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ENERGY IN YOUR HOME: HOW TO MAKE SMART CHOICES



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MAKING SMART CHOICES

- KNOW THE OPTIONS

Heat Pumps? Radiant Floors? Solar? Cellulose?

- MAKE A CHOICE THAT FITS YOUR LIFESTYLE

Technology? Environmental? Financial?

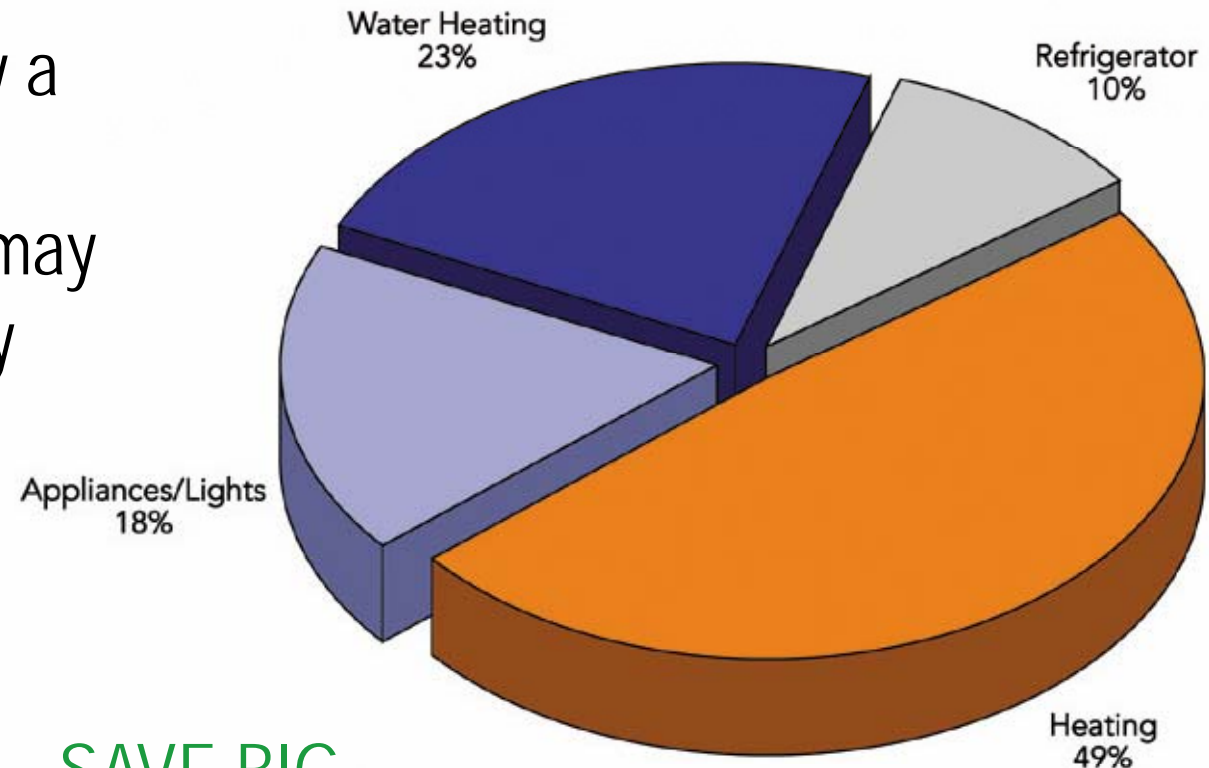
We need to be smart....conventional wisdom isn't always right



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ENERGY CONSUMPTION

Lifestyle can play a big role- two identical homes may have dramatically different consumption.



BUT....USE BIG = **SAVE BIG**



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BUILDING SHELL

- Comfort is when heat loss = heat gain.
- Heating system adds heat house at same rate it is lost
- We need insulation to limit heat loss, but when is enough?





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BUILDING SHELL

- Wall with R-100 insulation and a big hole. Is it warm?
- Naturally "breathing" (a.k.a. "drafty")
- Seal it tight, insulate intelligently, ventilate it right (HRV)
- Avoid CW traps
- **Criteria:** Cost, Feasibility, Performance (Test it!)



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HVAC

2 parts: source and distribution

Sources:

- Furnace (burn gas or electric resistance to heat air)
- Heat Pumps (electric, like a fridge)
- Boiler (heat water)
- **Criteria:** efficiency, cost, zoning





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HVAC

2 parts: source and distribution

Distribution:

- Forced Air (metal ducts)
- Hydronics (hot water in floor tubes or wall/floor radiators)
- Individual units (electric wall heaters or baseboards)
- **Criteria:** zoning, preference, cost



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HOT WATER

- Tank: High flow rates, runs out, leaks (gas or electric)
- Tankless: Endless, efficient, some delay, limited flow rates
- Solar: save 60-70%. Preheats and requires backup
- **Criteria:** flow rate, endless, energy use





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APPLIANCES

- Focus on Fridges, Washers, Dryers
- Fridges: throw out old ones- 1980's models use up to 4x!
- Washers: get high rpm, horizontal axis
- Dryer: moisture sensor, rigid exhaust duct work!!!
- Buy Energy Star only
- Check the list to get cash!



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LIGHTING

- Incandescent: 85% light is wasted as heat
- Compact Fluorescent Lights (CFLs) use 1/4 the energy
- Light color temp, CRI
- 3-way, outdoor floods, can lights available
- Use LEDs for dimming, have longest life





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"PHANTOM" LOADS

- Phantom Loads: devices using power when "off"
- Can account for up to 100s of kWh per year
- Use Kill-a-Watt to find phantom loads
- Look for EnergyStar devices, unplug wall-warts, use Smart Strips to isolate phantom loads





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RENEWABLES

- Solar Hot Water: Like a garden hose in the sun
- Solar Electric: grid-tied, up to 100% of electrical usage
- Wind Electric: cost-effective, but need big wind, land, tower
- Big Incentives- up to 75% cash, state and fed tax credits
- **Criteria:** Resource, Up-front capital/financing, Tax Liability



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BEST MOVES

- **Everyone:** CFLs, plug strips, programmable thermostat, lower your hot water tank, Home Performance test!
- **Most:** duct sealing, air sealing, new fridge, insulation
- **Some:** heat pump or furnace, solar, tankless hot water



ACCREDITED
CONTRACTOR



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PRESCRIPTIONS

Carbon: insulate, air seal, heat pump, solar

Technology: Foam insulation, solar, ground-source

Investment: Air sealing, new gas furnace, solar

Earth Advantage, LEED, Energy Star: many of the above



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RESOURCES

- Energy Trust of Oregon (cash rebates for PPL and PGE)
- Oregon Department of Energy (tax credits)
- ACEEE (info on appliances and efficiency)
- DOE (overview of energy choice)
- ImagineEnergy.net (energy choices, consulting, software)
- PGE and Pacific Power (good energy calculators)
- Carbon footprint (learn about your impact)



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NEXT STEPS

- 1) Understand where your energy goes with an energy audit or Home Performance test
- 2) Think about what matters most to you-
comfort? savings? renewables?
- 3) Make choices and make a plan