SESSION 1D

EVALUATING REFRIGERATOR/FREEZER RECYCLING PROGRAMS-FOUR COOL PERSPECTIVES

Moderator: Bill Saxonis, New York State Department of Public Service, Albany NY

PAPERS:

UMP, There It Is: A Collaborative Process Results in Standardized Appliance Recycling Evaluation Guidelines

Doug Bruchs, Cadmus, Portland, OR
Josh Keeling, Cadmus, Portland, OR

Savings from Appliance Recycling Programs: Think Outside the Grid

Mohit Singh-Chhabra, Ptarmigan Research (RTF Contract Staff), San Francisco, CA
Angie Lee, Navigant Consulting, Inc., Walnut Creek, CA

How the New and Used Refrigerator Markets Are Intertwined

John H. Reed, Innovologie, Rockville, MD
Moria Morrissey, Innovologie, Rockville, MD

ARPs are RAD: How to Incorporate Environmental Benefits from Appliance Recycling Programs into Cost-Effectiveness Calculations

Josh Keeling, Cadmus, Portland, OR
Arnab Pal, Cadmus, Portland, OR
Caroline Chen, StatWizards LLC, Rosemead, CA

SESSION SUMMARY:

Appliance recycling programs (ARPs) have served as a critical component of residential energy-efficiency programs in many states, for many years, and continue to play an important role. Conceptually, these programs represent a simple concept— "we give you money, you give us your old appliance." From an evaluation standpoint, however, the programs present many challenges.

This session covers several key evaluation challenges by presenting two approaches to estimating energy savings, an overview of the market for new and used refrigerators and a roadmap for documenting environmental benefits.

After consideration of the evaluations challenges, one of the first measures addressed by the U.S. Department of Energy through its Uniform Methods Project (UMP) was refrigerator recycling programs. The paper from Bruchs and Keeling summarizes the UMP evaluation protocol and explains problematic evaluation concepts. The paper also discusses how the protocol's methodology aligns, and deviates, from previous evaluation practices; addresses the often controversial issues of part-use, replacement, and secondary market impacts; and illustrates the UMP evaluation protocol in an evaluation-flow diagram.

The paper from Singh-Chhabra and Lee offers a methodology, currently being used in the Pacific Northwest, for measuring energy impacts from appliance recycling programs. The methodology focuses on factual and counterfactual scenarios regarding the status of the recycled appliances and employees a Weibull distribution method to calculate appliance survival curves for estimating their remaining useful life. The authors provide guidance for using this methodology in other regions of the country.

The Reed and Morrissey paper presents a detailed market analysis that describes both the new and used refrigerator markets in California. Because markets in other parts of the country are similar,

the results have wide applicability. Understanding the new and used refrigerator markets is essential to understanding refrigerator rebate programs including utility standalone and utility/retailer partnership programs as well as longer term refrigerator and freezer disposal issues.

The paper from Keeling, Pal and Chen addresses the issue of capturing environmental benefits. The authors note that as appliance recycling programs mature—and as an increasing proportion of the participating appliances have been manufactured after the National Appliance Energy Conservation Act standards—reductions in energy benefits result in decreased benefit-cost ratios. The authors recommend that environmental benefits be included in cost-effectiveness calculations. The paper provides program administrators and evaluators with a methodology to capture environmental benefits that can easily be incorporated into a typical appliance program evaluation at little additional cost. A case study, drawn from a study recently conducted for Southern California Edison, showcases this approach and its potential benefits.