BUYER'S GUIDE

Save energy and money for your home

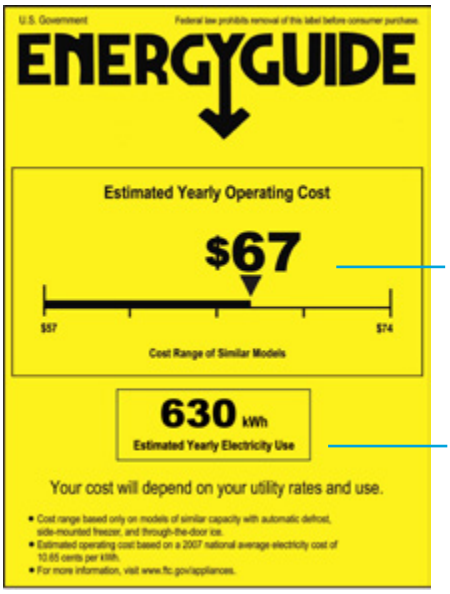
PG&E®

Clothes Washer Buyer's Guide

When shopping for a rebate-qualifying CEE Tier 3 clothes washer, look for energy and water-saving features like advanced controls (water temperature, load size, pre-soak cycles, etc.) and faster spin speeds.

Look for the label

Most washers must meet specific energy standards as outlined by the U.S. Department of Energy. Energy usage and efficiency are displayed on the yellow EnergyGuide labels. This label also displays the ENERGY STAR® logo for qualified models. Go to the FTC website.



Estimated yearly operating costs are shown for similar models, based on the national average rate for electricity. Look for models with the lowest operating costs.

Estimated annual energy consumption is based on typical use. Multiply this by your local rate to get an estimate of your actual operating cost.

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Go to the front

In general, horizontal-axis (usually front-loading) are much more efficient than conventional vertical-axis (usually top-loading) machines with agitators. This is because front-loading machines don't have to fill the tub completely with water.

Go high MEF and get a rebate

Modified Energy Factor (MEF) is a calculation of the end moisture content, tub size, and water heating use that enables you to compare energy efficiency between washers. The higher the MEF, the more efficient the washer. Clothes washers that qualify for PG&E rebates as CEE Tier 3 models offer MEFs at or above 2.4. Download this list of washers and look for models with a Tier 3 in the far right hand column of the CEE list.

Go low WF and get a rebate

Water Factor (WF) is the number of gallons used per each cubic foot of laundry. The lower the WF, the more efficient the washer. Clothes washers that qualify for PG&E rebates as CEE Tier 3 models have WFs at or below 4.0. Download this list of washers and look for models with a Tier 3 in the far right hand column.

Seek control

Washers with advanced controls can either sense load size and adjust water levels or have various wash, rinse and pre-soak cycles that you can set for more precise energy management.

Embrace spinning

Spinning moisture out of your clothes is much more efficient than heating to dry them. Improved spin speeds on new machines allow you to either air-dry or use the dryer less, which saves energy and extends the life of your clothes.

Size matters

Try to size the new clothes washer to fit your needs for the next 7 to 10 years. If you buy a model too small for your household, you may end up washing too many loads, which usually consumes more energy than washing a few large loads. If you only need the large capacity for comforters and bulky items, considering using a local laundromat instead.

Check your specs

Measure your laundry room space as well as the doorways and any other nearby appliances (such as a dryer) and bring these measurements with you when you shop to make sure your new clothes washer will fit. Also consider noise levels. If you're installing close to sleeping areas or in an upstairs setting, look for units with vibration-reduction technology or sport suspension.

More ways to get smart about clothes washers

Watersense

For laundry and cleaning, saving water is as important as saving electricity. Learn what you can do to make smart water choices around your home and with the products you buy. Learn more at the **Watersense website**.

Energy Guide

Calculate what you'll save by replacing your clothes washer with an energy-efficient model. Go to the **Energy Guide Website**.

Water Agency Rebates

You might also be eligible for a combined rebate of up to $125 from PG&E and your local water agency. To see if you qualify, go to the **Water Energy Saving website**.

Places to Buy

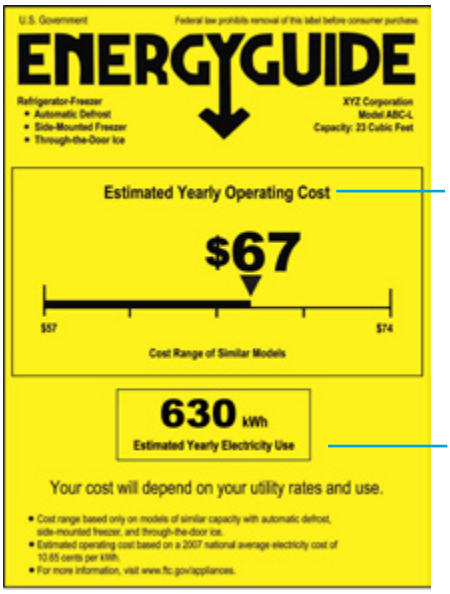
Go to the **ENERGY STAR® store locator** to find a local retailer. Don't forget to apply for your rebate. Apply online or ask a store associate for a rebate application.

Refrigerator Buyer's Guide

Today's new refrigerators use a lot less energy than those from just 10 to 20 years ago. Here's what to look for when shopping for an energy-efficient, rebate-qualifying CEE Tier 3 refrigerator.

Look for the label

Most refrigerators must meet specific energy standards as outlined by the U.S. Department of Energy. Energy usage and efficiency are displayed on the yellow EnergyGuide labels. This label also displays the ENERGY STAR® logo for qualified models. Go to the FTC website.



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Go CEE Tier 3 and get a rebate

CEE Tier 3 refrigerators are 30% more energy-efficient than non-ENERGY STAR units, plus you can earn a $75 rebate from PG&E when you purchase a qualifying model. Download this list of refrigerators and look for models with Tier 3 in the far right hand column of the CEE list.

Start at the top

Refrigerators with top-mounted freezers use 10% to 25% less energy than bottom-mounted or side-by-side models of the same capacity.

Size matters

The most energy efficient refrigerators are typically 16–20 cubic feet. Refrigerators under 25 cubic feet should meet the needs of most households, and larger ones use significantly more energy.

Back to basics

While ice and water dispenser options can limit the number of times you open the freezer and refrigerator, the U.S. Department of Energy estimates that they can take 14% to 20% more energy and can add $75 to $250 to the price of your new refrigerator. It can be more efficient to use the basic ice tray.

Check your specs

Be sure to factor in both door swing (in relation to adjacent walls and other appliances) and clearance (at least 1-inch space around the refrigerator to ensure adequate air flow) when measuring space for your new refrigerator.

Behold the freezer chest

Remember, chest freezers are more efficient than upright, front-loading models.

Made in the shade

Boost your new model's energy efficiency by making sure it's not located in direct sunlight or next to a heat source like the oven or dishwasher.

Minimize multiple refrigerators

Resist the temptation to move your old refrigerator to the basement or especially the garage for auxiliary purposes. It's generally much more efficient to operate one big refrigerator rather than two smaller ones. If you have a second fridge, just use it when you absolutely need it—around holidays, for example. Otherwise, keep it empty and unplugged.

Places to Buy

Go to the **ENERGY STAR® store locator** to find a local retailer. Don't forget to apply for your rebate. Apply online or aska store associate for a rebate application.

More ways to get smart about refrigerators

Energy Guide

Calculate what you'll save by replacing your refrigerator with an energy-efficient model. Go to the **Energy Guide Website**.

Rebate-Qualifying CEE Tier 3 Refrigerators

Remember, only Consortium for Energy Efficiency (CEE) Tier 3 refrigerators are eligible for PG&E rebates. To find qualifying refrigerators, look for models with Tier 3 in the far right hand column of the **CEE list**.

Recycle your old refrigerator

Get $35 for recycling your old refrigerator or freezer. **Find out more**.

Television Buyer's Guide

Did you know today's large, high-definition TVs can use as much electricity as a standard, new refrigerator? Here's how to shop for a TV that uses about 40% less energy than standard units.

Look for the PG&E and ENERGY STAR® sticker

TV models that sport this sticker are, on average, about 40% more energy efficient than standard models. These retailers support PG&E's initiative for energy-efficient electronics and feature the PG&E and ENERGY STAR sticker on the highest energy-efficient models in their stores.

Look for the PG&E and ENERGY STAR sticker on your next in-store purchase.

Partners

Seek control

Choose a TV with Automatic Brightness Control, which saves energy by automatically adjusting the brightness of your TV based on the ambient light in the room. For TVs without this control, be sure to adjust the manual backlighting controls, since the factory default settings are often too bright on most TVs.

Turn on the energy saver mode

The average U.S. household spends about $100 a year on energy to power electronics while they're off (or in standby mode). Cut down on standby mode energy use by getting a TV with an energy (or power) saver mode. Just remember to set it when you get your new TV home.

Turn off the quick start option

This option (which allows your TV to turn on more quickly when you press the power button) typically causes your TV to consume more power when it's in the standby mode.

Add a "smart" power strip

A smart power strip knows when a master device (like your new TV) is turned off and will then cut off power to all the other peripherals (such as your DVD, DVR, gaming consoles and stereo) that are plugged into it. This is the best way to avoid wasteful "vampire" energy loads.

Lighting Buyer's Guide

ENERGY STAR®–qualified Compact Fluorescent Lamps (CFL) and Light Emitting Diode (LED) bulbs use about 75% less energy than traditional incandescent bulbs. Look for the ENERGY STAR logo and PG&E sticker as your assurance of quality and performance.

Find instant rebates

Skip the paperwork and rebate applications. Look for the ENERGY STAR logo and PG&E sticker to earn instant rebates when you purchase and install qualifying CFL and LED bulbs.
Visit the PG&E lighting retail locator website to find a local participating retailer now.

Start saving now—replace incandescent and halogen bulbs today

Do not wait for your incandescent and halogen bulbs to burn out. Instead, install CFL and LED bulbs today to start saving energy and money right now.

Find your type

There is a CFL or LED bulb to fit almost any light fixture with the same amount of brightness (expressed as lumens) and light color (expressed on the Kelvin scale or noted as "bright white", "warm white", etc.) as the incandescent bulb you are replacing. Always look for ENERGY STAR as your assurance of quality and performance. Here are key factors to consider when shopping for an efficient replacement light:

1. What kind of fixture is the light bulb going into?

Use this chart below to determine the most appropriate bulb type for the fixture type in which you are replacing:

	Table/Floor Lamps	Pendant Fixtures	Ceiling Fixtures	Ceiling Fans	Wall Sconces	Recessed Cans	Track Lighting	Outdoor Covered	Outdoor Flood
Spiral	✓		✓	✓	✓			✓	
Covered A-shaped	✓	✓		✓				✓	
Globe		✓							
Tube	✓		✓		✓			✓	
Candle				✓	✓			✓	
Indoor Reflector				✓		✓	✓		
Outdoor Reflector									✓

2. How much light/brightness do I want?

Lumens are the measure of light brightness. Use this chart to determine which ENERGY STAR®-qualified CFL and LED bulbs will provide the same amount of light brightness as your current incandescent light bulbs. Focus on lumens, not watts, to ensure you get the right amount of light from the bulb.

Incandescent Bulbs (watts)	Minimum Light Output (lumens)	ENERGY STAR-Qualified Bulbs (watts)
40	450	9 to 13
60	800	13 to 15
75	1,100	18 to 25
100	1,600	23 to 30
150	2,600	30 to 52

3. What color will work best for my use?

ENERGY STAR light bulbs offer a range of light color. Light color is measured on the Kelvin scale (K). Lower numbers mean the light appears yellowish and higher numbers mean the light is whiter or bluer. NOTE: While the Federal Trade Commission requires the Kelvin rating on packaging for all medium-based screw-in bulbs, it is not required on pin-based bulbs. So you may see color indicated by "bright white, warm white, cool white, etc.

Warm White, Soft White	Cool White, Neutral White	Natural or Daylight (think blue sky at noon)
Standard color of incandescent bulbs.	Good for kitchens and work spaces.	Good for reading.
2700K 3000K	3500K 4100K	5000K 6500K

Check your specs

Only CFL and LED bulbs marked "dimmable" will work with dimmer switches. Only CFL and LED bulbs marked "three-way" will work in three-way sockets. In addition, CFLs are not recommended for use with electronic controls such as photocells, motion sensors, or timers.

Another bright idea: CFL and LED fixtures

Want to save even more? Consider replacing the entire light fixture with one designed exclusively for a CFL or LED bulb. Using these CFL and LED fixtures helps reduce the risk of the bulbs overheating and helps the light last longer.

Recycle used CFLs

As of 2006, it is against California law to send CFLs to landfills (as they contain very small amounts of mercury). Thus, CFLs do not belong in your household garbage and should be disposed of properly at your local recycling center or participating hardware store. To learn more about CFL recycling and CFL mercury content, go to the PG&E recycling CFLs Fact Sheet.

To find your local recycling center, go to the Earth 911 website or call 1-877-Earth911, or contact your local garbage collection company.

More ways to get smart about home lighting

ENERGY STAR Guide to LEDs

Get the facts about LEDs and learn how they are different from incandescent and fluorescent lighting. Visit the ENERGY STAR website.

Places to Buy

Visit the PG&E lighting retail locator website to find a local participating retailer now.

Room Air Conditioning Buyer's Guide

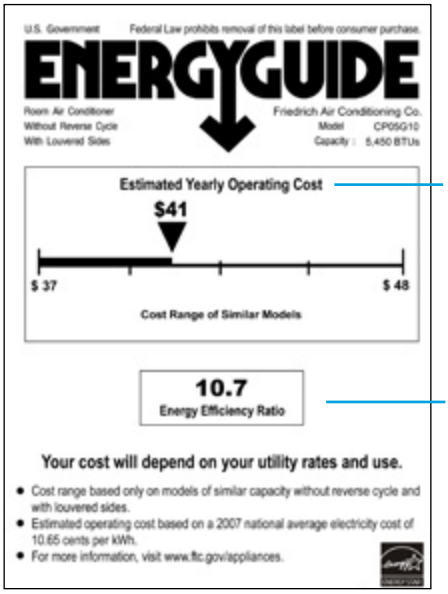
When shopping for a rebate-qualifying ENERGY STAR® room air conditioner, look for units with advanced controls such as a timer and digital thermostat for additional energy savings.

Reduce your cooling load

Before you invest in new cooling equipment, first lower your home's cooling load by implementing passive cooling measures such window shading and glazing, and insulation and weatherization. This way you can buy a less expensive unit.

Look for the label

Most room air conditioning units must meet specific energy standards as outlined by the U.S. Department of Energy. Energy usage and efficiency are displayed on the white EnergyGuide labels.



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Estimated annual energy consumption is based on typical use. Multiply this by your local rate to get an estimate of your actual operating cost.

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Calculate your potential energy savings

This label also displays the ENERGY STAR logo for qualified models. These units are about 10% more energy efficient than conventional models. Use this savings calculator to figure out what an ENERGY STAR qualified room air conditioner could save you over its lifetime. The cost of your PG&E electricity varies by how much you use. For a quick estimate, use $0.20kWh in the calculator.

Seek higher EER ratings

Room air conditioning unit efficiency is measured by an Energy Efficiency Ratio (EER) rating. Choose a unit with an EER rating of 10 or higher.

Seek control

Look for a unit with more energy-savings features, such as a digital readout for thermostat settings and a timer that will automatically shut off the unit a pre-selected time intervals.

Check your specs

Be sure your home's electrical system can meet the unit's power requirements, and that the unit will be level when you install it so the drainage system and other systems can work efficiently.

Work with a licensed electrician

If you need to run a new 220-volt outlet to accommodate your new room air conditioner, be sure to use a licensed electrician. To find a licensed electrician in your area, call The Contractor's State License Board (CSLB) at 1-800-321-CSLB (2752) or go to the CSLB website.

Get multiple bids and permit(s)

Get estimates for the installation of qualifying equipment and customer references, in writing, from at least three contractors. Be sure each estimate states the contractor will be responsible for getting the required permitting from your local building department. For additional guidelines on how to select a licensed contractor, go to the **Contractor's State License Board (CSLB) website**.

Read the installation instructions

Familiarize yourself with your new unit's installation instructions before you start. Follow them completely for your safety and comfort. Units mounted in windows need to be secure so they don't fail out. If you don't remove and store the unit for winter, cover it so that cold air doesn't blow into the room.

More ways to get smart about room air conditioners

Use this ENERGY STAR® calculator to figure out **what size room air conditioner** you need.

Places to Buy

Go to the **ENERGY STAR® store locator** to find a local retailer.

Ready to save even more?

For more energy savings, consider Energy Upgrade California, a new statewide program where homeowners of single-family residences can earn up to $4,000 in incentives by taking a "whole house" approach to energy efficiency. **Learn more**.

Central Air Conditioning Buyer's Guide

You can keep cool and still save money when you follow these steps to choosing, installing, and maintaining the right energy-efficient central air conditioning system for your home.

Reduce your cooling load

Lower your home's cooling load by implementing measures such as installing exterior window shading and adding attic insulation anytime before you begin retrofitting or changing out your central air conditioning system.

Work with a licensed HVAC contractor

If you decide to install a whole new central AC system, we strongly recommend you work with a licensed heating, ventilation and air conditioning (HVAC) contractor. Hiring a licensed HVAC contractor increases the likelihood your new system will be installed properly. To find a licensed HVAC contractor in your area, call The Contractor's State License Board (CSLB) at 1-800-321-CSLB (2752) or go to the CSLB website.

Seek higher SEER and EER ratings

Central air conditioning efficiency is measured by a Seasonal Energy Efficiency Ratio (SEER) rating and an Energy Efficiency Ratio (EER) rating. Select an ENERGY STAR®-qualified system. These systems have a SEER rating of 14 or higher and an EER rating of 11 or higher. For split systems (usually paired with central natural gas furnaces), look for a 1 4.5 or higher SEER rating and a 12 or higher EER rating.

Make sure your contractor pull permits

Be sure each estimate states the contractor will be responsible for getting the required permitting from your local building department.

Install carbon monoxide and smoke detectors

Carbon monoxide (CO) detectors, along with smoke detectors, are required by the State Fire Marshal. Be sure to include these devices in your project.

Size matters

Get the right-sized air conditioning system. A bigger system isn't necessarily better as it requires larger ductwork, will short cycle (causing undue wear and tear on the equipment) and won't have adequate run times to provide uniform comfort in your home. A right-sized system running for an extended period is more energy efficient and effective at maintaining comfort. Make sure your contractor follows California's Building Energy Efficiency Standards (also known as Title 24) and completes the required cooling load calculations according to Air Conditioning Contractors of America (ACCA) guidelines so you get the right–sized system.

Get multiple bids

Get estimates for the installation of qualifying equipment and customer references, in writing, from at least three contractors. For additional guidelines on how to select a licensed contractor, go to the Contractor's State License Board (CSLB) website.

Consider our AC Quality Care Rebates

Before investing in new cooling equipment, consider taking advantage of our AC Quality Care Rebate Program. This program could help improve the efficiency of your current AC system and even prolong its life. Plus, you'll be eligible for rebates when you have qualifying services done by AC Quality Care participating contractors. These rebate-qualifying services can include:

- $50 Full Air Conditioning Contractors of America (ACCA) Standard 4 Heating, Ventilation and Air Conditioning (HVAC) System Assessment Rebate, which provides you with a comprehensive evaluation of your system so you can work with your contractor on next steps. Following this assessment, you may qualify for these additional rebates:
  - $400 Airflow Correction to adjust, repair and renovate ducts, and install new filters
  - $50 Refrigeration System Service Rebate, which includes faults diagnosis and correction of refrigerant-charge levels
  - $300 Replacement Blower Motor Rebate
  - $50 One-Year Quality Maintenance Service Agreement Rebate

Follow industry-standard installation specs

Insist your contractor install your system according to ACCA Standard 5 HVAC Quality Installation Specification to ensure it performs at the highest efficiency levels.

Have an existing Central AC Unit?

A properly maintained HVAC system is more effective at helping you manage costs and indoor comfort. In addition, quality care and maintenance of your current AC system can help achieve efficiency and help achieve its potential life span.

More ways to get smart about your cooling system

Use ceiling fans

Add ceiling fans in spaces that you use a lot on hot days. They can be attractive and effective in providing a cool breeze. As a result, you can raise the thermostat 4°F with no reduction in comfort. Remember fans don't cool rooms—they cool people and pets. So operate fans only when rooms are occupied.

Ventilate to start the day cool

Open windows and doors to get "free" cooling in the evening when it's cooler outside (about 5°F or more). Your house may gradually warm up during the day, but it may not get hot enough to need cooling, as long you as close windows and doors before the outdoor temperature rises and block direct sunlight from entering with effective window coverings.

Minimize heat-producing activities

Try and minimize heat-producing activities such as cooking and baking, as well as running appliances such as a dishwasher or dry on hot days.

For more information about the AC Quality Care Rebate Program, visit www.pge.com/acqualitycare or call 1-888-265-0057.

Water Heater Buyer's Guide

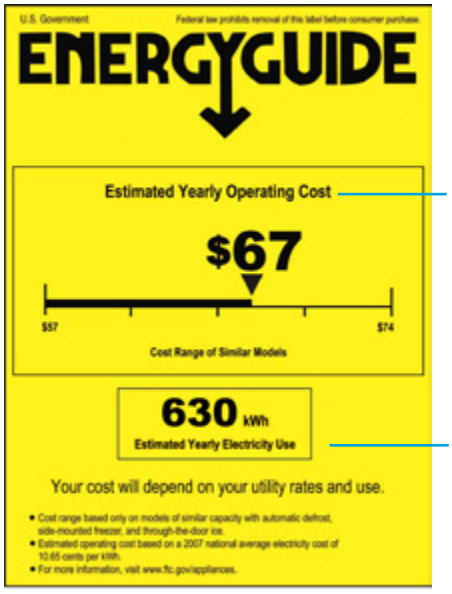
New water heaters use significantly less energy than units from just 10 years ago. Here's what to look for when shopping for an energy-efficient water heater that can also earn you a rebate.

Do your homework now

It's good to do your research now so when your current water heater fails, you'll know which energy-efficient model to buy and where to get it—rather than rush and purchase a unit just based on its price tag.

Look for the label

Most water heater units must meet specific energy standards as outlined by the U.S. Department of Energy. Energy usage and efficiency are displayed on the yellow EnergyGuide labels. This label also displays the ENERGY STAR® logo for qualified models. Go to the FTC website.



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Seek higher EF and earn a rebate

Water heater efficiency is reported in terms of its energy factor (EF). The higher the EF, the more efficient the water heater. Natural gas tank water heaters that qualify for PG&E rebates offer EFs at 0.67 and above, while electric heat pump water heaters with EFs of 2.0 and above qualify for PG&E rebates.

Size matters

When evaluating new models, look at the first-hour rating on the EnergyGuide label to see how much hot water the model can deliver during your household's peak demand hour. You may decide to buy a larger capacity unit or one with a higher first-hour rating.

Seek electric ignition

Electronic ignition in a natural gas water heater eliminates nuisance pilot outage issues associated with standing (or "always on") pilot models and saves energy. Look for the ENERGY STAR logo.

Insulate your pipes

Insulating your hot water pipes would reduce heat loss and can raise water temperature 2°–4°F hotter than un-insulated pipes can deliver. Plus, you won't have to wait for as long for hot water when you turn on a faucet or showerhead, which helps to conserve water.

Know your type

The most efficient water heaters are usually the most costly, but they often pay for the additional cost in energy savings and let you save even more during the unit's 10- to 15-year lifespan.

NATURAL GAS WATER HEATERS		
TYPE	ENERGY FACTOR (EF)	THINGS TO CONSIDER
Storage Tank	0.67	Periodic water heater maintenance can significantly extend your water heater's life and minimize loss of efficiency.
ELECTRIC HEAT PUMP WATER HEATERS		
Storage Tank	2.0	When installing your new electric storage tank, also install bottom boards or rigid insulation to prevent heat loss through the floor. Periodic water heater maintenance can significantly extend your water heater's life and minimize loss of efficiency.

More ways to get smart about water heaters

Calculate what you'll save by replacing your water heater with an energy-efficient model. Go to the Energy Guide Website.

Places to Buy

Go to the ENERGY STAR® store locator to find a local retailer. Don't forget to apply for your rebate. Apply online or ask a store associate for a rebate application.

Attic Insulation Buyer's Guide

From insulation types and R-values, to finding and working with a contractor, here's what to consider when you're shopping for attic insulation—along with safety guidelines for do-it-yourselfers.

Work with a licensed contractor

Because insulation is tricky to work with it, and only yields energy efficiency benefits if it's properly installed, we highly recommend you work with a professional, licensed contractor. To find a licensed contractor in your area, call The Contractor's State License Board (CSLB) at 1-800-321-CSLB (2752) or go to the CSLB website.

Get multiple bids and permit(s)

Get estimates and customer references, in writing, from at least three contractors. Be sure each estimate notes that the contractor will be responsible for getting the permitting (if necessary) from your local building department.

Doing it yourself?

Before installing attic insulation, be sure to consider your home improvement skills and the type of attic you have. If you choose to do the installation yourself, please remember to:

- **Practice safety first** by reviewing the safety guidelines.
- **Seal air leaks and ductwork** to take the strain off of your heating and cooling units.
- **Check with your local building department** about any necessary permitting.

Understand R-values

R-value is a measure of insulation's ability to resist heat flow. The higher the R-Value, the better the insulation.

Check your attic

Work with your contractor to find out how much attic insulation you have now. The recommended insulation level for most attics is to use R-38, or about 10 to 14 inches of insulation, depending on the insulation type. To find the level recommended by the U.S. Department of Energy for your location, check the Energy Savers R-Value map.

IF YOU SEE	IT IS PROBABLY
Loose fibers	Fiberglass (light yellow, pink, white); Rock wool (dense grey or near white, may have black specks); or Cellulose (small flat pieces or fibers, grey if made from newspapers or brown if made from cardboard)
Granules (light-weight)	Vermiculite (golden color) or Perlite (white)
Batts (light-weight)	Fiberglass (yellow, pink or white)

Find your type

Insulation is made from a variety of materials. Work with your contractor to choose the most appropriate product for your climate, your home's design, etc.

TYPE	R-VALUE/INCH	MATERIALS AND APPLICATIONS
Blankets (batts or rolls)	3.0–4.3 (for high density batts) per inch	This insulation is usually made of fiberglass or rock wool, and manufactured in blankets (batts or rolls) of various sizes and thicknesses. It's made to fit between the studs in walls or between the joists of ceilings or floors.
Blown-in loose-fill insulation	2.2 to 3.8 per inch	This is commonly made from fiberglass or cellulose. It's blown into the walls and attic through a large hose, making it great for hard to reach places or enclosed cavities.
Sprayed or injected foam	3.2 to 5.7 per inch	Usually made from polyurethane or similar materials, this insulation is sprayed on to surfaces or injected into cavities, where it expands to the desired thickness. Generally more expensive than fiber-based installations.
Rigid foam boards	3.5 to 7.5 per inch	Boards are made from fibrous materials or plastic foams, and formed into large sheets and molded pipe coverings. They're typically cut to fit and glued, caulked or mechanically fastened into place. Polystyrene must be covered with ½ –inch sheetrock™ for fire protection.
Reflective or radiant barriers	Varies depending on heat flow direction	This material is made from aluminum foils with backing such as kraft paper, plastic film, polyethylene bubbles or cardboard. It's stapled to studs or joists and works best when heat flow is downward (i.e. in floors).

Check the label

The Federal Trade Commission has very clear rules about the R-value label that must be placed on all residential insulation products. A good insulation label should include:

- Type of insulation material
- R-value (measured at 75°)
- Types of spaces than can be insulated using this material
- Safety precautions in application and use, including any fire hazard restrictions

Ready to save even more?

For more energy savings, consider Energy Upgrade California, a new statewide program where homeowners of single-family residences can earn up to $4,000 in incentives by taking a "whole house" approach to energy efficiency. Remember to save your receipts. Learn more.

More ways to get smart about insulation

Get all the facts about insulation, including how it works and the smart approaches to adding insulation to an existing home from the U.S. Department of Energy. Go to the Radiant Barrier Fact sheet to learn more.

Wall Insulation Buyer's Guide

From insulation types and R-values, to finding and working with a contractor, here's what to consider when you're shopping for wall insulation—along with safety guidelines for do-it-yourselfers.

Work with a licensed contractor

Because insulation is tricky to work with it, and only yields energy efficiency benefits if it's properly installed, we highly recommend you work with a professional, licensed contractor. To find a licensed contractor in your area, call The Contractor's State License Board (CSLB) at 1-800-321-CSLB (2752) or go to the CSLB website.

Get multiple bids and permit(s)

Get estimates and customer references, in writing, from at least three contractors. Be sure each estimate notes that the contractor will be responsible for getting the permitting (if necessary) from your local building department.

Doing it yourself?

Before installing wall insulation, be sure to consider your home improvement skills and the type of walls you have. If you choose to do the installation yourself, please remember to:

- **Practice safety first** by reviewing the safety guidelines.
- **Seal air leaks and ductwork** to take the strain off of your heating and cooling units.
- **Check with your local building department** about any necessary permitting.

Understand R-values

R-value is a measure of insulation's ability to resist heat flow. The higher the R-Value, the better the insulation.

Check your attic

Work with your contractor to find out how much wall insulation you have now. To find the levels recommended by the U.S. Department of Energy for your location, check the Energy Savers R-Value map.

IF YOU SEE	IT IS PROBABLY
Loose fibers	Fiberglass (light yellow, pink, white); Rock wool (dense grey or near white, may have black specks); or Cellulose (small flat pieces or fibers, grey if made from newspapers or brown if made from cardboard)
Granules (light-weight)	Vermiculite (golden color) or Perlite (white)
Batts (light-weight)	Fiberglass (yellow, pink or white)

Find your type

Insulation is made from a variety of materials. Work with your contractor to choose the most appropriate product for your climate, your home's design, etc.

TYPE	R-VALUE/INCH	MATERIALS AND APPLICATIONS
Blankets (batts or rolls)	3.0–4.3 (for high density batts) per inch	This insulation is usually made of fiberglass or rock wool, and manufactured in blankets (batts or rolls) of various sizes and thicknesses. It's made to fit between the studs in walls or between the joists of ceilings or floors.
Blown-in loose-fill insulation	2.2 to 3.8 per inch	This is commonly made from fiberglass or cellulose. It's blown into the walls and attic through a large hose, making it great for hard to reach places or enclosed cavities.
Sprayed or injected foam	3.2 to 5.7 per inch	Usually made from polyurethane or similar materials, this insulation is sprayed on to surfaces or injected into cavities, where it expands to the desired thickness. Generally more expensive than fiber-based installations.
Rigid foam boards	3.5 to 7.5 per inch	Boards are made from fibrous materials or plastic foams, and formed into large sheets and molded pipe coverings. They're typically cut to fit and glued, caulked or mechanically fastened into place. Polystyrene must be covered with ½ –inch sheetrock™ for fire protection.
Reflective or radiant barriers	Varies depending on heat flow direction	This material is made from aluminum foils with backing such as kraft paper, plastic film, polyethylene bubbles or cardboard. It's stapled to studs or joists and works best when heat flow is downward (i.e. in floors).

Check the label

The Federal Trade Commission has very clear rules about the R-value label that must be placed on all residential insulation products. A good insulation label should include:

- Type of insulation material
- R-value (measured at 75°)
- Types of spaces than can be insulated using this material
- Safety precautions in application and use, including any fire hazard restrictions

Ready to save even more?

For more energy savings, consider Energy Upgrade California, a new statewide program where homeowners of single-family residences can earn up to $4,000 in incentives by taking a "whole house" approach to energy efficiency. Remember to save your receipts. Learn more.

More ways to get smart about insulation

Get all the facts about insulation, including how it works and the smart approaches to adding insulation to an existing home from the U.S. Department of Energy. Go to the Radiant Barrier Fact sheet to learn more.

Safety Guidelines for Do-It-Yourself Attic and Wall Installation

If you decide to install your own attic or wall insulation, always observe the following precautions. If you're air sealing before you insulate, have a licensed contractor check to make sure that your combustion appliances (gas stove, oven, dryer) are venting properly to avoid fire safety issues that can be hazardous to your family.

General Safety Tips

- Wear adequate clothing to protect your skin and eyes—a long-sleeved shirt with collar and cuffs buttoned, gloves, hat, safety goggles, and a disposable dust respirator rated for the type of insulation your attic or walls contain or that you're installing.
- Read all labels and follow the manufacturer's instructions.
- Observe all fire safety codes.
- Don't cover attic vents with insulation, as proper ventilation MUST BE MAINTAINED to avoid overheating in the summer and prevent moisture build-up all-year long.

Blocking Material Precautions

Install blocking material to keep insulation away from any heat source or attic opening. Possible blocking materials include: wood and sheet metal flashing. Be sure that the blocking material in the attic extends from the attic floor to above the top of the new insulation.

Fire Safety Concerns–Heat Producing Devices (HPD)

- Don't cover or hand-pack insulation around bare stoves, electrical fixtures, motors or any heat-producing equipment, such as recessed lighting fixtures, as the heat can build up and lead to fire. Electrical fire safety codes prohibit the installation of thermal insulation within three inches of a recessed fixture enclosure (wire compartment, or ballast) or above the fixture, because it can trap heat and prevent air circulation.
- Exercise caution when installing around the following devices, as they may overheat and cause a fire if fully or even partially covered with insulation. Leave at least three inches clearance around these devices (unless otherwise noted). Be sure insulation can't migrate into the clearance area. Flues and vents are typically either sheet metal or an off-white clay pipe that extend from the gas appliance/equipment through the ceiling into the attic or the wall.
  - Combustion appliance (gas stove, oven, dryer); these have a flue or vent pipe
  - Bath or kitchen exhaust fans (mounted in the ceiling)
  - Recessed lights
  - Hot water pipes
  - Water heater (install insulation with a minimum 12-inch space around the unit)
  - Water heater flue or vent
  - Furnace (install insulation with a minimum 12-inch space around the unit)
  - Chimney (masonry or metal)
  - Doorbell transformer
  - Whole house fan

Fire Safety Concerns—Wiring

Wiring can overheat and cause a fire if its not in good condition and is then covered with insulation. Examples include:

- Knob and tube wiring: Have it inspected by a licensed C-10 Electrical Contractor for condition appropriate overload protection before covering with insulation,
- Frayed, damaged wiring or wiring with missing insulation. Have it repaired BEFORE you start insulating.
- Junction Boxes. Have covers installed BEFORE you start insulating.

Fire Safety Concerns—Combustion/Ventilation (CVA)

CVA openings that are covered could cause a gas appliance to produce carbon monoxide (CO). Typically a CVA is provided through a screened opening in the ceiling above a gas appliance such as a furnace or water heater in a closet. Be sure insulation isn't covering the screened opening and blocking material around the opening in order to allow the air to flow easily.

Miscellaneous Attic Precautions

If any of the areas or items below exist in or have openings in your attic, be sure that insulation isn't covering or in contact with them. All openings above the furnace, or the water heater that connect to the attic, must be blocked to prevent insulation from falling into the room or the appliance. These areas or items include:

- Attic vents
- Drop ceilings
- Closet openings into the attic

Cool Roof Buyer's Guide

From understanding what defines a cool roof to finding and working with a contractor, here's what to consider when you're shopping for a rebate-qualifying cool roof.

Know what's "cool"

Cool roofs are roofs that are designed to maintain a lower roof temperature than traditional roof while the sun is shining. Their surfaces reflect sunlight and emit heat more efficiently than hot or dark roofs.

Know the lingo

Solar reflectance and thermal emittance are the two key material surface properties that determine a roof's temperature and each is measured on a scale from 0 to 1. The higher the values, the cooler the roof will remain.

Know your roof type

The definition of "cool" depends on what type of roof you have.

Low-sloped roof: A roof surface with a maximum slope of 2 inches "rise" (increase in height) for every 12 inches of "run" (increase in length horizontally). It requires an initial solar reflectance of 0.70* or higher and a thermal emittance of 0.75 or higher to qualify as a "cool roof".

Steep-sloped roof: A roof surface with a slope greater than 2 inches of "rise" (increase in height) for every 12 inches of "run" (increase in height horizontally). It requires an initial solar reflectance of 0.25* or higher and a thermal emittance of 0.75 or higher to be a "cool roof".

*These are PG&E's rebate thresholds. For more information and exceptions related to building code compliance in California, call the California Energy Commission's hotline at 1-800-772-3300.

Work with a licensed roofing contractor

Because installing a cool roof isn't a simple do-it-yourself project, we highly recommend you work with a licensed roofing contractor. To find a licensed roofing contractor in your area, call The Contractor's State License Board (CSLB) at 1-800-321-CSLB (2752) or go to the CSLB website.

Get multiple bids and permit(s)

Consult several licensed roofing contractors and get estimates in writing, along with customer references, from at least three contractors. For your protection, be sure each estimate notes the contractor will be responsible for getting the necessary permitting from your local building department. This helps to ensure that you'll get the energy efficiency you expect.

Find your type

There are a wide variety of "cool roof" systems—from special coatings and membranes to shingles and metal. Work with your contractor to choose the most appropriate system based on the type of roof you have, your local climate, the amount of insulation in your roof and your home's cooling system.

ROOFING SYSTEM	REFLECTANCE VALUES	APPLICATION	WHAT IS IT
Field-Applied Cool Roof Coatings	Generally 0.70 and higher	Low-sloped roofs and, less commonly, steep-sloped roofs	They contain white or special reflective pigments that reflect sunlight. Typically these coatings are like very thick paints and capable of protecting the roof surface from ultraviolet (UV) light and chemical damage. More than 500 different cool roof coatings are available with products for most roof types.
Single Ply Membranes	Many options above 0.70 available	Primarily low-sloped roofs, with some steel-slope roof applicability	Pre-fabricated sheets that are rolled onto the roof and attached with mechanical fasteners, chemical adhesives or held in place with some kind of ballast. Some are white and reflect sunlight well; others must be formulated differently or coated to make them reflective.
Built-Up Roofs (BUR)	Variable; up to 0.83; make good candidates for field-applied coatings	Primarily low-sloped roofs, with some steel-slope roof applicability	Consist of a base sheet, fabric reinforcement layers and a protective surface layer.
Modified Bitumen Sheet Membranes	Variable; up to 0.85 depending on its surface coating	Primarily low-sloped roofs, with some steel-slope roof applicability	Composed of one or more layers of plastic or rubber material with reinforcing fabrics, which are surfaced with mineral granules or with a smooth finish. They can also be used to surface a built-up roof, and this is called a "hybrid" roof.
Spray Polyurethane Foam	Many options above 0.70 available	Primarily low-sloped roofs	Created by mixing two liquids together that react and expand to form one solid piece that adheres to the roof. Since foams are susceptible to mechanical moisture and UV damage, they require a protective coating. The rating of the top coating determines the "cool" rating.
Shingled Roofs	Up to 0.41	Primarily steep-sloped roofs	Consist of overlapping panels made from numerous materials. Fiberglass asphalt singles, commonly used on homes, can be coated with special "cool" granules to provide better solar reflectance.

Continues on next page

Find your type continued

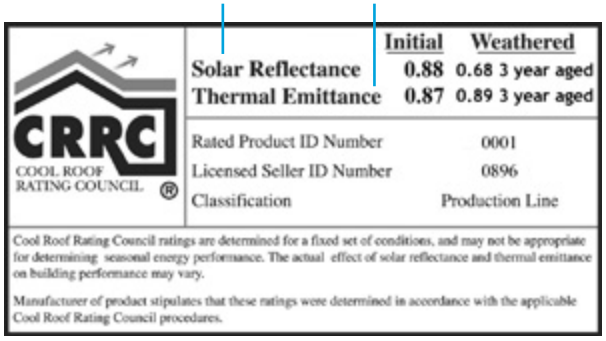
ROOFING SYSTEM	REFLECTANCE VALUES	APPLICATION	WHAT IS IT
Tile Roofs	Highly variable; up to 0.82	Primarily steep-sloped roofs	Can be made of clay, slate or concrete and manufactured with high reflectance values. Depending on the installation method, they also offer enhanced air circulation because ambient air can circulate below, as well as above the tile, helping the roof shed solar heat more easily.
Metal Roofs	Variable with options available about 0.70 for low-slope roofs and many options above 0.25 for steel-slope roofs	Primarily steel-sloped roofs, with some low-slope roof applicability	Cool metal roofs typically have factory-applied coatings which are durable and can be made with high solar reflectance and thermal emittance. (Uncoated or "bare" metal tends to have low thermal emittance, which wouldn't satisfy the technical definition of what's "cool").

Check the label

Many roof products today are tested for their cool roof properties by the Cool Roof Rating Council (CRRC), an independent, non-profit organization, and receive a performance label. Because surface properties can change over time, values are measured for both initial and three-year weathered conditions. Most weathering or soiling occurs during the first year or two and then values usually stabilize.

Solar reflectance values for initial and three-year weathered conditions

Thermal emittance values for initial and three-year weathered conditions



Keep your receipts

Don't forget to apply for your rebate. Work with your licensed roofing contractor to apply online or complete a paper rebate application.

More ways to get smart about cool roofs

Calculate Your Potential Cool Roof Savings

Use this U.S. Department of Energy calculator to learn what you might be able to save by installing a cool roof in your home. Learn more on the Oak Ridge National Laboratory website.

CRRC Rated Products

Go to the Cool Roof Rating Council's (CRRC) online directory for credible and accurate roof performance data on more than 1000 different products. This directory is searchable by product type, manufacturer, brand, slope application and more. Learn more on the CRRC website.

Ready to save even more?

For more energy savings, consider Energy Upgrade California, a new statewide program where homeowners of single-family residences can earn up to $4,000 in incentives by taking a "whole house" approach to energy efficiency. Learn more.

Whole House Fan Buyer's Guide

Whole house fans come in lots of configurations and need proper installation to yield maximum energy efficiency. Here's how to shop for and get your rebate-qualifying fan safely installed in your attic.

Work with a licensed contractor

Because installing a whole house fan isn't a simple do-it-yourself project, we highly recommend you work with a professional, licensed contractor. To find a licensed contractor in your area, call The Contractor's State License Board (CSLB) at 1-800-321-CSLB (2752) or go to the CSLB website.

Get multiple bids and permit(s)

Get estimates for the installation of qualifying equipment and customer references, in writing, from at least three contractors. Be sure each estimate states the contractor will be responsible for getting the required permitting from your local building department. For additional guidelines on how to select a licensed contractor, go to the Contractor's State License Board (CSLB) website.

Know your options

Whole house fans come in a range of configurations—from low cost, one- or two-speed direct drive fans to full-featured whole fan systems that include automatic controls, inlet dampers, and more. When shopping for a whole house fan, consider energy-saving features like:

- Timers that will automatically turn the fan on and off at pre-selected time intervals.
- Multiple speed fans that allow your home to be ventilated quickly at high speed and maintain temperatures at lower speeds.
- Fan covers and insulation help prevent energy loss by sealing the area around the whole house fan, preventing hot or cold air from escaping.

Safety first

Whole house fans are normally designed to be installed to exhaust into attics, so it's important to fully understand what's up there before installing one. Work with your contractor to choose the best location, controls and attic insulation to prevent potential fire hazards from occurring.

If you have an attic-mounted furnace, consider including a window interlock control to keep the fan from operating when the furnace is on.

If you have an attic-mounted water heater, DO NOT install a whole house fan because it causes the water heater to malfunction.

If you have loose-fill or blown-in attic insulation, consider stapling plastic netting over it to keep it from being blown around or replace it with batts insulation so it won't be impacted by the blast of the fan.

If you have insulation covering heat-producing devices (such as recessed lights, low-voltage transformers, etc.), remove this insulation to prevent potential fire hazards.

Check the openings in your attic

Be sure these openings aren't covered or blocked to prevent the fan from effectively drawing in air.

Avoid backdrafts

Because whole house fans require adequate openings to draw air in, it's possible that they draw air backwards through combustion appliances (such as a water heater) and fireplaces, creating a backdraft and causing a fire hazard. To avoid this, only operate your fan when you have enough openings from windows and doors, or consider having your contractor install automatic dampers. Also, consider using windows that have a security-open position that locks the window with a 2" to 3" gap to let air through.

Keep your paid invoice or receipts

Don't forget to apply for your rebate. Work with your contractor to apply online or complete a paper rebate application. For more details, download this complete guide to PG&E Energy Efficiency Rebates.

More ways to get smart about whole house fans

Learn all about how to install and use a whole house fan from the U.S. Department of Energy.

Ready to save even more?

For more energy savings, consider Energy Upgrade California, a new statewide program where homeowners of single-family residences can earn up to $4,000 in incentives by taking a "whole house" approach to energy efficiency. Learn more.

Natural Gas Furnace Buyer's Guide

From understanding energy efficiency ratings to finding and working with a licensed HVAC contractor, follow these steps to choose the right central natural gas furnace and qualify for a PG&E rebate.

Reduce your heating load

Before you invest in new heating equipment, first lower your home's heating load and prevent heat from escaping by sealing drafty windows and doors and insulating your attic and walls. By minimizing heat losses, you might find you can upgrade to a smaller, less expensive furnace.

Work with a licensed HVAC contractor

We strongly recommend you work with a licensed heating, ventilation and air conditioning (HVAC) contractor. Not only does this help to ensure your new central natural gas furnace unit performs at the highest efficiency levels, but it's required to be eligible for a PG&E rebate. To find a licensed HVAC contractor in your area, call The Contractor's State License Board (CSLB) at 1-800-321-CSLB (2752) or go to the CSLB website.

Get multiple bids

Get estimates for the installation of qualifying equipment and customer references, in writing, from at least three contractors. For additional guidelines on how to select a licensed contractor, visit the Contractor's State License Board (CSLB) website.

Make sure your contractor pull permits

Be sure each estimate states the contractor will be responsible for getting the required permitting from your local building department.

Install carbon monoxide and smoke detectors

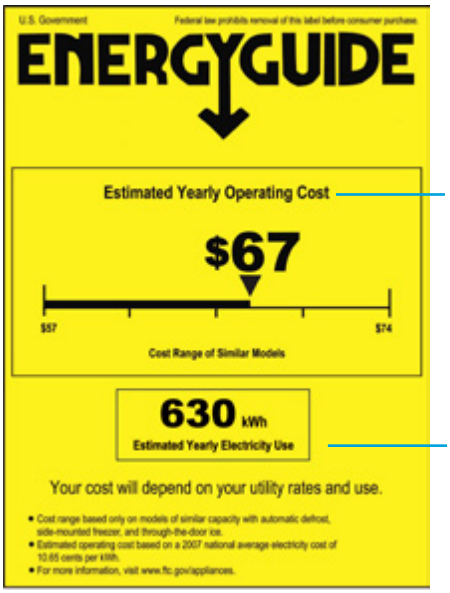
Carbon monoxide (CO) detectors, along with smoke detectors, are required by the State Fire Marshal. Be sure to include these devices in your project. Also, make sure your contractor conducts a combustion safety test on all your gas appliances.

Size matters

Choose the right-sized furnace. Oversized systems turn on and off more frequently, which can shorten your furnace's life, and often don't run long enough to fully mix the air in your home—especially in two-story homes. Likewise, an undersized system won't adequately heat your home. Make sure your contractor follows California's Building Energy Efficiency Standards (also known as Title 24) and completes the required cooling load calculations according to Air Conditioning Contractors of America (ACCA) guidelines so you get the right–sized unit.

Look for the label

Central natural gas furnaces must meet specific energy standards as outlined by the U.S. Department of Energy. Energy usage and efficiency are displayed on the yellow EnergyGuide labels.



Estimated yearly operating costs are shown for similar models, based on the national average rate for natural gas.

Estimated annual energy consumption is based on typical use. For a closer look at your operating costs, use this savings calculator.

The Energy Guide sticker displayed is for illustrative Purposes only. Actual stickers and values therein may vary.

Seek higher AFUE

The Annual Fuel Utilization Efficiency (AFUE) is the most widely used measure of furnace's heating efficiency. The higher the AFUE, the more efficient your new furnace will be, provided it's installed properly. Central natural gas furnace units that qualify for PG&E rebates offer AFUEs at or above 94%. Download **PG&E's Residential Rebate Catalog** for a full listing of residential rebate products and programs.

Get a variable-speed motor (VSM) equipped furnace

Unlike conventional single-speed motors, a variable-speed motor (VSM) runs at a wide range of speeds to more precisely control the flow of heated air, ensuring cleaner combustion and efficient operation. Some central natural gas furnace units with VSMs qualify for PG&E rebates.

Download **PG&E's Residential Rebate Catalog** for a full listing of residential rebate products and programs.

Keep your paid invoice or receipts

Don't forget to apply for your rebate. Work with your contractor to apply online or complete a paper rebate application. For more details, download this complete guide to **PG&E Energy Efficiency Rebates**.

More ways to get smart about furnaces

Estimate the size and cost of a new heating and cooling system. Go to the **Energy Guide Website**.

Pool Pump Buyer's Guide

Pool pumps can be the largest consumers of outdoor electricity. Here's what to look for when shopping for an energy-efficient variable-speed pump that can also earn you a rebate from PG&E.

Work with a licensed contractor

Because selecting and installing a pump pool isn't a simple do-it-yourself project, we highly recommend you work with a licensed pool professional. To find a licensed pool professional in your area, call The Contractor's State License Board (CSLB) at 1-800-321-CSLB (2752) or go to the CSLB website.

Go for a variable-speed pump

We strongly recommend that you exceed the minimum two-speed pump requirement set by California's Title 20 energy-efficiency standards and buy a variable-speed pool pump. Single- and two-speed pumps don't offer the same flexibility and energy savings you can get with a variable-speed pool pump. Additionally, only variable-speed pumps are eligible for PG&E rebate.

Seek control and get a rebate

Programmable controllers help you to better match your variable-speed pool pump's flow to your pool's needs. To qualify for a PG&E rebate, your new variable-speed pump must be equipped with a programmable controller (either built-in or separate) that can:

- Meet California's Title 20 energy-efficiency standards.
- Operate the pump on at least two speeds and switch speeds automatically.
- Default to the lowest speed after one normal cycle (24 hours) if temporary high-speed override capacity exists.

Smooth out the flow

Design the pump's piping to reduce hydraulic resistance by replacing 90° angles with either 45° or "sweeping" 90° fittings and, increasing, wherever possible, the size of the pipes. This makes the water flow more efficiently, and, when combined with using a large filter (rated to at least 50% higher than the pool's design flow rate), decreases the pool circulation system's hydraulic resistance, so it takes up to 40% less electricity to run to run your pump.

Slow things down

A variable-speed pool pump lets you customize the pump's speed and timing to meet your pool's filtration system needs, and, for a relatively small investment, can reduce your pool pump's energy usage by 50% to 75%.

Keep it clean

Keep your intake grates clear of debris. Clogged drains require your new pump to work harder, which uses more energy. Backwash your filter appropriately. Backwashing too frequently wastes water, while not backwashing wastes energy by requiring the pump to work harder.

Keep your receipts

Don't forget to apply for your rebate. Work with your licensed pool professional to apply online or complete a paper rebate application.

More ways to get smart about pool pumps

Get the facts about how to install and operate your pool pump for maximum energy efficiency from the U.S. Department of Energy. Go to the Energy Savers website.

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