Your HOME can be HEALTHY, RESILIENT, ECO-FRIENDLY

Science-based GUIDE to home improvements

PLANNING HOME IMPROVEMENTS?

From tiny to extensive projects, it's helpful to be informed by performance principles

This guide spotlights key steps in your path to enjoy these ...

BENEFITS

- Quality of life
- Health
- Energy savings
- Superior comfort, quality & durability
- Resilience in power losses, extreme events

Your guide to a clean energy home

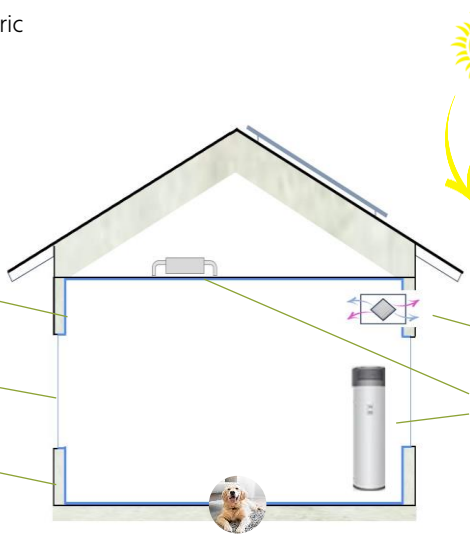
Prioritize Efficiency!

1. Optimize existing home structure by improving efficiency
2. Switch gas appliances to electric
3. Power your home with solar

Control Air Movement
Most homes have random leaks. Air seal to limit the flow of air, moisture, heat, pollutants.

Windows
Replace single-paned to improve comfort, save energy

Increase Insulation
Most homes are under insulated (DOE). Adequate insulation supports comfort, durability, resilience, efficiency.



Reduce Heat Risks
Add shading strategies. Design awnings or eaves to block summer sun when it's at higher angles (lower winter sun can help heat home). Plant shade trees.

Improve Air Quality
Deliver fresh filtered air with an efficient system such as a heat recovery ventilator.

Heat Pumps
Heating, cooling & hot water

Solar + Batteries
Reduce climate impacts and long-term expenses while increasing resilience.

Your Priorities

Clarify your dreams, concerns, goals, such as: health, comfort, costs, environmental impact, resilience, fire-resistance, quiet, market value

Energy Use Assessment

Understand your existing house conditions. Online surveys are limited. Get a professional assessment with solution recommendations.
DOE

Informed Plan

Research, consult with contractors

Finance

Incentive programs can often be combined
Switch Is On
Go Green Financing
DSIRE

1 Structure

Air sealing and insulation upgrades in attics, floors and walls are cost effective investments. These should be the first steps if possible. Highly efficient enclosures are foundational to performance. They require smaller, less costly, heating/cooling systems and energy needs can be met by smaller solar systems. These improvements support comfort, safety, air quality, durability – reducing expenses and emissions.

Resilience advances along with performance; homes maintain safe temperatures and clean air longer in power losses, providing safer shelter for humans.

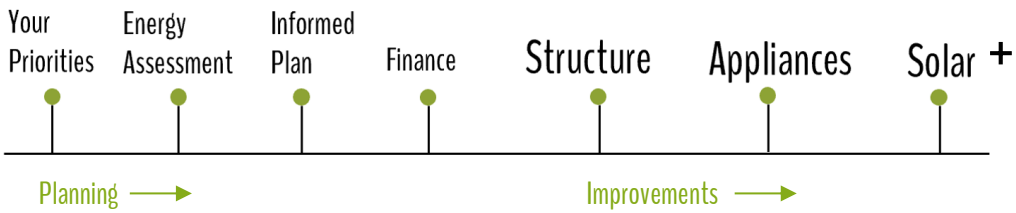
2 All-Electric Appliances

Replace gas appliances with heat pumps for heating, cooling, hot water, clothes drying; induction stove for cooking.

Supply fresh filtered air with designed ventilation.

3 Solar Energy

Complete your path to a clean-energy home with solar and batteries.



PATH This timeline illustrates an order of steps that typically produces optimal, cost-effective results. Tailor to ***your*** priorities.

Find a pre-qualified contractor at the Clean Energy Connection

Access live links https://ajo.earth/homeowners-guide/

Airtight Structure

Air seal surfaces, connections, and penetrations. This is a priority for higher performance. Variety of effective sealants and strategies. Prevents moisture damage, heat/cool/energy losses, deterioration, drafts, intrusion of pollutants, smoke. Supports comfort, air quality, efficiency, durability.
DOE PassiveHsAccel

Insulation

Most homes are under-insulated. Install adequate levels; many regions benefit from above-code R values. Choose types for human health and check for toxicity. The quality of installation is vital to insulative effectiveness. Well insulated homes are more durable, comfortable, efficient, resilient, quiet.
DOE Insulation Institute

Heating, Cooling, Hot Water

Heat Pumps do it all! Instead of using energy to generate heat, they *move* existing heat as refrigerators do, so are 3-5 times more efficient. Replace gas appliances with electric HPs. They're safer, cleaner, reduce pollutants and fire risk.
CarbonBrief IEA
HP Water Heaters can be timed to save $, emissions – a clean E battery!

Healthy Air

Pollutants indoors can be 100+ times worse than outdoors with potential ill health effects. Of most concern are particles and NO2. Prevent contaminants from entering (air tightness, no gas, filtration), then maintain ongoing air quality. Provide fresh filtered air via

- Heat Recovery Ventilator or
- Balanced exhaust/supply with filtration

Healthy Kitchens

Cooking produces pollutants, but far more with gas (NO2, CO, particles...), increasing risk of asthma, cancer, respiratory and cognition problems.
Induction stoves are safer, precise, efficient.

Effective exhaust is critical but many range fans are inadequate - have yours tested! Open windows when possible.

Healthy Materials

Healthy homes are vital to human thriving and well-being, yet some commonly used materials bring health risks: asthma, cognitive decline, infertility, cancer. Some release chemicals by off-gassing and degradation which can interact to produce other toxins. Choose safer options.
Resources for healthier materials.

Water Efficiency

Water is a precious resource and there are many ways to reduce waste. Increase efficiency by installing low-flow fixtures and auto-controlled irrigation. Plant climate-specific landscaping and minimize lawns. Consider Rain catchment.

If it takes a long time for hot water to arrive to a fixture, install an on-demand recirculation pump or improve distribution

Solar + Batteries

Complete your path to a clean-energy home with solar plus batteries or choose a 100% renewable energy option through a local provider. When considering size, account for future changes such as efficiency improvements or electric car.

Timing of use and other control strategies can further reduce size and grid dependance.

TO FURTHER REDUCE HOUSEHOLD EMISSIONS Electric car, lawnmower.... avoid plastics, food & lifestyle choices mindful of climate impacts **EVERY INDIVIDUAL ACTION MATTERS!**

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