CONSERVATION ADVISORY COUNCIL
Notes from meeting January 13, 2010

Attending from the Council:
Andria Jacob, City of Portland
Bill Welch, EWEB
Don Jones, Pacific Power
Holly Meyer, NW Natural
Jeff Bissonnette, Fair and Clean Energy Coalition
Jim Abrahamson, Cascade Natural Gas
Lauren Shapton, Portland General Electric
Paul Case, Oregon Remodeler's Association
Robin Straughan, representing Oregon Department of Energy on behalf of Suzanne Dillard
Brent Barclay, Bonneville Power Administration

Attending from Energy Trust:
Brien Sipe
Fred Gordon
Hannah Hacker
John Volkman
Matt Braman
Pete Catching
Peter West
Phil Degens
Sarah Castor
Steve Lacey

Attending from the board:
Dan Davis
Dan Enloe
John Reynolds

Others attending:
Andrew Ragen, Rogers Machinery
Jeremy Anderson, WISE
Jess Kincaid, CAPO
Kari Greer, Pacific Power
Peter Gutmann
Rebecca Sherman, ODOE
Roger Spring, Evergreen Consulting

1. Welcome and introductions
At 1:36 p.m., Peter West asked for self-introductions and reviewed the agenda. The agenda was adopted without changes.

2. Savings adjustments: procedure and process
Fred Gordon presented on adjusting savings estimates in response to market effects, and whether changes or clarifications are needed on the existing procedures. This initial presentation to the council will be followed with discussions with the Board of Directors, OPUC, utilities, and then another presentation to the council before Energy Trust's recommendation is adopted.

The initial recommendation by Energy Trust staff is to continue reporting savings based on market effects—those actions Energy Trust influenced—for most purposes. For utility funding agreements, staff recommends using a consistent estimate of market effects (free rider rate and spillover rate) for one year, "locked in" July of the prior year to

forecast that year's savings. For other reporting purposes, the most current estimate of market effects will be used, assuring that the most transparent and current estimates of savings are used for reporting toward Energy Trust goals and Integrated Resource Plan targets.

Energy Trust reports on savings to measure the success of programs against budget plans, action targets, OPUC performance measures for average megawatts, therm and levelized costs, and the recently adopted five-year strategic plan goals. Savings reports also influence utility forecasts, payment to Energy Trust contractors, Power Plan compliance, and benefit/cost tests.

Fred clarified what is meant by gross savings and net savings. Gross savings are savings per measure where the program directly provided help and/or cash incentives. Net savings are adjusted for market effects and determined by the gross savings minus "free riders" (whether the measure would have been installed without Energy Trust's influence) and adding in "spillover" (whether participants installed more efficiency measures than those for which they received direct Energy Trust incentives, but state they would not have done so without the program's influence). Market transformation savings (used by NEEA and some Energy Trust programs) is similar to net savings, but measures the influence of the program on the whole market—market share minus base market share (or how the market acts without the program)—estimated for each program year.

Fred discussed that about one-third of current Energy Trust electric savings and a significant share of the gas savings are market transformation. We have shown that we influence sustained changes in the market share of efficient technologies including gas furnaces and efficient new homes. We plan to study the possibility of such effect for commercial lighting and new buildings.

We can estimate market effects within reasonable bounds and with reasonable certainty using a range of estimation techniques that produce a reasonable range of estimates. This is more precise than other key variables in utility resource planning, such as forecasts of loads or gas prices. To deal with uncertainty, for resource acquisition programs, we usually pick the midpoint of the range of reasonable estimates for free riders. Because spillover levels are more difficult to estimate, and to be conservative in our estimates, we sometimes pick a lower estimate than the midpoint.

Current Energy Trust reporting is tailored by audience and purpose:

- Net savings plus market transformation: integrated resource plans, annual and quarterly reports, OPUC performance measures
- Gross savings plus market transformation: PacifiCorp internal goals, Washington state gas program, Power Planning Council compliance
- PMC goals are set before the contract year begins: prescriptive measures (fixed savings per measure); custom measures (gross savings)

There is no set standard for savings reporting in other states, and they vary between gross savings, net savings/gross volume, and net savings.

Reporting on net savings is becoming more difficult as the free rider estimates and market transformation are increasing, as well as savings goals. If the free rider rate increases, it tells us that the market is becoming transformed and we need to switch to another technology to show our continued presence in the industry. New technologies are more expensive but will deliver greater savings for our increasing goals. Yet it is still important to use net savings to show the added value we bring to an increasingly changing market environment (federal and state programs coming on-line, greater market forces for efficiency action).

Staff recommendations are to continue existing net savings reporting in Oregon, and to clarify basis for utility funding agreements. In July, “locking in” market effects adjustments for resource acquisition for the following year. By keeping status quo on savings reporting, there will be modest procedural changes and simplified compliance with funding agreements, we are still using best available data for long-term tracking and reporting, and the utility/Energy Trust and PMC/Energy Trust contracts are on the same basis. However, the market effect rate for those contracts will sometimes delay updates for planning, forecasting and other reporting.

Holly Meyer asked for a greater explanation of what “locking in” the savings rate means. Fred explained Energy Trust will look at what the market effects, free rider and spillover rates are and for purposes of contract tracking, we’ll stay at that percent for the year. When we look at cumulative savings for utility load/savings, we’ll look at the best available data. July of the previous year will lock in that rate for the next calendar year; this timing is especially critical as budgeting begins in August.

Holly asked how reporting occurred in the past. Fred answered we just started working on the incremental funding agreements with gas—have been doing this with electric (PGE uses net numbers)—we are just getting to the point with electric agreements where we need to sort this out.

Bill Welch asked how the savings reporting translates forward to incentives and what the impact is for the programs. Fred said our incentives will still be based on market requirements—we still need to figure out how to spend the money on things that are occurring without us.

Paul Casey mentioned the desire to keep Energy Trust program changes to a minimum. Fred agreed that is what we are striving for, but what is changing is our degree of freedom to respond to developing market conditions by changing activity levels. Because we are spending down our surplus and must manage individual utility budgets on an annual basis, our flexibility is reduced.

Paul Casey reminded the council of the recent 30-day incentive change notification policy newly in effect and asked we keep the customers' and trade allies' best interests in mind. Peter West responded the 30-day notification policy is in relation to our obligation for program budgets being utility specific and it is incumbent on Energy Trust to relate and notify the trade allies of our budget constraints.

Brent Barclay asked if attribution on a unit base will be locked down as well. Fred said "yes".

3. Commercial and industrial lighting market assessment

Phil Degens presented on the results of a 2009 market assessment of commercial and industrial lighting. The study was conducted between June and August of 2009. The last regional lighting study was completed in 2000 and Phil reported we have had a fairly high free ridership rate in the Existing Buildings program. We are also testing a hypothesis that high-performance T8s have gone through market transformation. Forty-three percent of total commercial electric load is lighting (approximately 526 aMWs): 35 percent of electric load for electric-heated buildings and 60 percent of electric load for gas-heated buildings.

Existing studies by Energy Trust, the Power Planning Council, regional studies and other national market studies on C&I lighting from the last decade were reviewed. Seventy-five C&I lighting market actors were also interviewed, including Energy Trust staff, contractors, distributors and designers.

Results show that Energy Trust has impacted the market, reducing lighting energy consumption by approximately four percent in the nonresidential sector from the start of the lighting program. Large and small offices and the retail sector were the largest customer base in 2009. Market actors consider Energy Trust to have influenced the adoption of T8s (55 percent said Energy Trust is a "major influence"). And 25 percent of new fluorescent lighting installed are high-performance T8s. Based on the 2007 Commercial Building Stock Assessment (CBSA), lighting makeup by existing square foot: fluorescent T12s (17 percent); T8s (51 percent); T5s have increased their presence; and LEDs make up a small share of lighting but this is projected. Phil indicated T8s will become the baseline for a mid-2012 code update. The code change will coincide with the phase-out of T12s—an important opportunity for Energy Trust to influence lighting retrofits in the buildings that have 17 percent of the lighting as T12s. The opportunity will be even more significant with building built before 1994 (27 percent of the lighting is T12s). The program will also be able to affect the market when more efficient halogen IR lamps are required in 2012.

Controls in existing buildings present opportunities for our programs: occupancy sensors, on/off switches, dimmers/daylighting. Occupancy sensors one of the highest installed lighting control in retrofit projects (58 percent).

Lighting Power Density (watts/sq ft) between 2002 and 2007 decreased over the sample period, most significantly in the grocery sector; there is an opportunity to improve code as some LPD in existing buildings and new buildings are better than specified by code. The code change in 2007 improved the LPD by approximately 18 percent over 1998.

Based on the last regional study of new construction lighting in 2004, which measured against the lighting makeup in 1998, new construction lighting has shown only a slight increase in installation of high-performance T8s, and installation of T12s is very low (0.6 percent) as they were replaced by T5s and T8s. The same study showed an increase in occupancy controls and efficient ballasts. The study shows that there is still room to increase the market penetration of lighting controls.

Market actors interviewed provide a diverse set of services: lighting design/specifications, installation, maintenance, retail and wholesale lighting sales. When asked how often their projects go beyond code, contractors said 56 percent of the time they discuss going beyond code in retrofit and new construction projects and 20 percent always discuss it. In the end, more than 69 projects wound up being better than code.

Reasons cited for going beyond code include financial incentives, reduced life cycle costs, reduced maintenance costs, improved quality of visual environment and good citizenship. Reasons for not going beyond code involved the added capital costs and uncertainty over performance of equipment (which is an opportunity for Energy Trust to clarify the technology to reduce uncertainty).

Based on the review of existing studies and the interviews with key market actors, staff recommends:

- Looking at the T12 turnover as a large opportunity Energy Trust should plan for in an effort to steer what products will replace T12s and what types of controls are installed
- Making sure trade allies are designing and installing controls effectively
- Discussing with trade allies how often they check lighting designs against code and setting defaults to determine whether training is needed
- Exploring opportunities to work with manufacturers to learn their methods in disseminating information
- Improving LPDs with the next code change for particular building types

Brent Barclay asked that if the standard changes for T12 lighting, will Energy Trust adjust the baseline and when do you stop offering an incentive for a measure expected to be required in the future. Staff clarified the baseline will be high-performance T8s and the anticipated code change will require we change the level of lighting Energy Trust offers incentives on, since we can’t claim savings for efficiency that is required.

It was observed that building owners will wait until the lighting equipment fails before they decide to upgrade, so there will potentially be a large bump in T8 retrofit activity after the code change in 2012. Fred replied that Energy Trust will need to start preparing the contractors this year to get ready for the increased activity.

John Reynolds asked for an update on LED technology and how this recommendation prepares us for adoption of the new technology. Phil responded that Energy Trust is looking at the LED market now, which is showing to still be small (some specific fixtures, canned lights) but nothing for the general fluorescent market. Barring LED exit signs, specific/display lighting and niche lighting applications, LED technology is a minimal factor in the market.

Roger Spring with Evergreen Consulting commented these recommendations affect the training of lighting trade allies and this training has been included in the 2010 schedule. Evergreen Consulting, which manages the lighting contractor network for Energy Trust's commercial and industrial programs, supports the study recommendations.

4. Air and duct measure impact evaluation

Brien Sipe presented findings from several studies on gas savings in single-family homes for air/duct sealing and duct insulation. Prior to this evaluation, there has been several impact evaluations conducted between 2005 and 2007 by various firms, each using a variety of approaches, sometimes resulting in unstable or unintuitive results. Energy Trust is moving this impact evaluation, and other residential evaluations, in-house with expert oversight to maintain a consistent evaluation approach.

An original impact evaluation was done in 2003 and is the basis for our current savings (duct sealing at 21 therms; duct insulation at 12 therms; air sealing at 26 therms). In 2005, the same approach was used as in '03-'04 for the impact evaluation, but there was inconsistency in the engineering estimates and the realization savings rates were unusable. A 2007 study revealed no incremental savings from air sealing, but significant savings for the combined duct insulation/sealing rate (47 therms). The study was conducted again in 2007 but with a different firm. They also found no incremental savings from air sealing, and savings estimates for duct insulation of 31-43 therms and for duct sealing of 38-56 therms.

An in-house analysis of '06-'07 activity examined an average of the program data and found a more conservative estimate of duct insulation (16-18 therms) and similar findings on duct sealing (34-59 therms) and air sealing (zero therms) as the two '07 studies. In addition, the in-house study found a substantial increase in duct insulation savings between the two years. This finding was corroborated by Michael Blasnik & Assoc. research on the two program years.

Table 1: Duct/air sealing and duct insulation savings estimates by study

Study	Sites	Duct insulation	Duct sealing	Air sealing
Stellar 2005-2006	1,321	45	42	-
Blasnik 2006	615	20-28	40-69	-
HMG 2007*	3,000+	47	-	0
In-house 2006-2007	8,179	16-18	34-59	0
Blasnik 2007-2008	605	31-43	38-56	0

Other findings from the draft in-house study included lower than predicted savings for all insulation measures (wall, ceiling, floor). Fred mentioned that this analysis has not been finalized, but insulation rates are looking lower.

Table 2: Single-family gas weatherization measures current expected realization rates and impacts on therm savings

Measure	Total 06-07 measures	Current total therm savings	06-07 eval RR	Adjusted 06-07 therms
Air sealing	483	12,558	0%	0
Ceiling insulation	2,657	174,146	64%	111,018
Duct insulation	1,027	12,576	133%	16,768
Duct sealing	705	13,547	281%	38,061
Floor insulation	1,562	112,953	45%	50,829
Wall insulation	1,111	88,251	52%	45,891
Total	7,545	414,032		262,567

In 2008, a significant number of stand-alone air sealing work was performed and significant improvements in the implementation and QC of the measure have led staff to expect to see positive savings in this and subsequent years for the measure

Other findings from the impact evaluation are the considerable impacts from interactive effects:

- Decreased marginal savings as multiple measures are installed
- Contractor influences: contractors specializing in HVAC yielded higher duct sealing savings per job, but installed, on average, far fewer measures per home than duct sealing performed by insulation-focused contractors

In summary, gas savings are set to increase substantially for duct sealing, with an incremental bump in duct insulation. 2006-2007 air sealing gas savings will be zero. The increase in duct savings can potentially offset lower savings from other insulation measures, as duct work became a larger part of the program in 2008-2009.

Discussion followed on the air sealing results:
Concern was voiced on the evaluations showing no benefit from air sealing, several attendees indicated the lack of savings goes against common knowledge in building science. Brien explained that the current theory is that air sealing installed in these early years was ineffective, due to installation requirements that may have allowed duct sealing delta CFMs to be double counted when the measures were combined. Brent Barclay asked if this impact evaluation takes into account mechanical ventilation. Brien responded that at this time homes were not being sealed tight enough to require mechanical ventilation.

It was also pointed out that the relative number of air sealing jobs is small compared to the overall program. It's a minimal impact, 12,000 therms, but an impact.

Paul Casey mentioned any system can be cheated, no system is infallible. There is no way for anyone to quality control the pre-testing CFM numbers and he agrees the air sealing results are contradictory to ENERGY STAR® and Home Performance.

Paul talked about changing the process of trade allies submitting pre- and post-test CFM numbers on separate days, potentially changing the layout of the invoice and looking at the technique of air sealing and testing before making any decisions around the status of the measure.

John Reynolds followed up, asking for clarification on whether this impact evaluation indicates air sealing will be removed as an available measure. Staff responded air sealing will not be removed as a measure, and indicated subsequent changes to the implementation of the measure are expected to result in savings from the measure.

Fred responded that staff does not think this report is representative of 2008, and we will be going back to learn more (2008 had a lot more air sealing measures installed). The presentation was delivered now so council members are receiving the same information as program staff.

Peter added this topic will start showing up in future CAC meetings and that it is incumbent on us to propose and bring more information forward, but as of now we are not changing any incentive payouts for this year.

Jeremy Anderson asked how these numbers line up with Regional Technical Forum numbers. Current Energy Trust delta CFM numbers for duct sealing are about 30 percent higher than RTF numbers for the region. Brien indicated actual savings estimates have been presented to the RTF for use in their SEEM modeling for electric duct sealing predicted savings.

Brien confirmed a question from Holly Meyer that the next evaluation will explore the same three measures.

Discussion and clarification continued on multiple measures installed and the order in which they are installed having an effect on overall savings achieved. Peter said we're talking about net savings, all the combinations of these measures. We need to be more accurate in our estimates to represent our claims correctly and stay responsible to the consumers (i.e. Clean Energy Works Portland). Factors to think about are savings and cost/therm; it may be smaller savings but the cost per therm will still be less when bundling measures.

5. Utility strategic roundtable

Peter announced a new forum for utility/Energy Trust discussion in response to the utilities' expressed interest in communicating with the Energy Trust Board of Directors on a more even level for strategic discussions, such as IRP goals. The roundtables are open to the public and will start as a two-year trial.

The first roundtable is on February 3 at 10 a.m. in the Energy Trust offices and will cover the upcoming legislative session; the recession and how Energy Trust will serve low- and moderate-income customers and collaborate with the utilities on serving those customers; and general questions on any new models of delivery. These roundtables are an opportunity for utilities to more directly operate with the board members, and council members are welcome to attend.

6. Adjourn

The meeting adjourned at 3:33 p.m. Next meeting is February 17, 2010.