

RESIDENTIAL

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A Guide to Sustainable Living Home Improvements





A Guide to **Sustainable Living Home Improvements**



What is **sustainable living**?

It's simplistic to say that sustainable living involves being ecologically savvy and minimizing your carbon footprint, as living sustainably means using resources wisely by reducing waste and maximizing ways to create and maintain a healthy home and work environment. Recycling paper and plastic, employing reusable bags at the grocers, and using an air fryer or microwave instead of the oven are merely a start, and more substantive eco-friendly home improvements and changes can save you money in both

the short- and long-term, increase the value of your home, and have a broader environmental effect.

It may seem counter-intuitive to purchase new items and dispose of old ones to improve your home's sustainability, but the impact can be substantial, even when the expenditures aren't. There are sustainable upgrades for every budget. In this home electrification guide, we'll explore home improvements and upgrades you can make to save money, increase your energy efficiency, and live a more sustainable lifestyle.



Sustainable Home Improvements That Save You Money

Rising costs of living and an increasing utility bill may have you looking for ways to save, but some home improvements are sound investments that can reduce your energy costs without breaking the bank. Implementation costs on more expensive home improvement projects can even qualify for [federal income tax credits](#), other [federal energy tax credit programs](#), and various incentives from your state, municipality, or utility.

Making residential energy efficiency improvements results in immediate month-to-month savings, and many of these can boost profits when the house is sold.

Energy-Efficient Appliances and Upgrades

Investing in energy-efficient heat pumps, water heaters, and other appliances, and even replacing

old-fashioned light bulbs with LEDs can save you money on utility bills.

Replacing your old water heater, refrigerator, clothes dryer, other major appliances, or lightbulbs now might make sense. Newer models are costly, but they operate more efficiently, particularly any options rated and approved by [EnergyStar](#), a government program in which products are tested and certified by third parties for meeting energy efficiency specifications. Some EnergyStar appliances may cost a little more to purchase than others in the store, but the [savings in energy costs add up over time](#). Additionally, shopping for the best deal is easier when you have time and don't have to purchase a replacement quickly.

HVAC and Heat Pump Upgrades

Air conditioning and heating units are among the most energy-consuming items in a house, particularly in areas with significant cold or hot spells. Replacing an antiquated heating, ventilation, and air conditioning (HVAC) system could qualify for government tax incentives to help fund the switch and save money on utility bills.



Replacing an old central air conditioning unit with an Energy Star HVAC appliance can even **save you over \$2,000** in utility costs over time.

Additionally, an updated, energy-efficient HVAC can recoup an estimated **71% of the system's cost** to your home's overall value.

Depending on your home design, replacing an old furnace or boiler with an energy-efficient **heat pump** can help you transition from fossil fuels to create a cleaner, healthier home. Heat pumps can efficiently provide comfortable temperatures for your home by using electricity to transfer heat from cooler areas to warmer ones. In cold weather, heat pumps move heat into your house. Conversely, when it is hot outside, heat pumps cool your home by moving warm air inside your house to the outdoors.

New heat pumps can be expensive, even with an up to **\$8,000 heat pump federal incentive**, but are a worthwhile investment. A **new heat pump saves** homeowners an estimated \$1,000 annually, allowing

them to fully recoup the cost and realize added savings over time.

Heat pump water heaters are another upgrade to consider. They are two to three times **more energy efficient** than traditional water heaters. A heat pump water heater draws heat from the surrounding air and uses it to heat the water in your storage tank.

Energy Efficient Lighting

The most affordable change you can make in your home is replacing any incandescent light bulbs you may still have with light-emitting diode (LED) light bulbs. Inefficient incandescent bulbs require more energy, emit more heat, and are already being phased out in favor of alternatives such as LEDs. Energy Star-rated residential LEDs use **75% less energy**. For example, a traditional 60-watt incandescent light bulb draws 60 watts of power, while an LED with comparable lighting capacity only requires **8-12 watts**. Streetlights, commercial lighting, and other lighting installations have already switched to LEDs, and you should, too. As more LEDs are employed, the U.S. Department of Energy estimates that by 2035, energy savings per year will equal 21 million megawatt hours, the annual output generated by the Grand Coulee Dam. To put this into perspective, that's enough energy to power more than eight states for an entire year.

Replacing old light bulbs can be an expensive project but is well worth it.

While LED light bulbs are more expensive upfront, they cost far less to use and last significantly longer.

Using an old-fashioned 60-watt incandescent lightbulb, even just three hours a day, can add around \$7 yearly to a typical utility bill. While this might sound relatively inexpensive, a comparable





replacement **LED will cost \$1** per year on average with similar use, and these savings can add up. Additionally, many LEDs will operate for **10,000 to 25,000 hours**, whereas a traditional light bulb will operate for only 1,000 hours on average.

Upgrading Your Home's Insulation and Weatherization

Adding new or **improving existing insulation** in a house can have a significant impact on your comfort and utility bills. Air leakage under doors, around windows, through ceilings and floors, and adjacent unheated areas such as the garage is a leading cause of residential energy waste. Heat flows from warmer areas to cooler ones, so you want to keep as much heat as possible outside from moving into the house during warm weather and keep heat in when it's cold out.

Weatherizing materials slow heat flow in the home to reduce warmer air rising away from the living spaces in winter.

Insulation makes a building more comfortable by eliminating drafts and helping maintain a consistent temperature throughout.

Light-blocking curtains or blinds keep heat in during winter and block out sunlight, helping keep rooms cool on hot days. This can really make a difference when windows face the afternoon sun.

The price for insulation is based on the material selected, its ability to reduce heat flow, aka its "R-value," and how much is needed in that temperature zone. Prices for **weather-stripping** to seal air leaks around doors or windows or light-blocking window treatments depend on the product material, its durability, and the quantities needed.

Renovating your **attic insulation** is a sustainability investment that can yield immediate financial benefits and enhance the home's resale value. **Improving attic insulation** is one of the most profitable energy-efficiency upgrades for U.S. homeowners. The insulation costs and the impact on heating and cooling costs vary in different geographic areas depending on local weather conditions. The return on investment (ROI) on selling the home also varies, with a national average of 116.9% return on insulation investment.

Solar Panels and Battery Storage

Installing solar panels will allow you to generate clean energy, increase your energy independence, and save you money in the long run. Adding battery storage capabilities to your home, in addition to solar panels, maximizes savings and protects you during outages. If you work or study from home, the sustainable living combination of solar power and battery banks provides added energy resiliency and ensures you have power even when the grid is out, or a natural disaster occurs. There is a reason why we see a growing shift in **renewable energy being used in homes**.

Adding a solar panel system to your residence is probably the most significant sustainable upgrade you can make, and costs considerably less than a





solar array installed a decade ago. The **average cost of a solar panel** installation in the U.S. in 2023 is around \$20,650, about 60% of what it used to be. Government and utility incentives available now can further reduce your expenditure.

It used to be people living in areas with expensive utility rates or sunshine year-round were more likely to add solar power to their homes. With lower installation prices today, even homeowners in Alaska and other sun-deprived regions are **adding solar systems** to reduce costs. Depending on the solar array's size, energy usage, and the area's utility rates, purchasing a solar panel system will pay for itself in less than ten years. In Los Angeles and other

sunny places, homeowners typically **break even on installing solar** in seven years.

Battery storage systems can accelerate your break-even point. They allow you to store and use solar power when the sun goes down instead of drawing power from the grid. The combination of solar and an energy storage system can give you energy independence and power around the clock.

Battery banks alone can be a sound investment for those who do not install a solar system or live in homes unsuitable for one.

You can benefit from the resiliency and cost savings a battery storage system offers. They serve as a backup power supply during outages and keep the AC running on a scorching day. Many utilities employ time-of-use (TOU) rates throughout the day, with energy prices reflecting the demand for energy and higher prices being based on peak demand. This allows you to use the grid to charge batteries when utility costs are at their lowest and utilize the battery system to help alleviate expenses when demand, and prices, are high.





Sustainable Living Habits for Homeowners

With extreme weather chronically topping headlines, more homeowners recognize the need to make lifestyle changes to curb their energy consumption and be more eco-friendly. Adding solar panels, using more energy-efficient appliances, and making other home improvement investments are apparent changes, but steps toward sustainable living also include less flashy ones that add up.



Smart Panels for Smart Power Use

Turning off lights, unplugging electronics not in use, and other simple actions have long been touted as energy-saving habits. Replacing your old electrical panel with a smart panel takes these eco-friendly steps to a whole new level by giving you control over the power usage throughout the house.

Every home has an electrical panel with breaker switches that protect you if there is a power surge, faulty wiring, or malfunctioning appliances. If you have rarely touched or thought about it, you may want to consider getting a new, more technologically advanced “smart” one.

Today’s intelligent panels do more than direct electric currents to parts of your home. They help you **monitor and manage the electrical load** and determine how much energy is used in different parts of the dwelling. **Smart electrical panels** allow you to control the circuits in your home. Accessed through an app, the panels allow users to see how much power a circuit is drawing and turn each circuit on or off.

Smart electric panels can also help you save money by optimizing your energy use; running energy-heavy appliances with time-of-use pricing generate significant savings.



Adding a smart panel is critical if you add battery storage units or solar panels to your residence. They let you control the load in the backup batteries and whether you pull power from the solar array, the battery bank, or the grid at any given time.

Controlling Water Usage

Huge portions of the U.S. have been in a prolonged drought. Residents have been encouraged to conserve water and practice mindful water usage. Water conservation is critical, as the growing population places increased demand on water resources depleted by the droughts. There are several ways for homeowners to ensure they are conserving water, including low-flow fixtures, fixing leaks, and drought-sensitive landscaping.

The average American uses about **82 gallons of water daily**, with showering being a significant usage factor. Showering with a regular shower head uses **at least 2.5 gallons per minute**, which adds up during a 10-minute shower. Switching to a low-flow shower head that aerates the water, thus using less, will substantially reduce how much water your shower consumes. Doing so will reportedly allow the average family to save up to 2,700 gallons of water annually.

Fixing leaking pipes is another household improvement that has an impact. An estimated **10 percent of homes have leaks** around toilets, faucets, and in the yard, accounting for more than 10,000 gallons of water wasted every year. Finding

and fixing those leaks is a sustainable living home improvement that helps protect dwindling water resources and can lower your monthly water bill.

Maintaining a traditional grass lawn takes a lot of yard work and requires a lot of water. **A standard lawn needs** one to two inches of water each week. With the extra dry summers in recent years, you can no longer rely on regular rainfall dowsing the turf.

Depending on your climate, replacing the grass with drought-tolerant cover crops or a succulent garden is a water-wise option that will look more attractive than brown patches of dried-out blades. In a warm climate, desert-inspired landscaping with cacti, agave, or aloe can give your yard a natural, eco-friendly look. Another option is replacing parts of the lawn with pebbled pathways and hearty shade trees. Their canopy will also help keep the areas of the home cooler in the summer by blocking some sunlight.

The Compost Pile Instead of the Garbage Pail

Food waste is one of the largest categories of material thrown into public landfills. **Americans discard almost 120 billion pounds** of food annually. That's estimated to be about 40% of the entire national food supply. If that waste isn't shocking enough, think about water, land, and other resources that were also used to produce it. Planning meals and smart shopping can help reduce how much food is wasted, and composting food you would have thrown out makes more sense than adding it to the town dump.

The average American uses about 82 gallons of water daily.



2.5 gallons per minute (at least)
Showering with a regular shower head



10k gallons of water
Wasted every year on leaks around the home



A standard lawn needs
1-2 inches of water each week



What is composting, and why is it important?

Composting is the natural process that converts decayed organic materials into fertilizer or mulch.

Think of composting as nature's way of recycling food scraps and yard clippings into something else that is useful for the environment. When you mix food scraps into a compost pile, you are reducing your landfill waste. You are also transforming your uneaten food into sustainable and environmentally sound materials and reducing the use of fertilizer and pesticides.

You can [compost nearly everything](#) that comes from the ground or is natural. That includes apple cores,

old bread, coffee grounds, eggshells, grass clippings, autumn leaves, cardboard and paper, cantaloupe rinds, carrot peels, wood chips, hair clippings, fireplace ashes, and much more. You cannot compost bones, pet waste, diseased plants, grease and oils, and yard matter treated with chemicals.

You can set up a compost bin in your home. You need a composting bin with a tight-fitting lid to avoid attracting pests and a bottom hatch for removing the fertilizer generated when it's ready to be used. If you do not need the compost or do not want to compost in your home, you can still collect your scraps for others to compost. Many cities pick up compostable food and yard materials in special garbage bins. For example, [San Francisco has green bins](#) for compostable items that are transformed into nutrient-rich soil for use at local farms. Other communities have composting programs with drop-off points. Research and find options in your area.





Financial Benefits of Living Sustainably

Investing in energy-efficient home upgrades that are good for the planet can immediately benefit you with savings on your utility bills. But did you know going green and embracing sustainable living practices can also raise the value of your home?



Real Estate Buyers Want Greener Homes

Savvy home buyers today are looking for homes that have environmentally-friendly features. With concern for the planet steadily growing, demand for energy-efficient homes and features is increasing. Studies have shown that [energy-efficient homes sell faster](#) and for higher resale values than residences that don't have energy-efficient designations. Freddie Mac found that homes with high energy-efficiency ratings sell almost 3% more on average than homes without energy-efficient upgrades.

What are home buyers demanding now? Affordability and closet or storage space will always top lists, but demand for houses with [energy-efficient upgrades](#) are increasing, according to real estate agents. House shoppers are concerned about ways to keep utility costs down and are consequently prioritizing things such as solar panels. Green certifications awarded by institutions such as Leadership in Energy and Environmental Design (LEED), WELL, and Energy Star show the residences meet or surpass design, energy efficiency, or other rigorous criteria. They can attract budget- and environmentally-conscious buyers.

More than half of Realtors report that clients are increasingly interested in [sustainable home features](#). A National Association of Home Builders survey cited Energy Star-rated appliances and windows and energy-efficient interior and exterior lighting as the top features requested. Buyers are willing to pay a premium for these upgrades. They recognize that most sustainable home improvements boost in-home comfort and owner appreciation. In addition, green renovations yield financial benefits in anticipated electricity or water bill savings and lower maintenance costs. The climate makes a difference. Energy-efficient upgrades are [more highly valued in](#) hotter and more arid areas because it's more expensive to maintain a comfortable home temperature in those areas, leading residents to be more environmentally-minded.



Tax Credits & Utility Company Incentives

Tax credits, tax deductions, and rebates are available at the federal, state, and local levels for homeowners who install energy-efficient appliances and make other sustainable living improvements. Homeowners can combine incentives to maximize savings.

[The federal Inflation Reduction Act](#), passed in 2022, created many tax credits and rebates for homeowners. These include a 30% tax credit on solar arrays and system installation, a 30% tax credit on battery storage units, tax credits for purchasing an electric vehicle, and a 30% tax credit for installing an EV charging station. The measure also included [rebates and tax credits](#) for a new heat pump, water heater, electric panel upgrade, an electric range, and more Energy Star-certified equipment. The federal government funds these efforts to reduce energy consumption, but each state administers the program. The U.S. Department of Energy posts information on various rebates, tax credits, and other savings programs.

Some utility companies offer rebates and incentives for homeowners who adopt sustainable practices. Many electric utilities offer rebates for purchasing Energy Star appliances and other products that reduce energy use. For example, [Pacific Gas & Electric](#) in Northern California provides rebates for buying a smart thermostat to optimize energy usage. [First Energy in Pennsylvania](#) offers rebates for new energy-efficient washing machines, clothes dryers, heat pumps, air conditioners, water heaters, and more. Check with utilities in your area to find out what offers they have.



Turning Ideas **into Actions**

Most American families spend \$2,200 or more annually on residential utility bills, but in some arid areas such as Southern California, that may be less than the average utility cost of maintaining your home electrical needs in the summer – especially with energy inefficiencies and working to maintain a cooler climate indoors. According to the U.S. Department of Energy, making even some of the home improvements in this guide can lower your utility bills by up to 25%.

Installing alternative energy home improvements, such as solar power, a battery storage bank, or a smart electric panel, are critical first steps. To maximize the value of your investment, get expert help to determine what options and equipment are best for your home. Qmerit is a national leader in electrification services and our highly-trained, certified electrical service contractors have a

proven track record for satisfied customers and energy-efficient home improvements. With the largest network of licensed electricians trained and certified for electrification technology installations and services in North America, Qmerit has installed over 53,000 solar panel system integrations, 86,700 electric panel upgrades, and over 18,500 battery storage banks. No one is more trusted or experienced when it comes to whole-home electrification and EV charging.



Living sustainably benefits the planet and can save you money as a homeowner. Start by making simple changes to your daily habits and consider investing in sustainable home improvements. [Contact Qmerit](#) today to determine which sustainable practices and advances are best suited for your home.

