



**Goal 2: Commercial Quality Installation Committee
Monday February 29, 2016 Meeting Notes**

Call to Order

The meeting was called to order at 1:08 pm PST by Rob Falke, Chair and President of National Comfort Institute (NCI). Meetings are normally scheduled for 60 minutes.

Roll Call

Quorum for voting organizations = 4 of 6. 4 of 7 voting members, 0 non-voting members and 2 guest/staff attended this meeting. A total of XX members and guests were in attendance.

P = present at meeting

A = absent voting member; if proxy has been assigned it will be noted below.

WHPA Goal 2: CQI Committee VOTING Members				Roll Call
Air-Tro	Bob	Helbing	Contractor (Nonresidential)	
BuildingMetrics	Pete	Jacobs	Energy Efficiency Program Consultant	
National Comfort Institute (NCI)	Rob	Falke	Educator, Trainer	
Southern California Edison (SCE)	Sean	Gouw	California IOU	
San Diego Gas & Electric (SDG&E)	Jeremy	Reefe	California IOU	
Tre' Laine Associates	Pepper	Hunziker	Other Stakeholder	
WHPA Goal 2: CQM Committee NON-VOTING Members				Roll Call
Aire Rite AC & Refrigeration	Larry	Smith	Contractor (Nonresidential)	
American, Inc. **	Darwin	Ward+		
IC Refrigeration	Rich	Imfeld	Contractor (Nonresidential)	
Lee's AC, Htg. and Bldg. Performance**	Bryan	Lee+	Third Party Quality Assurance Providers	
JP Gorman, Inc **	Joe	Gorman Jr.+	Controls (Manufacturer or Distributor)	
Southern California Edison (SCE)	Tara	Becnel	California IOU	
Southern California Edison (SCE)	Scott	Higa	California IOU	
Southern California Gas Company (SoCalGas)	Pete	Tanios +	California IOU	
WHPA Goal 2: CQI Committee Invited Guests and Staff				Roll Call
Aire Rite AC & Refrigeration	Don	Langston	Contractor (Nonresidential)	
California Public Utilities Commission (CPUC) - Energy Division	Lola	Odunlami	California PUC	
IC Refrigeration	Rich	Imfeld		
STAFF				
BNB Consulting/WHPA Staff, host, admin. support & scribe	Bob	Sundberg	WHPA Staff	
Empowered LLC	Shea	Dibble	WHPA Co-Director	

** Organization is Not a Member of the WHPA; + Individual is NOT Registered with the WHPA;

(P) after last name = Member/Registrant is Pending Approval from the WHPA Executive Committee



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AGENDA		
Topic	Discussion Leader	Desired Outcome
Welcome, roll call, approve past meeting minutes, review ACTION items and agenda	Rob Falke and Bob Sundberg	Record meeting attendees, finalize past meeting minutes, review status of meeting action items.
Welcome members & guests	Rob Falke	New members and invited guests welcomed.
New Business	Rob Falke	Address any new or critical issues.
Report on previous assignments	Hunziker & Sean Gouw	Standards and training organizations research related to HVAC performance evaluation.
CQI Field Measurement Data Spec. Work Group	Pete Jacobs	Update committee on WG status. Propose resource requirement to complete work in 2016. Number of meetings and meeting durations.
CQI HVAC Unit/System Performance Evaluation Protocol	Rob Falke	Discuss and propose resource requirement for follow-on WG for 2016. Number of meetings and meeting durations.
Proposed ASHRAE performance standard development	Rob Falke	Understanding of what was proposed to ASHRAE.
2015 goal assessment and 2016 goal pre-planning	Rob Falke	Assess 2015 goal progress, carryover into 2016 and preliminary goals for 2016.
Summarize meeting, assignments/ACTION items, set next meeting date/time, adjourn	Rob Falke and Bob Sundberg	Set next meeting date, confirm time, review any new ACTION items and next meeting agenda items.

Approve Minutes of Previous Meeting

The December 18, 2015 meeting notes were distributed December 31 and approved at the February 29, 2016 meeting. Bob Sundberg would have finalized meeting notes posted to the committee's website location.

Welcome New Members and Guests, Membership Status

Rob Falke, NCI and Chair, agreed to review current committee members and guests for status based on the degree of 2015 participation. He and Bob Sundberg would communication with less active members and guests to confirm their status for 2016. The goal was to retain active members and guests and seek replacements for current members who had not been active.

Rob Falke indicated that he'd been in contact with several other individuals who expressed interest in committee participation. He would provide that information to Bob Sundberg to begin the new member process with those individuals.



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ACTION: Rob Falke would provide contact information to Bob Sundberg about several individuals who had expressed interest in joining this committee. Bob Sundberg contact those individuals to begin the new member process.

Review Status of Action Items from Previous Meeting

July ACTION: Pepper Hunziker and Sean Gouw would investigate and provide a summary of all known standards which effected HVAC installation and performance as well as all known organizations which provided HVAC training and included training on those standards. Pending.

December Update: Rob Falke still needed to deliver the NCI standards summary document to Pepper and Sean that would be prepared in a format which could be reviewed by California utilities as well as the CPUC. The document includes direct references from six or seven industry standards which have direct bearing on commercial installation. Completed. Delivered to Pepper Hunziker and Sean Gouw in January for discussion at the January CQI Committee meeting.

December ACTION: Pete Jacobs and Rob Falke would talk with each of the other relevant WHPA committee chairs about how best to proceed with future phases of the data specification working group which would focus on residential installation and commercial maintenance. They would also contact ACCA representatives to discuss future committee goals, the committee name issue and learn about ACCA plans for revision of their Standard 5.

Status: Rob Falke met with Don Langston at ASHRAE/AHRI in January. He'd taken notes from their discussion about coordinating CQI/CQM committee efforts on the data specification effort. He had not discussed with further with Don or Dale Rossi since then. He intended to provide Don and Dale with his notes and discuss this further with both of them during the next month. Rob had also contacted Chris Ganimian of the RQI Committee and gotten input about what that committee would be interested in regarding a data specification specific to residential installation. Current thinking was that the commercial installation draft would be submitted to both the CQM and RQI committees so that those groups could customize the CQI draft more specifically to meet their application needs.

New Business - Rob Falke

None.

CQI Standardized Field Measurement Data Specification WG (CQM SFMDS WG) - Pete Jacobs

Pete Jacobs, BuildingMetrics Inc. and chair, reported that the WG held its last meeting December 29. He'd received member feedback as well as comments made by members and others during the ASHRAE meetings in January. From that input, he hoped to put out a final version of the commercial installation specification which WG members could vote on in early 2016.

Standards & Training Organizations Related to CQI - Sean Gouw and Pepper Hunziker

Pepper Hunziker, Tre' Laine Associates, reported that she and Sean had not been able to locate more than three or four utility related training efforts on system performance related standards listed on the summary document Rob Falke's firm had provided. They hadn't located any specific training offered for any of the standards on the list Rob had provided.

Rob Falke oriented the group to the standards summary list. Most specific references within each listed standard pointed to measurements which needed to be taken in order to evaluate unit or system performance. The instruments to use, accuracy requirements of the instruments and how to measure properly. Fan characteristics, methods for testing pressure. Methods of testing the design and seasonal efficiency of systems. Each individually touched on measurement procedures and methods of calculation. But, he'd never seen them pulled together to measure the field operating performance for a system.



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ASHRAE Proposed Performance Standard - Rob Falke

At the ASHRAE meetings a standard was proposed for development – A Test Method for Measuring the Operating Performance of an Installed HVAC System. This was presented to the TC7.3 and main standards committee. Both committees approved further consideration for development of a new standard and elevated the proposal. There were many questions fielded from ASHRAE committee members, mostly engineers, regarding adaption of current installation standards to installed systems. A recurrent question was why hadn't this type of standard been addressed long before. Almost all current ASHRAE test methods standards were designed for laboratory use. There was virtually no focus on systems once installed or the degree of performance deterioration that occurred. Almost no industry data on existing system performance existed. One small study of 23 systems his firm had conducted for ASHRAE had revealed that system performance deteriorated as much as 40% to 60% from new system potential efficiency which meant the opportunity for improvement was huge. In correcting degraded performance of those systems, the power consumption did increase on average by about 3% while system efficiency was improved up to 60%. Because of these potential improvements, ASHRAE seemed to be very interested to develop a series of field measurement standards.

Rob described some of the issues and conclusions found in a recent DOE publication. Field measured air pressure was found to be up to 10X the AHRI tested pressure which had a very direct bearing on power consumption per 100 CFM airflow. The impact of all of this was that current system efficiency ratings might be considered exaggerated as a result of lab test parameters vs. field operation. New methods for describing equipment efficiency (SEER and HSPF) were having to be considered. One of the important conclusions was that increases in equipment efficiency designs had gone about as far as it could go without dramatically increasing costs and complicating service and maintenance. There appeared to be a heightened interest to now focus on savings no longer just on higher efficiency equipment but on operation and the distribution system. He thought that the WHPA and this committee's focus seemed to be in the right place at the right time as many groups were searching for how to pursue greater energy savings.

Pete Jacobs, BuildingMetrics Inc., wondered if Rob had found any useful or valuable information in ASHRAE Guideline 14-2014?

<https://www.ashrae.org/standards-research--technology/standards--guidelines/titles-purposes-and-scopes#Gdl14>

ASHRAE Guideline 14-2014 –Published guideline. Supersedes ASHRAE Guideline 14-2002.
Measurement of Energy, Demand and Water Savings

1. PURPOSE:

The purpose of this document is to provide guidelines for reliably measuring the energy, demand and water savings achieved in conservation projects.

2. SCOPE:

2.1 This document provides procedures for using measured pre retrofit and post retrofit billing data (e.g., kWh, kW, MCF, kGal) used for the calculation of energy, demand and water savings.

2.2 The procedures:

- (a) include the determination of energy, demand and water savings from individual facilities or meters.
- (b) apply to all forms of energy, including electricity, gas, oil, district heating/cooling, renewables; and to water and wastewater. and
- (c) encompass all types of facilities: residential, commercial, institutional, and industrial.

2.3 Procedures do not include:

- (a) sampling methodologies used in large-scale demand side management programs,
- (b) metering standards, or
- (c) major industrial process loads.



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Rob thanked Pete for reminding him of this guideline which he was aware of but had never completed his study.

Pete Jacobs mentioned that it was ASHRAE's version of an international measurement and verification protocol. It included a lot of details about methods for taking accurate measurements.

<http://www.nrel.gov/docs/fy02osti/31505.pdf>
<http://mnv.lbl.gov/keyMnVDocs/ipmvp>

Pepper Hunziker asked about next steps once the data specification was completed and how that might impact workforce education and training. She indicated not being very familiar with the WG efforts or the data specification spreadsheet which Pete had referred to. What were those required measurements and how would you know if the training was adequate and in the right sequence? Bob Sundberg committed to providing her with a copy of the most recent spec. as well as copies of Pete's data specification WG meeting notes. Pete Jacobs stated that the meeting notes were very complete and would be helpful to get a better understanding of how the spec. was developed and the issues discussed.

Bob Sundberg, WHPA staff, brought the most recent data spec. up online to share and showed Pepper how many measurements were involved in various applications and uses. The spec. dealt more with which measurements were needed for performance evaluation and calculations. How the measurements needed to be taken would be dealt with more in the second WG phase, one dealing with development of the performance evaluation protocol and required calculations.

ACTION: Bob Sundberg committed to providing Pepper Hunziker with a copy of the most recent data specification spreadsheet as well as copies of Pete's data specification WG meeting notes.

Rob Falke commented to Pepper that understanding what these various measurements were and how to accurately take them was fairly complex and did require a good deal of training and care. There was no shortcut or silver bullet for WE&T. Performance evaluation was a system test method beyond each of the individual standards his firm had gathered. It was a new inclusive approach that no one current discipline offered since it was beyond commissioning, test and balance and other common individual practices. And it was beyond the already challenging efforts to measure performance in the laboratory. Conducting field measurements, trying to simplify the method to what everyday technicians could complete, was a daunting challenge. The training necessary to get technicians to perform these tasks would be an interesting skillset.

CQI Committee Goals - Rob Falke

Rob Falke, NCI, noted that the CQI Committee proposed goal, which had come out of the breakout group at the November 2015 WHPA In-Person meeting, had no committee member participation. The goals developed and submitted to the Executive Committee mirrored the spirit of the committee's 2015 goals but not the specific goal details or wording. He proposed that he compare the In-Person goal document to the committee's 2015 goals and suggest a goals version for 2016 which could be provided to the Executive Committee.

ACTION: Rob Falke would review and compare the committee's 2015 goals against CQI Committee goals developed by the November 5 WHPA In-Person Meeting breakout group. He would produce a suggested version for 2016 which could be submitted to committee voting members for approval by Friday March 4 and then provided to the Executive Committee for consideration at their March 9 meeting.

Closing Comments/Adjournment

Rob Falke thought they could hold the next meeting on a Friday, possibly the week of March 21 – 25.



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The next meeting was planned for March 25 at 1:00 pm PT.

The meeting was adjourned at 2:12 pm PST.

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Summary of Pending and New Action Items and Key Decisions

January 2016 ACTION: Rob Falke would provide contact information to Bob Sundberg about several individuals who had expressed interest in joining this committee. Bob Sundberg contact those individuals to begin the new member process.

January 2016 ACTION: Rob Falke would review and compare the committee's 2015 goals against CQI Committee goals developed by the November 5 WHPA In-Person Meeting breakout group. He would produce a suggested version for 2016 which could be submitted to committee voting members for approval by Friday March 4 and then provided to the Executive Committee for consideration at their March 9 meeting.

January ACTION: Bob Sundberg committed to providing Pepper Hunziker with a copy of the most recent data specification spreadsheet as well as copies of Pete's data specification WG meeting notes. Completed March 6.

July 2015 ACTION: Pepper Hunziker and Sean Gouw would investigate and provide a summary of all known standards which effected HVAC installation and performance as well as all known organizations which provided HVAC training and included training on those standards. Pending.

December 2015 Update: Rob Falke still needed to deliver the NCI standards summary document to Pepper and Sean that would be prepared in a format which could be reviewed by California utilities as well as the CPUC. The document includes direct references from six or seven industry standards which have direct bearing on commercial installation.

December 2015 ACTION: Pete Jacobs and Rob Falke would talk with each of the other relevant WHPA committee chairs about how best to proceed with future phases of the data specification working group which would focus on residential installation and commercial maintenance. They would also contact ACCA representatives to discuss future committee goals, the committee name issue and learn about ACCA plans for revision of their Standard 5.