Evaluation Committee Report

January 30, 2009

The Evaluation Committee met on January 30, 2009 with Debbie Kitchin, Chair; Alan Meyer, Board member; Dan Enloe, Board member, by phone; Ken Keating, evaluation expert; Philipp Degens, Evaluation Manager; Fred Gordon, Planning & Evaluation Manager; Steve Lacey, Director of Energy Efficiency and incoming Director of Program Support; Matthew Taylor, Evaluation intern; Brien Sipe, Evaluation Analyst, and Sarah Castor, Market Research & Evaluation Analyst attending. Matt Braman, Planning Analyst, attended for the second half of the meeting.

The meeting began at 10:00am with a review of the agenda.

Matthew presented an analysis of Home Energy Review (HER) participant follow through. "Follow through" was defined as participating at least once in an Energy Trust program - including Home Energy Solutions (HES), ENERGY STAR products, or Solar – after receiving an HER. The issue of follow through rates arose when a PMC quoted a follow through rate of 40% without documentation of its source. Evaluation's analysis found an overall follow through rate across all program years of 32%. When looking at specific time periods, the following results were found:

- The typical follow through rates after 3 months, 6 months, and 1 year are about 15%, 20% and 25%, respectively.
- At 3 or more years after an HER, the follow through rate approaches 40%.
- The Portland Metro area has the highest follow through rate after one year (27%).
- The follow through rate for all periods is significantly lower for home built after 1990.
- Follow through on specific recommendations from the review was 21% after one year. Information on specific recommendations is only available for HERs in 2007 and later.
- While most follow through measures are installed within one year of the HER, significant savings are obtained from measures installed after one year, as homeowners replace wait to replace expensive equipment, such as heating equipment, until it is no longer functional.

Ken noted that there may be more follow through that does not go through the program, so these estimates are a lower bound.

Phil noted that other reasons for performing the analysis were:

- Interest in knowing when would be the best time to contact HER participants to remind them of their recommendations and our offerings.
- Interest in knowing which measures were most commonly installed after an HER and which houses/participants are most likely to install measures.

In the future, Evaluation hopes to explore which measures are likely to be installed more than one year after an HER and whether homeowners who install measures within one year are likely to go through another round of measures at a later date. The current analysis only considers the time until the first post-HER measure installation.

Fred pointed out that most of the measures we pay incentives on are not preceded by an HER, but are contractor-driven. Ken noted that the analysis indicates Energy Trust programs have been very successful compared to similar programs in California.

Phil presented on the billing analysis workshops undertaken by Evaluation staff. Between August and October 2008, Energy Trust invited leading experts in the field of billing data analysis to present on best practices. The workshops were motivated by:

- Lack of transparency in how final billing models have been determined in the past

- Need to generate consistent comparable billing analysis results
- Unstable and unreliable results from billing analyses
- Inconsistent use of diagnostics in model development
- Lack of reconciliation of free rider adjustments from participant and nonparticipant billing models and those elicited from surveys
- Lack of reconciliation of internal and external spillover from savings estimates.

The goals of the workshop were:

- To obtain recommendations on how to improve current billing analysis to obtain accurate, unbiased estimates of savings
- Develop a roadmap to implement and test billing analysis methods to advance the art, and make it relevant to our work
- Document the process in a white paper.

The workshops discussed issues around data cleaning and screening; model selection and specification; sample selection, particularly of nonparticipant (comparison) groups; and new advances in analysis.

After the workshops, the consultants were asked to perform impact analyses on the residential tankless water heater measure, duct sealing and insulation measures, and the multifamily program using their preferred methods. These measures and program have been a challenge to analyze in the past. Results will be compared to assess the differences between the methods, as well as to help determine evaluation factors for the annual true up process.

The committee discussed the option of end-use metering for determining savings rather than using billing analysis, but the technologies and process are still quite expensive, time-intensive, and it can be difficult to find contractors to perform such data collection and analysis. Energy Trust continues to employ these tools selectively, especially for business programs, and monitor the state of metering techniques for future applications.

The committee reviewed the different billing analysis models presented at the workshops, their strengths and weakness, and best applications. Major conclusions were:

- The amount of billing data available will influence which model is used.
- Some models are more intuitive and allow more insight into the source of savings (or lack thereof).
- Regardless of the model type, the selection of a comparison group is a process that needs careful consideration in order to accurately estimate savings.
- Billing analysis cannot determine the extent of free ridership or spillover; these effects should be assessed with a survey of participants and nonparticipants and the results used to adjust estimates obtained from billing analysis.
- A commonly-recommended correction for self selection (Heckman Correction using the Mills ratio) is unlikely to be successful and just adds expense to an evaluation.
- Descriptive statistics should be used to assess the quality of data and to explain how the savings estimates were obtained.
- Billing data analysis is better at estimating program saving than measure-level savings. Estimating measure-level savings affordably is difficult but sometimes important.

Evaluation staff gained much insight from the workshops and believes the workshops will help Energy Trust obtain more accurate savings estimates in its impact evaluations.

In the future, Evaluation staff would like to require evaluation contractors to estimate more than one model to verify savings estimates.

Fred noted that Evaluation would like the Committee's opinion and recommendation to the Board regarding these recommendations, since the independence of the evaluations could potentially be called into question by those outside the organization. Debbie, Alan, Ken, and Dan agreed that these recommendations do not reduce the independence of the process if Energy Trust does not dictate the exact methods and models to be used. Fred noted that the requirement is simply to make sure evaluation contractors can explain and defend their results. Steve noted that the PUC may ultimately comment on this approach, as well.

Phil then presented the results of some of the consultants' analyses of the measures of interest. The number of consultants analyzing each measure was determined by the number of research designs proposed; if two or more consultants proposed the same approach, only one was asked to perform that evaluation, to avoid duplication. Major results were as follows:

- Tankless Water Heaters
    - Savings were estimated by four of the five consultants
    - All found savings of between 59 and 71 therms per year
    - One consultant's approach was able to identify evidence of water heating fuel switching (from electric to gas) for some participants, and that average hot water consumption was lower than generally assumed.
    - Two consultants were able to estimate savings from gas furnaces also installed by participants who also installed a gas furnace through the HES program.
- Multifamily program
    - All five consultants will evaluate this program; only two have provided results to date.
    - One consultant found a realization rate of ~50% for electric measures and negative savings for gas; the other found a realization rate of 8% for electric measures and 65% for gas.
    - Large difference in results is likely due to the different samples each consultant selected for analysis.
    - Evaluation hopes to gain some insight from remaining three consultants' analyses. For this reason, and because of difficulties with these analyses, Evaluation cautions against drawing conclusions based on the results to date, other than as a directional indicator; it appears that savings are likely overestimated but we cannot yet say by how much.
- Duct sealing and insulation
    - Three consultants were selected to evaluate these measures; only one report has been received to date.
    - Savings were particularly difficult to assess because homes frequently installed one or more measure at the same time; therefore the consultant estimated the savings from installing at least one of these measures or envelop insulation.
    - The realization rate for gas heated homes was 74%, while the realization rate for electrically heated homes was 224%.
    - There were also electric savings in gas heated homes, and more research is needed to understand why.
    - Evaluation hopes to gain more insight with the remaining consultants' analyses.

The next Evaluation committee meeting is scheduled for March 13th from 10am -1pm.

The meeting adjourned at 1pm.