Work Paper SCE17CC003

**Revision 0**

**Short Form**

**Southern California Edison**

**Insulated Hot Food Holding Cabinets**

**Introduction**

This short form workpaper documents (WP) the values adopted from PGE’s WP entitled “Insulated Holding Cabinet-Electric” (PGECOFST105 R5). SCE adopts all the values in PGECOFST105 R5 – “Insulated Holding Cabinet MD” with no changes.

# Document Revision History

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| --- | --- | --- | --- |
| **Rev** | **Date** | **Author** | **Summary of Changes** |
| 0 | 11/29/2017 | Arvind Subramanya (TRC) | * Transferred savings values to SCE Calculation template for the 2017 program year. * Mid-stream program was added in this revision of the workpaper. * All 16 climate zones were used in this version. |

**Measure Summary**

Table : Measure Summary Table

| **Section** | **Value** |
| --- | --- |
| **Summary & Purpose** | This short form workpaper documents ex-ante load impacts and cost-effectiveness values for Insulated Holding Cabinets. The scope includes two measure categories:  **FS-20224:** Full-size holding cabinets are defined as any holding cabinet with an internal measured volume of greater than or equal to 15 cubic feet (≥15 ft.3).  **FS-31559:** Half-size holding cabinets are defined as any holding cabinet with an internal measured volume of less than 15 cubic feet (<15 ft.3).  The DEER database for the program years does not contain information on energy use, savings, or equipment costs for an energy-efficient electric hot food holding cabinet measure. The only reference in DEER for Commercial cooking equipment is for Estimated Useful Life (EUL). This Work Paper is based on the measured energy consumption rate as determined using the ASTM Standard Test Method for the Performance of Hot Food Holding Cabinets (F2140). |
| **1.1 Measure & Baseline** | Please refer to Attachment #1 Calculation Templates for the list of measure solution codes and baseline condition. |
| **1.2 Technical Description** |  |
| **Measures** | **FS-20224:** **Full Size (≥ 15 cu. ft), ≤ 20 W/cu. ft Insulated Holding Cabinet** (PGE ID: F110)  Full-size holding cabinets are defined as any holding cabinet with an internal measured volume of greater than or equal to 15 cubic feet (≥15 ft.3).  **FS-31559:** **Half Size (< 15 cu. ft), ≤ 20 W/cu. ft Insulated Holding Cabinet** (PGE ID: F111)  Half-size holding cabinets are defined as any holding cabinet with an internal measured volume of less than 15 cubic feet (<15 ft.3). |
| **Code for All Measures** | **California Title 20:** California Title 20 Appliance Efficiency Standards does require reporting the insulated holding cabinet idle energy rate per ASTM F2140 for the CEC Appliance Database, but the standard contains no minimum performance requirement.  **California Title 24:** There are no State of California Title 24 Efficiency Regulation requirements for commercial holding cabinets.  **Federal:** There are no Federal energy efficiency requirements for commercial holding cabinets. |
| **Requirements** | * All measures must be electric hot food holding cabinets that are fully insulated and have doors. * This measure must include new insulated holding cabinets that have a demonstrated idle energy rate of less than or equal to 20 Watts per cubic foot of internal volume, as determined by applying The ASTM Standard Test Method for the Performance of Hot Food Holding Cabinets (F2140). * Cook-and-hold or retherm equipment is not eligible. |
| **1.3 Installation Type and Delivery Mechanisms** |  |
| **Installation Type** | Replace on Burnout (ROB)  New Construction (NEW/NC) |
| **Delivery Mechanisms** | Financial Support: Down-Stream Incentive – Deemed  Mid-Stream Programs: Mid-Stream Incentive |
| **1.4.1 DEER Data** |  |
| **Net-Gross-Ratio** | NTD ID: Com-Default>2yrs  NTG Value: 0.6 |
| **Effective and Remaining Useful Life** | EUL ID: Cook- HoldCab  Source: DEER 2016  EUL: 12 Years, RUL: 4 Years |
| **Section 2. Calculation Methodology** |  |
| **Energy savings/Peak Demand Reduction – All Measures** | The DEER database for the program years does not contain information on energy use, savings, or equipment costs for an energy-efficient electric hot food holding cabinet measure. The only reference in DEER for Commercial cooking equipment is for Estimated Useful Life (EUL).  The base case for both half and full size hot food holding cabinets in this work paper was the California Energy Commission (CEC) Title 20 regulations , requiring all new commercial hot food holding cabinets to have a maximum normalized idle energy rate of 40 W/ft³ based on ASTM F2140. Refer to Table 6 of PGECOFST105 R5 for base ASTM test results. The measure case data was drawn from the CEC Appliance database that met the specified idle energy rate of 20W/ft³ or less. The complete list of qualifying holding cabinets is summarized in Appendix A of PGECOFST105 R5. Table 7 of PGECOFST105 R5 summarizes the average measure holding cabinet specifications.  The demand reduction estimation is based on measured data for standard efficiency insulated holding cabinets and for high-efficiency insulated holding cabinets. The measured data are derived from tests conducted under ASTM Standard Test Method for thePerformance of Hot Food Holding Cabinets (F2140).  Please refer to Section 2 of PGECOFST105 R5 for additional details and examples. |
| **Section 3. Load Shapes** | DEER:Indoor\_Non-CFL\_Ltg  The load shape for Commercial holding cabinets differ among food service facilities depending on daily menu variations, hours of operation, serving periods, day-of-week, and facility location. The measure load shape for this measure is determined by the E3 calculator based on the applicable non-residential market sector and the foodservice end-use. |
| **Section 4. Costs** | Please refer to Attachment #1 Calculation Templates for detailed baseline and measure costs. |
| **Section 4.1 Base and Measure Costs** |  |

*No Changes were required for this short form. The savings were simply transferred to SCE’s 2017 Calculation Template.*

**Attachments:**

1. A1 SCE17CC003.0 - Calculation Template