State of California

M e m o r a n d u m

Date: January 11, 2019

To: Henry Liu, PG&E

CC: Chan U Paek, SCG; Ed Reynoso, SDG&E; Cassie Cuaresma, SCE

From Peter Biermayer - Utilities Engineer, Industrial/ Agricultural Programs and Portfolio Forecasting Section, Energy Efficiency Branch, Energy Division, CPUC

Subject: Non-standard Disposition for the commercial rack oven workpaper SWFS014-01

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1. Summary

Provided here is notification to all Program Administrators (PAs) that a statewide workpaper SWFS014-01 for commercial food services rack ovens requires revisions with resubmission by September 1, 2019 to facilitate the disposition review and approval cycle for 2020 implementation.

2. Background

Commercial convection ovens are the most widely used appliances in the food service industry. A rack oven is a larger oven that holds one or two racks, where each rack holds multiple pans (18"X26") of product. The rack is wheeled into the oven, then is lifted and rotated during the baking process. These large-capacity ovens fill the requirements of high-volume retail and baking operations. Efficiency is improved through more insulation, improved combustion, and improved air circulation.

Rack oven performance is determined by applying the American Society for Testing and Materials (ASTM) Standard Test Method for the Performance of Rack Ovens (F2093).1 The ASTM Standard Test Method is the industry standard for quantifying the efficiency and performance of rack ovens. This measure is focused on single- and double-rack gas fired rack ovens.

3. Critical Review Issues

Additional information and analysis are required to support the ex ante savings values in the statewide workpaper. The critical issues are:

- Equipment performance baseline and eligibility requirements
- Calculations and Alignment with Energy Star

- Investigate and resolve measure tracking data

3.1. Equipment Performance Baselines and Eligibility Requirements

The gas rack oven measure is supported by laboratory testing data contributed by the Food Service and Technology Center (FSTC)[1] and the Food Service Equipment Center (FSEC)[2]. This data source consists largely of program qualified units with limited testing data for baseline units. The workpaper SWFS014-01 source for key baseline characteristics is a proprietary database and data drawn from a sample of economy-grade equipment tested by FSTC. These data appeared to be obtained from the *Commercial Cooking Appliance Technology Assessment* in 2002.

There is a need to evaluate the appropriateness of this legacy data source using a more recent set of data. The update process steps should include:

- **Assemble all available testing data from the FSTC and FSEC** for both 2002 (the source for this workpaper) and the most recently available data. Combined the data into a comprehensive database including useful parameters characterizing the ovens, including: single versus double ovens, pan capacity, cooking efficiency, idle energy rate, preheat energy, cooking time per batch, production capacity, date of testing, oven size, temperature setting during cooking. Compile the data in a spreadsheet to support analysis by fuel, capacity, and other functions.

  For each category summarize the sample size, min, max, median, average, and examine each sample for trends, and clusters or patterns.

  Summarize the findings addressing gas rack oven characteristics in a memo and submit with the revised workpaper including all the underlying data and analysis findings for inspection by reviewers.

- **Assemble and review secondary sources** that can contribute to knowledge surrounding the performance and the differential between program and base case equipment. The secondary resource shall include, but are not limited to:
  - California Energy Commission studies
  - Energy Star sources

  These resources and findings and conclusions should be summarized in a second memo that addresses any contradiction between testing-based findings/calculations noted above, and these other secondary sources.

- Reformulate baseline efficiencies and eligibility requirements. After gathering the primary and secondary data, the baseline efficiencies and eligibility requirements should be reformulated to:
  - Identify any substantive distinctions in rack ovens as a function of configuration.

[1] https://fishnick.com/about/overview/ The FSTC has developed over 40 Standard Test Methods for evaluating commercial kitchen appliance and system performance. It is operated by Frontier Energy and funded by PG&E.
[2] https://www.socalgas.com/for-your-business/education-and-training/food-service-equipment-center The FSEC is a test kitchen operated by SCG.

- Revise baseline and and/or equipment eligibility efficiency thresholds consistent with program objectives.
- Note any updates to savings calculations required to support the configurations
- Revise implementation application data collection process as necessary to support measure configuration

The findings and conclusions should be summarized in a third memo that addresses the final values and rational for the baseline and eligible measure requirements.

3.2. Alignment with Energy Star

For standard gas rack ovens Energy Star states that EE units are 10% more efficient. If this is from a gas usage perspective and an EE unit uses 907,333 Btus per day, then a baseline unit would be expected to use the following:

Baseline use per day = 907,333 / (1 - 10%) = 1,008,148 Btus

This is very different from workpapers based on a differential of energy use per day of 907,333 versus 1,486,333 Btu/day and amounts to a very large discrepancy, which the IOUs need to verify and reconcile.

3.3. Tracking Anomalies

The workpaper supports savings calculations for two rack oven configurations: a single oven (SCG only) and a double oven. The double oven savings are about twice the single oven savings, although the incentive is the same. However, a review of the 2017 savings claims shows that all claims were for double ovens and there were no single oven claims, even though the incentive for a single and double oven are the same. This raises a question of whether the oven size is being properly reported. Table 1 summaries the 2017 reporting.

Table 1. Summary of 2017 Rack Oven Configurations

	Quantity	WP Deemed Unit Savings (therms)	First year gross savings (therms)
Rack oven			
Single	0	1,034	0
Double	151	2,113	313,496
Total	151		313,496

4. Direction

Based on the critical review items, the IOUS are directed to conduct the indicated research, revise the workpaper, and resubmit for 2020 implementation.

4.1. Revise Baseline and Eligibility Requirements

The IOUs are directed to revise the baseline and eligibility requirements for rack ovens consistent with the findings and conclusions of the research outlined in Section 2.2. In order to ensure timely completion of the workpaper, the IOUs shall formulate and submit a workpaper workplan by January 31, 2019 with a schedule that results in a September 1, 2019 revised workpaper submission. The workplan

will identify mutually agreed upon interim delivery dates for each memo so that these can be reviewed as the work is completed.

The final workpaper submission should incorporate the data, findings, and conclusions from the memos and complete sets of source data as described in Section 2.0 of this disposition.

4.2. Consistency in Calculations

The PAs are directed to review and revise the parameters used in calculations for the baseline and eligible equipment and to realign qualification standards with EnergyStar efficiency and idle rate specifications.

The PAs are also directed to document all of the workpaper assumptions and inputs in the workpaper or support calculation spreadsheets.

4.3. Tracking Data Resolution

SCG is directed to acquire copies of invoices submitted with 2018 rack oven applications to verify the oven size (single or double oven). SCG is directed to summarize their findings in a memo and submit prior to filing final 2018 savings claims. Any errors in reporting should be corrected in claims. If rack ovens have been classified in error, SCG should identify a remediation plan in the memo.

addressed/incorporated as part of the workpaper stage 2 update process.

4.4 Stakeholder communication strategy

The PAs shall propose a communication strategy for their stakeholders. This strategy should be comprehensive to ensure all information is timely and easily accessible. Lack of communication or delayed communication can have unintended market impacts that should be avoided.