

# Potential and Pitfalls with Quality Installation Verification

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## Introduction

This poster explores the verification of baseline technical assumptions behind a high efficiency air conditioner quality installation program. By comparing data gathered through both contractor self-report as well as on-site visits, we found differences between how contractors report their quality installation (QI) procedures and actual on-site measurements.

## Methodology

Cadmus surveyed 15 nonparticipating contractors, asking detailed questions about their practices administering the QI components. We weighted responses by sales to derive component-level freeridership values. Cadmus then used the relative savings attributable to each QI component to find an overall QI freeridership value of 55.3%.

Cadmus also used results from site visits to 18 homes with recent high efficiency non-program AC installations to determine the prevalence of QI compliance from nonparticipating contractors. That analysis yielded a failure rate for each component. Homes that satisfied the QI requirements received a passing score, and were the basis for the freeridership value. Cadmus then used the weighted savings attributable to each of the QI components to find an overall QI freeridership value of 54.2%.

Although the overall freeridership value based on self-report was virtually the same as the value derived from field measurement, we found significant differences at the component level. As shown in Table 1, the contractors we surveyed believed they were conducting a proper load calculation and duct sealing at a higher rate than what we found in the field during home visits. Conversely, contractors were under-estimating the frequency of dry bulb and wet bulb recording.

**Table 1. Self-Report and Field Measured Quality Install Freeridership Comparison**

Quality Install Component	Self-Report Freeridership	Field Measured Freeridership
Load Calculation	58.9%	22.2%
Dry/Wet Bulb	32.0%	77.8%
Refrigerant Charge	57.7%	50.0%
Duct Sealing	87.6%	50.0%
<b>Total</b>	<b>55.3%</b>	<b>54.2%</b>

This poster will explore implications for how these differences affect contractor perceptions of the installation work they do and their actual installation practices. Further we suggest ways to address the perception gap with participating contractors to improve their quality installation practices. This evaluation resulted in specific topics for contractor training on QI, communication strategies with HVAC installation contractors, and some program design changes resulting in greater savings for the program.