Meeting Notes
Evaluation Committee Meeting
November 13, 2009, 10:00 AM – 1:00 PM

Attendees

- Phil Degens, Evaluation Manager
- Debbie Kitchin, Board Member and Committee Chair
- Alan Meyer, Board Member
- Dan Enloe, Board Member (by phone)
- Tom Eckman, Evaluation Expert, NW Planning and Conservation Council
- Matt Braman, Planning Program Manager
- Sarah Castor, Evaluation Project Manager
- Lauren Gage, Evaluation Manager, Bonneville Power Administration
- Fred Gordon, Director of Planning and Evaluation
- Steve Lacey, Director of Operations
- Brien Sipe, Evaluation Project Manager
- Matthew Taylor, Evaluation Intern
- Peter West, Director of Energy Programs

Topics covered:

1. Evaluation Updates
2. Commercial & Industrial Lighting Market Assessment (draft)
3. Dimmable LED Recessed Can Light Pilot (draft)
4. Impact of Evaluation Results on 2010 Budget
5. Residential Solar Valuation Study
6. Duct Sealing and Insulation Impact Evaluation Findings

1. Evaluation Updates

Phil began the meeting with updates of Evaluation projects underway and planned. The next Evaluation Committee Meeting will review the following evaluations:

- Home Energy Solutions 2007-2008 Process & Impact Evaluation
- Segmentation Comparison Study
- Corvallis Energy Challenge
- Refrigerator Recycling Evaluation (if time allows)
- New Homes 2009 Process Evaluation (if time allows)

2. Commercial & Industrial (C&I) Lighting Market Assessment

Contractor: Heschong Mahone Group (HMG)

Phil presented the results from a draft of the lighting market assessment, noting that it is an early draft and will be revised. The study was motivated by higher free rider rates for lighting in the Existing Buildings (EB) program and indications of market transformation. In addition, there will be a major change in new construction codes in 2010 that may impact lighting baselines.

The assessment involved a review of existing market studies – including the 2002, 2004, and 2007 Commercial Building Stock Assessments – and surveys of lighting market actors.

The goals of this study were:

- To describe the market structure, product flows, baseline sales (by major technology), baseline design and O&M practices, and market penetration of lighting energy efficiency products and services.
- To analyze how the Energy Trust programs have interacted with and influenced the market and to determine the market actors experience with Energy Trust.
- To help Energy Trust to assess its influence in transforming the market for select lighting technologies.
- To inform changes in Energy Trust program design and direction of current measures.

In addition to HMG's work, Matthew Taylor has gathered information from the lighting tools for many of Energy Trust's projects to analyze what types of lighting are being frequently installed and replaced. Results of this analysis will be incorporated into the final report.

Major findings:

- Energy Trust's lighting savings represent about 4% of lighting energy consumption in the non-residential sector
- Over 80% of market actors believe Energy Trust was the most important or a major influence on the adoption of high performance (HP) T8 lighting
- Seventeen percent of the square footage of existing buildings in Oregon is lit with T12s; most of those buildings were built prior to 1994
- Lighting power density has declined most in grocery applications, due to frequent renovations and chains adopting efficient lighting standards
- A relatively small percentage of existing buildings have lighting controls

Committee members noted that lighting contractors often don't push controls because they result in call-backs for maintenance and programming. Alan suggested modifying our incentive to encourage controls, or possibly offering an incentive for commissioning of controls. Phil suggested Energy Trust could require controls with lighting incentive once T12s are outlawed in 2012; training for lighting contractors is also important. Dan noted that magnetic ballasts are still available for about the same cost as electronic ballasts, though they will be outlawed in 2012.

Findings (continued):

- Most high-intensity discharge (HID) ballast types are "unknown" in existing studies; Phil suggested not collecting that information in the future, but Steve said that surveyors should be able to tell the type with a spinning top
- Lighting controls are more prevalent in new construction
- Most lighting market actors provide a variety of services, including lighting design, installation, maintenance, retail selling, and wholesale distribution
- Market actors main source of information and training is manufacturers
- Several market actors report not discussing energy efficiency with clients on projects, many projects do not go beyond code

Recommendations:

- Plan for the opportunity of T12 phase-out
- High-output (HO) T5s use more energy than regular T5s, but provide more light, so it is important to design the lighting to account for this when considering T5s
- Encourage the installation and use of lighting controls
- Encourage lighting contractors to compare existing lighting and project designs with code requirements
- Explore opportunities to work with and learn from manufacturers on reaching market actors

Phil noted that from Matthew's analysis HO T5s usually compete with T8s (not regular T5s) in replacing HID applications. Phil also suggested that we could give light meters to contractors to aid in comparing lighting to code (typically measured in lumens per square foot).

Fred noted that Energy Trust will be building a market transformation model for HP T8s since it appears we influenced the upcoming code change for new construction.

3. Dimmable LED Recessed Can Light Pilot

Contractor: Stellar Processes

Phil presented results from the study and noted that this technology fits (and was tested in) a very specific niche: recessed can downlights on dimmable switchs in residential kitchens. The lights were fitted with lighting loggers to record hours of use and degree of dimming. The 5 test homes were all new construction; in one home the lighting logger failed, leaving 4 homes in the sample.

The study was designed to answer two questions: 1) to what extent are the lights dimmed, and 2) what are the resulting energy savings from the technology?

Findings:

- Use of dimming was split: two homes dimmed the fixtures at about 50% for almost the entire study period and 2 homes left them at full brightness almost full time
- On average, the lights were used for 2.8 hours per day
- Annual savings estimated at 55.3 kWh per fixture annually
- Each fixture costs approximately $100

From Evaluation's perspective, the savings from dimmable can LEDs is not substantial enough to favor them over other lighting technologies. We currently offer a $30 incentive, similar to dimmable CFLs, and no change is recommended. Unit cost will need to come down quite a bit before the technology has a reasonable payback.

4. Impact of Evaluation Results on 2010 Budget

Matt presented briefly about the effect of new evaluation factors on projected savings in the 2010 budget. Evaluation factors are slightly smaller in 2010:

	2009	2010 Proposed
Existing Buildings	0.87	0.82
New Buildings	0.79	0.67
Production Efficiency	0.83	0.78

Consequently, projected average MW saved for 2009 is 45.2, rather than 48.4. Energy Trust will still meet its IRP goals.

Fred added that Planning has been working on a summary of our policy on using and reporting net and gross savings, and he will be making a presentation to the board, OPUC and Conservation Advisory Council.

5. Residential Solar Valuation Study

Contractor: Taylor Watkins, Watkins & Associates

Brien presented findings from the study, the purpose of which was to provide evidence on the non-energy benefits of installing solar on homes. Currently, there are only a few studies of changes in home value and they are from California.

The study used sales comparison appraisals to deduce the contributory sales value of solar. Energy Trust identified 17 properties in the Portland and Bend areas that have transferred ownership since having PV installed; only 10 of those were judged to be comparable to other homes. It is unknown why properties with solar might transfer less often than those without, although it was hypothesized by the committee that people who install solar are those who plan to be in their homes for many years and can benefit directly from their investment.

Eight of the homes had solar PV systems, one had a solar thermal system, and one home had both systems.

Homes were appraised by a professional appraiser and each appraisal was reviewed by at least one other appraiser to validate findings. In cases where the reviewer disagreed with the original appraiser, the reviewer also provided an estimate, giving a range of contributory value. The average value added by a solar system was $9,480; the average of the low estimates was $6,580. Based on size of the systems appraised, the estimated contributory value of solar is approximately equal to the cost of the system after incentives and tax credits.

Evaluation recommends repeating the analysis once a year on additional home transfers, but only if there are enough to warrant analysis.

Dan recommended asking RMLS to make solar a standard field on listings; Debbie thought this might already be so. Evaluation and program staff will investigate and follow up if necessary.

6. Duct Sealing and Insulation Impact Evaluation Results

Brien presented results from new and previous investigations into duct sealing and duct insulation natural gas savings. Current reportable savings estimates come from the 2003-2004 Home Energy Solutions (HES) impact evaluation, and are very conservative at 21 therms for sealing and 12 therms for insulation.

The 2005-2006 HES evaluation was unable to find a stable estimate of savings from duct measures using statistically adjusted engineering models. As a result, Energy Trust contracted with Stellar Processes and Blasnik & Associates to produce independent estimates of savings for 2006 program year participants using a weather-normalized annual consumption (NAC) approach. Evaluation staff also conducted a savings analysis in-house.

Estimates for 2006 duct sealing ranged from 27 to 69 therms; duct insulation savings ranged from 17 to 45 therms. Excluding homes with extremely large changes in consumption (outliers) produced the lower ends of the savings ranges. The committee discussed whether the exclusion of outliers was valid and in what circumstances. Dan suggested that estimates that exclude outliers be used when forecasting savings and educating contractors, to use conservative figures, but that outliers be included in the analysis when estimating actual program savings. The committee agreed that outliers do represent actual program savings although they are not representative of the average population.

An impact analysis of the 2007 HES program was recently completed by HMG (and will be presented at the next Evaluation Committee meeting) estimating 47 therms saved for duct measures – HMG was not able to estimate savings separately for sealing versus insulation. HMG used a conditional demand model with participant fixed effects, rather than a NAC model, and several of their other measures savings estimates are suspect, leading Evaluation to be skeptical of the estimate for duct measures.

Evaluation contracted with Blasnik & Associated again to estimate savings for late 2007 and early 2008 participants and conducted another in-house analysis with all 2007 participants. This time, Blasnik estimated about 36-40 therms for duct insulation and 41-48 therms for duct sealing; in-house analysis found 27-32 therms for insulation and 41-68 for sealing.

In-house analysis also revealed interesting findings. Duct insulation jobs done by HVAC contractors have higher average savings than jobs done by insulation contractors, probably because HVAC contractors who are installing new gas furnaces are more likely to make sure ducts are the right size. In general, duct measure savings are lower when more than one measure is installed, as is expected, since measures are interactive, not additive.

The committee discussed the last finding and the implication that we should be giving less money for additional measures, based on savings impact, rather than more money, which is usually what it takes to get customers to do multiple measures. Tom felt that, since we don't know what the baseline is for a measure (or a portfolio of measures), we should pay the larger incentives to get the measures done now rather than later.

Lastly, the committee discussed what can be done to improve future impact evaluations. Strategies include:

- Separating impact and process evaluations to improve the quality of impact evaluators
- Use billing analysis specialist who will perform NAC analyses
    - Drawbacks include a shortage of expert evaluators and the expense of such evaluators
- Perform shadow billing analyses in-house to verify results, ensure quality
- Perform all billing analyses in-house and have them reviewed by outside experts, to reduce the time required of the experts

Alan suggests laying out the scope of a project and then deciding if contractors can do parts of it. Fred noted that Planning and Evaluation will be taking the issue of in-house analysis to Management Team; there is a need to ensure independence of the results. Lauren said that BPA contracts with outside firms for most of their evaluation needs, but managing the contractors is almost more time consuming than doing the work in-house. Tom added that finding knowledgeable impact evaluators is a systematic problem in the industry, as they are in short supply; with most evaluators, the quality of work is low or you end up having to train the contractors on best practices. Alan felt we should limit the number of evaluations we do so staff aren't overwhelmed with work or the need to hire evaluation contractors. He suggested we investigate how we can operate more efficiently.

Phil said that Evaluation will move slowly forward with performing evaluations in-house with outside review, pending management approval.

The meeting adjourned at noon.

The next Evaluation Committee meeting is scheduled for January 15th, 10am- 1pm.