

**Meeting Notes: WHPA Market Adoption Subcommittee – Conference Call
February 1, 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 (<i>partial</i>) | 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 |
| • Bob Sundberg, WHPA Staff, Facilitator | WHPA | Staff |
| • Jonathan Woolley (<i>partial</i>) | Western Cooling Efficiency Center/UC Davis | Other Stakeholder |
| 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 |
| • KC Spivey, Adv Tech Chair | Pacific Gas & Electric | Investor Owned Utilities |
| • Dave Waters | RSD Total Controls | Controls Mnf/Distributor |
| Members Recently Removed from Roster | Organization | WHPA Category |
| • James Tuleya (<i>due to time constraints</i>) | Pacific Gas & Electric | Investor Owned Utilities |

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.

The recording started after roll call and introductions were completed.

Review of January 4th Notes and Action Items – Bob Sundberg and Julie Humes

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.

The comments regarding James Tuleya’s action item for the CPUC’s recommendations to the IOU’s were made prior to the start of the recording.

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

This action item was covered prior to the start of the recording.

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.

Prior to the start of the recording, Julie Humes described the progress in working with KC Spivey to identify good candidates that were at the ETCC meeting to join the working group on emerging technologies and information form.

ACTION: Julie Humes and KC Spivey will identify an ETCC meeting attendee to join the emerging technologies and information form working group.

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

Julie Humes said that during the meeting she would send her “initial thought” notes and the link to what the ETCC already has for submission forms to Daniel Jones and Serafima Higginson with a copy to Bob Sundberg.

Daniel Jones confirmed that he and Serafima Higginson have already been working on the form. Serafima Higginson consulted with Adrienne Thomle and added more information but the file was lost so she is recreating it from her notes. She will also incorporate information from Julie Humes’ notes.

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

Bob Sundberg already submitted conservative, estimated volunteer hours for December, but asked for the number of volunteer hours call participants incurred in January.

Julie Humes had 2 days in Los Angeles in December, but about 4-5 hours for January prepping for the national conference call she did.

Serafima Higginson put in 4-6 hours on the ET Product Info Sheet working group.

Ruzwa Cooper spent time on the meeting call and had Daniel Jones talk to his office about JADE. Daniel Jones confirmed Ruzwa Cooper’s comments that his time at Cooper Oates was as much about learning as about selling. A lot of the research on “market barriers” will include talking with customers to find out what it will take to get a different type of product like JADE accepted.

Daniel Jones spent 8 hours specific to this subcommittee, in addition to hours for Workforce, Education and Training.

**Review ET Product Info Sheet Draft – Serafima Higginson & Daniel Jones, plus
“Market Barriers” Discussion for JADE New Technology Recognition and Adoption – Julie Humes**

Participants viewed the draft version of the 3 page form through WebEx.

Serafima Higginson talked through the form. Using JADE as an example, the first part is a basic overview, including when JADE was introduced, the basic benefits, and what JADE does (features). The next part is a table comparison of the JADE Economizer to the existing, older economizers as well as the added benefits of JADE versus those.

Bob Sundberg clarified that the form sections would be begin with an overview, then general benefits, product description, photo of the product, then a section focused on the essential features and functions, including the related benefits for the product compared to the existing market.

Serafima Higginson added that the second page has an explanation of the need in the marketplace. The comparison table will be put with that explanation. The next part will clarify who the primary customer is followed by information on the challenges faced with market adoption.

Serafima Higginson pointed out that she, Daniel Jones and Bob Sundberg are very close to the product so they would like someone outside Honeywell to provide detailed feedback.

Julie Humes appreciated the level of work that was already done. She confirmed that the form drafted is good for discussing JADE as the first project. Her vision is for it to be made more generic without being related to any specific product. It needs to be setup so any manufacturer can submit it. The draft is well done and just needs to be put more into line items, i.e., Product Overview, Product Description, Features and Benefits. The work done already is dually beneficial.

ACTION: Serafima Higginson will clean up the ET Product Information Form (with JADE information and as a generic form) and distribute it to the group.

Julie Humes is pleased with the extent of the work done so far, which was more than she expected. There will need to be some sort of numbers for measurement when at the point of “actually taking the product down and trying to put together a marketing plan”. It

could be done with a retail price or a base price (nothing proprietary) to start with as measurement. There also needs to be a fixed quantity (i.e.: 10,000 units) with results measured for what happens with those units – some kind of projection based on this project.

Serafima Higginson and Daniel Jones believe they can't get approval for that.

Bob Sundberg suggested that another way to include information without being specific on numbers might be to say if 100% of the previous platforms were going out the door in January, 2011 and there was an expectation of maybe a 5% or 10% conversion of those numbers to the new technology, how rapidly was it expected to replace the inertia of the older technology? If the expectation was that within the first two years 25% of shipments would be of the new product versus 100% of the old platforms...

Serafima Higginson pointed out that the problem is that they don't really measure how many people actually switch from the old.

Julie Humes felt this group and the project will actually help with that. She suggested that maybe Serafima Higginson could sit down with her product managers and maybe the sales team and ask what the initial projections were when they sat down with R&D to build the product for things like payback for manufacturing, market share, etc. That information could possibly be turned into some calculable numbers this group to use that wouldn't hurt the proprietary numbers.

ACTION: Serafima Higginson will talk with Adrienne Thomle about what data could be used for the group to turn into calculable numbers that would not hurt Honeywell's proprietary numbers.

Julie Humes gave an example of how she handles not giving out proprietary numbers. As a manufacturer, utility companies constantly ask for product shipment data within the state. Since she can't give that, she will explain that "in the San Francisco market our share was up 2% for this year".

Bob Sundberg clarified that in this case it may never be 100% conversion. Someone is always going to want the lowest cost, the simplest of the familiar solution. Maybe the conversation rate to the new technology goal was "some percentage in some period of time" rather than 100% conversion. With the engineering project, marketing and product management probably would have set initial sales unit goals or a conversion rate of some kind.

Serafima Higginson does know the numbers but needs to find a way to provide information without violating the proprietary nature of those numbers.

Julie Humes reiterated that the fine details are not needed, just somewhere to start. She also wondered if through all of the efforts, this group is able to get funding from a utility company to rebate the product for purposes of the market adoption project, how would they go about coming up with the numbers? Would it be through some signed agreement for number sharing or something?

Mark Cherniack commented that there is a well-established mechanism for utilities to submit savings claims essentially via "Work Papers". Utility staff make a claim based on engineering analysis, a reasonable amount of data and/or statistical and engineering calculations in the absence of specific measured data. "Work Papers" are submitted to the CEC/CPUC staff. They are then reviewed in the context of DEER (Database for Energy Efficiency Resources). The utilities who submitted the "Work Paper" then get responses about whether or not it is acceptable, needs to be changed, revised or revisited. Following an affirmative from the CPUC, they can then start a program for providing incentives.

Julie Humes asked if they get into proprietary numbers or if it is mostly engineering data.

Mark Cherniack confirmed that it is mostly engineering data because decision made on "Work Papers" is essentially public information. Anything specifically designated as intellectual property or confidential has some mechanism to keep it confidential.

Julie Humes asked how they project the funding needed if the utilities or ETCC or someone likes it.

Mark Cherniack said they typically start a pilot project with a certain amount of program activity and whatever budget would be required to carry out the activity including incentive costs, valuation, EM&V, and administrative costs. It is sort of the same process that happens in Emerging Technologies. A big leap in recent memory had to do with variable speed pool pumps in California. At least 2-speed variable pumps were determined to save potentially 80% of pool pumping energy off the top. Things moved very quickly. "They may have moved into a pilot project but they may have moved into a program and then moved as quickly as possible to get it into Title 24. It was basically non-controversial."

Bob Sundberg commented that if there is an effect on energy efficiency for a new invention, then one of the “beaten” yet “rigorous” pathways is to develop a “Work Paper” with or submitted to one of the IOUs for validation of the energy efficiency or savings benefits of that technology. Then there is the route through to the CPUC and DEER if there is agreement with validation of the “Work Paper” through testing, field proof or some combined research, which would make up the engineering numbers as opposed to theoretical savings.

Mark Cherniack confirmed Bob Sundberg’s comment that “Work Papers” can be combination of engineering and analysis as well as some performance based analysis. The more performance analysis, the more likely it is to be received positively and result in next steps not just in fine tuning the “Paper” but also in launching something. All of it takes time.

Bob Sundberg summarized that the ultimate goal would be for this technology to be recognized through that pathway and that the IOU’s would have some approval and an agreed upon amount of savings it would yield in different climates, maybe in different but similar building types with the outcome of DEER to provide a basis for the Utilities including this in incentives or other programs. Economizers in this case are recognized in the State, but the economizers that have been recognized are of an earlier generation. The new features of this technology may yield greater energy efficiency results. They would have to be claimed in evidence and working with an IOU to provide a “Work Paper” that could be evaluated and recognized.

Mark Cherniack wasn’t sure of the precise relationships between “Work Papers” and DEER in terms of what is transferrable from a “Work Paper” to DEER. It may need additional measured data or additional engineering analysis. A conundrum using JADE for example is that it can be installed and then someone pays attention to its output and capabilities. If an economizer is fixed, there is a problem noted and it is repaired. How long is the assumption about savings? Are there repeat savings on the economizer since something else might go wrong? (Bob Sundberg called it the “persistence of the savings”.) Over what period of time can one claim the savings? That question has to be included in any “Work Paper”.

Julie Humes asked if that needed to be included in the up-front part.

Mark Cherniack responded that you have to describe the conditions under which the savings claims are being made – the conditions under which you can claim how much savings.

Julie Humes questioned it in terms of the purpose of what we are doing and our goals Are we taking the whole market adoption as far as creating energy savings or if that is something the utilities would be doing making our job just to “get it installed?”

Mark Cherniack said the utilities are the ones who have to make the savings claims to get credit for it. It needs to be determined if it is a non-resource savings or a resource savings – an actual kWh or Kw savings being talked about or market transformation activity that may lead to savings. The savings can’t be counted very specifically for the utilities targets and goals they have to meet annually and therefore rate of return. Mark Cherniack noted the Edison’s request for a rate increase was denied very recently. There is some expectation that PG&E’s recent rate request will be denied too. That has impacts in terms of layoffs, where the priorities are to keep up their rate of return. It is unclear what this will impact. The utilities are the ones who have to submit the claims of savings. They can use any type of information that can be supplied to them through an ET program, etc.

Daniel Jones added that as part of the background and information that this subcommittee considers, he has a school district looking at installing JADE systems “all over” their several hundred buildings. They are going to sub meter a unit in which they know the economizer is not operating functionally. They are going to put an economizer in another one – same type of unit, same school -- and sub meter both of those units as part of their projections to the school district to show what the energy savings calculator said versus actual energy usage and savings. (This unit sample testing will provide a unit vs. unit energy usage comparison that intends to capture energy waste/savings differences. The Savings Estimator software is designed to project energy usage for an entire building independent of how many or what size rooftop units deliver heating/cooling.)

Mark Cherniack felt the pre activity data is the most critical to show the difference. One installation even with really nice measurement data isn’t enough on which to base a whole program. You would need a broader case with all units at the building being monitored for HVAC power usage as measured data in the form of “Work Papers.”

Bob Sundberg added that in the general form with a barrier section at the end like Serafima Higginson mentioned, there could be things like “no field proven savings established yet” or “not recognized in CA by XYZ”. For those seeking growth in California markets, those could be identified as barriers that every one of the technologies would basically face: “validation of a claim for impact on energy efficiency improvement.”

Julie Humes agreed with that. Initially she wasn't thinking that measurement should be included because she was thinking "marketing". Maybe some of the lines on the form under barriers could talk about output, baselines, whatever ETCC needs to see or "we need to see as we're doing this".

Bob summarized key points for the pathways now identified:

- There needs to be recognition by ETCC – the technologies which are the bridges between the multiple Utilities.
- The Utilities are not able to put their full effort and resource behind it unless that technology has recognition of some valid claims/proof for some generalized savings at the level of the CPUC as listed in DEER.
- The marketing materials are great, but until there is some proof of what the technology actually does do and not just projections, it won't get full attention. Probably the larger resources that an IOU could implement would be limited to being a resource support program rather than even one based on deemed or projected savings or just trying to bring market transformation - behavior change.

Julie Humes brought attention back to the form. She suggested that Serafima Higginson notes that there needs to be a section on measurement. Perhaps the person as SCE that KC Spivey is going to recommend could help with that section by looking at it from the ETCC perspective.

ACTION: Serafima Higginson to add a section on measurement to the form.

Bob Sundberg commented that the evidence and support by a Utility program is, in a sense, a marketing effort since it provides validation that a technology claim can be realized. If there is the endorsement of a Utility program format, there is greater opportunity for them to expose more of the marketplace to the technology. It is a marketing strategy. He suggested that they now steps back from the JADE information in the form to the sections and look toward the generic. The form populated with JADE information has helped "flush out" the sections that are needed.

Julie Humes felt input was needed from KC Spivey in terms of "where our job stops". It starts with creating a process and a sampling technology, taking it into the marketplace and defining whether or not it is being adopted, why it is not being adopted, and how to make it better to make it adopted - where that stops still needs to be defined.

ACTION: Julie Humes to talk with KC Spivey about where the job the market adoption subcommittee stops in the process of helping a technology gain market adoption.

Mark Cherniack commented that to his knowledge the IOU's and PG&E, specifically, are already looking at JADE.

Daniel Jones confirmed that there have been numerous discussions with PG&E and JADE. Adrienne Thomle will be coming to California soon to do a "train the trainer" type of thing specifically on JADE with PG&E. It is going to be installed in both training centers for QM180. In the Stockton site, the JADE unit will be in the classroom so they can see what happens to the room when CO levels go up because of all the people in the room.

Mark Cherniack asked if they would conduct JADE simulated performance, savings issues at both of the centers? It wouldn't necessarily be applicable or submittable for work papers, but does provide some evidence and orient the IOU's to what the potential is.

Daniel Jones hopes they will "dive in that deep." He is attending a mini JADE session next week to see how much they go into it. He knows that they do spend quite a bit of time on a rooftop talking about a JADE.

Bob Sundberg added that he hopes simulation will be done in the classes or demonstrations for functionality even as simple as a sensor that stopped giving a signal to show how JADE would give an alarm signal notifying others that there is an issue.

Daniel Jones clarified that when he goes out to give training, he plugs different sensors into an active JADE unit. His demonstration includes plugging a sensor into a wrong spot or unplugging after it is working to show how the instantaneous error notification happens.

Ruzwa Cooper said that part of the challenge is that the technology used is up to the building owner and not the contractor, especially with economizers. The question is when is it worth it to the building owner to either replace the economizer control unit proactively before it is broken or to just propose replacing the individual component and leave the rest of the old but functional controls in place (logic module, various sensors). The cost of an entire JADE system plus labor is somewhere in excess of about \$700

- \$800. From a building owner's perspective, if there is a control unit installed that it is still working, they would question why it should be replaced simply because it has better "bells and whistles" even though from maintenance and technician perspectives it is a better unit. They want to know if they are really getting anything more. Units that are broken at about 10-12 years old will be replaced at about 16-17 years old when the entire RTU gets replaced. So, they question if enough money would really be saved between now and then to justify a new economizer system being installed now. It would make the most sense to sell it as an OEM piece of equipment. The JADE system could be specified when the new RTU is being considered.

Daniel Jones answered that one of his goals at the national sales meeting was to find out how the adoption is being taken inside the OEM market place. They are talking to the Tranes and Carriers with the option of putting in the JADE economizer. That process is happening, just not as rapidly as he would like. Carriers are starting to adopt it as an economizer in a brand new rooftop units.

Ruzwa Cooper pointed out that building owners are shopping price with all the contractors they talk with. Despite value discussions, at the end of the day, for 90% of purchases, the main differentiators are still the price or the reputation of the contractor, and then they are asked to match what "the other guy did". It is a conundrum of adapting technology that is "hidden in the box".

Bob Sundberg asked what sorts of evidence/projections would be helpful to look at for better, informed decision making if, for example, there is a 10-12 year old unit with the rest of the systems running well, no compressor leaks or coil issues, okay supply fan and exhaust motor, and a reasonably decent EER (8-11 range).

Ruzwa Cooper had that conversation with his team this morning in trying to determine what was needed to convince a building owner that all the discussion about energy savings is real. Intuitively they know it and understand it, but they need to see that it will save them something on their utility bill. No one has yet been able to "put their neck on the line" and confirm how much their bill will go down per year. The data where the school district will compare units side-by-side might be more compelling than what is currently available.

Daniel Jones asked whether the Honeywell Savings Estimator, produced by a third party, would be valuable? The Savings Estimator includes quite granular information on a rooftop unit in a particular California or other climate and gets down to the time of use within 10%.

Ruzwa Cooper clarified that he is sold on it. It is the building owner that needs to be sold on it. The challenge is getting them to understand that it is something "they would be crazy not to buy". Most of the time they are not talking to the owner of the building, but rather an intermediary facility manager: property manager or someone else. They try to get around that, but it is a reality that contractors struggle to get a direct conduit to the building owner. The person they do talk with takes in the information and tries to make a decision quickly. The contractor explains that there is "x" or "x plus something". The person tries to figure out how to make that decision. The contractor has to explain all of the granular level data, but the person's eyes are "glazing over". In the meantime, the person also has proposals from other contractors for less money. The person makes the easy money based decision to protect their job in their short meeting with the building owner. Ruzwa Cooper is finding that in today's market place, very few people are willing to do the hard work – the missionary work. To a certain extent, anyone introducing new technology will have to help the contractors do the missionary work both in terms of informing the contractors and in informing the general market place. It takes "demand pull and demand push" because it is "the next thing since sliced bread." Barriers like this are probably not unusual at the beginning of any new technology.

Bob Sundberg summarized that there has been tremendous amount of feedback about the form and the challenges with getting something adopted.

Serafima Higginson and Daniel Jones both felt that with some help they would be able to make further progress in the next month.

Julie Humes asked if Ruzwa Cooper would be interested in working with Daniel Jones and Serafima Higginson on the form given his understanding of barriers.

Ruzwa Cooper agreed to do so.

ACTION: Daniel Jones will call Ruzwa Cooper to further discuss market barriers for JADE and the blank form.

Julie Humes reiterated that she would take on the action item (previously documented) to find out from KC Spivey what his vision is for where "our job stops and measurement and IOU's come in".

Bob Sundberg commented that in reviewing October/November notes, it was discovered that once an IOU is recognizing a technology and it becomes part a program or incentive schedule, either resource or non-resource, that is essentially the end stop, their final step in promoting any energy efficiency technology. That technology may be "launched" but it is far from being commonly used or mainstreamed. There likely are additional market barriers that are not solved just by being part of a utility program or in an incentive schedule.

Mark Cherniack indicated that the end stop may be there in KC Spivey's mind because that is where the Utilities typically stop, but it may not be where a subcommittee of the Alliance needs to stop since it includes Industry input. The pathways we try to recognize should lead to and through the Utility program recognition. It may or may not be sufficient to stop at that point. Is it really market adoption? Utilities are not noted for accurately measuring rates of market adoption so they are far more involved in getting new technologies launched and supported, less with insuring that they become commonly used.

Subcommittee Recruiting – Julie Humes

Bob Sundberg informed that he and Julie Humes had spoken about the fact that there were a number of people who joined the subcommittee and attended one or two meetings, then not ever again.

Julie Humes announced that when the subcommittee was formed, one of the concerns was having people "pop in and out" and not really contribute. Monitoring is fine as long as people are showing up regularly, but there are some who showed up a few months ago but then have not returned. Should those people, for example, Jason Hanson (one of the Lennox contractors) who is very busy, be removed at this point but be eligible for rejoining at a later time if they commit to being engaged monthly?

Most concurred with Julie Humes' suggestion, but Ruzwa Cooper recommended that the individuals in question be asked what they want to do. Julie Humes' commented that "we don't hear from them." Ruzwa Cooper felt that some of it might just be the timing of the meetings and suggested sending an email asking if they still want to be on the roster and whether they commit to attending or whether they have a scheduling conflict with our regular meeting day or time.

Julie Humes stated that Bob Sundberg spends time trying to reach the people we don't hear from. Julie Humes felt it wasn't necessary to keep doing so.

Bob Sundberg felt it would be appropriate for Julie Humes or him to try one last time to let the individuals know efforts have been made to try to have them join the last several meetings and find out if they would like to be made inactive (removed from the roster) or remain active and join when they can. If there is no reply, they are made inactive.

Julie Humes said a courtesy notice should be sent.

ACTION: Bob Sundberg will send courtesy notices to those who are on the roster but have not been responding to see if they have any intention of joining. Otherwise, they will be removed from the roster with the option of being added later if their circumstances change.

Bob Sundberg pointed out that it may be that the person on the roster is actually the incorrect person from that organization to be part of the subcommittee and someone else might be better suited in terms of time or willingness. It would be a loss to have the absence of an organization like the Pipe Trades Training Center director, Carl Cimino.

Julie Humes felt that if there is no response it would be better to see if someone else could be identified within the training/education community.

Bob Sundberg summarized that participants will continue to be sought with the roster cleaned up to those that are truly active.

All were in agreement that the "last touch" letter should be sent out.

Closing Comments and Next Meeting – Bob Sundberg

Bob Sundberg reminded that recurring meeting reminders should already be on everyone's calendars for this year for the first Wednesday of each month.

Next Meeting: Wednesday, March 7, 2012 from 12:00 – 1:30pm PDT.

Adjourn

Action Items Summary

NEW ITEMS

- **ACTION:** Serafima Higginson will clean up the ET Product Information Form (with JADE information and as a generic form) and distribute it to the group.
- **ACTION:** Serafima Higginson will talk with Adrienne Thomle about what data could be used for the group to turn into calculable numbers that would not hurt Honeywell's proprietary numbers.
- **ACTION:** Serafima Higginson to add a section on measurement to the form.
- **ACTION:** Julie Humes to talk with KC Spivey about where the job the market adoption subcommittee stops in the process of helping a technology gain market adoption.
- **ACTION:** Daniel Jones will call Ruzwa Cooper to further discuss market barriers for JADE and the blank form.
- **ACTION:** Bob Sundberg will send courtesy notices to those who are on the roster but have not been responding to see if they have any intention of joining. Otherwise, they will be removed from the roster with the option of being added later if their circumstances change.

CONTINUING ITEMS

- **ACTION:** Julie Humes and KC Spivey will identify an ETCC meeting attendee to join the emerging technologies and information form working group.