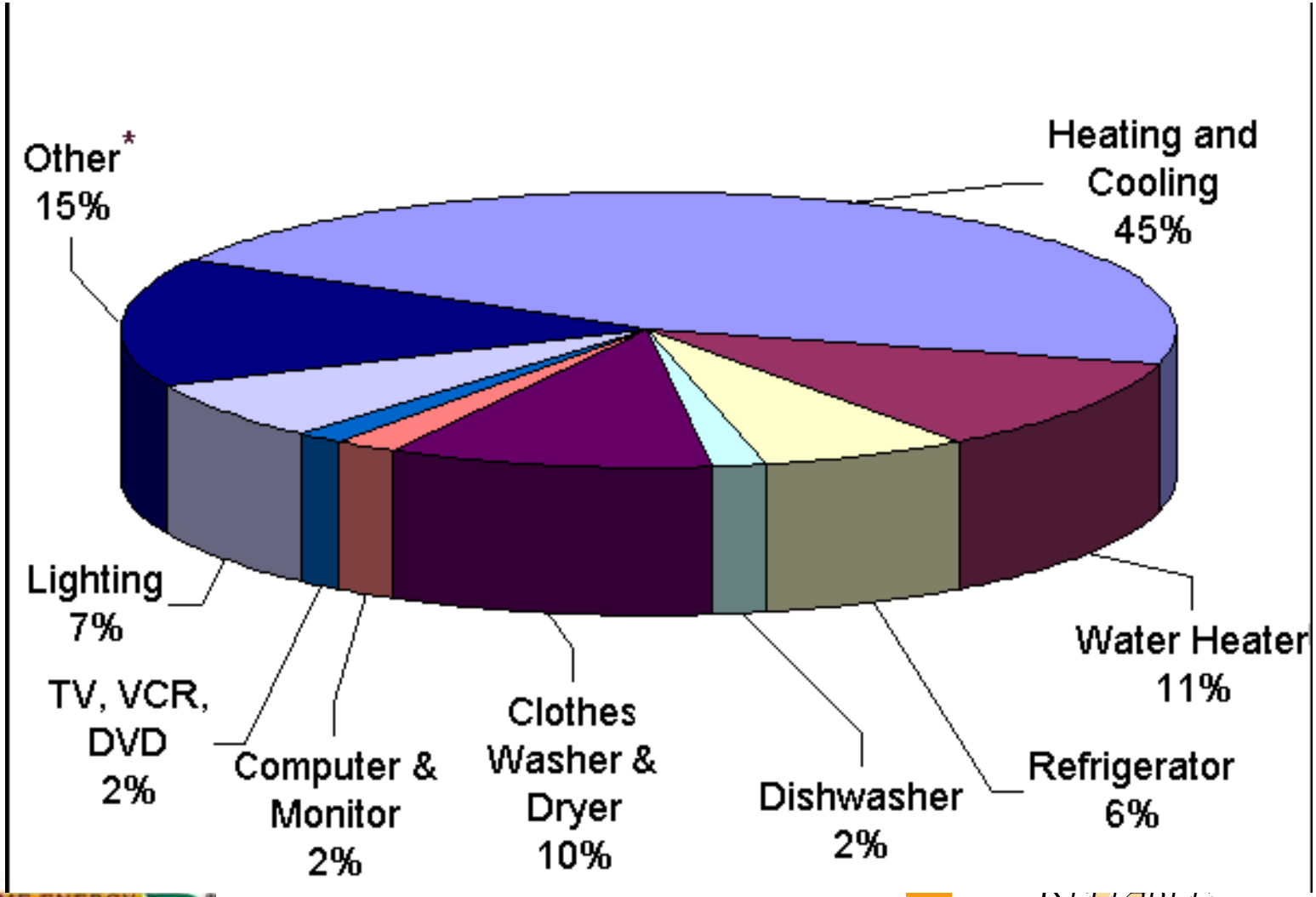
Home Energy Tune-uP®

Bringing Today's Energy Technology to Yesteryear's Homes

Residential Energy Chart



PRIMARY USES OF RESIDENTIAL ENERGY

- Temperature control
- Lighting
- Hot Water
- Appliances
- The common denominator for this energy is the... Btu

Btu

A wooden match contains approximately one Btu of heat energy

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BTUs Expended

- Average human gives off about 340 Btu/hr
- There are approximately 1000 Btus in a typical candy bar

POTENTIAL ENERGY OF FUEL

WOOD	16,000,000 Btu/cord
COAL	15,200,000 Btu/ton
OIL	139,000 Btu/gallon
NATURAL GAS	100,000 Btu/Therm
LIQUID PROPANE	91,400 Btu/gallon
GASOLINE	123,000 Btu/gallon
ELECTRICITY	
RESISTANCE	**3.413 Btu/watt**
REFRIGERATION	**12,000 Btuh/ton**

How Electricity Is Billed

- KiloWatts
- Kilo = 1000

  +
- Watt
- 1 kW = 1000 watts

Example of 1 kWh

- Equivalent to 10 -100 watt lightbulbs being left on for 1 hour
- 10 bulbs X 100 watts = 1000 watts/1 kWh

Typical kWh Usage Of Household Appliances

• **36 inch Color TV (w/tube)**	**30 kWh per month (8 hours per day)**
• **Computer**	**1.08 kWh per 4 hours**
• **Electric water heater**	**400 kWh per month**
• **Furnace Fan**	**130 kWh per month**
• **Coffeemaker**	**9 kWh per month**

Costs of Household Appliance Electrical Usage

…@ 10 cents per kWh

- Coffeemaker – 9 kWh = 90¢ per month
- Furnace fan – 130 kWh = $13 per month
- Electric water heater – 400 kWh = $40 per month
- 90% of the Energy Use with a Washing Machine is the Heated Water

Older Refrigerators Use More Energy

- Built in 1978
  and still running
- Unit's power
  Usage measured
  at 300 kWh monthly
  or $35 per month

METHODS OF HEAT TRANSFER

- CONDUCTION
- CONVECTION
- RADIATION

Conduction

- The movement of heat through a substance or between two substances in physical contact with each other. Heated metal will transfer its heated molecules to another substance in direct contact with it.
- Responsible for indoor heat being lost to the cold exterior and unwanted exterior heat migrating to the cooler interior

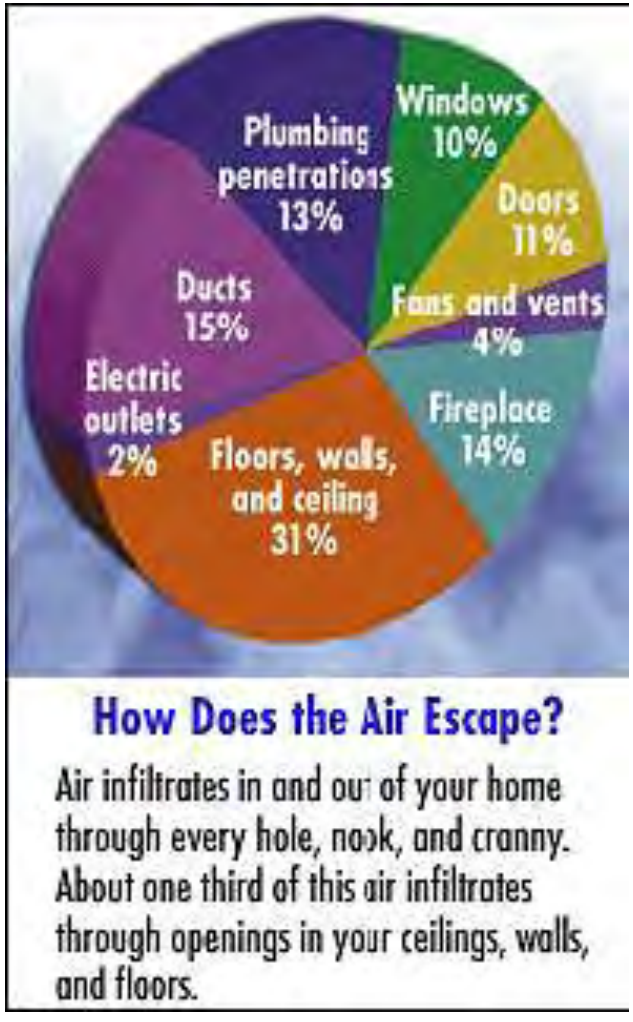
Reducing the Conduction Process

- Insulation is the best material to retard the transfer of heat
- It doesn't stop heat, it simply acts as a filter that *slooows* down the conduction rate
- The slower the transfer rate, the higher the R-Value or lower the U-Value

Convection

- A transfer of heat by the actual movement of a heated liquid or gas. Air, for example, is heated and rises toward the ceiling and displaces cooler air which then drops to the floor.
- Hot water and steam heating systems utilize convection as water rises when it is heated.

Air Moving In & Out of Your Home



CONVECTION PROCESS

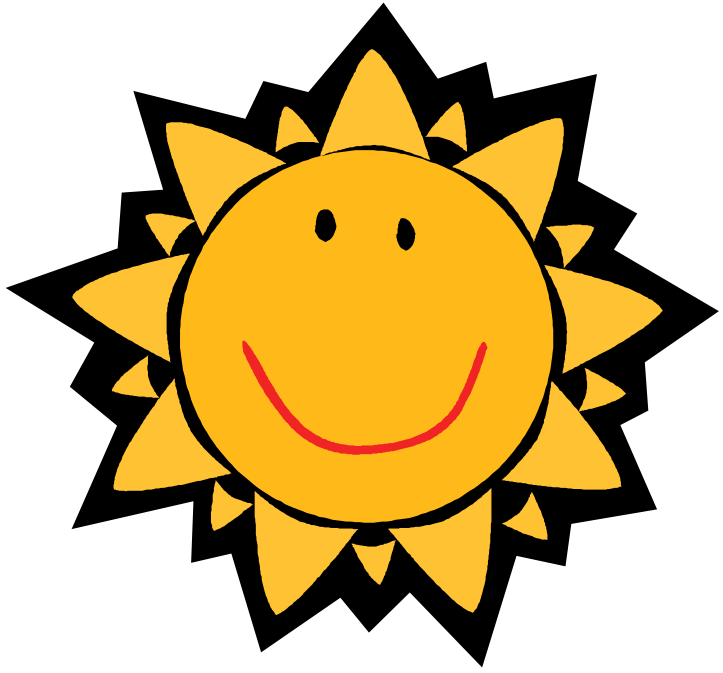
- The air leakage is measured in CFM (Cubic Feet per Minute)
- Under normal day-to-day conditions, a typical house has 1 Air Change per Hour or ACH
- A “tight”house can be as low as *.33 ACH* or 1 Air Change every 3 hours
- As much as 200 CFM can flow up an open fireplace flue
- A dryer typically moves 150 CFM when in operation

Radiation

- The movement of heat away from a warm object by means of electro-magnetic waves (or infrared rays)
- This method of heat transfer does not involve any other molecules other than the substance radiating the heat.

Solar Radiation

The most common
and
abundant form
of radiation
is solar energy!
(Think renewable &
sustainable energy)



It Pays To Think GREEN

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ENERGY EFFICIENCY/ CONSERVATION

- The largest available resource
- Eliminating energy waste can help bridge the gap between fossil-fuel dominance and the burgeoning renewable energy age.

ENERGY EFFICIENCY versus ENERGY CONSERVATION

- Energy conservation is thought of as doing with less or doing without, e.g.,
- Turning the thermostat down, putting on extra blankets, using fans instead of air conditioning…etc.
- Sacrificing to conserve energy

ENERGY EFFICIENCY versus ENERGY CONSERVATION

- Energy efficiency should be looked at as taking advantage of advances in technology to actually improve comfort while using LESS energy.
- Efficiency eliminates energy waste.
- Energy efficient heating systems deliver more heat and consume less energy.
- Compact fluorescent light bulbs provide satisfactory lighting with 2/3rds less energy.

Energy Efficiency: A Sound Investment

Investing in energy efficiency can be highly profitable.

- Returns are steady averaging 25% on energy bills.
- Returns increase as energy prices rise.
- Returns are not taxed because you keep all the money you save.
- Your investment is usually recouped when you sell your home.

What is a Home Energy Tune-uP®?

Home Energy Tune-uP® is a service offered by certified home inspectors. It provides a detailed, unbiased analysis of your home's energy improvement opportunities.

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The Tune-uP Process

Tune-uP® is quick, easy, and cost-effective

A trained professional will:

- **Collect** the data
  - 30 to 45 minutes if added to a full home inspection
  - 60 to 90 minutes if done as a stand-alone inspection
- **Analyze** the data and generate a report, using specialized software
- **Print** the report and email or deliver it to you

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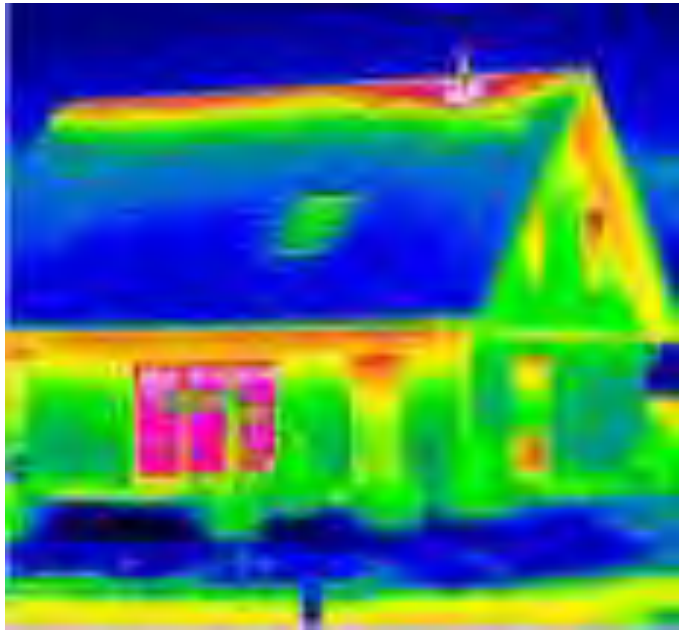
Tools to Enhance Auditing

- Infrared Thermal Imaging Camera Shows Areas of Energy Losses



Tools to Enhance Auditing

A blower door can help to locate air leaks.

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The Tune-uP Report

Below is an example of a table from a report. It highlights upgrades that are cost effective when financed.

Measures	Recommendation	Annual Savings	Cost
Programmable Thermostat	Install	$82	$237
Refrigerator	Buy Energy Star®	$111	$610
Roof	Insulate	$357	$2,049
Water Heater	Replace	$94	$743
Central A/C	Consider Replacing - Age	$142	$2,625
TOTALS		**$785**	**$6,264**
Monthly Savings & Cost[1]		$65	$38

[1] *Monthly savings are based on 2006 energy prices. Monthly cost is for a 30 year loan at 6% interest.*

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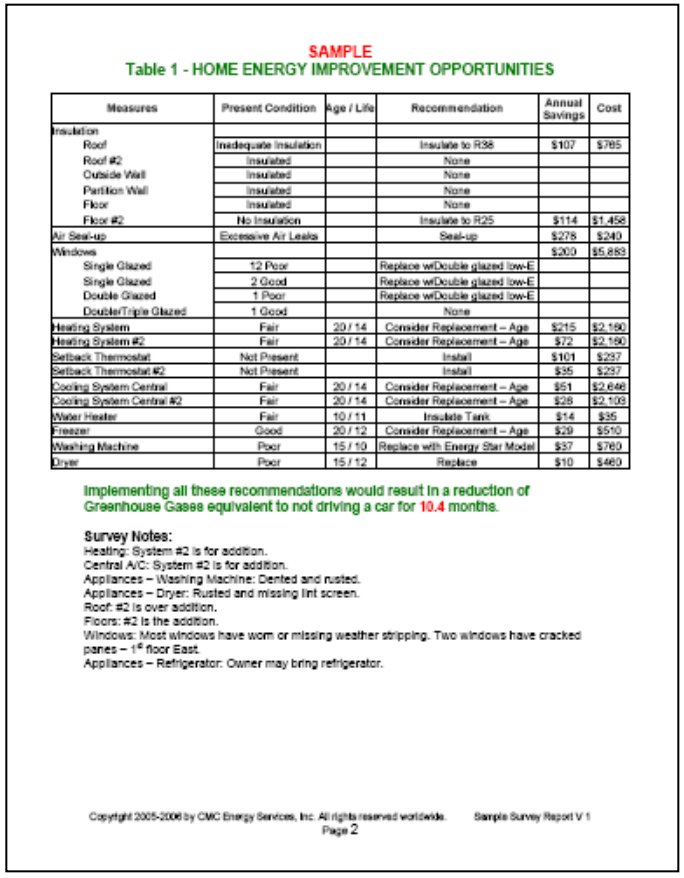
The Tune-uP Report

- Lists upgrade costs and savings
- Highlights the cost-effective upgrades
- Describes low- and no-cost ways to save energy and improve comfort
- Provides information about tax rebates and financing



SAMPLE

Table 1 - HOME ENERGY IMPROVEMENT OPPORTUNITIES

Measures	Present Condition	Age / Life	Recommendation	Annual Savings	Cost
Insulation					
Roof	Inadequate Insulation		Insulate to R38	$107	$765
Roof #2	Insulated		None		
Outside Wall	Insulated		None		
Partition Wall	Insulated		None		
Floor	Insulated		None		
Floor #2	No Insulation		Insulate to R25	$114	$1,458
Air Seal-up	Excessive Air Leaks		Seal-up	$278	$240
Windows				$200	$5,883
Single Glazed	12 Poor		Replace w/Double glazed low-E		
Single Glazed	2 Good		Replace w/Double glazed low-E		
Double Glazed	1 Poor		Replace w/Double glazed low-E		
Double/Triple Glazed	1 Good		None		
Heating System	Fair	20 / 14	Consider Replacement – Age	$215	$2,160
Heating System #2	Fair	20 / 14	Consider Replacement – Age	$72	$2,160
Setback Thermostat	Not Present		Install	$101	$237
Setback Thermostat #2	Not Present		Install	$35	$237
Cooling System Central	Fair	20 / 14	Consider Replacement – Age	$51	$2,646
Cooling System Central #2	Fair	20 / 14	Consider Replacement – Age	$28	$2,109
Water Heater	Fair	10 / 11	Insulate Tank	$14	$35
Freezer	Good	20 / 12	Consider Replacement – Age	$29	$510
Washing Machine	Poor	15 / 10	Replace with Energy Star Model	$37	$760
Dryer	Poor	15 / 12	Replace	$10	$460

Implementing all these recommendations would result in a reduction of Greenhouse Gases equivalent to not driving a car for 10.4 months.

Survey Notes:

Heating: System #2 is for addition.
Central A/C: System #2 is for addition.
Appliances – Washing Machine: Dented and rusted.
Appliances – Dryer: Rusted and missing lint screen.
Roof: #2 is over addition.
Floors: #2 is the addition.
Windows: Most windows have worn or missing weather stripping. Two windows have cracked panes – 1st floor East.
Appliances – Refrigerator: Owner may bring refrigerator.

 Sample Survey Report V 1

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Home Energy Tune-uP is Prescriptive

- A Home Energy Tune-uP is like a Physical Exam for your house
- The report will prescribe improvements that range from easy and inexpensive to more complex and more costly
- It is up to the Homeowner to take the next step and make a few, some, or all of the changes or no benefit will be achieved

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Tune-uP Benefits

Home Maintenance: Tune-uP identifies inefficient equipment and estimates replacement costs so homeowners can:

- Take time to make better choices
- Get better financing
- Avoid unexpected large expenses
- Replace equipment before it breaks down

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Tune-uP Benefits

- Makes a home more comfortable
- Lowers energy bills by 25%, or an average of $475 per year
- Increases a home's resale value
- Makes a home more environmentally friendly

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Home Energy Tune-uP®

Tune-uP is the quick, easy, and cost-effective way to target energy improvements that save money, improve comfort, and benefit the environment.

For more information visit www.hometuneup.com

or call Reliable Home Inspections at 719-251-8841 and talk to Robert Johnson.

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