2007 RESNET Building Performance Conference

"Taking it to the Next Level"

"The Existing Homes Challenge for Raters"

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WHY?

- **The average American household pays approximately $1,900 a year for their energy use,**
- **In total, Americans spend more than $160 billion a year to heat, cool, light, and live in their homes.**
- **The price of energy continues to fluctuate.**
- **Gasoline prices at the pump were at near-record highs during the summer of 2006,natural gas prices are increasing,**
- **across the country utility rates are making double-digit gains.**

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Where does it all go?

- The nation's 110 million homes use more than 22 quads (one quad = one quadrillion btus) of energy (21 percent of the national total),
- Representing 17% of total U.S. electricity use and a substantial amount of natural gas (2005 Buildings Energy Data Book, U.S. DOE

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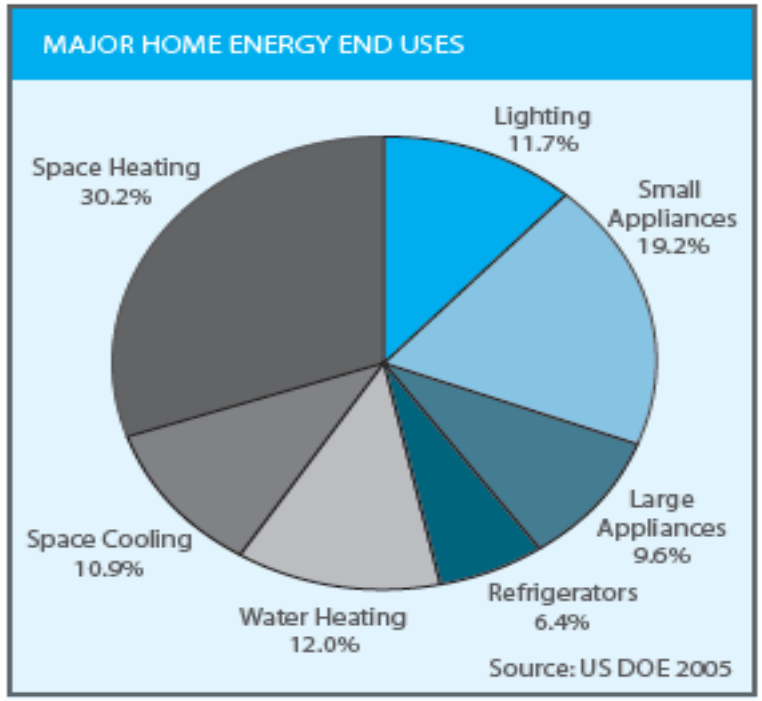
Average American Home Energy Use.

Residential Energy Consumption can be broken down in the following end uses:

- **Heating: 30.2%**
- **Air Conditioning: 10.9%**
- **Water Heating: 12%**
- **Lighting: 11.7%**
- **Refrigerators: 6.4%**
- **Large Appliances (clothes washer & dryers, cooking equipment, freezers and dishwashers): 9.6%**
- **Small Appliances (televisions, other home electronics, and home office equipment among others): 19.2%**



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Home Energy Use

- **The U.S. housing stock is expected to increase to 130 million units by 2020.**
- **This will create an unprecedented opportunity for the Home Performance Industry, to introduce energy-efficient homes into the existing stock that will save homeowners an increasing amount on their energy bills.**
- **more efficient homes, greenhouse gas emissions, the leading cause of global warming, will also be reduced.**

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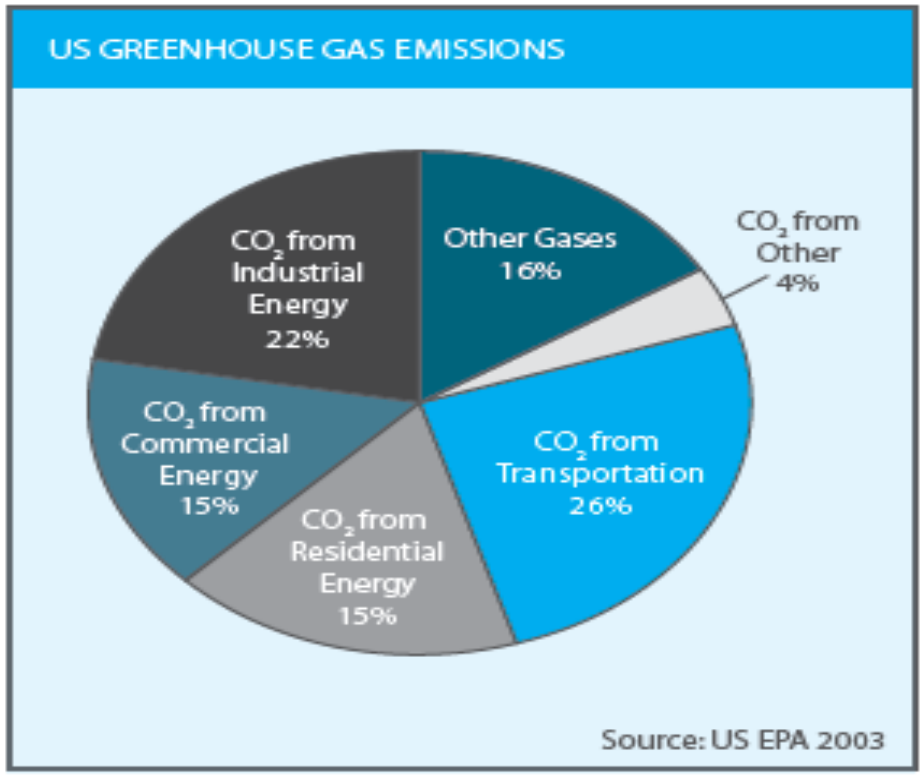
U S Greenhouse Gas Emissions



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Home Energy Use

Between now and 2020, the major trends in home energy use are expected to include the following:

Home Energy Use

- **Heating and cooling will decrease to about 40 % of total annual home energy use**
- **Small electronics' total energy use will increase by 70 %**
- **Lighting electricity use will grow by 30 %**
- **Large home appliances' energy use will increase by 10 %**
- **Refrigeration energy use will decrease by 20 %**

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BENEFITS OF ENERGY EFFICIENCY IN THE RESIDENTIAL SECTOR

Opportunities exist for improving home energy efficiency. The federal government estimates that many households can reduce their home energy bills 20 to 30 percent cost effectively by taking the following steps:

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BENEFITS OF ENERGY EFFICIENCY IN THE RESIDENTIAL SECTOR

- **Selecting high-efficiency ENERGY STAR qualified products when shopping for refrigerators, clothes washers, dishwashers, and home electronics, among others**
- **Using ENERGY STAR qualified light fixtures and bulbs**
- **Improving the energy efficiency of heating and cooling systems through better maintenance, sealing and insulating ducts, installing programmable thermostats, and correctly sizing the system**
- **Improving the envelope of the home with the appropriate amount of insulation, sealing air leaks, and choosing high-efficiency ENERGYSTAR windows**

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BENEFITS OF ENERGY EFFICIENCY IN THE RESIDENTIAL SECTOR

Additionally, taking all of these measures together by treating the house as a system will yield even greater energy and dollar savings while improving the overall efficiency of the home. The systematic approach, along with a home energy audit, helps determine the most cost-effective and energy-efficient measures to take first, which is particularly important for homeowners implementing a home improvement project on a budget.

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BENEFITS OF ENERGY EFFICIENCY IN THE RESIDENTIAL SECTOR

Steps taken to reduce energy use often pay for themselves, meaning that homeowners will save more in energy savings over the life of the product than it costs to purchase, install, and maintain. If more Americans took advantage of cost-effective, energy-efficient solutions, they could:

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BENEFITS OF ENERGY EFFICIENCY IN THE RESIDENTIAL SECTOR

- **Save a significant amount of money and improve our economy**
- **Save energy, including natural gas and electricity**
- **Reduce the number of new power plants needed**
- **Improve quality of life**
- **Increase our national security**
- **Help reduce emissions of greenhouse gases**

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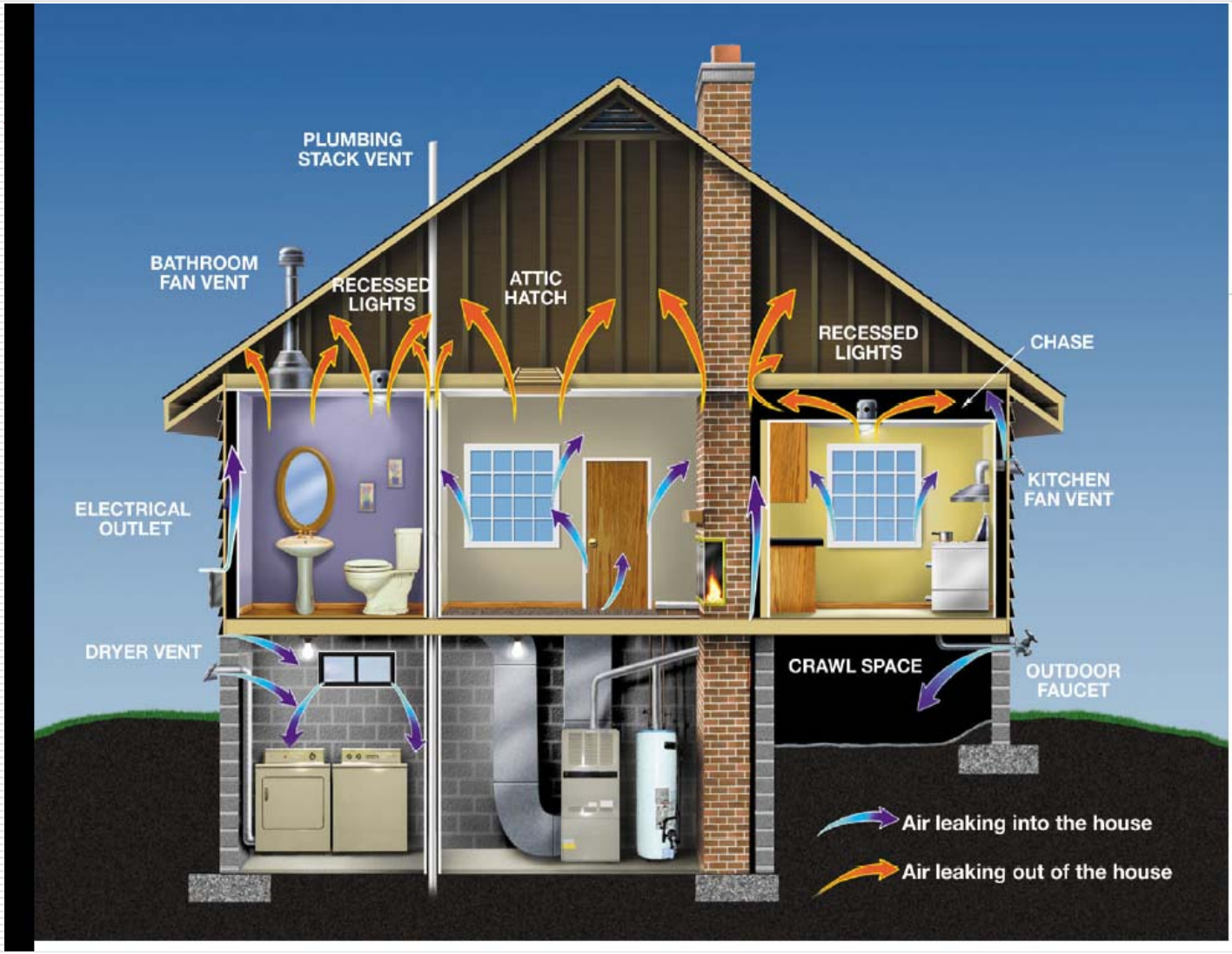
Common areas of home energy loss Source: U.S. EPA, 2003



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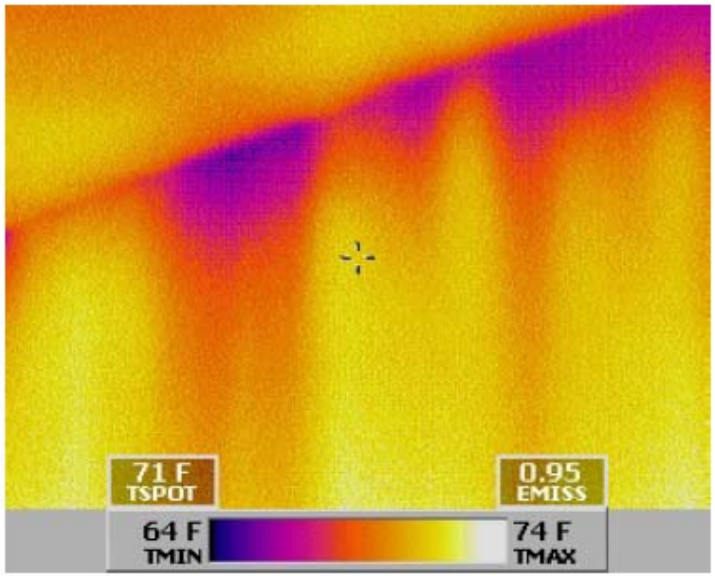
Actual Examples: Attic Insulation

Actual Examples:



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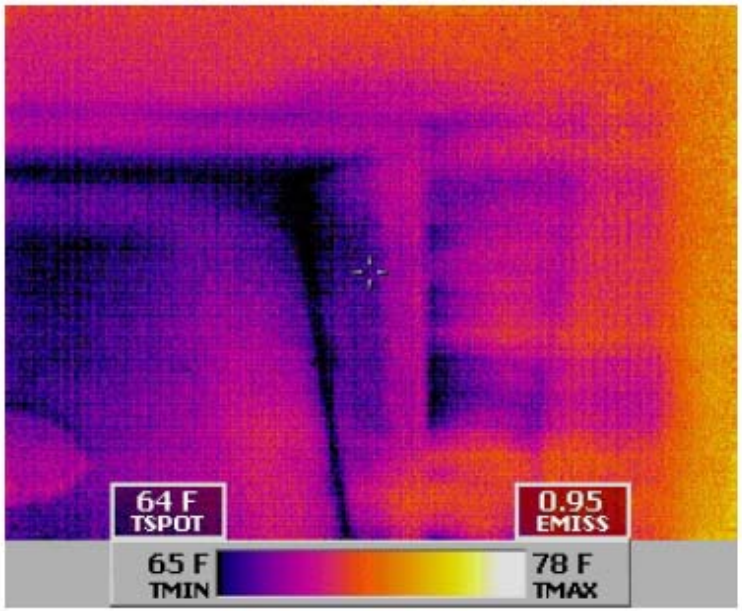
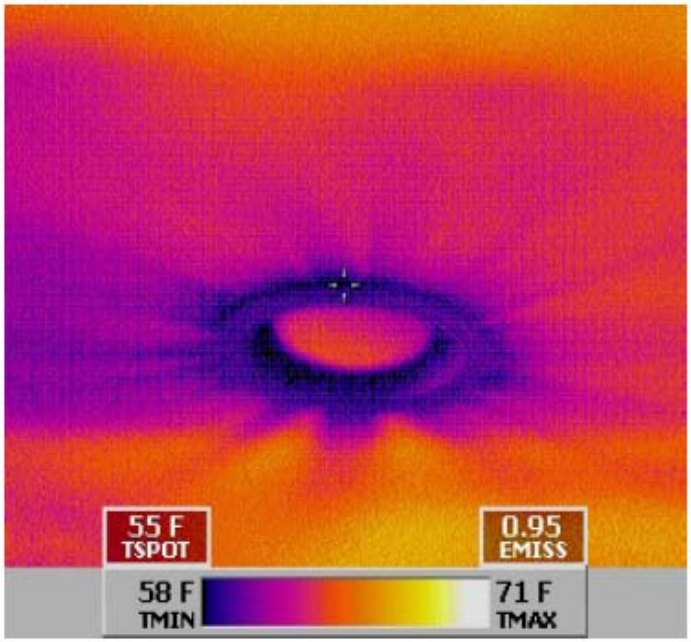
Actual Examples: Attic Access



Actual Examples: Recessed Lights



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Actual Examples
Crawlspace & over Garage

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Actual Examples
Attic Air Leaks

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Potential Savings
Home Sealing

- Average reduction after air sealing and insulation 15-25% in consumption.
- Comfort – Immeasurable
- “If every home in the United States used Energy Star Home Sealing, we could close 90 power generation plants”. EPA Home Sealing DVD w/Steve Thomas.

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Potential Savings
Greenhouse Gas Savings

- Electric – Average- 1.34 lbs/kWh
- Natural Gas – Average – 12.0593 lbs/100 cu. ft.
- Heating Oil – 22.384 lbs./Gallon

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Questions?