



# City of Houston REEP

**Residential Energy Efficiency Made Easy**



# Centerpoint Standard Offer Program (SOP)

## City of Houston Co-Sponsor

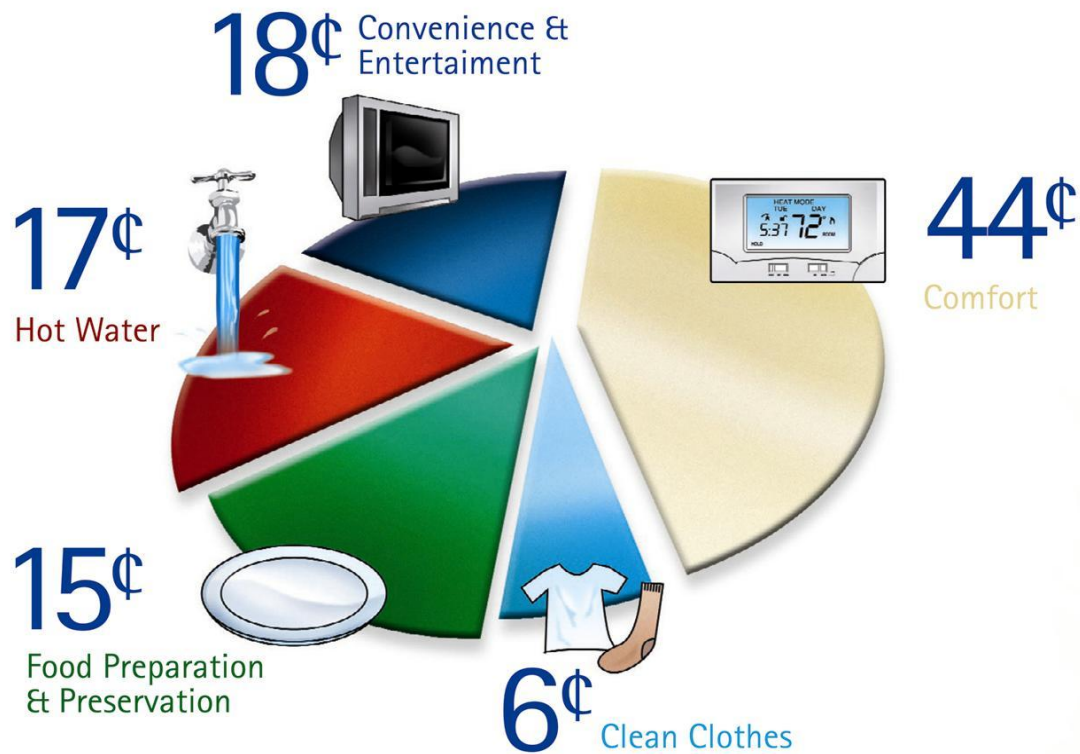
### Participants

- Centerpoint Energy– Program Administrator / Funding
- City of Houston (COH) – Marketing / Signups
- Direct Energy – Electric Services Company (ESCO) via direct labor & third party contract administration

### Overview

- COH identifies larger subdivision containing target demographics:
  1. Age of home
  2. Household size
  3. Household income
  4. Overall condition of homes
- Direct Energy evaluates home with Door Blower and Duct Blaster test, determines suitable measures then performs or supervises the installation
- Centerpoint designs and administers the program including determination of compensation, field evaluation and post installation quality audits

# Energy Spend of a Properly Built Home



Where Your Energy Dollar Goes

# Residential Energy Efficiency

## Question:

What is the typical electricity bill for a single family home in Houston, Texas during the month of August?



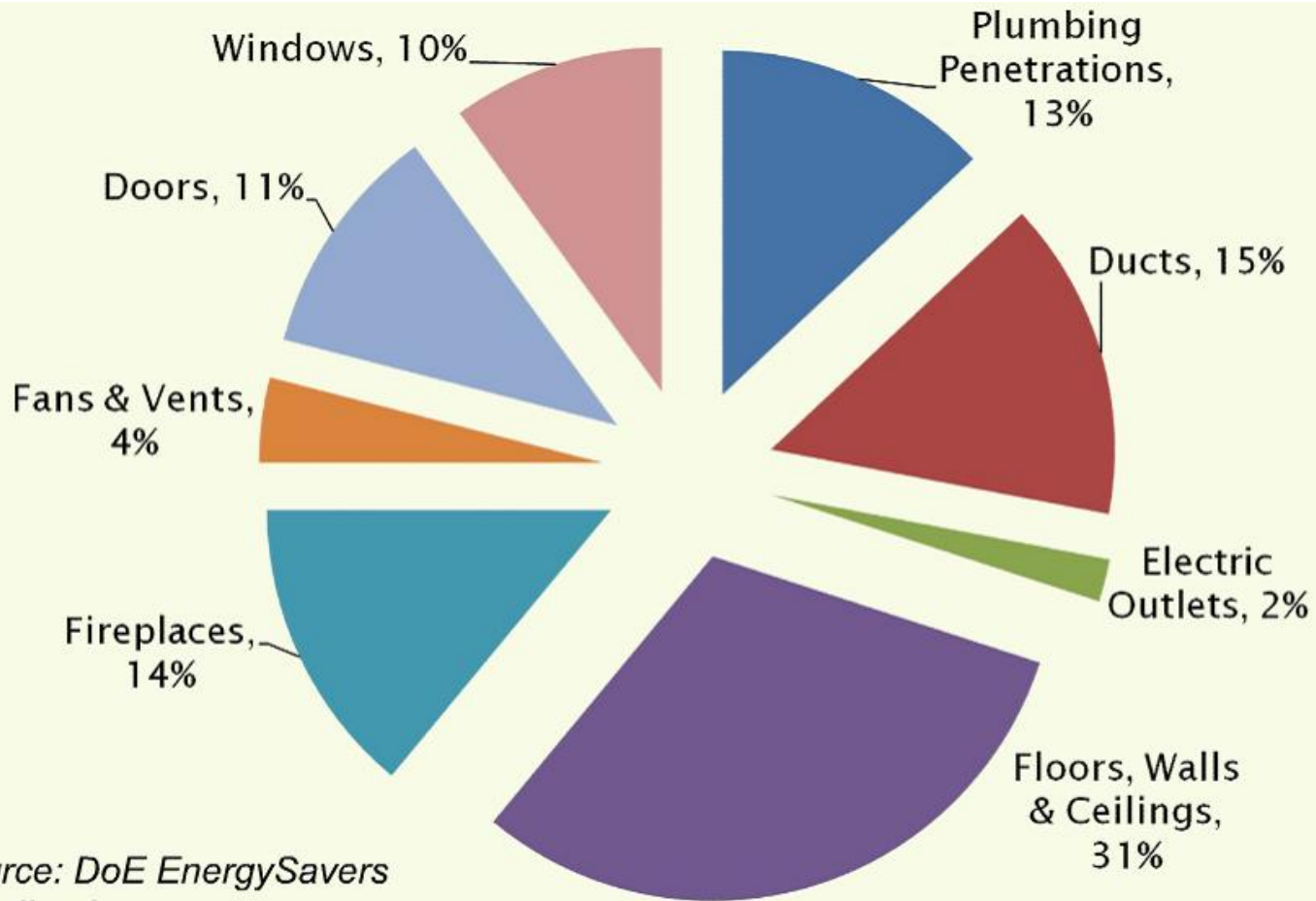
# Residential Energy Efficiency

## Answer:

We don't know. Contributing factors to consider when trying to answer the question are:

- Energy Rate (\$)
  - Size of Home
  - Age of Home
  - Type of Home
- Number of Inhabitants
- Thermostat Setting (72 degrees vs 78 degrees)
  - Age of Comfort Equipment
- Infiltration Rate / Insulation Level
  - On & On & On & On.....

# Air Leakage Opportunities



Source: DoE EnergySavers Handbook

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# Air Infiltration Testing

## Bloor Door Test



## Duct Blaster Test



# Health and Safety

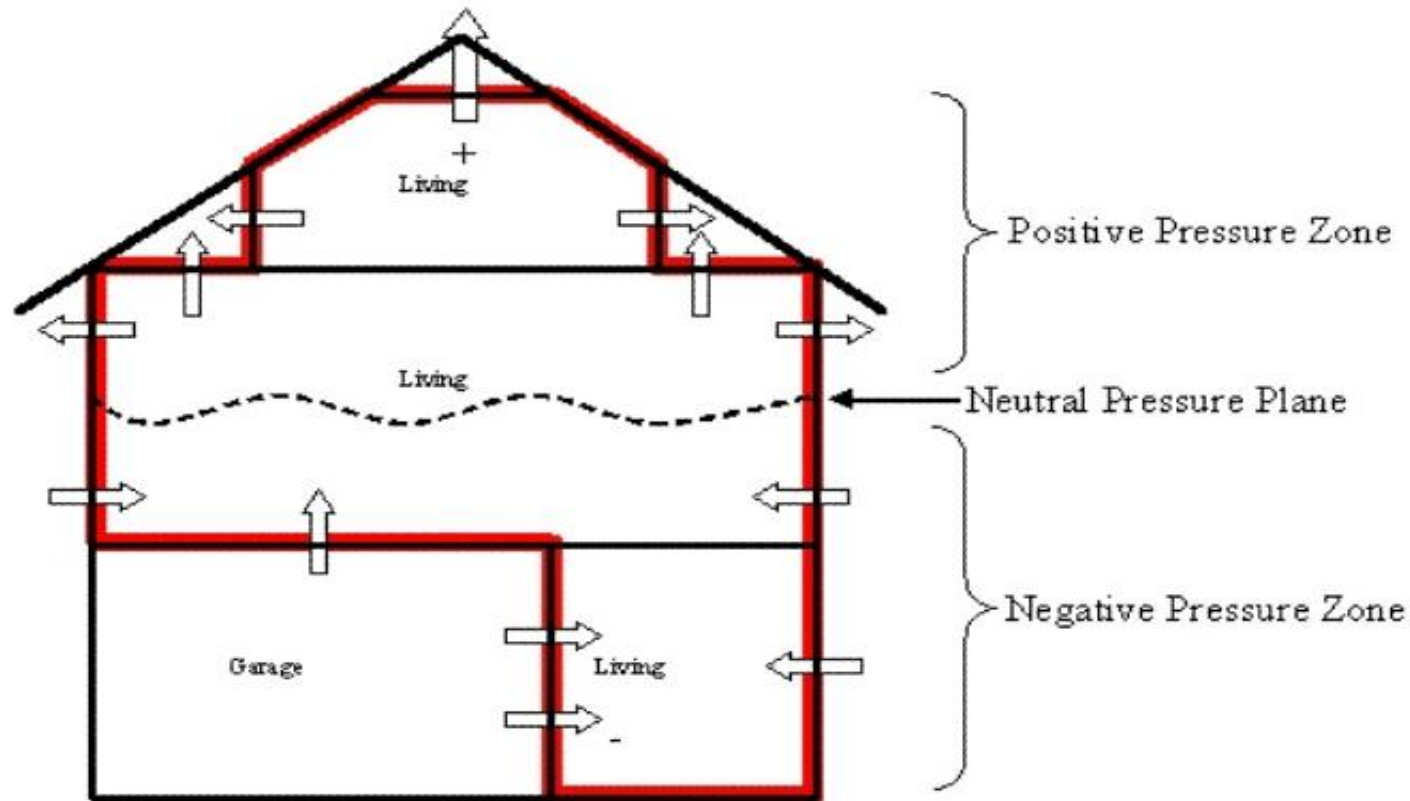
## Weatherization: Concerns



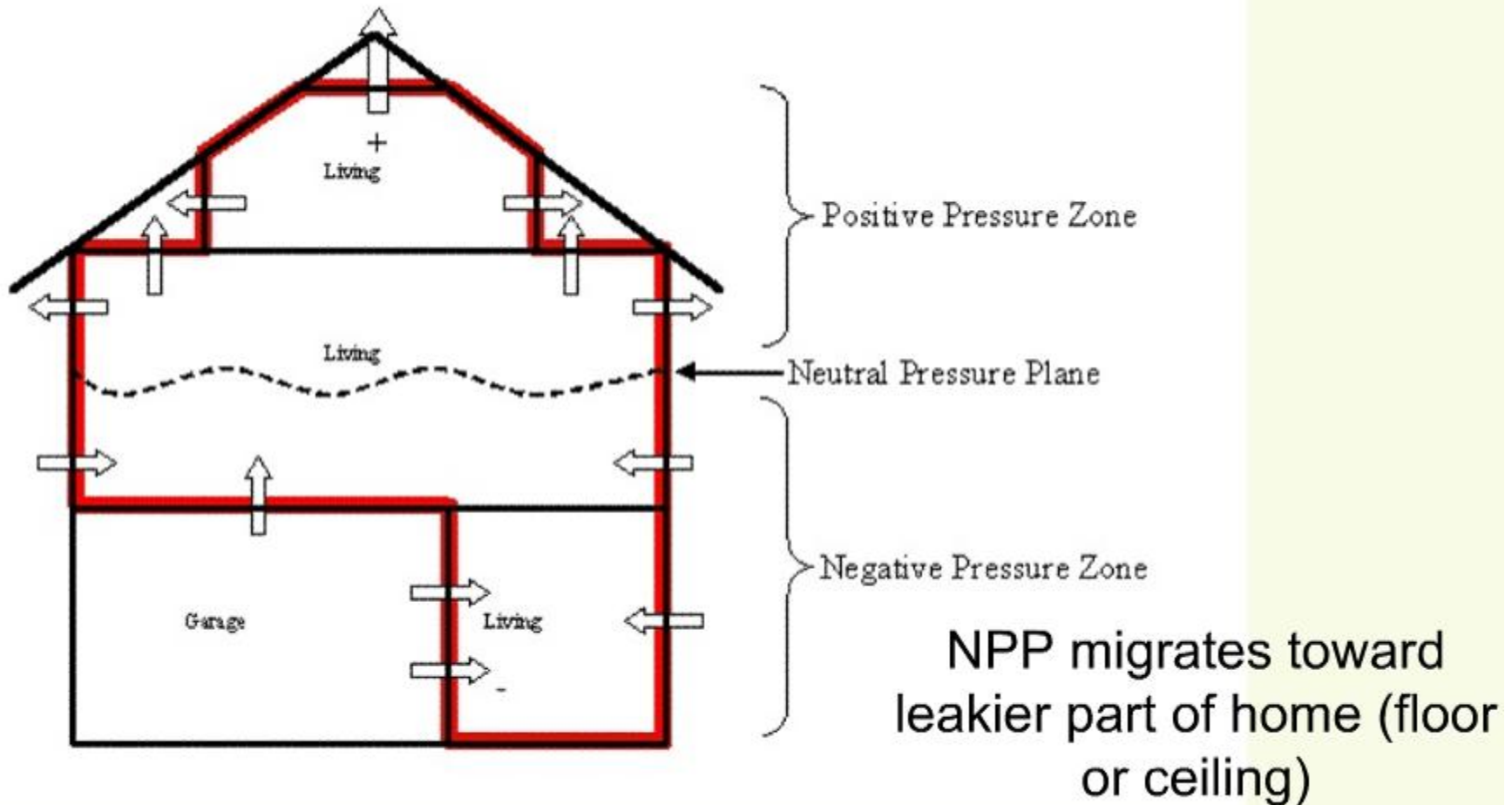
- Carbon Monoxide
- Moisture Problems
- Lead-Paint dust
- Back Drafting
- Natural Air Changes
- Creating a health or safety issue

# Envelop Leakage

- Neutral Pressure Plane



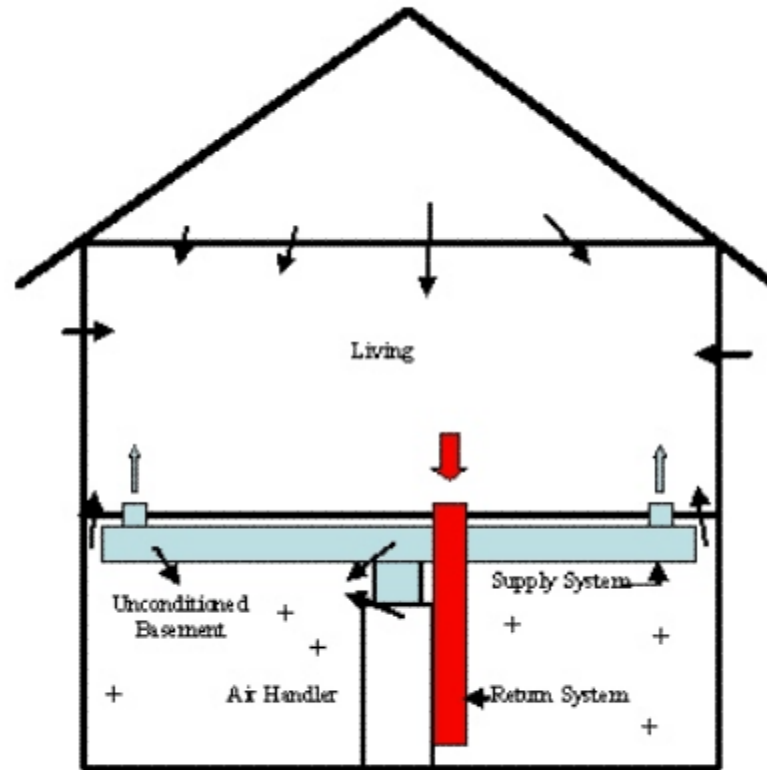
# Neutral Pressure Plan (NPP) Migration



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# Pressure & Duct Leakage

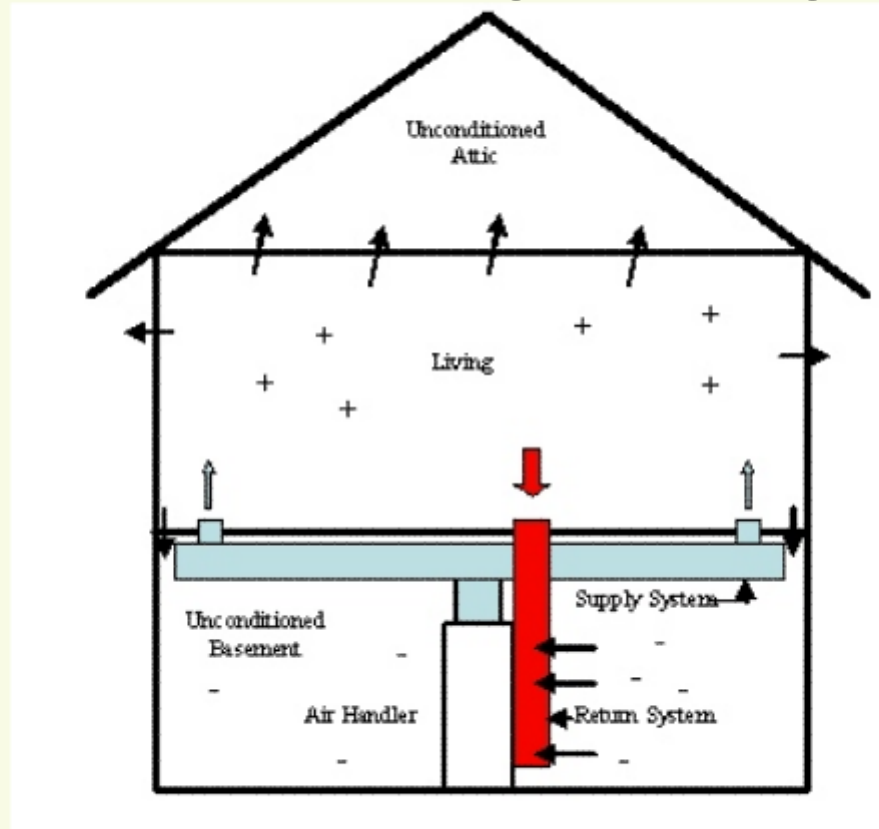
Supply leaks create negative pressure



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# Pressure & Duct Leakage

Return leaks create positive pressure



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# Qualifying Measures

- **Infiltration Reduction**

- Requires blower door pre and post testing - minimum reduction required
- Program measures:
  - Caulking of air gaps around windows, doors & baseboards
  - Weather-stripping of exterior doors
  - Installation of wall outlet and switch insulation gaskets
  - Sealing of plumbing penetrations
  - Weather-stripping of attic access stairs, doors and scuttles
  - Insulation of hot water piping (electric only)
  - Installation of water heater insulating blanket (electric only)

- **Low-flow Shower Heads**

# Residential Energy Efficiency

## Duct Sealing



# Residential Energy Efficiency

Low R-Value



High R-Value



## Insulation Value (Ceiling)

# Residential Energy Efficiency

**Inefficient**



**Efficient**



**Compact Fluorescent Light Bulbs or CFLs pay for themselves in as little as 1 year & last up to 7 years.**



# Residential Energy Efficiency

**Windows**



**Solar Screens**



## Window Efficiency