

MARIN SUSTAINABILITY MAGAZINE

**TOOLS AND
PROGRAMS TO
MAKE YOUR HOME
COMFORTABLE,
HEALTHY, AND EFFICIENT**



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HEALTHY BUILDINGS

A production of the Marin County Community Development
Agency Sustainability Team
3501 Civic Center Drive Room 308, San Rafael CA 94903

INDOOR AIR QUALITY

by The Marin Sustainability Team

Indoor Air Quality (IAQ) refers to the air quality within and around buildings, especially as it relates to health and comfort. We spend most of our time indoors so good IAQ is essential to our health and quality of life!

Poor IAQ can be attributed to multiple factors ranging from features in the home (like leaky ducts and old gas combustion appliances) to occupant behavior (like what cleaning products you use, cooking without proper ventilation, or burning wood for heat).

This section will shed some light on common causes of poor air quality in residential spaces, what you can do about it, and programs and resources available in Marin County to help.

CLEANING AND PERSONAL CARE PRODUCTS

The cleaning, laundry, and personal care products you are using might smell good, but some of them could be polluting the air you breathe. Volatile organic compounds, or VOCs, are a major category of indoor air pollutants. These are toxic vapors that are off-gassed from man-made materials. Products like air fresheners, dryer sheets, deodorants, and lotions are common sources of VOCs.

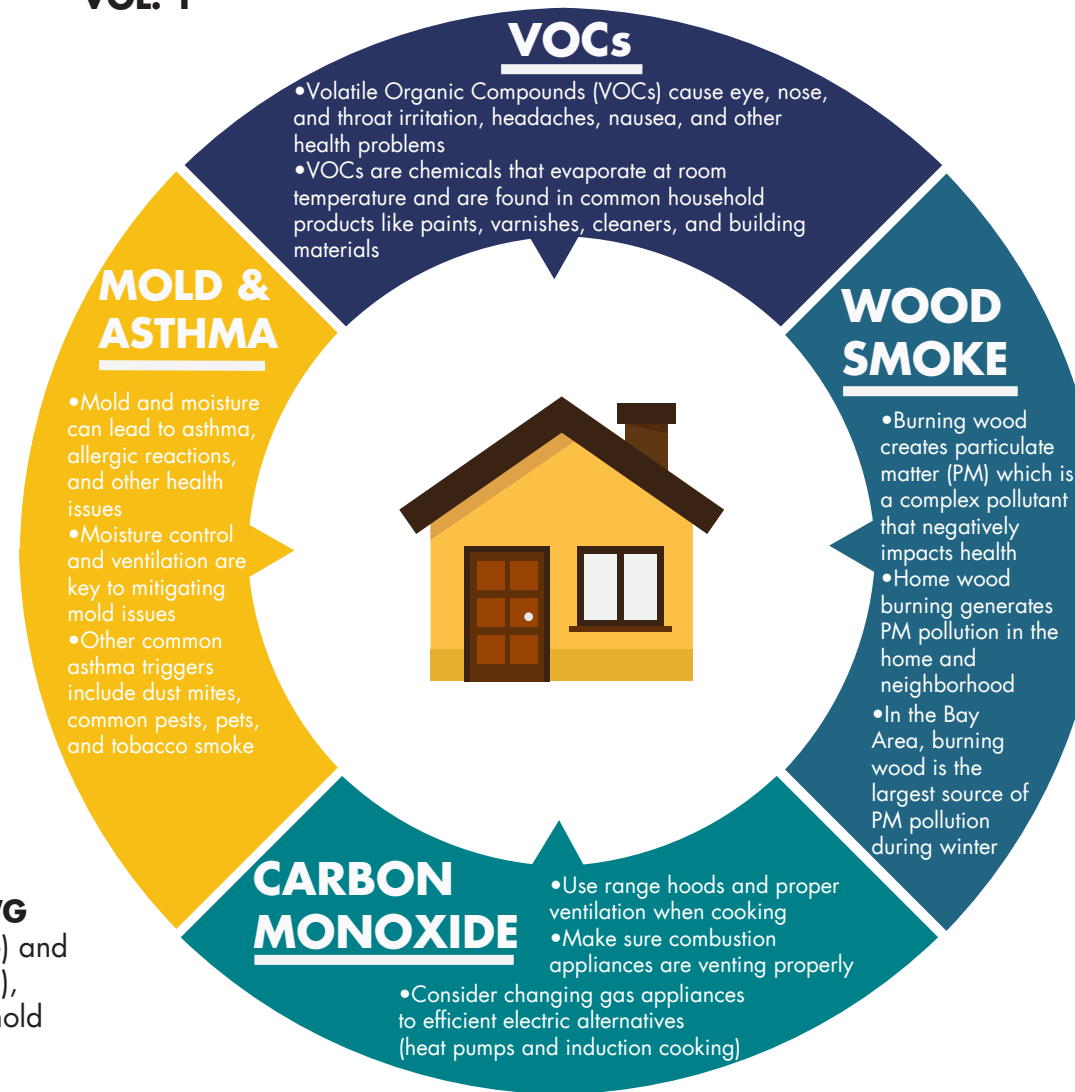
Just because a manufacturer claims that a product is “natural” or “non-toxic” doesn’t necessarily mean it’s not harmful. There are several third-party verification programs that can help us evaluate how safe cleaning and personal care products really are. **EPA Safer Choice**, **Green Seal**, and **EcoLogo** are some of the most common certifications that will let you know that a product has been verified as non-toxic by an independent organization.

Additional helpful resources: the **EWG Guide** (ewg.org/healthyhomeguide) and **The Good Guide** (goodguide.com), which evaluate the toxicity of household and personal care products.

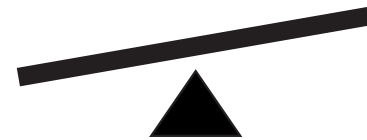
COOKING EQUIPMENT

Cooking appliances are one of the biggest sources of indoor air pollution in our homes. Studies on IAQ have shown that gas cooking equipment can result in unhealthy levels of nitrogen dioxide, carbon monoxide, and formaldehyde in our homes¹. Another recent study found that some cases of childhood asthma are attributable to cooking with gas². Using range hoods and opening windows during and after cooking are important to reduce the harms of cooking-related indoor air pollution. The most effective way to address this, of course, would be to remove the source of the pollution and replace gas cooking equipment with efficient, all-electric appliances.

¹ <https://ehp.niehs.nih.gov/doi/full/10.1289/ehp.122-a27>
² <https://www.uq.edu.au/news/article/2018/04/gas-stoves-and-damp-houses-increase-aussie-asthma-rates>




IT'S ALL CONNECTED: HEALTH, AIR QUALITY, AND SUSTAINABILITY



Induction cooktops are safer, faster, and easier to clean than gas cooktops, and give chefs a level of control that is unmatched by other cooking methods. Rather than producing heat, induction cooktops use electromagnetic energy to directly heat cookware. As a result, less energy is used and less heat is wasted in the surrounding air. Homeowners replacing gas or propane cooktops with induction equipment may apply for rebates of \$250 to \$500 through Electrify Marin. More information is available at marincounty.org/electrify.

AVAILABLE PROGRAMS TO HELP IMPROVE IAQ

Electrify Marin

Electrify Marin provides rebates for Marin single family homeowners that change gas appliances (furnace, water heater, cooking) to efficient electric options including heat pumps and induction cooking. Extra funding is available for income-qualified residents.  marincounty.org/electrify | (415) 473-3069

BayREN Home+

Home+ provides no-cost technical assistance and rebates for single family homeowners that make energy efficiency improvements to the home. Building envelope air sealing and duct sealing can improve IAQ in the home by limiting air infiltration from a home’s attic and crawl space into the conditioned space.  BayRENResidential.org | (866) 878-6008

Green and Healthy Homes Initiative- Marin

GHHI-Marín coordinates home improvement service providers in Marin County to help residents make their homes safe, healthy, and energy smart. While anyone can apply for services through the GHHI-Marín program, free or subsidized services are available only to income-qualified residents.  greenhealthyhomesmarin.com | (415) 464-6688

Marin County Wood Smoke Program

Funding is available to assist Marin residents to remove or replace wood stoves and fireplaces with cleaner burning units and heat pumps. Funding through the Bay Area Air Quality Management District may also be available for residents in high wood smoke impact zip codes in Marin. marincounty.org/woodsmoke | (415) 473-2698
baaqmd.gov/woodsmoke | (415) 749-5195

Marin County Health and Human Services

Recent climate change-related disasters have highlighted the importance of building healthy, resilient, and sustainable communities. Marin Health and Human Services encourages residents to learn more about protecting their health and preparing for extended power outages. marinhhs.org/wildfire-air-quality
marinhhs.org/preparing-extended-power-outages

HEALTH, COMFORT, AND ENERGY EFFICIENCY

by Kellen Dammann

Home improvement projects that improve the efficiency of your home and lower your utility bills can also have a big impact on your home's air quality and comfort levels. These benefits are sometimes overlooked when homeowners review a cost-benefit analysis of energy efficiency projects.

DUCT SEALING

According to EnergyStar¹, the typical American home with a central forced air system loses 20% to 30% of airflow due to leaks, holes, and poorly connected ducts. That's like a 20% to 30% tax on your heating and cooling bills!

By sealing your ducts, you are making sure that your central HVAC system is operating efficiently, which will lower your bills and reduce wear and tear on your mechanical system. When ducts are in attic and crawl spaces, sealing ducts can improve air quality by eliminating dust and allergens from entering your air system. This can benefit people that suffer from asthma and seasonal allergies.

¹ https://www.energystar.gov/campaign/heating_cooling/duct_sealing

INSULATION AND AIR SEALING

Making sure your building envelope is well insulated and air sealed is important for reducing your heating and cooling bills and ensuring that your home is comfortable during summer and winter. Having well-insulated walls, attic, and crawlspace slows heat transfer and air sealing prevents heat transfer through convection (the movement of air). You can think of it like wearing a wool sweater and a windbreaker on a cold, windy day. Without the windbreaker, you would feel the cold air through the wool sweater.

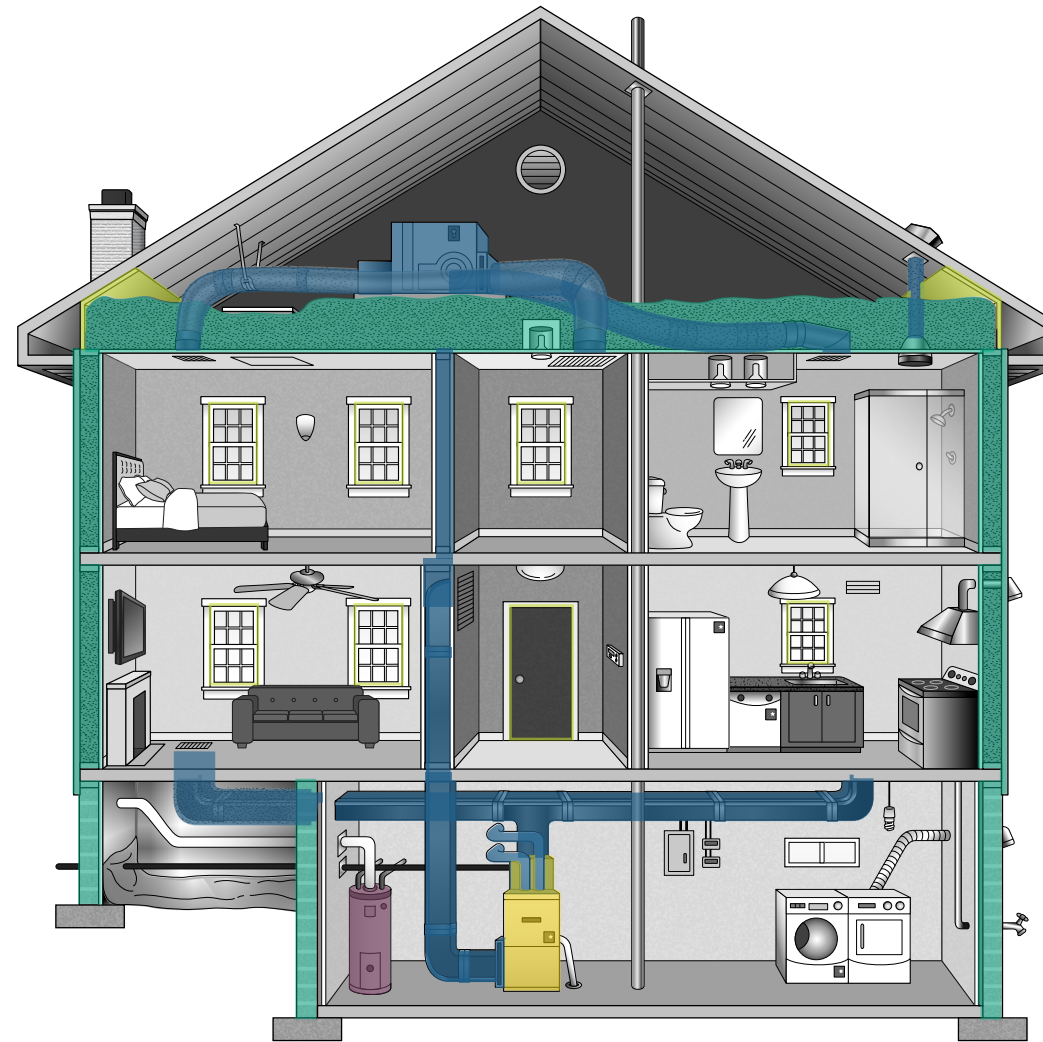
SAFETY

There are also safety concerns related to leaky ducts. Gas-burning appliances like water heaters, furnaces, and clothes dryers release combustion gases (like carbon monoxide) through their ventilation system. Leaky ducts may cause "backdrafting," where these gases are drawn back into the conditioned spaces. Sealing duct leaks can minimize this risk. •

BAYREN HOME+ REBATE MEASURES

The Bay Area Regional Energy Network (BayREN) Home+ program provides rebates and technical assistance to homeowners looking to make energy efficiency improvements. No-cost, one-on-one technical support is available by calling a Home Energy Advisor at (866) 878-6008.

Learn more: BayRENResidential.org



HEATING AND COOLING EQUIPMENT

Discover the most efficient solutions for reliable year-round comfort and energy savings.

REBATE: \$500 - \$1,500

AIR SEALING

Sealing up air leaks cuts heating and cooling costs, while improving durability, comfort, and air quality.

REBATE: \$300

WATER HEATER UPGRADES

A high-efficiency water heater can save the average household hundreds of dollars a year compared to standard models.

REBATE: \$400 - \$1,500

DUCT SEALING

About 20-30% of the air that moves through ducts can be lost due to leaks and poor connections. Proper sealing solves the problem.

REBATE: \$400

INSULATION

One of the most important steps you can take to keep your home warm in the winter and cool in the summer

REBATE: \$0.75 - \$2/sq. ft. up to \$1,000

BAYREN HOME +

Get no-cost support from a Home Energy Advisor :

(866) 878-6008

BayRENResidential.org

WHY ELECTRIFY?

by Mark Chhabria

You probably know that gas and diesel vehicles produce emissions that contribute to climate change, but did you know that this also extends to your home appliances? Much like the electric vehicles replacing gas-fueled vehicles, new electric appliances are on the market that perform the same or better than your old propane appliances and can also make your home more comfortable. For example, heat pumps for space heating can be used to cool your home in the summer, providing year-round comfort with a single efficient appliance. Induction cooktops won't heat up your kitchen, making it comfortable to cook on hot summer days.

It is estimated that about one-third of the greenhouse gases produced in Marin County come from our buildings, largely the result of burning natural gas and propane. Here in Marin, natural gas and propane are most commonly used in homes for water heating, space heating, and cooking.

Electrifying your home is an effective way to reduce your residential carbon footprint. Each year, California's electricity supply

gets cleaner, as the percentage generated by renewable sources such as wind and solar increases. Both PG&E and MCE Clean Energy offer customers the option of buying 100% renewable electricity. Homes that use efficient electric appliances in conjunction with renewable electricity significantly reduce the greenhouse gases that cause climate change.

Natural gas use also presents significant health and safety risks for Marin residents. Burning natural gas in your home impacts indoor air quality, creating unhealthy levels of nitrogen dioxide, carbon monoxide, and formaldehyde. Leaks are a pervasive problem with gas infrastructure, which is especially dangerous in earthquake and fire-prone areas.

For water heating and space heating, electric heat pumps provide efficient electric alternatives to your gas and propane-fueled systems. Heat pumps don't generate heat, they move heat from the surrounding air into a water storage tank or into your home, aided by a refrigerant. Heat pumps for space heating can also be run in reverse during the summer to cool your home. Homeowners

looking to add air conditioning to their properties should consider removing their furnace and installing a heat pump, which can heat and cool your home.

Induction cooking equipment is popular among professional and home chefs around the world. Induction cooktops use an electromagnetic current to heat cookware directly, rather than heating it indirectly with a flame or resistance burner, making it a much more efficient cooking method. Because no heat is wasted in the cooking process, induction cooktops won't heat up your kitchen. Induction burners provide cooks with a level of control and flexibility unparalleled by other cooking methods. Since induction cooking is all-electric, the health and safety risks associated with cooking with gas are reduced.

As is often the case with new technology, prices for these kinds of appliances are a bit higher than traditional counterparts. Rebates through Electrify Marin were designed to make the net cost of these efficient electric appliances closer to the cost of traditional gas and propane models. Because of the high cost of propane, homeowners switching from propane to efficient electric appliances will generally see a noticeable decrease in their utility bills. •



Electrify
M A R I N

Electrify Marin provides Marin residents rebates for switching from gas to efficient electric appliances

- **Make Your Home More Comfortable**
- **Improve Air Quality**
- **Reduce Your Carbon Footprint**
- **Get Money Back**



For more information about electrifying your home and the rebates available through Electrify Marin, visit

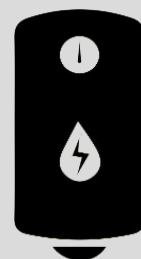
www.marincounty.org/electrify, email energy@marincounty.org, or give us a call at **(415) 473-3069**.

ELECTRIFY MARIN REBATE PROGRAM

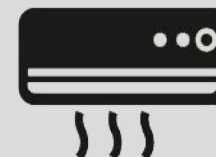


**INDUCTION RANGE
(COOKTOP + OVEN)**
\$500

INDUCTION COOKTOP
\$250



**HEAT PUMP
WATER HEATER**
\$1,000
**(\$2,000 for
income-qualified)**



CENTRAL AIR SOURCE HEAT PUMP
\$1,000
(\$4,500 for income-qualified)

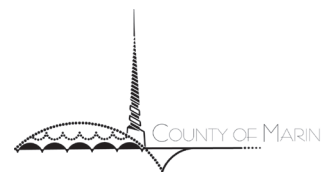
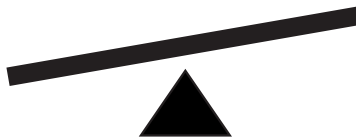
MINI SPLIT HEAT PUMP
\$800
(\$3,000 for income-qualified)



MarinSustainability.org

The mission of the Community Development Agency is to protect health and safety, preserve environmental quality, and plan sustainable, diverse communities.

**IT'S ALL CONNECTED:
HEALTH, AIR QUALITY,
AND SUSTAINABILITY**



Bay Area Regional Energy Network Disclaimer. The BayREN Home+ Program provides assistance and incentives for home improvement projects that can reduce energy use and make homes more comfortable. This program is managed locally by regional energy networks and directed by the California Public Utilities Commission in collaboration with the California Energy Commission. Funding comes from utility customers under the auspices of the California Public Utilities Commission. Incentives are offered on a first-come, first-served basis and are effective until funding is expended or the program is discontinued. Programs may be modified or terminated without prior notice. Trademarks are property of their respective owners. All rights reserved.

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All County publications are available in alternative formats upon request. Request for accommodations can be made by calling (415) 473-3069 (Voice), (415) 473-3232 (TDD/TYY) or by email at energy@marincounty.org.