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Docket Number:	17-AAER-11
Project Title:	Set-Top Boxes
TN #:	221197
Document Title:	California Investor Owned Utilities Comments Response to Invitation to Submit Proposals - Set-top Boxes
Description:	N/A
Filer:	System
Organization:	California Investor Owned Utilities
Submitter Role:	Public
Submission Date:	9/18/2017 9:27:48 AM
Docketed Date:	9/18/2017

Comment Received From: California Investor Owned Utilities
Submitted On: 9/18/2017
Docket Number: 17-AAER-11

Response to Invitation to Submit Proposals - Set-top Boxes

Additional submitted attachment is included below.

Set-top Boxes

Codes and Standards Enhancement (CASE) Initiative
For PY 2017: Title 20 Standards Development

Analysis of Roadmap Proposal for
Set-top Boxes
Docket # 17-AAER-11

September 18, 2017

Prepared for:

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This report was prepared by the California Statewide Investor-Owned Utilities Codes and Standards Program and funded by the California utility customers under the auspices of the California Public Utilities Commission.

1. Purpose

The Codes and Standards Enhancement (CASE) Initiative supports the California Energy Commission's (Energy Commission) efforts to outline technology roadmaps for various products. The four California Investor Owned Utilities (IOUs) – Pacific Gas and Electric Company (PG&E), San Diego Gas and Electric (SDG&E), Southern California Edison (SCE), and SoCalGas® – sponsored this effort (herein referred to as the Statewide CASE Team). The overall program goal is to prepare and submit proposals that will result in cost-effective enhancements to improve the energy and water efficiency of various products sold in California. This specific effort is to identify information gaps that should be considered in the development of a roadmap for set-top boxes (STBs).

2. Background

In December 2012, STB equipment manufacturers, service providers (cable, satellite, and internal protocol [IP]), and energy efficiency advocates established a voluntary agreement (VA) specifying energy efficiency requirements. The terms of the VA were subsequently expanded in 2013, and set to expire as of January 1, 2018. In anticipation of this timeframe, the organizations involved will initiate discussions to renew the VA, and expect to complete these efforts by the end of the calendar year.

3. Key Issues

In an additional guidance document dated August 22, 2017, the Energy Commission highlighted 15 questions identifying information gaps that should be resolved in the development of a STB roadmap (California Energy Commission, 2017). The Statewide CASE Team agrees with the Energy Commission that these 15 questions outline most of the major issues that necessitate resolution in the future development of a technology roadmap. Since many STB stakeholders will re-engage in the VA renewal discussions, the Statewide CASE Team encourages the parties to address the highlighted questions, and provide this information to the Energy Commission and stakeholders at the conclusion of the VA negotiations.

Below are some additional issues that should be addressed in a technology roadmap and be included in the scope of the VA discussions:

- What is the reported energy consumption of installed STBs in California homes?
- Are the hours used for the typical energy consumption (TEC) calculations in annual energy consumption reflective of actual annual duty cycles for STBs?
- What are the technical barriers to faster deployment of next generation power management strategies implemented in STBs?
- What percentage of overall installments (versus procurements) in 2016 did not meet Tier 1 standards of the VA? What percentage of the 2016 installments (versus procurements) did not meet Tier 2 levels?

4. PG&E Codes and Standards Field Study

As part of a larger residential energy use study, PG&E collected information on the installed appliances and equipment in a representative sample of 1,000 homes in their territory (Price, Rasmussen, & Anderson, 2016). On-site surveys were conducted in the representative homes between October 2015 and April 2016. The Statewide CASE Team provided some initial analysis below based on STB survey information. Approximately 1,200 STBs were identified in the survey, and, of those, model number information could be identified for over 600 models. The Statewide CASE Team matched model numbers to reported TEC values from ENERGY STAR®. Figure 1 shows the wide variation of reported annual energy consumption (i.e., TEC) of the models for which a reported TEC was able to be assigned. The larger the point in the chart indicates the more instances a certain STB model was identified.

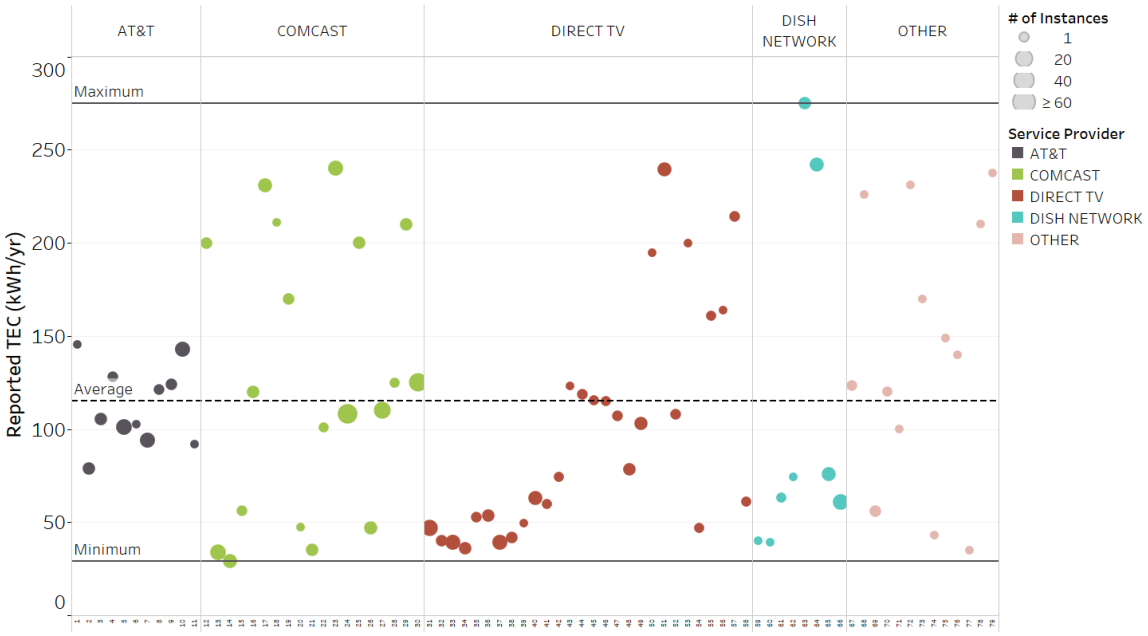

Figure 1: PG&E Codes and Standards Field Study: Reported TEC of installed STBs by service provider.

Source: Statewide CASE Team.

To examine this spread in reported TEC in STBs over the years, initial box plots were developed for the dataset and shown in Figure 2. The box plots display the maximum, third quartile, median, first quartile, and minimum reported TEC of surveyed STBs by year of manufacture. This figure highlights that the *installed* STBs within the study sample have not shown much improvement in reported energy consumption over the years.

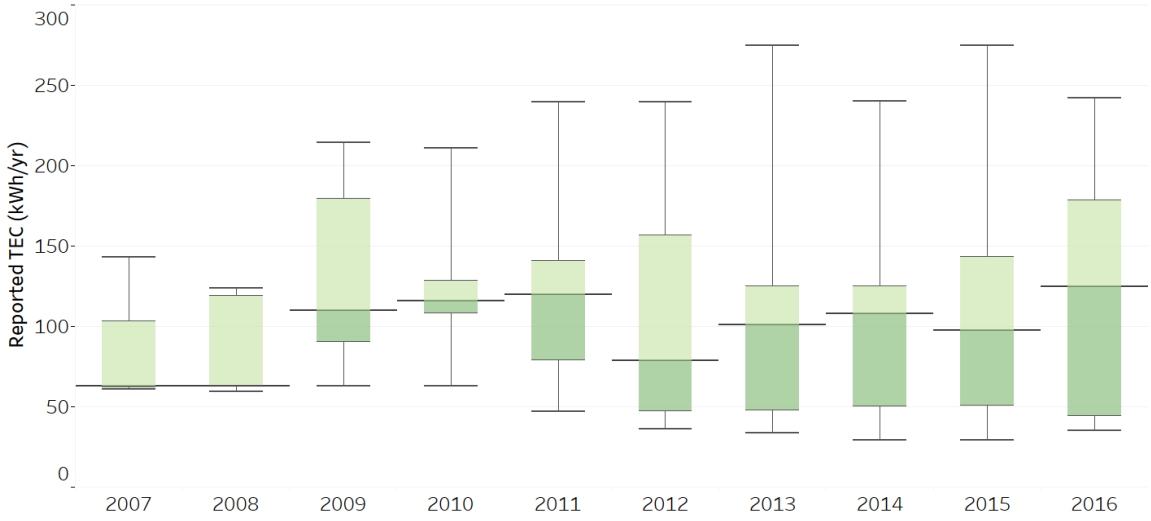

Figure 2: PG&E Codes and Standards Field Study: Box plots of reported TEC of installed STBs by year of manufacture.

Source: Statewide CASE Team.

Additional in-depth analysis of this survey data will be conducted to help provide insights on the installed base of STBs aside from this preliminary assessment. In addition to survey information, PG&E will conduct a full-scale STB energy metering study in a nested sample of surveyed homes. This information should provide insight on duty cycles of STBs and the actual energy consumption of installed STBs (instead of relying on reported TEC values). The Statewide CASE Team welcomes engagement with STB stakeholders to help inform further analysis of the information collected in the survey and metering study.

5. Conclusions

As stated previously, the Statewide CASE Team agrees that the 15 questions outlined by the Energy Commission include the major issues slated for resolution in the future development of a technology roadmap. In light of the recently initiated VA renewal process, the Statewide CASE Team encourages the VA parties to include these questions in the scope of their discussions, and provide responses to the Energy Commission, and its stakeholders, at the conclusion of the negotiations. The Statewide CASE Team looks forward to working with the Energy Commission and all STB stakeholders throughout the development of the STB roadmap.

6. References

California Energy Commission. (2017, August 22). Docket Number 17-AAER-05. *Additional Guidance on Roadmap Proposals*.

Price, K., Rasmussen, T., & Anderson, M. (2016). To ZNE and Beyond! Building a Dynamic Energy Data Resource . *ACEEE Summer Study on Energy Efficiency in Buildings.* Washington, DC: American Council for an Energy Efficient Economy.