

# Residential Break-Out Session



- ENERGY STAR Qualified HVAC Products
- Educational tools and materials to use with programs
  - HVAC Brochures and Guides for Homeowners
    - Efficient Heating and Cooling
    - Home Sealing
    - Duct Sealing
  - Web-based educational homeowner tools
    - Home Energy Yardstick
    - ENERGY STAR Home Advisor
    - ENERGY STAR @ Home Tool
- NEW: HVAC Quality Installation

# Heating & Cooling with ENERGY STAR



- ENERGY STAR specifications cover
  - Air-source Heat Pumps
  - Boilers
  - Central AC
  - Ceiling Fans
  - Dehumidifiers
  - Furnaces
  - Geothermal Heat Pumps
  - Home Sealing (Insulation)
  - Programmable Thermostats
  - Room AC
  - Ventilating Fans

*Additional commercial products*

# Programmable Thermostats



## **Finalizing Specification Revision – January, 2008**

- Incorporates new consumer education requirement to help address consumer use issues
- Extends current specification to allow for collaboration with industry and other stakeholders on better ways to enhance savings potential and differentiate product
- Suspends current specification effective December 31, 2009

# Programmable Thermostat Education Campaign



- Deliver through manufacturers, contractors, retailers and EEPs
- Offer web-based tools, point of sale info, educational video cast
- Integrate PT proper use into ENERGY STAR pledge and associated educational materials

Program your **thermostat** to save energy while you're asleep or away.

**Saving energy helps prevent global warming**

**LEARN MORE AT  
[energystar.gov](http://energystar.gov)**

# Heating & Cooling with ENERGY STAR



## Robust online tools and resources portfolio

- For Consumers
  - Technical Advice
    - Product-specific information
    - HVAC equipment – maintenance and replacement
    - Proper sizing and installation
    - How to find the right contractor for a project
    - Links to other resources
  - Manufacturer lists
  - Qualified products lists
  - Savings calculators
- For Businesses
  - Purchasing & procurement guidance
  - Information resources
  - Information on securing product quotes
- For Partners
  - Key Product Criteria
  - Partner Commitments
  - QPI Form
  - Products in Development
  - Partner Resources



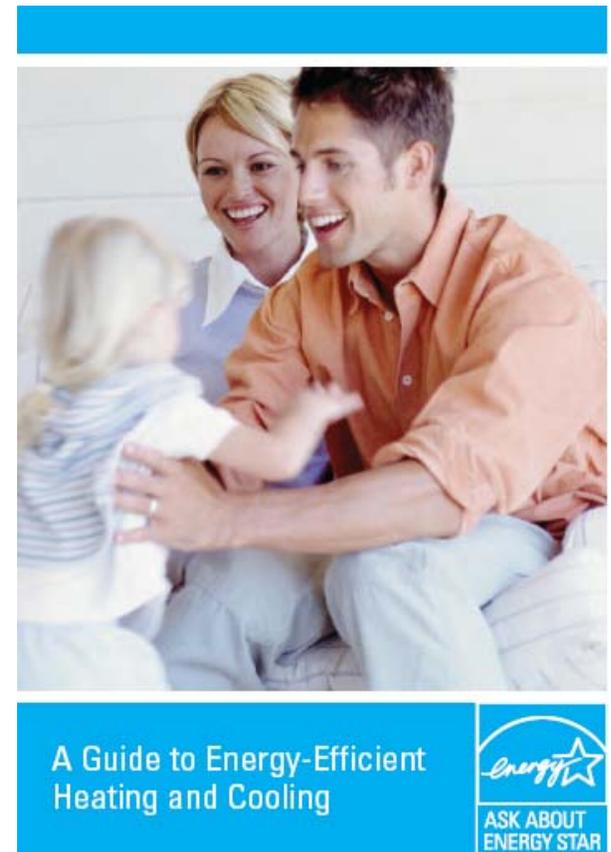
# Educational Materials and Tools to Support HVAC Programs

# Heating & Cooling with ENERGY STAR

## Educational Guides



- ENERGY STAR Heating & Cooling Guide -- helps consumers:
  - Maintain heating and cooling equipment to maximize efficiency and comfort
  - Decide when to replace old equipment
    - Understand how to choose the right equipment
    - Understand how to properly size the equipment
  - Learn about working with heating and cooling contractors
  - Understand how to seal and insulate their home for increased comfort, efficiency, and health/safety
  - Understand duct sealing
- Also available in Spanish

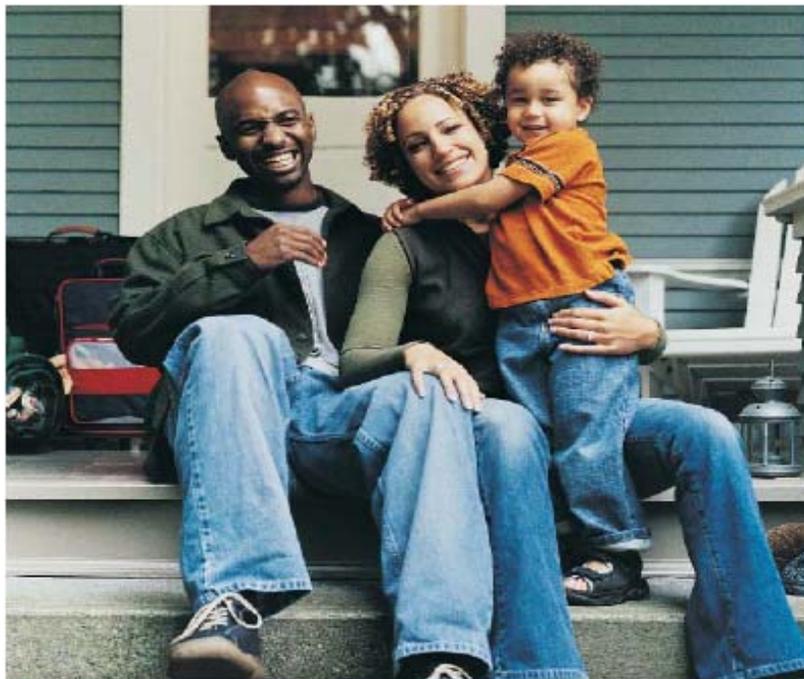


# Heating & Cooling with ENERGY STAR

## Educational Guides



### Do-It-Yourself Guide to Home Sealing

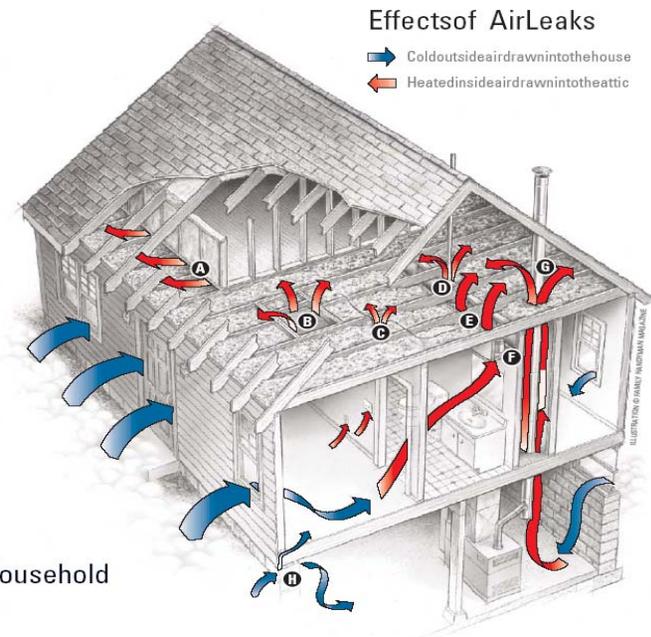


**A DO-IT-YOURSELF GUIDE TO ENERGY STAR® HOME SEALING**  
 SEALING AIR LEAKS AND ADDING ATTIC INSULATION

For more information visit [www.energystar.gov](http://www.energystar.gov) or call 1.888.STAR.YES (1.888.782.7937).

United States Environmental Protection Agency **EPA**

Office of Air and Radiation (R202.J) EPA 430-F-04-024 November 2004



#### Common Household Air Leaks

- A** Between Floor Joists Behind Kneewalls
- B** Attic Hatch
- C** Wiring Holes
- D** Plumbing Vent
- E** Open Soffit (the box that hides recessed lights)
- F** Recessed Light
- G** Furnace Flue or Duct Chaseways (the hollow box or wall feature that hides ducts)
- H** Basement Rim Joist (where the foundation meets the wood framing)

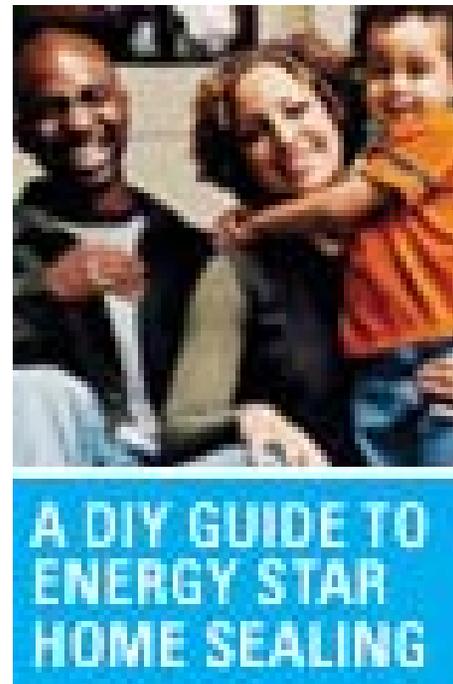
# Heating & Cooling with ENERGY STAR

## Educational Guides



## Do-It-Yourself Guide to Home Sealing -- cont

- Being used by major retailers
  - on Lowes energy web site
  - on THD energy web site
- Outreach to 40 utilities
  - home energy audit fulfillment piece
- Possible co-branding opportunities
- Also available in Spanish
- Home Sealing Brochure too



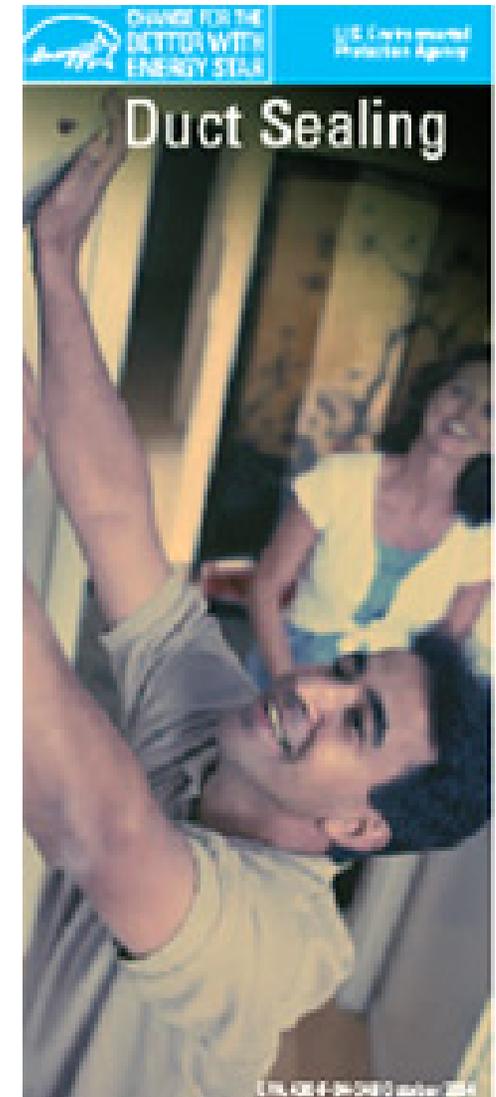
# Heating & Cooling with ENERGY STAR

## Educational Guides



### ENERGY STAR Duct Sealing brochure

- Discusses comfort, energy saving and safety of well-designed and properly sealed duct system
- Offers simple steps homeowners can take to improve duct performance.



# Consumer Based Web Tools



- EPA has three web-tools for home owners
- These tools
  - can help homeowners understand possible improvements to make to a home
  - can be framed or hosted on a utility's web site
  - Can be used to promote an HVAC program, or any ENERGY STAR home improvement effort led by a utility

# ENERGY STAR

## Home Energy Yardstick



- Homeowners can compare their home's energy efficiency to similar homes in their area.
- Home gets score of 0-10, based on homeowner's actual utility bills (or estimates).
- This tool is also available in a syndicated version that can be hosted on a utility's web site.

A screenshot of a web browser displaying the ENERGY STAR Home Energy Yardstick form. The browser's address bar shows the URL: http://energystar.gov/index.cfm?fuseaction=home\_energy\_yardstick.showStep2. The page title is "ENERGY STAR Home Energy Yardstick : ENERGY STAR". The browser's menu bar includes File, Edit, View, Favorites, Tools, and Help. The search bar contains "Google". The browser's status bar shows "32 blocked" and "AutoFill". The page content includes a navigation menu on the left with items like "Home Improvement", "Common Home Problems", "Home Energy Yardstick", "Home Energy Audits", "Air Seal & Insulate", "Heat & Cool Efficiently", "Home Performance with ENERGY STAR", "Home Improvement FAQs", "For Contractors", and "For Insulation Manufacturers". The main content area is titled "ENERGY STAR Home Energy Yardstick" and contains a description of the tool, a list of energy sources (Natural Gas, Fuel Oil, Propane, Kerosene) with checkboxes, and a form with four questions: "What is your ZIP Code?", "How many people live in your home?", "What is the square footage (conditioned floor area) of your home?", and "When was your home built?". The form has input fields for the first three questions and a dropdown menu for the last one. Below the form, there is a question about using annual or monthly information to enter utility billing information, with radio buttons for "Monthly" (selected) and "Annual". A "Submit" button is at the bottom.

# ENERGY STAR Home Energy Yardstick



ENERGY STAR Home Energy Yardstick : ENERGY STAR - Windows Internet Explorer

http://energystar.gov/index.cfm?fuseaction=home\_energy\_yardstick.showStep2

File Edit View Favorites Tools Help

Google

ENERGY STAR Home Energy Yardstick : ENERGY STAR

Home Improvement > Home Improvement > Home Energy Yardstick

Common Home Problems

## ENERGY STAR Home Energy Yardstick

If you have five minutes and your last 12 months of utility bills, use the ENERGY STAR Home Energy Yardstick to compare your home's energy efficiency to similar homes across the country and get recommendations for energy-saving home improvements from ENERGY STAR. You will also need to enter some basic information about your home (such as zip code, age, square footage, and number of occupants). If you don't have your bills, contact your utility for a 12-month summary.

Home Energy Audits

Air Seal & Insulate

Heat & Cool Efficiently

Home Performance with ENERGY STAR

In addition to **electricity** which **energy source(s)** does your home use? (check all that apply)

Home Improvement FAQs

For Contractors

For Insulation Manufacturers

Natural Gas  
 Fuel Oil  
 Propane  
 Kerosene

Complete the following information about your home. All fields are required.

Join ENERGY STAR

What is your ZIP Code?	<input type="text"/>
How many people live in your home?	<input type="text"/>
What is the square footage (conditioned floor area) of your home?	<input type="text"/>
When was your home built?	Select Decade

Would you like to use annual or monthly information to enter your utilities billing information?

Monthly  Annual

Home owner enters data

Home owner receives score

ENERGY STAR Home Energy Yardstick : ENERGY STAR - Windows Internet Explorer

http://energystar.gov/index.cfm?fuseaction=home\_energy\_yardstick.showStep2

File Edit View Favorites Tools Help

Google

ENERGY STAR Home Energy Yardstick : ENERGY STAR

Home Improvement

## Home Energy Performance Results

Common Home Problems

### Energy & Environmental Performance

Home Energy Yardstick

Your score: 9.4 out of 10

Your score is excellent and your energy use is well below average. 94% of U.S. homes use more energy than you.

Home Energy Audits

Air Seal & Insulate

Heat & Cool Efficiently

Home Performance with ENERGY STAR

Home Improvement FAQs

For Contractors

For Insulation Manufacturers

Tell us about your home

Join ENERGY STAR

Your home energy use is in the top 20% of U.S. homes. [What is your story?](#) What did you do to achieve such a low energy use?

**Take Action**

1. Replace your 5 most frequently used lights or the bulbs in them with ones that have earned the ENERGY STAR.
2. Look for [ENERGY STAR Products](#). Available in more than 50 product

About Your Home & Energy Use [\[Edit Info\]](#)

About Your Home

Zip Code: 22181  
 People Living in Home: 4  
 Square Footage of Home: 2400  
 Home Built: 1970s  
[Heating Degree Days](#): 3631  
[Cooling Degree Days](#): 1417

Energy Use from 01-Jan-2006 to 31-Dec-2006

Use (Electricity)	Bill Amount (Electricity)
10000 kWh	\$500

Total Source Energy Consumption: 113,961 kBtUs

Annual pollution from energy use in your home is equivalent to the emissions of 1.4 cars.

# ENERGY STAR Home Advisor



- Homeowners can get customized list of recommended home improvement projects for energy savings and increased comfort
- Homeowners enter ZIP code and basic information about the types of fuel used to heat and cool their home.
- Utilities can link to this on-line tool from their own web sites

The screenshot shows the ENERGY STAR Home Energy Advisor website. At the top, there is a navigation bar with the ENERGY STAR logo, a search box, and links for "About ENERGY STAR", "News Room", and "FAQs". Below the navigation bar are tabs for "Products", "Home Improvement", "New Homes", "Buildings & Plants", and "Partner Resources". The main content area is titled "ENERGY STAR Home Energy Advisor" and features a progress bar with three steps: "Enter Basic Information About Your Home", "Get Recommendations from ENERGY STAR", and "See Potential Energy Savings". Below the progress bar, there is a paragraph explaining that a typical household spends about \$1,900 a year on energy bills and contributes twice the amount of greenhouse gases to the environment as an average car. The text encourages users to use the tool to get home improvement recommendations. Below this, there is a section for "Questions" with four numbered questions, each with a dropdown menu or text input field. The questions are: 1. What is your zip code? (text input), 2. How Do You Cool Your Home? (dropdown menu), 3. How Do You Heat Your Home? (dropdown menu with "Gas Furnace" selected), and 4. What Type of Water Heater Do You Have? (dropdown menu with "Hydronic" selected). A "Submit" button is located at the bottom right of the form.

**Home Improvement**

- Common Home Problems
- Home Energy Audits
- Air Seal & Insulate
- Heat & Cool Efficiently
- Home Performance with ENERGY STAR
- Home Improvement FAQs
- For Contractors
- For Insulation Manufacturers

[Join ENERGY STAR](#)

**ENERGY STAR Home Energy Advisor**

**Enter Basic Information About Your Home** | **Get Recommendations from ENERGY STAR** | **See Potential Energy Savings**

A typical household spends about \$1,900 a year on energy bills and contributes twice the amount of greenhouse gases to the environment as an average car. ENERGY STAR, the government-backed symbol for energy efficiency, can guide you in making your home more energy efficient, reducing high energy bills, improving comfort, and protecting the environment—whether you do it yourself or hire a qualified professional. Use the ENERGY STAR Home Energy Advisor to get your home improvement recommendations from ENERGY STAR.

To get started, enter some basic information about your home below.

\* An asterisk indicates required field

**Questions**

1. What is your zip code? \*
2. How Do You Cool Your Home?
3. How Do You Heat Your Home? \*
4. What Type of Water Heater Do You Have? \*

**Submit**

# ENERGY STAR Home Advisor



 **ENERGY STAR Home Advisor**

[Enter Basic Information About Your Home](#) → [Get Recommendations from ENERGY STAR](#) → [Learn More](#)

**ENERGY STAR** Potential Total Energy Savings for Homes in your Area: 24% \*

- Home Improvement
- Common Home Problems
- Home Energy Audits
- Air Seal & Insulate
- Heat & Cool Efficiently
- Home Performance with ENERGY STAR
- Home Improvement FAQs
- For Contractors
- For Insulation Manufacturers

[Join ENERGY STAR](#)

**[Seal air leaks in your home](#)**

Reducing air infiltration (the amount of air leaking in and out of your home through cracks in walls, windows and doors) is often the most cost-effective way to improve your home's energy efficiency and comfort. Use caulk, spray foam, or weather stripping to reduce these leaks. Or, hire a professional to test and seal your home.

- Use the **Do-It-Yourself Guide to ENERGY STAR Home Sealing to reduce air infiltration**
- Hire a professional to seal your home to reduce air leaks and infiltration



**[Seal the leaks in your ductwork](#)**

Sealing and insulating ducts can improve the efficiency of your heating and cooling system by 20 percent or more. Accessible ducts, such as those in attics, basements, crawlspaces, and garages, can be sealed using a specialized sealant called duct mastic (duct tape is not recommended) available at home improvement stores. Or, consider hiring a professional to test and seal your ductwork with an aim of achieving a specific reduced leakage rate.

- Aim to seal ducts to **10% total leakage**
- Insulate ducts in unconditioned spaces to R-6



**[Add more insulation to your home](#)**

There are several common types of insulation — fiberglass, cellulose, rigid foam board, and spray foam. When correctly installed, each type can deliver comfort and lower energy bills during the hottest and coldest times of the year. Insulation performance is measured by R-value — its ability to resist heat flow. Higher R-values mean more insulating power. The recommended insulation levels in your area are:

- R-38 for the Attic
- R-13 for the Wood Frame
- R-10 to R-13 for the Basement Wall/Crawl Space



Climate and house specific recommendations

# ENERGY STAR @ Home Tool



- Interactive seasonal web tool teaches about energy efficiency to
  - save money
  - protect the environment
  - enjoy year-round comfort
- Tips for every room
- Visitors can share their stories to educate others about what they have done to save
- Easy, free tool for program sponsors to use as part of their educational efforts
- Opportunity for customization with utility-specific information on savings, programs, and other local offerings
  - Lowe's
- [www.energystar.gov/home](http://www.energystar.gov/home)





# ENERGY STAR HVAC Quality Installation

# ENERGY STAR HVAC Quality Installation



- Launching new program in 2008
- Key Components
  - Proper sizing and refrigerant charge, measure air flow, reduce duct leakage with installation of HVAC system
  - Verification by third-party

# How does HVAC Quality Installation Meet Utilities' Goals?



- Reduces household electricity use

Homes	Estimated annual per-house savings
Existing	1600 KWh
New	1000 KWh

Assumptions:

New system corrects typical install problems

- Duct leakage reduced from 35% to 20%
- Duct insulation increased from R2 to R6
- Proper charge
- Proper airflow
- Proper sizing

- Reduces peak electricity demand

Location	Estimated Per-house peak AC demand savings
Fort Worth, TX	1.3 KW
Jacksonville, Florida	1 KW

# How does the Program Work?



- Utility/Program Administrator
  - provides training, incentives and marketing support to contractors
  - performs quality assurance checks on the installations (either in-house or through a third-party)
- HVAC contractors
  - agree to follow ENERGY STAR Quality Installation Guidelines, based on ACCA/ANSI QI Specification
  - provide a completed commissioning report to the program administrator for review.



# Recent Success and Next Steps



- Completion of HVAC QI Specification
- Completion of Pilots in TX and CA (2007)
  - Report on results is available
- Launch Program

The image shows the front cover of the ACCA Standard for HVAC Quality Installation Specification. The cover is primarily blue and white. At the top left is the ACCA logo (Air Conditioning Contractors of America). Below it is the contact information for ACCA. The title "ACCA Standard" is prominently displayed in a large, bold, white font on a dark blue background. Below the title, the standard number "ANSI/ACCA 5 QI-2007" is listed. The main title of the standard, "HVAC Quality Installation Specification", is written in a large, serif font. Below this, the subtitle "Residential and Commercial Heating, Ventilating, and Air Conditioning (HVAC) Applications" is written in a smaller, sans-serif font. At the bottom of the cover, there is a paragraph of text explaining the ACCA standards development process and a small ANSI logo with the text "Approved American National Standard" and "www.ansi.org".

**ACCA**  
AIR CONDITIONING  
CONTRACTORS OF AMERICA

2800 Shirlington Road  
Suite 300  
Arlington, VA 22206  
703.575.4477  
Fax 703.575.8107  
www.acca.org

## ACCA Standard

STANDARD NUMBER: ANSI/ACCA 5 QI-2007

### HVAC Quality Installation Specification

Residential and Commercial Heating,  
Ventilating, and Air Conditioning (HVAC)  
Applications

The Air Conditioning Contractors of America Educational Institute (ACCA-EI) Standards Task Team (STT) develops standards as an American National Standards Institute (ANSI) accredited standards developer (ASD). ACCA develops voluntary standards as outlined in the ACCA Essential Requirements and the ANSI Essential Requirements. ACCA standards are developed by diverse groups of industry volunteers in a climate of openness, consensus building, and lack of dominance (e.g., committee/group/team balance). Essential requirements, standard activities and documentation can be found in the standards portion of the ACCA website at [www.acca.org](http://www.acca.org). Questions, suggestions, and proposed revisions to this standard can be addressed to the attention of the Standards Task Team, ACCA, 2800 Shirlington Road, Suite 300, Arlington, VA 22206.

ACCA Standards are updated on a five-year cycle. The date following the standard number is the year of approval release by the ACCA-EI Standards Task Team. The latest copy may be purchased from the ACCA online store at [www.acca.org](http://www.acca.org) or ordered from the ACCA bookstore via toll-free telephone at 888.200.2220.  
© 2007 ACCA

Approved American National Standard  
**ANSI**  
www.ansi.org

# EPA Support



- Implementation Guide
- Marketing Material
- Sample Commissioning and Verification Reports
- Certificate
- Training and Technical Support

Two versions of an "Installation Pilot Commissioning Report" form. The left form is in English and the right form is in Spanish. Both forms contain various fields for project information, equipment details, and commissioning results, including checkboxes for "Pass" or "Fail" and "Yes" or "No" responses.