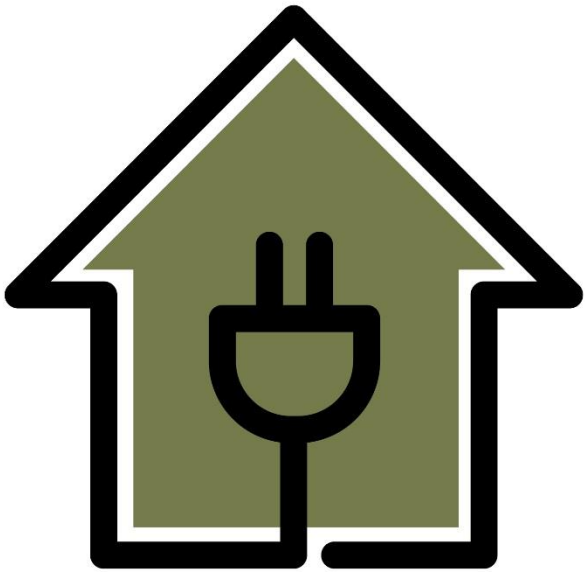
MARIN COUNTY ELECTRIC HOME GUIDE



Electrify Marin
Natural Gas Appliance
Replacement Rebate Program

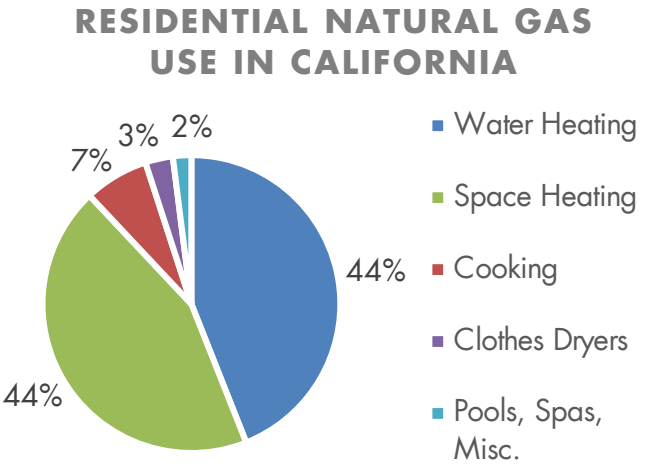
www.marincounty.org/electrify

FOSSIL FUELS IN YOUR HOME

Burning fossil fuels generates emissions that contribute to climate change. You may know that fossil fuels are burned in Marin County by gas and diesel vehicles, but did you know that this also extends to natural gas and propane use inside of homes?

The most common gas-fueled home appliances are:

- Water Heaters
- Space Heaters
- Ranges and Cooktops
- Clothes Dryers



Source: California Energy Commission

Reducing or eliminating natural gas and propane from your home will reduce greenhouse gas emissions and improve indoor air quality, contributing to a safer, healthier home and environment.

WHAT CAN YOU DO?

There are actions you can take to reduce fossil fuel consumption in your home, starting with removing the appliances that depend on natural gas or propane and replacing them with electric models. All-electric alternatives are available for most home appliances that use fossils fuels. The County of Marin is now offering rebates to homeowners who replace gas appliances with efficient electric ones. Replacing natural gas appliances will benefit your household and your community. Learn more at www.marincounty.org/electrify.

BENEFITS OF ELECTRIFIED HOMES

WHY ELECTRIFY?

Environmental Benefit

Gas appliances are fueled by natural gas or propane, but the power for electric appliances comes from a more complex set of energy sources. Electricity can be, and historically has been, generated by fossil fuels including coal, oil, and natural gas. In recent years, State legislation and environmental motivation have driven more of California's electric supply to come from renewables, such as wind and solar. The current statewide goal is for 100% of electricity to come from carbon-free sources by 2045. In Marin, both MCE and PG&E offer programs which allow customers to purchase electricity from 100% renewable sources. Installing on-site solar is another way to bring renewable electricity into your home. An all-electric home that is powered by renewable electricity will not produce greenhouse gas emissions that contribute to climate change, unlike homes with fossil fuel appliances.

Health and Safety

Natural gas use in homes impacts indoor air quality and presents a risk of gas leaks and combustion-related injury. Burning gas in enclosed spaces can result in unhealthy levels of nitrogen dioxide, carbon monoxide, and formaldehyde. While exhaust systems can help, switching to electric appliances will remove the sources of these emissions entirely. Cooking with natural gas has also recently been found to be a cause of childhood asthma. Leaks are a pervasive problem with gas infrastructure, which can be especially dangerous in earthquake and fire-prone areas such as ours. For more information about these and other health and safety risks associated with natural gas use, visit the *Resources and Links* section of the Electrify Marin website at www.marincounty.org/electrify.

In Marin, much of our electricity is generated from renewable sources such as solar and wind, making electricity a cleaner alternative to natural gas and propane.

Cutting-Edge Technology

In recent years, huge improvements have been made to electric water heating, space heating, and cooking appliances. Many of the most modern, high-tech, and efficient appliances on the market today are all-electric. For example, heat pumps for water heating and space heating move heat from one place to another rather than generating heat directly, using far less energy than traditional appliances. Induction cooking systems use electromagnetic energy to heat iron cookware directly, rather than generating heat and transferring it to the cookware indirectly. This creates a faster, more seamless cooking experience. These and other emerging technologies can make our homes safer, more energy efficient, and more fun!

Financial Incentives

The County of Marin's **Electrify Marin** rebate program is currently offering rebates of $250 to $1,000 per replaced gas appliance for qualifying all-electric models, with higher rates available for low-income households. Supplemental rebates are available for electric service panel upgrades when adding electrical capacity is required to accommodate new electric appliances. Additional incentive programs may become available in the future. To learn more, visit www.marincounty.org/electrify.

Equipment Type	Standard Rebate	Low-Income Rebate
Heat Pump Water Heater	$1,000	$2,000
Central Air Source Heat Pump	$1,000	$4,500
Mini-Split Heat Pump	$800	$3,000
Induction Range	$500	$500
Induction Cooktop	$250	$250
Service Panel Upgrade	$500	$1,200

PLANNING FOR AN ELECTRIFIED HOME

Prioritizing and financing home upgrades isn't always feasible, but a good way to start is by evaluating your use of natural gas and propane and finding out what electric alternatives are available. Here are some steps you can take to plan for an electrified home:

1. Assess Your Natural Gas Use: You can begin by creating an inventory of the gas-fueled appliances in your home. Refer to the chart at the beginning of this guide to determine which ones are using the most gas. Furnaces and water heaters are generally the biggest gas users, but gas used by smaller appliances adds up as well.

2. Plan for Upgrades: Factors such as the age, performance, and efficiency of an appliance can help you prioritize. For example, if your water heater is teetering on 15 years old, it may need to be replaced soon. Instead of waiting until your appliance breaks, planning what you will replace it with ahead of time can make it easier to choose the right replacement and allow time for a quality upgrade.

3. Evaluate Your Electrical Capacity: Switching from gas to electric appliances, adding an EV charger, or installing solar may require additional electric service panel capacity. Consult with your contractor to determine if a service panel upgrade is needed, and plan for additional gas to electric swaps you may want to make in the future – you can add the capacity now and avoid having to upgrade again down the road.

4. Consult with Your Contractor: Some of the most efficient electric appliances are emerging technologies, so not all contractors have experience installing them. Talk with your contractor about their comfort level with the appliances you're considering installing.

YOUR HOME'S ELECTRICAL CAPACITY

Most homes in Marin are equipped with a 100-amp electrical service panel, though some older homes that haven't been upgraded may still have 60-amp panels. New homes are generally built with 200-amp panels.

Switching to electric appliances, adding an EV charger, or installing solar may require an upgrade to your existing electric service panel, especially in older homes. Your electrical contractor can help you determine how much electrical capacity your home may need, now and in the future.

The following are general electrical requirements for some of the more efficient electric appliances that could be viable alternatives to your gas appliances. *Requirements may differ for certain models, so you should always consult with an experienced electrical contractor.*

APPLIANCE	ELECTRICAL REQUIREMENTS
Heat Pump Water Heater	30 amp circuit 220/240 volt breaker
Central Air Heat Pump	30-40 amp circuit 220/240 volt breaker
Mini-Split Heat Pump	15-30 amp circuit 220/240 volt breaker
Induction Range	40 amp circuit 220/240 volt breaker
Induction Cooktop	30 amp circuit 120/240 volt breaker
Heat Pump Clothes Dryer	30 amp circuit 120/240 volt breaker
Vented Electric Dryer	30 amp circuit 220/240 volt breaker
Electric Vehicle Charger	40 amp circuit 220/240 volt breaker

EFFICIENT ELECTRIC APPLIANCES

HOT WATER HEATING

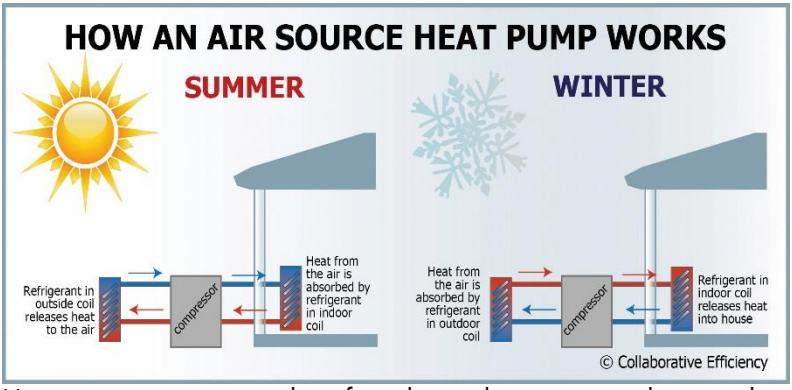
Of the different types of electric water heaters on the market today, heat pump water heaters are the most energy efficient by far. These use the same technology as refrigerators but in reverse – moving heat from the surrounding air into a water tank. Heat pump water heaters can use less than half the energy required by traditional electric resistance models. Space and airflow requirements differ from gas-fueled water heaters, so check with your contractor whether a heat pump water heater is right for your home.

SPACE HEATING

For homeowners switching from a gas furnace or heating system, the most energy efficient electric replacement will be a heat pump system. Heat pumps move heat from outside the home indoors and can be run in reverse in the summer to provide cooling. Even on cold winter days, heat pumps use a refrigerant to amplify what little ambient heat is present and move it indoors to heat your home. Heat pump systems work efficiently down to a temperature of 25°F, making them an ideal choice for Marin's mild climate. There are different options available for homes with and without existing duct systems:

Central Air Source Heat Pumps can be installed in homes with ventilation systems already in place, replacing a central gas furnace.

Mini-Split Heat Pumps are smaller systems that can be ideal for retrofitting houses with non-ducted systems, or for building additions when installing ductwork isn't feasible.



Heat pump systems move heat from the outdoors into your home in the winter, operating most efficiently in mild climates such as ours.

COOKING

There are a variety of electric alternatives to gas cooking equipment. The most efficient electric cooking method is induction, which uses electromagnetic energy to heat up cookware instead of directly generating heat. Induction cooking requires iron cookware – you can test your cookware with a magnet to see if it's compatible. Induction cooktops are fast, easy to clean, have less risk of burns, and won't heat up your home on a hot day. Electric kettles can be an energy efficient alternative to boiling water on a cooktop, and microwaves and pressure cookers can save energy by reducing cooking time.

CLOTHES DRYERS

Of course, the most energy efficient solution would be to line-dry your clothes whenever possible, but there are several types of electric clothes dryers available. Heat pump dryers are the most energy efficient, but they can be expensive and take longer to get your clothes dry. Vented electric dryers are inexpensive and relatively efficient but require ventilation to the outdoors. Electric condenser dryers don't require outside ventilation but are not energy

efficient. Factors such as the unit's location within the home, and the availability of outside ventilation will help you determine which electric model is best for you.

OTHER GAS-FUELED EQUIPMENT

Some of the other common uses for gas and propane in homes include fireplaces, heating systems for swimming pools and spas, and barbeques/grills. In general, looking into whether electricity can get the same job done as gas can be a good place to start. Solar heating for pools and spas can be an ideal solution that is both sustainable and cost-saving. An efficient electric space heating system, for example, may replace the need for a gas-powered fireplace in your home. New technologies are constantly emerging, so there may be electric alternatives that you are not yet aware of.

Your electrical contractor can help you determine what's best for your home and budget. Always consult with an experienced contractor when planning home upgrades.

MARIN COUNTY BUILDING DEPARTMENTS

Most home electrification projects will require permits from your local building department. Electrical and plumbing permits can usually be pulled instantly online. You can save money by bundling permit applications, pulling a single permit to perform multiple upgrades at the same time. Contact your local building department for the permitting requirements in your area.

Belvedere 450 San Rafael Ave Belvedere, CA 94920 (415) 435-3838 cityofbelvedere.org	**Corte Madera** 300 Tamalpais Drive Corte Madera, CA 94925 (415) 927-5062 townofcortemadera.org	**Fairfax** 142 Bolinas Road Fairfax, CA 94930 (415) 453-1584 townoffairfax.org
Larkspur 400 Magnolia Ave Larkspur, CA 94939 (415) 927-5038 ci.larkspur.ca.us	**Marin County** 3501 Civic Center Drive Suite 308 San Rafael, CA 94903 (415) 473-6550 marincounty.org	**Mill Valley** 23 Corte Madera Ave Mill Valley, CA 94941 (415) 388-4033 cityofmillvalley.org
Novato 922 Machin Ave Novato, CA 94945 (415) 899-8989 novato.org	**Ross** 31 Sir Francis Drake Bl Ross, CA 94957 (415) 453-1453 townofross.org	**San Anselmo** 525 San Anselmo Ave San Anselmo, CA 94957 (415) 258-4616 townofsananselmo.org
San Rafael 1400 Fifth Ave San Rafael, CA 94901 (415) 485-3367 cityofsanrafael.org	**Sausalito** 420 Litho Street Sausalito, CA 94965 (415) 289-4128 sausalito.gov	**Tiburon** 1505 Tiburon Blvd Tiburon, CA 94920 (415) 435-7380 townoftiburon.org

QUESTIONS?

County of Marin staff is always available to answer questions and point you in the right direction on your home electrification project. You can reach us directly at (415) 473-3069 or energy@marincounty.org.

Electrify
MARIN

Marin Community Development Agency
3501Civic Center Drive, Suite 308
San Rafael, CA 94903

Tel: (415) 473-3069
Fax: (415) 473-7880
energy@marincounty.org

www.marincounty.org/electrify

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