

## Memorandum #2

Date: October 1, 2019

To: Energy Efficiency Branch, Energy Division, California Public Utilities Commission

From: Jay Madden, P.E., Senior Engineer, Southern California Edison

Subject: Statewide Workpaper SWFS007-01, Insulated Hot Food Holding Cabinet, Summary of Available Data Review – Holding Cabinet

On January 11, 2019, the CPUC issued “Non-standard Disposition for the Insulated Hot Food Holding Cabinet statewide workpaper SWFS007-01.” This memo addresses Energy Division’s direction in the disposition, paragraph 3.1, to review secondary sources that can contribute to knowledge surrounding the performance and the differential between program and base case equipment.

Secondary sources were collected from California Energy Commission (CEC) certified appliance database and ENERGY STAR. Per the disposition memo, some half-size cabinets were found to have Idle Energy Rates of 19 to 20 W/cu. ft. in the baseline appliances, as compared to the 40 W/cu. ft. assumed across all sizes, based on CEC regulations (CEC-400-2014-009-CMF).

Per the analysis of the baseline data from CEC and Food Service Technology Center (FSTC) sources, normalized energy rate differences among half-size holding cabinets were within 3%, on average. Differences were more pronounced among the full-size holding cabinets, which demonstrated an average energy rate difference of 12%, with the FSTC data sources yielding a higher average energy rate than the CEC data. It was noted, however, that the CEC data sources stem from a significantly higher sample size of 80 for half-size cabinets and 160 for full-size cabinets, compared to FSTC’s data sample size of 8 for both half and full-size cabinets.

| Normalized Energy Rate (W/ft <sup>3</sup> ) | Base FSTC v. CEC% Diff |      |
|---|------------------------|------|
|   | Half                   | Full |
| Average                                     | 3%                     | 12%  |
| Median                                      | 2%                     | 1%   |
| Min   | 7%                     | 51%  |
| Max   | 11%                    | 69%  |

*Figure 1 - Normalized Energy Rate Comparison between FSTC and CEC data sources for baseline HFCs*

Energy efficient HFC data yielded a similar difference in half-size cabinets. FSTC sources showed a 1% difference, with the FSTC data having a higher normalized energy rate than CEC data sources. Differences were more pronounced in the full-size HFCs. FSTC sources showed a 25% higher normalized energy rate as compared to CEC data sources.

| Normalized Energy Rate (W/ft <sup>3</sup> ) | EE FSTC v. CEC % Diff |      |
|---|-----------------------|------|
|   | Half                  | Full |
| Average                                     | 1%                    | 25%  |
| Median                                      | 7%                    | 21%  |
| Min   | 13%                   | 55%  |
| Max   | 2%                    | 27%  |

*Figure 2 - Normalized Energy Rate Comparison between FSTC and CEC data sources for energy efficient HFCs*

In comparing energy efficient HFC data between CEC and ENERGY STAR sources, ENERGY STAR sources were found to have a higher normalized energy rate than CEC data sources, with an 8% difference. Conversely, for full-size HFCs, ENERGY STAR sources were found to have a lower normalized energy rate than CEC data sources, with a 38% difference.

| Normalized Energy Rate (W/ft <sup>3</sup> ) | EE CEC v. Estar% Diff |      |
|---|-----------------------|------|
|   | Half                  | Full |
| Average                                     | 8%                    | 38%  |
| Median                                      | 10%                   | 35%  |
| Min   | 45%                   | 36%  |
| Max   | 1%                    | 30%  |

*Figure 3 - Normalized Energy Rate Comparison between CEC and ENERGY STAR data sources for Energy Efficient HFCs*

A final comparison between FSTC and ENERGY STAR energy efficiency HFC data demonstrated a 7% difference, with FSTC data being lower than ENERGY STAR sources for half-size cabinets. For full-size cabinets, FSTC data sources demonstrated a 61% difference, with FSTC data sources being higher than ENERGY STAR sources.

| Normalized Energy Rate (W/ft <sup>3</sup> ) | EE FSTC v. Estar% Diff |      |
|---|------------------------|------|
|   | Half                   | Full |
| Average                                     | 7%                     | 61%  |
| Median                                      | 3%                     | 55%  |
| Min   | 32%                    | 86%  |
| Max   | 1%                     | 55%  |

*Figure 4 - Normalized Energy Rate Comparison between FSTC and ENERGY STAR data sources for Energy Efficient HFCs*

Updates the original workpaper SWFS007-01 based upon the findings presented herein are detailed in a separate Memorandum #3, dated October 1, 2019.