



## Goal 2: Residential Quality Installation Committee June 22, 2016 Meeting Draft Notes

### Call to Order

The meeting was called to order at 10:05 am PDT by Buck Taylor, Chair, Roltay, Inc.

### Roll Call

5 of 9 voting members are needed for a quorum. 5 of 9 voting members, 9 non-voting members and 1 guests/staff attended. There were 15 total attendees at this meeting. Bob Sundberg facilitated the online Webex and call conference, recorded the meeting and produced summary meeting notes.

WHPA Goal 2: RQI Committee VOTING Members				Roll Call
ACCA (Air Conditioning Contractors of America)	Wes	Davis	Contractor Association	
Benningfield Group	Russ	King	Third Party Quality Assurance Provider	
DNV GL Energy Services (formerly KEMA)	Zachary	Connolly	Energy Efficiency Program Consultant	
Energy Analysis Technologies	Chris	Ganimian	Third Party Quality Assurance Provider	P
Mechanical Systems Design & Consulting (MSDC)	Jeff	Henning	Educator, Trainer	P
NCI (National Comfort Institute)	Scott	Johnson	Educator, Trainer	
Henry Bush Plumbing, Heating and Air Conditioning and Home Energy Solutions (Redlands Plumbing & Heating & AC)	Tyler	Miner	Contractor (Residential)	P
Roltay Inc.	Buck	Taylor (Chair)	Other Stakeholder	P
Superior Air	Larry	Kapigian	Contractor (Residential)	P
WHPA Goal 2: RQI Committee NON-VOTING Members				
Air Conditioning Contractors of America (ACCA)	Glenn	Hourahan	Contractor Association	
Air Conditioning Contractors of America (ACCA)	Donald	Prather	Contractor Association	P
Air Conditioning Contractors of America (ACCA)	Todd	Washam	Contractor Association	p
ASHRAE			Engineering Society	
BuildingMetrics	Pete	Jacobs	Energy Efficiency Program Consultant	
Building Performance Institute	Jeremy	O'Brien	Certifying Body	P
CEC (California Energy Commission)	Samuel	Lerman	Government	
CEC (California Energy Commission)	Jeff	Miller	Government	
CPUC/ED (California Public Utilities Commission - Energy Division)			California PUC	
Clean Energy Horizons, LLC	Norm	Stone	Energy Efficiency Program Consultant	P
Davis Energy Group	David	Springer	Energy Efficiency Organization	
EPA/ENERGY STAR	Chandler	Von Schrader	Government (Other than CPUC)	
ICF International	Casey	Murphy	Energy Efficiency Program Consultant	P
Misti Bruceri & Associates, LLC	Misti	Bruceri	Energy Efficiency Program Consultant	
PG&E (Pacific Gas and Electric Company)	David	Bates	California IOU	
PG&E (Pacific Gas and Electric Company)	Marshall	Hunt	California IOU	



**Goal 2: Residential Quality Installation Committee  
June 22, 2016 Meeting Draft Notes**

PG&E (Pacific Gas and Electric Company)	Swapna	Nigalye	California IOU	P
Quinn-Murphy Consulting LLC	Patrick	Murphy	Educator, Trainer	
Sacramento Municipal Utility District (SMUD)	Ravi	Patel	Publically Owned Utility	
SDG&E (San Diego Gas & Electric)	Collin	Smith	California IOU	P
SDG&E (San Diego Gas & Electric)	Jeremy	Reefe	California IOU	
SCE (Southern California Edison)	Lori	Atwater	California IOU	
SCE (Southern California Edison)	Anne Marie	Blankenship	California IOU	
SCE (Southern California Edison)	Scott	Higa	California IOU	
SCE (Southern California Edison)	Steve	Clinton	California IOU	p
SCE (Southern California Edison)	Jarred	Ross	California IOU	
SoCalGas (Southern California Gas Company)	Harvey	Bringas	California IOU	P
ZONEFIRST	Richard	Foster	Controls (Manufacturer or Distributor)	
<b>WHPA Goal 2: RQI Committee Pending Candidates</b>				
<b>WHPA Goal 2: RQI Committee NON-VOTING Guests</b>				
Aire Rite Air Conditioning and Refrigeration	Don	Langston	Contractor (Nonresidential)	
Benningfield Group	Lynn	Benningfield		
Building Performance Institute	John	Jones	Certifying Body	
California Public Utilities Commission (CPUC) - Energy Division	Pete	Skala	California PUC	
CDH Energy	Hugh	Henderson	Energy Efficiency Organization	
CLEAResult (formerly PECE)	Michael	Blazey	Energy Efficiency Program Consultant	
CLEAResult (formerly CSG)	Mike	Withers	Energy Efficiency Program Consultant	
Field Diagnostic Services	Dale	Rossi	Third Party Quality Assurance Provider	
Galawish Consulting	Elsia	Galawish	Energy Efficiency Program Consultant	
ICF International	Ben	Bunker	Energy Efficiency Program Consultant	
Johnson Consulting**	Katherine	Johnson+		
Johnson Controls Inc. (JCI)	Bryan	Rocky	HVAC Manufacturer	P
KEMA / DNV-GL **	Jarred	Metoyer+		
National Comfort Institute	Rob	Falke	Educator, Trainer	
NIST (National Institute of Standards and Technology)	Piotr	Domanski** +		
NIST (National Institute of Standards and Technology)	Vance	Payne***+		
PG&E (Pacific Gas and Electric Company)	Chris	Li+	California IOU	
PG&E (Pacific Gas and Electric Company)	James	Tuleya	California IOU	
PG&E (Pacific Gas and Electric Company)	Mary	Anderson+	California IOU	
PG&E (Pacific Gas and Electric Company)	Sam	Choe+	California IOU	
PG&E (Pacific Gas and Electric Company)	Robert	Davis	California IOU	
PG&E (Pacific Gas and Electric Company)	Leif	Magnuson	California IOU	
SCE (Southern California Edison)	Joseph "Dario"	Moreno	California IOU	
SCE (Southern California Edison)	Andres	Fergadiotti+	California IOU	



**Goal 2: Residential Quality Installation Committee  
June 22, 2016 Meeting Draft Notes**

SCE (Southern California Edison)	Sean	Gouw	California IOU	
SCE (Southern California Edison)	Ryan	Cho+	California IOU	
Tre' Laine Associates	Pepper	Hunziker	Energy Efficiency Program Consultant	
<b>WHPA Staff</b>				
BBI (Better Buildings Inc.)	Mark	Lowry	WHPA Executive Advisor/BBI COO	
BNB Consulting/WHPA staff support	Bob	Sundberg	Energy Efficiency Program Consultant	P
Empowered LLC	Shea	Dibble	WHPA Co-Director	
WHPA emeritus staff	Mark	Cherniack		

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

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

To avoid repetition, the name of the member organization will not be repeated in the body of the minutes; the individual names of meeting participants will be used.

**Approve Minutes of Previous Meeting**

May 25 meeting draft notes were distributed June 5. No revisions or corrections were received. Finalized and approved meeting notes would be posted to the WHPA site under the RQI Committee.

**AGENDA**

Topic	Discussion Leader	Desired Outcome
Welcome, roll call, previous meeting minutes, new members, candidates and guests, new business topics	Buck Taylor and Bob Sundberg	Produce an accurate record of all attendees, finalize and approve past meeting minutes, welcome new members and guests, identify new business.
Review previous Action items and meeting agenda	Buck Taylor	Resolve older items, determine status of current action items, finalize meeting agenda items.
New Business – consider restructure of committee meetings	Buck Taylor	Discuss and decide whether or not to have meetings broken into 1) administrative/news/updates portion and 2) goals working sessions
Executive Committee Update – 1) “Quality” in committee names, 2) potential conflict of interest issue with IOU planning	Buck Taylor and Bob Sundberg	Keep committee members aware of WHPA wide subjects and issues
EUC/Home Upgrade/Adv. HU and RQI program coordination update	Swapna Nigalye, Lori Atwater, Collin Smith	Members understand status of program integration; incentive level realignment or other program revisions/plans for revision.
Working Session – 1) EC considers proposed 2016 goals, 2) review proposed goals, 3) review 2012 White Paper topics, 3) begin outlining key market transformation barrier topics	Buck Taylor	Understand and agree to 2016 goals, begin outlining barrier topics to tackle.



**Goal 2: Residential Quality Installation Committee  
June 22, 2016 Meeting Draft Notes**

WE&T Committee update: efforts to promote ResQI	Pepper Hunziker	Inform members of WE&T Committee efforts to promote awareness of and ACCA Standards 5/9 training inclusion in HVAC training programs statewide on RQI practices.
RQI Committee 2016 Goals	Buck Taylor	Review Goals/Implementation Plan delivered to EC
Set next meeting date, time and tentative agenda items	Buck Taylor and Bob Sundberg	Meetings are normally scheduled the third Wednesday of each month.

**Welcome New Members and New Guests; consider new member candidates**

- Welcome Jeff Miller, CEC, new guest member as of May.
- Todd Washam, ACCA, WHPA registration June 9. Director of ACCA Industry Relations. Works with all states, all utilities and industry associations.
- Joseph “Dario” Moreno, SCE. Invited to visit by Lori Atwater, SCE, in her absence.

**Review past Action items**

April 2016 ACTION: Lori Atwater, SCE, committed to having the IOU leads provide the RQI Committee members with a summary of the IOUs HVAC ResQI strategy. Ongoing.

April 2016 ACTION: Jeremy Reefe requested that Bob Sundberg, WHPA staff, send out an email for the IOU leads to talk with Buck prior to their IOU lead meeting. Following discussion with Buck, the IOU leads would develop a summary document on the IOU business development planning process for the May committee meeting. See meeting agenda discussion below. COMPLETED.

April 2016 ACTION: IOU program leads (Lori Atwater/SCE, Swapna Nigalye and Leif Magnuson/PG&E, Collin Smith/SDG&E) would provide committee chair and staff with IOU HU program manager and HU Working Group contact information as well as other key HU representatives (ICF or other implementer staff) going forward. Ongoing.

April 2016 ACTION: Once provided with HU/Advanced HU contact information, Chris Ganimian would contact the HU Working Group co-directors to request attending a future RQI Committee meetings and coordinate RQI Committee members possibly attending HU program related meetings. Pending

April 2016 ACTION: Pepper Hunziker, Tre' Laine Associates, agreed to inform RQI Committee members about efforts of the WE&T Committee related to training/education efforts to standardize on RQI practices. Pepper was going to reach out to other IOU groups to gain a better understanding of where their programs were at with respect to incorporating ACCA Standard 5 requirements in their training. She re-committed to provide an update at the May meeting. COMPLETED.

**New Business**

Buck Taylor, Roltay Inc. and Chair, indicated that he wanted the group to discuss how they might restructure the meeting to improve effectiveness. This committee didn't have a separate working group resourced for separate meetings to dive deep into topics or develop work products for the full committee. This committee did have its meeting time resource increased from the normal 1 hour meeting to 1.5 hour meetings to allow for time to work on their goals during monthly meetings. He proposed changing the meeting format to allow the first 30 to 40 minutes for administrative items and updates, normal committee business but reserving 1/2 or more of the meeting time for work on issues and topics from their goals. He thought that would help the committee be more productive.



## Goal 2: Residential Quality Installation Committee June 22, 2016 Meeting Draft Notes

Jeff Henning, MSDC, and Chris Ganimian, energy Analysis Technologies, supported the change in format. No one opposed the idea.

### IOU Representative Program and Issue Updates

- Swapna Nigalye, PG&E, provided an update on their residential high performance HVAC installation initiative/study which Leif Magnuson had introduced at an earlier meeting. It was intended to be a high performance version which built on the residential quality installation model based on ACCA Standards 5 and 9. One of their selected contractors had completed their training and finished the installation at their first site. That contractor was quite enthused about the advanced training and their preliminary assessment was that the installation went fairly well. They would provide further updates.
- Collin Smith, SDG&E, reported that they had a meeting scheduled for the following day with the new Home Upgrade program advisor who had just been assigned two to three weeks prior. He'd provide a report of their meeting at the July committee meeting.

**ACTION:** Collin Smith, SDG&E, would provide the committee with an update in July following their meeting with the new Home Upgrade program advisor.

### Executive Committee June Meeting Update – Buck Taylor

- Conflict of interest issue raised as a result of the May CPUC guidance document provided to IOUs on this subject. Some at the EC meeting expressed the opinion that they didn't believe this would be a serious issue for the WHPA or its groups. However, they were not in a position to render a legal or informed sourcing/purchasing department opinion. Buck didn't think the EC would be able to provide guidance yet this year, more probably in 2017 after the CPUC completed review/approval of IOU business plans and the IOU staff then moved into development of program plans. One of the reasons he'd proposed a revision of the market barriers white paper was to provide a pathway for the committee to provide input to the IOUs prior to their entering their program planning phase where there was concern for conflicts of interest possibly occurring. The white paper would provide forward guidance rather than possibly being asked to provide responses to IOU representatives regarding specific program related questions.
- Discussion about removing the term "Quality" from committee names. The two commercial committees thought that the term quality had ambiguous and undefined meaning and somewhat limited the scope, goals and issues which they elected to work on. There was also a concern about copyright ownership regarding standards developed by ACCA.
  - The CQM Committee focused most of its effort on improvement for the ASHRAE/ACCA Standard 180 based IOU maintenance programs. This standard didn't refer to the term "quality" at all. The committee also investigated and supported adoption of newer advanced technologies to improve commercial system energy efficiency beyond Standard 180's minimum requirements.
  - The CQI Committee had concluded that no single national standard comprehensively or adequately identified all the elements which might be required to ensure a "quality" installation. There were over a dozen known industry standard various trades employed. They felt constrained by ACCA Standard 5 which included the term "quality" in its specification. They had elected to focus on how system performance could be determined through field measurements in order to re-address how IOU programs might more accurately determine and claim savings. This would also provide a foundation for comparison of AHRI equipment efficiency ratings to installed equipment ratings against installed system delivered efficiency – a new and advanced means to verify a "quality" installation,
  - Buck and Donald Prather, ACCA, informed the group about ACCA Standard 5, titled "HVAC Quality Installation Specification for Residential and Commercial Installations." This standard was intended for residential and commercial packaged HVAC equipment and not larger commercial built-up systems (chiller/boilers etc.). An earlier version of the standard had listed a specific equipment size

## Goal 2: Residential Quality Installation Committee June 22, 2016 Meeting Draft Notes

limit, like 7.5 or 10 tons cooling capacity. The most recent version didn't. But, the intention was that the standard only addressed smaller packaged equipment that was typically NOT engineered for an installation. Buck understood the standard to provide a framework for installation and it referred to a number of other standards. It was not an absolute checklist and it didn't address measurement of installed system performance.

- Buck had explained that at the EC meeting he'd related that he didn't think this committee had a concern about whether the term "quality" was in its name or not. Most of their efforts had been focused taking on the CA Long Term Strategic Energy Efficiency Plan's mandate to establish a national standard's based installation rather than simply "to code" ones or that large percentage of installations which were never permitted or inspected even for code compliance.
- This committee had earlier received CPUC confirmation that the CPUC considered "quality" installations to be those based on the ACCA Standard 5 national standard, at least for residential applications, not "to code" installations or commercial installations.

Bob Sundberg, WHPA staff, stated that in his understanding, the term "quality" in the state strategic plan had been used as a placeholder for HVAC installation or maintenance/service practices which were based on a national standard or standards without getting any more specific. That use had never been re-addressed or clarified in the strategic plan. He believed that naming of the WHPA committees had simply picked up that "short-hand" term and the issue had not been evaluated since. He added that the chairs of the two commercial committees (installation and maintenance) simply wanted the term "quality" removed from the committee name.

Donald Prather, ACCA, explained the scope of the 2015 version of ACCA Standard 5. He quoted, "this standard applies to HVAC equipment and components being installed in residential and commercial buildings..." He added that the standard applied to unitary air conditioners, air source/water source heat pumps and geothermal heat pumps, furnaces which were gas fired, oil fired or electric and others. Built up systems like chillers which were generally designed by architects and professional engineers were not included in this specification. He commented that they'd had a lot of success branding the specification as QI (quality installation) but that it was a minimum requirement for design, installation and commissioning of systems.

Norm Stone, Clean Energy Horizons, commented that in CQM Committee discussions the discussions had centered around branding of the term "quality." Customers might begin to question what they were getting if they didn't sign up with an IOU "quality" maintenance program. Given what those programs actually offered in advanced technologies on top of the Standard 180 based maintenance framework, they'd considered whether another term like "premium maintenance" would be a more accurate descriptor or just to remove a descriptive term from the name altogether.

Buck Taylor offered that if the committee name and the name or reference to a utility program were the same, that would constitute a conflict. The residential utility program removed the term "quality" from its name but it wasn't ever addressed for committee names. All involved in that program understand that it had its origin based on ACCA Standard 5. His position was that this was a committee focused on residential installations, the committee was not the program or solely formed to only support RI programs.

Jeff Henning, MSDC, didn't understand why the term "quality" in a committee name should be an issue for this committee. The CPUC was interested to move from a components based code to a standards based code. ACCA Standards 5 & 9 were the only national standard which covered all aspects of installation. Their stated goal was to make "quality installation" meaning based on ACCA Standard 5, the norm in the industry by 2020. He thought that having the term "quality" branding for this level of installation was key. It was a standard which homeowners could look up online to become familiar with what it stated needed to be done to qualify as a "quality installation." He saw no reason to change the committee name.



## Goal 2: Residential Quality Installation Committee June 22, 2016 Meeting Draft Notes

Bob Sundberg, WHPA staff, shared that from his listening to this subject being discussed at the EC June meeting, two commercial committees had proposed simplifying their names by dropping the term “quality” from it, not substituting another term in place of “quality.” The EC was also considering that there might be a “governance” issue since the state strategic plan used the undefined term “quality” in many places. He understood that there was no resource available to address revisions to either the strategic plan or HVAC Action Plan in the foreseeable future. His understanding was that there was not a proposal to strike the term “quality” from all committee names. Only the two commercial committees. Don Langston had stated at the EC meeting that his committee was focused on far more than just a minimum standard. The committee wanted to also address advanced commercial HVAC technologies as did the IOU programs as well as other practices which could deliver far above minimum levels of system performance. Also, that none of the IOUs had used the term “quality” in their programs nor did ASHRAE/ACCA/ANSI Standard 180, which provided the foundation for all of the major IOU programs, include the term “quality” anywhere in that commercial maintenance minimum standard.

### Conflict of Interest discussion continued

Chris Ganimian, Energy Analysis Technologies, thought the committee needed clarity on the conflict of interest issue before proceeding with a white paper review and revision.

Buck Taylor, Chair, indicated that he believed that 1) since any proactive effort to revise the white paper was an attempt to provide proactive forward general guidance prior to any discussions around development of program implementation plans, 2) was not done in response to discussions at CA EECC committee or subcommittee meetings or IOU requests for input and that 3) the revised white paper would be a posted public document, revising the white paper would not constitute any conflict of interest for any contributor who might bid on a future IOU contract.

Bob Sundberg, WHPA staff, commented Buck’s reference to their revised white paper being posted as a publically available document, but probably not until submitted in final form and “adopted” by the EC as a WHPA document. Other working groups had routinely posted early and ongoing revised drafts of their work products to make others aware of the current status of their work product. The same strategy could be used by this committee to post drafts of their revised white paper and make the drafts and their content publically available.

In response to Chris Ganimian’s concern, if he or others were involved in an IOU meeting and someone joins that meeting and leads a discussion about issues, but does not reveal that those issues are related to program implementation planning, those are circumstances which might occur where Buck was concerned that a conflict of interest might unknowingly have occurred. It would hurt the IOU as well as potential vendors if this action eliminated them from providing services for the next 5 to 10 years, considering the new rolling portfolio process.

Jeff Henning, MSDC, commented that given the large number of those currently or in the past who had been employed by utilities, this was a fundamental problem which needed to be resolved. IOUs needed expert, professional industry guidance and input but the conflict of interest issue clouded how they could possibly provide that input and needed to formally be brought before both the CEC and CPUC.

Buck Taylor, Chair, clarified that this was why he had drafted a formal request in writing that this issue be brought before the EC at their June meeting and addressed be addressed formally by the EC. This was discussed with Mark Lowry, WHPA Executive Advisor, prior to the June EC meeting for all committees. They needed further clarification regarding where the boundaries existed to better understand what committees could freely do and where there would be a definite issue.

Chris Ganimian indicated that he’d previously been asked to comment regarding their program by the program administrator. He was concerned that those comments might constitute a conflict of interest going forward.



## Goal 2: Residential Quality Installation Committee June 22, 2016 Meeting Draft Notes

Buck Taylor responded that it might not constitute a conflict. Those remarks were provided after the fact in M&V work, not in program design, development and initial implementation. A number of members had helped SCE staff with their energy savings claim work papers, but that wasn't the same as providing input on an implementation plan. There could potentially be a conflict of interest moving forward if the utility staff is then working on future program plan details. But, what Chris referred to was captured in a document which was posted for public access and Buck didn't believe this constituted a conflict of interest. One twist on this was evident during the requests for comment regarding Work Order 32. The committee and WHPA itself could not provide comments. Only individuals representing their individual organizations could provide comments.

Buck cautioned members to be sure to ask IOU staff in meetings they might attend whether any of the content to be discussed was going to be used by them for program implementation planning.

### RQI 2016 Goals – Buck Taylor

Buck Taylor, Chair, shared the three SMART Goal topics recently approved for this committee:

- 2016 SMART Goal Topics:
  1. Develop a 2016-17 communication plan to communicate RQI needs to influence policy and implementation
  2. Assist in the integration of RQI and Whole House while protecting the integrity of QI fundamentals
  3. Provide input into appropriate business plans as requested

### SMART Goals.

SMART is a methodology to develop goals that are:

- Specific,
- Measurable,
- Action-Oriented,
- Realistic, and
- Time-Based

### Draft of 2016 RQI Committee Implementation Plan

Buck Taylor, Chair, reviewed the 2016 SMART Goals Implementation Plan which the EC had reviewed at their June meeting.

### 2016 Proposed Implementation Plan

Committee Description/Mission: The Residential Quality Installation (RQI) Committee establishes goals, standards, and criterion to meet the RQI objectives established in the California Energy Efficiency Strategic Plan Goal 2: “Quality HVAC installation and maintenance becomes the norm. The marketplace understands and values the performance benefits of quality installation and maintenance.” The committee addresses program and marketplace barriers to RQI through:

- Assisting in the development of an appropriate baseline for IOU claimed energy savings.
- Supporting the work paper process to assign fair and accurate measure savings.
- Working with program evaluators to identify an agreed upon approach for system performance evaluation to improve alignment between EM&V efforts and the IOU programs.
- Developing customer-focused messaging to be used in the marketplace describing RQI benefits.

These efforts are intended to improve recognition of RQI measures with the regulators, IOUs and end-use customers, and to attain an extended, scalable program reach.

### Goal #1: Launch 2016 RQI Committee





## Goal 2: Residential Quality Installation Committee June 22, 2016 Meeting Draft Notes

Goal #2: Update August 2012 White Paper: Changes Required to Achieve QI; Include a New Section Outlining a Communication Plan that Communicates RQI Needs required to Influence Policy and Implementation by December 31, 2016

### **Brainstorming other goal topics or market barriers to address in goals**

Buck asked attendees for additional ideas about market barriers which needed to be addressed in order to support transforming the marketplace from its current no/low rate of permitted installations and code requirements for installations to a national standards based installation becoming the norm. He felt strongly that the regulatory environment severely limited what the utilities could do to address those serious barriers and more rapidly transform the marketplace. The utilities were being forced to develop deep, extreme programs which would be difficult, if not impossible, to convert from a small number of pilot installations to expanded participation and broad acceptance as the new norm. There were also regulatory approvals and incentives provided for non-national standards based installation that competed directly for attention and acceptance with quality installation program efforts. He thought it was this committee's responsibility to publish a document which highlighted those significant barriers to market transformation so that the regulators might be made more aware that their regulatory activity actually created market barriers to their own goals for market transformation. If code continued to be the definition for market baseline performance, transformation to a national standards based installation might never be achieved. IOUs would be unable to claim actual savings which he was convinced they already delivered. Those were the sorts of issues which he believed needed to be raised. Barriers beyond consumer and contractor behavior alone.

Buck proposed they use the remaining meeting time to review the current (2012) white paper at a high level to make everyone aware of the key topics/issues it addressed. Try to decide whether the barriers still existed or not and if additional major barriers had developed since this document was published in August 2012.

### **Review of 2012 RQI Committee Market Barriers White Paper**

Buck Taylor reviewed the following main barrier topics.

1. **Program Implementation Barriers** – The current energy savings documented in DEER do not seem to provide an adequate incentive for utilities to sufficiently stimulate the market for the purpose of accelerating adoption of QI and QM. There is a cost required to overcome decades of industry complacency in the areas of training, mentoring, and compelling verification. In the absence of credit for providing the high level of contractor support required, utilities may be able to offer little more than a standard equipment replacement program.
2. **Program Participation Barriers** – Contractors have not adopted standards-based QI in large numbers because there is a significant cost to do so. Contractors must commit to technician training, purchasing instrumentation, lost business to contractors who are not willing to comply with QI standards and/or Title 24, and the risk of failing. Perhaps most importantly though is the fact that customers are not demanding the level of service required by the utilities and have not demonstrated that they are willing to pay for it. Customers are more likely to make purchasing decisions based on price rather than competence.
3. **Code Inconsistencies** – Title 24 needs to better align with industry standards. Much of what Title 24 has tried to do is regulate workarounds that simplify the design and installation process rather than create the provisions for enforcing industry standards.
4. **Verification Barriers** – Assuming that the necessary code improvements are made and an effective enforcement mechanism is created, then better trained HERS raters will be required to verify compliance with industry standards. The current crop of HERS raters have not been trained to the level required to confirm the proper design and commissioning of residential HVAC systems.

### **Discussion and comments**

Jeff Henning commented regarding #3 Code Inconsistencies in late 2015 face-to-face meetings with the CEC specifically about whether they intended to integrate Standard 5 into the state energy code. The response was a qualified YES, if it was determined to be cost-effective.



## Goal 2: Residential Quality Installation Committee June 22, 2016 Meeting Draft Notes

Donald Prather, ACCA, added that he believed that the IEA Annex 36 study provided evidence that it was cost-effective. The problem was getting people trained to install and operate systems correctly and in an efficiency manner.

Buck Taylor responded that the issue of needing to be regarded as “cost-effective” was tied closely to how the CEC regarded components of code. Duct sealing, for instance, was an assumed installation component in 100% of current installations, so IOUs could not claim energy savings for installations which verified properly sealed ducts. The only amount which might be claimed was an amount above and beyond what was required, in theory, by code. There was no approved claim based on correct system sizing or sizing improvements. Code didn’t address system sizing and the impact that would have on existing duct sizing, especially if duct sizing was an issue that was not addressed. There was no current mechanism in DEER to treat or address that sort of practical issue.

Buck responded to Jeff’s comment about installation to a standard needing to be cost-effective. Work Order 32 had already gone on record with its evaluation that RQI programs were not cost effective, that is, installation to a national code was not determined to be cost-effective based on current assumed code compliance baseline assumptions. Many others had pointed out flaws in their WO32 evaluation such as the inadequate sample size and non-compliance with the actual procedures prescribed in ACCA Standard 5 based installations. These are the kinds of issues which a revised white paper might remind utilities should be addressed in their energy savings claims with the CPUC. CPUC dispositions and ruling based on WO32 were rulings based on flawed findings. Even the findings of the California Technical Forum regarding making residential installation savings claims and the studies which supported valid savings claims were largely ignored. It appeared to him that the CEC based marketplace baseline assumptions which formed the basis for CPUC rulings were valid and fixed and were not going to be changed. In his opinion, the regulators themselves constituted some of the most serious major barriers to accomplishing their own published goals.

Norm Stone, Clean Energy Horizons, added that he believed that the AB802 legislation directive was an effort to get away from the component and measure based energy savings analysis to real building energy use analysis as the basis for realized savings and IOU claimed and verified savings. The difference between assumed code compliance and any greater realized savings was never going to be cost-effective. A more accurate measure would be the delta, comparison between the existing system performance and the newly installed system performance projected accurately for annual usage. That’s the difference which should be used to justify market transformational programs. Not a theoretical code which is not inspected or enforced in the vast majority of HVAC installations.

Buck Taylor agreed 100%. He also thought IOU program planners should build in the meter data collection which would allow for future analysis of real-time meter data. That would provide a more accurate record of actual energy use to avoid retaining the whole “deemed savings” approach.

Chris Ganimian thought that a main focus for the revision of their white paper should be on the true savings which Standard 5 based installations offered compared to existing condition system operation that was being replaced. Another barrier not addressed in the first white paper was how to develop the building blocks, structure for utility clients to implement this program approach. He’d heard complaints that the SCE program effort was great but it couldn’t be expanded, ramped up to the broader marketplace. Even Chandler Von Schrader, the EPA/Energy Star Director, had confessed that he didn’t think this great approach could be expanded to the broader marketplace. He wanted effort focused on how to expand that implementation process. Parallel to that was the need for an installation verification process which was a primary reason he thought the SCE program had been so effective.

Buck Taylor agreed with the notion that what was really needed and didn’t exist was a feedback mechanism to reinforce proper responses to issues and problems as they came up within industry. The industry had really not developed an infrastructure for mentoring this new, more comprehensive approach. Peer expertise and support just didn’t exist yet. So, they were still forced to rely on the ACCA Standard 9 process.



## Goal 2: Residential Quality Installation Committee June 22, 2016 Meeting Draft Notes

Buck Taylor commented that improved knowledge in the trades seemed to be a generational phenomenon. And, the typical generational change was about 20 years. The types of changes they were discussing weren't going to come immediately. With persistence they should see changes within 10 to 11 years but not marketplace adoption until about year 20 to make wholesale changes. In contacts with the WE&T committee members, what's not being taught is still a formidable barrier to changing this HVAC culture.

Donald Prather commented that he'd understood that some early plans for HERS raters was for them to be trained and capable of conducting proper installation verification. That area could certainly include new technology smart tools in addition to increased HERS rater training.

Chris Ganimian registered his having an issue with anyone considering HERS raters in the role of installation verification. It just wasn't going to work as long as you had contractors not taking responsibility for proper design and installation AND paying HERS raters for their service. He thought that was a classic conflict of interest.

Donald Prather indicated that the most recent ACCA standard had addressed and eliminated that issue. Based largely on utility input, they'd put in different options for how to address that.

Buck Taylor said that the Manual S calculations had to be repeated under the current conditions because during the design phase they'd been calculated under "design" conditions. That was the only way to determine in a snapshot of performance how close the system was performing to the manufacturer's specifications. That was a huge element that was often forgotten or overlooked.

Larry Kapigian, Superior Air, added that he was quite discouraged by the whole EUC/Home Upgrade approach to HVAC where they put almost all of their effort on whole house modeling with very little to no emphasis on testing under current conditions and little emphasis on proper sizing, discount the impact of sizing as if it just didn't matter.

Bob Sundberg, WHPA staff, asked Buck how that concept could be captured, the difference in approach between an SCE RQI installation and that of EUC/Home Upgrade HVAC installations? The CPUC, apparently, had approved greater savings for the HU installation than for the more rigorous RQI installation. As a result, HU was able to offer substantially greater contractor/owner incentives which amounted to offering a greater reward for an inferior installation. Both were HVAC equipment installations with the RQI installation adhering to ACCA Standard 5 and delivering greater building energy efficiency, but unrecognized. How could that discrepancy, that inconsistency be most effectively pointed out to the CPUC? How could IOUs RQI programs challenge that inequality which rewarded inferior installations and which undermined that national standards approach touted in the state strategic plan? Maybe grouping this issues into those related to the same general topic and then rating them would be the work of the next meeting or two.

Buck Taylor agree. He thought that the verification topic that existed had evolved since it was written back in 2012. Verification was a forward looking issue which depended upon the transition to a national standard which just wasn't happening. It was partly related to issue #3, code inconsistencies. He didn't know how compliance with existing code could be claimed 100 % of the time, to have been achieved when there were reports of less than 20% of installations involved even having permits pulled. How can they claim this to be the baseline when installations were not inspected even close to the 100% claimed when IOUs proposed energy savings claims in work papers. How can they claim cost-effectiveness for code when the actual costs to conduct those other 80% to 90% are never being imposed on those installations which effectively avoid any code driven verification? Manual J & S are already in code and the CEC is stating that they are not cost-effective. They need to be better educated on their own existing code and what the standards are trying to achieve. He thought the language they needed to hear was that this was, according to the state strategic plan, intended to be a performance based code with verification, not a measure or check-list based code. The



## Goal 2: Residential Quality Installation Committee June 22, 2016 Meeting Draft Notes

code inconsistencies need to be illustrated to better educate them on where they are deficient. Do a better job to educate them on why this committee is trying to navigate the path it thinks would be an improvement.

**ACTION:** Buck Taylor committed to collecting a list of these topics and suggestions into a bullet list. At the next meeting they could sort the list into categories from his first proposed list and see if they wanted to expand or reorganize the categories of issues/barriers.

Maybe they could provide an addendum for issue #4 and provide some forward looking comments that could be addressed once code integrated ACCA Standard 5.

Donald Prather raised the question about whether the CPUC even addressed the substantial impact on kW demand for all of those lower efficiency and oversized residential units installed.

Buck Taylor thought that IOU representatives should respond but did state that the CPUC responded only to how the IOU crafted their claimed energy savings work paper. It was probably rolled into all of the other calculations. There were different line items which the IOU could choose to include, or not. If kW claims were not in the IOU work paper, CPUC would currently not respond at all. The IOUs needed to determine and then communicate at least internally how many tons of cooling their programs had removed from peak demand periods. That is the sort of additional data which could help differentiate their savings claims from HU or other programs. Manual J, first, needed to be done and done correctly. There was no existing mechanism to ensure that Manual J was done correctly, assumed to have been done correctly with no one and no current means for checking. Manual S (sizing) calculations depended upon properly calculations of Manual J factors. That's the basic difference between prescriptive code and a verified performance based standard.

Larry Kapigian, Superior Air, commented that on every form he'd seen in years, no manual J calculations had been done. They just plugged in numbers which would equate to so many square feet of conditioned space per ton of cooling. The results turned out horribly wrong.

Buck Taylor concurred. A checked box on a code form did not equate to the data having been properly collected and calculations properly performed. Work Order 32 had cloudy results which regulators seemed to be clinging to. There wasn't a fair comparison between homes where Manual J calculations were performed correctly and verified and other installation, such as Larry just described, where they were not done correctly or at all. Maybe some fairer research could be conducted by IOUs to build that case. If you could get data from currently participating contractors on recent installations and data on installations done before the RQI procedures were use, maybe 3 or 4 per contractor, you'd have a basis for extrapolating from a sample to make this case for a general baseline difference. Work Order 32 evaluators didn't follow the same rigorous installation steps and verification and only tested homes where permits had been pulled, not the other 90% to 95% of home installations.

Buck reminded the group that Bob Sundberg had distributed some preliminary findings for a code compliance study the CPUC had commissioned. If that study verified the large number of currently claimed baseline installations where permits and inspection had never taken place, IOUs might be able to claim savings on a larger percentage of cases for following RQI procedures.

### Next Steps/Closing Comments/Adjournment

The next meeting was tentatively set for Wednesday July 20 at 10:00 to 11:30 am PDT - for 1.5-hour. Meetings are normally scheduled for the 3rd Wednesday of each month.

Tentative agenda items for the next meeting would include:

- Discuss EC feedback on the issue of potential conflicts of interest



## Goal 2: Residential Quality Installation Committee June 22, 2016 Meeting Draft Notes

- Review Buck Taylor's list of barriers/issues and organize into categories
- Prioritize which barriers/issues the group would first address in a revised white paper
- ?

Buck Taylor adjourned the meeting at 11:46 am PDT.

\* \* \* \* \*

ACTION Item summary below.

<b>Summary of Action Items and Key Decisions (from above)</b>
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June 2016 ACTION: Collin Smith, SDG&E, would provide the committee with an update in July following their meeting with the new Home Upgrade program advisor.

June 2016 ACTION: Buck Taylor committed to collecting a list of these topics and suggestions into a bullet list. At the next meeting they could sort the list into categories from his first proposed list and see if they wanted to expand or reorganize the categories of issues/barriers.