



## Goal 2: Commercial Quality Installation Committee Meeting Minutes Friday November 4, 2016

### Call to Order

The meeting was called to order at 1:04 pm PST by Rob Falke, Chair and President of National Comfort Institute. Meetings are normally scheduled for 60 minutes.

### Roll Call

Quorum for voting organizations = 5 of 9. Meeting attendees included: 7 voting members; 0 non-voting members; 0 guest; 1 staff. A total of 8 members and guests attended this meeting.

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)	
Aire Rite AC & Refrigeration	Don	Langston	Contractor (Nonresidential)	P
All Pro Plbg., Htg. & AC	Michael	Greany	Contractor (Nonresidential)	P
BuildingMetrics	Pete	Jacobs	Energy Efficiency Program Consultant	P
Green Link Mechanical	Jerry	Hernandez	Contractor (Nonresidential)	
Lincus-Solaris	Brian	Mauleon	Energy Efficiency Program Consultant	P
National Comfort Institute (NCI)	Rob	Falke	Educator, Trainer	P
Southern California Edison (SCE)	Sean	Gouw	California IOU	P
Tre' Laine Associates	Pepper	Hunziker	Other Stakeholder	P
WHPA Goal 2: CQI Committee NON-VOTING Members				Roll Call
Aire Rite AC & Refrigeration	Larry	Smith	Contractor (Nonresidential)	
AMS	Marc	Pickett	Contractor (Nonresidential)	
National Comfort Institute (NCI)	Ben	Lipscomb	Educator, Trainer	
Lupson & Associates LLC	Warren	Lupson	Other Stakeholder	
San Diego Gas & Electric (SDG&E)	Jeremy	Reefe	California IOU	
Southern California Edison (SCE)	Scott	Higa	California IOU	
WHPA Goal 2: CQI Committee Approved Guests and Staff				Roll Call
IC Refrigeration	Rich	Imfeld		
ServTEC AC	George	Rodriguez	Contractor (Nonresidential)	
Southern California Gas Company (SoCalGas)	Pete	Tanios +	California IOU	
<b>STAFF</b>				
BNB Consulting/WHPA Staff, host, admin. support & scribe	Bob	Sundberg	WHPA Staff	P
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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<b>AGENDA</b>		
<b>Topic</b>	<b>Discussion Leader</b>	<b>Desired Outcome</b>
Welcome, roll call, review agenda, approve past meeting minutes and ACTION items	Rob Falke and Bob Sundberg	Record meeting attendees, finalize past meeting minutes, review status of meeting action items.
Welcome members & guests	Rob Falke	Welcome new guests and prospective members.
New Business	Rob Falke	Committee informed on new business topics to be shared or considered.
Review 2016 approved goals and implementation plan	Rob Falke	Better understanding of proposed mission and goals. Solicit responses and suggestions for revision and/or additional goals to consider.
Definition – energy efficient commercial installation	Rob Falke	Discuss, develop and seek agreement on definition.
CQI Working Group Update – Standardized Field Data Spec. WG	Pete Jacobs	Update committee on WG progress and status of data specification.
Industry activity related to commercial installation	Rob Falke	Update members on recent industry activity.
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 August 19 meeting notes were distributed August 21. The minutes were finalized, approved and would be posted to this committee's location at the WHPA website. No meeting was held in September. The next meeting was originally scheduled for October 21 but was re-scheduled to November 4.

**Review Status of Action Items from Previous Meeting**

April 2016 ACTION: Pete Jacobs would provide Bob Sundberg with a concise description of his proposed goal regarding a standardized means for IOU program data collection and content which could be added to the final minutes and added to the list of proposed goals. Completed.

April 2015 ACTION: Sean Gouw would speak with Andres Fergadiotti about attending the next CQI Committee meeting to help the team better understand current SCE claimed savings efforts and approaches which might be considered for a CQI program. Ongoing.

August 2016 ACTION: Rob Falke would develop a short document which could be presented to the Executive Committee and request approval/adoption to complete their Goal #2 work product. Bob Sundberg would create the work product cover sheet which would summarize the goal, results of the committee vote and a space for the Executive Committee decision and any vote results. Pending.

**Welcome New Members and Guests**

None.



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### New Business - Rob Falke

None.

### Goal #2 – develop a definition for an efficient commercial HVAC installation

Rob Falke, NCI and Chair, had proposed a draft definition at the previous committee meeting which was voted on and approved by those in attendance. He committed to developing a short document which could be presented along with the definition to the Executive Committee (EC) for consideration in fulfillment of Goal #2.

#### Proposed Definition

***Efficient Installation Definition - An efficient commercial or residential installation is defined as an HVAC system having the delivered system capacity and efficiency, field measured into the conditioned occupied space, that meets or exceeds a predetermined percent of equipment rated efficiency.***

***Efficient Commercial Installation refers both to the process of field-measuring and documenting the performance of an installed HVAC system and to the objective of achieving improvements in measured performance.***

***The process of field-measuring efficiency is an emerging technology and details of the engineering calculations and measurement protocols are the subject of future work. The completed WHPA Commercial Installation Field Data Collection Specification will, once completed, define the measurement and calculation process necessary to quantify installed efficiency. As this specification is operationalized, efficiency targets may be developed that various types of installations must achieve to be considered an efficient commercial programs.***

Rob Falke commented that since the committee's efforts were works in progress, he thought this definition should not be considered to be cast in stone. As work proceeded, they should remain open to ways it might be improved over time. Rob Falke agreed to complete the document in the following week. Bob Sundberg will then send the final version to the committee and request an email vote. The approved document will be forwarded to the EC for acceptance.

Rob summarized statements made in a document he'd authored to accompany the definition to be delivered to the EC.

1. *Highly rated efficient equipment, installed safely and to code, did not assure an efficient installation for consumers.*
2. *Shifted the focus from equipment factory testing and rating of "potential" efficiency and capacity to the system efficiency and capacity measured in the field which was actually delivered into the building.*
3. *Compared installed system delivered capacity to bench rated equipment capacity.*
4. *Could also be expressed as an installed system field EER with the addition of power measurements.*

The scoring for a system still made use of the OEM equipment rating. The efficiency rating would be a ratio of field measured capacity compared to that OEM equipment EER rating. It was not yet the responsibility of this committee to propose or determine at what ratio or percentage an installed system would be considered "efficient." From some field research, typical installed systems had been found to be operating in the range of 55% of equipment rated capacity. Code compliant systems had been found to be a bit better at around 63% of equipment rated capacity. A system considered to have been installed efficiently sometime in the future might be anywhere above those levels. But, to be considered an efficient commercial installation, the installation would need to be "scored" by the ratio of field measured efficiency compared to the OEM equipment EER rating.

Don Langston, Aire Rite AC and Refrigeration, thought that the definition and progress toward field measured performance and an efficiency rating was fantastic.



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### Standardized Field Data Specification presentation – Peter Jacobs and Rob Falke

Rob Falke, Chair, provided background information about how this specification for commercial installation was the first of three which the committee intended to develop. A version of this spec. would be customized for commercial maintenance as well as residential installation applications. The commercial specification was the work product of the committee Goal # 3.

Goal 3 – Creates a working group to write a specification that identifies the data collected in the field for utility program tracking and to score the installed performance of the HVAC system.

Goal #3 was intended to identify the data and location/equipment/condition information needed to later determine the performance of the newly installed HVAC system.

Rob Falke directed Bob Sundberg to send out two different committee votes to keep issues separate for the data specification from that of the definition for an efficient commercial installation. The data specification working group had a vote in progress which was expected to be completed by the end of the following week, November 11, after which it could be voted on by the full CQM Committee voting members.

Rob Falke summarized Goals #4 & #5 which would follow completion of Goal #3 and be worked on during the next year.

Goal 4 – Further documents and vets the evaluation method for energy savings by identifying the specific formulae required to convert the field data to a system performance score and interpret energy savings.

Goal 5 – Describes the field test procedures required to gather data as the system is field tested, commissioned and evaluated according to HVAC industry standards.

Pete Jacobs, BuildingMetrics Inc. and Working Group Chair, provided background, WG project scope and purpose as well as the project objectives. After incorporating WG member comments into the specification, the WG met October 5 to review version 7.2. There hadn't been any major changes suggested. So, the group thought that a final document for commercial installations could be put out for final review by members and also by a smaller group of industry experts who had volunteered to review the specification. They had removed data points which were specific to a commercial maintenance and a residential installation application and would devote time to customize a specification to those applications next. The primary purpose of the project was to collect the data points, field measurements, which would be necessary to later determine both the equipment as well as the HVAC system delivered efficiency and capacity.

Pete commented that the format had been changed from the original spreadsheet format to a more narrative format in a word document which had been a strong suggestion from WG members. He then walked the group through the data spec. sections:

- Job data
- Utility data – might be important for any utility program ID and tracking
- General system data
- In field test data
- Required commercial test instruments
- Q&A – frequently asked questions



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The group discussed the quantity and degree of difficulty collecting the data noted in the specification. One point that was discussed further was data point 2.9 – age of the building. Did that represent the original construction date or a most recent “repurposing” or renovated building. The building might have been recently purchased and put to new use which would have had an impact on the HVAC system. The age would be noted to try and determine which version of code was in effect when the installation occurred.

Brian Mauleon, Lincus Solaris, volunteered to look into the building age data point and provide a suggested rewording, possibly around the most recent time that HVAC system changes were made which required a code compliance inspection.

**ACTION:** Brian Mauleon, Lincus Solaris, volunteered to look into the building age data point 2.9 and provide a suggested rewording.

Bob Sundberg, WHPA staff, suggested spelling out terms like ADEC in the General System Data, Economizer Data 3.25. The acronym for advanced digital economizer controller might only be known to a few California utility program participants.

Pete Jacobs agreed that all acronyms needed to be defined.

Pete commented that this data specification really focused on the air side measurements to capture delivered system efficiency. The maintenance data specification would probably focus on the equipment refrigerant cycle data in addition.

Pete concluded by letting committee members know that the WG was in the process of voting on approval for the specification. He hoped it would be approved shortly and would then be delivered to full committee voting members for their review and vote on approval.

### **Industry Activity related to Commercial Installation - Rob Falke**

He was aware of a few new utilities around the country which were considering commercial installation programs. Ones in Louisiana, Georgia, Massachusetts and Iowa which were considering some form of performance evaluation for commercial installations. He also mentioned that a new ASHRAE committee was being formed – SPC 221. Its purpose would be to develop a standard regarding a consistent method for measuring system performance in the field. As soon as this committee’s work product is approved as a WHPA work product, it could be shared with the ASHRAE SPC 221 Committee. It had taken over a year to form the committee which had already met a couple of times. One presentation shared at a meeting focused on the degree of uncertainty for field measurement test methods which he proposed be shared at the next committee meeting.

### **New Business - Rob Falke**

None.

### **Closing Comments/Adjournment**

Rob Falke reminded committee members to look for a vote request both for the 1) efficient commercial HVAC installation definition as well as the 2) standardized field data specification.

The next meeting was scheduled for December 16, the 3<sup>rd</sup> Friday.



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Agenda items for the next meeting could include results on their votes, progress on the commercial maintenance and residential installation specifications as well as the uncertainty presentation for field measurement test methods.

The meeting was adjourned at 2:05 pm PST.

\* \* \* \* \*

### Summary of Pending and New Action Items and Key Decisions

November 4, 2016 ACTION: Brian Mauleon, Lincus Solaris, volunteered to look into the building age data point 2.9 and provide a suggested rewording.