Goal 2: Residential Quality Installation Committee
March 16, 2015 Meeting Notes

Call to Order

The meeting was called to order at 10:05 am PDT by Jeff Henning, Chair, President of MSDC, Inc .

Roll Call

5 of 9 voting members are needed for a quorum. 9 of 9 voting members, 7 non-voting members and 6 guests/staff attended. There were 22 total attendees at this meeting. Bob Sundberg facilitated the online Webex and call conference, recorded the meeting and produced summary meeting notes.

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

WHPA Goal 2: RQI Committee VOTING Members				Roll Call
ACCA (Air Conditioning Contractors of America)	Wes	Davis	Contractor Association	P
Benningfield Group	Russ	King	Third Party Quality Assurance Provider	P
DNV GL Energy Services (formerly KEMA)	Zachary	Connolly	Energy Efficiency Program Consultant	P
Energy Analysis Technologies	Chris	Ganimian	Third Party Quality Assurance Provider	P
Mechanical Systems Design & Consulting (MSDC)	Jeff	Henning (Chair)	Educator, Trainer	P
NCI (National Comfort Institute)	Scott	Johnson	Educator, Trainer	P
Henry Bush Plumbing, Heating and Air Conditioning and Home Energy Solutions (Redlands Plumbing & Heating & AC)	Tyler	Miner	Contractor (Residential)	P
Roltay Inc.	Buck	Taylor	Other Stakeholder	P
Superior Air	Larry	Kapigian	Contractor (Residential)	P
WHPA Goal 2: RQI Committee NON-VOTING Members				
ASHRAE			Engineering Society	
BuildingMetrics	Pete	Jacobs	Energy Efficiency Program Consultant	P
Building Performance Institute	Jeremy	O'Brien	Certifying Body	P
CEC (California Energy Commission)	Samuel	Lerman	Government	
CPUC/ED (California Public Utilities Commission - Energy Division)	Lola	Odunlami	California PUC	
Clean Energy Horizons, LLC	Norm	Stone	Energy Efficiency Program Consultant	
Davis Energy Group	David	Springer	Energy Efficiency Organization	P
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	
PG&E (Pacific Gas and Electric Company)			California IOU	
Quinn-Murphy Consulting LLC	Patrick	Murphy	Educator, Trainer	
Sacramento Municipal Utility District (SMUD)	Ravi	Patel	Publically Owned Utility	P
SDG&E (San Diego Gas & Electric)	Collin	Smith	California IOU	P
SCE (Southern California Edison)	Lori	Atwater	California IOU	P

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	
SoCalGas (Southern California Gas Company)	Harvey	Bringas	California IOU	
ZONEFIRST	Richard	Foster	Controls (Manufacturer or Distributor)	
WHPA Goal 2: RQI Committee Pending Candidates				
WHPA Goal 2: RQI Committee NON-VOTING Guests				
Air Conditioning Contractors of America (ACCA)	Glenn	Hourahan	Contractor Association	
Air Conditioning Contractors of America (ACCA)	Donald	Prather	Contractor Association	
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 PECI)	Michael	Blazey	Energy Efficiency Program Consultant	
CLEAResult (formerly CSG)	Michael	Withers	Energy Efficiency Program Consultant	P
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	
KEMA / DNV-GL **	Jarred	Metoyer+		
National Comfort Institute	Rob	Falke	Educator, Trainer	
NIST (National Institute of Standards and Technology)	Piotr	Domanski** +		P
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	P
PG&E (Pacific Gas and Electric Company)	Leif	Magnuson		P
SCE (Southern California Edison)	Andres	Fergadiotti+	California IOU	
SCE (Southern California Edison)	Sean	Gouw	California IOU	
SCE (Southern California Edison)	Ryan	Cho+	California IOU	
SoCalGas (Southern California Gas Company)	Kendra	Talley	California IOU	
Tre' Laine Associates	Pepper	Hunziker	Energy Efficiency Program Consultant	

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WHPA Staff				
BNB Consulting/WHPA staff support	Bob	Sundberg	Energy Efficiency Program Consultant	P
Enpowered LLC	Shea	Dibble	WHPA Co-Director	
WHPA emeritus staff	Mark	Cherniack		P

*** 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

October 14 meeting draft notes were distributed October 28. 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 business, new members, candidates and guests	Jeff Henning and Bob Sundberg	Produce an accurate record of all attendees, finalize and approve past meeting minutes, welcome new members and guests.
Review previous Action items and meeting agenda	Jeff Henning and Bob Sundberg	Resolve older items, determine status of current action items, finalize meeting agenda items.
New Business	Jeff Henning	Make committee aware of new RQI program and/or policy issues
RQI Committee 2016 Goals	Jeff Henning	Review Goals/Implementation Plan delivered to EC
EUC/Home Upgrade and RQI program integration update	Swapna Nigalye and Lori Atwater / Scott Higa/Collin Smith	Members understand status of program integration, incentive level realignment or other program revisions/plans for revision.
HVAC1 Upstream HVAC Program Evaluation Results	CPUC/DNV GL posted PPT	Committee gains an understanding of the Upstream program effectiveness evaluation.
AB-802 Energy Efficiency	Jeff Henning, Dale Gustavson	Begin to form a common understanding of what this bill states related to how energy savings will need to be determined going forward, implications for IOU claimed savings work papers and HVAC program savings evaluations.
Title 24 2016 Updates related to Residential Installation	David Springer/DEG	Update members and gain input for 2016 Title 24 revision consideration.
Set next meeting date, time and tentative agenda items	Jeff Henning and Bob Sundberg	Next meeting was tentatively scheduled for Wed. April 20. Meetings are normally scheduled the third Wednesday of each month.

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Welcome New Members and New Guests; consider new member candidates

Again, welcome Collin Smith, SDG&E Residential HVAC Program Advisor. Replaced long-term participant and contributor, JoJo Unverferth. Collin was a registered mechanical engineer and had previously worked in commercial HVAC consulting. He'd joined the residential group to help provide more technical support.

Welcome to Larry Kapigian of Superior Air. He will replace Joaquin Contreras as a voting member representing the residential contractor perspective.

Welcome to Ansen Williams and James Caskey of Valley College. HVAC instructors interested in work of the WHPA and RQI Committee.

Welcome to Swapna Nigalye of PG&E. Senior Program Manager, Residential HVAC Programs. She would replace Justin Kjeldsen who late 2015 entered a program management rotation to the AG/IND sector.

Welcome new guest Katherine Johnson of Johnson Consulting. CPUC/ED EM&V consultant.

Review past Action items

September 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.

August ACTION: James Tuleya agreed to provide Bob Sundberg and Jeff Henning with HU IOU and other program representative contact information. That information would be held until the IOU staff had the opportunity to discuss program integration with Home Upgrade representatives. Pending.

August ACTION: Chris Ganimian would contact the HU Working Group co-directors to request attending a future meeting once Justin Kjeldsen, PG&E, had advised him that the HU Working Group had been informed about the statewide HVAC team suggestion to work together to integrate HU with the RQI program and practices. Pending

Past ACTION Items:
April 2014 ACTION: Jarred Metoyer/KEMA would speak with Nils Strindberg/ED (now with Pete Jacobs) about the status of ED addressing the WHPA request for specific test-in data requirements necessary for ED to determine the level of system performance and which would be necessary for the evaluation of system performance data from other sources. A response to Jeff Henning and the RQI Committee could be expected from the CPUC/ED (page 8). This item will be addressed by Jarred with Pete Jacobs.

April 2014 ACTION: Jarred Metoyer, KEMA/DNV-GL, committed to work with Nils (now with Pete Jacobs) to ensure that the RQI Committee and other relevant WHPA committees were informed about the 1) public webinars regarding the research plan and also 2) public webinars offered to review methodology and results from the RQI Work Order 32 Report. Considered completed. Future communication to WHPA of valuable CPUC/ED information sessions/webinars would be coordinated by Lola Odunlami/CPUC ED and Pete Jacobs/CPUC ED consultant.

New Business --

1. HVAC1 Upstream HVAC Program Energy Impact Evaluation Results Presentation posted by CPUC/ED March 11. Evaluation conducted by DNV GL.

http://www.energydataweb.com/cpuc/search.aspx?did=1465
At the bottom of the Search Criteria box on the left, go to the bottom and type in the following exact text – hvac1. This will provide access to presentation, final results report and research plan documents related to the Upstream program.

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Jeff Henning, MSDC and Chair, requested Bob Sundberg distribute the CPUC/ED link to the Upstream program evaluation, that all members review the report and have the report placed on the April meeting agenda.

ACTION: Bob Sundberg directed to provide the CPUC/ED online link and distribute the HVAC1 Upstream HVAC Program Energy Impact Evaluation report for discussion at the April committee meeting.

2. Bob Sundberg, WHPA staff, shared that he'd gotten word that a CPUC/ED Coordinating Committee was holding a series of meetings devoted to IOU program development termed "business development planning." The coordinating committee intended to host a webinar specifically for WHPA members. A WHPA notification could be expected shortly. Shortly after the RQI C. meeting, Bob received the following information which was sent to all WHPA registered members. Check your email for the entire message.

You are invited to a WHPA webinar with NRDC's Lara Ettenson, CA Director of Energy Efficiency Policy and Co-chair of the Coordinating Committee, as she talks about the California Energy Efficiency Coordinating Committee and how WHPA Members can get more involved. **The webinar will be on Thursday, March 24, from 10-11am Pacific.**

Webinar Info

Thursday, March 24, 2016
10-11am Pacific Time

Webinar link
Webinar code: WHPA

Dial: 650-479-3208
Access code: 660 179 990

RQI 2016 Goals – Jeff Henning

Bob Sundberg, WHPA staff, shared the 2016 proposed goals online which were developed by a breakout group at the Nov. 5 2015 WHPA In-Person meeting. Those goals were being considered by the WHPA Executive Committee in order to formulate overall WHPA 2016 SMART Goals. They had not yet been approved and returned to the committee for further revision or input. The following were expected to undergo significant revision prior to approval. Jeff Henning and Lori Atwater had attended the first ½ of the breakout group meeting but had to depart the meetings and didn't participate in finalizing the following goals. Casey Murphy, ICF, also participated in the breakout group.

SMART Goal #1 – Effectively communicate RQI needs to influence policy and implementation

 Barrier – communication is more than speaking the same language, it is also a matter of timing (when you communicate) to meet the input schedules of the CPUC and other organizations.

 Work Product – Develop a communication plan for 2017 based on experience of 2016 "bus stops" and plans of the CPUC (see Gantt chart).

o Example #1 – Respond to the current CPUC four-question input request (November 2015 meeting and January or February 2016 written input deadline) and document the lessons learned during this response so that we can be ahead of the curve for the next input request.

- Example #2 – RQI and Energy Upgrade California (EUC) integration

COMMITTEE COMMENTS:

- Jeff Henning, Chair, indicated that under Example #1 their committee had not yet received the CPUC four question input request to which the committee had been asked to respond. Example #2 referred to the EUC Home Upgrade and Advanced Home Upgrade state-wide whole house improvement umbrella program.

SMART Goal #2 – Improve baseline for AB 802 through coordination with WHPA CQI.

 Chris ?? continuing to attend CQI Committee meetings as liaison from RQI Committee

 Contribute residential perspective

 Within 60 days of CQI work product, create residential QI addendum

COMMITTEE COMMENTS:

- Jeff Henning clarified that this goal was not related to AB 802. It referred to the CQI Committee's working group effort to develop a standardized data specification that was intended to be the foundation for developing a method for HVAC performance evaluation protocol. The commercial data spec. was intended to be adapted by RQI Committee members to residential installation once the commercial spec. was finalized. This goal was unrelated to AB 802 or baseline issues.
- Chris Ganimian, Energy Analysis Technologies, commented that the CQI working group had not reconvened since its last meeting in December. It hadn't completed its work and no one had received notification when or if it would continue its work. Bob Sundberg, WHPA staff, explained that this and all other working groups needed to be re-proposed as part of committee goals and approved by the Executive Committee before it could re-convene and continue its work. Those approvals had also been delayed because the transition from 2015 WHPA support into 2016 had only been resolved late in February. Pete Jacobs, BuildingMetrics and CQI WG Chair, explained the process by which the CQI WG would complete the commercial installation spec. and then, when WHPA approved, develop a residential installation template for this committee to carry forward.

SMART Goal #3 – Improve existing QI program design and implementation of RQI processes to streamline and simply future programs.

 Evaluate contractor experience in current programs; identify key barriers

 Recommend top 2 to 3 changes

 Simplify the current programs (KISS)

SMART Goal #4 – Develop key messaging on the value of RQI to drive demand by residential customers.

 Inventory types of value – EE, durability, proper sizing, third party verification

 ID sources and targets of case studies:

- Contractor HVAC
- Contractor – High Performance
- Customers

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 Develop one case study that can be effectively used by RQI contractors at "kitchen table"

COMMITTEE COMMENTS:

- Lori Atwater, SCE, commented on how critical this messaging the value of RQI was given their efforts to work in parallel with EUC/ Whole House/Home Upgrade. She explained that rather than having RQI integrated as a program within the Whole House/Home Upgrade program, they were attempting to integrate the "messaging" and promotion of both to take advantage of the enormous size, momentum and success of the Home Upgrade program. Whole House had a very robust outreach and large advertising budget to reach out to customers. She'd uncovered a number of misimpressions held by Whole House program managers and implementers about RQI. If the message to customers could/would include the value of a quality installation, customers would drive that demand for QI. They simply didn't know if/what the value might be except for the additional up-front cost. She could have really used input from the WHPA over the last couple of months to help put that value proposition message together. AC season and peak interest was just about to start in California. She had wanted to be in a better position to influence messaging in customer outreach. Spring was the key time to communicate their rebate offers to customers.
- Chris Ganimian added to Lori's comments. That Home Upgrade had a huge promotional budget complete with billboards and extensive advertising. Something RQI never had. He thought it would be valuable to get feedback from the two contractors on the call, Tyler and Larry. What they'd done that had worked in the past to create customer demand.
- Tyler Miner, Henry Bush Plbg. Htg. And AC, mentioned that every time RQI mailers were sent out, the phones would light up. Right now he thought the largest competition they had was the lack of advertisement and the continued discrepancy in rebates compared to Basic Home Upgrade for HVAC equipment installations. Why would they (contractors or homeowners) want to go down the QI track when they can get greater rebates for less effort.
- Larry Kapigian, Superior Air, used mailers and prominently advertise QI at their website. The major issue in central California was the lack of contractors participating in QI. Right now there were only two active QI contractors among hundreds of other contracting firms. He mentioned hvac-talk.com website bulletin board & forum extensively used by contractors, homeowners and commercial customers. It offered opportunity to spread the word about QI nationwide. They did accept pretty low cost advertising. He believed it was sponsored by Contracting Business.
- Casey Murphy, ICF, explained that Energy Star/EPA didn't have an advertising budget for hvac-talk.com or other industry forums but could point to sites from its own refreshed site. The Energy Star site offered customer communication "best practices" suggestions. They suggested messages of equipment durability, comfort, peace of mind of third party verified installation in addition to energy savings. The marketing message needs to be flipped to say it costs more if you don't get installation done right. The customer goes through stages in the buying process. They have to hear the right message for their phase and hear it multiple times through multiple channels for it to be effective.
- Lori Atwater, SCE, described their SCE efforts to leverage the new Energy Star Verified approach with contractor patches and sales collateral to support better contractor communication of the value of QI to their prospective customers. She wanted more WHPA help in crafting the value of QI message for April and May promotions. EPA didn't have a budget for advertising but the SCE QI program had a budget for customer outreach.
- Tyler Miner stated that the biggest obstacle he saw was that QI was not accepted as the standard for installation in California. They were continually coming up against that barrier in the Energy Upgrade California Home Upgrade type of installation which offered a bigger rebate than QI. And, money talks. Contractors are going in and telling homeowners they will install the system right and get them these large rebates. They aren't doing load calcs, sealing ducts or sizing correctly. That approach is still being promoted at the utility and state levels. As long as there are two paths and one is the path of least resistance with the biggest reward, that's the one most contractors and homeowners will go down.

KEY CONCEPT: Tyler Miner – as long as Home Upgrade offered larger rebates with fewer requirements and less effort, both contractors and home owners would continue to take the path of least resistance. Money talked and validated that lower

pathway. The greatest obstacle to market adoption of QI as the standard was the support and continued promotion of a "too code" installation over the ACCA Standard 5 based QI.

Bob Sundberg, WHPA staff, suggested that the discussion had moved onto the RQI and Home Upgrade topic on their agenda. Jeff agreed and suggested the group focus on that topic for much of the remaining meeting.

SMART Goal #5 – Assist in the integration of RQI and Whole House while protecting the integrity of QI fundamentals.

 Barriers/threats – integration, if not properly implemented, can undermine quality contractors and under deliver on energy savings

 Work product – develop white paper:

o From an HVAC contractor's perspective, what would a Whole House program look like? For example, don't incentivize HVAC measures in Energy Upgrade California based on nameplate efficiencies. For example, don't incentivize HVAC/duct sealing without requiring static pressure testing.

SMART Goal #6 – Assist in responding to four questions from CPUC for AB 802.

o By November 20 deadline; reference comment from Carmen Best (CPUC)

o By January or February 2016 deadline; reference comment from Carmen Best (CPUC)

o By "bus stop" process

COMMITTEE COMMENTS:

- Jeff Henning commented that he'd never receive the four questions from the CPUC which they were asked to respond to.

RQI IOU Update on Integration of RQI into Home Upgrade Program – Current RQI Program status

Lori Atwater, SCE, updated members on the SCE program status. She'd spoken with Leif Magnuson, PG&E, attended home performance conferences and had talks about ways to integrate RQI with the large Home Upgrade program. She explained that the SCE Program Implementation Plan (PIP) did NOT say to move the RQI program into or under the statewide EUC/Home Upgrade program. They needed to integrate promotion of RQI and its value proposition into the larger Home Upgrade marketing message. Their program challenge was how to increase demand for QI and how to expand the number of contractors offering that Advanced Home Upgrade option. The upcoming April contractor fact sheet would describe QI and its value as well as a contractor sheet for Home Upgrade contractors to leave with home owners which included comments about the Energy Star verified installation option through Advanced Home Upgrade.

KEY CONCEPT: Lori Atwater, SCE, stated that their RQI program was NOT being "integrated" into the much larger and statewide Home Upgrade program as she'd first understood in July 2015. Their focus was to "integrate the QI message and value proposition" into the Home Upgrade program offering and promotion.

Lori added that Home Upgrade contractors visiting their program website would now see options for Basic Home Upgrade, Advanced Home Upgrade and Advanced Home Upgrade with RQI. SCE would continue to offer cross training for Home Performance contractors to introduce them to the RQI option and introduce them to RQI trained contractors to partner with for the HVAC part of their home upgrade projects.

This was not an easy bridging. SCE had a separate Home Performance program with separate program managers with their own goals and separate budgets.

Jeff Henning asked Leif Magnuson of PG&E how they intended to cooperate with the statewide Home Performance programs. What were they intending to offer?

PG&E High Performance HVAC Installation Study – Leif Magnuson, PG&E

In 2015 PG&E did 3600 jobs in their Home Upgrade program. About 1800 or ½ were Advanced Home Upgrade jobs. They had some contractors in the Advanced Home Upgrade program who did extremely high performance installations but not consistently. Over the next six months they were testing to determine what approach they should take with a planned high performance HVAC installation program (HPHI). All the manual J, D and S Manual calculations were required. They also have some system performance metrics as goals for each installation. He agreed to send an email to all committee members/guests about the program specifics. Details were also available within the homeupgrade.org site (draft program documentation at the bottom of the following site).

http://homeupgrade.org/grow-business/highperformance/

Leif added that they had expert trainers working with advanced upgrade contractors to test whether these enhancements could be successfully integrated. Following a six-month study period ending in August, they would decide whether or not to roll out these enhancements to all advanced upgrade contractors in the fall for voluntary participation. In order to be designated as high performance advanced upgrade contractors they had to have 10% of all jobs with a minimum of five jobs meet the requirements. Late in the year they would decide whether to roll it out to all basic upgrade contractors.

Jeff Henning added that in his participation in the study design the previous summer, he wanted everyone to know that this "high performance" type of installation was well above the RQI ACCA Standard 5 based minimum standard. He was concerned over statewide marketplace confusion of the high performance installation with an RQI one.

Leif Magnuson clarified that they were branding the approach as "high performance installation" and not RQI or Energy Star Verified Installation. They thought that an approach which incorporated the intention of ACCA Standard 5 but pushed the contractors to get the maximum benefit from reducing building load and improving system design, equipment selection and installation would provide the best outcome both for the customer and the program from an energy savings perspective. They would ask contractors to meet all Standard 5 requirements and then go beyond it to meet additional performance metrics. They would be pushing contractors to upgrade the home to reduce the load on the system which would have a direct impact on the load calculations for system selection.

Lori Atwater mentioned that before this HPHI approach and study, PG&E did not have a contractor installation program with ACCA Standard 5 requirements. They offered education and training. They required measurement of duct leakage, load calcs and all the rest. PG&E was training the contractor to make the connection between the energy related home upgrades to the HVAC system selected and the compounded energy savings impact. Something that she aspired to for the SCE program.

Jeff Henning stated that the CPUC was the party behind the conflicting goals of wanting QI to be the standard of the industry by 2020 and yet still approving IOU programs for ratepayer funded rebates for lower levels of HVAC installations. If we're not even teaching contractors QI installation statewide, the goal of QI being a standard practice would continue to be unachievable.

Wes Davis, ACCA, raised the question of how HPHI and the Standard 5 differed, whether it was around airflow requirements. After discussion, Leif Magnuson clarified that the 450 cfm/ton, not the 500 to 600 considered earlier,

which was well within existing manufacturer's equipment performance rating tables & specifications for Manual S. Some have calculated values for higher cfm airflow but just hadn't yet published those values in their equipment tables.

Chris Ganimian's one reservation was that most contractors were not equipped to make these sorts of calculations which they'd learned from their work with the SCE program. It took a great deal of training and a verification process to provide the necessary feedback loop to move toward getting it right over time. The verification process identifies problems and then supports them in correcting those problems. It was well beyond a "train them and walk away" approach. Otherwise, it just wouldn't work. To get this approach out to a broader span of contractors would take considerably greater effort than most programs plan for which was the guidance he and Jeff had provided during the study design phase. That had been a "learning" process they'd gone through with the SCE program. Load calculations had been one of the sticky areas. Some windows might have been replaced with low "E" ones but the load calcs might have been run assuming ALL windows were of these R values. They'd discovered quite a number of unintended oversights in gathering the necessary accurate information in order for those load calcs to be correct.

Leif agreed that this was a pretty good summary of their study. He'd chosen three contracting firms where they already knew the firms could deliver volume. Could he find some middle ground between his expert trainers who could do 6 to 12 high performance installations a year and the large volume contractors who did 100 to 200 installations per year. Was there a way that these higher volume contractors could do a reasonably large number of high performance installations efficiently and convince their customer to pay the higher costs they would need to charge. That was the HPHI goal of the pilot study. There would be some classroom training but most of it would take place in the field. The expert trainers would work with them completely through the first 3 to 4 jobs. Then, they'd assess:

- Were they capable of taking all the right measurements?
- Did they deliver the type of system performance expected?
- Were they able to sell the high performance home upgrades and HVAC system to homeowners successfully?
- How well could these firms integrate this new level of installation into their business models?

Unasked question:

1. How will PG&E approach "claimed savings" with the CPUC/ED ex ante team in order to gain recognition for the high performance installations and support program cost? Will this involve "system performance evaluation" benchmarking? What measurements will be taken? How will performance be calculated?
2. How will the ex post CPUC evaluation teams evaluate their program and its claimed savings? Will the program evaluators use the same system performance calculation methods as the IOU approach? What "baseline performance" will this unit be compared to?
3. How high a realization rate can this program achieve, if implemented? (Ex-ante claimed savings – ex-post evaluation savings verification = realization rate)
4. What sort of a program cost to savings ratio could be developed which would allow for a pretty dramatic expansion of their HPHI effort to the broader range of Home Performance contractors?
5. How HPHI program incentives were intended to be positioned compared to the Basic Home Upgrade HVAC installation incentives given the group's understanding of the current discrepancy in SCE territory where Basic was approved for greater savings than RQI was currently able to claim?

Leif added that one outcome of the study will be a plan for the training manuals that would be required in order to roll this out to all the advanced home upgrade and later the basic home upgrade contractors. They were also developing a "green staff" to handle the mentoring and follow-up Jeff and Chris had mentioned as part of the preparation for a roll out in the fall.

Leif also mentioned that what they were trying to add above existing programs was to actually conduct measurements of system performance in the field beyond the required calculations.

Bob Sundberg, WHPA staff suggested the Leif or part of his team work with Chris Ganimian and get invited to join the CQI Committee standardized data specification working group's effort once it moved to focusing on residential installation. To also participate when a working group would attempt to develop a standardized method of system performance evaluation.

Title 24 2016 Updates Related to Residential Installation – David Springer, DEG

David Springer, Davis Energy Group, indicated that he would provide a summary of Title 24 changes related to residential installation for the group. His firm had been asked by the CEC to hold off on possible 2019 changes until that work was further along.

2016 Title 24 Changes

- Total duct leakage reduced from 6% to 5%, applies to new and full replacement,
- Ducts must be R-8 if located in an unconditioned attic, except R-6 in climate zones 3 & 5-7. For alternations, R-6 is allowed in CZ's 1 through 10, 12 & 13.
- Liquid line filter driers required for all air conditioner and heat pumps when provided by the manufacturer,
- New requirements for filtration and pressure drop and labeling of filters,
- For packaged systems the installer can certify that they installed a system that was charged by the manufacturer,
- "Charge Indicator Display" changed to "Fault Indicator Display", but the specifications for such devices remain the same. This is still an alternative to refrigerant charge verification.
- Two duct options: attic ducts in high performance attics (vented attic with insulation at roof deck and ceiling), and ducts in conditioned space,
- Airflow verification of minimum 350 cfm/ton for new installations and 300 cfm/ton for replacements remains.

AB 802 Discussion

No discussion.

Next Steps/Closing Comments/Adjournment

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

Tentative agenda items for the next meeting would include:

- RQI C. 2016 Goals
- HU program & RQI program issues
- PG&E HPHI program study progress and positioning
- Upstream Program DNV GL Impact Evaluation Report
- IOU Business Development Planning process – March 24 WHPA Webinar offered
- Progress of AB 802 and CPUC/ED movement toward building meter data as basis for verified energy savings
-

Jeff Henning adjourned the meeting at 11:29 p.m. PDT.

* * * * * *

ACTION Item summary below.

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Summary of Action Items and Key Decisions (from above)

March 2016 ACTION: Bob Sundberg directed to provide the CPUC/ED online link and distribute the HVAC1 Upstream HVAC Program Energy Impact Evaluation report for discussion at the April committee meeting. Completed. To accompany distribution of March 16 meeting notes.

March 2016 KEY CONCEPT: Tyler Miner – as long as Home Upgrade offered larger rebates with fewer requirements and less effort, both contractors and home owners would continue to take the path of least resistance. Money talked and validated that lower pathway. The greatest obstacle to market adoption of QI as the standard was the support and continued promotion of a "too code" installation over the ACCA Standard 5 based QI.

March 2016 KEY CONCEPT: Lori Atwater, SCE, stated that their RQI program was NOT being "integrated" into the much larger and statewide Home Upgrade program as she'd first thought in July 2015. Their focus was to "integrate" the QI message and value proposition into the Home Upgrade program offering.

OLDER ACTION ITEMS:

September 2015 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.

August 2015 ACTION: James Tuleya agreed to provide Bob Sundberg and Jeff Henning with HU IOU and other program representative contact information. That information would be held until the IOU staff had the opportunity to discuss program integration with Home Upgrade representatives. Pending.

August 2015 ACTION: Chris Ganimian would contact the HU Working Group co-directors to request attending a future meeting once Justin Kjeldsen, PG&E, had advised him that the HU Working Group had been informed about the statewide HVAC team suggestion to work together to integrate HU with the RQI program and practices. Pending

April 2014 ACTION: Jarred Metoyer/KEMA would speak with Nils Strindberg/ED (now with Pete Jacobs) about the status of ED addressing the WHPA request for specific test-in data requirements necessary for ED to determine the level of system performance and which would be necessary for the evaluation of system performance data from other sources. A response to Jeff Henning and the RQI Committee could be expected from CPUC/ED (page 8).