COMMERCIAL EQUIPMENT SELF-REPORTS DON'T ADD UP: EMPIRICAL EVIDENCE AND IMPLICATIONS

Moderator: Bobbi Tannenbaum, Btan Consulting

PAPERS:

Survey Data vs. Energy Audits: Comparing Two Forms of Data Collection in the Commercial Buildings Energy Consumption Survey

Carolyn Hronis, U.S. Energy Information Administration
Bill McNary, U.S. Energy Information Administration
Joelle Michaels, U.S. Energy Information Administration
Alan Swenson, U.S. Energy Information Administration

Don't Phone it in - On-Sites are Necessary: Self-Report versus On-site Data Collection

Priya Sathe, Itron, Inc.
Samantha Cole, Itron, Inc.
Jean Shelton, Itron Inc.
Lisa Paulo, California Public Utilities Commission

The Surveys Are In! A Comparison of Three Commercial Market Share Data Collection Methods

Samantha Cole, Itron, Inc.
Priya Sathe, Itron, Inc.
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SESSION SUMMARY:

Energy program evaluation and market research professionals rely on telephone surveys to collect a substantial amount of commercial building and equipment data. These data are used to inform program design and assess program impacts (among other uses). The lower cost of telephone surveys (relative to on-site data collection) allows for larger sample sizes, and thus greater statistical precision. Many energy research practitioners share concerns about the accuracy of self-reports and the potential for substantial measurement error. The papers in this session discuss findings from research asking "How accurate are telephone self-reports relative to on-site data collection?" All three studies include follow-up on-site visits to assess the accuracy of telephone self-reported data.

Hronis et al. presents the findings from a subset of 203 Commercial Building End-Use Consumption Survey (CBECS) buildings at which a follow-up on-site assessment was completed. This study addressed building size (square footage), building activity, and fuels used, three data elements essential for reasonable estimates of energy intensity by building type and end-use. They found a high degree of consistency in reported square footage from telephone survey and on-site assessments. This was due, in part, to some assessor's reliance on self-reports from an on-site respondents. They also found that smaller buildings had larger square footage discrepancies (percentage of telephone response). Principal building activity matched for ~ 80% of buildings, with both self-reports and on-site findings contributing to the mismatches. Different question

approaches contributed to the mismatches. The on-site energy assessors reported a lower incidence of all fuel types than telephone self-reports. This study's findings emphasize the importance of data collection design, and of adequately training data collection personnel.

Sathe, et al. and Cole et al. address research completed as part of the California joint Commercial Saturation Survey (CSS) and Commercial Market Share Tracking (CMST) studies. The telephone surveys collected business and building information to estimate the saturation of energy efficient equipment in California's commercial buildings (CSS) and to estimate the market share (percent of sales) for the same technologies. Both papers rely on data from a subset of ~ 1,500 telephone respondent buildings at which on-site surveys were completed. The compare aggregate findings, as well as site level data, for lighting and cooling.

Sathe et al. found that in aggregate, telephone respondents tend to under-report the incidence (presence of) lighting and cooling technologies. For example, telephone respondents reported that 79% of commercial buildings have linear fluorescent lighting, while on-site surveys found it in 94% of the building. The presence of lighting is less accurate when respondents are asked about specific types (such as T12 or T8 lighting). In general, high incidence and familiar technologies, such as T12s, T8s and CFLs tend to have a greater percentage of false negatives (technology found when telephone respondent reported it not present) then false positives. Low incidence or unfamiliar technologies tend to be the opposite. Contrary to Hronis et al findings, Sathe et al found that the smaller the building, the greater the consistency between telephone and on-site square footage estimates.

Cole et al. addressed the incidence of recent purchases (2009-2012) of specific lighting and cooling technologies. In aggregate, the telephone respondents underreported the incidence of high efficiency lighting and over reported the incidence of high efficiency cooling equipment purchases. The researchers also compared the distribution of recently purchased equipment observed on-site to contractor reports of sales. Aggregate estimates from these two sources are in greater alignment than the telephone to on-site results.