LWV LEAGUE OF WOMEN VOTERS® OF HUDSON

Moving toward Personal/Household Sustainability

Tool Kit
Home Energy: Efficiency & Electrification

Start with an Overview of Possibilities

Personal

- Measuring your carbon footprint
- Knowing it is about changing habits
- Inflation Reduction Act Incentives

Home Electrification

- A Home Audit
- Knowing it is a long term process with 4 basic steps (see slide 4 with the steps)

To understand the bigger picture of what is happening and why we need to be concerned:

Overview diagram of Layers of Climate Change: Issues and Solutions from Sea to Sky with QR codes

Start Small: In General, change your habits

Recycle – Reduce

•Turn off lights when leaving a room
•Return newspaper bags to carrier for reuse
•Recycle as much as allowed
•Recycle containers instead of buying new
•Recycle waste from old tech devices
•Try to avoid plastic
•Don't take car to car wash
•Drive less; carpool; combine trips
•Take shorter showers
•Compost and mulch grass for fertilizer, mulch
• Compost food waste
•Use rain barrel to collect roof water for gardening
•Switching to late-night use of appliances, like dishwashers, to save energy

Reuse

- Share clothing and/or Recycle clothing
- Use reusable bags for grocery, produce
- Use reusable water bottles
- Use cloth napkins – and multiple times before washing
- Reuse plastic containers, reduce use of plastic
- Use rags instead of paper towels
- Use Buy-Nothing and other sources to reduce and reuse materials, recycle more

Retrofit – Restore

•Hang clothes on line instead of dryer
•Reset thermostat lower, use programmable thermostat, close doors, use blankets in living room
•Eat organic and local when possible
•Open dishwasher to dry
•Eat less meat
•Plant a herb/vetgetable garden

4 Steps to Electrification: A long Planned Process

Step 1: Thermal Envelope

- Home Energy Audit
- Increase attic insulation
- Seal joints
- Weatherstripping

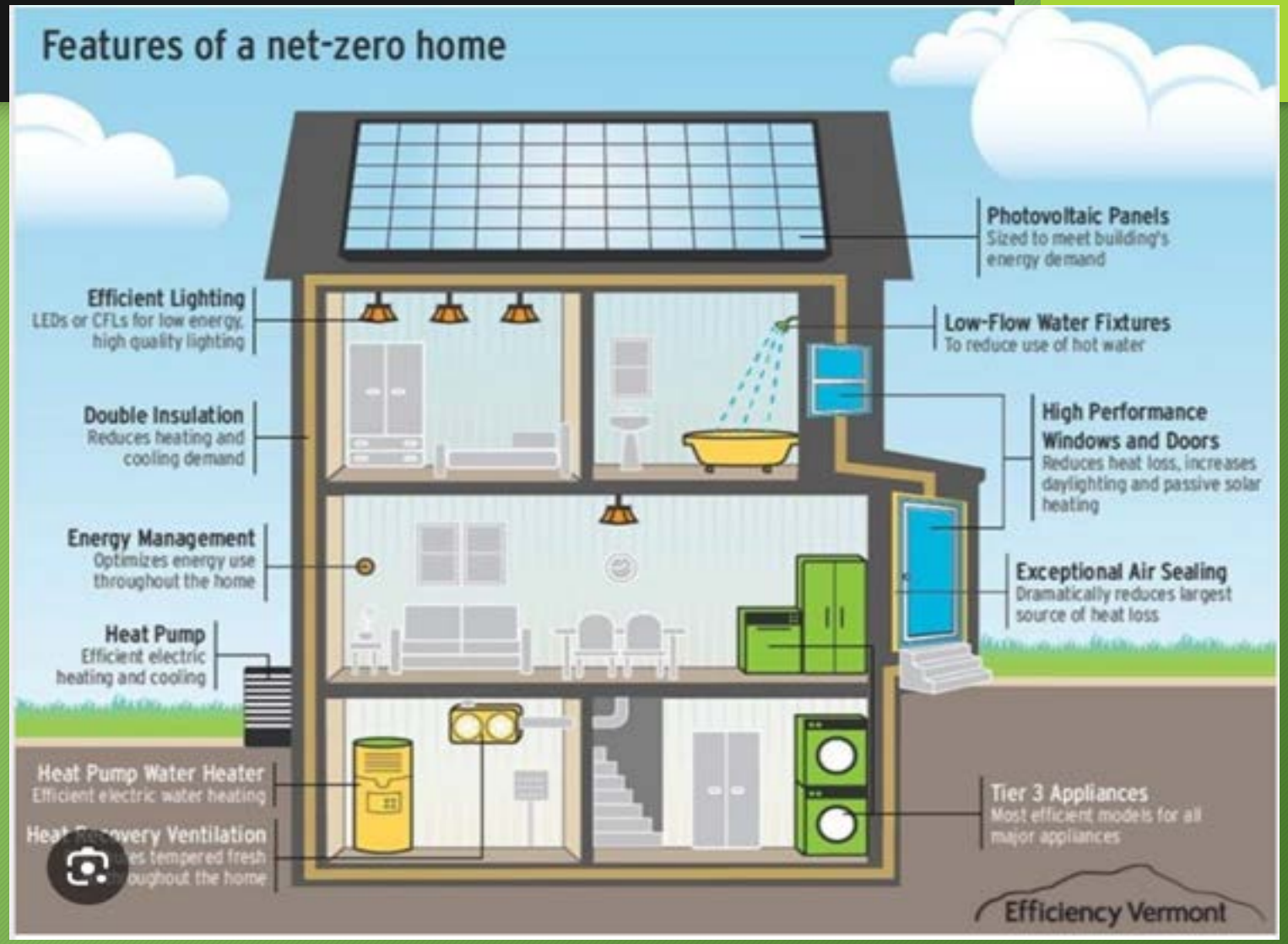
Step 2: Efficient Electric Appliances

- Electric Panel
- Heat pump water heater
- Induction cooktop
- Efficient refridgerator
- Heat pump clothes dryer

Step 3: Efficient HVAC

- Heat Pump
- Possible new air handling
- Energy recover ventilator

Step 4: Install Solar



Help from the Inflation Reduction Act

Click below for a summary of helpful rebates, tax credits, and other guidance that will help with the cost of becoming energy efficient.

Everything You Wanted to Know about The Inflation Reduction Act (IRA)

Step 1 of Home Energy: Thermal Envelope

Home Energy Audit

The average carbon footprint of a US household is 14,000 pounds per year, 7 tons. If you're interested in a number specific to your household, the EPA's test is as good as any (and there are a number of measures): Carbon Footprint Calculator | Climate Change | US EPA .

CHEAP & EASY : Switch to clean energy:

EASY: Sign up to get your electricity from CLEAN ENERGY through Hudson Public Power or your other provider Hudson Green Energy Program Sign-Up | EcoSmart Choice® can help you find certified green energy providers. HPP serves 6,400 electric customers.

More difficult & EXPENSIVE: HOME ENERGY AUDIT

Auditors check furnace (gas), ducts, hot water heater, insulation, sealing, etc. Energy Star has a simple do-it-yourself: ENERGY STAR Portfolio Manager: Home Energy Yardstick (HEY) as does the Dept. of Energy

For details and many more suggestions, click here.

More Step 1: Insulation and Windows

INSULATION

- **According to the U.S. Energy Information Administration, Insulating your attic could trim your heating expenses by as much as 30%. The average cost of insulating an attic is around $1,340.** For most folks, that's about $200 in savings per year.

BUY ENERGY STAR WINDOWS

- If you replace these home windows with Energy Star-certified windows, you stand to save $101–$583 per year
- **COST:** According to This Old House, the cost of an energy-efficient window depends on several variables but typically runs between $320 and $2,000, including professional installation. **How Much Do Energy-Efficient Windows Cost? (2024 Guide)**
- A tax credit can also cover other efficiency upgrades, up to a maximum of $1,200 for insulation, $500 for doors and $600 for windows and skylights.*

Step 2 of Home Energy: Efficient Electric Appliances

BUY APPLIANCES WITH THE ENERGY STAR label.

ENERGY STAR certified **refrigerators** are about 9 percent less energy than US minimum standard. With a new ENERGY STAR certified refrigerator, you can save about $230 over the 12-year lifetime of the product.

The cost has decreased so much that ENERGY STAR products no longer cost more than their counterparts, and, in some cases, cost even less. **(Can I Save Money With ENERGY STAR Appliances, also, How Energy Star Appliances Can Save You Money)**

ENERGY STAR certified clothes **washers** use about 20% less energy and about 30% less water than regular washers. Over the lifetime of the product, models that have earned the ENERGY STAR can save about $550 in energy costs.

More on Home Energy Efficiency

- You can read the full list with links to more information by clicking here
- Sign up to get your electricity from CLEAN ENERGY through Hudson Public Power or your other provider Hudson Green Energy Program Sign-Up | EcoSmart Choice® can help you find certified green energy providers. HPP serves 6,400 electric customers.
- **USE LED light bulbs.** They last up to 25 times longer—many for years. US Dept of Energy states that they use 75% less energy than traditional incandescent bulbs.
- **PLUG ENERGY MONITOR** Another excellent smart plug option; buy one that is heavy-duty and suitable for larger appliances. Monitor energy usage and control devices remotely. Price: $20 - $40

Step 3 of Home Energy: Efficient HVAC/Heat Pumps

- Data about the installation costs and operating savings of heat pumps vary considerably. Make sure you retain a competent, trustworthy professional when considering a heat pump.
- The most common types of heat pumps available are ground-source or air-source. Ground source heat pumps, also called geothermal heat pumps have the advantage of drawing heat from the stable ~55°F heat source below the frost line year-round, but they are more expensive and complex to install. Air-source heat pumps draw heat from the air, so their efficiency varies seasonally. They are easier to install as they are essentially identical in footprint to an AC unit and have the same 240V electric service requirements.
- So, you are considering purchasing a heat pump. Here are 12 things to know.

Step 4 of Home Energy: Install Solar

Is it even possible?

- Visit Project Sunroof
  - Do I have enough roof area to supply my house?
- Solar United Neighbors has good resources
  - Join an installation co-op, or learn how to shop for yourself

Am I ready?

- Have I reduced my electricity usage? (e.g. LED bulbs, old appliances)
- Do I plan on increasing my electricity usage soon? (e.g. heat pump, EV)
- Is my roof new? Solar panels have a life of 30 years, does your roof?
- Are there other roof issues? (e.g. repointing chimney, tree branches)
- Do I have 2 years of utility bills so the installer can gauge my usage?

More Install Solar

Buying Tips

- Get quotes from a few installers. They should do a simulation to show how your specific house will perform.
- HPP customers are credited ~$0.08/kWh for exported energy (this varies month to month). FirstEnergy customers are credited 1 kWh for exported energy (true net metering).
- Think of it as a fixed income investment. Ohio has payback periods of 14 years, but a tax free dividend of $50/mo on a $10k bond is a good deal (6% APY).
- Register your house with the Hudson Green Certificate Registry

Solar Fun Facts

- Embodied carbon (the emissions required in the fabrication of the panels) is paid off by just 3 years of usage in Ohio.
- Modern panels output 90% of their original power after 25 years.
- Most of solar energy is converted to heat. Only ¼ of the energy is converted to electricity. So if your major electricity use is pool heating, consider a solar water heater.

Set Goals and Time Lines

- Questions to consider as you work through your goals
- Personal/Household Plan

Resources for Homeowners

- **The Switch Is On**: https://switchison.org/ While this is California based, it has pages with simple descriptions of these appliances: space heating and cooling, water heating, cooking, and laundry and drying. They also have info on solar, batteries, and electrical panels.
- **Rewiring America "Homes"** : https://homes.rewiringamerica.org/ This site is notable for their calculator and planner. The calculator will show you what IRA incentives are available for your income and county. The planner will ask questions about your house and prepare a simple plan that includes costs. A weakness is that it does not include local rebates, but I've been told that will be added later. Another interesting feature is they have a section for renters, which are often overlooked in this process.
- **Quit Carbon**: https://www.quitcarbon.com/ This is a commercial, but free, service for making home electrification plans. Once they make your plan, they can get bids from contractors if you want. They make their money through contractor referral fees.