

# Memorandum



**Date:** January 11, 2019

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**Subject:** Non-standard Disposition for the commercial electric hot food holding cabinets workpaper  
SWFS007-01

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## 1. Summary

Provided here is notification to all Program Administrators (PAs) that a statewide workpaper SWFS007-01 for commercial food services electric hot food holding cabinets requires revisions with resubmission by September 1, 2019 to facilitate the disposition review and approval cycle for 2020 implementation.

## 2. Background

A commercial insulated hot food holding cabinet is a heated, fully enclosed compartment with one or more solid or transparent doors designed to maintain the temperature of hot food that has been cooked using a separate appliance. Efficient hot food holding cabinets often incorporate better insulation which reduces heat loss, offer better temperature uniformity within the cabinet from top to bottom, and keeps the external cabinet cooler. In addition, many certified holding cabinets may include energy saving devices such as magnetic door gaskets, auto-door closures, or Dutch doors.

Energy efficient (EE) models incorporate better insulation for reduced heat loss and provide better temperature uniformity, as well as additional energy saving features such as magnetic door gaskets, auto-door closers, or Dutch doors. EE hot food holding cabinets are more effective at maintaining food temperature while using less energy.

Holding cabinet performance is determined by applying the American Society for Testing and Materials (ASTM) Standard Test Method for the Performance of Hot Food Holding Cabinets (F2140). The ASTM standard test method is the industry standard for quantifying the efficiency and performance of hot food holding cabinets.

## 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:

- Update the equipment performance data
- Calculations and Alignment with Energy Star

### **3.1. Update Equipment Performance Data**

The electric hot food holding cabinets (HFCs) measures are supported by data determined as the average of values from models in each size category that were approved on the California Energy Commission (CEC) certified appliance database, as of June 19, 2014, that met the specified idle energy rate of  $\leq 20 \text{ W/ft}^3$ . The workpaper SWFS007-01 indicates that the source for base case specification for full ( $\geq 15 \text{ ft}^3$ ) and half-size ( $< 15 \text{ ft}^3$ ) insulated hot food holding cabinets is based upon the California Appliance Efficiency Regulations (Title 20), which requires all new commercial hot food holding cabinets to have a maximum normalized idle energy rate of  $40 \text{ W/ft}^3$  based on the American Society for Testing and Materials (ASTM) Standard Test Method for the Performance of Hot Food Holding Cabinets (F2140). These measures are also supported by laboratory testing data of HFCs tested at the Food Service and Technology Center (FSTC)<sup>1</sup>. There is a need to evaluate the appropriateness of this data source using a more recent set of data. The update process steps should include:

- Assemble all available testing data from the FSTC and the most recently available data. Combine the data into a comprehensive database including useful parameters characterizing the HFCs, including: cabinet volume, normalized idle energy rate ( $\text{W/ft}^3$ ), idle energy rate (kW), and so forth. Compile the data in a spreadsheet to support analysis.

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

Summarize the findings addressing electric HFC 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:
  - Energy Star sources
  - CEC certified appliance database (for information on idle energy rates) and/or other pertinent data sources

A few half-size cabinets show Idle Energy Rates of 19 to  $20 \text{ W/cu. ft}$  (maximum allowed value per program eligibility requirements). The IOUs should consider these units as possible candidates for baseline, rather than the  $40 \text{ W/cu.ft}$  maximum assumption across all sizes based on CEC's regulations (CEC-400-2014-009-CMF).

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<sup>1</sup> <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.

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 HFCs as a function of configuration.
- 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. Workpaper Calculations and Alignment with EnergyStar**

#### Workpaper Calculations

The full-size units range from 15.5 cu.ft to 80 cu.ft in volume and all appear to have the same Idle Energy Rate. The IOUs should consider setting up Idle Energy Rates based on volume thresholds for different ranges, such as <20 cu.ft, 21-40 cu.ft, 41-60 cu.ft and >61 cu.ft, as feasible, so the lower volume full-size units do not have the same Idle Energy Rate values as the higher volume units (which tend to have lower Idle Energy Rates).

#### Alignment with Energy Star

Energy Star (ES) stipulates a maximum idle rate based on the volume ranges (in cu.ft) of the cabinet while the FSTC data in the specifications workbook provided in support of the workpaper (tab: Steam Cookers 2017) is based on half-size vs. full size. These size thresholds appear to be inconsistent within the workpaper and ES requirements<sup>2</sup>. However, there were no red flags surrounding workpaper and Energy Star alignment.

### **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 HFCs consistent with the findings and conclusions of the research outlined in Section 3. In order to ensure timely completion of the workpaper, the IOUs shall formulate and submit a workpaper workplan by January 31, 2019 with a

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<sup>2</sup>[https://www.energystar.gov/products/commercial\\_food\\_service\\_equipment/commercial\\_hot\\_food\\_holding\\_cabinets/key\\_product\\_criteria](https://www.energystar.gov/products/commercial_food_service_equipment/commercial_hot_food_holding_cabinets/key_product_criteria)

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 3 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 workpaper assumptions and inputs in the workpaper or support calculation spreadsheets.

#### **4.3 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.