### ENERGY STAR Hot Food Holding Cabinets

###### Description

This measure applies to electric ENERGY STAR hot food holding cabinets (HFHC) installed in a commercial kitchen.

This measure was developed to be applicable to the following program types: TOS. If applied to other program types, the measure savings should be verified.

###### Definition of Efficient Equipment

To qualify for this measure the installed equipment must be an ENERGY STAR certified HFHC.

###### Definition of Baseline Equipment

The baseline equipment is an electric HFHC that’s not ENERGY STAR certified and at end of life.

###### Deemed Lifetime of Efficient Equipment

The expected measure life is assumed to be 12 years[[1]](#footnote-1)

###### Deemed Measure Cost

The incremental capital cost for this measure is[[2]](#footnote-2)

|  |  |
| --- | --- |
| HFHC Size | Incremental Cost |
| Full Size (20 cubic feet) | $1200 |
| ¾ Size (12 cubic feet) | $1800 |
| ½ Size (8 cubic feet) | $1500 |

###### Loadshape

Loadshape C01 - Commercial Electric Cooking

###### Coincidence Factor

Summer Peak Coincidence Factor for measure is provided below for different building type[[3]](#footnote-3):

|  |  |
| --- | --- |
| Location | CF  CF |
| Fast Food Limited Menu | 0.32 |
| Fast Food Expanded Menu | 0.41 |
| Pizza | 0.46 |
| Full Service Limited Menu | 0.51 |
| Full Service Expanded Menu | 0.36 |
| Cafeteria | 0.36 |

**Algorithm**

###### Calculation of Savings

###### Electric Energy Savings

Custom calculation below, otherwise use deemed values depending on HFHC size[[4]](#footnote-4)

|  |  |
| --- | --- |
| Cabinet Size | Savings (kWh) |
| Full Size HFHC | 9308 |
| ¾ Size HFHC | 3942 |
| ½ Size HFHC | 2628 |

ΔkWh = HFHCBaselinekWh – HFHCENERGYSTARkWh

Where:

HFHCBaselinekWh = PowerBaseline\* HOURSday \* Days/1000

PowerBaseline = Custom, otherwise

|  |  |
| --- | --- |
| Cabinet Size | Power (W) |
| Full Size HFHC | 2500 |
| ¾ Size HFHC | 1200 |
| ½ Size HFHC | 800 |

HOURSday = Average Daily Operation

= custom or if unknown, use 15 hours

Days = Annual days of operation

= custom or if unknown, use 365.25 days a year

HFHCENERGYSTARkWh = PowerENERGYSTAR\* HOURSday \* Days/1000

PowerENERGYSTAR = Custom, otherwise

|  |  |
| --- | --- |
| Cabinet Size | Power (W) |
| Full Size HFHC | 800 |
| ¾ Size HFHC | 480 |
| ½ Size HFHC | 320 |

HOURSday = Average Daily Operation

= custom or if unknown, use 15 hours

Days = Annual days of operation

= custom or if unknown, use 365.25 days a year

For example, if a full size HFHC is installed the measure would save:

ΔkWh = (PowerBaseline\* HOURSday \* Days)/1000– (PowerENERGYSTAR\* HOURSday \* Days)/1000

= (2500\*15\*365.25)/1000 – (800\*15\*365.25)/1000

= 9,314 kWh

###### Summer Coincident Peak Demand Savings

ΔkW = ΔkWh/Hours \* CF

Where: Hours = Hoursday \*Days

For example, if a full size HFHC is installed in a cafeteria the measure would save:

= 9,314 kWh / (15\*365.25)\* .36

=0 .61 kW

###### Natural Gas Energy Savings

N/A

###### Water Impact Descriptions and Calculation

N/A

###### Deemed O&M Cost Adjustment Calculation

N/A

###### Measure Code: CI-FSE-ESHH-V02-160601

1. Lifetime from ENERGY STAR HFHC which cites reference as “FSTC research on available models, 2009” http://www.energystar.gov/index.cfm?fuseaction=find\_a\_product.showProductGroup&pgw\_code=COG [↑](#footnote-ref-1)
2. Measure cost from ENERGY STAR which cites reference as “EPA research on available models using AutoQuotes, 2010” http://www.energystar.gov/index.cfm?fuseaction=find\_a\_product.showProductGroup&pgw\_code=COG [↑](#footnote-ref-2)
3. Values taken from Minnesota Technical Reference Manual, ‘Electric Oven and Range’ measure and is based upon “Project on Restaurant Energy Performance-End-Use Monitoring and Analysis”, Appendixes I and II, Claar, et. al., May 1985 [↑](#footnote-ref-3)
4. Algorithms and assumptions derived from ENERGY STAR Commercial Kitchen Equipment Savings Calculator.http://www.energystar.gov/index.cfm?fuseaction=find\_a\_product.showProductGroup&pgw\_code=COG [↑](#footnote-ref-4)