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Poster Title: Do You Know What's in Your Basement? Comparing Knowledge with Reality

Abstract: Is that a boiler or a furnace? As energy-efficiency evaluators, we quickly learn that homeowners often have little knowledge about the energy using equipment in their home or the characteristics of the building. However, visiting homes to inspect and catalog equipment is expensive. This poster will explore how we can overcome customers' knowledge gaps about their homes and cost effectively leverage existing data to make effective use of customer self-reports for baseline studies.

In 2017 and 2018, the authors fielded web-based residential appliance saturation surveys (RASS) with thousands of customers in two neighboring Northeast states – 900 surveys in the smaller state and over 2,400 in the larger state. Respondents reported on a wide variety of end-use equipment in their homes, enabling us to measure end-use penetration and characterize other energy-related details in their homes. Our trained technicians then visited subsets of those customers' homes where they verified and supplemented customers' reports based on actual observations. Comparing the subset of on-site-visit customers' survey responses with our on-site observations yielded adjustment factors (i.e. observed penetration divided by reported penetration). Applying these factors to the full web-survey sample refines the full population's self-reports. Looking at the results from one state, it was clear that for some end uses, customers provided good data on the equipment in their homes. For example, customers correctly reported water heating fuel type and presence of cooling systems. For other end uses, verification visits revealed that customers simply were unaware of the types of equipment in their homes – especially types of heating and water heating systems. Most notably, customers over-reported the presence of advanced power strips, even after being shown images of them.

These differences are very informative for evaluation purposes. This poster will (1) include comparative charts to identify the types of information that customers simply do not know and should be omitted from customer surveys to conserve survey "real estate" and (2) illustrate how to use adjustment factors for years to come by applying adjustment factors to relatively inexpensive web survey results.   All data collection is complete. The report in one state has been finalized, and the other will be finalized in January or February 2019.