THE SUSTAINABILITY INSTITUTE

Sustainable communities. One person at a time.

THE SUSTAINABILITY INSTITUTE

- ✓ Founded in 1999
- ✓ Focus on Capacity Building
- ✓ Home to Multiple Programs
  - ✓ CharlestonWISE & The Impact Project
  - ✓ Energy Conservation Corps
  - ✓ Pathways to a Green Economy

charleston WISE™

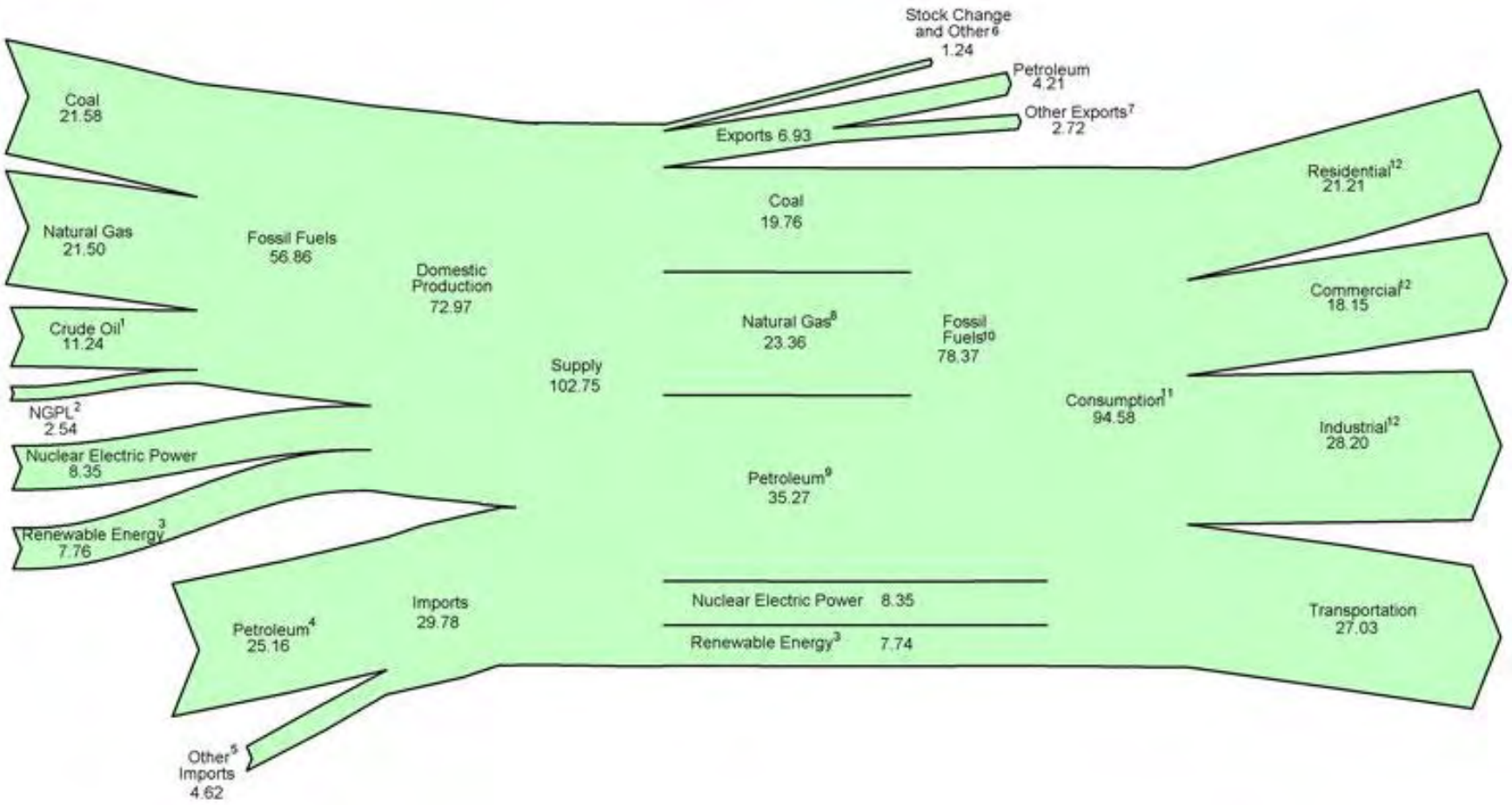
Worthwhile Investments Save Energy

- ✓ Connects you with local, certified contractors
- ✓ Trained to work on historic houses
- ✓ Helps reduce the overall costs of improvements
- ✓ A trusted resource throughout the energy improvement process

ENERGY EFFICIENCY WORKSHOP

- ✓ How is energy used in the home?
- ✓ How can I reduce energy use?
- ✓ What are the benefits of an energy efficient home?
- ✓ What resources and incentives are available to help me complete my improvements at a reasonable cost?

WHY ARE BUILDINGS IMPORTANT?

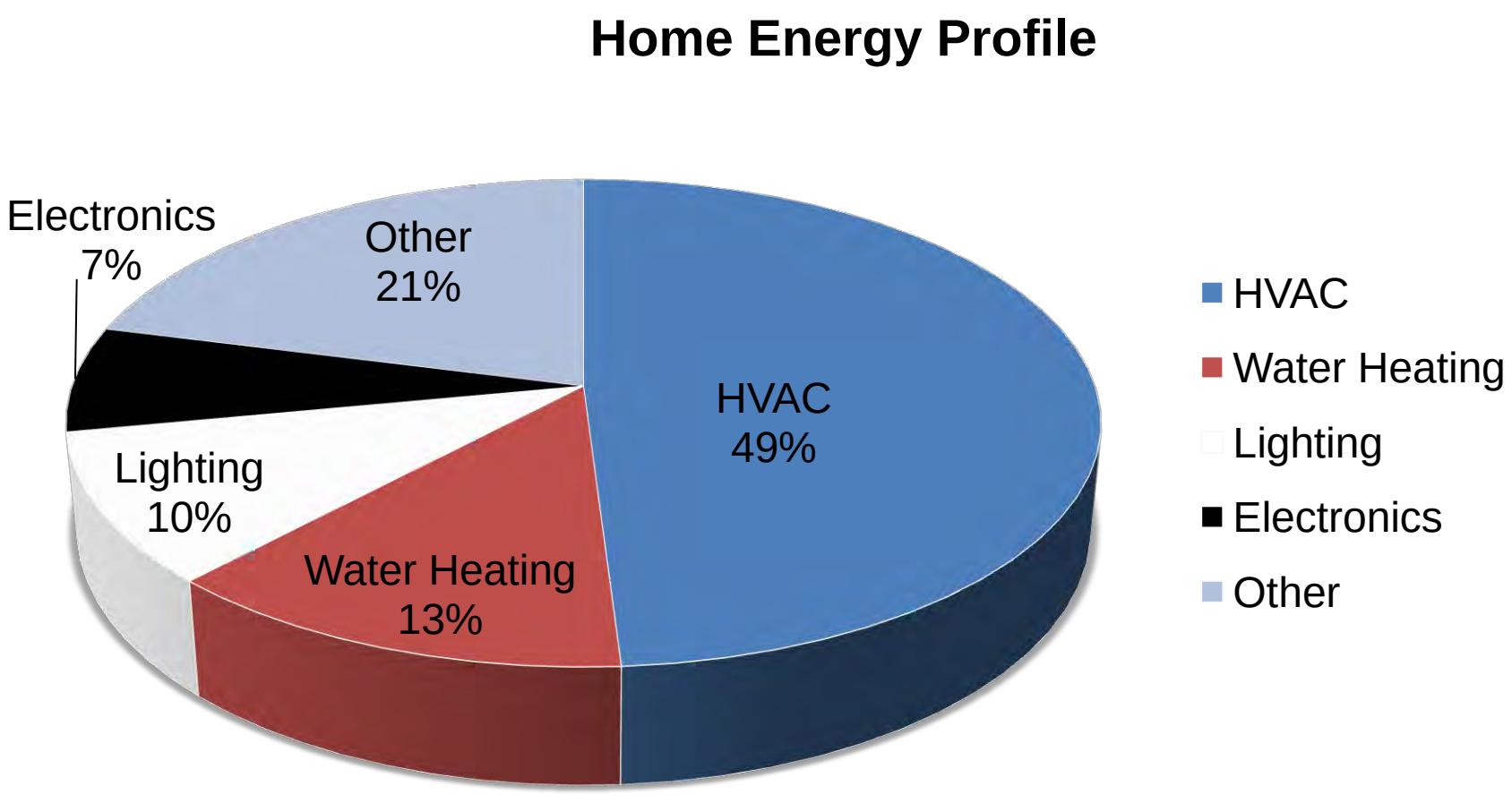


SOUTH CAROLINA

- South Carolina's energy consumption is among the highest in the U.S.
  - Commercial:1.6¢ lower than the national average.
  - Industrial: 1.2¢ lower than the national average.

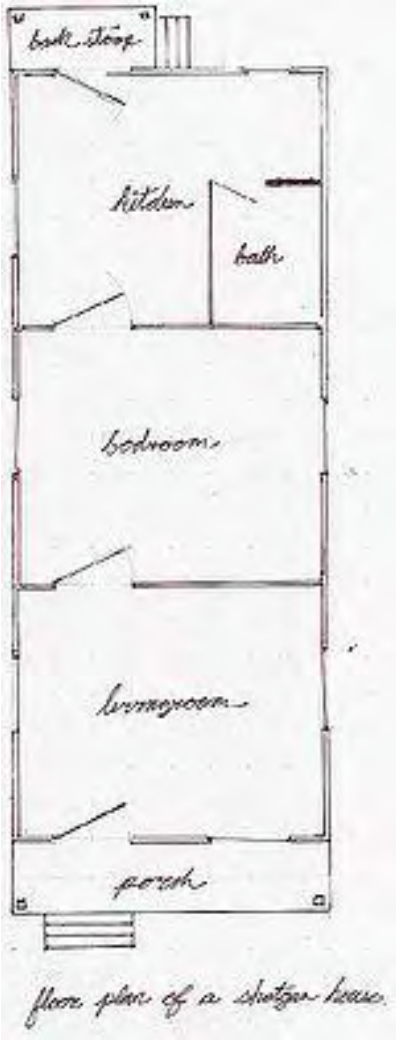
- South Carolina has low energy prices!

ENERGY PROFILES



ENERGY IN HISTORIC HOUSES

- ✓ Historic Houses are 20% less efficient than existing houses
- ✓ Most were built with climate specific features
- ✓ Can be retrofitted with little impact on historic material



ENERGY ASSESSMENT

- Energy Assessment:
  - Blower Door
  - Duct Blaster
  - Energy Modeling
  - Cost/benefit Analysis
  - Scope of Work

PROOF IS IN THE POWER BILL!

GreenHouse Energy Charges

KWH Used	Energy Charges
342	$43.33
469	$55.28
325	$39.44
360	$42.85
372	$44.01
297	$36.71
550	$61.34
487	$55.20
539	$60.27
431	$49.75

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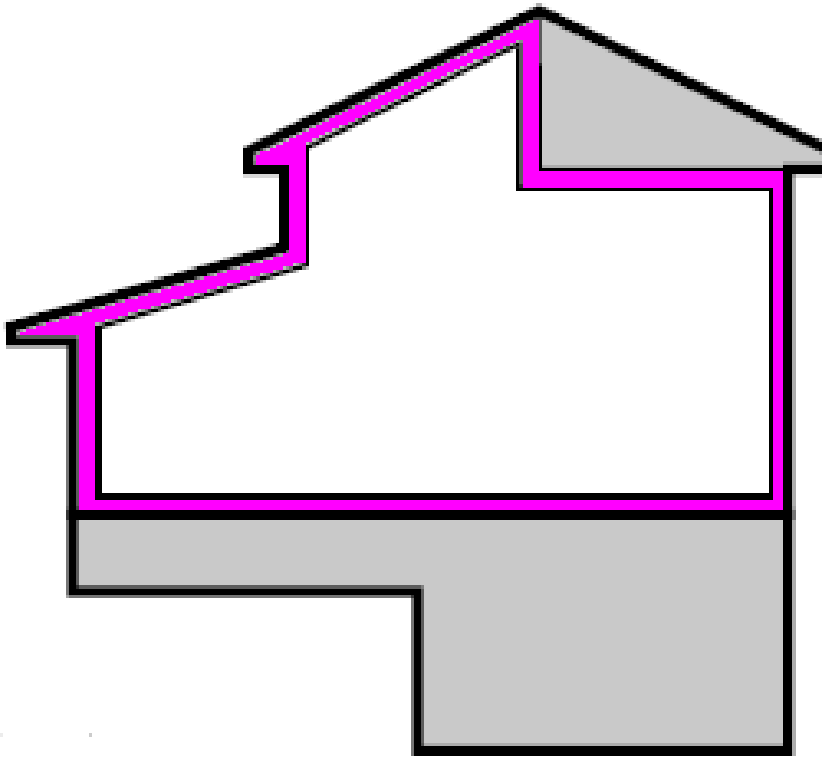
STEPS TOWARD SAVING ENERGY:

ENVELOPE IMPROVEMENTS

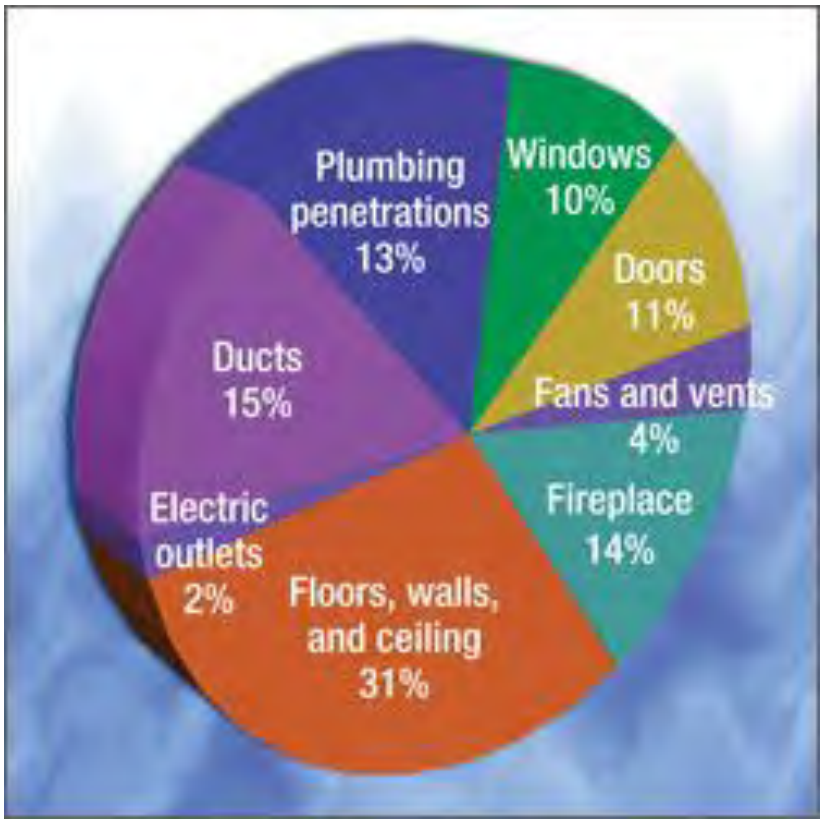
THE HOUSE AS A SYSTEM



The ENVELOPE makes up the outer shell of the home: walls, ceilings, windows, floors, insulation, etc.

AIR SEALING & INSULATION

- One of the most cost-effective ways to lower energy bills is to improve the "envelope" by sealing air leaks and by adding insulation.



CAULK IS CHEAP!

- **Where?**
  - Around windows/doors
  - Between ceiling and walls
  - Walls and floor

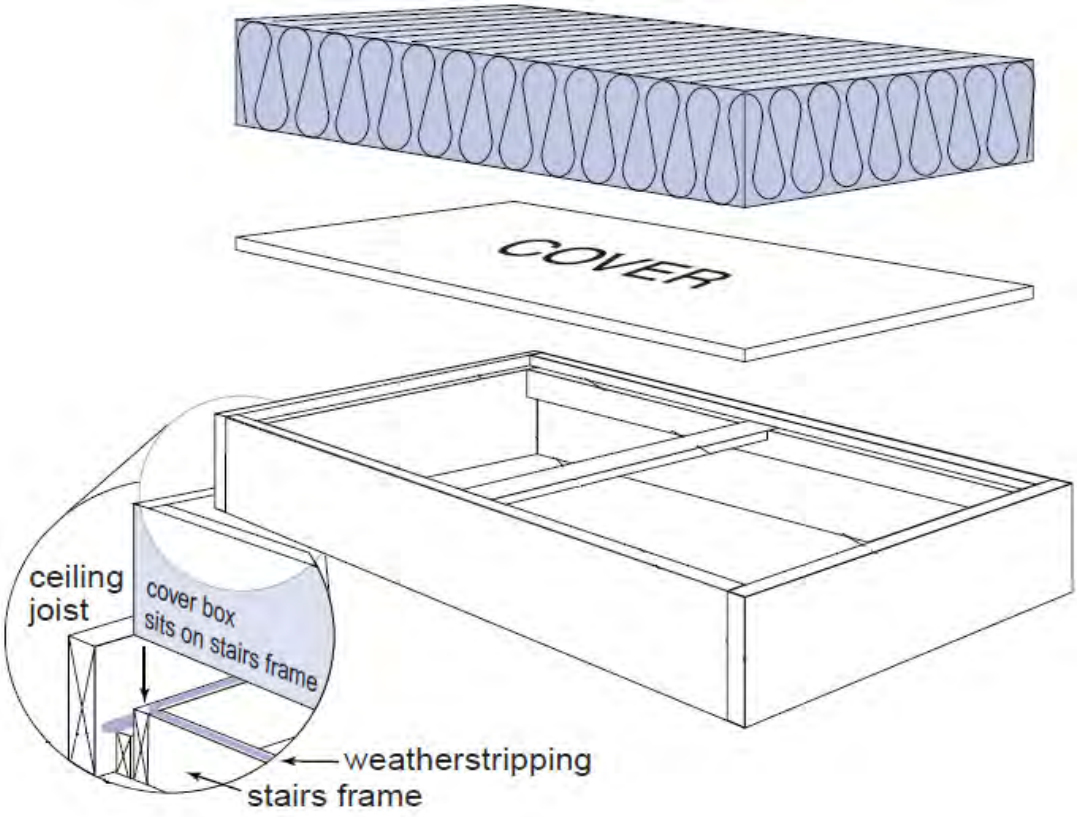
SPRAY FOAM

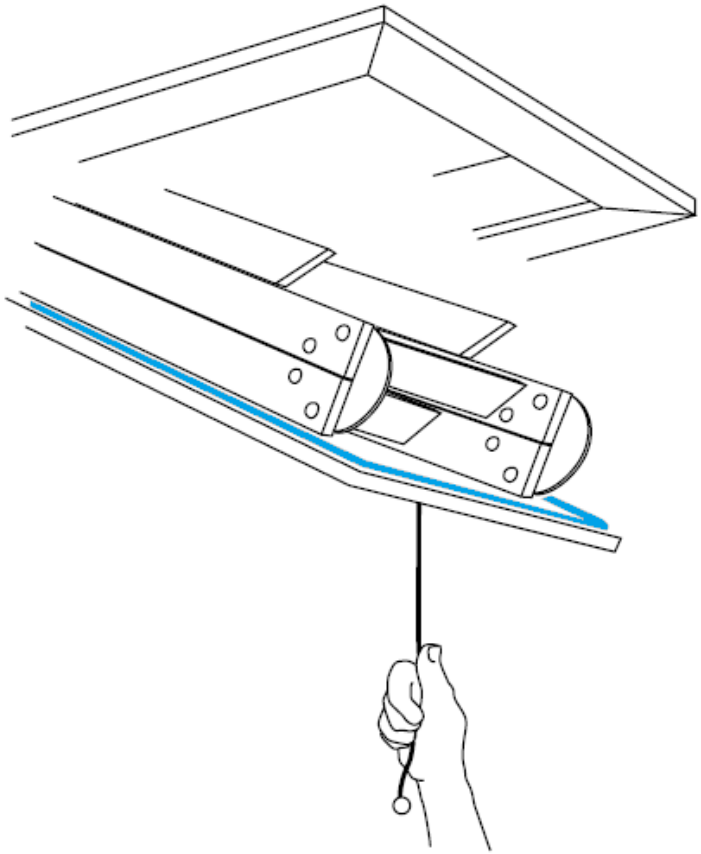
- Cracks from ½ inch to 3 inches
  - Window Rough Openings.
  - Plumbing penetrations.
  - Electrical penetrations
  - HVAC Penetrations

WEATHER-STRIPPING

- *A 1/8 inch space between a standard exterior door and its threshold is the same as a two inch square hole in the wall!*

ATTIC HATCH





Images Courtesy of Southface

COLLECTIVELY LARGE HOLES

– Child safety covers for electrical outlets installed in sockets not being used helps further reduce the loss of heat/AC through this opening (also provided)

RECESSED LIGHTING

- Another example of a collectively large hole in your house.
- Auditor secret:
  - Look for spider webs!
  - Look for dirty insulation.

INSULATION

- *"R-Value"*
  - How well insulation can Resist heat flow.
  - Higher R-Value = More resistance.

South Carolina Homes:

- **R-30 Ceiling**
- **R-19 Floors**
- **R-13 walls**

INSULATION

- Check your home's insulation using a flashlight and ruler.

  4 inches = R-11

  6 inches = R-19

  8 inches = R-26

  10 inches = R-30

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STEPS TOWARD SAVING ENERGY:

HVAC

HVAC

- 44% of your utility bill goes for heating and cooling
- For every degree that you move away from these temperatures, add 4 to 6% to your bill.
- Set thermostats at 68 in winter and 78 in summer

PROGRAMMABLE THERMOSTATS

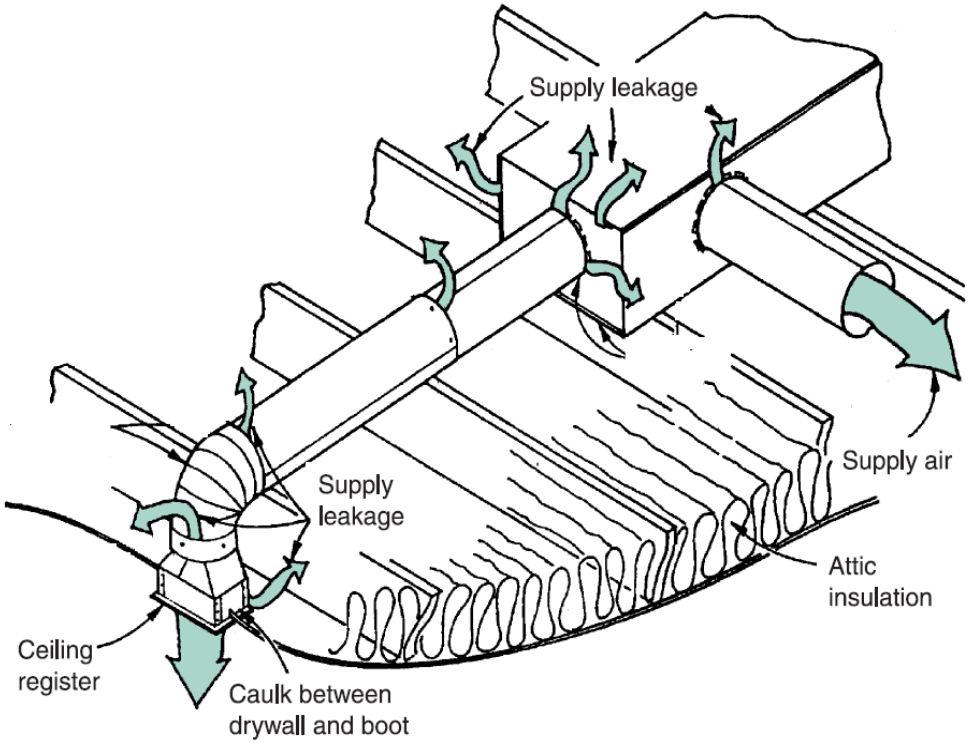
You can improve your homes heating and cooling costs by about 15% by installing a programmable thermostat.

USE YOUR HVAC LESS

- Operating a ceiling fan 10 hours a day or more can cost less that **$3 a month**.
- Fans use only about **1/10th of the energy** that air conditioning does.

DUCTWORK

- **Leakage rates of 20%** is typical in both new & existing homes.
- With 20% leakage a home's HVAC system efficiency can be reduced by **50%!**



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STEPS TOWARD SAVING ENERGY:

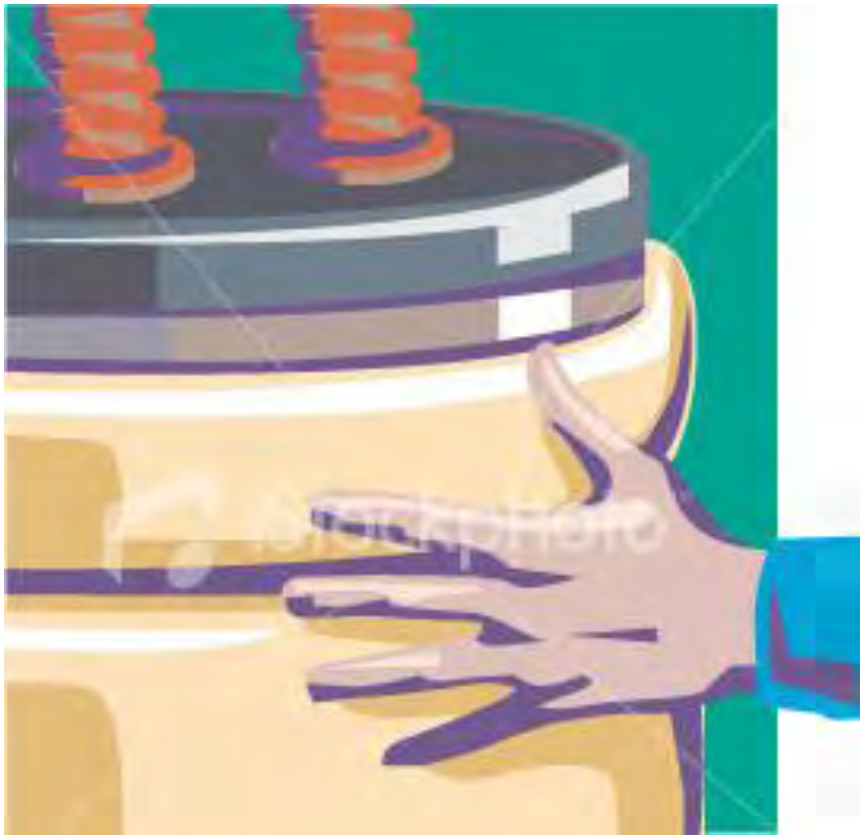
WATER HEATER

WATER HEATING

An average family spends about
$400 *each year water heating!*

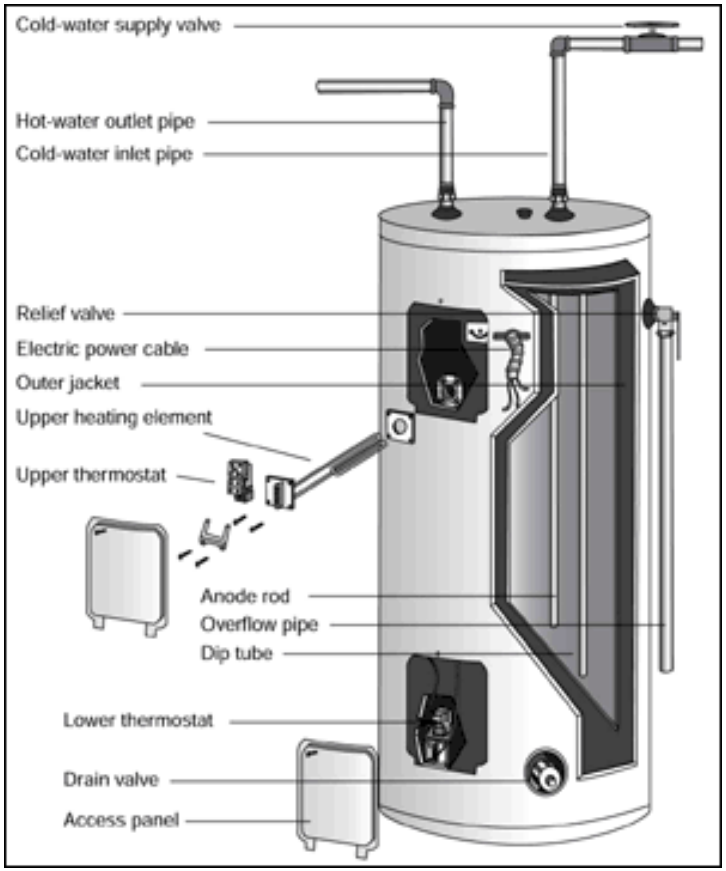
WATER HEATING

- Apply an insulation blanket over an electric hot water heater
- This reduces heat loss through the walls of the water heater



WATER HEATING

- Insulate hot water pipes:
  - Reduces the time it takes for hot water to reach the tap.
- Temperature!
  - **120º** Maximum!



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STEPS TOWARD SAVING ENERGY:

WATER CONSERVATION

WATER CONSERVATION

The Average Daily Household water use is 350 gallons!

SIMPLE CONSERVATION TIPS

- Take shorter showers!
  - For every minute you reduce your shower, you can save about **2,000 gallons of water a year.**

LOW-FLOW FIXTURES

- Faucet Aerators
  - Install faucet aerators for the kitchen faucet.
  - It uses about 30% less water per minute than a standard faucet, yet still gets the job done
- Shower
  - Install low-flow shower head It uses about 2.5 gallons per minute instead of 5 to 7 gallons with a regular shower head

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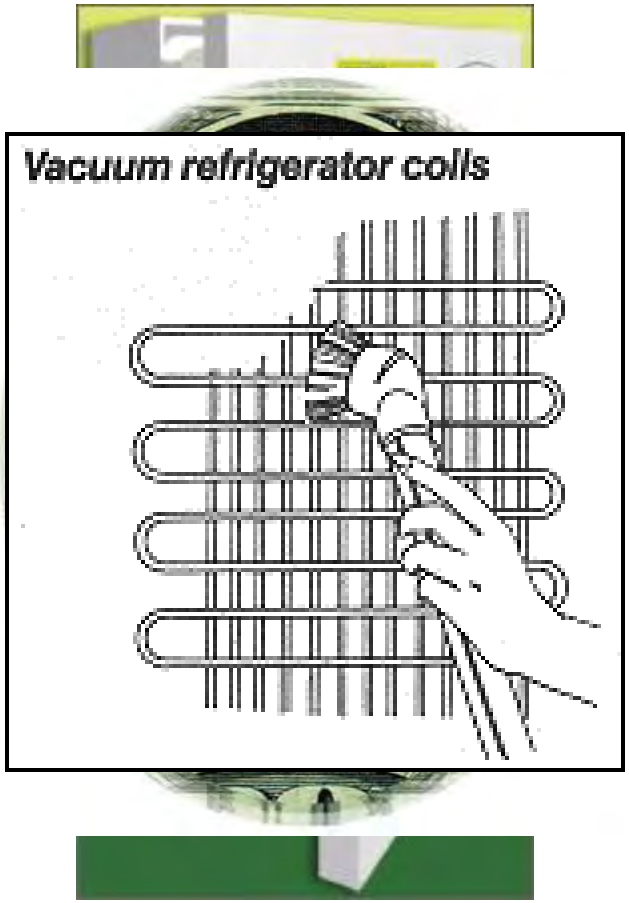
STEPS TOWARD SAVING ENERGY:

APPLIANCES

APPLIANCES

- Refrigerator
  - Set both the frig. and freezer at the correct temperatures:
    - Frig.: 40 degrees
    - Freezer: 0 degrees
  - Refrigerator is more efficiently when it is at least 2/3 full!



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STEPS TOWARD SAVING ENERGY:

LIGHTING

NATURAL LIGHT

Take advantage of Natural Light whenever possible!

EXTERIOR SHUTTERS- SOLID

- The Historic Charleston Foundation has closed their wood shutters in August and September the past two years and seen an 8-10% decrease in their energy usage compared to previous summers

Image courtesy of the Historic Charleston Foundation

LIGHTING

Only about 5% of the energy that goes into a typical incandescent bulb comes out as light. The remaining 95% becomes heat!

COMPACT FLUORESCENT LIGHT BULBS

- ✓ CFLs are 4 times more efficient and last 10 times longer than incandescent bulbs
- ✓ Some are guaranteed to last 7 years or more
- ✓ Replace bulbs on the longest first

QUESTIONS & CONTACTS

- Find us on the web:
  - www.SustainabilityInstituteSC.org
  - Find us on Facebook
  - SustainabilityinstituteSC
- Find us by Phone:
  - 843.529.3421
- Find us by email:
  - Info@SustainabilityInstituteSC.org