



# AHFC's Energy Programs

**Betty Hall**

**Energy Information Specialist**



# Today's Topics

- Energy Programs
- Building Science 101
- Energy Saving Tips

# AHFC Programs

- Weatherization
- Home Energy Rebate
- New Home Rebate
- Second Mortgage for Energy Conservation
- Alaska Energy Efficiency Revolving Loan Fund
- Interest Rate Reductions for Energy Efficiency



# **Weatherization** PROGRAM

- Individuals who meet income guidelines may apply for the Weatherization Program
- Homeowners and renters may apply
- The weatherization provider will provide program services at no cost to qualified applicants
- Individuals may not participate in both the Weatherization Program and the Home Energy Rebate Program



# **Weatherization** PROGRAM

***Individuals who meet income guidelines may apply for the Weatherization Program through the weatherization service provider in their area:***

- Fairbanks, the North Star Borough or on the road system south to Cantwell and east to Delta Junction: **Interior Weatherization** 452-5323 or 1-800-478-5323 [www.interiorwx.org](http://www.interiorwx.org)
- Mat-Su Borough, Kenai Peninsula Borough, Copper River Valley, Southeast Alaska (except Juneau), Bristol Bay, Kodiak, Prince William Sound or the Aleutians: **Alaska Community Development** at 746-5680 or 1-800-478-8080 [www.alaskacdc.org](http://www.alaskacdc.org)
- Anchorage, Juneau, Western Alaska and Northern Alaska: **Rural Cap** at 1-800-478-7227 [www.ruralcap.com](http://www.ruralcap.com)
- Interior Alaska villages: **Tanana Chiefs Conference** at 1-800-478-6822 [www.tananachiefs.org](http://www.tananachiefs.org)
- If you are living in a house owned by a state designated housing authority, you may contact your housing authority directly.

***Homeowners and renters may apply.***

***The weatherization provider will provide program services at no cost to qualified applicants.***

***Individuals may not participate in both the Weatherization Program and the Home Energy Rebate Program.***

# FY 2010 100% OF MEDIAN INCOME LIMITS FOR ALASKA

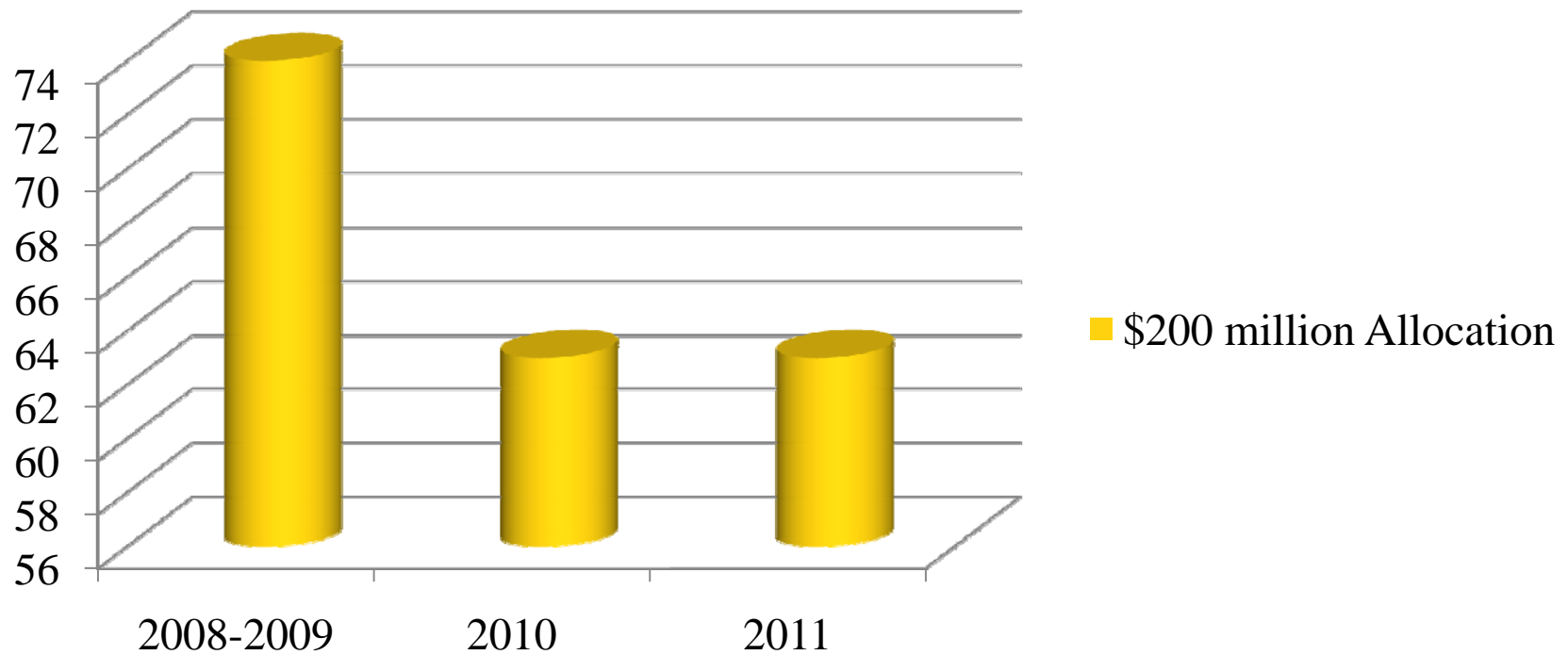
Effective  
May 14,  
2010

Community Name	INCOME LIMIT - 1 PERSON	INCOME LIMIT - 2 PERSONS	INCOME LIMIT - 3 PERSONS	INCOME LIMIT - 4 PERSONS	INCOME LIMIT - 5 PERSONS	INCOME LIMIT - 6 PERSONS	INCOME LIMIT - 7 PERSONS	INCOME LIMIT - 8 PERSONS
Anchorage Borough Low Income Limit	58,600	66,900	75,300	83,600	90,300	97,000	103,700	110,400
Aleutians East Borough Low Income Limit	50,400	57,600	64,800	71,900	77,700	83,500	89,200	95,000
Aleutians West Census Low Income Limit	67,500	77,100	86,700	96,300	104,100	111,800	119,500	127,200
Bethel Census Area Low Income Limit	57,900	66,100	74,400	82,600	89,300	95,900	102,500	109,100
Bristol Bay Borough Low Income Limit	55,700	63,600	71,600	79,500	85,900	92,300	98,600	105,000
Denali Borough Low Income Limit	65,800	75,200	84,600	94,000	101,600	109,100	116,600	124,100
Dillingham Census Area Low Income Limit	50,400	57,600	64,800	71,900	77,700	83,500	89,200	95,000
Fairbanks North Star Borough Low Income Limit	53,800	61,500	69,200	76,800	83,000	89,100	95,300	101,400
Haines Borough Low Income Limit	50,400	57,600	64,800	71,900	77,700	83,500	89,200	95,000
Juneau Borough Low Income Limit	63,700	72,800	81,900	91,000	98,300	105,600	112,900	120,200
Kenai Peninsula Borough Low Income Limit	50,400	57,600	64,800	71,900	77,700	83,500	89,200	95,000
Ketchikan Gateway Borough Low Income Limit	55,500	63,400	71,300	79,200	85,600	91,900	98,300	104,600
Kodiak Island Borough Low Income Limit	54,800	62,600	70,400	78,200	84,500	90,800	97,000	103,300
Lake and Peninsula Borough Low Income Limit	50,400	57,600	64,800	71,900	77,700	83,500	89,200	95,000
Matanuska-Susitna Borough Low Income Limit	53,000	60,500	68,100	75,600	81,700	87,700	93,800	99,800
Nome Census Area Low Income Limit	50,400	57,600	64,800	71,900	77,700	83,500	89,200	95,000
North Slope Borough Low Income Limit	59,500	68,000	76,500	84,900	91,700	98,500	105,300	112,100
Northwest Arctic Borough Low Income Limit	50,400	57,600	64,800	71,900	77,700	83,500	89,200	95,000
Prince of Wales (outer Ketchikan) Low Income Limit	50,400	57,600	64,800	71,900	77,700	83,500	89,200	95,000
Sitka City & Borough Low Income Limit	58,100	66,400	74,700	82,900	89,600	96,200	102,800	109,500
Skagway-Hoonah-Angoon Low Income Limit	50,400	57,600	64,800	71,900	77,700	83,500	89,200	95,000
Southeast Fairbanks Census Area Low Income Limit	50,400	57,600	64,800	71,900	77,700	83,500	89,200	95,000
Valdez-Cordova Census Low Income Limit	56,300	64,400	72,400	80,400	86,900	93,300	99,700	106,200
Wade Hampton Census Area Low Income Limit	50,400	57,600	64,800	71,900	77,700	83,500	89,200	95,000
Wrangell-Petersburg Census Area Low Income Limit	50,400	57,600	64,800	71,900	77,700	83,500	89,200	95,000
Yakutat City & Borough Low Income Limit	50,400	57,600	64,800	71,900	77,700	83,500	89,200	95,000
Yukon-Koyukuk Census Area Low Income Limit	50,400	57,600	64,800	71,900	77,700	83,500	89,200	95,000
<b>2010 DOE Poverty Income Levels</b>	<b>27,060</b>	<b>36,420</b>	<b>45,780</b>	<b>55,140</b>	<b>64,500</b>	<b>73,860</b>	<b>83,220</b>	<b>92,580</b>



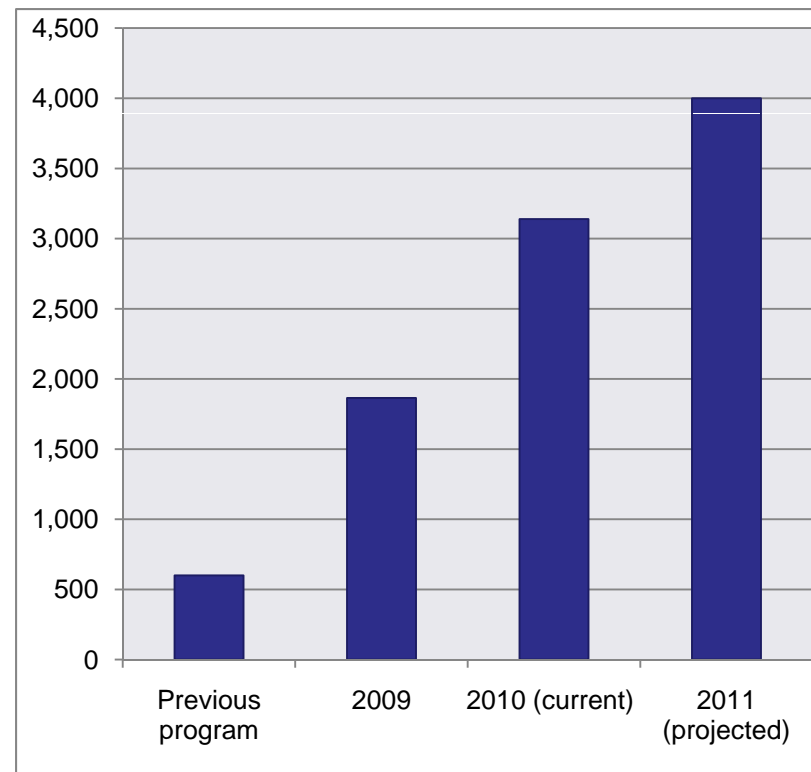
# Weatherization PROGRAM

**\$200 million Allocated**



## Homes Weatherized

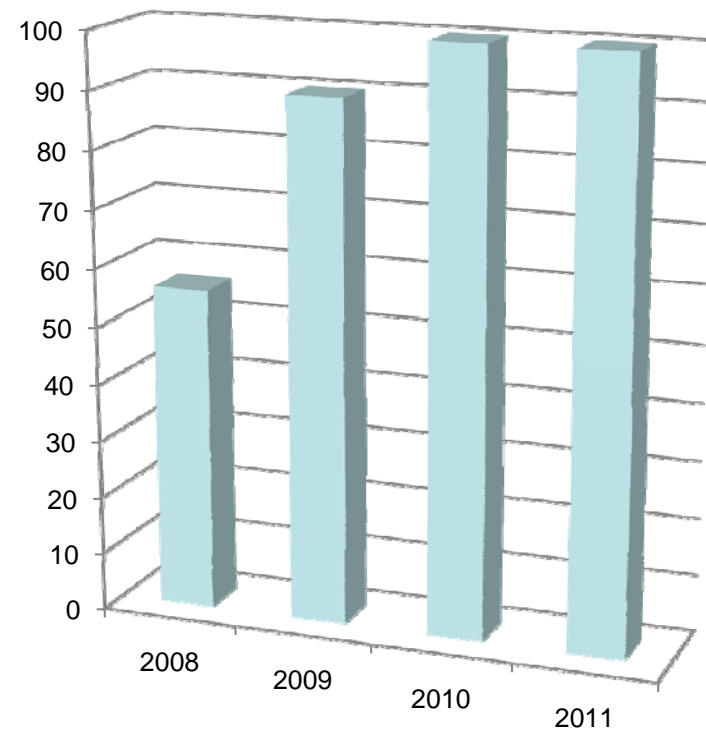
- 1978-2008: **600 annually**
- 2009: **1,864**
- 2010: **3,139** (current)
- 2011: **4,000** (projected based on funding)
- Statewide weatherization providers and housing authorities have now achieved a sustainable capacity.



# **Weatherization** PROGRAM

## Communities Served

- 2008: **56**
- 2009: **90**
- 2010: **100+**
- 2011: **100+**





# **Home Energy Rebate** PROGRAM

- For individuals who do not qualify for Weatherization Program
- No income requirements
- Owner-occupied, year-round residences
- Homeowners pay upfront & are then rebated for making eligible improvements they choose
- “Before & After” energy ratings required
- Individuals may not participate in both the Weatherization Program and Home Energy Rebate Program



## How do I participate?

1. **Request a home energy rating.** Sign-up at [www.akrebate.com](http://www.akrebate.com) or contact the AK-REBATE *Call Center* at 1-877-257-3228.
2. **Get the first rating.** A rater will call to schedule and perform the first energy rating. Rater fees vary, so ask for their rate. Contact the *Call Center* if you would like a different rater.
3. **Fill out and send in the first energy rating paperwork.** You will be entered into the program and reimbursed up to \$325 for the rating. **You have 18 months from the first rating to complete the program.**
4. **Choose and make the energy-efficiency improvements** listed in your energy rating.
5. **Get a second energy rating** after the improvements are done.
6. **Fill out and send in the final rebate paperwork.** You will be reimbursed up to \$175 for the rating and receive a rebate based on your home's improved energy-efficiency and your eligible receipts.



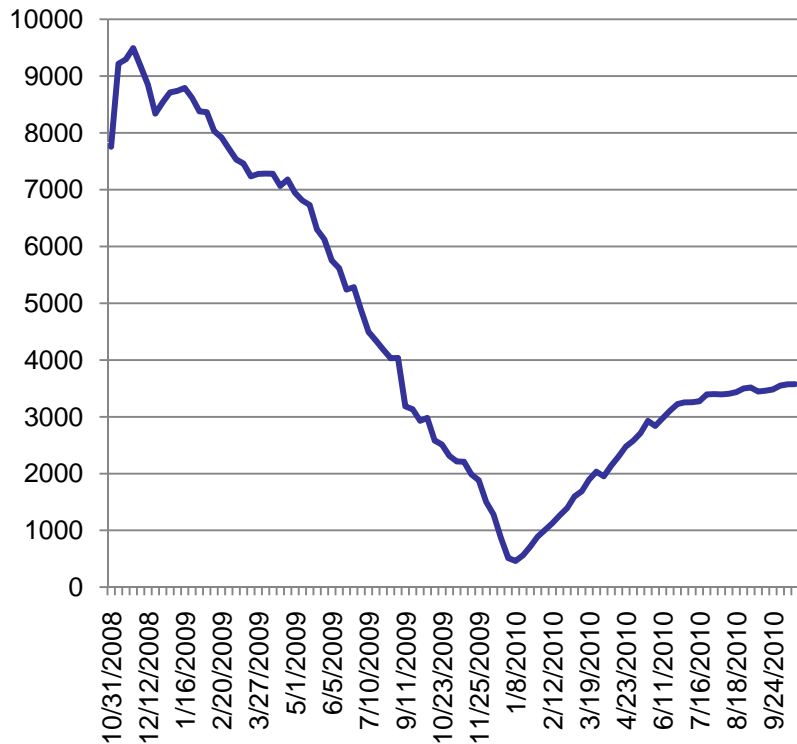
 **Home Energy Rebate**  
PROGRAM

**\$160 Million**

Funds: Fully obligated  
Expended: **\$98.4 million**

# Home Energy Rebate PROGRAM

Wait List: 3,311



Anchorage = 1,526

Fairbanks = 217

Juneau = 175



# **Home Energy Rebate** PROGRAM

## Program Snapshot

Average Costs of 11,800 Homeowners

**\$10,869** spent  
-\$6,303 rebate  
**= \$4,566 homeowner  
investment**

\$1,535 annual energy savings  
3 year payback



# Home Energy Rebate PROGRAM

## Energy & CO2 Results

HOMES	Before	After	Total Saved	Per Home
9,840				
<b>Energy Cost</b>	\$51,429,591	\$36,680,758	\$14,748,833	<b>\$1,535/yr</b>
CO2 lbs/year	422,132,557	300,342,735	121,789,822	12,443 lbs/yr
Rating Stars	2+	4		3 steps
BTUS			<b>978 Billion</b>	99.48 Million

Average energy use reduced 33.15 percent

Average energy cost reduced 30 percent

Equivalent energy savings:

- 168,766 barrels of crude oil
- 7 million gallons of fuel oil
- 717 gallons of fuel oil per home



# Home Energy Rebate & Weatherization *Results*

April 2008 – March 29, 2011

Ratings  
41,475

Rebates  
12,719

5+ Homes  
995

Weatherized  
5,003

18,717 homes now more energy efficient since 2008



# Home Energy Rebate & Weatherization *Results*

## BEFORE

(1996 - March 2008)

## AFTER

(April 2008 – March 30, 2011)

• Ratings	25,557	<b>40,480</b>
• Rebates	n/a	<b>12,719</b>
• 5+ Homes	2,345	<b>995</b>
• Weatherized	10,704	<b>5,003</b>

18,717 homes now more energy efficient since 2008

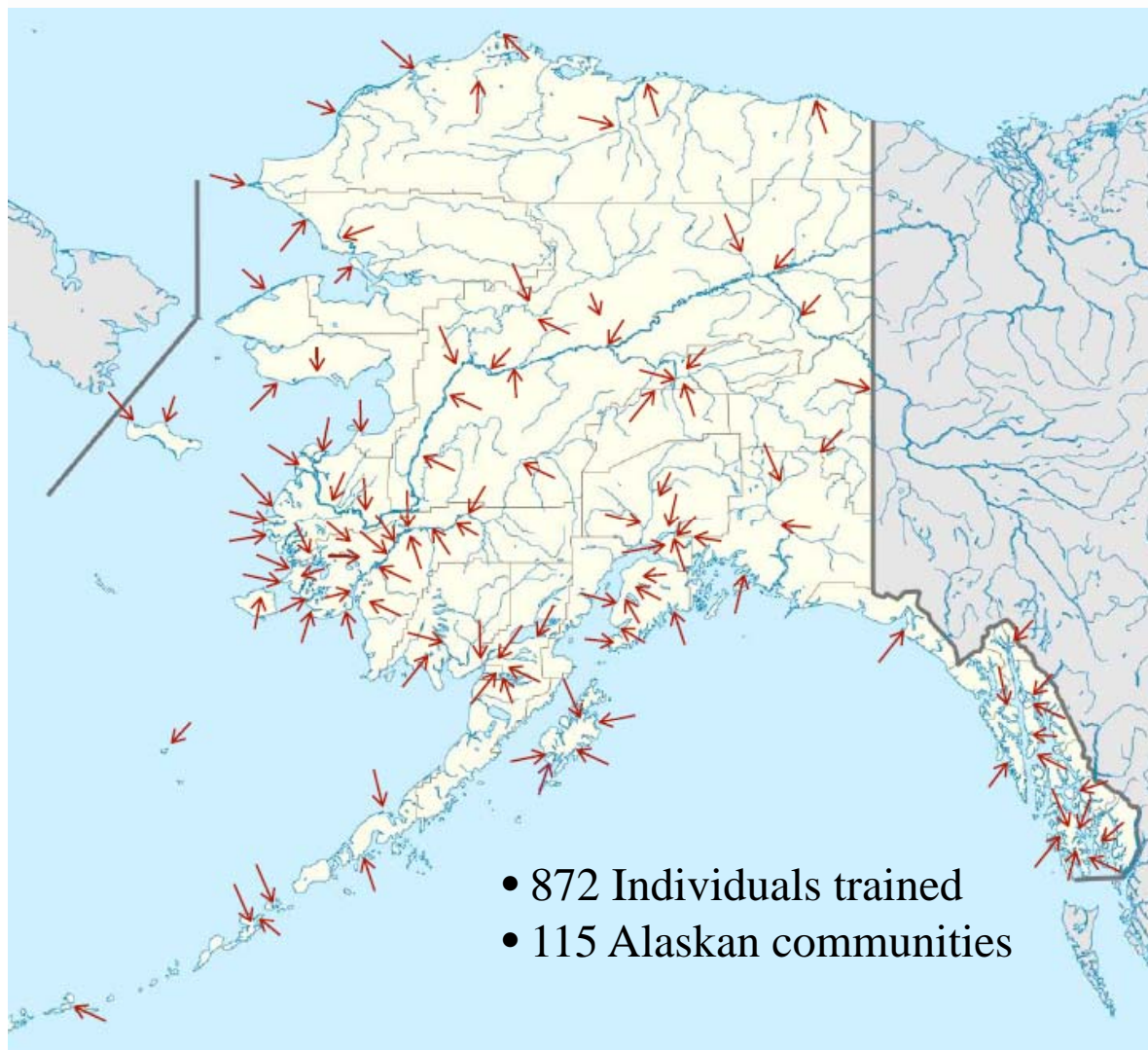


# Job Creation & Retention

Estimate 2,500 jobs created:

- 1,500 from weatherization
- 1,000 from rebate
- ISER confirmation in progress

## 2008-2010 Residential Weatherization Training



✓ Alaska Works Partnership Inc.

✓ Alaska Housing Finance Corp

✓ Denali Commission



# New Home Rebate

- There is a \$7500 rebate for a new 5 Star Plus home.
- Purchased on or after April 5, 2008.
- Not more than 1 year old at time of sale.
- For original owner.
- Must meet all AHFC property financing requirements & have a 5 Star Plus energy rating.
- Individuals participating in the 5 Star Plus New Home Energy Rebate may not participate in the Home Energy Rebate program for existing homes or the Weatherization Program.

**To Participate:** Call AK-REBATE at 1-877-257-3228



# **New Home Rebate**

**5\*+ Homes to date: 995**

**Total spent: \$7,462,500**

3.29.2011



# Second Mortgage for Energy Conservation

## 2<sup>nd</sup> Mortgage up to \$30,000

- 15 Year Loan at the Taxable Rate
- 90% LTV single family and duplexes
- 80% LTV for triplexes and fourplexes
- Must meet AHFC requirements
- Energy Rating
- Rebate applied to loan

**To Participate:** Call Alaska USA Federal Credit Union  
907-786-2800 (toll free 1-888-425-9813)



## Second Mortgage for Energy Conservation

- Second mortgage up to \$30,000
  - 15 Year Loan at the Taxable Rate
  - Active Loans: **89**
  - Loans Paid Off: **39**



# Alaska Energy Efficiency Revolving Loan Fund (AEERLF)

**“Alaska Sustainable Energy Act” - \$250 million revolving loan fund**

- Energy efficiency improvements for
  - Regional Educational Attendance Areas (REAs)
  - University of Alaska
  - State facilities
  - Municipal facilities
- Guaranteed savings from energy efficiency improvements are used to pay off the loan
- Requires Retrofit Energy Assessment for Loan (REAL)



## Goals of the AEERLF program:

- Reduce energy costs for public facilities by providing funding for comprehensive energy efficiency retrofits that go beyond lighting and heating system upgrades
- Get baseline data for Alaska: energy consumption/sf for buildings with specific energy end uses



# Retrofit Energy Assessment for Loan (REAL)

- **Initial Project Evaluation**
  - Energy benchmark
- **Energy Audits**
  - Audits by Certified Energy Auditor (CEA) or Certified Energy Manager (CEM) certification through the Association of Energy Engineers (AEE), or an AHFC-approved equivalent.
- **Energy Performance Contracts (EPCs)**
  - Energy Service Companies (ESCOs) qualified by Alaska Housing Finance Corporation (AHFC) and Alaska Department of Transportation and Public Facilities (DOT/PF) may be used.

Retrofits may be managed by qualified Energy Service Companies (ESCOs) or the facility owner (if under \$250,000).



# Benchmark Effort Underway

- Two firms collecting data statewide –
- Asking for building inventory, age, size, occupancy, energy use
- First time effort to capture statewide public facility energy use



## **Benchmark Effort Underway**

- State DOT also collecting benchmark information on state owned facilities
- University collecting on UA system facilities
- All added into Alaska Retrofit Information System (ARIS) database

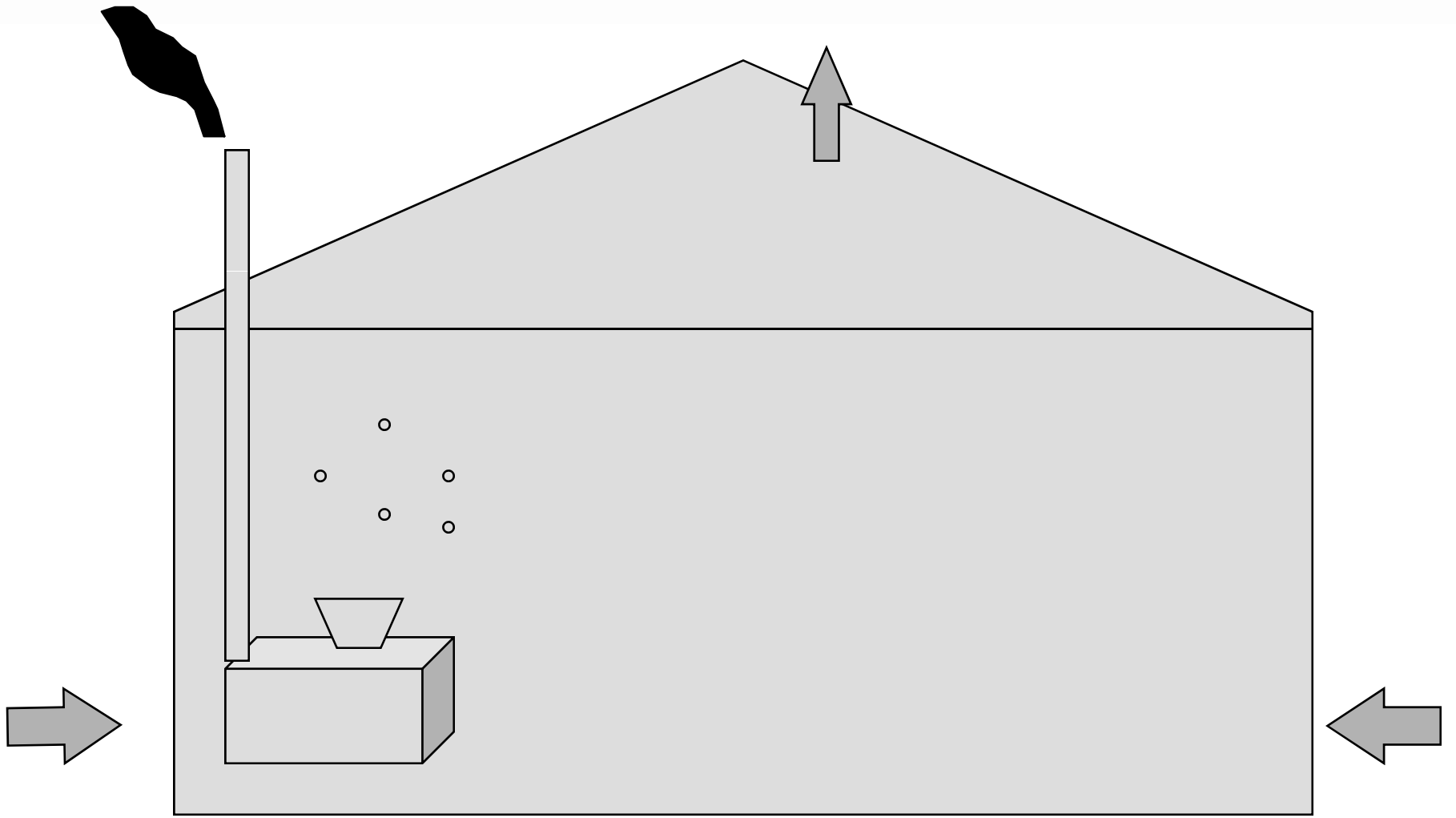


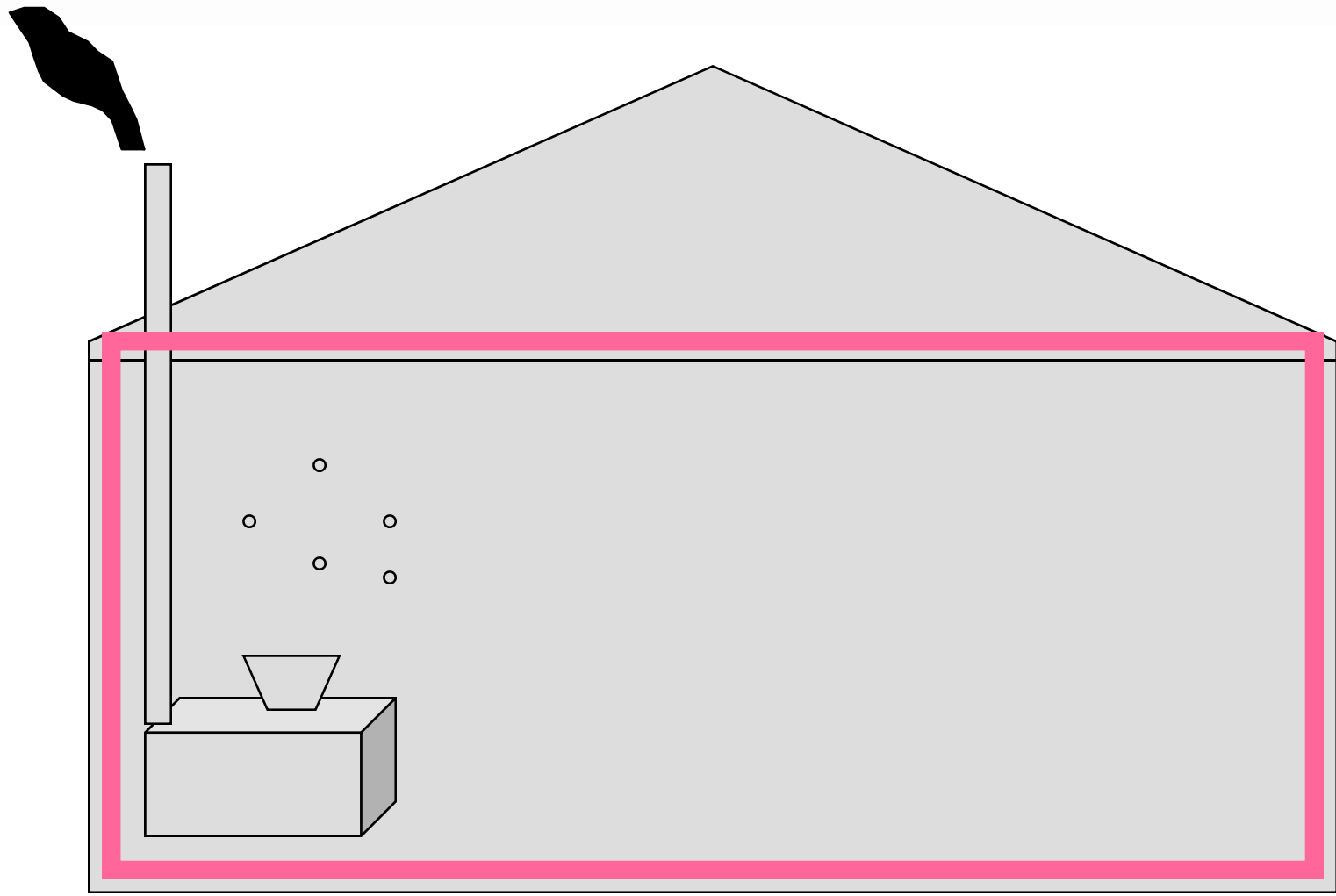
# Education

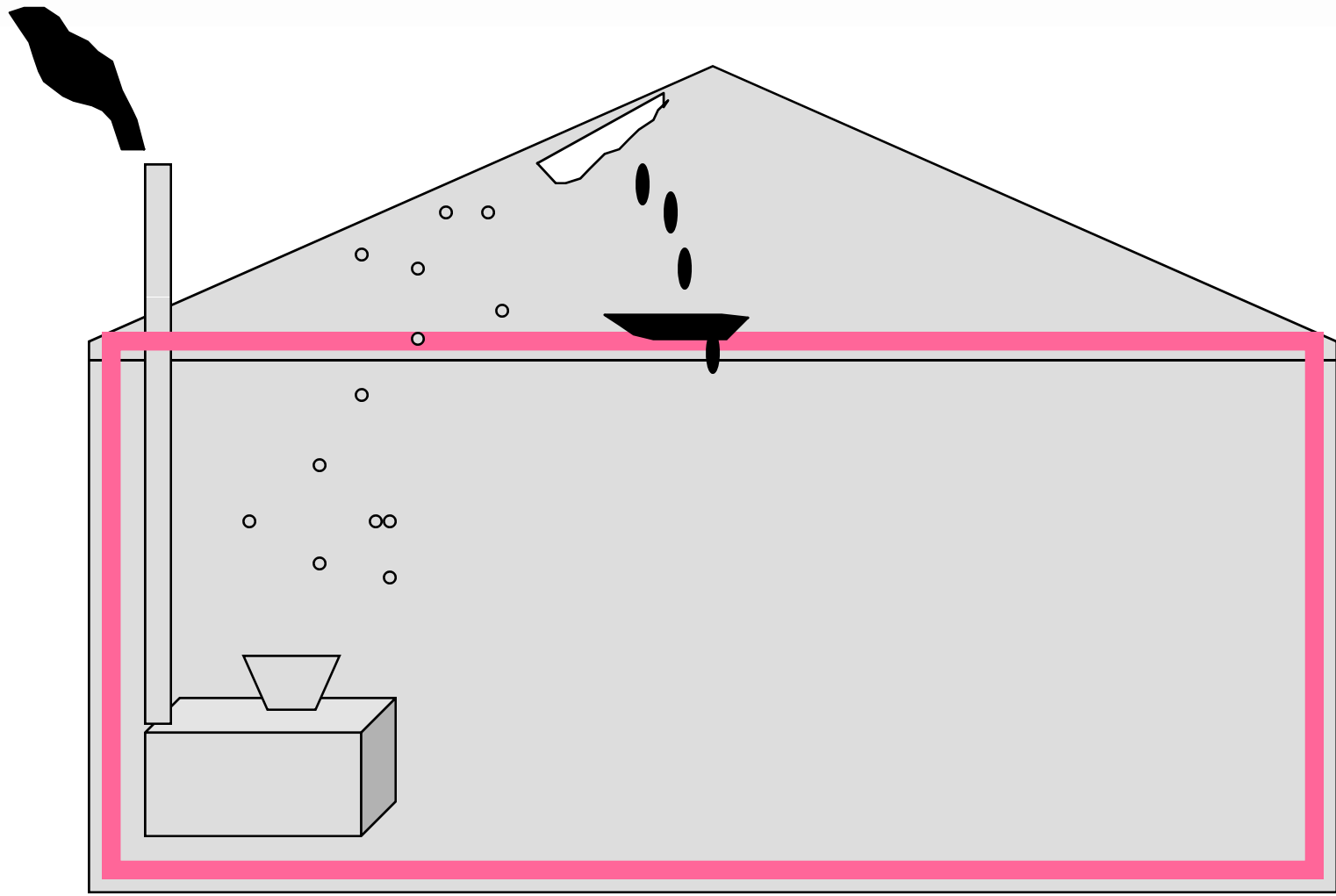
# Building Science 101

## The House is a System







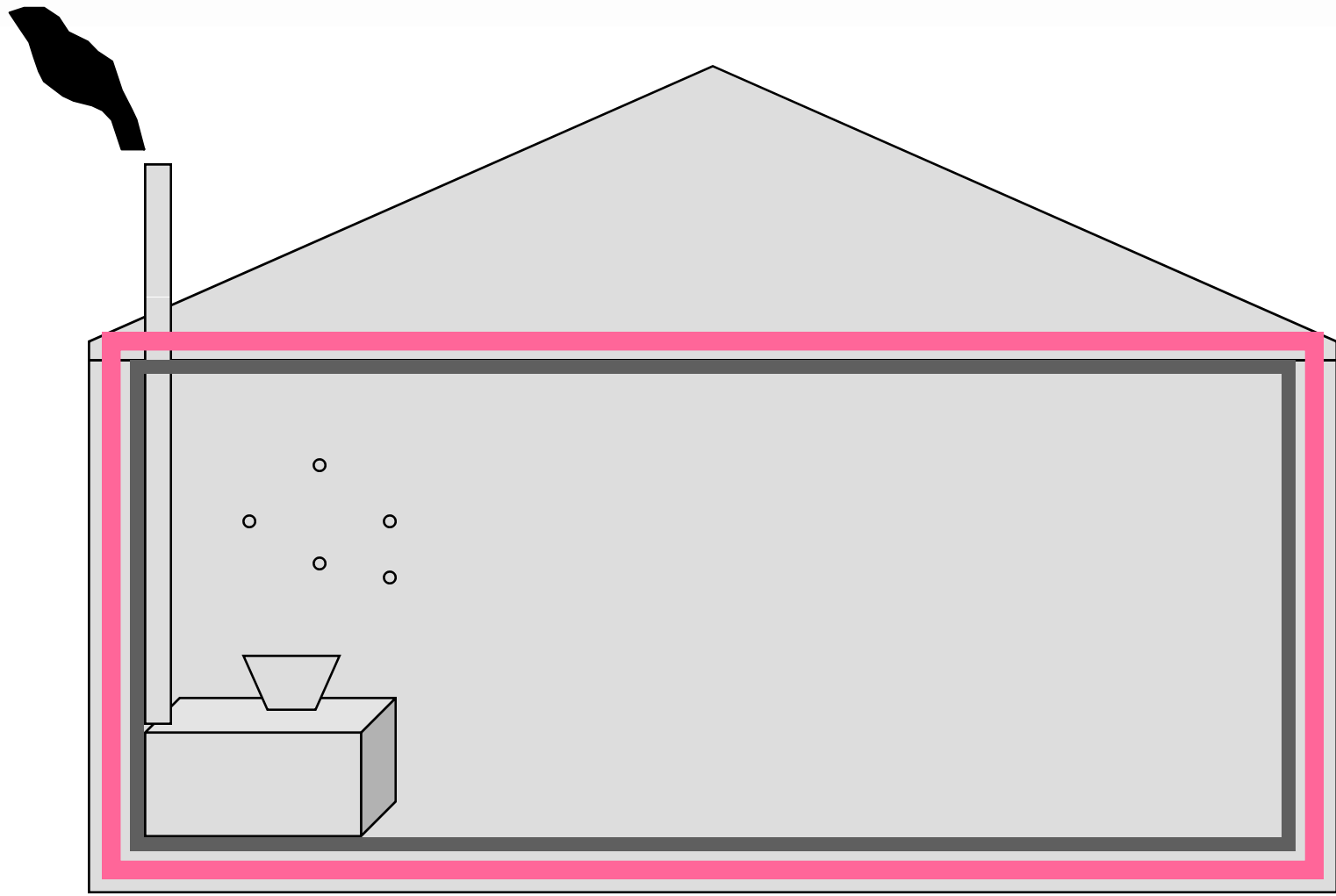


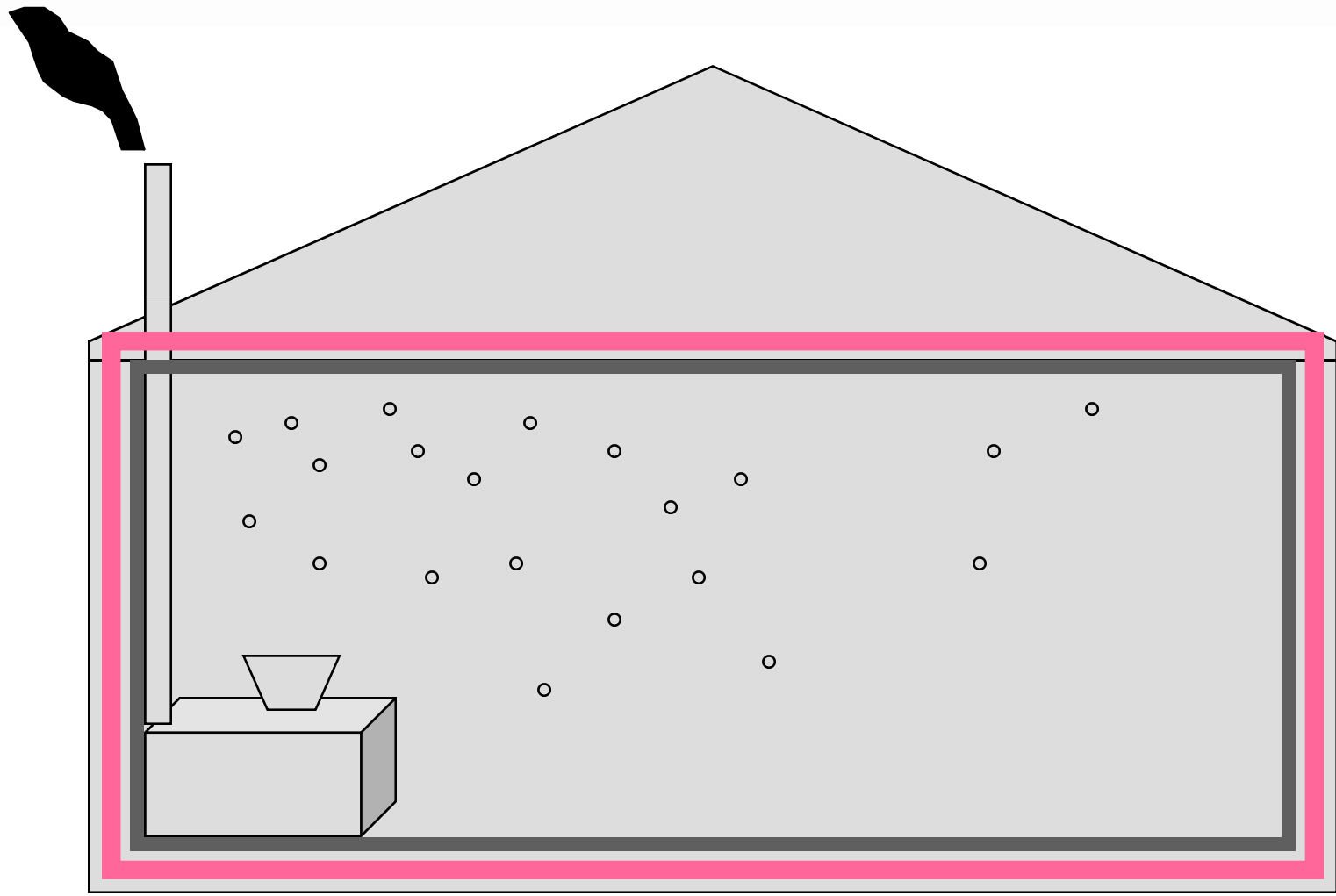






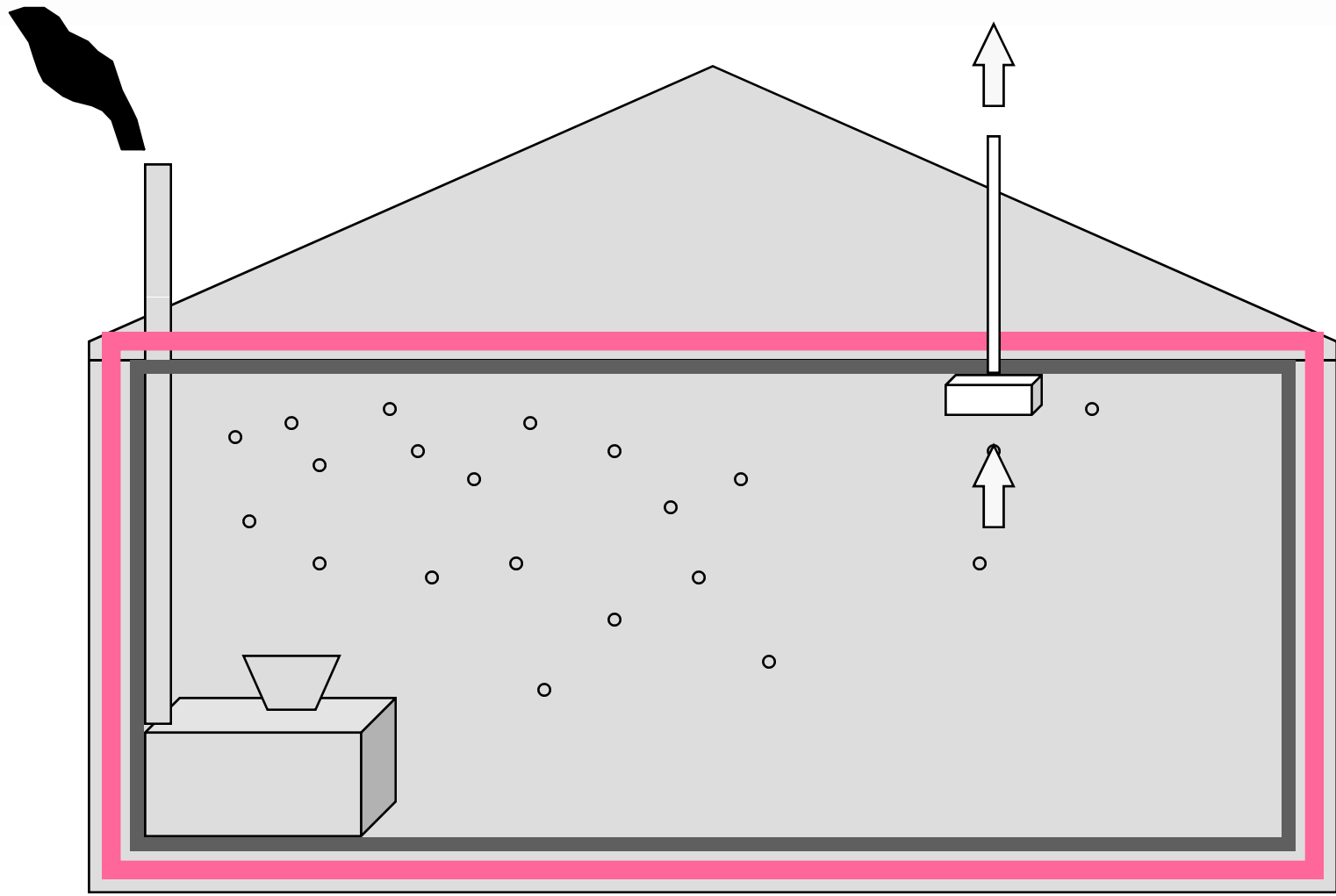




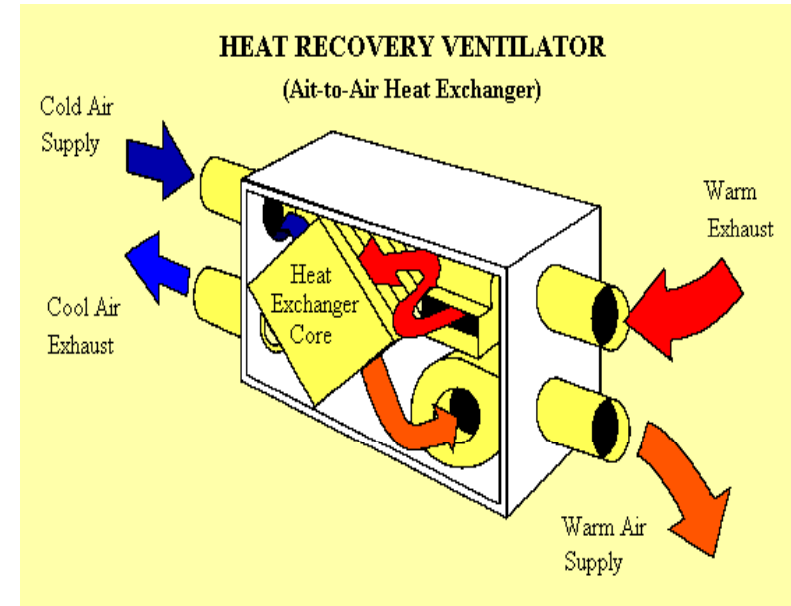
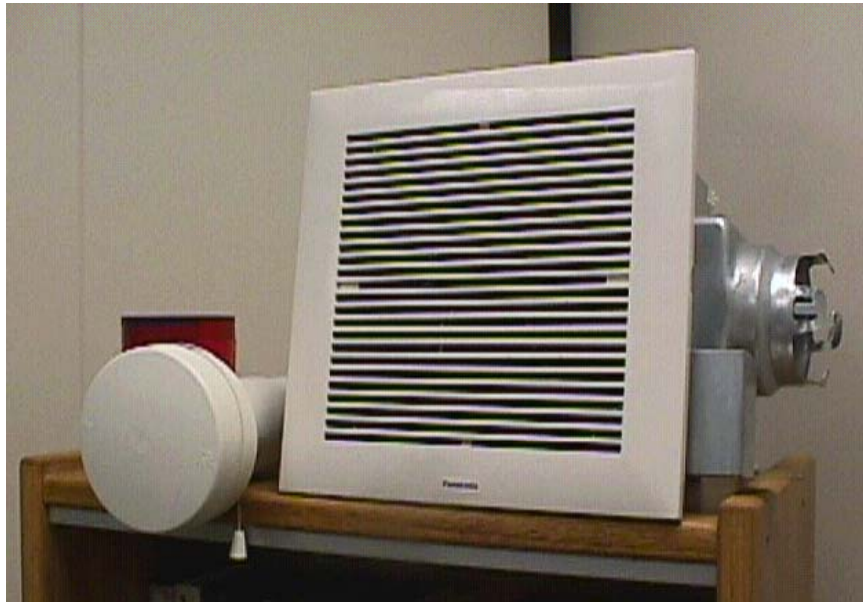




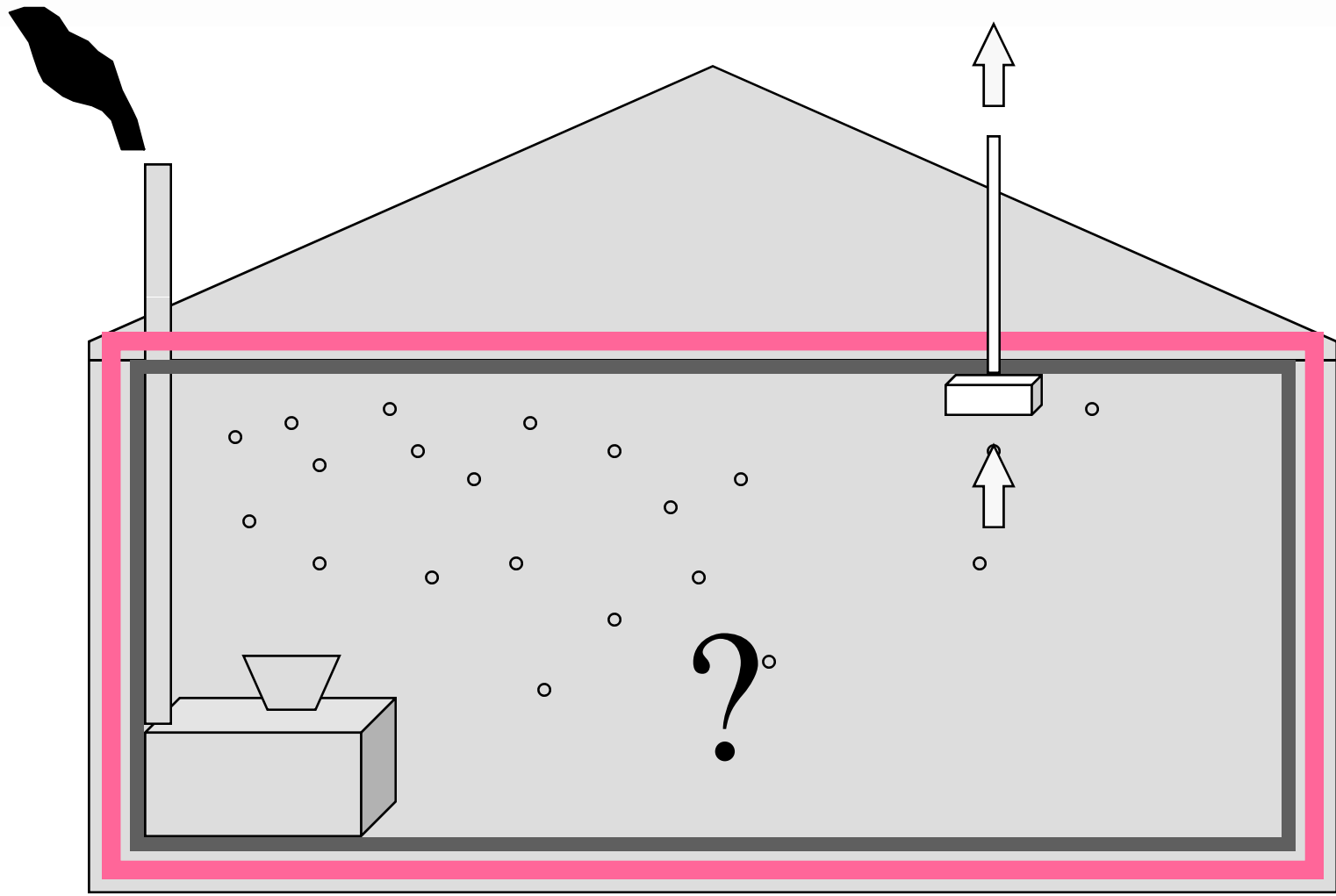


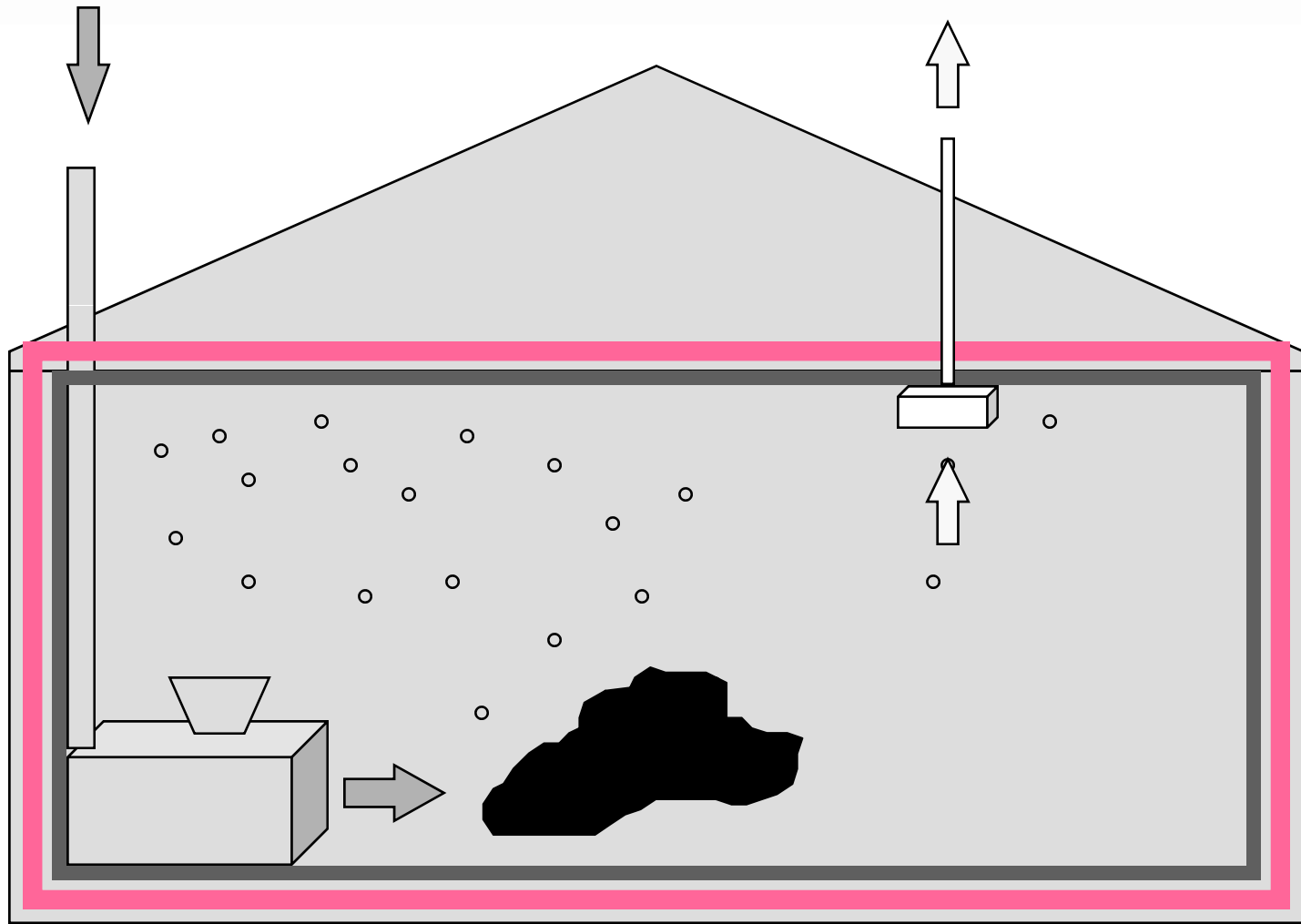


# Ventilation System



*“Build tight, ventilate right”*

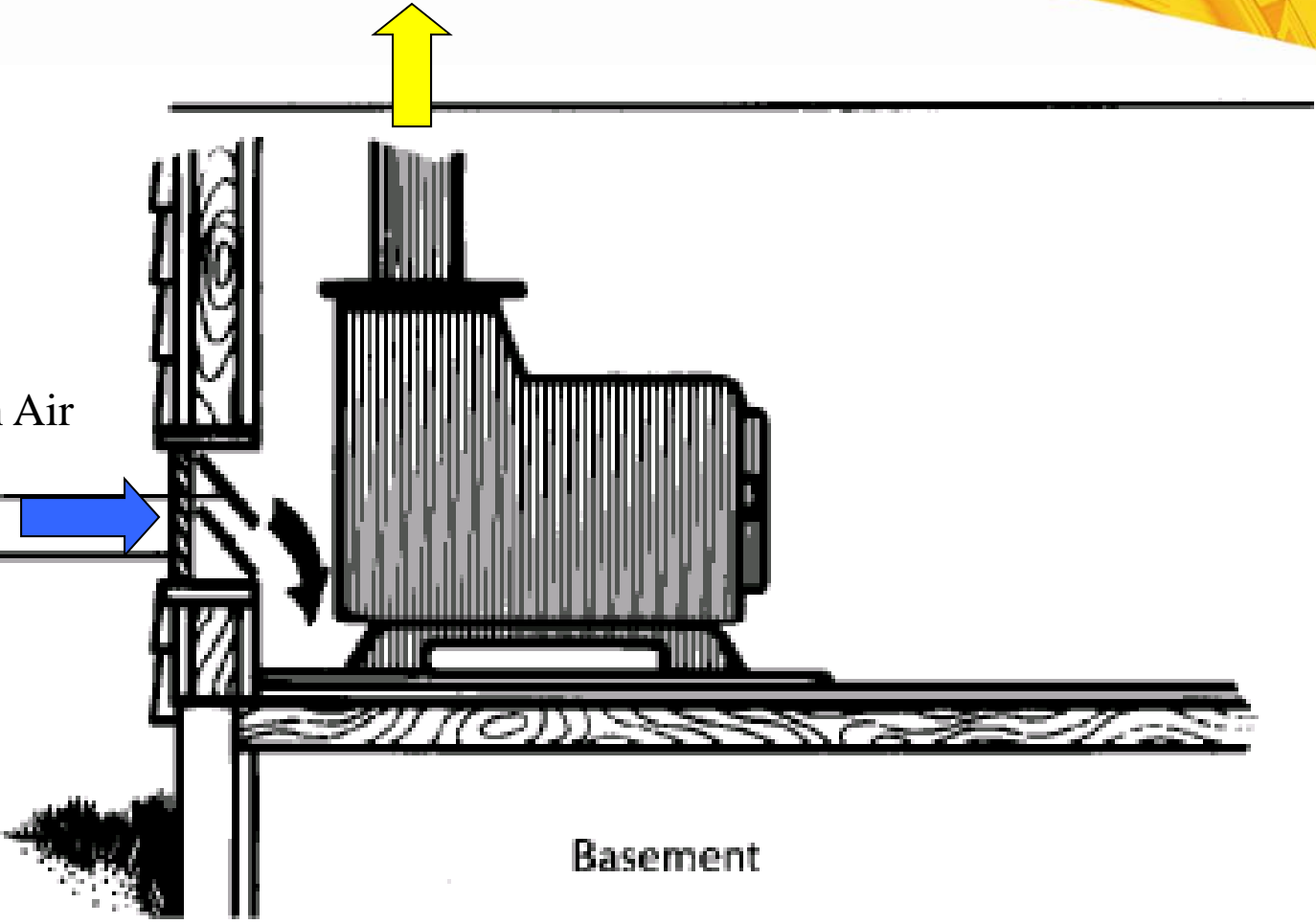




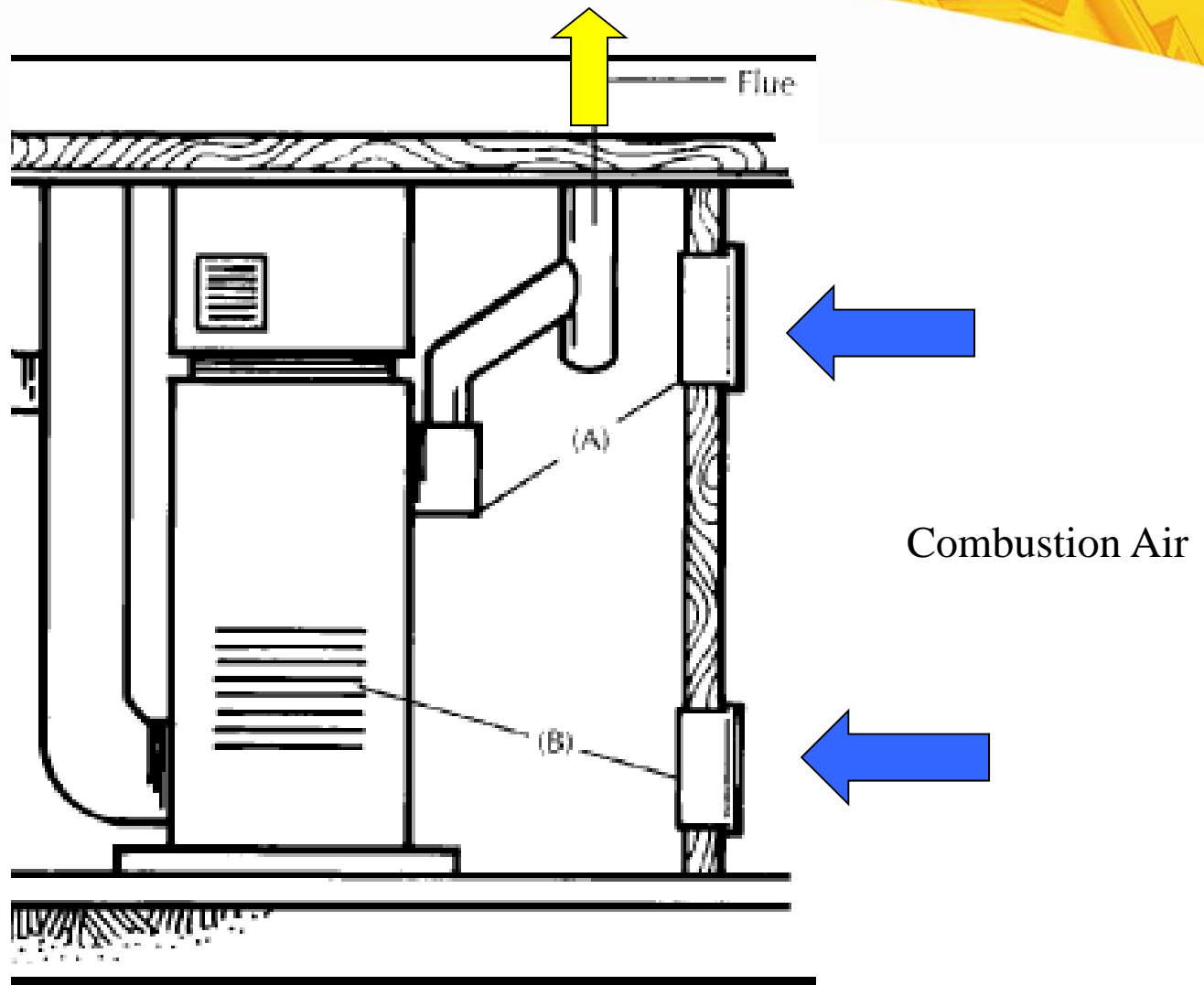
Combustion Air

Damper

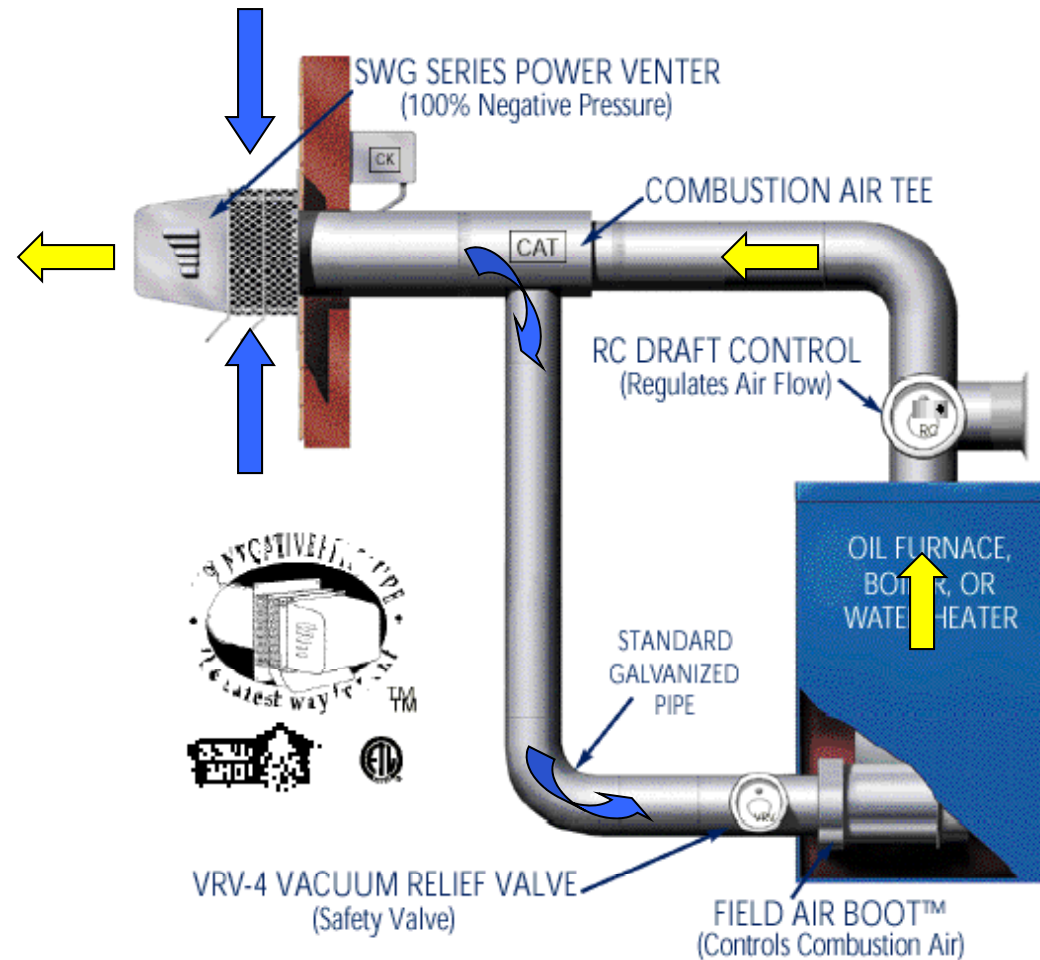
Register



Basement

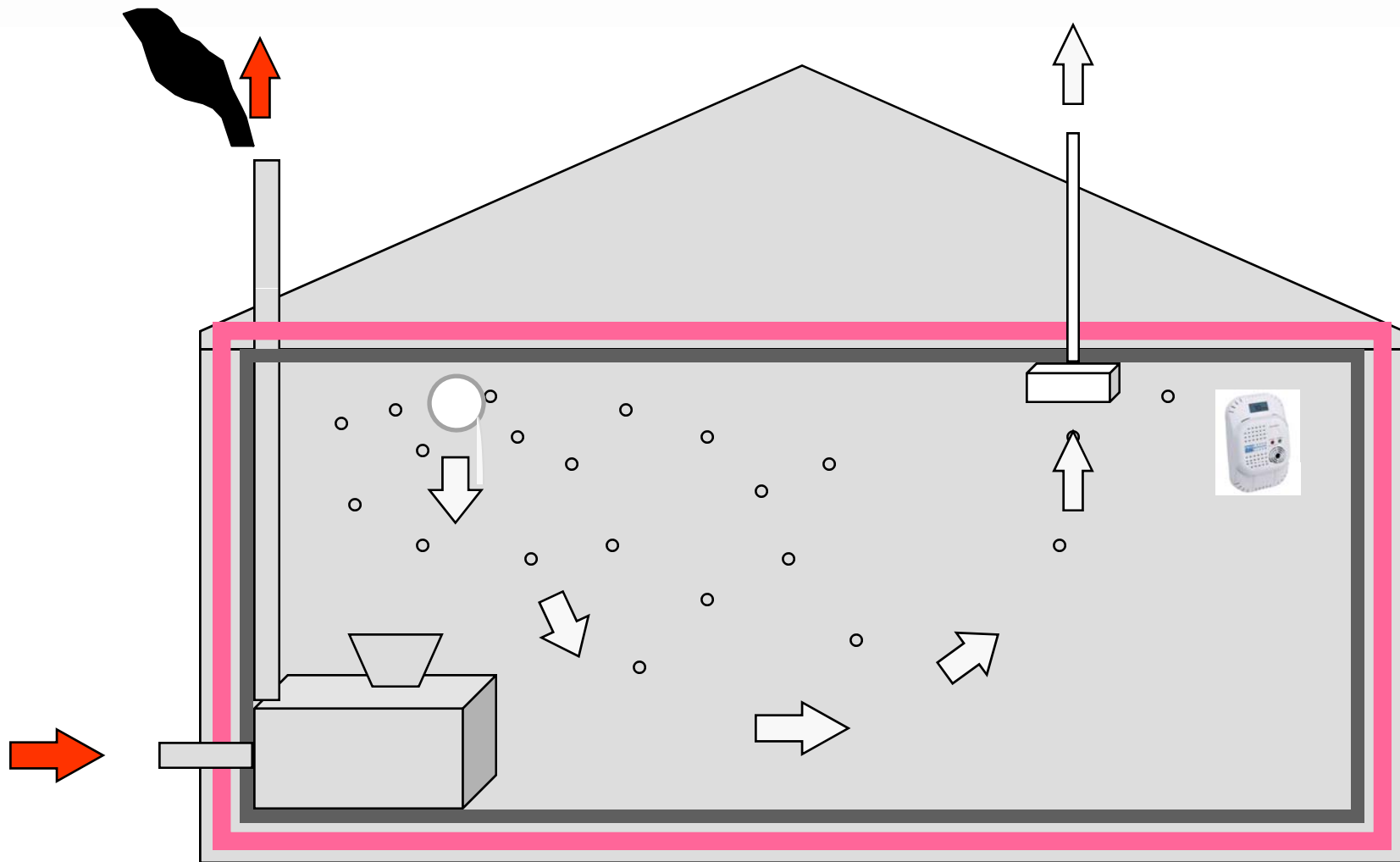


# Direct Vent or Sealed Combustion Heating & Hot Water Heaters



# The House is a System

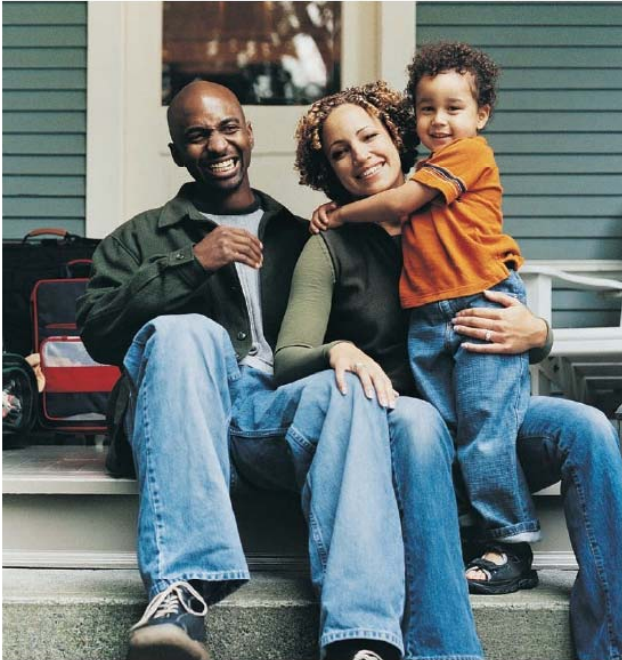
*“Build tight...ventilate right!”*



# Energy saving tips


*Be an informed consumer!*

# Air Sealing & Insulating Information



A photograph of a smiling family of three—a man, a woman, and a young child—sitting on the steps of a house. The man is on the left, the woman is in the middle, and the child is on the woman's lap. They are all dressed in casual attire.

A DO-IT-YOURSELF GUIDE TO SEALING AND INSULATING WITH ENERGY STAR®  
SEALING AIR LEAKS AND ADDING ATTIC INSULATION



ENERGY STAR



More information at [www.energystar.gov](http://www.energystar.gov)

*Some items may qualify for federal tax credits.*

# Plug the holes in the ceiling

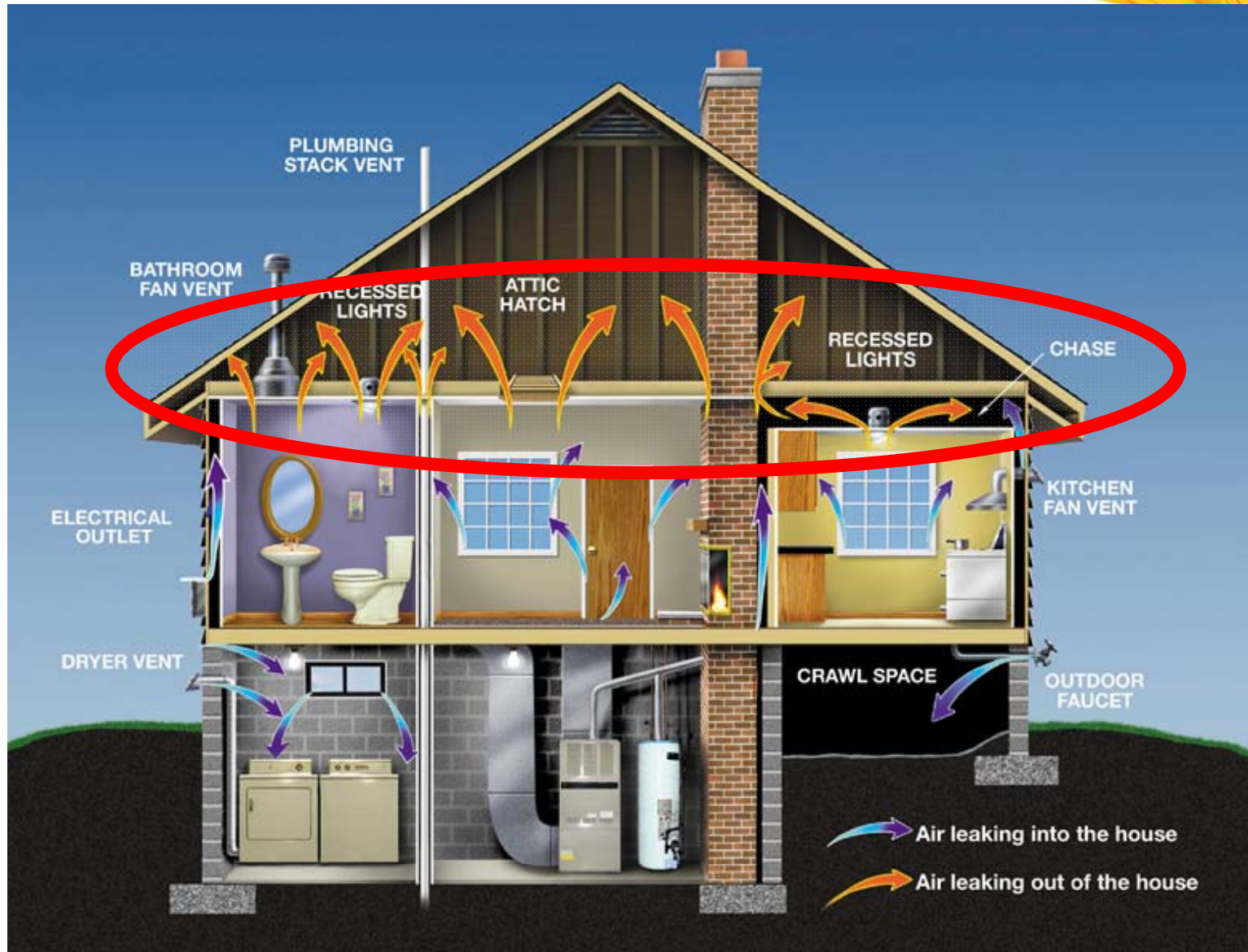
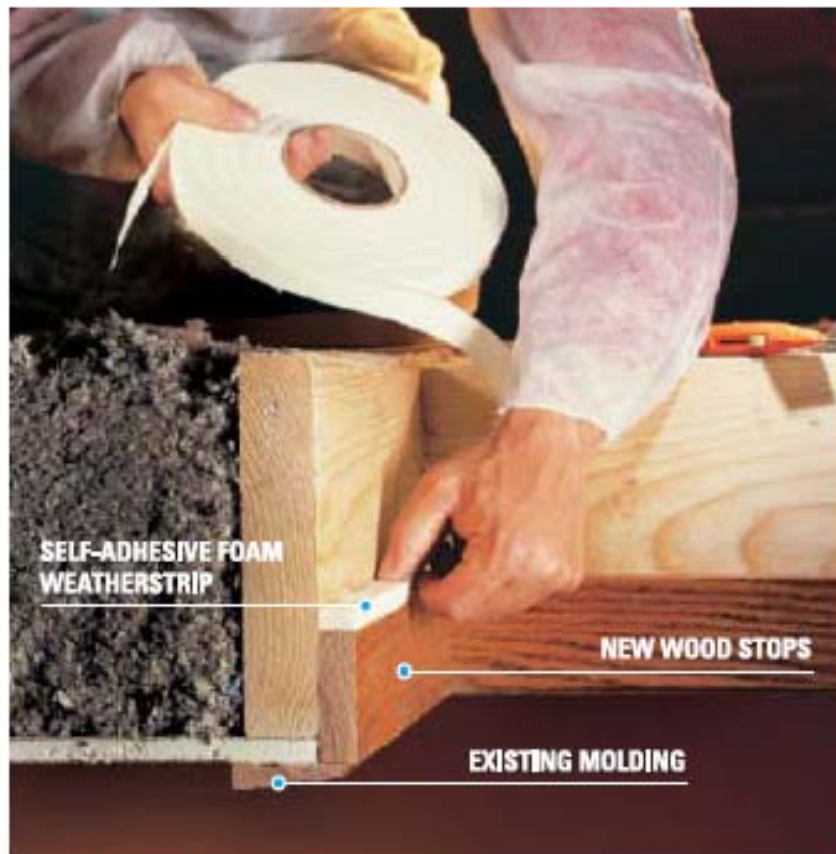
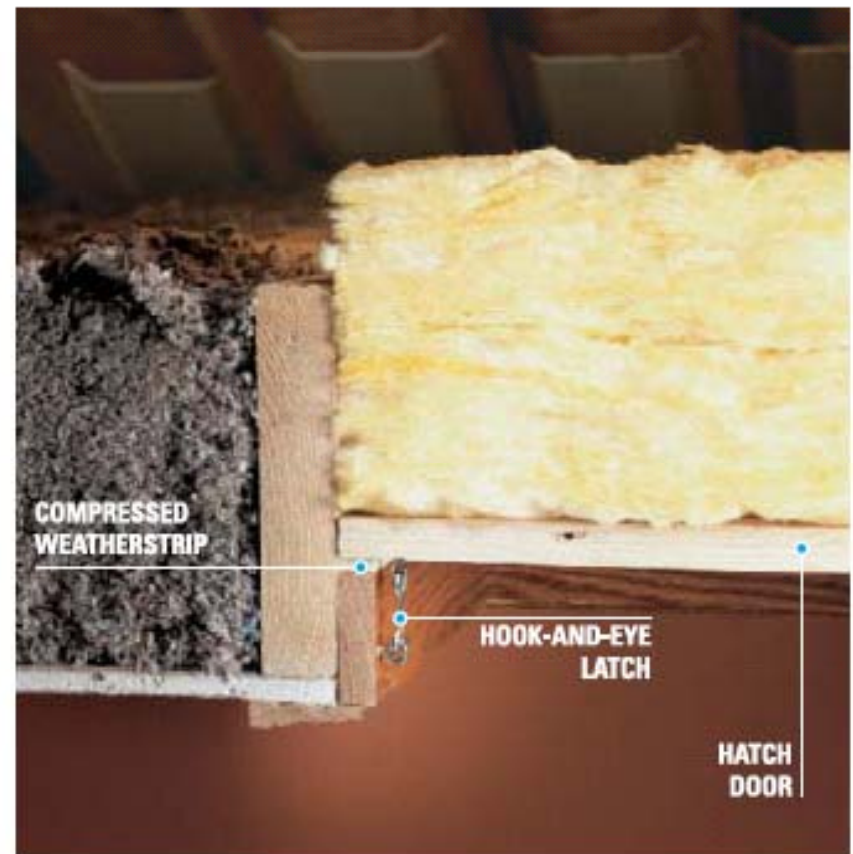


Image: Energy Star

## 11. WEATHERSTRIP THE DOOR



## 12. ATTACH FASTENERS



## 9. FILL HOLES WITH CAULK

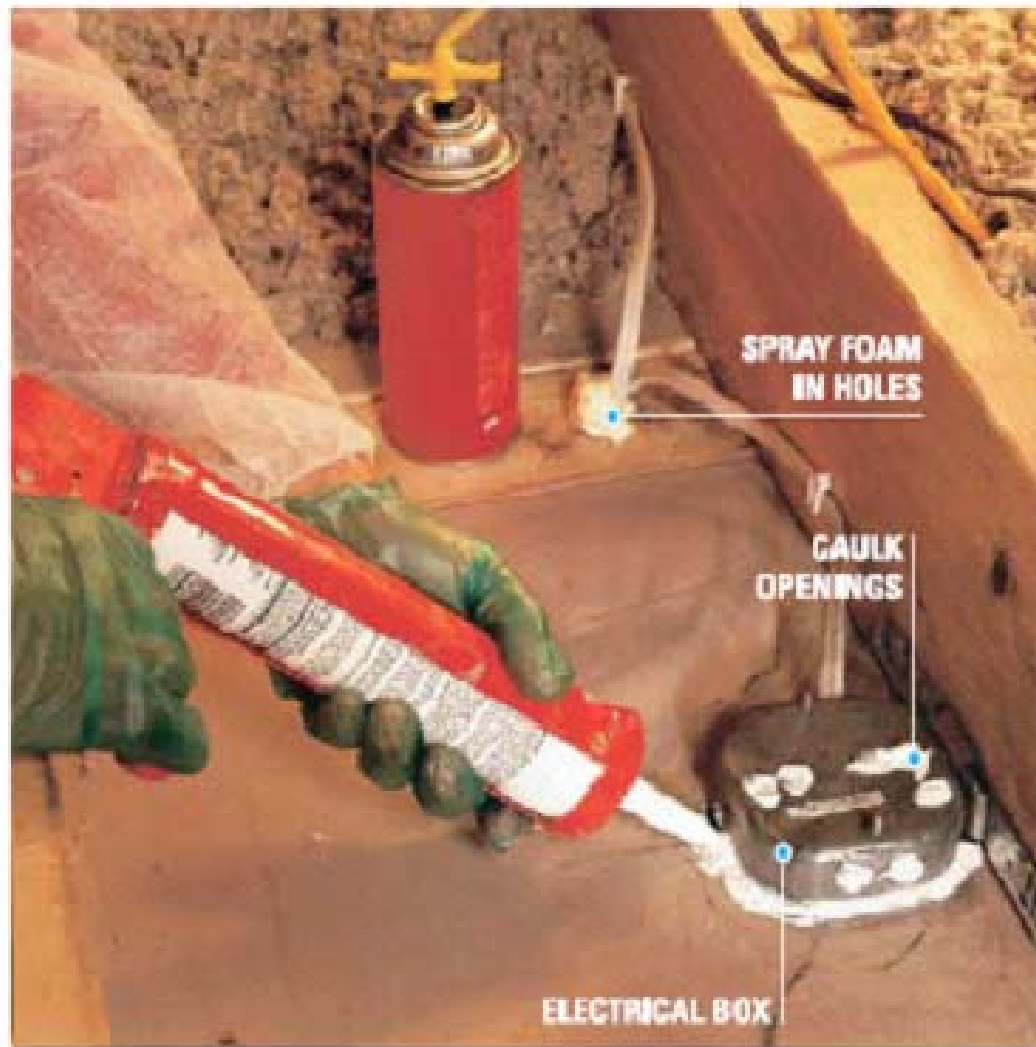


Image: Energy Star

## 10. STUFF GAPS WITH INSULATION



Image: Energy Star

## 5. CUT ALUMINUM FLASHING



Image: Energy Star

## Areas To Foam Or Caulk

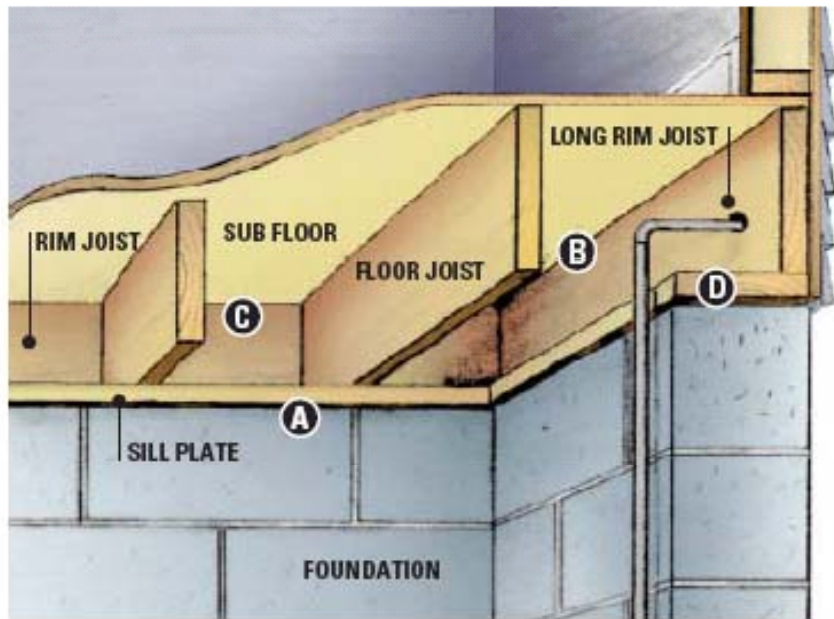


ILLUSTRATION BY DALE HOFFMEYER

## Seal and insulate



# Air Sealing Tips

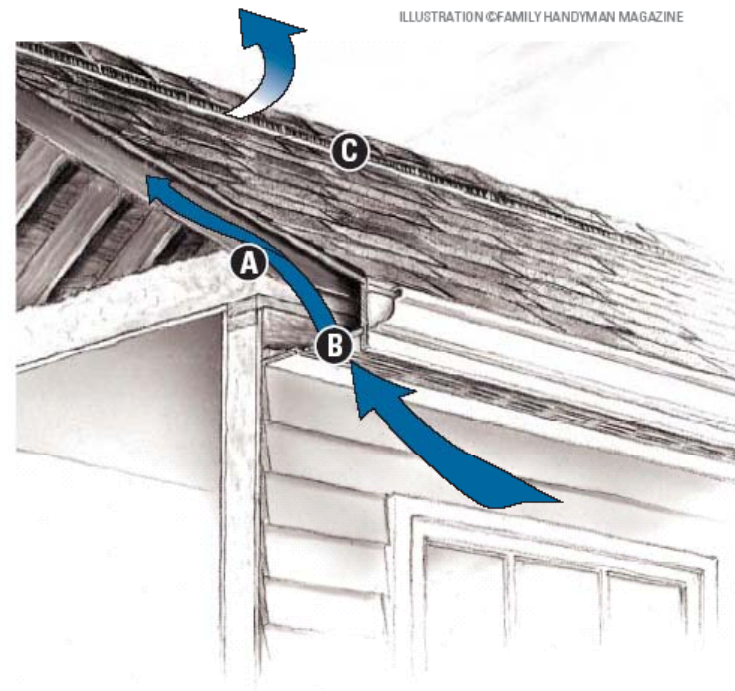
- Seal *BEFORE* insulate.
- Seal *high and low*
- Use special care around items which produce heat (like chimneys, recessed light fixtures).
- Add mechanical ventilation for good indoor air quality



More information at [www.energystar.gov](http://www.energystar.gov)

# Insulating Tips

- *Install properly*
- *Count bags for blown-in type insulation (like cellulose),*
- *Do not block roof ventilation*




More information at [www.energystar.gov](http://www.energystar.gov)

# Window & Door Information



NFRC  
[www.nfrc.org](http://www.nfrc.org)

		<p><b>World's Best Window Co.</b></p> <p>Millennium 2000+          Vinyl-Clad Wood Frame          Double Glazing • Argon Fill • Low E          Product Type: <b>Vertical Slider</b></p>	
<b>ENERGY PERFORMANCE RATINGS</b>			
U-Factor (U.S./I-P)		Solar Heat Gain Coefficient	
<b>0.30</b>		<b>0.30</b>	
<b>ADDITIONAL PERFORMANCE RATINGS</b>			
Visible Transmittance		Air Leakage (U.S./I-P)	
<b>0.51</b>		<b>0.2</b>	
Condensation Resistance			
<b>51</b>		<b>—</b>	
<small>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions and a specific product size. NFRC does not recommend any product and does not warrant the suitability of any product for any specific use. Consult manufacturer's literature for other product performance information.  <a href="http://www.nfrc.org">www.nfrc.org</a></small>			

$$U = 1/R$$

$$R = 1/U$$

*Look for the label!*

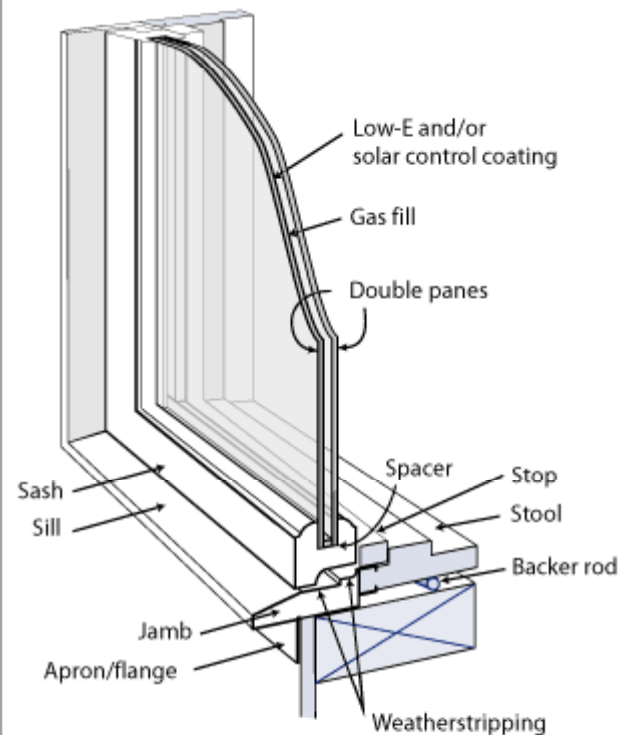
# Window Replacement Tips

*Keep NFRC window labels to show the rater.*

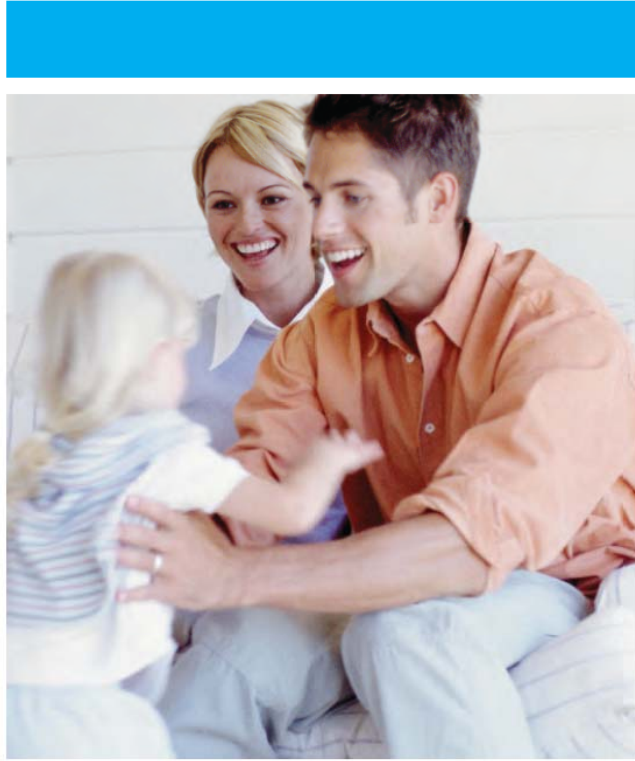
 National Fenestration Rating Council CERTIFIED	<b>World's Best Window Co.</b> Millennium 2000+ Vinyl Clad Wood Frame Double Glazing • Argon Fill • Low E Product Type: Vertical Slider
<b>ENERGY PERFORMANCE RATINGS</b>	
U-Factor (U.S./I-P)	Solar Heat Gain Coefficient
<b>0.35</b>	<b>0.32</b>
<b>ADDITIONAL PERFORMANCE RATINGS</b>	
Visible Transmittance	Air Leakage (U.S./I-P)
<b>0.51</b>	<b>0.2</b>
Condensation Resistance	—
<b>51</b>	—
<small>Manufacturer declares that their design conforms to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed unit of environmental conditions and a specific product size. Consult manufacturer's literature for other product performance information. www.nfrc.org</small>	

## Window Technologies

Energy-efficient window technologies are available to produce windows with the U-factor, SHGC, and VT properties needed for any application.



# Water Heater & Heating System Information



A Guide to Energy-Efficient  
Heating and Cooling



*Be an informed buyer:*

- *tankless / demand water heaters*
- *high efficiency heating systems*
- *proper sizing of systems*

More information at [www.energystar.gov](http://www.energystar.gov)

# Water Heater Replacement Tips

- *Sealed combustion and direct vent systems are safer.*
- *Get at least 3 bids for work. Costs may vary considerably*

**RESEARCH NOTE: Tankless water heaters work in Alaska when properly sized.**

*Heating & Hot Water Efficiency Info*  
[www.ahrinet.org](http://www.ahrinet.org)

Water Heater Technology	Average Annual Savings*
<a href="#">High-Efficiency Gas Storage</a>	\$30
<a href="#">Gas Condensing</a>	\$110
<a href="#">Whole-Home Gas Tankless</a>	\$115
<a href="#">Solar</a>	\$220
<a href="#">Heat Pump</a>	\$290

\* Savings for average household of 2.6 people.

Five types of water heaters can now earn the ENERGY STAR.  
[Find the one that's right for you](#)

**More information at [www.energystar.gov](http://www.energystar.gov)**

# Heating System Replacement Tips

- *ACCA Manual J or AkWarm software will properly size a replacement heating system.*
- *Sealed combustion and direct vent heating systems are safer*
- *Get at least 3 bids for work. Costs may vary by thousands of dollars.*

**RESEARCH NOTE: Heating systems in Alaska are oversized 120%!**

**Table 1. Annual Estimated Savings for Every \$100 of Fuel Costs by Increasing Your Heating Equipment Efficiency\***

Existing System AFUE	New/Upgraded System AFUE								
	55%	60%	65%	70%	75%	80%	85%	90%	95%
50%	\$9.09	\$16.76	\$23.07	\$28.57	\$33.33	\$37.50	\$41.24	\$44.24	\$47.36
55%	----	\$8.33	\$15.38	\$21.42	\$26.66	\$31.20	\$35.29	\$38.88	\$42.10
60%	----	----	\$7.69	\$14.28	\$20.00	\$25.00	\$29.41	\$33.33	\$37.80
65%	----	----	----	\$7.14	\$13.33	\$18.75	\$23.52	\$27.77	\$31.57
70%	----	----	----	----	\$6.66	\$12.50	\$17.64	\$22.22	\$26.32
75%	----	----	----	----	----	\$6.50	\$11.76	\$16.66	\$21.10
80%	----	----	----	----	----	----	\$5.88	\$11.11	\$15.80
85%	----	----	----	----	----	----	----	\$5.55	\$10.50
90%	----	----	----	----	----	----	----	----	\$5.30

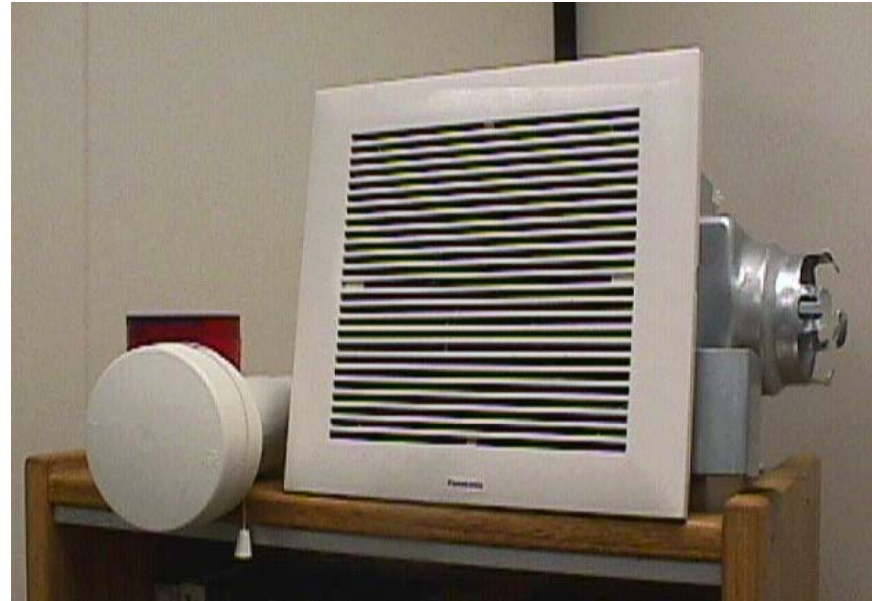
\*Assuming the same heat output

*Heating & Hot Water Efficiency Info*  
[www.ahrinet.org](http://www.ahrinet.org)

*Only high efficiency heating systems qualify for federal tax credits!*  
 Check at: [www.energystar.gov](http://www.energystar.gov)

# Ventilation Tips

- *Quiet = 1 sone or less*
- *Continuous duty rated*
- *Proper sizing*
- *Energy Star*



More information at [www.energystar.gov](http://www.energystar.gov) &  
[www.ahfc.us](http://www.ahfc.us)

# Whole Building Ventilation Sizing in CFM (cubic feet per minute)

<b>Number of Bedrooms</b>	<b>0-1</b>	<b>2-3</b>	<b>4-5</b>	<b>6-7</b>	<b>&gt;7</b>
<b>&lt;1500 ft<sup>2</sup></b>	<b>35</b>	<b>55</b>	<b>75</b>	<b>95</b>	<b>115</b>
<b>1501-3000</b>	<b>50</b>	<b>70</b>	<b>90</b>	<b>110</b>	<b>125</b>
<b>3001-4500</b>	<b>65</b>	<b>85</b>	<b>105</b>	<b>125</b>	<b>145</b>
<b>4501-6000</b>	<b>80</b>	<b>100</b>	<b>120</b>	<b>140</b>	<b>160</b>
<b>6001-7500</b>	<b>95</b>	<b>115</b>	<b>135</b>	<b>155</b>	<b>175</b>
<b>&gt;7500 ft<sup>2</sup></b>	<b>110</b>	<b>130</b>	<b>150</b>	<b>170</b>	<b>190</b>



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### What's Happening

- ▼ **BEES - Alaska's Building Energy Efficiency Standard**  
Mat-Su , Alaska  
Mar 31, 2011  
This FREE class, sponsored by AHFC, reviews the Building Energy Efficiency Standard (BEES) for constructing new energy efficient homes in...  
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Anchorage , Alaska  
Apr 05, 2011
- ▶ **Anchorage: AEE Certified Energy Auditor training**  
Anchorage , Alaska  
Apr 05, 2011 - Apr 08, 2011
- ▶ **Read Your Rating Class**  
Alaska  
Apr 06, 2011

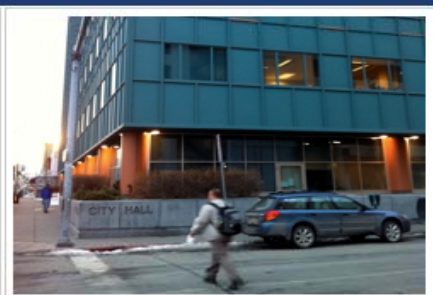
[See More >](#)

### Latest Energy News

### Revolving Loan Fund for Public Buildings

Alaskan school districts and municipalities may be able to get free investment-grade energy audits on buildings they own if they agree to share benchmarking data with the Alaska Housing Finance Corporation!

[Read More >](#)



Check out this great new video from ACA featuring Alaskan Businesses!!



A project of the Alaska Energy Efficiency and Conservation Working Group (EECWG)



**Questions?**  
**Betty Hall**  
**Research Information Center**  
**(800) 478-2432**