



ENERGY STAR HVAC QI

ENERGY STAR Tools for Program Administrators Residential HVAC

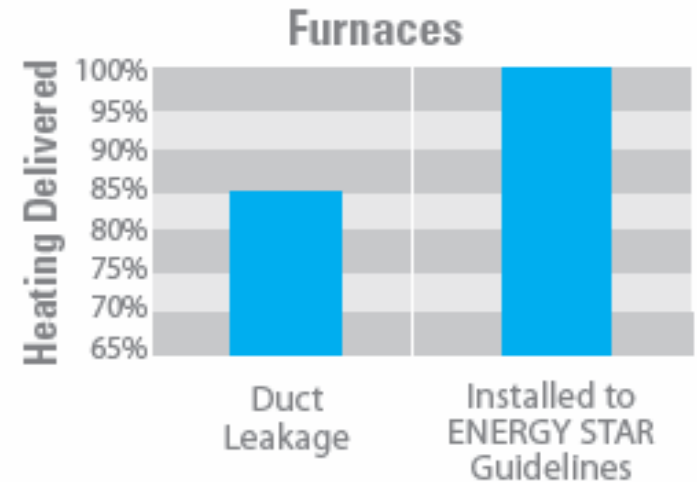
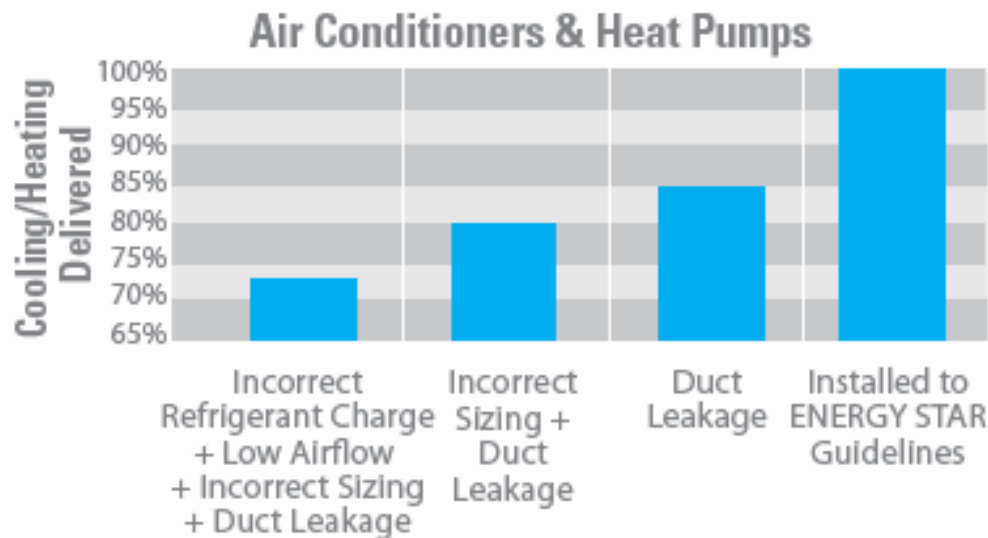
Heating and Cooling with ENERGY STAR

- ENERGY STAR Qualified HVAC Products
- Web-based educational homeowner tools
- Educational tools and materials
- HPwES and New Homes
- Change the World
- HVAC Quality Installation



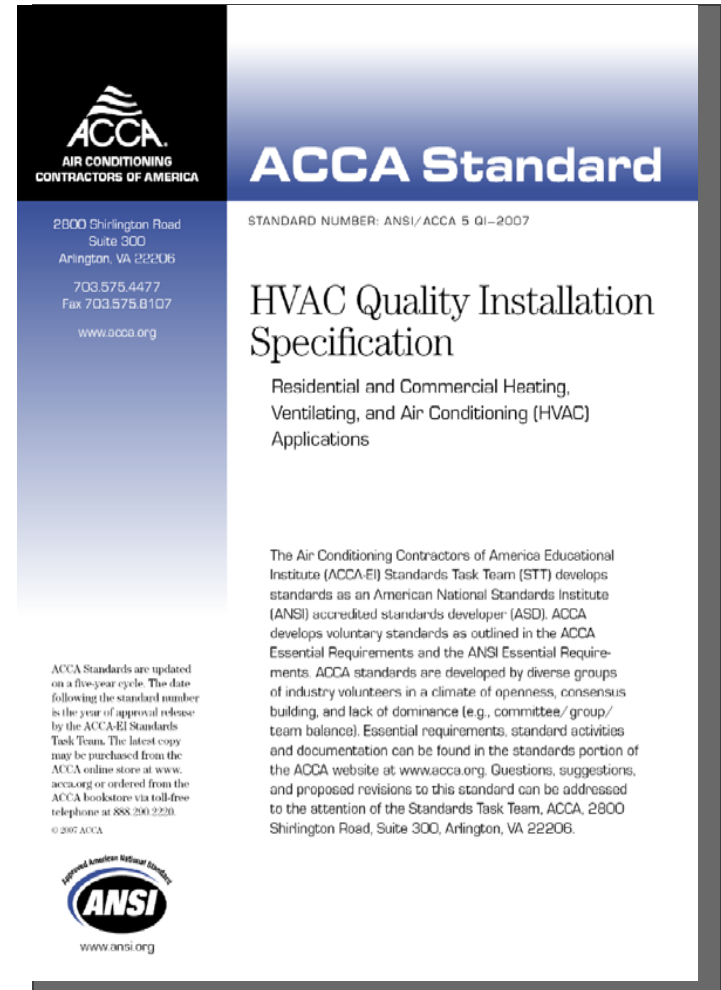
Why QI Matters

Quality Installations Deliver Your Equipment's Full Potential, Many Installations Do Not



ENERGY STAR HVAC QI Guidelines

- Installations under the program must meet the ANSI/ACCA HVAC Quality Installation Specification
- The QI Specification identifies consensus requirements associated with quality installations



ACCA
AIR CONDITIONING
CONTRACTORS OF AMERICA

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ACCA Standard

STANDARD NUMBER: ANSI/ACCA 5 QI-2007

HVAC Quality Installation Specification

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

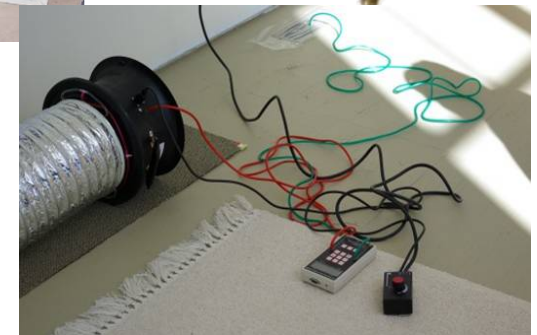
The Air Conditioning Contractors of America Educational Institute (ACCA-EI) Standards Task Team (STT) develops standards as an American National Standards Institute (ANSI) accredited standards developer (ASD). ACCA develops voluntary standards as outlined in the ACCA Essential Requirements and the ANSI 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. 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 or ordered from the ACCA bookstore via toll-free telephone at 888.200.2220.
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ANSI
www.ansi.org

4 Main Elements of QI

- **Equipment sizing & selection**
 - Load calculation with Manual J
 - Sizing with Manual S
 - Matched coils
- **Verify proper refrigerant charge**
- **Verify proper air flow across coil**
- **Duct sealing**
 - Leakage no more than 20% of total airflow, or
 - At least a 50% improvement over the initial measurement



Installation Verification

Level 1 Verification (100%):
 Data review of Manual J calculations and commissioning report

Level 2 Verification (Sampled):
 In-field verification of the installation

Verification Guidance:
 EPA involved with ACCA Verification Protocols Committee

**ENERGY STAR in Cooperation with TXU Electric Delivery
 Installation Pilot Commissioning Report**

Date: _____ Time: _____

Site Information

Address 1: _____
 Address 2: _____
 City: _____ State: _____ Zip: _____

Design

Heat Gain Method: Manual J v7 Manual J v8 None Other (specify): _____
 Duct Design Method: Manual D None Other (specify): _____
 Equipment Specification method: Manual S OEM Recommendation Other (specify): _____

Latent Heat Gain: _____ BTUh Sensible Heat Gain: _____ BTUh
 Total Heat Gain: _____ BTUh Design Airflow: _____ CFM
 Duct Design Static Pressure: _____ IWC
 Type of Installation: Replacement New System - Existing Home New System - New Home
 Square Feet of Zone: _____ sqft

Equipment

Condenser: Manufacturer: _____ Model: _____
 Serial Number: _____

Evaporator: Manufacturer: _____ Model: _____
 Serial Number: _____

System

Melting Device: TXV Fixed Orifice Other (specify): _____
 Refrigerant: R-22 R-410a Other (specify): _____
 Refrigerant Charge Goal (for TXV): _____ Subcooling _____ Approach (for Lennox only)
 Fan Motor Type: Fixed Speed (e.g. PSC) Variable (e.g. GE - ECM)
 Latent Capacity: _____ BTUh Sensible Capacity: _____ BTUh
 Total Capacity: _____ BTUh
 ARI EER/SEER: _____ (14 or higher) ARI Ref #: _____

Air Flow Tests

Static Pressure: Return Static _____ IWC Supply Static _____ IWC
 Measured Air Volume @ evaporator: _____ CFM
 Volume Measurement Method Used: TrueFlow Anemometer Pressure Matching (w/ Duct Blaster) Other: _____

Evaporator/Air Handler Fan Power: Pre: _____ Amps _____ volts _____ watts
 Post: _____ Amps _____ volts _____ watts
 Condenser Fan Power: Pre: _____ Amps _____ volts _____ watts
 Post: _____ Amps _____ volts _____ watts
 Compressor Power: Pre: _____ Amps _____ volts _____ watts
 Post: _____ Amps _____ volts _____ watts

Speed Setting: Fixed: Low Med-Low Med Med-High High CFM (for setting): _____
 Speed Setting: Variable: Fan set for: _____ CFM

Please mail completed forms to: Siobhan Steyn at The Cadmus Group Inc., 57 Water St, Watertown, MA 02472
 or fax: (617) 673-7310 or email: ssteyn@cadmusgroup.com

Utility Role and Benefits

Utility Roll

- Manage program
- Train and mentor qualified contractors
- Ensure installations meet program standards
- Issue ENERGY STAR certificates to homeowners
- Track and evaluate program success
- Report data to EPA

Utility Benefits

- Long term KW Savings
- Savings over rebate only program structure
- Actual verification of program effectiveness
- ENERGY STAR Brand
- Program Support from EPA



QI Benefits for Contractors

- **Differentiate the quality of your service**
 - 77% report that ENERGY STAR frequently influences brand decisions
- **Help customers reduce heating/cooling costs**
 - Average savings
 - 30% for AC or heat pump
 - 15% for furnace
- **Reduce callbacks**
 - 29% of buyers made contractor call backs
 - 6% had four or more call backs
- **Support from Utilities**
 - Qualified leads
 - Marketing Support

Barriers for Contractors

- Homeowners do not understand QI and why it costs more to have it done right
- New equipment and software
- Training
 - Duct Leakage
 - Manual J
 - Air Flow
- Verification
- Learning Curve

Marketing & Education

- Consumer education is critical to success with QI
- ENERGY STAR materials
 - QI brochure
 - Bid comparison checklist
 - ENERGY STAR website
- Third-party verification

ENERGY STAR®
QUALITY INSTALLATION:
 CENTRAL HEATING &
 AIR CONDITIONING



U.S. Environmental Protection Agency
 and U.S. Department of Energy

Heating & Air Conditioning Installation Bid Comparison Checklist

When you purchase a new heating or cooling system, you expect high performance. Unfortunately, more than half of new systems in U.S. homes do not perform to their rated efficiency as a result of improper installation. In fact, improper installation can reduce performance by as much as 30%. This not only affects your utility bills, but can lead to a variety of comfort problems, including insufficient dehumidification, dust from leaking ductwork, and poor air distribution.

Ask the contractors bidding for your business if they follow ENERGY STAR® Quality Installation Guidelines (www.energystar.gov/qispec) to ensure that you are not buying just a piece of equipment but a properly installed heating and cooling system that provides comfort and efficiency. Ask the following questions to each contractor:

Contractor A: _____ Contractor B: _____ Contractor C: _____
 Contact: _____ Contact: _____ Contact: _____
 Phone: _____ Phone: _____ Phone: _____

EQUIPMENT	A	B	C
Do you offer ENERGY STAR qualified equipment?			
Will you measure my home and calculate the correct size for my equipment using Manual J? ¹			
Will you install a properly matched indoor coil and outdoor unit? ² (AC & heat pump only)			
Will you test to determine the maximum system size that can be installed with my existing ductwork?			
Will you install new refrigerant lines rather than reusing existing lines?			
Will you install and help me to set up an ENERGY STAR qualified programmable thermostat(s) (if not already in use)?			
Will you consider if zoning, with separate temperature controls for different areas, would be appropriate for my home?			
Will you provide me with information on any local rebate programs for which I might be eligible?			
DUCT WORK			
Will you check for damage to existing ductwork and duct insulation, and make repairs if necessary?			
If insulating ducts, will you seal all duct seams first?			
Will you test to confirm that duct leakage does not exceed recommended levels? ³			
VERIFICATION & MAINTENANCE			
Will you show me how to replace the air filter(s) in my new system?			
After installation, will you leave all manuals with me and provide documentation of installation procedures, including Manual J calculations, AHRI certificate, and records of any measurements or testing?			
Do you offer third-party verification that my system was properly installed and set up?			
Will you confirm proper levels of refrigerant and airflow across the coil? (AC & heat pump only)			

NOTES

¹ Proper equipment size is vital for maximizing efficiency and comfort. To size your new system, the contractor should calculate your home's heating and cooling loads using the Air Conditioning Contractors of America (ACCA) Manual J or equivalent.
² Your contractor should provide an Air Conditioning, Heating and Refrigeration Institute (AHRI) certificate to document that your system was properly matched.
³ Duct sealing is essential to the operation of your heating and cooling systems. In most cases, it is recommended that total duct leakage be no more than 20%.

Educating the Homeowner



BUY PRODUCTS THAT MAKE A DIFFERENCE

U.S. Environmental Protection Agency • U.S. Department of Energy

About ENERGY STAR • News Room • FAQs • **KIDS**

- ENERGY STAR
- Products
- Home Improvement
- New Homes
- Buildings & Plants
- Partner Resources

Products

- Appliances
- Heating & Cooling**
- Air Conditioning, Central
- Air Conditioning, Room
- Boilers
- Dehumidifiers
- Fans, Ceiling
- Fans, Ventilating
- Furnaces
- Heat Pumps, Air-Source
- Heat Pumps, Geothermal
- Light Commercial
- Programmable Thermostats
- Water Heaters
- Home Electronics

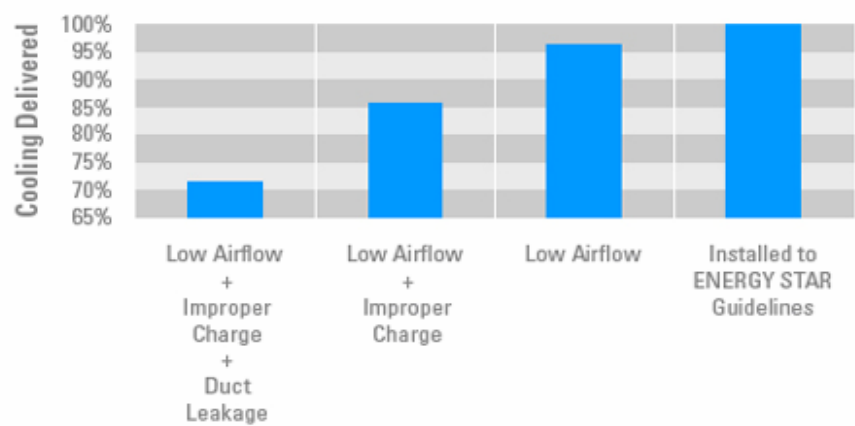
Home > Products > Heating & Cooling

Heat & Cool Efficiently

Ask about Proper Installation of your new equipment

Replacing your old heating and cooling equipment with new, energy-efficient models is a great start. But to make sure that you get the best performance, the new equipment must be properly installed. In fact, improper installation can reduce system efficiency by up to 30 percent — costing you more on your utility bills and possibly shortening the equipment's life.

Quality Installation Delivers 100% Cooling; Problem Installations Don't



Helpful Tools & Resources

- Guide to Energy Efficient Heating & Cooling
 - [English](#) (708KB)
 - [Español](#) (2.5MB)
- [Tips for Hiring a Heating and Cooling Contractor](#)
- [Duct Sealing brochure](#) (1.13MB)
- [Maintenance Checklist](#)



Heat Smartly with ENERGY STAR @ home

Current HVAC QI Partners



Next Steps



- Integrate ACCA verification protocols into program
- Verification commissioning reports
- Reduce cost and burden of verification
- Recruit new partners

The cover page of the ACCA Standard 9 HVAC Quality Installation Verification Protocols. It features the ACCA logo at the top left, contact information for ACCA, and the title "ACCA Standard 9 HVAC Quality Installation Verification Protocols". The page also includes a description of the standard and the ANSI logo at the bottom.

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ACCA Standard 9

STANDARD NUMBER: ANSI/ACCA 9 QIVP - 2009

HVAC Quality Installation Verification Protocols

Establishes Minimum Requirements for Verifying That Residential and Light Commercial HVAC Systems Meet the ANSI/ACCA 9 QI - 2007 (*HVAC Quality Installation Specification*) Standard.

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ANSI
American National Standards Institute
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