



## ENERGY STAR® HVAC Quality Installation – FAQ

The U.S. Environmental Protection Agency (EPA) is partnering with energy efficiency program sponsors (typically electric or gas utilities) around the country to offer the ENERGY STAR HVAC Quality Installation (QI) program, which supports the proper installation of residential heating, ventilation and air conditioning (HVAC) systems. This innovative program helps program sponsors go beyond simple equipment incentives to deliver additional savings by improving HVAC installation procedures. More information on the program can be found at [www.energystar.gov/hvacqi](http://www.energystar.gov/hvacqi).

**Q.** How does HVAC QI link to the ENERGY STAR New Homes version 3.0 specification?

**A.** HVAC QI is a standalone program that can be performed in new or existing construction. The latest version of the ENERGY STAR New Homes program also requires Quality Installation procedures, based on the same ACCA specification. The basic technical requirements are the same, but there are currently differences in how the two programs are structured and verified.

**Q.** What are the basic technical components of HVAC QI?

**A.** HVAC QI is a residential program that requires the completion of these four basic elements:

- Correctly sized and matched equipment based on load calculations
- Well-sealed duct system
- Installed with the proper amount of refrigerant (*refrigerant charge*)
- Operating with sufficient airflow in the system

These requirements are based on the Air Conditioning Contractors of America (ACCA) Quality Installation Specification (available for free download at: [http://www.energystar.gov/ia/home\\_improvement/home\\_contractors/qispec.pdf](http://www.energystar.gov/ia/home_improvement/home_contractors/qispec.pdf))

**Q:** What are the other basic program requirements?

**A.** Documentation on equipment selection and installation process (contractor must submit commissioning form and load calculations for each installation) and third party verification.

**Q.** What are the expected savings from HVAC QI?

**A.** Many typical HVAC systems do not operate at rated efficiency because of improper installation. HVAC QI improves operating efficiency and helps deliver the equipment's full potential.

The energy savings varies regionally depending on a number of factors, including climate and local building and installation practices. Average savings potential for each element of HVAC QI is estimated to be:

- Duct leakage 15%
- Sizing 5%
- Refrigerant charge 4%
- Air flow 3%

For a total savings potential of 27% in air conditioners and heat pumps and 15% in furnaces.

Exact savings are difficult to isolate, as HVAC QI is typically performed in conjunction with the purchase of new HVAC equipment and it is hard to determine an accurate before and after efficiency for the HVAC QI elements.

Average electricity savings claims for proper installation by current program sponsors range as follows:

- Air conditioner: 470-1,800 kWh per installation
- Heat pump: 400-2,300 kWh per installation

Additional detail on partner savings claims is available in the HVAC QI Annual Report.

**Q.** Is EPA working on developing a commercial HVAC QI program?

**A.** EPA is not currently developing program materials for the commercial sector. However, the Air Conditioning Contractors of America (ACCA) specification that is the basis of the HVAC QI program does include commercial installations.

**Q.** What are the requirements for duct leakage?

**A.** The ACCA specification defines maximum leakage in existing construction as:

- 20% of total air flow, OR
- A reduction of at least 50% from initial leakage rate

For new construction, leakage must meet one of the following requirements:

- Maximum 10% leakage from ducts inside the thermal envelope
- Maximum 6% leakage from ducts outside the thermal envelope

Sponsors that have already offered programs based on the Performance Tested Comfort Systems (PTCS) standard may use the PTCS criteria for duct leakage (measured on both supply and return sides) with prior approval from the EPA Program Manager.

Program sponsors or local authorities can choose to set their own maximum leakage levels as long as they are more stringent than the ACCA specification.

**Q.** Do program sponsors offer Sales Promotion Incentive Funds (SPIFs) to contractors or rebates to customers?

**A.** Yes, some program sponsors have chosen to provide SPIFs, some sponsors offer incentives to customers and some offer both. In existing programs, the total incentive available for HVAC QI ranges from \$300 to approximately \$1,500, with some partners offering additional separate incentives for high-efficiency equipment. One sponsor offers contractors rebates toward required equipment when they achieve certain levels of participation in the program.

Additional detail on current incentive structures is available in the HVAC QI Annual Report. To receive a copy of the report, email your request to [hvacqi@energystar.gov](mailto:hvacqi@energystar.gov).

**Q.** What is a Commissioning Form?

**A.** Participating contractors must complete a commissioning form for each HVAC QI installation to document equipment selection and measurements taken as part of the quality installation procedure. EPA provides a commissioning form template, shown in the Sponsor Guide posted at [www.energystar.gov/hvacqi](http://www.energystar.gov/hvacqi) - click on *For Sponsors* then look for the link under *Resources*. This template shows the minimum program requirements, and program sponsors may customize it to include other data or consolidate it with other sponsor forms.

**Q.** What are the requirements for third party verification?

**A.** The program sponsor must review the commissioning form for all jobs, and a percentage of jobs must be chosen for field verifications. The program sponsor, their program implementer, or a third-party approved by the sponsor can perform these verifications.

The verification requirements are phased to require a smaller sample for contractors as they gain experience in the program. These are the minimum program requirements for field verification:

- Phase 1: In-field verification on 3 of the first 5 jobs completed by a contractor who is new to the program.
- Phase 2: After the first 5 jobs have been completed, 5% of the subsequent installations require on-site verification.

Program sponsors may choose to require a higher sampling rate, and they may perform additional verification for selected contractors if necessary to ensure that installations are meeting the HVAC QI standard.

**Q.** How can interested contractors get involved with HVAC QI programs?

**A.** EPA has developed some free resources that any contractor is welcome to use, whether or not they are participating in an HVAC QI program: online training (recorded and live sessions) and the ENERGY STAR [Bid Comparison Checklist](#). To find these resources go to [www.energystar.gov/hvacqi](http://www.energystar.gov/hvacqi) and click on *For Contractors*.

Currently, in order for a contractor to participate in an HVAC QI program and complete official HVAC QI installations, the contractor needs to be located in area with a locally-sponsored HVAC QI program. To view current program sponsors, see [www.energystar.gov/hvacqi](http://www.energystar.gov/hvacqi) or contact your local utility.

**Q:** What resources does EPA offer to program sponsors?

**A.** Free support and guidance

- Program design and ongoing implementation support
- Sponsor Guide document
- Sample program documents and forms (Commissioning form, Verification form, ENERGY STAR certificate to provide to customers after installation)
- Contractor training materials (in-person training may also be available)
- Marketing materials (HVAC QI brochure customized with sponsor contact information, case studies to highlight success stories)

**Q.** Does the HVAC QI program cover geothermal systems?

**A.** The latest ACCA specification includes geothermal systems. The current program sponsors do not include geothermal systems in their programs and EPA has not concentrated on these so far. However, if a utility is interested in sponsoring a program encompassing geothermal systems, EPA is happy to work with them.

**Q.** What is the recommended or required lead time for developing an HVAC QI program?

**A.** This will depend on the circumstances of each program sponsor. Some will start from scratch and may need to include time for contractor outreach, education, and training. Other program sponsors may be re-branding an existing program to be an ENERGY STAR program and may need less lead time. In any case, launching an HVAC QI program is often easier in a “shoulder season” (fall or spring).

**Q.** What can homeowners receive in recognition of their HVAC QI installation?

**A.** EPA provides program sponsors with an electronic HVAC QI certificate template, which can be personalized and distributed to customers after completion of their installation. A sample of the certificate is available in the Sponsor Guide posted at [www.energystar.gov/hvacqi](http://www.energystar.gov/hvacqi).

**Q.** Are there any recommended certifications or trainings that HVAC QI contractors should complete?

**A.** EPA requires that program sponsors train and approve contractors to participate in the program. Other certifications such as NATE are required by some sponsors as a prerequisite to participation, but EPA does not have a specific training or certification requirement.

**Q.** Where can I get more information?

**A.** Visit [www.energystar.gov/hvacqi](http://www.energystar.gov/hvacqi) - the main page is consumer focused and additional information including the Sponsor Guide document is available under the links *For Sponsors* and *For Contractors*

E-mail [hvacqi@energystar.gov](mailto:hvacqi@energystar.gov) for a copy of the latest HVAC QI annual report or additional information.