



# Don't Phone it in – On-sites are Necessary

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# QUESTION: ARE TELEPHONE SURVEYS ACCURATE FOR COMMERCIAL BASELINE STUDIES?

- » Commercial baseline surveys collect information on customers characteristics and the types and efficiencies of equipment
  - The data are complicated and heterogeneous
- » Telephone surveys provide a low cost option
- » On-site surveys are preferred for their accuracy and detailed information
- » Use findings from on-site surveys nested within phone survey to determine accuracy

# OUTLINE

- » The Study
- » Available data
- » Incidence analysis
- » Comparison analysis
- » Conclusion

# THE CALIFORNIA COMMERCIAL SATURATION SURVEY (CSS)

- » Investigated measures currently installed in commercial buildings (2010-2012)
- » Conducted surveys of non-residential customers in the CA IOU service territories. Funded by CPUC.
  - Telephone Surveys – 7,980
    - Collect information on business characteristics and the types of lighting, TVs, refrigeration, and HVAC equipment at their site
  - On-Site Surveys – 1,439
    - Collect information on measures Currently Installed in Commercial Buildings; Lighting, Small HVAC, Refrigeration, TVs, Office Equipment, EMS
  - Web site: <http://capabilities.itron.com/wo024/>
- » The on-sites were recruited from the telephone survey
- » Produced results by IOU, business type, customer size, and EE program participation

# INCIDENCE VERSUS COMPARISON ANALYSIS

- » Investigate the nature and extent of inaccuracies in self-report telephone data compared with on-site survey data.
- » Incidence Analysis: Average incidence of measures
  - Can telephone surveys be used to correctly estimate the average incidence of equipment?
  - Do errors cancel out in aggregate?
- » Comparison Analysis: Site level matching of responses
  - How accurate are individual customers during telephone surveys?
  - Are some technologies accurately reported?
  - Are some groups of customers more accurate?

# INCIDENCE ANALYSIS

- » The incidence analysis compares the overall incidence rate from the phone survey to the incidence rate derived from the on-site survey.
- » Analysis uses all of the responses from the telephone and the on-site data collection effort.
- » If errors cancel, telephone surveys can describe average distributions accurately
  - Incidence of many, but not all measures, were under-reported relative to data from the on-sites.

# INCIDENCE ANALYSIS - FINDINGS

Technology	Telephone Survey (n = 7,890)	On-site Survey (n = 1,439)	Telephone Incidence Relative to On-site
Linear Fluorescents	79%	94%	- 15%
T12/ Fat tubes	19%	42%	- 23%
T8/ Second Generation T8/ Skinny Tubes	43%	71%	- 28%
T5	5%	6%	-1%
CFLs	47%	62%	- 15%
LEDs	19%	4%	15%
Occupancy Sensors	21%	17%	4%

# INCIDENCE ANALYSIS - FINDINGS

Technology	Telephone Survey (n = 7,890)	On-site Survey (n = 1,439)	Telephone Incidence Relative to On-site
No Cooling	25%	23%	2%
Split System – Cooling	9%	12%	- 3%
Packaged System – Cooling	37%	52%	- 15%
TV	38%	47%	- 9%
Solar PV	3%	2%	1%



# SITE LEVEL COMPARISON ANALYSIS

- » A site specific analysis restricted to sites in both surveys
- » Phone respondents often know if they have a general class of technologies (linear technologies and TVs) but have less understanding of the specific technology.
- » Little evidence that the accuracy of responses was dependent on the end use or the novelty of the technology.

# CSS PHONE VS. ONSITE – COMPARISON ANALYSIS -HIGHLIGHTS

- » Findings of Comparison Analysis consistent with Incidence analysis for **T12s, T8s and CFLs** which are under-reported by Phone surveys, and for **LEDs** which are over-reported.
- » Comparison shows that site level false positives and false negatives cancel each other to bring overall incidence for phone and on-sites close for **T5s**.
- » The discrepancies in the phone and onsite survey findings regarding the presence of **solar generation** is relatively low, but is higher for other types of **distributed generation**.

## CSS PHONE VS. ONSITE – CONCLUSIONS

- » Large businesses were found to have greater discrepancies in phone and on-site survey findings regarding the square footage of their premises than small businesses.
- » Schools and chain businesses may provide incorrect responses due to confusion about the exact site being discussed.
- » A potential source of disparity is the wording of the phone survey question.
- » Also a source of disparity could be new purchases between the time of the phone survey and the on-site survey

## CSS PHONE VS. ONSITE - CONCLUSIONS

- » Trade-off between Cost and Reliability is Large.
- » What is the optimal mix of on-site and telephone survey data?
- » Findings support the need to continue with on-site surveys and contractor studies to maintain a clear understanding of the efficiency distribution of technologies.



# THANK YOU



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