

DOCKETED

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*Comment Received From: Air Conditioning Contractors of America
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**ACCA Comments Supporting Manual J Load Calculations Verified
by Contractor-Friendly Software for Home Energy Ratings**

Additional submitted attachment is included below.



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Air Conditioning Contractors of America

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February 23, 2024

California Energy Commission
Docket Unit
715 P Street
Sacramento, CA 95814

RE: Docket No. 23-HERS-02

Dear California Energy Commission:

I write today on behalf of the Air Conditioning Contractors of America (ACCA), the leading national association representing heating, ventilation, air conditioning, and refrigeration (HVAC-R) contractors. Our over 3,000 member companies are recognized as industry leaders and are responsible for \$88 billion in annual sales. ACCA supports its members in cooperation with a network of state and local Allied Contracting Organizations, including the Institute of Heating and Air Conditioning Industries (IHACI) in California.

ACCA's ANSI-approved quality standards – such as manuals S, J, and D for residential design -- have been adopted by utilities, government agencies, manufacturers and others nationwide because these are the only standards that show how to make buildings' heating and cooling systems truly energy efficient while ensuring occupant comfort. ACCA was also a leading partner in the development of the ANSI/RESNET/ACCA/ICC Standard 310 for the Grading and Installation of HVAC Systems in new home construction.

It has come to our attention that the California Energy Commission is considering requiring HVAC load calculations as part of Docket No. 23-HERS-02. Given the enormous efficiency and comfort impacts of widespread oversizing of heating and cooling systems, ACCA applauds efforts incentivize load calculations as part of every HVAC project – provided those calculations are performed in adherence with ACCA's Manual J ANSI standard. Load calculation software that has been reviewed for compliance with ACCA design standards and building code requirements can be found on ACCA's website at www.acca.org/standards/approved-software.

We further urge CEC to ensure that any requirement for HVAC load calculations allows for HVAC contractors, not just HERS raters, to certify that a proper Manual J load calculation has been conducted.

An Urgent Need for Quality Installation

In recent years, efficiency programs and consumers have spent hundreds of billions chasing modest improvements in the nameplate efficiencies of HVAC systems, but Quality Installation has often been the missing leg of the stool. A 2014 NIST study found that about half of HVAC systems have significant installation faults, costing as much as 40 of their design efficiency. Equipment oversizing and refrigerant undercharge can each decrease efficiencies by 20 percent.



If there are multiple faults in a residential HVAC system, then the annual increased energy consumption can be more than 40 percent, and some recent studies have suggested even greater penalties.

The HVAC systems our members install, service and repair are the largest consumer of energy in America. U.S. homes consume about 10.18 quadrillion BTUs, and residential HVAC systems account for nearly 48 percent of total energy consumption in U.S. households.¹ A 30 percent energy loss in HVAC systems for failing to observe ACCA installation, duct work, or home performance procedures wastes about 1.5 Quads, or 439,606,625,000 kilowatt hours (kWh). With 124.6 million households in the U.S., and an average energy cost of 13 cents per kWh, each household wastes about 3,500 kWh (\$458 per year).

Quality Installation is the low hanging fruit to achieve our efficiency goals.

New Technology Can Verify Quality Installation and Load Calculations at Scale

Contractors' growing adoption of smart diagnostic tools makes it both easier and more reliable to verify that a system is operating to manufacturer specifications. In fact, over 16,000 technicians use the measureQuick® app daily to verify installation quality. ACCA has partnered with measureQuick® to re-launch its Quality Installation (QI) certificates, including Verified System Performance (VSP) certificates which also include a review of load calculations and other design elements.

Others including National Comfort Institute (NCI) and California's IHACI are similarly developing tools that similarly help HVAC contractors certify their quality work. While IHACI's own Visual Service software does not yet include load calculation or system design reviews, ACCA is eager to partner with them and others to ensure that all contractors are empowered to verify their load calculations rather than relying on third parties like HERS raters.

ACCA's base level QI certificate, Verified Equipment Operation (VEO), is earned when a new HVAC installation meets high standards in areas including:

- Airflow
- Refrigerant charge (for air conditioners and heat pumps)
- On-rate combustion (for furnaces and boilers)
- Electrical

The Verified System Performance (VSP) certificate takes things a step further. The entire HVAC system is considered, including everything required for VEO certification plus:

- Ventilation
- Manual J load calculation
- Manual S equipment selection
- AHRI matched system
- Tight ductwork
- Balanced airflow

¹ <https://www.eia.gov/consumption/residential/data/>

A VSP certified system that uses qualifying ENERGY STAR equipment may also earn an [ENERGY STAR Verified HVAC Installation](#) (ESVI) certificate. Learn more about this program and certificate options at: www.acca.org/qa/prove-it.

The measureQuick® app, already boasts an unparalleled ecosystem of diagnostic tools, monitoring devices, HVAC contractors, and software providers and is continually adding new integrations. ACCA is also open to exploring additional certificate pathways outside measureQuick®.

ACCA is also working with measureQuick® to develop a certificate for verification of compliance with the ANSI/RESNET/ACCA/ICC Standard 310 for the Grading and Installation of HVAC Systems in new homes.

Additional Comments

The successful adoption of quality installation practices and smart connected tools throughout the HVACR industry will require a significant investment in training for contractors and their teams. We urge the state of California to work towards enhancing these skills through contractors' in-house training programs, existing apprenticeship programs, and organizations like IHACI.

Working through our network of state and local [Allied Contracting Organizations](#) ACCA offers a variety of in-person, live virtual, and on-demand courses on topics like residential system design, home evaluation and performance improvement, duct diagnostic and repairs, smart connected tools, and A2L refrigerant safety. We would be glad to partner with the California Energy Commission to integrate these resources into your training vision and ensure that you're connected with rather than competing against well-established training programs.

Thank you for the opportunity to discuss the importance of Manual J load calculations as verified by ACCA certificates. For additional details, please contact Wes Davis, Director of Technical Services, at 703-824-8847 or wes.davis@acca.org.

Regards,



Sean Robertson
VP of Membership, Advocacy, and Events
Air Conditioning Contractors of America