

Gross Savings Estimation for Appliance Recycling Programs: The Lab Versus In Situ Measurement Imbroglia and Related Issues

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Abstract

Estimates of gross savings for California appliance recycling programs have relied upon methods relating DOE test and characteristic data from multi-era sample of refrigerators and freezers (R/F) to the program population (Athens Research 1996, 1998; KEMA, 2004). The result is a *reliable* approach that yields lab-based program population unit energy consumption (UEC) estimates for the evaluated program and for plausible scenarios involving change in program focus. And yet, skepticism about the external *validity* of this approach prevailed throughout the same decade: do lab-based regression estimates reflect the actual *in situ* consumption of the R/F? If there are systematic *lab-in situ* differences in the recycling population, is this relationship *contingent* upon other variables? *Related* issues include: extrapolation to full year UEC given error in short term in situ metering; degradation, and the factors *other than age* that *select for* a recycling population that is characterized by performance problems; the major physical determinants of differences between in situ and laboratory tests.

This paper reports on both data development and analysis relating to:

- extension of the lab data regression/population UEC estimation method to the 2004-05 IOU's recycling program,
- incorporation of a small dually metered sample (ADM, 2006) as a basis for investigating and preliminarily establishing the "lab-in situ relationship(s)",
- evidence on key issues: extrapolation from short term metering to full year consumption, the level of performance problems typical of recycling appliance populations, and
- summary analysis on the causal determinants of differences between lab and in situ results.