

SONOMA COUNTY

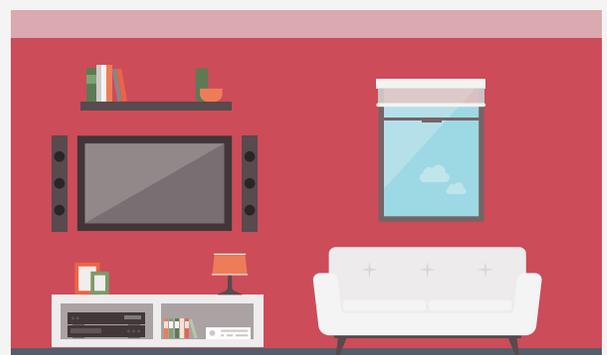
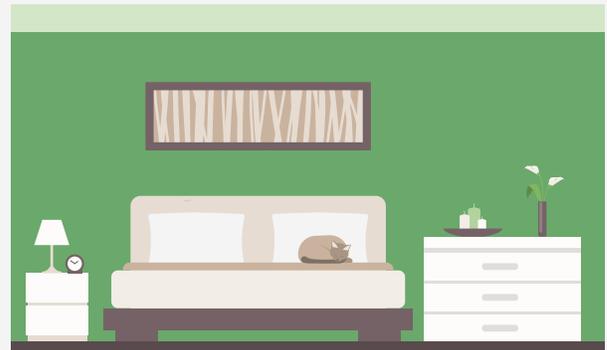
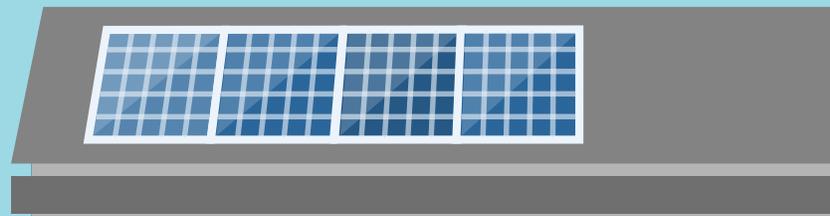
# HOME RESILIENCE GUIDE

Your resource for a more energy efficient, safe,  
comfortable, and durable home



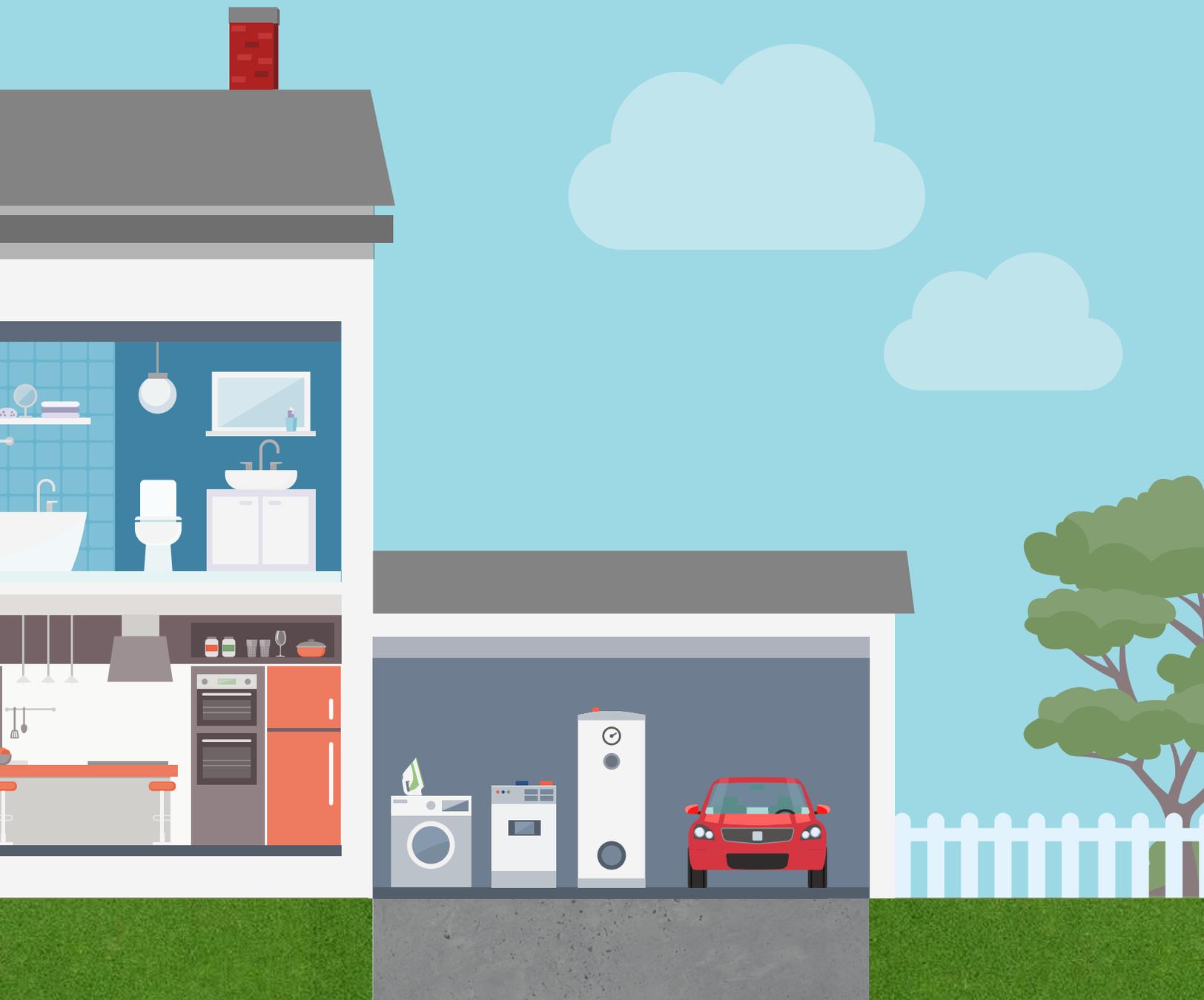
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# Welcome to the Home Resilience Guide!

The County of Sonoma, in partnership with the Bay Area Regional Energy Network (BayREN), are pleased to bring you a guidebook that will educate you on improvements you can make for a more energy efficient, safe, comfortable, and resilient home. You'll learn about energy efficient technologies, water saving features, and ways you can protect your home from wildfires, earthquakes, and much more.



# Home Performance Through Time

Our world has evolved, but your house hasn't.

If we were to stand in a home kitchen two hundred years ago, most of us wouldn't be able to make dinner: no gas, no electricity. If your house was built in the thirties or forties, it's likely that little thought was given to the comforts of good insulation. Houses built in the sixties might have central heating, but the programmable thermostat came much later. It wasn't until the eighties that California began transforming the way homes were designed and built, making them more comfortable and energy efficient.



Today, most homes are filled with modern conveniences: a clothes washer and dryer, a refrigerator, heating and cooling systems, and multiple electronic devices. Simply stated, as our homes became more complex and energy dependent, our energy use and carbon footprint have increased. If your house was built before 1980, it will greatly benefit from making upgrades and improvements. Even homes built after 1980 will likely benefit from newer technologies designed to improve energy efficiency and resiliency.

It's time to evolve your house with upgrades that will make your home healthier, safer, more comfortable, more energy and water efficient, more resilient, and will save you money while protecting our environment.





# Climate Change

Climate change is already contributing to increased air pollution, wildfires, droughts, and sea-level rise. Climate patterns are changing in California and across the planet. Since the mid-20th century climate scientists have tracked these global warming trends and attributed them largely to human activity on the planet. That activity (our use of fossil fuels) has resulted in dramatically increased levels of carbon dioxide and other greenhouse gases in the atmosphere.

In California, much of the state's energy still relies on the burning of fossil fuels like natural gas and oil. When fossil fuels are burned, carbon dioxide, methane, and other greenhouse gases are released into the air. These greenhouse gases, such as methane, are also released during fossil fuel extraction and transportation. Carbon dioxide isn't harmful at natural levels, but too much can act like a layer of plastic wrap around the Earth that lets in heat from the sun but doesn't let it escape. The atmosphere acts like a greenhouse, which is why these emissions are called greenhouse gases.

Decarbonization or electrification refers to the process of replacing technologies that use fossil fuels with those that use electricity as a source of energy. Changing our main energy sources to clean, renewable energy and improving our buildings will not only help reduce greenhouse gases but will also make your home more energy-efficient and safer for you and your family.



# Assessing Your Home's Energy Use

Assessing your home's energy use and its ability to protect your family from the impact of disasters is the foundation from which to understand and plan for improvements—to make your home more efficient and resilient. The resources to assess your home's energy use include:

## DO IT YOURSELF (DIY) TOOLKITS

Knowing how energy is used in your home will help you take steps to reduce your use. Sonoma County residents can check out a DIY Toolkit for free.

The Toolkits include the tools and information necessary for borrowers to perform their own home upgrade projects to weather strip windows and doors, monitor electrical usage, find water leaks, and make homes more efficient with LED lightbulbs. You can check out a DIY Energy and Water Savings Toolkit at all Sonoma County Library branches.

## HOME ENERGY SCORE (HES)

An HES is an easy way to take a deeper dive into home energy use.

A certified rater uses a system developed by the U.S. Department of Energy to **score your home's energy use on a scale of 1 to 10**. Think about it as a miles-per-gallon rating on your home.

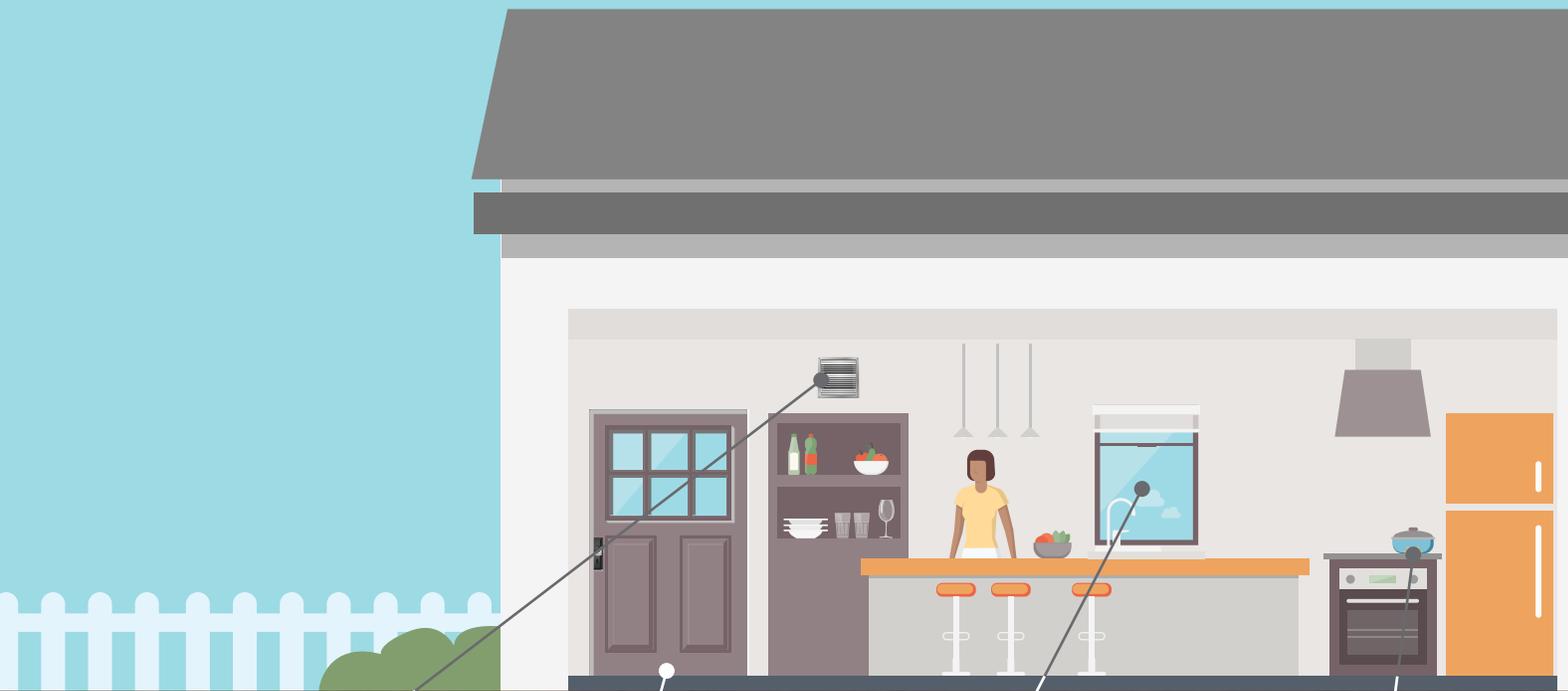
The rater comes to your home and conducts a personal, detailed analysis about your house and its energy features. When they're done, you get your score, facts about your home and its estimated energy consumption, and customized recommendations to improve your home's energy efficiency.



# Whole-house energy assessment

A whole-house energy assessment is a more thorough approach to understanding your home's systems and energy consumption. Without a whole-house assessment, any single approach to improving your energy efficiency could fail to get the results you expect. Following standards set by the Building Performance Institute and California Energy Commission, your energy assessment is done using rigorous diagnostic testing requirements – there's no guessing. You can choose from a list of participating contractors and certified Whole-House Home Energy Raters. The testing takes about two to three hours, using specialized diagnostic tools.

Typically, the assessment will be done both before upgrades to help determine the best steps to take, and after upgrades to verify that you're getting the results you expected.



## DUCT LEAKAGE TEST

Used to detect leaks in your heating/cooling ducts. Leaky ducts contribute to a home's energy loss, comfort issues, and poor indoor air quality.



## BLOWER DOOR TEST

Used to measure a building's air tightness. Homes can lose as much as 30% of the air you paid to heat or cool through leaks in the building enclosure.



## THERMAL IMAGING CAMERA TEST

Used to detect defects in insulation and air leakage around windows, through recessed light fixtures and through wall outlets, to name a few. Poor insulation and air leakage make your home uncomfortable in all seasons.



## COMBUSTION SAFETY TEST

Used in order to verify that all gas appliances are working safely and are properly vented. This test also assures harmful gases (i.e. carbon monoxide) are not being emitted in the home.

# Home Energy

## Comfort, energy efficiency, and lower utility bills.

Who doesn't want more comfort and lower bills? Most houses today lose as much as half of their cooled/heated air because they have poor insulation, inefficient heating/cooling systems, leaky ducts, and have leaks in the attic and around doors/windows. In fact, if you add up all the little cracks and crevices, your house likely has a hole the size of a hula-hoop. It's no wonder your feet are cold and your utility bills are high.

Your home's energy efficiency can be improved upon in five key ways:

### 1. BUILDING TIGHTNESS AND AIR SEALING

Air sealing reduces drafts and heat loss by eliminating air leaks. A variety of materials are used for air sealing, including caulk, spray foam, metal flashing, weather stripping, and rigid foam.

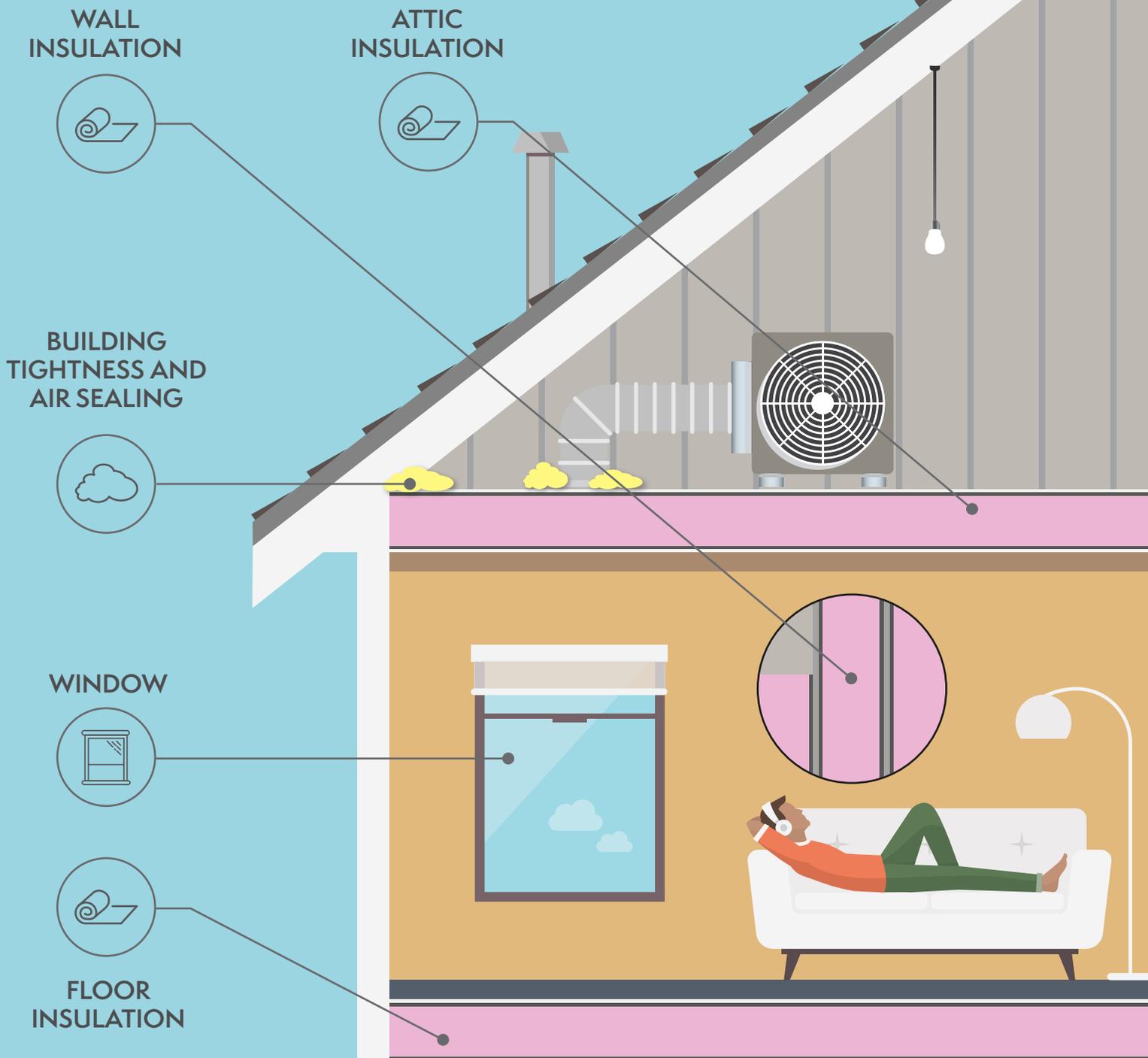
### 2. INSULATION

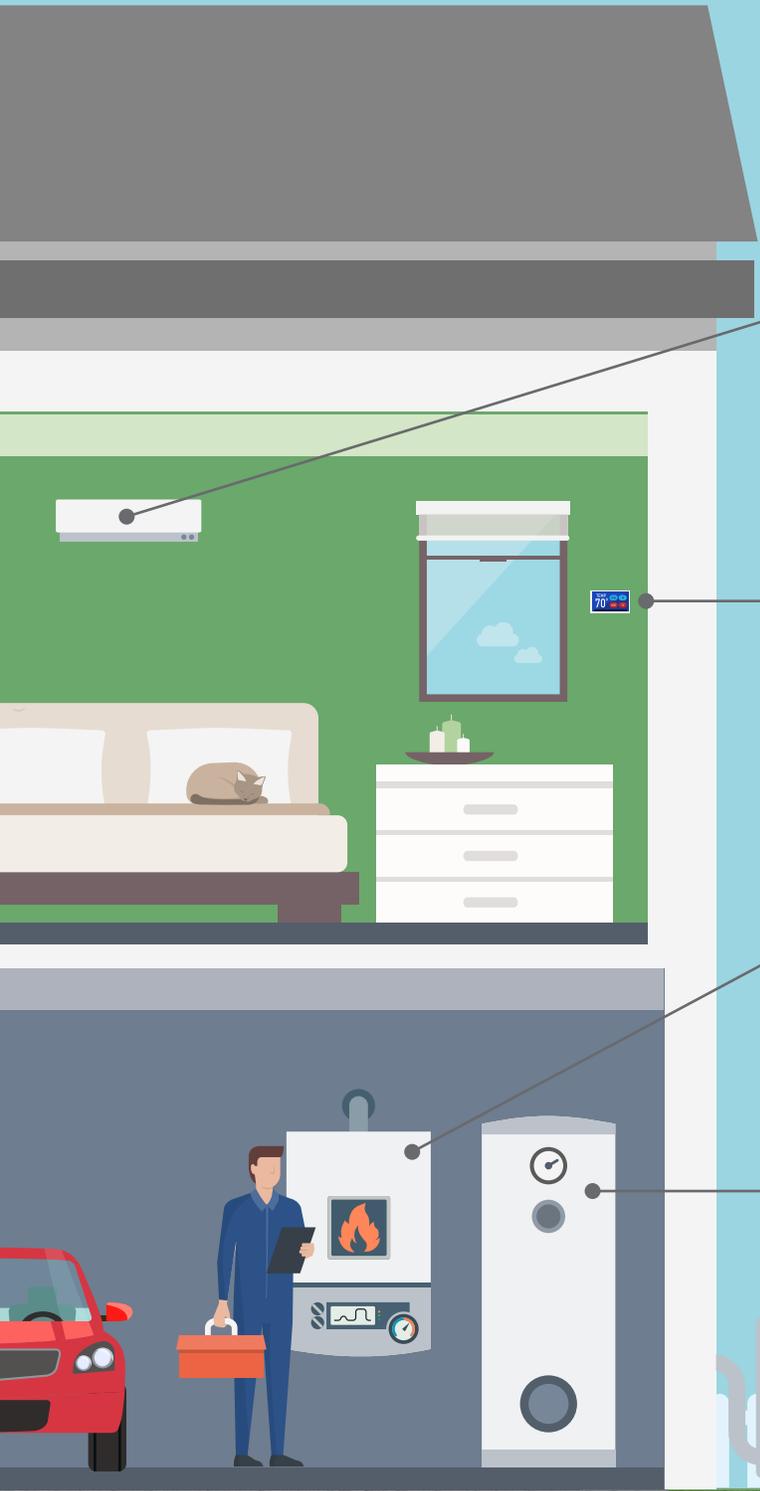
By providing resistance to heat flow, insulation keeps heated and cooled air inside your house, and keeps the outside temperatures out. When correctly installed, insulation can deliver comfort and savings, especially during the hottest and coldest times of the year

- **Attic insulation.** Heat loss and gain are greatest at the top of a building. The attic is where you can find some of the largest opportunities to save energy in your home. Loose-fill or batt insulation is typically installed in an attic.
- **Wall insulation.** Your home's walls are usually the largest single surface area on the outside of the home. Drill and fill is the process of drilling holes through your walls, and then blowing in insulation. If you replace the exterior siding on your home, consider adding insulation at the same time.
- **Floor insulation.** Properly insulating floors will make your home more comfortable. For homes with crawlspaces, insulation can be installed under raised floors.

### 3. WINDOWS

Double-pane windows have become the industry standard to make windows more energy-efficient. The efficiency of windows is rated by U-factor and Solar Heat Gain Coefficient (SHGC). U-factor measures how well the window insulates, SHGC measures how much solar heat the window lets in. Lower is better for both.





ELECTRIC  
HEAT PUMP



PROGRAMMABLE  
THERMOSTAT



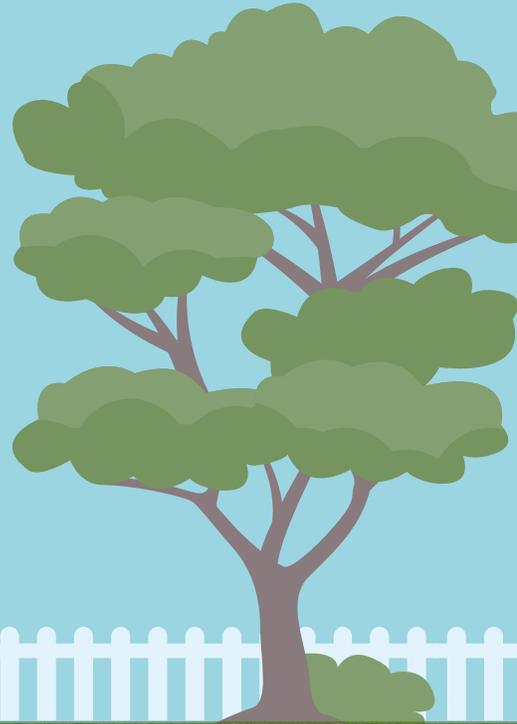
FURNACE



WATER  
HEATING



AC SYSTEM



## 4. HVAC SYSTEM

HVAC stands for heating, ventilation, and air conditioning. Your HVAC system is responsible for heating and cooling your home and includes components like furnaces, air conditioners, and heat pumps as well as ductwork and thermostats.

- **Furnaces** generate heat by burning fuel, generally either natural gas or propane. The efficiency of a furnace is measured by “annual fuel utilization efficiency” (AFUE). Older furnaces can have AFUE values as low as 65 percent and can lose up to 35 percent of the energy they burn in exhaust up their flue. Newer, sealed combustion/condensing furnaces can achieve up to 97% efficiency and are safer and more economical to run.
- **Air conditioning systems** draw heat energy out of the house and transfer it to the outside air. The most common setup for residential homes is a split system, which includes an inside-the-home evaporative heat exchanger and an outside condensing unit heat exchanger.
- **Heat pumps** cool your home like air conditioners and because of a reversing valve, are also capable of providing heat. Heat pumps are powered by electricity and are very energy efficient making them more environmentally friendly. Heat pump systems can be ducted or ductless. Ductless heat pump systems are a great option for homes without room for duct systems and are highly energy efficient because duct losses are eliminated. Ductless heat pump systems can be configured with multiple indoor units that allow homeowners to adjust the system to heat or cool certain rooms only when they're occupied, instead of heating or cooling the entire home.
- **Programmable thermostats** can save up to 10 percent of annual heating and cooling costs by making it easy to automatically regulate your home's temperature when you are at home, asleep or away.

## 5. WATER HEATING

Water heaters account for up to 20 percent of a household's utility bills. Low cost improvements that you can do yourself include learning how to safely lower your water heater temperature and insulate your hot water pipes. As a long-term investment, consider installing an energy efficient water heater.

- **Electric heat pump.** Heat pump water heaters are up to four times more efficient than standard models, and lower your energy costs by using a process that transfers heat from the surrounding air to the water.
- **Going tankless.** By heating water only when it is needed, going tankless can cut gas water-heating expenses by 30 percent compared to standard gas storage water heaters, while also providing continuous hot water.
- **Gas or electric resistance storage.** Look for water heaters with high Uniform Energy Factors (UEFs).

# Indoor Air Quality

Indoor Air Quality (IAQ) refers to the air quality in buildings as it relates to the health of the building occupants. There are many sources of indoor air pollution including combustion appliances, moisture, cleaning products, building materials, furniture, dust, pests, pollen, and outdoor air pollution including wildfire smoke. Inadequate ventilation can increase indoor pollutant levels by not bringing in enough fresh outdoor air to dilute emissions from indoor and outdoor sources and by not carrying indoor air pollutants out of the home. Improving indoor air quality can be achieved through:

## SOURCE CONTROL

Eliminate individual sources of pollution or reduce their emissions.

## IMPROVED VENTILATION

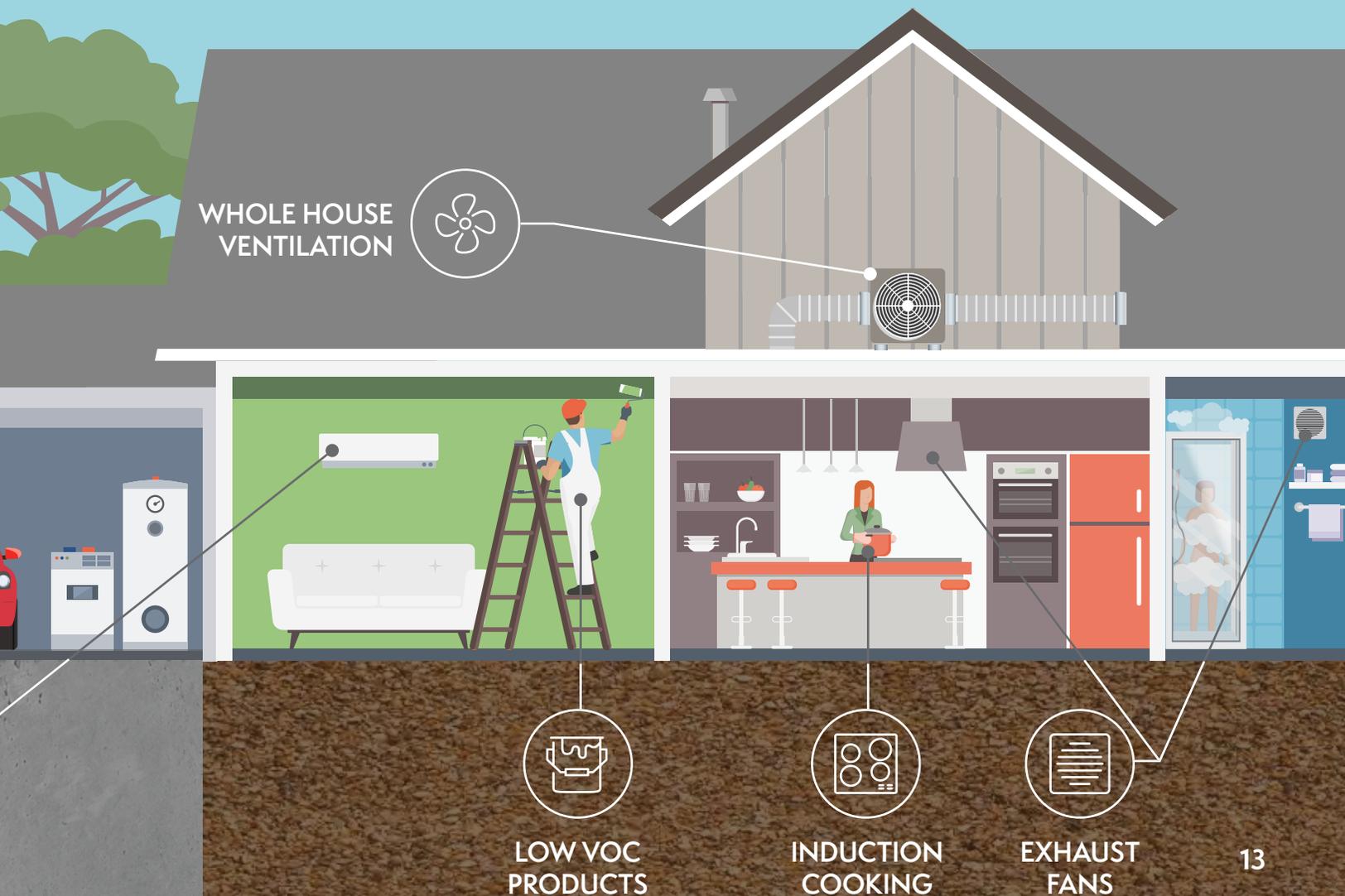
Install mechanical ventilation to lower the concentrations of indoor air pollutants in your home. Mechanical Ventilation is the process of actively supplying fresh air to and removing stale air from inside the house using powered equipment, such as motor-driven fans and blowers.

- **Air sealing.** Prevents outdoor pollution from entering the home and reduces noise from outside.
- **Duct sealing.** Prevents pollutants from the attic or crawlspace from entering the home.
- **Electric heat pumps.** Eliminate combustion gas pollutants by replacing combustion appliances used for water heating, home heating systems and clothes dryers with high efficiency electric heat pumps.
- **Induction cooking.** Replace gas stoves with induction to eliminate combustion gas pollutants from cooking.



ELECTRIC  
HEAT PUMPS

- **Low VOC products.** Choose paints, coatings, cleaning products, and furnishings with low or zero VOC (volatile organic compound) levels.
- **HVAC filters.** Upgrade to higher quality air filters and choose a filter with at least a MERV 13 rating, or as high a rating as your system fan and filter slot can accommodate. Replace filters regularly according to manufacturer's recommendations.
- **Portable air cleaners.** Choose ENERGY STAR® HEPA air cleaners.
- **Local exhaust fans.** Install ENERGY STAR® kitchen and bathroom exhaust fans to remove moisture and pollutants at their source.
- **Whole-house ventilation.** There are two common types of mechanical whole house ventilation systems:
  - » Exhaust ventilation systems pull stale air out of the home and cause fresh air to come into the home through air leaks and are relatively inexpensive and easy to install.
  - » Balanced ventilation systems do the best job of controlling pollutants in the home by exhausting stale air and providing fresh air using both supply and exhaust fans through a filtered, ducted distribution system.



**HOT WATER  
RECIRCULATION  
SYSTEM**



**FLOW AND FLUSH  
FIXTURES**



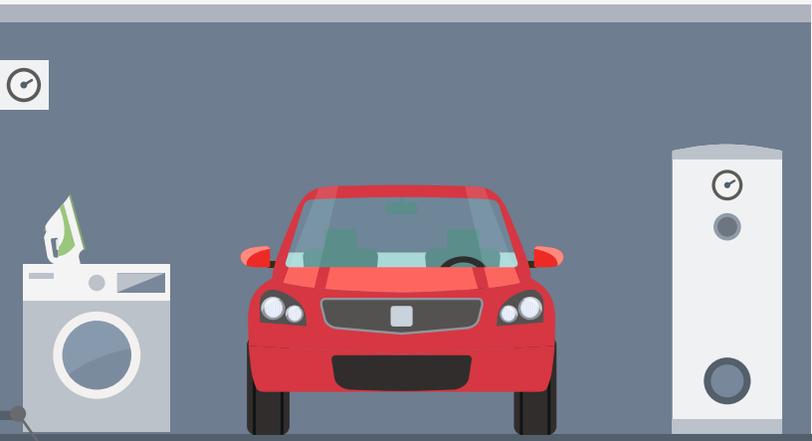
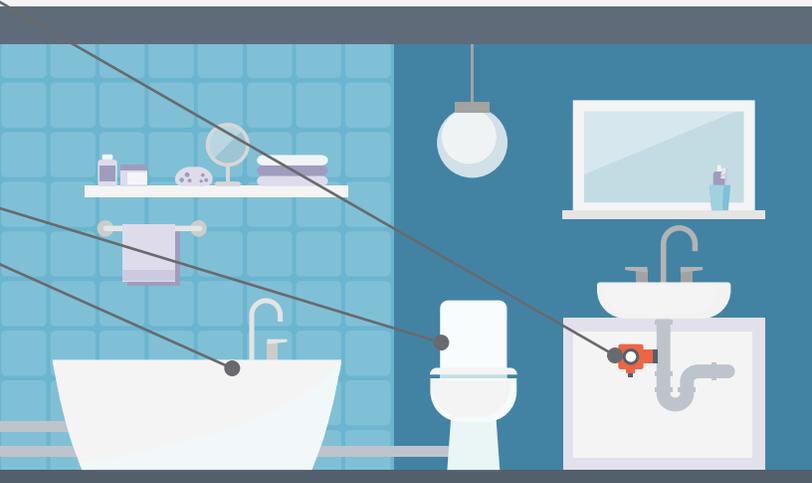
**WEATHER-BASED  
IRRIGATION**



**RAIN CAPTURE  
SYSTEM**



**DRIP  
IRRIGATION**



**GREYWATER  
SYSTEM**

# Water Efficiency

Water is a finite resource, there is only so much and no more. Ongoing drought conditions along with growing demand from new and expanding communities, industry, and agriculture put increasing pressure on this vital resource. Every drop of water counts!

**Flow and flush fixtures** with the EPA WaterSense® label are one way to improve indoor water efficiency. Installing low flow faucets, showerheads, and high efficiency toilets are some of the easiest and most DIY-friendly ways to make your home more water efficient.

**Find and fix leaks** by listening for and repairing dripping faucets and running toilets.

**Water efficient appliances**, including high efficiency dishwashers and clothes washers, can use up to 40 percent less water and less energy than standard models. Run your dishwasher and clothes washer with full loads only.

**On-demand hot water recirculation pumps** that can be controlled by the push of a button or a motion sensor solve the problem of a long wait for hot water at a distant fixture and save water by eliminating the need to send cold water down the drain while waiting for warm water.

**Outdoor water use reductions** can be achieved while still maintaining a vibrant and healthy landscape.

- **Replace turf** and use drought tolerant plants.
- **Install drip irrigation** with a smart, weather-based irrigation controller.
- **Regularly adjust sprinkler heads** and fix leaks to be sure water is going where it's supposed to. Because of repeated use, sprinkler nozzles can come loose and become turned, spraying in the wrong direction.
- **Apply mulch**, 2-to-4 inches deep in all planting areas.
- **Rainwater harvesting systems** with rain barrels or cisterns can be installed to collect rainwater from impervious surfaces such as roofs and patios to be used for irrigation.
- **Greywater systems** including laundry-to-landscape systems use wash-water from your washing machine to irrigate your landscape. This is the simplest, most cost-effective type of greywater system, and does not require a building permit, making it an excellent place to start! Greywater systems where wastewater is collected from showers, bathtubs, bathroom sinks, and clothes washing machines are another good option but are more complex and do require a plumbing permit.

# Clean Energy Options

Renewable energy, often referred to as clean energy, uses sources that are continually replenished by nature. Solar electricity or photovoltaic (PV) technology converts sunlight into electricity for your home. When combined with battery storage and electric vehicles, solar electric systems can go a long way to enhance your home's energy independence and resilience, lower utility bills, and reduce your carbon footprint.

## SOLAR PV SYSTEMS

Solar PV panels are composed of cells that are made from silicon and other materials that transform sunlight directly into electricity. Over the last decade the cost of installing a solar electric system has declined sharply, making solar PV systems more affordable than ever to install. With new cost-effective solar PV systems, homeowners can become part of the solution by using clean, renewable energy sources while saving on electricity costs. If installing a solar electric system on your home is not feasible because of excessive shade or other issues, consider switching to your utility's 100 percent renewable rate.

**Here's a Tip:** Do your energy efficiency upgrades first – you'll reduce your demand for energy, which may mean you need to install fewer solar panels, lowering your upfront costs while reducing your ongoing energy costs.

## NET ENERGY METERING (NEM)

NEM allows customers who generate their own energy ("customer-generators") to serve their energy needs directly onsite and to receive a financial credit on their electric bills for any surplus energy fed back to their utility. Under net metering, energy that your solar PV system produces during the day that you don't use is applied as a credit to your account. On a cloudy or rainy day or at night when your panels aren't producing enough energy, the utility grid will provide energy to your home, and count that energy used against the credits you've banked over time.

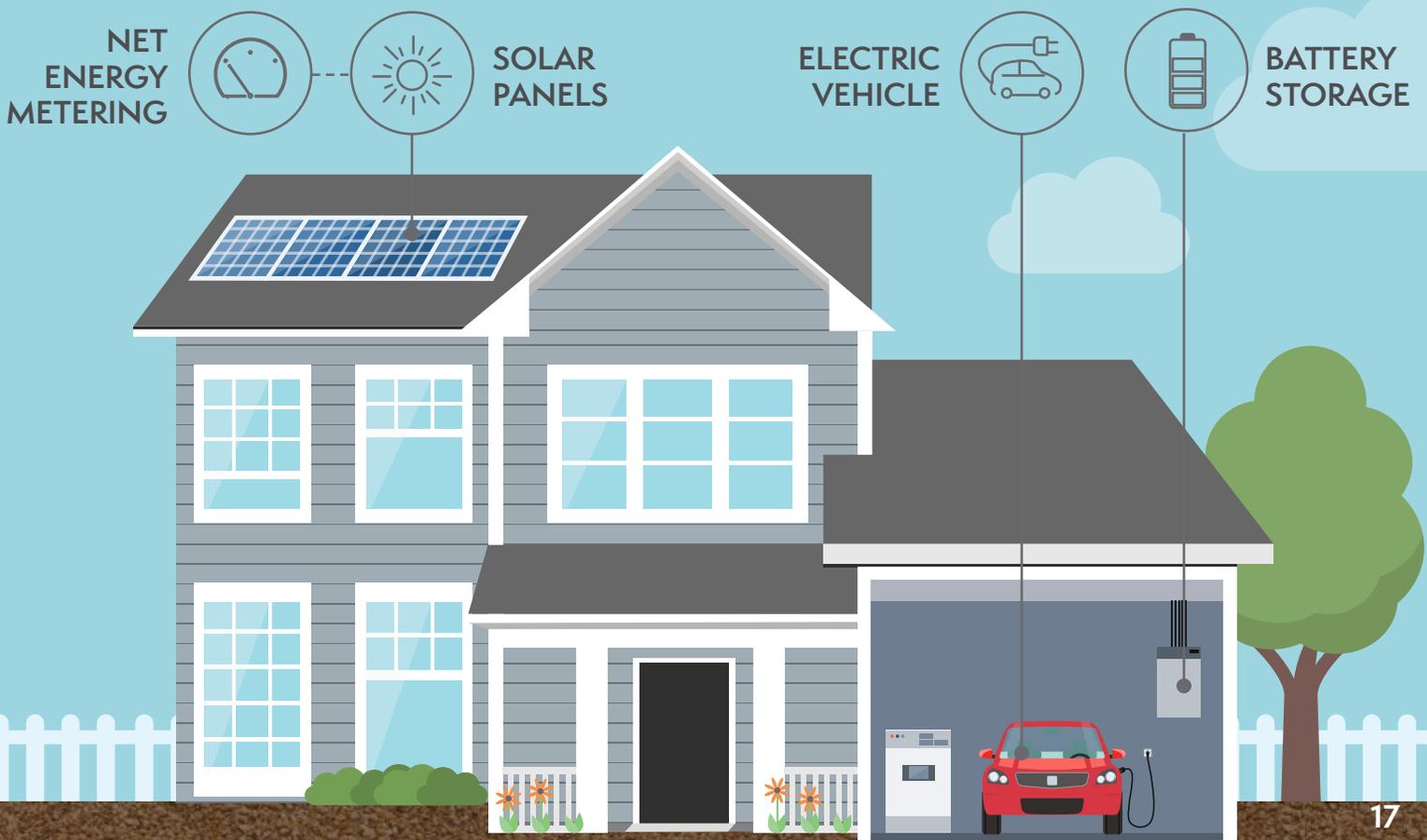
## BATTERY STORAGE

Batteries can supply backup power during power outages and help you manage your electricity use to save money. The vast majority of energy storage systems installed in the US are paired with solar. To save money during normal grid operation, charge your battery with solar during the day when rates are low and power your home with your battery instead of the grid during peak periods when electricity rates are highest.

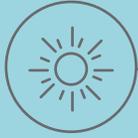
A solar PV system tied to the grid without battery storage and islanding capabilities is required to automatically shut down during a power outage to protect line workers. If you are installing a battery storage system for emergency backup, your solar PV plus battery system will have a special type of inverter with islanding capability. During an outage, your system will automatically “island” or disconnect from the grid keeping your power on, providing a source of electricity to keep important devices and appliances running until the grid comes back online. During the day your solar system will continue to feed into and charge your battery. Under favorable solar conditions with limited home electricity use, pairing solar with a battery storage system can help your devices stay powered for multiple days.

## ELECTRIC VEHICLES (EVs)

Significant improvements in battery technologies and overall EV efficiency have led to an expanding number of EV models with increased driving ranges. The cost of electricity to power an EV is lower than the mileage-equivalent cost of gasoline. Maintenance costs are lower because there are fewer moving parts and no oil changes. Instead of searching for a gas station with the cheapest price, you can conveniently charge at home or at an ever-growing network of EV charging stations and all-electric vehicles have zero tailpipe emissions. An electric engine generates instant torque, which means that electric vehicles provide smooth, responsive acceleration and deceleration. With their immense potential for increasing the country's energy security, economic vitality, and quality of life, EVs will play a key role in the country's transportation future.



SOLAR  
PANELS



AIR SEALING AND  
INSULATION



HEAT PUMP SYSTEM  
(HVAC)



HEAT PUMP SYSTEM  
(WATER HEATER AND  
CLOTHES DRYER)



BATTERY  
STORAGE



LED  
LIGHTING



INDUCTION  
COOKING

# Now It's Time to Go All-Electric

All-electric homes that eliminate natural gas are safer, healthier, and more efficient, and reduce greenhouse gases that contribute to climate change. Energy efficient electric appliances can help lower your energy use, which can translate into savings on your energy bill.

## Aim for Zero

Why not go all the way: create a “zero net energy” house. That’s when your house produces as much energy as it consumes, something not possible with mixed-fuel homes. In order to properly size your solar system to offset 100 percent of your home’s energy usage, you must first consider your energy efficiency.

**Here’s a Tip:** Time-of-Use (TOU) billing allows your electric utility to charge more during peak demand periods. Understanding how and when you use energy allows you to shift your use to off-peak demand hours to save money

- **Air sealing and insulation** minimize the effect of outside temperatures on indoor air
- **LED lighting** keeps your home cooler and saves energy
- **Heat pump water heaters** are up to four times more efficient than standard models
- **Heat pump HVAC systems** provide high efficiency heating and cooling
- **Induction cooktops** offer speed, energy efficiency, and greater safety
- **Heatpump clothes dryer** are 40-50 percent more efficient than gas dryers
- **Solar PV systems** let homeowners produce their own power
- **Battery storage** provides backup power during power outages and helps you save money

# Home Hardening

## Wildfire Safety

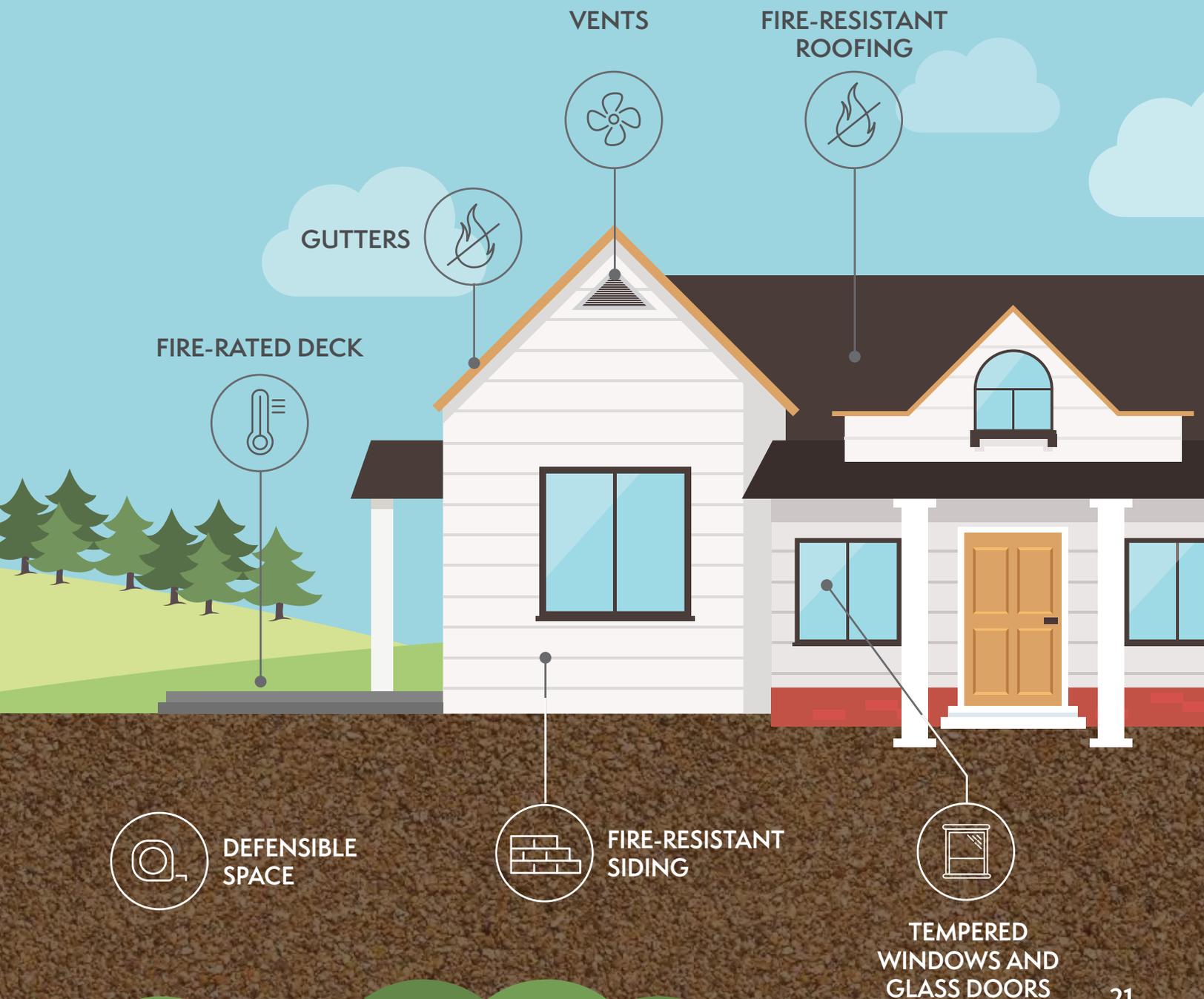
Recent wildfires have made the term "home hardening" a common household phrase. Research demonstrates that a home's odds of surviving wildfire can be substantially improved through careful attention to three principles:

1. Thoughtful landscape design aimed at reducing combustibles within the defensible space on a property
2. Retrofitting and hardening homes to resist wildfire
3. Implementing ongoing maintenance of the home and landscaping to reduce combustible materials (for example leaves and needles) and to address wear and tear that a home can incur over time. According to the Institute for Business and Home Safety (IBHS), up to 90 percent of home loss is due to embers and not the main wildland front. Because embers are the primary cause of structure ignition during a wildfire, the priority is to focus on horizontal surfaces and areas prone to accumulation of combustible debris.

High priority areas to focus on for home hardening include:

- **Roof/Edge.** Install a Class A fire-rated roof. A class A roof is designed to withstand a burning box of wood for 1 hour without burning through. Asphalt fiberglass composite shingles, clay tiles, cementitious tiles, and metal roofing with proper underlayment are all Class A roofing materials.
- **Gutters.** Install noncombustible gutters with gutter covers and keep gutters free of combustible debris.
- **Vents.** Install ember and flame resistant Wildland Urban Interface (WUI) rated vents.
- **Defensible space.** Reduce combustible vegetation and create defensible space in the 0-5' zone around your home. Remove woody plants and avoid combustible mulch and storing wood piles and other combustible materials in this zone. Noncombustible rock, gravel, concrete and pavers should be used in this zone.
- **Windows and doors.** The most vulnerable part of windows and glass doors is the glass. Single pane windows are highly vulnerable to breaking when exposed to wildfire conditions. Replace single pane windows with dual pane windows with at least one pane, ideally two panes, of tempered glass.

- **Decks, Patios and Porches.** Embers can directly ignite deck boards. If attached decks ignite, homes can be exposed to direct flames and/or radiant heat. Create an ember resistant zone under and around decks. Use noncombustible or ignition resistant higher density decking products for new and replacement decks.
- **Siding.** Siding is vulnerable to extended exposure to flames and radiant heat. Keep horizontal surfaces adjacent to vertical siding clear of combustible debris. Replace wood siding with noncombustible siding like three-coat stucco or cement board.



# Seismic Strengthening

Prior to the introduction of modern seismic codes many structures were designed without adequate detailing and reinforcement for earthquake protection. Homes built before 1980 with raised floors or crawlspaces, post and pier foundations, or unreinforced masonry chimneys are good candidates for earthquake retrofitting and seismic strengthening.

## STEM AND CRIPPLE WALLS

These are short walls that rest on a house's foundation and support the floor and exterior walls. Bracing cripple walls strengthens structures by increasing stability, and the process typically helps minimize damage to houses. Houses that aren't bolted to their foundation can move during an earthquake. Foundation bolting can prevent houses from moving off of their foundation during an earthquake.

## POST AND PIER

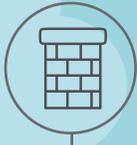
A post-and-pier house is built on wooden posts or concrete piers set into the ground to bear the weight of the house, and is vulnerable during an earthquake to shifting, and potentially collapsing. To withstand the effects of earthquakes, post-and-pier houses should receive a new continuous-perimeter foundation, with any cripple walls bolted and braced.

## MASONRY CHIMNEYS

Brick chimneys account for the most common damage during larger California quakes. Reinforcing or strapping chimneys can keep bricks from falling through the roof during an earthquake.

## SOFT STORY

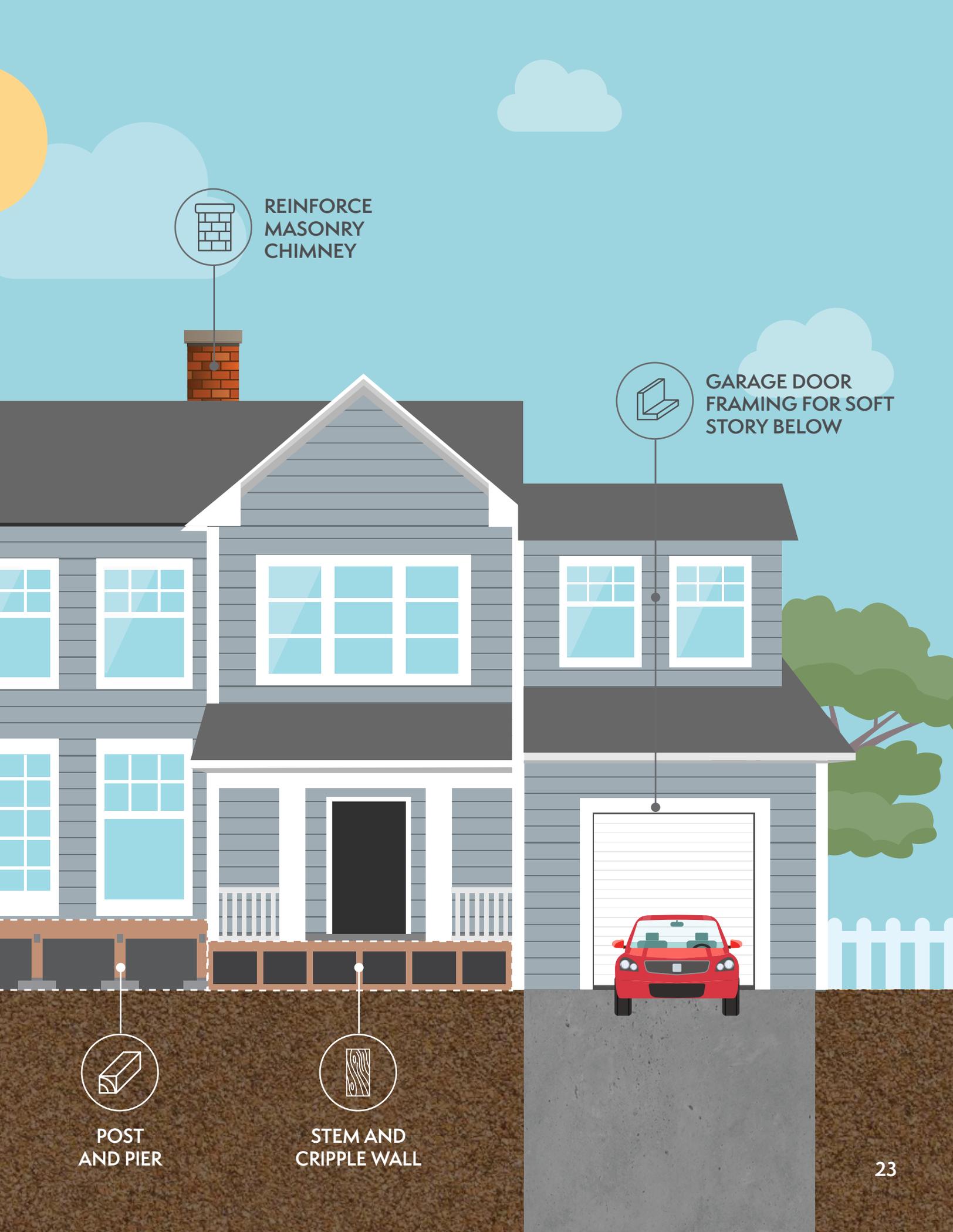
Many soft story homes have a story with a bedroom or playroom above attached garages. Soft story conditions can sometimes be improved by installing new plywood sheathing or steel reinforcements on each side of the garage door. Some garage doors require a steel frame to be properly retrofitted for earthquakes, which can be done through an engineered retrofit.



REINFORCE  
MASONRY  
CHIMNEY



GARAGE DOOR  
FRAMING FOR SOFT  
STORY BELOW



POST  
AND PIER



STEM AND  
CRIPPLE WALL

# Making a Plan

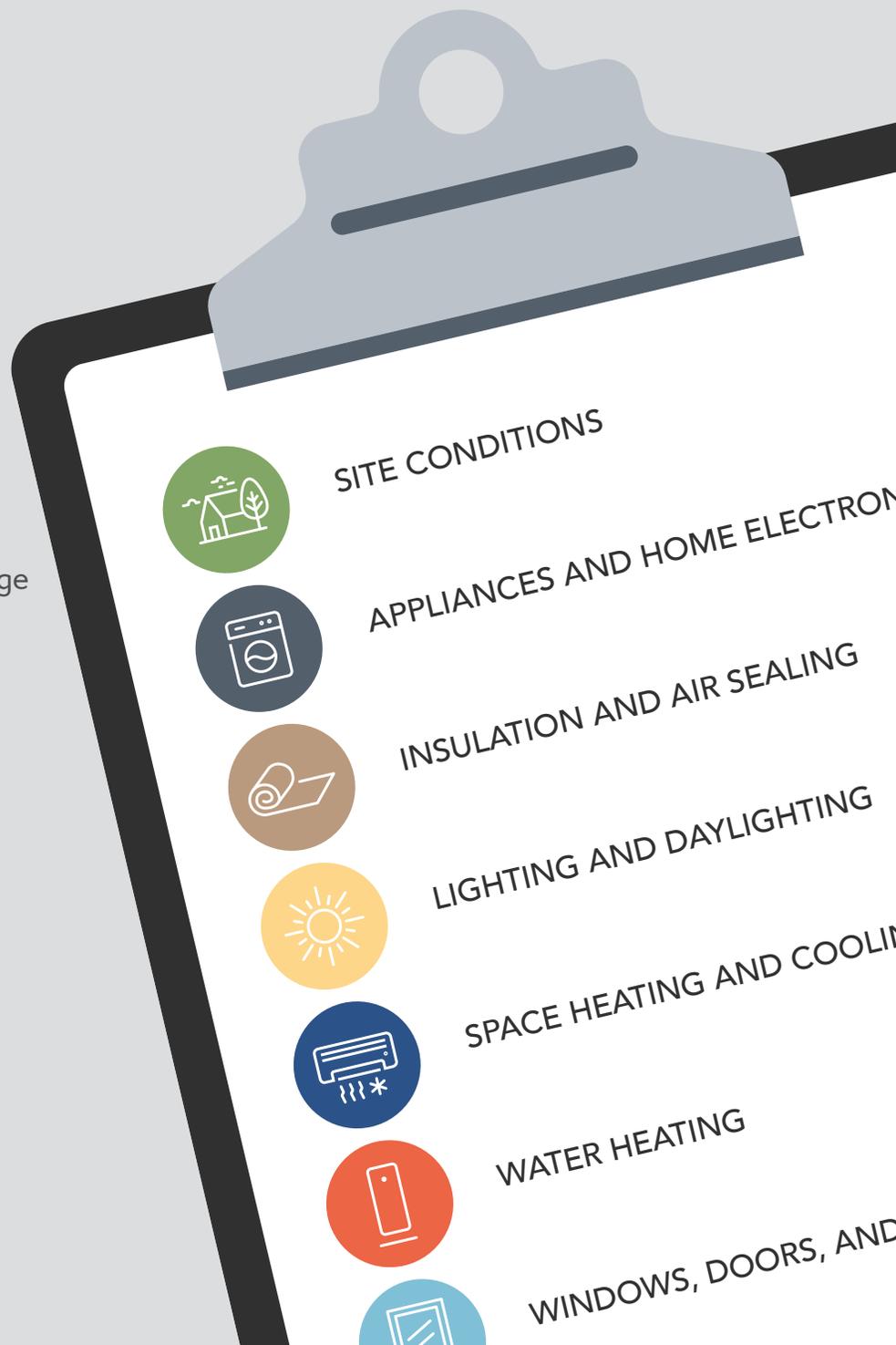
Upgrading an existing home requires careful planning and attention to detail. A whole-house systems approach helps homeowners successfully develop strategies for optimizing home energy efficiency and resiliency.

This approach considers the house as a system with interdependent variables, each of which are connected and affect the performance of the entire system.

These variables may include:

- Site conditions
- Appliances and home electronics
- Insulation and air sealing
- Lighting and daylighting
- Space heating and cooling
- Water heating
- Windows, doors, and skylights
- Roofing, siding, and decks
- Renewable energy and battery storage

The whole-house systems approach will result in reduced utility and maintenance costs, increased comfort, and improve your home's durability.



# Home performance contractors specialize in whole-house renovations

**Work with your contractor to figure out the best upgrades for your home and your budget.** Your contractor will help you prioritize improvements. For example, if your house is hot and stuffy, your contractor may advise you to start sealing and insulating your house prior to selecting an air conditioning unit. By choosing the right size for your reduced energy needs, you may be able to purchase a smaller unit!

Don't assume that the recommendations for your upgrades will always be costly. The greatest potential energy savings may be from some of the least costly upgrades such as reducing air leaks, adding attic insulation and insulating water heaters, pipes, and ducts.

## Phasing your project

Ideally, you should plan your entire project to ensure that installation of new measures does not require going back to redo something else. Having a comprehensive understanding to prioritize and sequence any improvements will save time and money.

For example, when redoing attic insulation, installing high efficiency lighting before installing blow-in attic insulation will avoid disturbing the insulation later. If you are considering a solar electric system, you should evaluate the age, condition, and fire rating of your roof. Additionally, if you are replacing exterior siding, this will allow access to upgrade wall insulation.



# Funding Your Projects

## Incentives, Rebates, and Financing

As a homeowner, reducing your energy costs and having a more resilient home might be your main goal when you decide to install improvements. But if you do some research, you may find that you can stuff some extra cash in your pocket by purchasing and installing improvements eligible for rebates. Many rebate programs require that you use a participating contractor or apply prior to installation. Be sure to know the terms before you make improvements to get the maximum incentive available.

## Incentive and Rebates

There are many types of energy incentives and understanding each one is key to maximizing your total savings. Incentives vary greatly but here are some of the most common:

### TAX CREDITS

A tax credit is subtracted from the amount of tax that you owe. Credits are claimed when you file taxes for the previous year, so if you made a purchase this year, you would be claiming your tax credit the following year when you file your taxes. Consult both federal and states agencies for current credits available.

### REBATES

Rebates work differently than tax credits by getting cash back into your hands more quickly after you make a purchase. There are no federal rebates for energy efficient purchases at this time. However, many state governments, local governments, and utilities do offer rebates for energy efficient purchases. Some manufacturers also sponsor special offers that can make efficient products more affordable.

# Financing

In addition to incentives like tax credits and rebates, there are financing options available if you are interested in making energy, water, and construction hardening home improvements. Depending on your personal situation and needs, one might be a better fit than another. For example, long term financing at a lower interest rate can make improvements more affordable over time. Here are a few options to consider:

- **Credit Cards** – Many cards offer reward programs to borrows that benefit you when making purchases on the card. However, you will have to pay back what you borrow within a billing cycle or promotional period to avoid paying high interest.
- **Cash-out Refinancing or Energy Efficient Mortgages** – A cash-out refinance replaces your current mortgage with a new, larger loan and a new interest rate. If you're considering refinancing, consider the drawbacks carefully. There can be additional fees and costs associated with refinancing. In general, refinancing is only a good idea if you can secure a lower interest rate than what you pay now.
- **Home Equity Line of Credit (HELOC) or Home Equity Loans** – Both HELOCs and Equity Loans are backed by your home as collateral. Home Equity loans are paid out in a lump sum while HELOCs are a revolving line of credit which mean you can take what you need when you need it.
- **State, Local, and Utility Financing Programs** – There are several special financing programs available based on where you live and/or who provides your utilities. These programs can offer no-cost or low-cost financing or a longer loan term.

## FOR SONOMA COUNTY PROPERTY OWNERS...

The Sonoma County Energy Independence Program (SCEIP) was implemented in 2009 to offer Property Assessed Clean Energy (PACE) financing for residential and commercial properties located in Sonoma County. SCEIP financing pays for up to 100 percent of the project's costs at a fixed interest rate and is repaid over a 10- to 20-year term as an assessment on your property tax bill. With no money down and an easy qualification process, SCEIP offers a simple way to finance energy efficiency, renewable energy, water conservation, wildfire safety, and seismic upgrades.

## THE BOTTOM LINE

Financing a home project takes planning. Homeowners should consider all the options and choose the financing path that is best for their project and financial situation.







### For more information, please contact:

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### About Energy and Sustainability at the County of Sonoma

Energy and Sustainability at the County of Sonoma is a one-stop-shop for those looking to make energy, water, or construction hardening improvements for wildfire safety or seismic strengthening. Our primary focus is buildings and behaviors. Internally, we work with facilities throughout the County to evaluate energy use. We also have a robust host of public services including Green Business Certification, energy, waste, and water audits, consultations, access to financing, and resources to assist with project planning. For more information, visit [www.sonomacountyenergy.org](http://www.sonomacountyenergy.org)

### About the Bay Area Regional Energy Network

The Bay Area Regional Energy Network (BayREN) is a coalition of the Bay Area's nine counties — a network of local governments partnering to promote resource efficiency at the regional level, focusing on energy, water, and greenhouse gas reduction.