



Goal 2: Commercial Quality Installation Committee Friday November 20, 2015 Meeting Notes

Call to Order

The meeting was called to order at 1:05 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 7. 4 of 7 voting members, 0 non-voting members and 1 guest/staff attended this meeting. A total of 5 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) | P |
| BuildingMetrics | Pete | Jacobs | Energy Efficiency Program Consultant | P |
| National Comfort Institute (NCI) | Rob | Falke | Educator, Trainer | P |
| 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 | P |
| | | | | |
| | | | | |
| WHPA Goal 2: CQM Committee NON-VOTING Members | | | | Roll Call |
| Aire Rite AC & Refrigeration | Larry | Smith+ | Contractor (Nonresidential) | |
| American, Inc. ** | Darwin | Ward+ | | |
| 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 | | | | |
| BBI (Better Buildings Inc.) | Dale | Gustavson | WHPA Executive Advisor | |
| 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

AGENDA



**Goal 2: Commercial Quality Installation Committee
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| 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 | Update on WHPA In-Person Leadership Meetings Nov. 4/5 |
| CQI Field Measurement Data Spec. Work Group | Pete Jacobs | Update committee on WG status |
| Investigation into standards and training organizations related to HVAC installation and performance | Pepper Hunziker & Sean Gouw | Committee informed on study conclusions and possible impact on CQI. |
| AB-802 Legislation regarding | Rob Falke | Members begin understanding of new law and implications for CPUC/ED, CEC, IOU claimed savings work paper development |
| 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 October 16 meeting notes were distributed October 28 and approved at the November 20 meeting. Bob Sundberg would have finalized meeting notes for that meeting posted to the committee's website location.

Rob Falke, NCI and Chair, commented that he really appreciated the detail captured in the monthly meeting notes.

Bob Sundberg, WHPA staff, responded that they were termed meeting "notes" rather than "minutes" or a full transcript of every comment made. Staff attempted to capture key comments made during discussions, not just provide a record/list of topics discussed, actions assigned or taken and committee votes as would be the case for meeting minutes. He asked the chair whether he thought that this approach was valuable or if the additional detail was not warranted considering the number of hours it required.

Rob Falke replied that with the current approach for meeting notes he could read through them quickly and catch the essence of what was discussed. It brought him right back to being at the meeting. It helped him keep in touch with what happened because he couldn't remember all the topics and comments that had been made.

Pete Jacobs, BuildingMetrics Inc., said he'd echo Rob's comment. He appreciated key comment details. He'd prefer to see more detail rather than less. That might even be easier for the scribe. If they wanted fewer details, the scribe would have to decide what to put in and what not to include more so than now. If, like now, you'd tried to capture the essence of comments and discussion topics, that would remove the scribe from having to make so many



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editing decisions. More reporting what you heard as you heard it. The current approach also didn't include every single comment, like a transcript would, which was often repetitive or off topic.

Review Status of Action Items from Previous Meeting

April 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, including the hybrid one discussed at the April 17 meeting. Addressed by Tara Becnel at August meeting. Pending IOU program development. Pending.

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.

September ACTION: Rob Falke would provide Pepper Hunziker with a list of standards related to commercial quality installation which his firm had compiled. Pepper and Sean Gouw would use the list for further investigation into standards related to commercial HVAC installation and organizations which provided training on those standards. Pending.

November Update: Rob Falke's firm was still pulling together HVAC standards related to commercial installation for Pepper and Sean. Rob expected they would be delivered to them prior to the next monthly meeting. See additional comments in October 16 meeting notes. Pending.

Welcome New Members and Guests

None.

New Business - Rob Falke

WHPA In-Person Leadership Meeting November 4/5 in San Diego

Rob Falke thought it was a good meeting with a lively discussion all the way through. Most of the useful discussion revolved around two recently passed and signed into law California bill - AB 802 and SB 350. The bills looked like they would work in tandem to influence changes in HVAC and energy savings policy.

SB 350 basically double the goal for the amount of energy efficiency to be attained over the next 15 years. That Senate bill would be hollow without the change in approach to how energy savings would be scored which was a big part of AB 802.

AB 802 changed the way that both the regulators (CPUC) and the California Energy Commission (CEC) needed to regard baseline (currently considered "to code") performance. Currently, when the CEC revised Title 24 installation requirements, there was an assumption that every single unit installed met those code requirements and the CEC was granted credit for achieving that savings. All system performance improvements below that code requirement were ignored since they'd already been assumed to have already been achieved and were attributed to CEC requirements. IOU programs could not offer incentives for any improvements that were below this false "to code" baseline. Under the current approach if a contractor improved system operating capacity from 35% to 85%, even though they performed an amazing improvement, no savings could be claimed. Under current rules, that 85% performance level might be below what "to code" compliance claimed. The system was already "assumed" to have been installed to and still operated at a code level of operating efficiency and capacity. Only savings above the level of performance could be claimed. The ignored reality was that only about 10% of installation jobs involved getting a permit which would include inspections that helped achieve that "to code" level of performance. A full



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90% did not get permits and were never inspected for code compliance. That false assumption seemed to him to be what AB 802 seemed to address. It would reset that baseline from which improvement driven HVAC savings could be claimed and incentives provided.

Going forward, baseline performance would be determined by the actual level of current or outgoing system performance and not some assumed level of "to code" performance. Going forward, whole building meter records would become the basis for determining savings. It was unclear whether that new approach would be some form of "deemed savings." But, claims of energy savings would need to be documented based upon a reduction in energy usage at the building meter.

Rob had understood from others that the new smart building meters could pick up the signature of a package unit and help to determine the HVAC portion of electrical use at the meter. If you knew that watts that were consumed over the time that it ran for kWh consumption and the kW levels hit over time, before and after improvements or a new installation was completed, you should be able to determine the change, improvement in the level of HVAC electrical use. He asked attendees whether that was an accurate understanding.

Bob Helbing, AIR-TRO, said that utilities should be concerned because some participating contractors would attempt to "game" the system and make adjustments to operation, like blocking airflow, in order to falsely increase their claimed savings. They'd have to try and make the test-in/test-out measuring procedures bullet-proof which would drastically increase program QA costs. He wasn't familiar with AB 802 legislation but was skeptical about whether environmentalists would like it. SB 350 was drafted by the Senate majority leader, Kevin de Leon. He also supported Proposition 39, Clean Air Jobs Act, which mandated very aggressive energy savings goals for schools. He thought that even after spending over \$1B, no kWh savings was achieved. LA Unified School District had not gotten even one related construction project approved. He'd conducted job walks and found it difficult to identify great savings opportunities. Schools were often closed during the most extreme peak cooling hours in summer.

Bob Sundberg, WHPA staff, shared that AB 802 had been signed into law in early October. The new legislation changed the baseline from an assumed "to code" for all installations to a comparison of the energy use prior to the energy efficiency measures or programs compared to energy use afterward in some way documented at the building meter. A pre/post comparison rather than energy savings approval based on theoretical code compliance assumptions, yearly energy use modeling with a multitude of discounts. A "gamed" snapshot of energy use by a contractor will not be the basis for the program energy savings claims.

Bob Helbing added that many contractors didn't participate in utility programs because the administrative overhead was daunting. Utilities were very concerned about program accountability and reporting results. So, their focus seemed to be on providing more and more reporting and measurements, quality and other follow-ups. If the result is that a typical one hour maintenance call became several hours, no contractor will go through all of the paper work just for an incentive. They couldn't justify the billing to their customer.

Rob Falke, NCI and Chair, responded that the current approach of adding up a lot of individual energy efficiency measure activities could all go away in the future. Somewhere down the line, incentives would be based upon building meter readings, whatever the long list of energy saving activities had been. That will take a degree of accounting and administration but should be far less than the current approach.

Pete Jacobs added that the promise of picking up pre/post whole building savings through interval metering was huge. The savings would be based on a long term look, not a one-time look that a contractor could manipulate the pre and post readings. It pretty much would eliminate ways to game the system. What's still to be determined and



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proven was how to identify and isolate the energy use of the HVAC equipment. The building smart meter would not provide the equipment signature identification. The analytics to differentiate different building energy loads hadn't yet been solved. Power factor for each load might be a pathway but smart meters alone right now didn't have the capability to break out aggregate HVAC usage and demand from the rest of the building electrical loads.

Bob Sundberg, WHPA staff, wondered whether all the buildings with energy management systems couldn't apply a lower tech approach. Use current transducers for each HVAC load to total up that energy usage. Just subtract it from the entire building energy usage to gather pre/post use and accurate energy savings. Pete agree that the approach would work wherever there was building automation and the owner invested in installation of the additional devices.

Bob Helbing suggested that lining up thermostat on/off runtime data with smart meter data might be less expensive than investing in all the watt meters and data loggers.

AB-802 & SB 350 Legislation - Repeated from October meeting notes

www.performancealliance.org

<http://www.performancealliance.org/Home/tabid/366/Default.aspx>

Go to the following link for general information and individual links for each bill.

<http://www.performancealliance.org/LegislativeActivity/tabid/2517/Default.aspx>

AB 802 general information:

[AB 802 http://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201520160AB802](http://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201520160AB802)

AB 802 Bill text in pdf form:

http://www.performancealliance.org/Portals/4/Documents/20150AB802_90.pdf

9/10/15 Senate Energy Committee Bill Analysis

https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB350

SB 350 general information:

https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB350

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

Rob Falke had not yet delivered a summary of standards related to commercial quality installation to Pepper Hunziker and Sean Gouw to investigate further.

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

Pete Jacobs, BuildingMetrics Inc., who chaired the new working group, provided a summary of the WG's most recent November 13 meeting. This cross-cutting group was intended to address interests of several WHPA committees. Pete then walked the group through the latest version of the Standardized Field Data Specification spreadsheet.

At this point the spreadsheet was broken into different sections based on usage and need. Initial performance evaluations for a new installation or retro-commissioning a unit, while being serviced under a maintenance agreement and when a performance evaluation need was triggered.



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They'd organized data points under several categories which included:

- job data
- equipment data
- design data
- test parameters
- airside pressures
- airflow
- economizer system
- airside temperatures
- electrical data
- refrigerant system

He'd asked all working group members to return comments on the practicality and applicability of each data set.

Rob Falke asked that Bob Helbing be sent a copy of the latest data spec. spreadsheet and for Bob Helbing to provide his comments to Pete Jacobs. (Emailed December 4 following the next CQI WG meeting.)

Bob Helbing's initial reaction was that the spec. included a LOT of data points to record. His skilled technicians were in the HVAC trade because they liked working on machines, not recording data, preferred hardware to software. He suggested to keep trying to keep it simple. He suggested the following basic measurements needed to be taken. Static pressure on the return and supply, entering temperature on the return and existing temperature on the supply and watt draw. He thought that the refrigerant system should only be checked with gauges if there was a strong indication of a serious issue. He also registered a number of comments about time-consuming the administrative requirements were for utility energy efficiency programs such as CQM. Utility incentives sound great for contractors but they can take weeks, months or longer to get. He'd enrolled his own building in the program 1.5 years before and yet to receive any earned incentives. There existed a serious barrier to entry for most contractors because of the data entry program demands. A few contractors will hire specialized staff to participate. But, the vast majority of contractors who did maintenance and installation on most buildings would not.

Closing Comments/Adjournment

Rob Falke thought they could hold the next meeting on the third Friday, December 18.

Pepper Hunziker recommended that an attention getting agenda be sent out with the next meeting notice to try and increase member attendance.

Rob Falke agreed with Pepper's suggestion and wanted to get the meeting notice out by December 11 with an agenda intended to draw in more attendees.

ACTION: Rob Falke would supply Bob Sundberg with the December meeting agenda by December 11 to be sent out with the next meeting notice.

Bob Helbing asked whether anyone had heard of or read the Dr. Arik Levinson report. The subject was how much energy was really being saved due to building energy codes in California. Levinson was the senior economist on environmental issues on the Obama Council of Economic Advisors. Like Rob Falke had said earlier, the report stated that the state was taking credit for energy savings which would have happened without their intervention or



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presumed things were always done to code, required to deliver the projected savings, which was commonly agreed not to be the case. Bob Helbing committed to supplying Bob Sundberg with a link to the report.

ACTION: Bob Helbing committed to provide Bob Sundberg with links to a report on California agency claimed energy savings authored by Dr. Arik Levinson. Completed. Bob Helbing sent an email to all committee members later in the day on November 20. Text provided after the ACTION Item summary.

The next meeting was scheduled for Friday December 18 at 2:00 pm PT.

The meeting was adjourned at 2:08 pm PST.

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Summary of Pending and New Action Items and Key Decisions

April 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, including the hybrid one discussed at the April 17 meeting. Addressed by Tara Becnel at August meeting. Pending IOU program development. Pending.

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Report by Dr. Arik Levinson cited by Bob Helbing at November 20 meeting

To CQI Committee Members:

Some of the recent WHPA discussions have centered on the role Title 24 plays in energy savings in our state. A distinguished economist has done research on this subject and has now published his findings. They make for an interesting read. **Dr. Arik Levinson** is a Georgetown economist who spent some time as [a senior economist for environmental issues](#) with the [Council of Economic Advisors](#) (C.E.A.) under President Obama. You can see his report at:

<http://faculty.georgetown.edu/aml6/pdfs&zips/BuildingCodes.pdf>



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For those who don't want to wade through 27 pages of academes, and another 27 pages of statistics, I've cut and pasted his concluding paragraph below. For those who listen to podcasts, Dr. Levinson appeared on Freakonomics Radio in February, where he discussed his findings. The podcast can be obtained at:

<http://freakonomics.com/2015/02/05/how-efficient-is-energy-efficiency-a-new-freakonomics-radio-podcast/>

Here's the concluding paragraph to the study:

California's original building energy codes aimed to reduce energy consumption for new buildings by 80 percent, and multiple subsequent revisions of those codes have projected even larger savings. Through three separate empirical comparisons here, I have found no evidence that homes constructed since California instituted its building energy codes use less electricity today than homes built before the codes came into effect, and only shaky evidence they use less natural gas. For electricity, post-1978 houses in California are not using less than pre-1978 houses, do not use less per degree-day when the weather gets hot, and do not use less relative to post-1978 houses in other states with less strict building codes. For natural gas, the results are more nuanced. Post-1978 houses do use less gas, and they do use less per degree - day when the weather is cold. But both trends may predate the building codes, and neither difference is close to the regulatory predictions. Furthermore, post-1978 houses in California use relatively more heating fuel than post-1978 houses in other states, not less.

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Robert Helbing
President
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