

# **Green Building Workshop Series Eco-City Alexandria Initiative**

## **Workshop 2: Audits for Your Home and Small Business**

**March 19, 2011**

**9:00 am – 12:30 pm**

**Charles E. Beatley, Jr.**

**Central Library**

**Alexandria, Virginia**





# Our Speakers Today

- **Lalit Sharma, P.E.**, Division Chief, Office of Environmental Quality, Department of Transportation and Environmental Services, City of Alexandria
- **Bill Eger**, LEED AP, Energy Manager, City of Alexandria
- **Chris Bellanca**, President, The Avenue Builders
- **Barbara Swart**, Homeowner
- **Katherine Medina**, Executive Director, Rebuilding Together Alexandria
- **Annette Osso**, LEED AP, President, Virginia Sustainable Building Network





# Workshop Overview

1. Background of Eco-City Alexandria Program and City's Energy Management Program
2. Energy Audits for Your Home
3. Homeowner Perspective on Energy Audits
4. Energy Audits for Small Businesses
5. Audits for Low & Moderate Income Homeowners
6. Incentive programs
7. Q&A with presenters





# Eco-City Alexandria

## Eco-City Charter Principles

- Land Use and Open Space
    - Water Resources
      - Air Quality
    - **Transportation**
      - Energy
    - **Building Green**
      - Solid Waste
    - Environmental Health
  - **Emerging Threats & Climate Change**
    - Implementation
- 
- **Environmental Action Plan**



# Energy Efficiency and Conservation Block Grant Projects

- Energy Conservation (Green Building Phase II)
  - Energy Audits and Energy Efficiency Retrofits for City Buildings
    - Green Fleet
    - Green Jobs Training
    - Green Loans
  - LED Traffic Signals/LED Street Lights
- Renewable Energy Installation at City Facility





# Eco-City Alexandria

- **GREEN BUILDING POLICY**

**Public Buildings**

**New Development**

**Existing Buildings**





# City of Alexandria's Energy Management Program

## City Operations

- Energy Efficiency, Conservation, and Optimization
- Utility Payments, Analytics, and Reporting
- Demand Management
- City Green Building Projects
- Facility Operations and Maintenance
- Energy Procurement
- Renewable Energy Systems
- Energy Assurance and Reliability
- Generator Management Program
- Alternative Vehicle Procurement
- Vehicle Fuel Reduction and Alternative Fuel Use
- Vehicle Fuel Procurement
- Policies, Legislation, and Standards
- Energy Conservation Committee

## Community

- Energy, Green Building, and Climate Change Outreach and Education
- Energy Programs and Incentives
- Energy Assurance and Reliability
- Policies, Legislation, and Advocacy





# Energy Assessments

- **Seven (7) Facilities**

- City Hall
- City Courthouse
- Health Department
- Chinquapin Recreation Center
- Torpedo Factory
- Firestation 205
- Barrett Library

- **Outcomes:**

- Air Management
  - HVAC Controls Replacement
  - Re- and Retro-Commissioning
  - HVAC Controls Optimization
  - Lighting Density Reduction, Retrofits, and Controls
- 



# Current Energy Capital Projects

## **Energy Efficiency and Conservation Block Grant Program**

- City Hall Vegetative Green Roof
- LED Lighting Retrofits
- DDC Control Retrofits
- Solar PV/Solar Thermal System Installation
- Replace 11 vehicles with hybrid alternatives (9 sedan / 2 SUV)

## **Capital Improvement Program (FY2011 – FY2012)**

- Lighting Retrofits
  - HVAC Control Retrofits and BMS Modernization
  - HVAC Modernization
  - Re- and Retro-commissioning
  - Facility Advanced Metering Infrastructure
  - Emergency Generator Installation and Maintenance
- 



# Energy Management Program Success Snapshot

- Fully operational Energy Accounting and Analytics Platform
- ASHRAE Level 1 and Level 2 Energy Assessments on seven (7) City facilities; additional assessments conducted internally
- Prioritization of energy efficiency for City facility capital improvements
- Reductions of 3%+ (kBtu/ft<sup>2</sup>) per year [2008 – 2010]





# Green Building Workshop Series

*Next Workshops, Save the Date NOW!*

The Green Landscape: For You and the Chesapeake Bay,  
**May 7, 2011** at Cora Kelly Elementary School, 25 West Reed Avenue

*Stay Tuned for Future Workshops*

Green Upgrades in Historic Properties - **June**

Renewable Energy Systems and Green Power - **September**

Green Operations for Retail, Restaurants, Small Offices and  
Cultural Centers - **November**

*Workshop series funded by EECEBG.*





# Benefits of Energy Audits

They provide you with information about what steps you can take to:

1. Increase your comfort and health
2. Reduce energy bills and water bills
3. Add value to your property
4. Do your part to help the City of Alexandria reach its Eco-City energy and environmental goals
5. Reduce your carbon emissions footprint
6. Each action is a step toward addressing climate change





# Your Home Performance Assessment or Energy Audit

Chris Bellanca  
The Avenue Builders

- Home Energy Rating System (HERS) Rater
- Goldstar and BPI Accredited Contractor
- EarthCraft House Technical Advisor
- NARI Certified Remodeler
- B. Arch. Eng. – Penn State University







If your car was leaking gas,  
what would you do??





# What is a Home Performance Assessment or Energy Audit ??????





# What is a Home Performance Assessment or Energy Audit??

A home performance assessment/energy audit is often the first step in making your home more efficient. An audit can help you assess how much energy your home uses and evaluate what measures you can take to improve efficiency, lower utility bills, increase comfort.

You can perform a simple energy audit yourself, or have a professional energy auditor perform a more thorough assessment.

Source: [www.energystar.gov](http://www.energystar.gov)





# Energy Efficiency

**Energy efficiency** - *using less energy to provide the same level of energy service.*

For example, insulating a home allows a building to use less heating and cooling energy to achieve and maintain a comfortable temperature.





# Why should you get a home performance assessment?

↑ Energy Efficiency

↑ Comfort

↓ Utility Bills

↓ Carbon Footprint

↑ Safety

↑ Durability

↓ Moisture Problems

↓ Home Failures

↓ Health Issues

↓ Cleaning





# Assessment Steps

- Prepare the home
- Review site specifics
- Exterior inspection
- Interior inspection
- Mechanical systems inspection
- Results



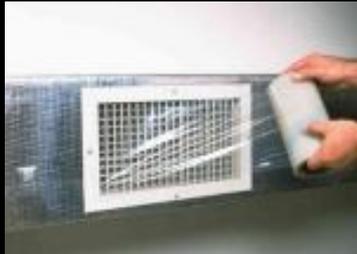


# Inspection Areas

- ✓ Thermal envelope
- ✓ Air leakage
- ✓ Insulation
- ✓ HVAC
- ✓ Lighting/appliances/electronics
- ✓ Moisture control



# Tools





# Preparing the Home

- Make a list of your specific concerns
- Have a copy of your most recent utility bills  
(gas, electric, oil, propane)
- Be there
- Access
- Pets
- "Winter Conditions"
- Fireplace



# Home Performance Assessment

Home Energy Audit – assesses the house as a system

- Visual Inspection
- Blower Door Test
- Infrared Camera
- Combustion Safety Testing
- Ventilation
- Equipment Efficiencies
- Duct Leakage
- Software Modeling of Home Energy Use
- Improvement Recommendations (20% - 50%+)





# Home Performance Assessment

House as a system approach – the leg bone is connected to the hip bone.....

Homeowners typically hire contractors on a project by project basis. Each component of the house has different design parameters that are interdependent on other systems, but who looks at the system as a whole?





# Inspection Areas

## Exterior

- Roof
- Windows/Doors/Siding
- Crawlspace or Basement
- Chimney
- Exterior Drainage System
- Penetrations





# Inspection Areas

## Interior

- Air Leaks
- Thermal Bypasses
- Insulation
- Penetrations





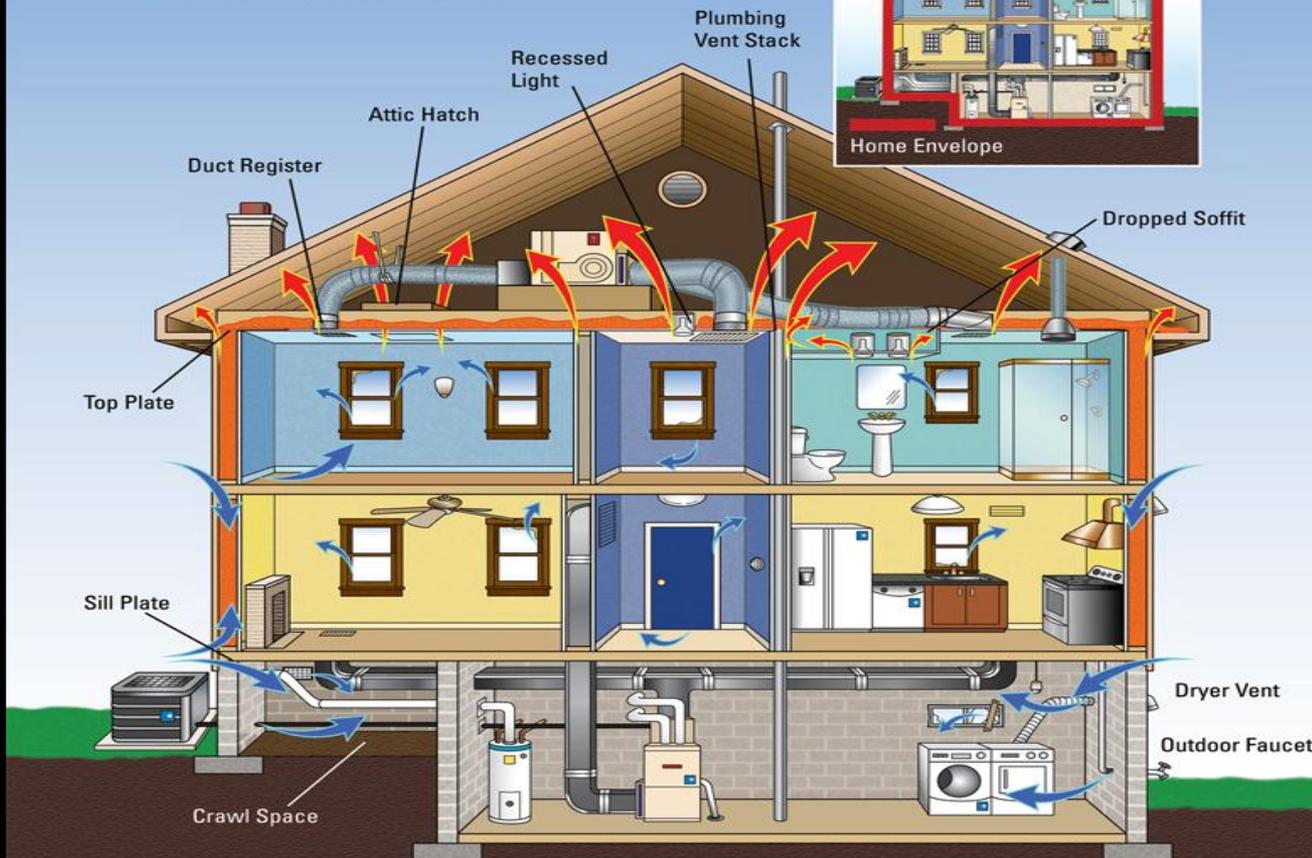
# Where Does Air Leakage Occur?

- Thermal Envelope
  - Air Barrier
  - Insulation in contact w/ air barrier
  - “Build tight, ventilate right”



## COMMON AIR LEAKS

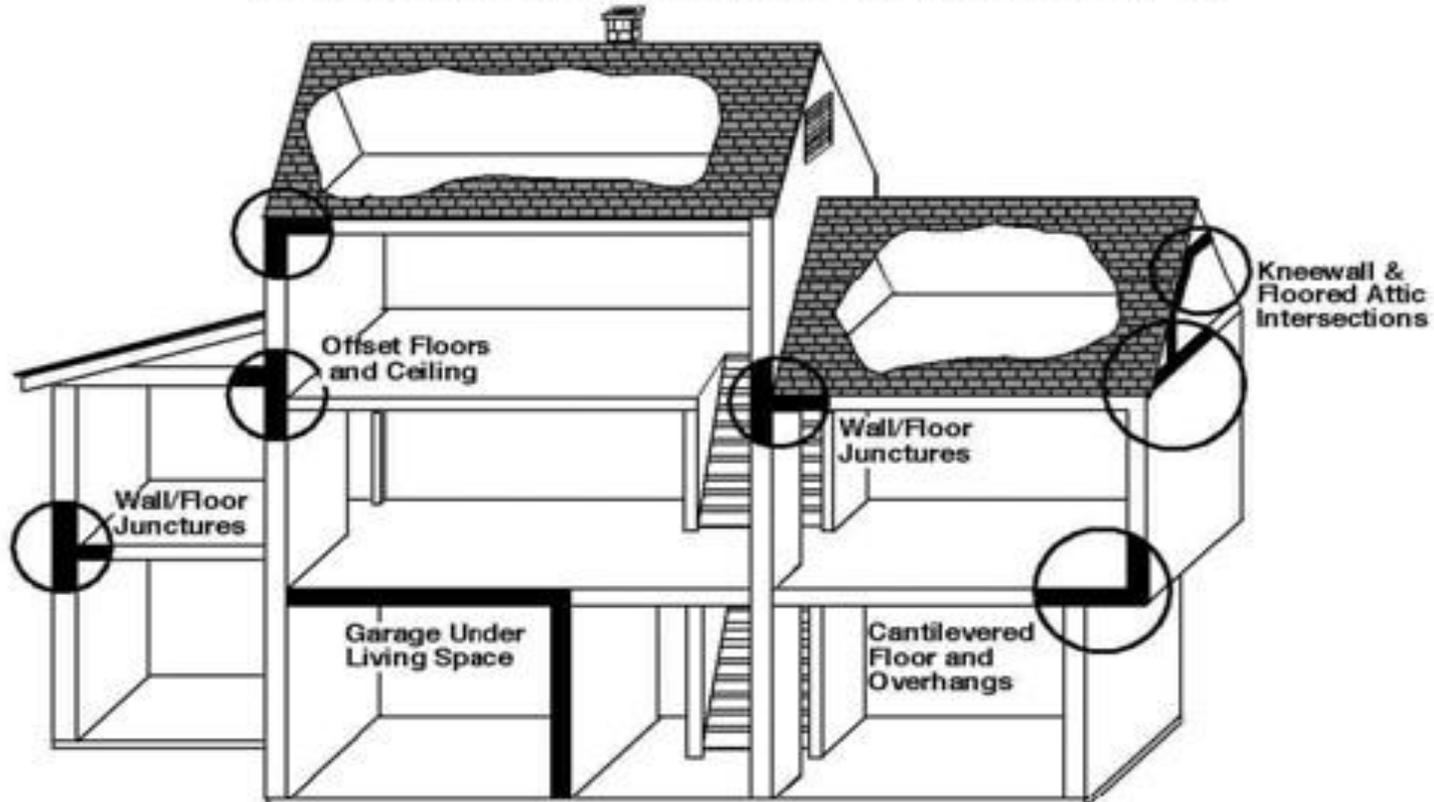
-  Air Leaking into the house
-  Air Leaking out of the house



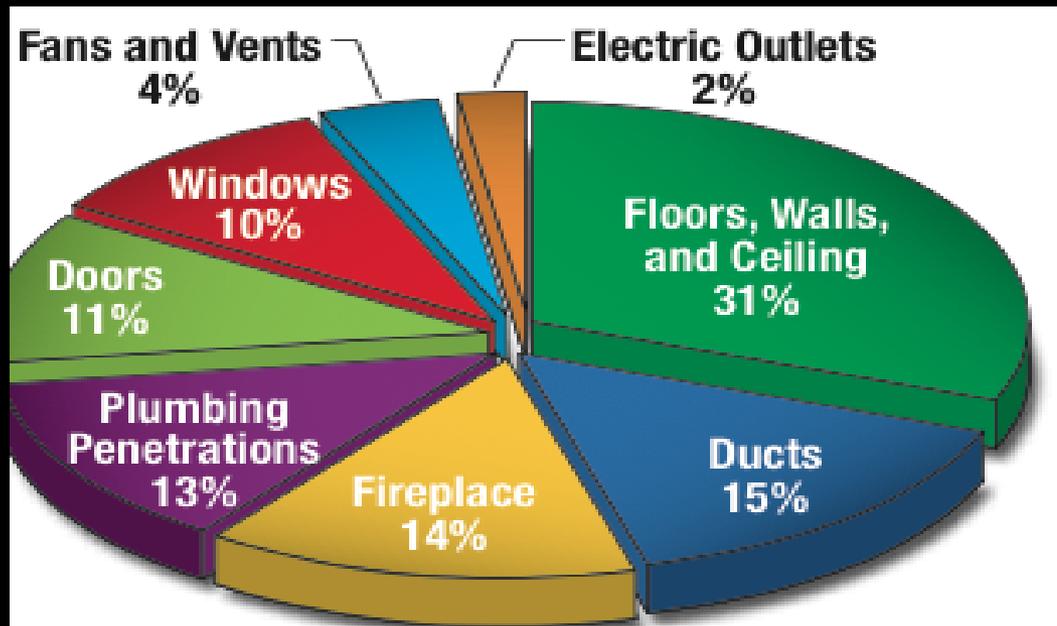
Source: U.S. EPA

# Where Does Air Leakage Occur?

## Key Junctures in High Density Insulation



# Where Does Air Leakage Occur?



## How Does the Air Escape?

Air infiltrates into and out of your home through every hole and crack. About one-third of this air infiltrates through openings in your ceilings, walls, and floors.



# Inspection Areas

## Heating, Ventilation, and Air Conditioning

- Combustion Safety
- Unit Efficiencies
- Proper sizing
- Duct Leakage
- Ventilation (range hoods, bath fans)



# Inspection Areas -HVAC

- Combustion Safety
- Efficiency Ratings
- Proper sizing
- Space Heaters
- Electrical Resistance Heaters
- Radiant Heating
- Passive/Active Solar
- Wood and Pellet
- Air Conditioning
- Evaporative Systems
- Duct Leakage
- Ventilation  
(range hoods, bath fans)





# The Results

## 1) Diagnostic Summary

- Utility bill analysis
- Blower door
- Infrared scan
- Air exchange rate

## 2) Recommendations List

## 3) Plan of Action



# Moving Forward

- 1) Decide which improvements to make
- 2) Upgrading the Thermal Envelope (\$500 - \$5,000)
- 3) Systems Upgrades (\$5,000 - \$15,000)
- 4) Deep Energy Savings – Generators (\$15,000 - \$100,000)





# Home Improvements

- 1) Low/No Cost Steps (\$0 - \$200)
- 2) Upgrading the Thermal Envelope (\$500 - \$5,000)
- 3) Systems Upgrades (\$5,000 - \$15,000)
- 4) Deep Energy Savings – Generators (\$15,000 - \$100,000)





# Low / No Cost Measures

## Immediate – 6 month payback

- 1) Lighting – CFL's, LED's, Dimmers, Motion Sensors
- 2) Change air filters
- 3) Adjust thermostat
- 4) Programmable thermostat
- 5) Weatherstripping/seal penetrations
- 6) Kill-A-Watt
- 7) Insulate hot water heater
- 8) Lower hot water heater thermostat





**Top Returns on Investment  
(common improvement recommendations)**

- Air Sealing
- Attic Insulation
- Basement/Crawlspace vapor barrier/insulation
- Windows
- Duct Sealing
- Heating and Air Conditioning System
- Ventilation
- Siding/external wall insulation
- Lighting
- Refrigerator
- Hot Water Heater
- Dishwasher
- Washing machine





# Deep Savings/Generate Power

- Solar Hot Water
- Geothermal Heat Pump
- Photovoltaics (PV or Solar Panels)
- Wind
- New Technologies



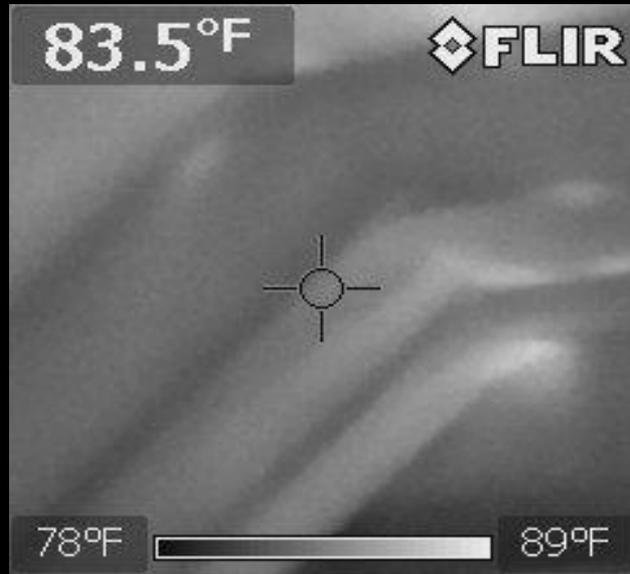


## Testing out

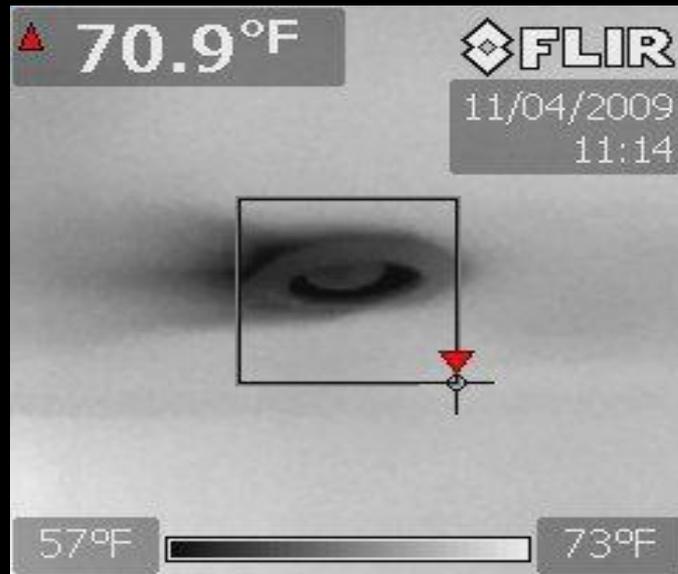
Testing out helps to ensure the safety of the occupants while measuring results.



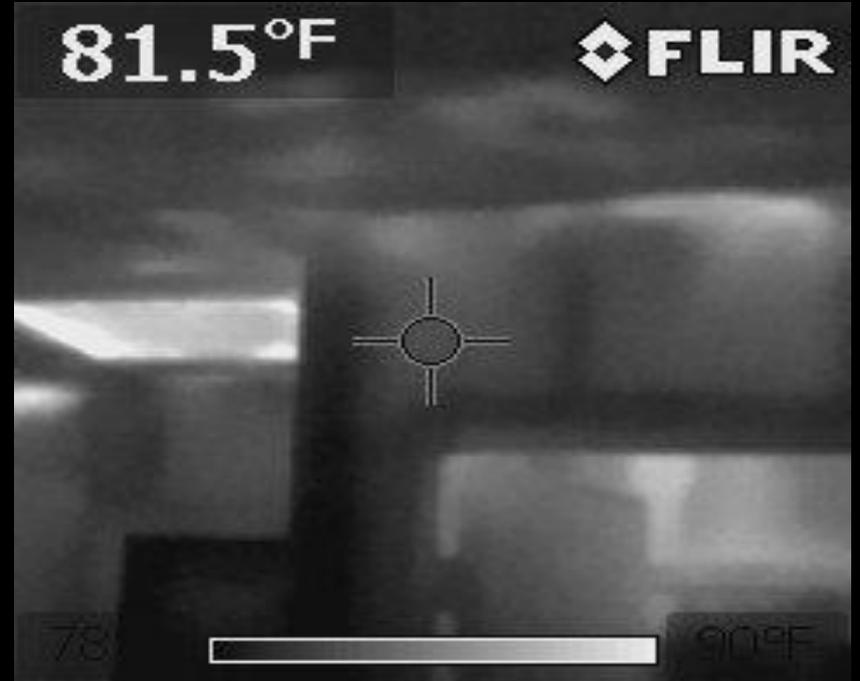


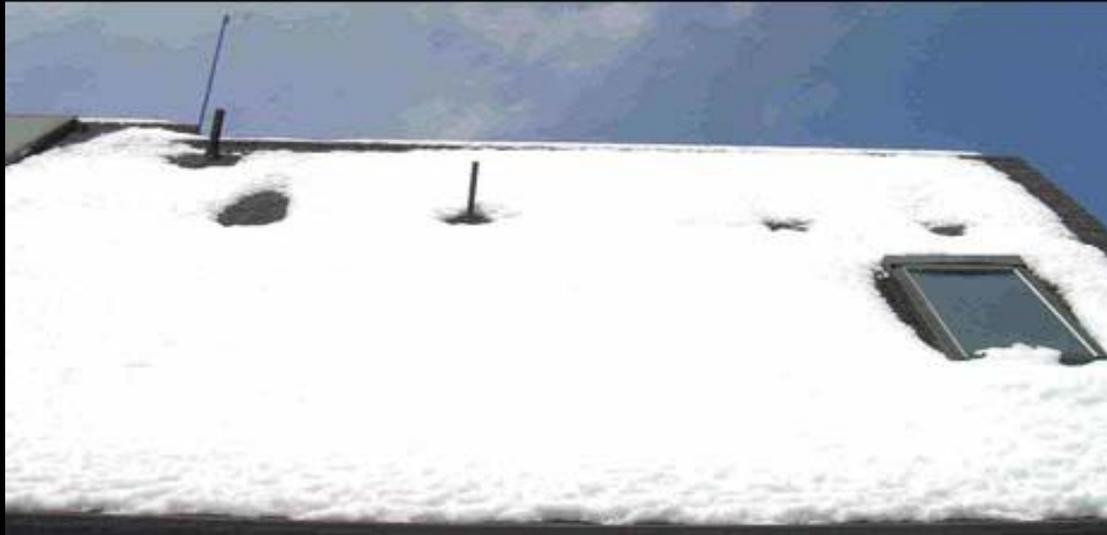
















??Questions??

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Green Building Workshop Series: Workshop 2

# Home Energy Audits: A Consumer's Viewpoint

**Barbara Swart**

**March 19, 2011**





## Topics of Discussion

- What is a home energy audit?
  - Why would you want an energy audit?
  - Where does your energy go?
  - What are the components of an audit?
  - How do professional and DIY audits compare?
  - What are the most likely energy issues in area homes?
- 

# What is a Home Energy Audit?

- Analyzes the energy used in your home
- Recommends ways to use energy more efficiently



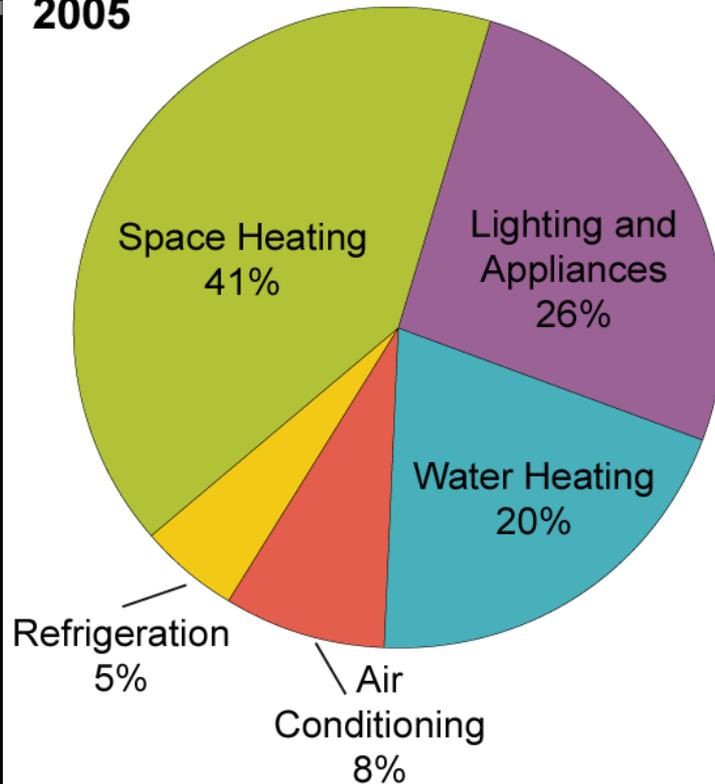


## Why would you want an audit?

- Save energy resources = save money
    - Find out where energy is being used
    - Breakdown energy costs of each component
    - Prioritize possible changes
      - Identify the biggest bang for your buck
      - Identify the payback period
      - See what changes make sense
  - Save the world/save yourself
    - Reduce use of fossil fuels that are finite
    - Reduce greenhouse gas emissions causing climate change and environmental illnesses
  - Home comfort
- 

# Where does the energy go?

**How Energy is Used in Homes, 2005**



Source: Energy Information Administration, 2005  
*Residential Energy Consumption Survey.*

According to survey by the Energy Information Administration in the Department of Energy

[www.eia.doe.gov](http://www.eia.doe.gov)

- Average home in US - depends on location, type of energy used, many factors

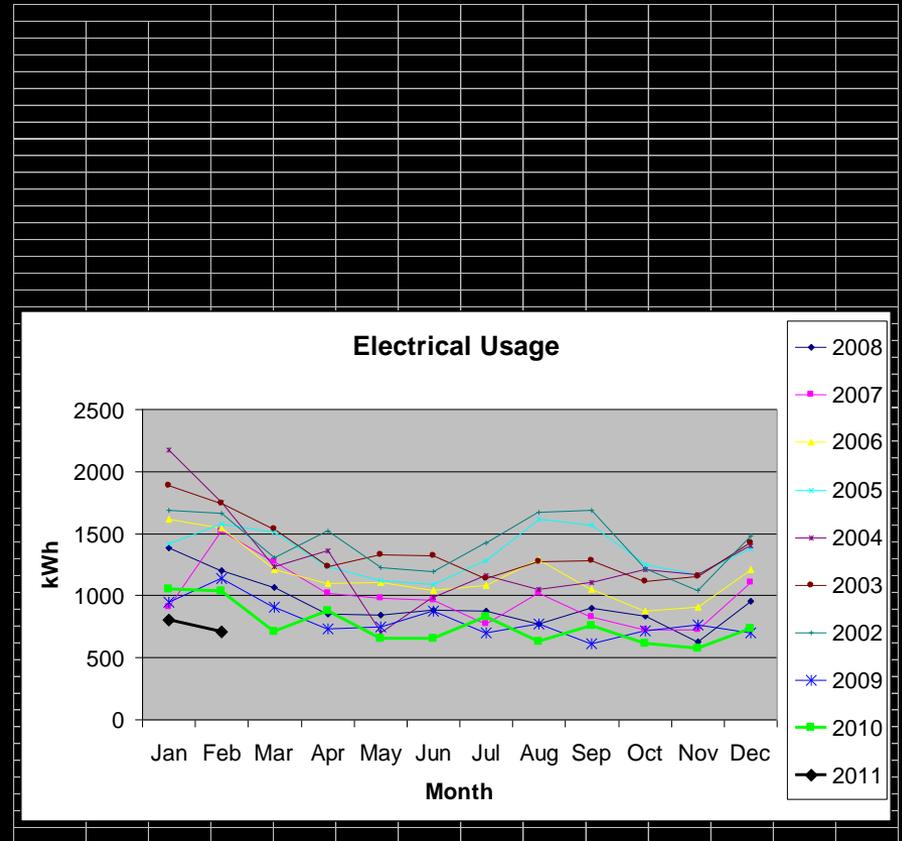
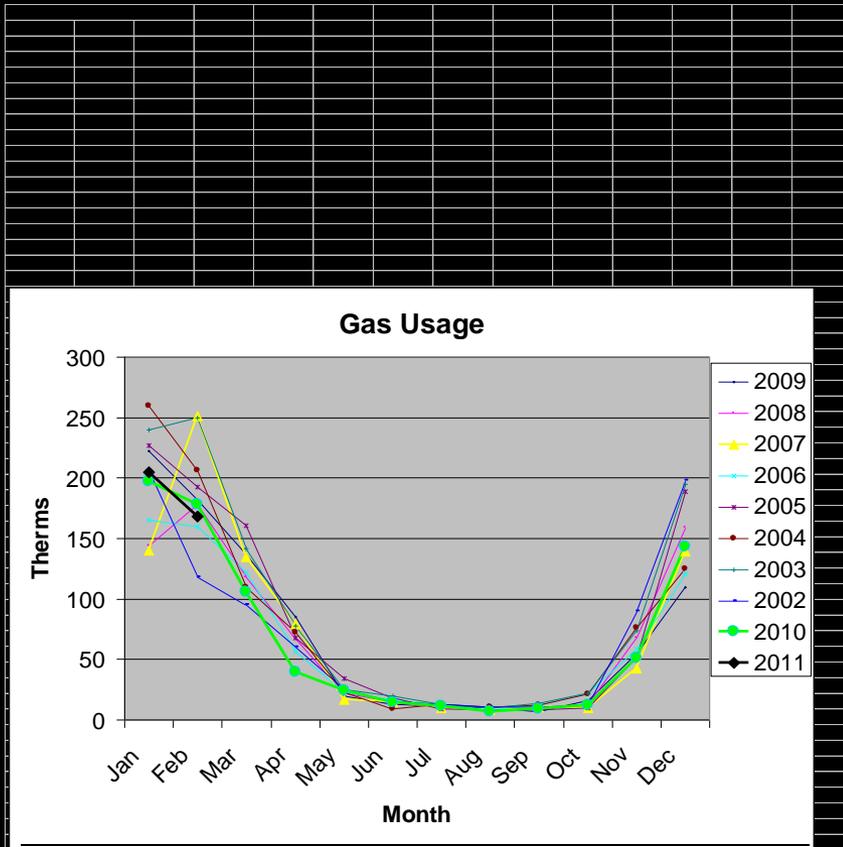


# What are the Components of an Energy Audit?

\*\*\* No set standards for energy audits \*\*\*

- House walk through: house measurements, inspection of insulation, appliances, leaks, room usage – checklists of all items related to energy usage
  - Utility bill review, benchmark comparison
  - Leakage tests
  - Appliance review and wattage measurements
  - Performance report and recommendations for changes
  - Model what if scenarios for changes to see if they make sense
- 

# Utility Usage Spreadsheets







# Benchmarks

- Different benchmarks for various comparisons
  - One example: Home Heating Index for gas usage
  - Need 3 things to determine Home Heating Index
    - 1. Amount of gas used**
    - 2. Weather index – Heating Degree Day**
    - 3. Size of house**
- 



# Home Heating Index Benchmark Input

1. *Amount of gas used* - therms are on gas bill
  2. *Weather Index* – Heating Degree Days are on gas bill
    - As of March 2006, Washington Gas added Heating Degree Day to bills, relates heat demand to outdoor temperatures
    - HDD for the day = 65 degrees – ((high temp+low temp)/2)
    - Our area has about 3,500 HDDs per year, Chicago >6,000.
  3. *Size of House* - square feet of heated space  
[www.arlingtonva.us](http://www.arlingtonva.us), click on real estate assessments.  
<http://realestate.alexandriava.gov>
- 



# Home Heating Benchmark Calculation

**HOME HEATING INDEX =**

**# BTUs ÷ # Heating Degree Days ÷ # Square Feet**

*600*  
THERMS  
X  
*100,000*

*3,000*  
HDDs  
from gas  
bill

*2,500*  
square feet  
from real  
estate info

**Do the math: HHI = 8.0**





# Benchmark Comparison

Home Heating Index  
Btus/HDD/Square Foot

Under 2.5

Between 2.5 and 5

Between 5 and 10

10 and 15

Over 15

Super Energy Efficient Home

Good Energy Efficient Home

Some Opportunities to Save Energy Between

Many Opportunities to Save Energy

Extremely Energy Inefficient Home

Formula:  $\text{BTUs (Therms} \times 100,000) / \text{HDDs/Square feet}$



## Blower door test



- Attach large fan to front door of closed house
- Blow air out of house, air flows through any leaks
- Calibrated machine gets actual measurements





## How Blower Door Results are Measured

- Square feet (total of all the leaks) represents the “hole” in your house
- Air Changes per hour, .35 is recommended.
- Greater than .35 is leaky.
- Don't want completely air tight house because of indoor pollution – would need mechanical ventilation.
- 15 CFM (cubic feet per minute) per person recommended.





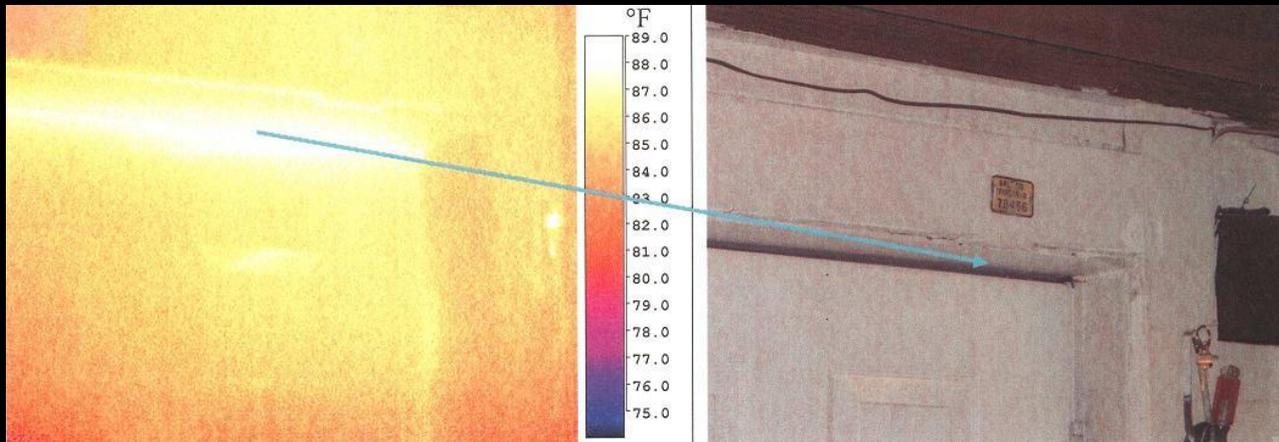
## Duct Leakage Test

- Similar to blower door test
- All heat registers and grills are taped over
- The air is blown out and negative pressure readings are taken.



## Thermographic Test

- Measures difference in temperature between inside & out
- Temperatures range from white (hottest) to black (coolest)
- Can detect openings in walls that you can't normally see
- Especially good for insulation analysis
- Can be done when temperature inside is different from outside (best analysis is with 20 degree differential)



## Review appliances/Wattage measurements

- Energy descriptions on appliances
- Review age and condition of equipment
- Kill A Watt energy meter – buy or borrow from library (available at Arlington and Alexandria Libraries)
- Look for phantom usage (can eliminate with power strips, small switches at plug)





# Audit Report

- Analysis report on energy performance
  - Recommendations for energy efficiency improvements
  - Prioritization of improvements by costs, payback periods, ease or difficulty of implementation
  - Models “what if” scenarios
- 



## Who will do the audit?

- Professional
  - Where to find an energy auditor
  - Things to check before hiring an auditor
  - Our experience – pros and cons
- Do It Yourself
  - Where to find information and audit software on the web
  - Our experience with DIY – pros and cons





## Where to find a professional energy auditor

- **ACE** (Arlingtonians for a Clean Environment) has a directory. [www.arlingtonenvironment.org/greenchallenge/green\\_directory.pdf](http://www.arlingtonenvironment.org/greenchallenge/green_directory.pdf)
  - **VA Department of Mines, Minerals & Energy** – [www.dmme.virginia.gov/de/arra-public/EnergyAudit.shtml](http://www.dmme.virginia.gov/de/arra-public/EnergyAudit.shtml)
  - **RESNET** (Residential Energy Services Network) works on energy efficiency ratings systems standards. Lists companies at [www.resnet.us](http://www.resnet.us)
  - **Home Performance with Energy Star** – [www.energystar.gov](http://www.energystar.gov) limited listings for VA, but frequently updated
- 



## Selecting an energy auditor

Understand the difference between Energy auditors and Energy consultants

Avoid conflicts of interest –for example, auditors who implement their own recommendations

Due diligence – check references, BBB, multiple quotes

Decide what you want done and get an agreement in writing, ask for a sample audit

Check the cost – approximately \$300-\$500

Make sure you schedule the audit so that you can walk through with the auditor and ask questions. (half-day)

Field is new and ***not regulated***





# Our Experience with Professional Audit

- **Positive**
    - 3 tests included
    - Identified insulation problems & wall leaks
    - Tested duct work – found no problems
    - Indicated new windows would not be worthwhile
    - Discussed window condensation problem
  - **Could have been better**
    - Didn't do everything that I expected, but I didn't specify
    - All testing was leakage, didn't cover other 50%
    - Report was sloppy, used repetitious boiler plate
    - Tape over duct covers tore paint off covers
    - Report was over a month late
- 

## Do It Yourself ?



A consumer looking at her energy bills

## Do It Yourself ?

- Internet sites will make the job easier
- You can get high level info or drill down – depends on the time you want to spend



## Home Energy Saver Website

- [hes.lbl.gov](http://hes.lbl.gov) – most comprehensive, free to use
- Developed and maintained by Lawrence Berkeley National Laboratory, supported by DOE, EPA, CA Energy Commission
- Can use defaults or enter your own data
- Uses sophisticated climate models
- Breaks down energy usage, costs, CO2 emissions, payback times. Models what ifs. Recommends and prioritizes upgrades.
- This is the gold standard of this type of program – used by some commercial companies



# Home Energy Saver Website

Home Energy Saver

[Login](#) | [Help](#) | [About](#) | [Privacy](#) | [Media Room](#) | [Feedback](#)



## HOME ENERGY SAVER™

- Start
- Describe
- Compare
- Upgrade
- Learn

**ENERGY CALCULATOR**

Enter your zip code, or

Enter previous session #

**GO** **GO**

[Look up zip code](#)

*Save money, live better, help the earth!*

Over 6 million visits!



### Case Studies

"Home Energy Saver helped me save thousands of dollars per year. It is one government service that makes paying taxes worthwhile."

— Nick Wilder  
Wheat Ridge, Colorado

[Read more stories.](#) [Add yours.](#)

### Energy NewsWire

- [Airports Soar to New Heights with Alternative Fuels](#)
- [What Do You Love Most About Saving Energy?](#)
- [Hey There. Would You Like to Buy a Thneed?](#)

- [Get the latest on energy-efficiency tax credits](#)
- [Obama at Home Depot](#)
- [HES featured by Suzie Orman in Oprah Magazine](#)



### Are YOU set to save?

Please help us learn more about how thermostats get used (or not) with a 5 minute survey.

[Sure, I'll do the survey!](#)

More resources for: Teachers... [Energized Learning](#) • Professionals... [HESpro](#) • Help implementing our recommendations... [ENERGYSTAR.gov](#)



Created for the US Department of Energy



<http://res.lbl.gov/consumer/> (1 of 2) [2/22/2011 4:02:22 PM]



## Other Websites With DIY Energy Audit Information

- EERE - Energy Efficiency and Renewable Energy ([www.eere.energy.gov](http://www.eere.energy.gov))
- ASE - Alliance to Save Energy ([www.ase.org](http://www.ase.org))
- Energy Star ([www.energystar.gov](http://www.energystar.gov))





## My experience with DIY Audits

### ▪ **Positive**

- Drilled down to other 50% that professional audit didn't cover
- Got reports on paybacks, what ifs, etc
- Learned a lot, sorted out hype

### ▪ **Could have been better**

- Was not as technical, because I didn't have the equipment to do blower door or thermographic tests\*
- Took a lot of time to go into all the details
- Did not have the training/knowledge that a good professional auditor has



# Most Likely Issues for this area?

- What are our houses like?
  - Most houses 40's, 50's or older, brick/wood, generally well constructed, well maintained, mature trees
- Review our houses in terms of where the most energy goes





# Likely issues: Highest to Lowest Usage

## 1. Heating

- Poor insulation in older houses
- Non-programmable thermostats
- Energy inefficient older furnaces
- Leaks due to older construction techniques

## 2. Appliances and Lighting

- Incandescent lights (replace with CFLs, LEDs)
  - Complex electronic equipment, some using energy 24 X 7
  - Energy inefficient appliances
- 



## Likely Issues: Highest to Lowest Usage (continued)

3. Water Heaters
  - Energy inefficient water heaters
4. Cooling/AC
  - Poor Insulation
  - Non-programmable thermostats
  - Loss of shade trees
5. Refrigerators
  - Energy inefficient refrigerators





## Moral of the Story

- Knowing where your energy goes is a good thing. You won't know how to save energy/money if you don't know how much energy goes where.
  - There are many ways to get the knowledge.
  - Green is the latest thing that hype-sters have latched onto. Look at energy saving expenditures with a critical eye.
  - Don't necessarily throw everything out – equipment takes energy to make and transport. But when something breaks permanently or the cost to break even in a reasonable timeframe makes sense, make the energy saving change.
- 



# THE END

Questions, Comments?

Help Needed? Email: [barbara@bscl.org](mailto:barbara@bscl.org)





# Energy Audits for Your Small Business

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The Avenue Builders

Home Energy Rating System (HERS) Rater  
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# Energy Audits for Your Small Business/Commercial Building

Focus is on the minimizing energy contributions  
to the  
bottom line sustainability of a business.





# Good Energy Management is Good Business

Whether your business is manufacturing, real estate, retail, healthcare, education or government, controlling and cutting costs is important for success is important for success.

Reducing energy use and increasing energy efficiency is a proven strategy for cutting and controlling costs with good returns.



# Energy Contributions to a Business

Even with good returns, energy waste is still prevalent throughout organizations. Consider that:

A 400% variation in energy use intensity of buildings in the United States exists that is not explained by age, technology, hours, size, climate.

Little improvement of overall energy consumption has been seen although building components are 30% more efficient since 1980.

Oversizing building fan systems, on average, occurs by 60%.  
Most chillers are oversized by 50–200%.



# Energy Contributions to a Business

Unfortunately, capturing energy waste has been hampered by a lack of focus on energy management. Too often energy management is characterized as:

Decentralized

Poorly-coordinated

Focused on paying bills & running the powerhouse

Reactive

Undervalued

Considered capital intensive



# Indirect Benefits of an Energy Audits for Your Small Business

Improve productivity

Lower operating/maintenance costs

Better customer comfort

Increased asset value

Enhanced public image



# Preparing for an Energy Audits for Your Small Business

Energy bills

Operating parameters (hrs of operation, number of employees, etc.)

Inventory of equipment

Specific concerns (comfort)



**The Avenue Builders  
Office  
Alexandria, Virginia**

**Carried out energy  
audit and energy  
efficiency retrofits**





# Energy Factors in a Business

Building Envelope

Equipment

Occupant Behavior

Operations and maintenance





# Building Envelope

Walls

Ceilings/Roofs

Foundation

Windows

Insulation levels/optimization





# Building Envelope





# Equipment

Temperature Controls

Timer Controls

Lighting

Ventilation

HVAC equipment

Office equipment

Kitchen equipment

Water usage

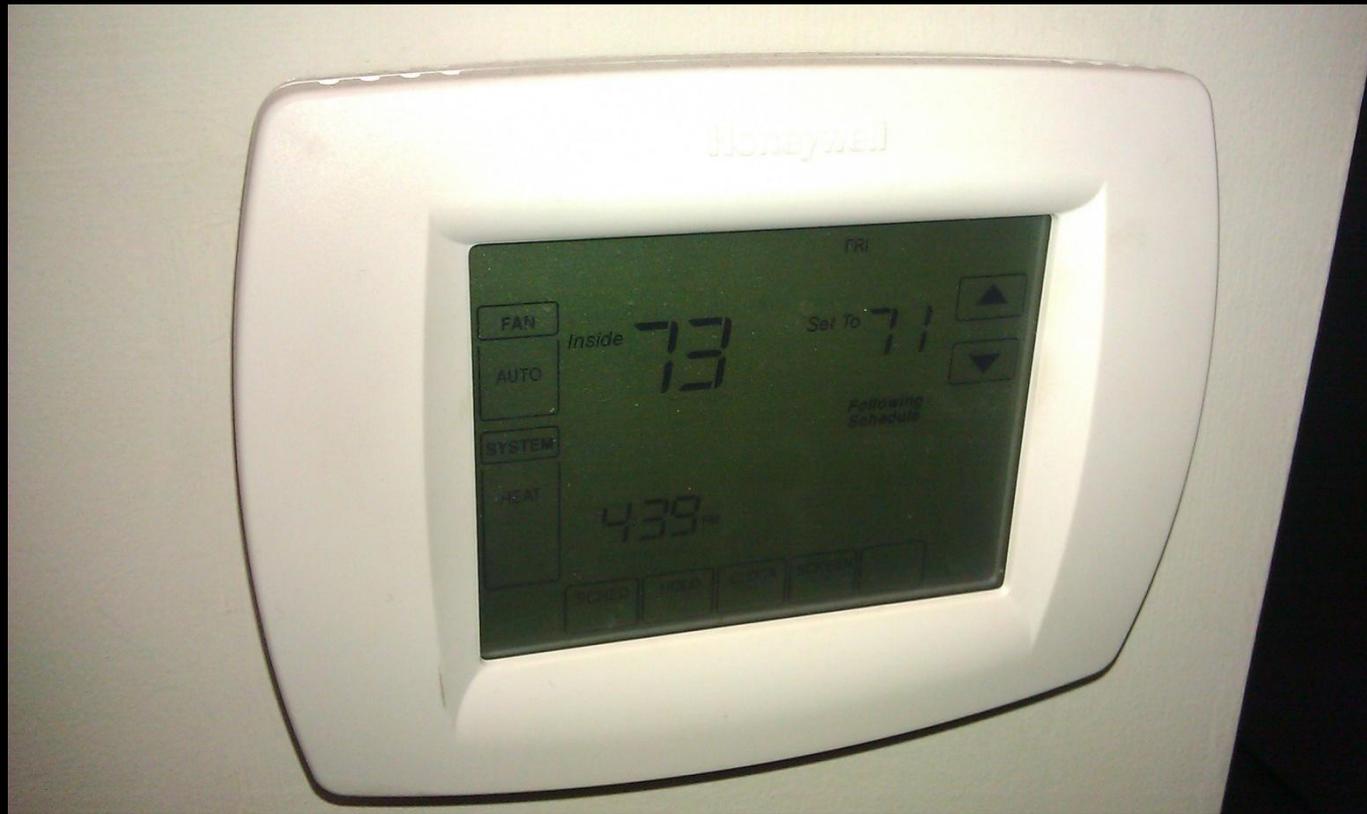


# Equipment





# Equipment



# Equipment



# Lighting



T 8 fluorescent



T 12 fluorescent

Generally – T8 bulbs are approx. 40% more efficient



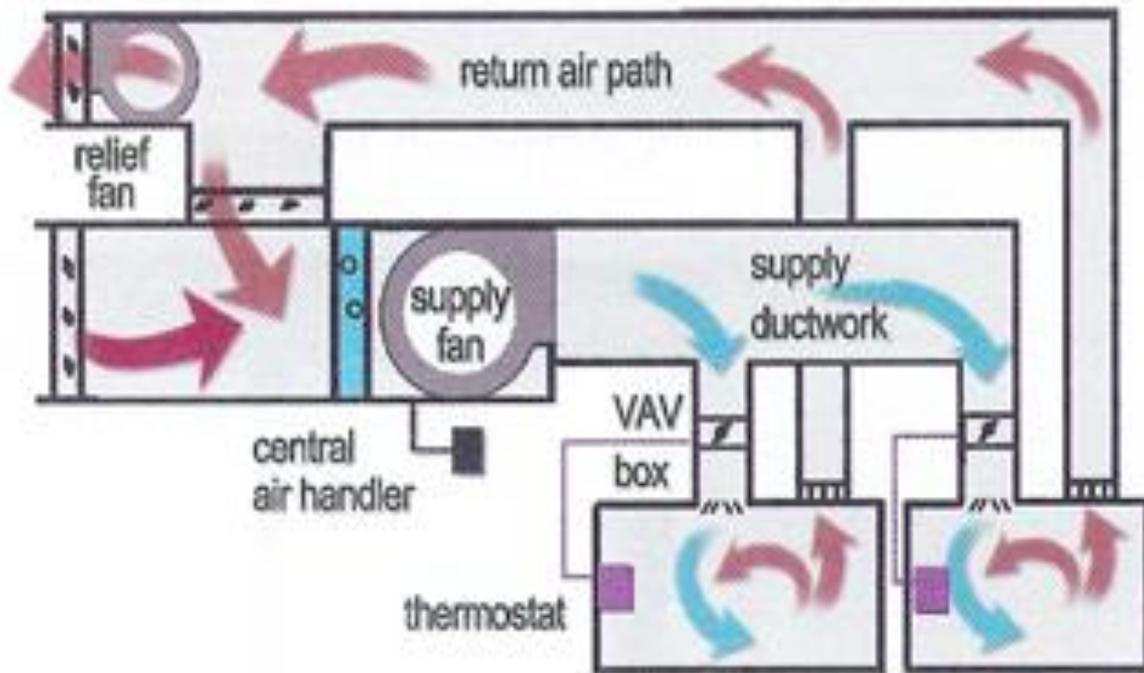


# Lighting



# Equipment

## Components of a VAV System





# Operations and Maintenance

Equipment function

Thermostat calibration

Damper adjustment

Janitorial best practices





# Occupant Behavior

Equipment use

Energy awareness programs

ENERGY STAR equipment purchase

Daylight harvesting

Workstation task lighting installation

Thermostat optimization





# Develop a Plan of Action

Assign a champion

Prioritized plan

Calculate payback for improvements

Financing alternatives

Ongoing monitoring and tracking and measure results





Questions?

Chris Bellanca

The Avenue Builders

[chris@theavenuebuilders.com](mailto:chris@theavenuebuilders.com)

703-299-9251

[www.theavenuebuilders.com](http://www.theavenuebuilders.com)





# Making a Difference

Audit and Weatherization Services  
for Low and Moderate Income  
Residents

**Katherine Medina, Executive Director  
Rebuilding Together Alexandria**





# What We Do

- **Rebuilding Together fills a pressing need in Alexandria.** The rising cost of living and falling social service budgets have left some of our most vulnerable residents without the most basic of necessities; a warm, safe, and dry home.
- RTA allows low-income residents to remain in their houses by providing free home repairs year round, including weatherization & energy efficient upgrades.
- Since 1986, thousands of volunteers have worked on more than 1,200 homes and non-profit agencies in Alexandria and in the Gulf.





## The Story of Our Clients

2010 Household Income: \$21,762  
Average Age: 72  
# of People in Home: 1.86  
Disabled Homeowner: 54%  
Female Head of Home: 55%





# Income Qualifications

▪ 1 person living in home	\$45,100
▪ 2 people	\$51,550
▪ 3 people	\$58,000
▪ 4 people	\$64,400
▪ 5 people	\$69,600
▪ 6 people	\$74,750





# Upcoming Projects

- **Fall: Energize Alexandria Day!**

- Weatherization & energy efficient upgrades
- October 22

- **Year Round**

- Weatherize on a case by case basis















# Savings

- If you add up all the hidden air leaks in your home, they can equal a hole the size of an open window—and can lead to a higher energy bill
- Compact fluorescent light bulbs (CFLs) save about \$30 or more in energy costs over the bulb's lifetime
- Heating and cooling equipment that has the ENERGY STAR rating, combined with properly sealed ducts can save up to 20% on energy bills and may also improve the comfort level in your home
- Properly caulking and weather-stripping doors and windows reduces heating and air conditioning usage by 10-20%





## Contact Information

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**Rebuilding Together Alexandria**  
700 Princess Street  
Mezzanine Suite 2  
Alexandria, VA 22314

703.836.1021  
[rebuildingtogetheralex.org](http://rebuildingtogetheralex.org)





# Incentives for energy retrofits

## Local Utility Programs

- Dominion
  - CFL price reductions (residential)
  - HVAC and lighting upgrade rebates (commercial)
- Washington Gas
  - Rebates for gas hot water retrofit, programmable thermostats, and home energy system check ups

## Virginia Programs

- ENERGY STAR and WaterSense appliance tax free holiday
- Solar energy equipment tax exemption (residential & commercial)
  - offered by City of Alexandria

## Federal Programs

- Tax credits for residential efficiency and renewables installations
- Tax deductions for commercial buildings that reduce energy use

**FIND OUT MORE AT ALEXANDRIA'S GREEN BUILDING RESOURCE CENTER (<http://alexandriava.gov/gbrc>)**





## Resources from Workshop 2: Energy Audits for Your Home and Small Business

### *Free Energy Assessment Program! Offered by City of Alexandria*

*Over the next year, the City will provide, free of cost, 8 assessments for four (4) building types in Alexandria. Building types are: Single Family, Multifamily, Small Office, and Commercial. Each building will receive both a survey, a basic energy assessment, and a comprehensive audit of the building and its systems.*

**Apply Today via the GREEN BUILDING RESOURCE  
CENTER (<http://www.alexandriava.gov/gbrc>)  
between March 11-April 8**

Questions? Contact Erica Bannerman, 703.746.4067 or Katye Parker, 703.746.3819.





## Resources from Workshop 2: Energy Audits for Your Home and Small Business

[www.alexandriava.gov](http://www.alexandriava.gov)

[www.ase.org](http://www.ase.org)

[www.bpi.org](http://www.bpi.org)

[www.energystar.gov](http://www.energystar.gov)

[www.eere.doe.gov](http://www.eere.doe.gov)

[hes.lbl.gov](http://hes.lbl.gov)

[rebuildingtogetheralex.org](http://rebuildingtogetheralex.org)

[www.resnet.us](http://www.resnet.us)

[www.smartbuildingdirectory.org](http://www.smartbuildingdirectory.org)

[www.vsbni.org](http://www.vsbni.org)

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CENTER (<http://alexandriava.gov/gbrc>)**

