; this will result in the highest savings.
- 2 Turn off the lamp and wait for the incandescent bulb to cool for 5 minutes.
- 3 Please do not use the LED bulb included in this toolkit in a dimmable or enclosed fixture. If you buy your own LED bulbs, read the packaging to see where the bulb should be used; not all LEDs are designed to work in every socket.
- 4 Match the equivalent wattage of the old bulb (a 60W incandescent should be replaced with a 9W or other 60W equivalent LED).



## Tips:

- Dimmable fixtures require dimmable LEDs or CFLs; these are available at hardware stores. A standard bulb will quickly burn out if used in a dimmable fixture.
- Make sure to dust your bulbs at least every six months; a dirty bulb is an inefficient bulb.

## Next Steps:

Replace all bulbs in your home with LED bulbs. Replace incandescent bulbs first to save the most energy and money; then you can also replace any CFLs (CFLs contain mercury and cannot be thrown away in the normal trash. Visit [hhw.org](http://hhw.org) for information on disposal).

LEDs can be more expensive than the average light bulb. If you still want to save energy but can't spend extra money, first try looking for LEDs on sale. If you can't find the right kind on sale, you can also switch your incandescent bulbs to CFL bulbs.

For more information on energy-efficient bulbs:



<https://goo.gl/VgR5ZI>

Energy efficient bulb cleanup guide:



<https://goo.gl/XwZLjH>



# Reducing Energy Use: 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 jams, and more.



**Instructional Video:**  
How to Use an Infrared  
Laser Thermometer



<http://goo.gl/bDJj2>



## Action #4: Use the Infrared Laser Thermometer

The Infrared Laser Thermometer detects heat gain and loss.

- 1 Turn on and point the thermometer at an interior wall or area of average internal home temperature. This is your reference temperature.
- 2 Point the thermometer at potential trouble spots in your home such as doors, windows, outlets, and exterior walls. Note any temperature fluctuations that may be caused by air leaks.
- 3 To detect small temperature differences, adjust the switch to 1°F. To detect larger temperature differences, adjust it to 5°F or 10°F.
- 4 The laser color will change depending on the temperature conditions:

**Green = Good Red = Gaining Heat Blue = Losing Heat**

You can see the temperature difference between the reference temperature and the scan temperature.



## Tips:

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 cooler in the summer and warmer in the winter. Take these steps to reduce leakage in your home envelope:

- Caulk windows.
- Schedule a professional audit or contact a local contractor to address insulation needs around your light fixtures, vents, or other spots. Energy Upgrade California is an excellent resource for this; visit [energyupgradeca.org](http://energyupgradeca.org) for information.
- Insulate ceilings, walls, attics, floors, crawl spaces, and basements to recommended standards for optimum savings.
  - Visit <https://goo.gl/ntgs07> for information on green insulation.

## Instructional Video:

How to Caulk  
Windows



<http://goo.gl/pdRsJ>



# Reducing Energy Use: Home Envelope

If you found any thermal leaks around your doors and windows in Action #4, you can use the weatherstripping provided in this toolkit to help stop those leaks.



## Action #5: Install Weatherstripping

Use weatherstripping to seal gaps in your doors and windows.

- 1 To check for drafts around doors and window jams, you can either use the thermometer in action 4 or try to slide a piece of paper through the area. If you see light, then that area will 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 the door or window where the strip will be applied. Peel back adhesive strip and apply.
- 4 Please return what you do not use with the Toolkit.



### Tip:

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.

### Instructional Video:

How to Apply  
Weatherstripping



<https://goo.gl/cCPMUL>



### Instructional Video:

How to Install Outlet Gaskets.



<http://goo.gl/HQ4YW>



## Action #6: Install Outlet Gaskets

Another way to ensure proper insulation and help prevent air leaks that can result from poor wall insulation is by using outlet gaskets.

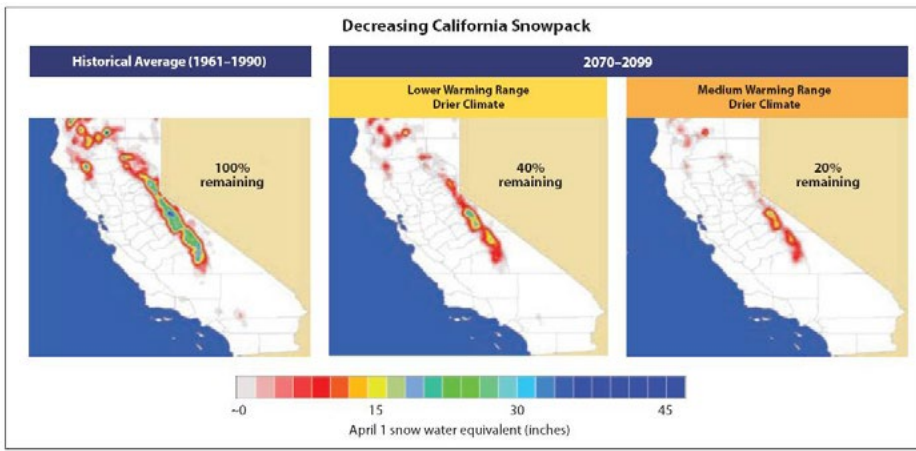
- 1 Identify exterior walls with the most exposure to draft (you can use the thermal leak detector from Action 4).
- 2 Choose an outlet or switch plate to upgrade.
- 3 Carefully loosen the face plate screw with a screwdriver (not provided) and remove faceplate.
- 4 Place gasket over internal area. If 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.

# Introduction to Water Usage

To view the level of drought across California visit <https://goo.gl/kDMzoy>

As a necessity for life itself, water is one of our most precious natural resources. In the Bay Area, we receive most of our water from the snowpack of the Sierra Nevada. With a changing climate and growing populations, our water resources have been shrinking year by year as rain has become more unpredictable, even with the heavy rainfall from 2016-17. While state and local leaders continue to work on long-term solutions to our water challenges, saving water daily helps stretch supplies and keeps water in reservoirs for the inevitable dry years to come.

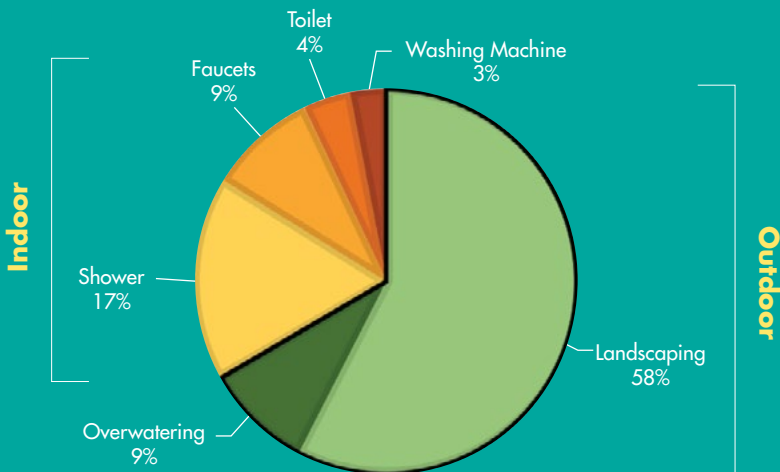
While the average American uses 90 gallons per day, when you consider food choices and other daily decisions, you would be surprised at how much water you use. Learn more and calculate your water footprint at [www.watercalculator.org](http://www.watercalculator.org)



Luers A., Cayan D., Franco G., Hanemann M. and Croes B., California Climate Change Center (2006) Our Changing Climate: Assessing the Risks to California, p.7

## How We Use Water

Indoor Water Use in a Typical Single Family Home



## Save a little water, save a lot of energy!

20% of the state's electricity and 30% of its natural gas is used to move and treat water, making this the most intensive use of energy in California. At a quarter of the cost of traditional energy saving measures such as changing light bulbs, water conservation also happens to be a very economical way to reduce energy use and greenhouse gas emissions.

Reducing water use can therefore help lower your energy bills.

# Reducing Water Use: At the Tap

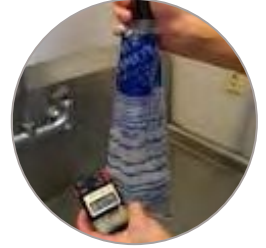
INTRO



## Action #7a: Measure the Flow Rate of Faucets

Using the water flow rate bag, you will measure the rate that water flows from your faucets and showerheads. Even if you have low flow aerators, it can be helpful to check the flow rate because aerators can corrode.

- 1 Turn on faucet and fill water flow rate bag for 5 seconds.
- 2 Record the gallons per minute measured on the flow rate bag.
- 3 If your water is flowing at a rate greater than noted in Action 8a, install one of the Toolkit aerators (Action #8).



TOOLKIT



## Action #7b: Drip Gauge

- 1 If you have a dripping faucet, hold the empty drip vial under the drip for 5 seconds.
- 2 Set it on a level surface and look at the gallons per day (GPD) and gallons per year (GPY) markings to see how much water the leak is wasting each day and year.
- 3 Visit <http://fishnick.com/leakcalculator/> to see what the leak is costing you.



Think before you dump leftover water: make the most of it by giving it to your indoor or outdoor plants.

Fun Fact: Over half of all water use in the home takes place in the bathroom. Installing aerators saves 1.2 gallons per person per day.

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# Reducing Water Use: Bathroom



## Action #8a: Replace the Aerators

After measuring the flow rate of your aerators and showerheads using the flow rate measure bag, see if their flow rates match the flow rates we have listed. If they are higher, then you can replace them to help save water.

**Bathroom sink:** 0.5 gpm

**Kitchen sink:** 1.5 gpm

**Showerhead:** 2.0 gpm

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.



**Equipment:**  
Faucet Aerator

- 1 Close or plug your drain.
- 2 Unscrew old aerator counterclockwise; if needed, use the pliers to loosen the aerator. Wrap the teeth of the pliers with painter's tape or a towel to avoid scratches to the existing equipment.
- 3 Clean and dry water pipe threads (grooves at end of faucet).
- 4 Wrap provided pipe thread seal tape around pipe thread.
- 5 Screw on new aerator clockwise by hand.
- 6 Turn on faucet to test for leaks, and tighten with pliers if necessary



**Tool:**  
Pipe Thread Seal Tape



**Tool:** Pliers



## Action #8b: 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 2.0 gpm, you should replace with the showerhead provided.

Instructions: Identical to Action #8a.

### Other Water Saving Tips

- Turn water off while brushing your teeth and shaving.
- Upgrade your old, inefficient toilet (3.5 gallons per flush or more) to a high-efficiency or dual flush toilet.
- Make use of a shower timer, which helps you save water and energy at the same time. Try to set it for five minutes or less.



### Instructional Videos:

How to change your faucet aerator and showerhead.

Faucet Aerator



<https://goo.gl/ZHDeo>

Showerhead



<https://goo.gl/qkcx8>

# Reducing Water Use: Bathroom & Water Heater

INTRO



## Action #9: Check Your Toilet for Leaks



A toilet that runs constantly can waste up to 200 gallons of water per day, which can cost you \$250 over the course of a year! 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 leak. Typically, a leaky flapper is the cause for toilet leaks and needs to be replaced.

TOOLKIT



## Action #10: 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. (Collect excess water in a pitcher or bucket and use to water plants)
- 5 Insert thermometer and wait for it to reach its highest point.
- 6 Record highest point temperature.
- 7 Adjust setting so that your hot water runs at 120°F. If your water heater does not have specific temperature settings, this action might take a few tries.



Heating water typically accounts for up to 49 percent of the natural gas use in your home.

**Instructional Video:**  
How to Adjust Your Water Heater Temperature



<http://goo.gl/DJDKk>

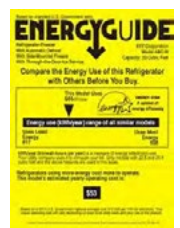
ENERGY

WATER



## Tips

- Insulate the pipes leading from the water heater and use an insulating sleeve on the actual heater. This helps conserve energy.
- Set your water heater to “Vacation Mode” to conserve energy when you are away for long periods of time.
- Check the EnergyGuide sticker when purchasing a new hot water heater. It provides the estimated cost to run the equipment.
- Do you have a recirculation pump? These pumps can save water, but only if the timer is set correctly.



RESOURCES



# Reducing Water Use: Outdoors

- **Irrigation Leaks:** Regularly check for and fix leaks in your irrigation system; leaks can waste thousands of gallons of water annually.
- **Drip Irrigation:** Consider switching to a drip irrigation system to save water.
- **Timing Watering:** Water when temperatures and wind are the lowest: in the evenings and in the mornings before sunrise. This reduces evaporation and allows water to soak deeper into your landscaping.
- **Irrigation Controls:** Change your irrigation schedule for each season depending on local weather conditions. Consider upgrading to a weather-based irrigation controller.
- **Drought Resistant Plants:** Remove part or all your grass and plant native, drought-resistant species. These will require much less water and will therefore help reduce your water and energy bills.
- **Pool Filter Scheduling:** 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.

When your car needs a wash, be sure to visit a commercial car wash that recycles wash water and saves water. A home car wash uses 80-140 gallons of water, whereas most commercial car washes with water recycling use 30-45 gallons.

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 the Bay.



# Sustainable Lifestyle

INTRO



## Transportation

Get better gas mileage:

- Under-inflated tires will decrease your gas mileage, so check the tire pressure when filling your tank. Proper tire pressure levels can be found on the inside of the driver's side door.
- Walk, bike, or take public transportation whenever possible. Visit VTA website for bikeways maps and local public transit routes and schedules.
- "Safe Routes to School" are cool! Encourage your kids to commute by walking, biking, scootering, or taking the school bus to school. Visit <https://goo.gl/rdrurx> to learn the ways to create a fun, healthy, and safer way to get to school.



TOOLKIT

ENERGY



## Kitchen

- **Shop your refrigerator first.** In the U.S., 40 percent of our food goes uneaten. Eat what you have before shopping for more by taking EPA's Food Recovery Challenge. Visit <http://goo.gl/XWk0Zf>
- **Cook efficiently.** Heat only as much water as needed and cover pans to reduce cook time and energy use.
- **Try the meatless 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.
- **Opt for organic.** Avoiding pesticides is better for the environment and your health.
- **Practice efficient dishwasher habits.** Scrape, don't rinse, dishes. Air dry dishes by turning off the heat setting and opening the door. This will save energy and water.



WATER

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## Final Steps



### Return the DIY Toolkit to the Library

Now that you've used the Toolkit and accomplished the steps to a more 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** Consider amplifying your savings through the whole home performance approach of Energy Upgrade California—visit [energyupgradeca.org](http://energyupgradeca.org) to learn more and get started.
- 3** 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. Visit [gosolarcalifornia.org](http://gosolarcalifornia.org) to learn more about solar options for your home.
- 4** Spread the word about SVEW and share your experience using the DIY Toolkit.
- 5** If you want any information from this handbook after you return the toolkit, visit [sjenvironment.org/DIYtoolkit](http://sjenvironment.org/DIYtoolkit) for an electronic copy.
- 6** Enjoy the savings from all your DIY actions!



## Congratulations on taking these steps to save vital resources!

### Contact

Silicon Valley Energy Watch  
City of San José - Environmental Services Department  
200 East Santa Clara, San José, CA 95113  
Phone: (408)535-8550  
[energy@sanjoseca.gov](mailto:energy@sanjoseca.gov)



### Participating Libraries



Brought to you by:



As a part of the State's energy efficiency portfolio funded by California utility customers, Silicon Valley Energy Watch (SVEW) exists to help residents, businesses, and public agencies throughout Santa Clara County save energy easily and cheaply. SVEW is implemented by the City of San José Environmental Services Department in partnership with Ecology Action. This program is funded by California utility customers and administered by PG&E under the auspices of the California Public Utilities Commission. "PG&E" refers to Pacific Gas and Electric Company, a subsidiary of PG&E Corporation.