

Regional Technical Forum Meeting Notes

November 9, 2007

DRAFT

1. *Greetings and Introductions.*

Tom Eckman welcomed everyone to today's meeting, held at the Council's Portland offices. The following is a summary (not a verbatim transcript) of the topics discussed and decisions made at this meeting. Anyone with questions or comments about these notes should contact Eckman at 503-222-5161.

The minutes from the October RTF meeting were approved with a few minor comments.

2. *PTCS QA/QC.*

Bob Davis noted that this presentation summarizes the results of the 2007 PTCS quality assurance/inspection fieldwork. He then provided a presentation titled "PTCS QA and Training – FY 2007 Findings." Davis touched on the following major topics:

- Overview – QA summary, lessons learned from QA, BPA PTCS plans for this year, PTCS training.
- QA overview – the first round of heat pump and duct inspections that has been done, other than STAC detailed monitoring; elements looked at included duct leakage and HP controls, airflow and charge; results were generally encouraging
- QA agents
- PTCS summary: total installers (250 have done at least 1), total heat pumps + duct sealing done: 510; total duct seals done: 1,500
- QA summary: duct sealing (55 inspected, 50 passed, 5 failed and had follow-up; 23 contractors have done 5 or more); heat pump (inc. duct sealing): 510 systems done, 43 inspected, 34 passed, 9 failed and had follow-up, 54 contractors have done 5 or more.
- Examples of failed QA notes – heat pumps, duct sealing
- QA – some issues we saw: one brand of heat pump generally needs to have the outdoor unit size tap set ½ ton larger than the actual system

size to get the desired airflow; control of strip heat; sizing, while not addressed in detail, could be.

- Failed heat pumps, causes (graphs)
- QA: What we learned – we're still in the early phase of this project; with more QA, we'll have a clearer picture of performance. Installs are generally pretty good, many fails are on the new parts of the commissioning, QA works – it adds value and improves program credibility with installers; increased utility personnel capability
- QA – remaining challenges: new technologies; even with QA, we don't measure energy savings over time, just a snapshot of performance; coordination of QA visits is tougher than we thought.
- STAC – in comparison: STAC monitoring showed generally good performance, at least after problems were identified and fixed. Some findings that deserve attention: dual-stage compressors (some are lemons); energy usage for defrost cycle flies below ARI's radar (but field adjustments can limit the damage)
- Energy Star: we don't inspect Energy Star jobs; 6 were inspected in Bend and Vancouver (1 failed)
- CheckMe! – 12 CheckMe! Heat pumps were inspected; 2 failed.
- Utilities: some utilities come to inspections and the help is always appreciated.
- QA in FY'08: we have a projected 3,000 systems in FY'08, which means we will do 300 QA inspections
- Training overview: high demand for training caused us to evaluate how to increase capacity to certify new technicians; as a result, the Goldendale summit was convened, with the following result:
- Master technician: a path that will allow specific qualified technicians or utility staff to train technicians in their territory.
- Master technician qualifications: minimum 2 years full-time experience etc.
- Trainer's latitude – new trainers can certify in their vicinity or company; they are responsible for producing technicians who can meet PTCS specs; trainers are responsible for notifying ECOS when they believe a technician is ready to be tested.
- Certification path
- Classroom training: BPA is moving to a 50%cost sharing requirement for training in 2008 (previously BPA has picked up the full tab for training) – 1-day heat pump training costs \$2,000; 3-day duct sealing training costs \$3,400.

One participant noted that, in addition to ECOS, there are two or three other qualified PTCS training entities in the region, although ECOS has the most comprehensive database. He expressed concern over their long-term commitment, however, noting that, when Climate Crafters decided to get out of the business, that led to problems in the region. If Bonneville stops subsidizing ECOS, what's going to happen to this training program in the region? He asked.

That's nothing new, Eckman said – that's just the way it works. The question is whether a central organization needs to be designated, said Eugene Rosolie.

Davis noted that some proposed language documenting the proposed QA approach for 2008 is available on the RTF website; he asked the other RTF members to review it and come to the next meeting of the group ready to discuss and approve it. We will discuss that issue, and whether we need to talk about bounds, at the January meeting, Eckman said.

2. *Presentation and Discussion of Puget Sound Area CFL Lighting Saturation and Remaining Potential Market Research.*

Eric Brateng said this study is now at its end, and Puget now has some survey data to share. He and other study participants provided the following presentation:

- Overview: study review, research outcomes, where we go from here
- Research objectives: to quantify standard screw-base sockets, and to quantify the saturation of CFL bulbs.
- Research areas: remaining potential (technical vs. attainable), future program design
- Defining potential: used “attainable potential” for the purposes of this study, as opposed to “achievable” or “technical” potential.
- Study approach: secondary research review, mail-based survey.
- Survey implementation process: introductory letter mailed to sample; survey packet mailed; reminder postcard mailed; respondents provided two weeks to return materials.
- Sample disposition (table)
- Data accuracy check: in-home audits conducted with 10 respondents; manual review of data – found about 40% underreporting of CFL installs and sockets, yet saturation levels were unaffected.
- 7,700 surveys sent out; 22% response rate
- Key findings: opportunity exists for more CFL installations.
- Sockets, CFLs and CFL saturation level (by utility) – table
- Recommendation #1: encourage additional CFL installation
- Remaining potential, household (graph)
- Remaining potential, rooms (weighted) (graph)
- Remaining potential, by fixture type (graph)
- Remaining potential planning estimates, by utility (graphs)
- Recommendation #2: to continue to facilitate consumer purchases through incentives
- Consumer purchasing preferences – coupons & rebates (pie chart)
- Key finding #2: CFL programs should be targeted
- Recommendation #3: develop a strategy that encourages (missed that)
- Distribution of CFLs in households
- Zero CFLs in household: demographic comparison (pie charts)

- Recommendation #4: to promote higher CFL use in low-saturation rooms
- Average saturation level by room (graph)
- Recommendation #5: to promote and provide information on all specialty bulbs now available and encourage their acceptance in the marketplace
- Sockets per fixture type, household (graph)
- Sockets per control type, household (graph)
- Sockets per control type, dining room (graph)

Brateng concluded the presentation by discussing where the effort will go from here:

- The study will be repeated.
- Utility collaboration: research, marketing, program design/delivery, product development, other?

The group offered a few detailed questions about the study: regarding the prevalence of standard twist vs. reflector bulbs in recessed lighting, saturation of dimmer controls on can fixtures etc.

One participant noted that there are proposed changes to the HUD code on CFLs; he said any RTF comments on the proposed HUD changes should be channeled through Eckman. Another participant noted that hours of use is a key component of this analysis – how many minutes a day do bulbs need to run in order to be cost-effective? I will put that estimate together and present it at our January meeting, Eckman said. The group also discussed other, additional studies.

It's been great to see the Puget-area utilities working together to do this work, Charlie Grist said – it would be very useful to sit down with your team to discuss how similar efforts might be dispersed across the region. I was also curious about your non-residential CFL study data, he added. It will be a little while before I can share the results of that study, but I will provide them when I can, Brateng said.

3. ***Project Updates.***

- Ductless Heat Pump Research Work Scopes and Pilot Programs.

David Baylon has finished writing up the ductless heat pump research designs and I would like to send them out for review, Eckman said. Bruce Manclark, Mark Johnson and Jeff Pratt agreed to participate in this review, and to send their comments to David and Adam.

- Deemed Savings and Cost-Effectiveness of Air Source Heat Pump Commissioning, Controls and Duct Sealing in Existing Homes.

I updated the differential effects of controls used in new construction, based on SEEM, and implemented them into the cost effectiveness analysis, Eckman said. The result was this measure, which showed that it is cost-effective across all zones and building types except Super Good Cents manufactured homes in zone 1. Mark Johnson said utilities have told him that some Super Good Cents manufactured homes have proven leaky enough to warrant duct ceiling, and suggested that it may be useful for the RTF to designate a threshold leakage rate.

- Productivity Project.

We discussed counting the non-energy benefits from productivity gains in high-efficiency buildings, Grist said; we are going to sketch out a decision tree toward a protocol for determining non-energy benefits. We will be developing a case study, and looking at current non-energy benefits, in support of that effort, he added. Danielle Gidding is looking at absenteeism as a potential metric. We need access to Carnegie Mellon's eBIDS studies, as well as the Lighting Design Lab studies with absenteeism, and if anyone has access to those studies, please let me know, said Grist.

The group devoted a few minutes of discussion to this topic, offering a variety of clarifying questions, comments and suggestions, including the potential value of the Oregon State study to the commercial sector portion of this project. In closing, Grist noted that this work is nowhere near finished; he invited any RTF members who are interested in helping with the development of the decision tree to contact him directly. There is currently no timeline for when this effort will be concluded.

- Rooftop Economizer Project.

The first phase of bench-testing is done, a report has been drafted, and the results are pretty interesting, Grist said – we have forwarded the draft report to the committee, and to Honeywell, for review. Once we receive comments, we will incorporate them and send out the draft report to a wide audience, Grist said.

4. *Presentation, Discussion and Decision on Proposed “Provisional” Deemed Savings Analysis for Ductless Heat Pumps.*

There is a need to have a provisional number for savings in order to launch programs for mini-splits, Eckman said. We don't have a final number yet, but we need to put a provisional number out there. We have some information on what zonally-heated homes use for space heating, and should be able to come up with

an estimate, as a group, with a potential savings estimate – that’s essentially the question before us today.

I looked at what we have for measured use in existing and new construction, Eckman said; we also looked at the sample of homes we did billing analysis on three years ago. It looks, if the contractor installed installation price really is about \$4,000, as though we need to save about 4,000 kWh a house – it’s about \$1 per kWh, if the B/C ratio is to be positive. Eckman then used the overhead projector to demonstrate the spreadsheet he has developed to inform this debate.

Will you be assessing applicability to multi-family? Jill Steiner asked. Unfortunately, we don’t have the data to do that at the moment, Eckman replied. I would suggest that we not ignore the importance of the hotel/motel market as we get into the multi-family market, said another participant.

I can’t run a program unless you guys come up with a number, so it’s a chicken-and-egg problem, Eckman said. I want to take a reasonable shot at it, based on what we know. We can’t simulate it, because we don’t have the performance curves. What we need is a number that will be a placeholder for savings from these systems, based on your best wisdom and judgment.

Jeff Harris suggested that the RTF designate two numbers: an average number, and a number based on billing data – depending on how a given utility runs its program, we might give them a different number as a “hall pass,” he said. So we need a number that meets the cost-effectiveness level, but that targets enough users for our purposes, Ken Keating observed.

After a few minutes of further discussion, David Baylon suggested that the RTF pick a number between 3.5 and 4. Eckman said his preference would be to pick a number at the lower end of the spectrum, because it’s far more comfortable to adjust the final number upward, rather than downward.

Ultimately, Jay Himlie moved that the RTF set its estimated savings number at 3,500 kWh. It was agreed that this motion is agnostic with respect to the size of the system and to pre-consumption. Himlie’s motion was seconded and unanimously approved.

5. *Presentation and Discussion of Revised Deemed Savings Analysis for Energy Star Refrigerators.*

Eckman said Energy Star is updating its specification for Energy Star refrigerators; as of April 2008, the new standard will go from 15 percent to 20 percent better than the federal standard. That reduces the number of qualifying refrigerators significantly. Unfortunately, the B/C ratios for all but one of the configurations are not cost-effective, he said. There is really no incremental cost data available, unfortunately, he added.

Eckman used the overhead projector to show the group the spreadsheet he has developed in support of this measure. The question is, what do we want to do about this in the new program year? Eckman said. It's pretty clear that, given the costs I've found, this measure is not a winner, at least not today.

The group devoted a few minutes of discussion to Eckman's analysis. Given the uncertainty here, it seems we should at least not make any changes right now, and perhaps revisit this next summer, Eugene Rosolie said. So you're saying we should update the savings, but keep the B/C ratios the same? Eckman asked. Yes, Rosolie said. The programs aren't paying very much for this measure, and it doesn't take effect until late April of '08, Keating said – we're not talking about many months before the new fiscal year starts. We could simply accept this as a market transformation measure, Eckman said. We could also sell this as a plus measure, another participant suggested. And how long will the old Energy Star refrigerators be on the market? Rosolie asked. No more than six months to a year, Eckman replied.

Ultimately, it was agreed that the RTF will take no action on this topic at this time, but will revisit it some time before its July 2008 meeting.

6. *Presentation and Discussion of Revised Deemed Savings Analysis for Energy Star Commercial Clothes Washers.*

Eckman noted that the B/C numbers for Energy Star commercial clothes washers are more positive than they were for the previous agenda item, although the majority of the savings are found in water savings. The principal changes here are a more accurate allocation of savings between the dryer and washer. We now have a data on the relationship between MEF and washing machine electricity use, Eckman said. Research sponsored by Southern California Edison metered various types of coin-operated laundry facilities, splitting out washer vs. dryer vs. hot water energy use. Eckman stated that he was able to develop a curve fit for that data that can be used to estimate the change in washing machine energy use and hot water use based on the MEF rating of a washer.

In addition, the data from California also provides us with a better estimate of the actual share of wash cycles that use hot water use across all of the cycles, Eckman continued. Prior to the availability of this data, we had to assume that the federal test procedure accurately represented the average mix of wash water temperatures selected by consumers. With this information, we can now compute actual *in situ* MEF rather than rely on the nameplate MEF. Using the field data I found that *in situ* MEF are higher than nameplate performance. This is the case because under field conditions consumers were selecting fewer "hot water" wash cycles and therefore using less hot water than the assumed in the federal test procedures. Eckman said he is planning to re-run this analysis for residential clothes washers in the future, but since the metered data is only available from

“coin-op” machines he is concerned that it may not represent in home laundry use.

The bottom line is that this will up the electric benefits and reduce the gas benefits by a small increment, compared to where we are today, Eckman said. And this takes the remaining moisture content numbers we’re seeing in the new machines into account? One participant asked. Yes, Eckman replied.

Eckman asked for a recommendation from the group to update the deemed savings analysis for commercial clothes washers as he described. This motion was made, seconded and unanimously approved.

Eckman noted that he and Grist will soon begin working on the Sixth Power Plan, and invited active input from the RTF on the assumptions, cost and achievable potential estimates that will be used to develop the Plan. He said there will likely be a series of extra meetings to discuss these data, and asked that anyone interested in participating in these meetings contact him or Grist.

7. Next RTF Meeting Date.

The next meeting of the Regional Technical Forum was set for Tuesday, January 8. Meeting summary prepared by Jeff Kuechle, NWPPCC contractor.

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