



Goal 2: Commercial Quality Installation Committee Meeting Minutes
Friday, July 21, 2017

WHPA Code of Conduct: Please note that all participants of all Western HVAC Performance Alliance (WHPA) meetings, committees, working groups, and ad hoc groups shall adhere to the WHPA Code of Conduct: <http://www.performancealliance.org/Home/CodeofConduct/tabid/205/Default.aspx>.

Call to Order

The meeting was called to order at 10:20 a.m. PDT by Chair Rob Falke (NCI). There are eight voting members, and meeting quorum is five. Meetings are scheduled for 60 minutes.

Welcome

Rob Falke (NCI) reviewed the agenda. No additional items were added.

ITEM	AGENDA TOPICS	DISCUSSION LEADER
5 min	Welcome and Roll Call	Falke/Galawish
5 min	Approval of June 16, 2017, Meeting Notes	Galawish
15 min	Discussion About This Week’s Events: <ul style="list-style-type: none"> T-24 CEC Meeting and Direction WHPA Article on ASHRAE 221 Committee’s Work 	Falke
5 min	CI Data Spec Working Group Update	Jacobs
10 min	Goals 2 and 4 Update: Work Products for 2017: <ul style="list-style-type: none"> White Paper Aimed at Operationalizing AB 802 on the Street (Q3 2017) White Paper on Typical CA HVAC System Performance (Q4 2017) 	Falke
15 min	ASHRAE SPC 221 Update	Falke
5 min	New Business	Falke
	Closing Comments/Adjournment	Galawish
	Next Meeting – August 18, 2017: 10-11 a.m. PDT	Galawish

David Catanese (CLEAResults) introduced himself. He was formerly with Conservation Services Group, and he has worked on Southern California’s IOU residential programs—code compliance and upstream—and SDG&E’s premium efficiency cooling program. Past work includes managing Massachusetts MassSave Program, a weatherization program. Currently his main role in California is managing SDG&E premium EE core program, SoCalGas EE programs for schools (resource efficiency in schools), and HERs training program. He played critical roles in implementing these programs.

Paul Thomas (SDG&E) introduced himself. He joined SDG&E in January 2017, although he has worked with and for the utilities for about twenty years. He worked for a consulting firm for 4-5 years; started two consulting firms; worked four years at SCE running programs such as Sustainable Communities, EUCA, and Water Energy Nexus pilot; spent ten years at SoCalGas working on vendor programs with trade allies; was account exec rep for commercial customers; and was intern for five years conducting EE audits. In his role at SDG&E, he is now in charge of the SW program administration for residential and nonresidential HVAC upstream and midstream programs across all IOU service territories.



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Roll Call

Organization	First Name	Last Name	WHPA Category	P=Present
Voting Members				
BMI (BuildingMetrics Inc.)	Pete	Jacobs	Energy Efficiency Program Consultant	P
NCI (National Comfort Institute)	Rob	Falke	Educator, Trainer	P
Non-Voting Members				
SCE (Southern California Edison)	Scott	Higa	California IOU	P
SDG&E (San Diego Gas & Electric)	Paul	Thomas	California IOU	P
Guests				
CLEAResult	David	Catanese	Energy Efficiency Program Consultant	P
Staff				
Galawish Consulting Associates (Staff Support)	Elsia	Galawish	Energy Efficiency Program Consultant	P

Approval of June 16, 2017, Meeting Notes

Pete Jacobs (BMI) made a motion to approve the minutes; Rob Falke (NCI) seconded that motion; however, since there was not a voting quorum present to approve the June 16, 2017, CQI Meeting Minutes, Bonnie Gustavson (Staff) will send an email to the remaining voting members for their email vote to approve. *(NOTE: the email tally vote was taken and these Minutes are approved as of 8/14/17.)*

Discussion About This Week's Events

Rob Falke (NCI) – Was at the meeting at the CEC on July 18 which rolled out the 2019 standards feedback. Have some concerns about that meeting; forward facing committee; we are looking ahead towards AB 802; savings at the meter NMEC; our work product focuses on how systems are working around California; performance-based committee.

Paul Thomas (SDG&E) – He attended and wants to hear other folks' input – interested in learning more about C&S and also what specific concerns arose from the July 18 CEC's workshop.

Rob Falke (NCI) – He has the following concerns:

1. Continued use of DEER and not moving to metered data (NMEC)
2. Questions/concerns during workshop were not addressed – no real feedback; no knowledgeable presenters.

Paul Thomas (SDG&E) – Countered that there was an amount of dialog at the beginning of the workshop, especially around whole house. He is interested in learning more about the standards and related issues.

Pete Jacobs (BMI) – Code compliance generally means a combination of mandatory things you have to do to comply with code – check-off box or compliance trade-offs. It is not clear how DEER fits into the current code process.

Rob Falke (NCI) – Intent is for code to move in the direction of savings at the meter and away from measures and checking-the-box. There is little on measure performance, only Acceptance Testing.



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Pete Jacobs (BMI) – For new construction, it is difficult to get savings at the meter. For renovations or systems replacement that fall under code jurisdiction, there would be an opportunity to get savings at the meter. However, the code's major concern is new construction. The original Acceptance Tests were developed by PECE (now CLEAResults) in Portland.

Scott Higa (SCE) – How old is the Acceptance Testing protocol?

Pete Jacobs (BMI) – Acceptance Testing was introduced as a component to the code compliance process in early 2000. There have been periodic updates to this test over the years.

Rob Falke (NCI) – Judy Johnson (Staff) is drafting an article for the WHPA Newsletter regarding this Committee and Working Group's work. The article specifically mentions the relationship between WHPA and ASHRAE and highlights a lot of the Committee's work products. It provides background on the input that these two Committees have added to the proposed ASHRAE 221 Standard and touched on how quickly it has moved forward, along with its potential impact on the industry. This article should be available shortly.

Scott Higa (SCE) – For the benefit of Paul Thomas (SDG&E) and David Catanese (CLEAResult), I'd like Rob Falke (NCI) to provide a helpful-to-high-level description of the ASHRAE 221 Committee and how CQI and its Working Group has supported that work. (See ASHRAE SPC 221 update on page 4 of these minutes.)

CI Data Spec Working Group Update

Pete Jacobs (BMI) – Provided an update on the CQI Field Data Specification (FDS) Working Group's activities beginning with an *historical perspective* for new members' benefit.

Formed Working Group to provide standardized working specs for measurements taken in the field from the context of commercial and residential installation (CI and RI) and commercial maintenance activities. Last year, we received approval from the WHPA Executive Committee for our commercial installation spec; since then we have worked on developing adaption of this for commercial maintenance and residential installation areas.

The idea around the data spec was just to develop standardized definitions and formatting for field data in terms of what is collected and how it is collected. This makes it easier to capture data, use it for program evaluations, and plug into savings calculation procedures.

We created a variance of the approved CI specs for RI and sent to the RQI Committee. It was reviewed, and they have taken the specs which will be sent for approval to the EC later this year.

The third aspect of this was the commercial maintenance spec. We developed a draft and had a Committee meeting to discuss and solicit comments. Comments were received from one person. Pete Jacobs (BMI) would prefer additional review/comments before handing over to the CQM Committee.

ACTION ITEM: Scott Higa (SCE) and Paul Thomas (SDG&E) volunteered to review the CM pro forma data spec and provide comments. Paul Thomas (SDG&E) asked Pete Jacobs (BMI) to also send it to David Catanese (CLEAResult) for review.

Skip Ernst (Daiken Applied) – I have a lot of experience in making performance measurement in the lab. The strategy at this point is to have a series of meetings to talk about instrumentation techniques – instruments to use, best practices for field measurement, and good field protocols (how one makes these types of measurements in the field). We recognize that field measurements are much more uncertain than lab measurements, but we have a way of dealing with that through our measurement uncertainty analysis—where to look at reasonable uncertainty in field measurements. We then



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propagate that through to the uncertainty in the measured quantities—part of overall commercial installation performance metric—and account for those uncertainties. The objective of this is to look at performance metrics before and after system improvements to see if the measured performance increase is outside the uncertainty in the pre/post measurements.

Rob Falke (NCI) – Basically, what the CQI FDS Working Group did was to operationalize ASHRAE 221 in the utility program. A small amount of data is needed in the data spec but they expanded the data collection to show what the IOUs energy savings program would need to effectively implement ASHRAE 221. The Working Group provided many of the principles for the Standard and imparted a great foundation from which to launch the Standard. We have had very good cross-cutting committee relationships with the RQI and CQM Committees throughout this process with many of their members being a part of the ASHRAE 221 Committee.

Goal #3: *Data Specs:*

- RQI Committee has reviewed the data specs and concluded that there is no need for an RQI FDS Working Group because the industry is currently collecting the information required in the specs under existing ACCA 5 and 9.
- Working to wrap up data specs for QM by incorporating ongoing feedback into draft pro forma QM data specs; draft will be finalized and sent to the CQM Committee for consideration in early August.

Goal #4 & #5 *Test Protocols and Standardized Calculation Methods:*

- Currently working on these goals in collaboration with the ASHRAE SPC 221 Standard Committee. SPC 221 work feeds into instrumentation techniques and the Working Group goals.

ASHRAE SPC 221 Update

Rob Falke (NCI) – *What the ASHRAE 221 Standard does?*

It provides a test method that can score the performance of a system once installed in a building. It scores a system as a simple % of rated equipment capacity. For example, a system may be rated at 120k BTUs. We measure through this process to find out how many of those BTUs make it into the building. If 60k BTUs make it into the building, then that system (once installed in the building) is operating at 50% of equipment-rated capacity. What we have learned from the Committee is that we measure the % of deterioration of performance in the system through installation. With the manufacturers' lab rating of 100% and field measurement at 50%, the net effect of that installation is a 50% decrease in the efficiency of that system. 55% is roughly what we have found around California. Once a system is fixed and improved, we are finding efficiency increases from 55% to 85%. That is >60% improvement in the performance of the system. We are working on a formula to convert that to savings. With data collected in this group, there is a direct correlation to savings at the meter.

Standard 221 is written in the language of the field practitioners, regulators, EM&V practitioners, contractors, and technicians so they can use it. It is an in-field test method that can be performed on any system. It is an improvement to HVAC systems installation performance assessment. We have expanded from constant volume systems to variable volume systems.

The 221 Committee has been working on the Standard for eleven months (since September 2016), and we expect it to be released on August 2, 2017, for public review.

Scott Higa (SCE) thanked the CQI Committee and CQI FDS Working Group for all their efforts, especially Working Group Chair Pete Jacobs (BMI) who has been involved in all aspects of HVAC activities (CPUC, WHPA, and IOUs). These efforts have helped with SCE's HOPPs alignment with CQI activities. Rob Falke (NCI) mentioned that Scott Higa's (SCE) program was critical to at least 50% of the data collected, and these data are being used by the ASHRAE 221 Standard Committee. Rob Falke (NCI) informed the group that it was the SCE CQI program that Scott Higa (SCE) managed that allowed for the field data collection. About half of the data NCI collected came through this program.



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Goals 2 and 4 Update: Work Products for 2017

Rob Falke (NCI) –

Goal 2 – *AB 802 Field Measured Individual System Baseline Work Product:*

The Committee is continuing to draft a white paper to communicate how it thinks AB 802 can be implemented in the field and provide solutions to several issues that are not addressed by AB 802. The white paper will bring awareness to all stakeholders on HVAC “sales-related” issues. This is a first cut at describing the current situation and some of the gaps between (a) AB 802 as legislated, (b) AB 802 as interpreted by the CPUC, and (c) the actual “boots in the field” that will get the work done. A draft will be distributed by the end of September 2017 for review and comments.

Goal 4 – *Typical CA HVAC System Performance Work Product:*

The Committee is drafting a white paper that looks at using ASHRAE SPC 221 to determine calculation methods for developing a standardized, repeatable, performance-based method for systems evaluation in California and using a test method to score performance of systems. The draft will be available in Q4 2017.

New Business/Closing Comments/Adjournment

The meeting adjourned at 11:01 a.m. PDT.

Next Meeting: Friday, August 18, 2017, at 10:00 a.m. PDT.

ACTION ITEMS:

1. **Bonnie Gustavson (Staff)** to send email vote request to the CQI Committee voting members for approval of June 16, 2017, CQI Committee Meeting minutes. (*NOTE: the email tally vote was taken and these Minutes are approved as of 8/14/17.*)
2. **Pete Jacobs (BMI)** to send draft pro forma QM data specs to Scott Higa (SCE), Paul Thomas (SDG&E), and David Catanese (CLEAResults).
3. **Scott Higa (SCE), Paul Thomas (SDG&E), and David Catanese (CLEAResults)** to review QM data specs and send comments to Pete Jacobs (BMI), pjacobs@buildingmetrics.biz.
4. **CQI Committee members** to review AB 802 white paper (pasted below) and provide comments to Rob Falke (NCI), robf@ncihvac.com.

White Paper for Review



Taking AB 802 into
the Field v 1.3 7-18-17

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