

**Meeting Notes: WHPA Market Adoption Subcommittee – Conference Call
January 4, 2012 12:00 – 1:30pm (Pacific Time)**

Scribe: Wendy Worrell, WHPA Staff

Roll Call – Bob Sundberg		
Attendees	Organization	WHPA Category
• Mark Cherniack, WHPA Staff	New Buildings Institute	Other Stakeholder, Staff
• Ruzwa Cooper	Cooper Oates Air Conditioning	Nonresidential Contractor
• Curtis Framel	Southwest Energy Efficiency Project	Educator/Trainer
• Serafima Higginson	Honeywell	HVAC Manufacturer
• Julie Humes, Mkt Adopt Chair	Lennox Industries	HVAC Manufacturer
• Daniel Jones	Honeywell ACS/ECC	Controls Mnf/Distributor
• KC Spivey, Adv Tech Chair (partial)	Pacific Gas & Electric	Investor Owned Utilities
• Bob Sundberg, WHPA Staff	WHPA	Staff
• James Tuleya (<i>partial</i>)	Pacific Gas & Electric	Investor Owned Utilities
Members Unable to Attend	Organization	WHPA Category
• Carl Cimino	Pipe Trades Training Center	Educator/Trainer
• Chris Forth	Johnson Controls/York Unitary Products	HVAC Manufacturer
• Jason Hanson	Sierra Pacific	Residential Contractor
• Don Langston	Air Rite Air Conditioning & Refrigeration	Nonresidential Contractor
• Lizette Nielsen (for Jeremy Reefe)	San Diego Gas & Electric	Investor Owned Utilities
• Dave Waters	RSD Total Controls	Controls Mnf/Distributor
• Jonathan Woolley	Western Cooling Efficiency Center/UC Davis	Other Stakeholder

To not be repetitive, the individual names of meeting participants will be used, but the organization names will not be repeated in the body of the notes.

Bob Sundberg received Julie Humes’ okay for James Tuleya to briefly discuss some of the IOU changes for new portfolios before the review of the action items and welcoming of Ruzwa Cooper and Curtis Framel since James Tuleya could only be on the call for a bit at the start of the meeting.

Review of CPUC Energy Division Proposed Changes to IOU Portfolios for Relevance - James Tuleya

Bob Sundberg announced that James Tuleya represents most of PG&E’s Program Development, along with some split responsibilities with KC Spivey. The CPUC’s Energy Division proposed changes/suggestions to IOU portfolios and focus during early December. Documents from the CPUC related to emerging technologies or market adoption were prepared. To expedite understanding, Bob Sundberg asked James Tuleya to “help figure it out a bit”.

James Tuleya expressed that the reference was to an “ACR”, an Assigned Commissioner’s Ruling Scoping Memo. It is part of the stages of the process for planning what the programs will do across the State at the IOU’s for energy efficiency not only for HVAC, but for all portfolio programs. It is a guidance document and scoping memo providing a vision from the Commission for the different aspects of the portfolio. It is for the period from 2013 – 2014, which would be an extension of the current 2010-2012 energy efficiency program cycle. An extension was already approved. In the process of the extension, there is an opportunity to fine tune what was done in the HVAC area and the other types of programs. It is not the same thing as a brand new program cycle that would require longer planning. This is more the middle ground of trying to improve energy efficiency programs from the IOU program perspective based on the learning curve from the new things being done in the current cycle. Some of what is being suggested is more, deeper savings and more integration of what is being done. But, it doesn’t look like it will be “huge, wholesale changes” to what is already trying to be accomplished in the current program cycle. The process and timeline are:

1. A Scoping Memo was sent out to all registered parties that helps clarify what the Energy Division (the staff side of the Commission for Energy Efficiency) sees as potential changes and improvements. Sometimes there are errors in what is being suggested because they do not have the knowledge that IOU folks or those closer to implementation have.
2. The IOU’s are currently working on a reply to the ACR and commenting on other people’s replies.
3. That will generate a proposed decision from the State for guidance of what they want to see in the IOU’s submission of plans for the next two years. Late this month/early next month there will be more guidance from the Committee following the back and forth communications.

4. Based on that and further discussions the IOU's will have with the Energy Division's staff, with other stakeholders, and with the Performance Alliance, they will develop a Draft Plan for Energy Efficiency Programs for 2013-2014, including HVAC. It will be filed in April. Over the next couple of months, they will be looking for more input from the broader set of stakeholders that may not yet have seen some of the guidance. There are some challenging parts of what is mentioned, but after it "plays itself out a little" the comments and replies make "the lay of the land" clearer.

From his perspective, there is nothing that fundamentally impacts changes for what the Market Adoption Subcommittee is trying to do. They are still trying to reach the Strategic Plan goals and are still eager to promote Fault Detection Diagnostics as well as appropriate Emerging Technologies.

Julie Humes questioned the deadline for comments.

James Tuleya clarified that in order to comment on the formal proceedings, one would have to have been a "party" to the proceeding. Otherwise, there is no way to comment other than to provide a suggestion for comment into one of the other parties on the initial distribution list. The Performance Alliance, Committees and Subcommittees can provide input into the IOU's as well as directly to the CPUC without it being formal comments. Suggestions could be given to PG&E who will be having discussions with the Energy Division and the other IOU's on how to proceed based on this guidance and other stakeholder input outside the formal process. It all feeds into the next round of formal comments in April and May. There are plenty of opportunities to feed comments into the process over the next couple of months.

Julie Humes expressed that the Subcommittee fit well into "II: IOU's should investigate ways to increase the uptake of ET's into Statewide Programs."

Bob Sundberg asked if the IOU's timeframe for comments had already passed in December.

James Tuleya confirmed that for the first round, their comments were put in before the holidays with the reply comments being put in two days from now. He stressed that the Performance Alliance can take a look at all the set of initial guidance plus comments and reply comments related to HVAC and then give input on that.

ACTION: James Tuleya will highlight the HVAC related portions of the ARC for posting on the Performance Alliance website homepage for all Committees and Subcommittees to see for input along with a manageable set of links to all of the related documents across the Portfolio that are available at the CPUC website.

James Tuleya also clarified that the page in the document stating "increase the percentage of emerging technologies installed into the deemed and calculated statewide program" that lists A through J of things beyond just HVAC like lighting and ovens is just an example list. They are not the top items. The scoping memo draws from a market potential study for energy efficiency savings in the future. That is currently a draft that Navigant as the consultant to Energy Division has developed. All the different stakeholders have been reviewing Navigant's potential study and commenting on what needs to be clarified, emphasized or characterized better, etc. It is a bit premature for the guidance document for planning to be referring to the potential study since the potential study isn't finalized. The potential study is about where formal savings are derived from energy efficiency measures. Fault Detection and Diagnostics is an important technology effort, but unto itself is not actually a measure. It is something that needs to get done with efforts on standardizing FDD capabilities that lead to savings in other areas. In the potential study, it isn't a top savings potential measure on its own. It is just important within planning the leads to current and future savings opportunities in Quality Maintenance types of measures and other areas like Quality Maintenance Service. Some of the comments will clarify that.

Julie Humes questioned what "contractors" means on page 2 at the bottom where it states "...HVAC upstream incentive programs, Energy Division proposes that contractors represent and warrant that all permits have been obtained".

James Tuleya clarified that they are referring to HVAC contractors but that they misunderstand who is actually participating in the upstream programs. James Tuleya has clarified that in PG&E's comments along with anything else "upstream" or "HVAC" related. The reference was to SB454 which requires certain things to happen with contractors and end users for helping with permit compliance. What is technically required by that bill (now State law) is that for anyone receiving an incentive from a Utility program using rate payer dollars, they have to certify that they used licensed contractors and followed all applicable permit requirements. IOU programs are in compliance with that but it only applies to where they are providing incentives downstream to the customer. The law doesn't technically apply to an upstream program, but PG&E has been in discussion with the Commission staff to figure out how to help support the spirit of the law relative to all the programs including upstream. They have provided some detailed information and alternate suggestions for what is appropriate for the market for manufacturers, distributors and contractors who are also engaged in the process.

Julie Humes summarized that the bottom line is that the programs are going to be semi-revised to be more cost effective through 2014.

James Tuleya confirmed that the next full program cycle will be 2015 with a 1 ½ year process for that starting in 2013. The focus is to get further ahead of the process to feed in comments and ideas as early as possible.

James Tuleya left the meeting.

Welcome New Members and Subcommittee Overview – Bob Sundberg & Julie Humes

Bob Sundberg welcomed the two new members: Curtis Framel and Ruzwa Cooper.

Curtis Framel announced that he is with the Southwest Energy Efficiency Project in Boulder, Colorado. They cover a six state area in the Midwest and are currently partnering with the Western Cooling Efficiency Center at UC Davis. They are initiating an energy efficiency cooling technology information service. He is trying to “net in” with ongoing efforts related to cooling efficiency, product technologies, and new market opportunities. He is listening in to see which subcommittees are most appropriate for him to provide value. They are focusing their efforts on IOU’s in their service territories plus the California IOU’s. They are limited as a subscriber focus. He is on a fact finding mission presently so he may not participate as much today.

Ruzwa Cooper introduced himself. Cooper Oates Air Conditioning has been in business for 40 years. They do commercial only and are a service contractor as well as a new design, build and construction contractor. Don Langston recruited him to the subcommittee. They have been a fairly active partner with PECE on their Air Care Plus Program in Northern California using the field diagnostics tool. They have engaged with Honeywell as one of the third party contractors for the Quality Maintenance Program in the PG&E service territory. They are trying to be fairly active and position themselves to help their clients improve their ROI – their building assets – by helping them save energy as well as extend the life of their equipment. He felt his being part of the subcommittee would be helpful for them in terms of learning more about what everyone is thinking about the future while he hopefully helps the subcommittee understand what is practical rather than abstract and theoretical.

Julie Humes welcomed both and expressed that the subcommittee has been active for 6 months. They have been working on theory, fact finding and introducing the subcommittee to other entities in the State such as TRIO and the Emerging Technologies Coordinating Council. KC Spivey has helped with ETCC. This subcommittee is a group of professionals with HVAC backgrounds and key stakeholders who would like to see advanced technology energy efficiency oriented products flow smoothly from the OEM down to the end user. The fact finding is to find out how not to get crossways with what everyone else is already working on, particularly in terms of the Emerging Technologies group. During a meeting with them last month, they were receptive to having us help them understand how to break through market adoption barriers or find out why a technology is not taking off, which is the whole purpose of this subcommittee. It is to take the emerging or advanced technologies, whether they are ineffective on the street and need a “nudge” for the end user or maybe something that is not on the street yet. The first recommendation is Honeywell’s JADE, with Serafima Higginson’s and Daniel Jones’ (both with Honeywell) providing information as part of the call. The query is how to take that into the market adoption queue.

Honeywell JADE Economizer System Consideration as FDD Technology Vehicle To Explore Process & Barriers to Market Acceptance and Adoption – Serafima Higginson and Daniel Jones

Bob Sundberg asked Serafima Higginson from the developing company’s home office and/or Daniel Jones’ from developing company’s field sales force to provide understanding of the current circumstance for this economizer system that is more than just the traditional economizer in terms of its market acceptance approximately one year after it was formally announced.

Serafima Higginson emailed Julie the current market trends they could share but it was not shared with the team due to the holidays.

The content of the email that Julie Humes emailed during this call was as follows:

Serafima Higginson followed up on Julie Humes’ request, regarding getting more information about Honeywell’s new economizer JADE, with her manager, Adrienne Thomle. Unfortunately they can’t give out any financial information as it is proprietary.

Some of the challenges they face with JADE adoption are:

- Training of the contractors and service technicians on the installation and benefits of a new product;*
- Can’t just tell people about the value. They have to use and try new product themselves in order to find out the significance of savings for them;*

- Most contractors need to "touch and feel" the product, photos don't work - may need a video. But run into issue of time again. Got to get it in their hands.
- Adopting to the new - **a lot of customers want same old products they are comfortable with, don't want to be the first adopters even if the new product saves them time and money and is easier to use.**
- Resistance to change;
- Price. Not a top challenge but if price is a concern even \$1 can make a difference in new product adoption; dependent on customer and application.
- The ones who like the new product right away want to use it in additional applications it wasn't designed for; see it as a lower cost, easier solution than what they are doing now.
- **Long selling cycle since most service contractors are not as good selling energy savings until they get a push from Utilities or other energy savings programs.**
- **People prefer replacing like-for-like with the same wiring and footprint.** The same as relays and contactors.

Julie Humes asked Serafima Higginson to share background information about JADE, when it launched, how they market it, and then for Daniel Jones to talk about it at the local level.

Serafima Higginson shared that they launched a year ago on January 11, 2011. It is their "state-of-the-art" new economizer that is very easy to use. It is new to the market because other economizers were breaking all the time and were very complicated. The word in the market was very negative until they came up with JADE, a semi-automatic four button system with LCD display. It is programmable with all the settings visible on the LCD. There is also an alarm option notifying failures such as sensors or if the actuator has the wrong power to it. It is easy to wire. It has connectors on the side and is capable of demand control ventilation in addition to temperature or enthalpy based economizing. It has been received positively on the market, but it does have its challenges. The biggest challenge is that most contractors are "used to what they are used to" and hesitant introducing new products. They don't realize the savings until they actually see the savings.

Daniel Jones confirmed that once the contractor finally installs it and sees how easy it is and that the economizer isn't showing hours' worth of errors that need to be resolved, that is all they start buying. There is an adoption curve that is taking a while.

Serafima Higginson stated that is it very price competitive for what it does but it is a bit higher than a simple economizer that always breaks.

Ruzwa Cooper asked what the target market is for the product.

Serafima Higginson said that primary market is commercial contractors and distributors.

Ruzwa Cooper asked for more specific targeting such as if it is for retrofitting existing equipment.

Serafima Higginson confirmed that it is mostly for existing equipment to replace existing economizer systems.

Ruzwa Cooper questioned than that if something is found defective, this would be an option the contractor would use rather than the replacement of the OEM original controls.

Daniel Jones confirmed that to be correct. This is a standard rooftop unit. The big focus on the market place would be 50,000 square foot buildings with multiple and larger rooftop units which have dampers and economizer controls – anything from 3 ton up. It is pretty much a "plug and play" even though you do have to remove all the sensors to use the new ones. The kit is easy to install.

Ruzwa Cooper asked if it is sold through distributors like RSD and Johnstone Supply, etc.

Daniel Jones confirmed that to be the case.

Serafima Higginson referenced the picture Bob Sundberg showed online of the unit. All the sensors are color matched. There are only two sensors to work with: 20K NTC and Sylk Bus sensors depending on the kind of temperature or enthalpy (RH + temperature) control you want.

Bob Sundberg added that the sensors actually provide their readings in digital form back to the logic module. The logic module contains the selected changeover strategy and setpoints. It also processes the algorithms which calculate "enthalpy" and compare OA outdoor air to RA return air to select the lowest cost source. The DCV demand control ventilation function also helps insure that proper OA ventilation is provided based on actual building occupancy.

Serafima Higginson confirmed that the LCD lights up and that parameters can be changed, saved and stored.

Daniel Jones also mentioned that another fairly new product to support adoption of the JADE system is the PC module, just being introduced in early 2012. The PC module can be plugged from the JADE logic module into a PC to generate reports on internal analytics and diagnostics for one RTU. From a contractor's standpoint, the economizer tells what has happened and what is wrong with it so all the diagnostics that needed to be performed manually in the past with previous platforms, will no longer be necessary.

Serafima Higginson pointed out that the module plug-in can "give you proof" with a fraction of the cost if you were to buy a data recording machine.

Daniel Jones commented that there is an energy cost savings estimating tool, the RTU Solutions Savings Estimator funded by Honeywell but created by a third party, which is very accurate at projecting energy usage and economizer control strategy savings within 10%, conservatively. This building modeling tool was designed specifically for commercial buildings with packaged HVAC equipment. He has been told that it is truly accurate to 5%. Using building modeling and projecting energy usage and potential savings does add complexity, but also a level of simplicity when the contractor talks with the end user about the impact of a controls upgrade. The tool is another challenge for market adoption. In addition to projecting energy savings from economizer upgrades, HVAC unit degraded settings could be put in to demonstrate how much energy is wasted from poorly operating RTUs vs. those receiving quality service. **Training on use of this tool, getting that done in the field, is a big part of the challenge.**

Bob Sundberg could see that controls contractors used to using PCs and rooftop controllers on a building automation system would feel quite comfortable with JADE. He was curious about the reception with the vast majority of service providers being mechanics and technicians instead. He also gave an in-depth overview of how the cost savings estimating tool works and offered to provide the link to the JADE literature and savings estimator download.

ACTION: Bob Sundberg to send the links to the JADE literature and the savings estimator download to the Market Adoption Subcommittee members.

<http://beyondinnovation.honeywell.com/products/jade.html> -- brochures and white papers
<https://customer.honeywell.com/> -- JADE, simulator + RTU Solutions Savings Estimator software

Daniel Jones felt another challenge for JADE's market adoption is that it is a new technology even though it is not very difficult to understand. There is a thought process that "It may require more people to be trained to install it than I have now." As more end users start understanding it, the better it will do. He believes it is a perfect product for CQM180 based programs.

Julie Humes asked how measurements can be done without data since it is proprietary within Honeywell. She pondered if there is a way to effectively control the measurement without hurting the proprietary numbers by looking, for example, at how many were distributed through IOU's.

Daniel Jones suggested that it would be public knowledge through CQM180. JADE will be trained in the CQM180 program at the Stockton/San Francisco location. It will be installed at both training facilities. Some market adoption data could be gathered from that CQM180 information.

Serafima Higginson said that the data they have right now doesn't have a tracking record that would specify out IOU's like that.

Julie Humes felt that we need to capture that measurement in order to measure our success as a subcommittee. We need to define the variables that are important to the CPUC and what is being done here.

Mark Cherniack asked if there is a plan that perhaps JADE may become a measure in the program. He also wondered if this has to go through emerging technology first to be essentially piloted in a program. Mark confirmed that JADE has not been in the Utility Program yet.

(Julie Humes confirmed that KC Spivey had to leave the call earlier in the meeting.)

Julie Humes spoke with KC Spivey yesterday.

Bob Sundberg clarified as a point of reference that the Southern California Edison Program is called HVAC Optimization. The program implementers did not seek to include any new technologies in addition to what would meet the minimum stated goal for CQM. They only wished to replace what was there with 10, 20, 30 year old technology (new device still being manufactured with the

old technology) that was there as part of a "repair to original functionality" approach. There was no element in the Program currently to encourage contractors to look at any newer technologies that could be an improvement over what was originally installed and found non-functional. Within the last 3 months, they have been working with their implementer to attempt to have controls upgrades integrated into the program. There could be additions during Q1 2012. In Bob's communications with contractors over the last 6 months, none were aware of JADE. It seems to be getting lost with the multitude of new HVAC offerings.

Daniel Jones confirmed that a lot of contractors know because of face-to-face conversations with him about JADE. A lot of effort is being made in the distribution channel toward greater market awareness – more "lunch and learn" sessions are being done with 15-20 contractors in a room.

Bob Sundberg asked what criteria of numbers Julie Humes is looking for to determine if JADE is the correct vehicle to start with at this point. (No response)

Daniel Jones felt another challenge is getting people to accept that through CQM180 programs, JADE is free. Energy savings provides the ROI to justify its purchase and installation

Serafima Higginson said that things are starting to pick up. The word is out and is positive but it is not going quickly.

Develop ET Project Info Sheet with IOU – Form Working Group - Julie Humes

Julie Humes requested that a 2-3 person working group be created to put together an evaluation form on the product as this would be good timing if we want to start with JADE. The ETCC group was receptive to this subcommittee helping with viable, marketable products from major manufacturers that are not getting the glances they should be getting rather than focusing on something that is a new start-up TRIO incubation type product. JADE could be used as a launching mechanism for creating some type of product evaluation form. The working group could include someone from the ETCC, perhaps a representative like Randy Wong or Edwin Hornquist from Edison who would like to engage with this group to create this form. She can have KC Spivey help her get a list of those who nodded in agreement that the subcommittee would be helpful to them. She envisions the form is a product overview, an explanation of its market readiness, Utility company interest, Deemed savings status, Is it in the DEER database? Cost? How has it been marketed? Challenges faced? Challenges needing to be addressed? Where is it on the TRIO radar? CEC interest?

ACTION: Julie Humes to work with KC Spivey to put together a list of ETCC members as candidates to join the new working group and provide IOU input, perhaps Randy Wong (PG&E) or Edwin Hornquist (SCE). Goal is to have the new IOU member join the next subcommittee meeting February 1.

Julie Humes responded that JADE has been discussed at the last couple of meetings. Initially it was about coming up with a product. Then there were other side conversations. It is not up to this group to decide. We have to work with other agencies and help them to create a procedure for market adoption that does include behavioral change. It goes hand in hand with the California HVAC Action Plan. **We are to find out why the market is not adopting. JADE is a test product that we have come up with.**

Bob Sundberg clarified that this is a vehicle primarily for industry to provide input to try and help improve the process for adoption of promising and credible technologies rather than just to hand-pick a few. This includes looking at gaps between state agencies. We are using JADE more as a vehicle for discovery.

Julie Humes added that it also includes training and marketing. It is looking at how we introduce an entire package to assist the IOU's, the Emerging Technologies Group and the State of California in getting these energy efficient products into the market place.

Serafima Higginson asked how long the forms should be.

Julie Humes felt that would be up to the working group. She prefers to stay out of the working group so other members could have more interaction at the State level.

Serafima Higginson wants to be involved. Daniel Jones will support Serafima as he can, but he is extending his involvement in the QM/QI workforce education and training subcommittee already.

Julie Humes believes it would require getting together outside of this subcommittee call to put together a rough draft to present to the subcommittee to review at the February 1st meeting. Julie Humes would also like to have whoever from the ETCC is involved to attend the next meeting to offer perspective as well.

Serafima Higginson asked if the draft is an outline only of what the form should be or the form itself.

ACTION: Julie Humes to send Serafima Higginson her notes for her first thoughts on what the intake form might be.

Serafima Higginson asked who would see the form once it is created.

Julie Humes clarified that to start, the subcommittee would see it as well as whoever is involved from the IOU's. The IOU person may want to "make their mark on it" so an IOU could use it for a program. If someone from Emerging Technologies was involved in the working group as well, they might also "make a mark on it" so they could use it for Emerging Technologies as well.

Bob Sundberg asked if the purpose of the form is for developers or new products/technologies/services to be able to provide a concise description of information regarding the products as well as the stage for introduction and acceptance. Is the form the type that would provide the type of information that could be submitted to the best few places for innovators wanting to come to California to be evaluated, recognized, evaluated?

Julie Humes believes that if we can make it universal to all entities it will find a home. Currently that will be this subcommittee.

Bob Sundberg reiterated that JADE is a vehicle to make this form. How would you make the State of California rapidly understand what it is, what impact it could have and where you are in the stage of introduction and acceptance?

ACTION: Julie Humes will email the group asking for volunteers for the working group to develop a product evaluation form.

Closing Comments and Next Meeting – Bob Sundberg

Bob Sundberg reminded everyone to please review the action items from the end of the November and December notes to see if there is anything that still needs progress before the next meeting.

ACTION: Market Adoption Subcommittees members are asked to please send any volunteer hours for December to Bob Sundberg.

Next Meeting: Wednesday, February 1, 2012 from 12:00 – 1:30pm PDT.

Adjourn

Action Items Summary

NEW ITEMS

- **ACTION: James Tuleya will highlight the HVAC related portions of the ARC for posting on the Performance Alliance website homepage for all Committees and Subcommittees to see for input along with a manageable set of links to all of the related documents across the Portfolio that are available at the CPUC website.**
- **ACTION: Bob Sundberg to send the links to the JADE literature and the savings estimator download to the Market Adoption Subcommittee members.**
- **ACTION: Julie Humes to work with KC Spivey to put together a list of ETCC members as candidates to join the new working group and provide IOU input, perhaps Randy Wong (PG&E) or Edwin Hornquist (SCE).). Goal is to have the new IOU member join the next subcommittee meeting February 1.**
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