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**LEED BD+C: Core and Shell | v4 - LEED v4**

# Appendix 3. Retail process load baselines

## Required

**1** result in**All** .

- Glossary

### Requirements

**Table 1a. Commercial kitchen appliance prescriptive measures and baseline for energy cost budget (IP units)**

| | | Baseline energy usage for energy modeling path | | Levels for prescriptive path | |
|---|---|---|---|---|---|
| **Appliance type** | Fuel Function | Baseline efficiency | Baseline idle rate | Prescriptive efficiency | Prescriptive idle rate |
| **Broiler, underfired** | Gas Cooking | 30% | 16,000 Btu/h/ft2 peak input | 35% | 12,000 Btu/h/ft2 peak input |
| **Combination ovens, steam mode (P = pan capacity)** | Elec Cooking | 40% steam mode | 0.37P+4.5 kW | 50% steam mode | 0.133P+0.6400 kW |
| **Combination ovens, steam mode** | Gas Cooking | 20% steam mode | 1,210P+35,810 Btu/h | 38% steam mode | 200P+6,511 Btu/h |
| **Combination ovens, convection mode** | Elec Cooking | 65% convection mode | 0.1P+1.5 kW | 70% convection mode | 0.080P+0.4989 kW |
| **Combination ovens, convection mode** | Gas Cooking | 35% convection mode | 322P+13,563 Btu/h | 44% convection mode | 150P+5,425 Btu/h |
| **Convection oven, full-size** | Elec Cooking | 65% | 2.0 kW | 71% | 1.6 kW |
| **Convection oven, full-size** | Gas Cooking | 30% | 18,000 Btu/h | 46% | 12,000 Btu/h |
| **Convection oven, half-size** | Elec Cooking | 65% | 1.5 kW | 71% | 1.0 kW |
| **Conveyor oven, > 25-inch belt** | Gas Cooking | 20% | 70,000 Btu/h | 42% | 57,000 Btu/h |
| **Conveyor oven, ≤ 25-inch belt** | Gas Cooking | 20% | 45,000 Btu/h | 42% | 29,000 Btu/h |
| **Fryer** | Elec Cooking | 75% | 1.05 kW | 80% | 1.0 kW |
| **Fryer** | Gas Cooking | 35% | 14,000 Btu/h | 50% | 9,000 Btu/h |
| **Griddle (based on 3 ft model)** | Elec Cooking | 60% | 400 W/ft2 | 70% | 320 W/ft2 |
| **Griddle (based on 3 ft model)** | Gas Cooking | 30% | 3,500 Btu/h/ft2 | 38% | 2,650 Btu/h/ft2 |
| **Hot food holding cabinets (excluding drawer warmers and heated display), 0 < V < 13 ft³ (V = volume)** | Elec Cooking | na | 40 W/ft3 | na | 21.5V Watts |
| **Hot food holding cabinets (excluding drawer warmers and heated display), 13 ≤ V < 28 ft³** | Elec Cooking | na | 40 W/ft3 | na | 2.0V + 254 Watts |
| **Hot food holding cabinets (excluding drawer warmers and heated display), 28 ft³ ≤ V** | Elec Cooking | na | 40 W/ft3 | na | 3.8V + 203.5 Watts |
| **Large vat fryer** | Elec Cooking | 75% | 1.35 kW | 80% | 1.1 kW |
| **Large vat fryer** | Gas Cooking | 35% | 20,000 Btu/h | 50% | 12,000 Btu/h |
| **Rack oven, double** | Gas Cooking | 30% | 65,000 Btu/h | 50% | 35,000 Btu/h |
| **Rack oven, single** | Gas Cooking | 30% | 43,000 Btu/h | 50% | 29,000 Btu/h |
| **Range** | Elec Cooking | 70% | | 80% | |
| **Range** | Gas Cooking | 35% | na | 40% and no standing pilots | na |
| **Steam cooker, batch cooking** | Elec Cooking | 26% | 200 W/pan | 50% | 135 W/pan |
| **Steam cooker, batch cooking** | Gas Cooking | 15% | 2,500 Btu/h/pan | 38% | 2,100 Btu/h/pan |
| **Steam cooker, high production or cook to order** | Elec Cooking | 26% | 330 W/pan | 50% | 275 W/pan |
| **Steam cooker, high production or cook to order** | Gas Cooking | 15% | 5,000 Btu/h/pan | 38% | 4,300 Btu/h/pan |
| **Toaster** | Elec Cooking | — | 1.8 kW average operating energy rate | na | 1.2 kW average operating energy rate |
| **Ice machine, IMH (ice-making head, H = ice harvest), H ≥ 450 lb/day** | Elec Ice | 6.89 - 0.0011H kWh/100 lb ice | na | 37.72*H-0.298 kWh/100 lb ice | na |
| **Ice machine, IMH (ice-making head), H ≤ 450 lb/day** | Elec Ice | 10.26 – 0.0086H kWh/100 lb ice | na | 37.72*H-0.298 kWh/100 lb ice | na |
| **Ice machine, RCU (remote condensing unit, w/o remote compressor, H < 1,000 lb/day** | Elec Ice | 8.85 - 0.0038H kWh/100lb ice | na | 22.95*H-0.258 + 1.00 kWh/100 lb ice | na |
| **Ice machine, RCU (remote condensing unit), 1600 > H ≥ 1000 lb/day** | Elec ice | 5.10 kWh/100 lb ice | na | 22.95*H-0.258 + 1.00 kWh/100 lb ice | na |
| **Ice machine, RCU (remote condensing unit), H ≥ 1600 lb/day** | Elec Ice | 5.10 kWh/100lb ice | na | -0.00011*H + 4.60 kWh/100 lb ice | na |
| | | 18.0 - 0.0469H | | 48.66*H-0.326 + 0.08 | |

| | | | | | |
|---|---|---|---|---|---|
| **Ice machine, SCU (self-contained unit), H < 175 lb/day** | Elec Ice | kWh/100lb ice | na | kWh/100 lb ice | na |
| **Ice machine self-contained unit, H ≥ 175 lb/day** | Elec Ice | 9.80 kWh/100 lb ice | na | 48.66*H-0.326 + 0.08 kWh/100 lb ice | na |
| **Ice machine, water-cooled ice-making head, H ≥ 1436 lb/day (must be on chilled loop)** | Elec Ice | 4.0 kWh/100 lb ice | na | 3.68 kWh/100 lb ice | na |
| **Ice machine, water-cooled ice-making head, 500 lb/day < H < 1436 (must be on chilled loop)** | Elec Ice | 5.58 – 0.0011H kWh/100 lb ice | na | 5.13 - 0.001H kWh/100 lb ice | na |
| **Ice machine, water-cooled ice-making head, H < 500 lb/day (must be on chilled loop)** | Elec Ice | 7.80 – 0.0055H kWh/100 lb ice | na | 7.02 - 0.0049H kWh/100 lb ice | na |
| **Ice machine, water-cooled once-through (open loop)** | Elec Ice | Banned | Banned | Banned | Banned |
| **Ice machine, water-cooled SCU (self-contained unit), H < 200 lb/day (must be on chilled loop)** | Elec Ice | 11.4 – 0.0190H kWh/100 lb ice | na | 10.6 - 0.177H kWh/100 lb ice | na |
| **Ice machine, water-cooled self-contained unit, H ≥ 200 lb/day (must be on chilled loop)** | Elec Ice | 7.6 kWh/100 lb ice | na | 7.07 kWh/100 lb ice | na |
| **Chest freezer, solid or glass door** | Elec Refrig | 0.45V + 0.943 kWh/day | na | ≤ 0.270V + 0.130 kWh/day | na |
| **Chest refrigerator, solid or glass door** | Elec Refrig | 0.1V + 2.04 kWh/day | na | ≤ 0.125V + 0.475 kWh/day | na |
| **Glass-door reach-in freezer, 0 < V < 15 ft³** | Elec Refrig | 0.75V + 4.10 kWh/day | na | ≤ 0.607V + 0.893 kWh/day | na |
| **Glass-door reach-in freezer, 15 ≤ V < 30 ft³** | Elec Refrig | .75V + 4.10 kWh/day | na | ≤ 0.733V – 1.00 kWh/day | na |
| **Glass-door reach-in freezer, 30 ≤ V < 50 ft³** | Elec Refrig | .75V + 4.10 kWh/day | na | ≤ 0.250V + 13.50 kWh/day | na |
| **Glass-door reach-in freezer, 50 ≤ V ft³** | Elec Refrig | 0.75V + 4.10 kWh/day | na | ≤ 0.450V + 3.50 kWh/day | na |
| **Glass-door reach-in refrigerator, 0 < V < 15 ft³** | Elec Refrig | 0.12V + 3.34 kWh/day | na | ≤ 0.118V + 1.382 kWh/day | na |
| **Glass-door reach-in refrigerator, 15 ≤ V < 30 ft³** | Elec Refrig | 0.12V + 3.34 kWh/day | na | ≤ 0.140V + 1.050 kWh/day | na |
| **Glass-door reach-in refrigerator, 30 ≤ V < 50 ft³** | Elec Refrig | 0.12V + 3.34 kWh/day | na | ≤ 0.088V + 2.625 kWh/day | na |
| **Glass-door reach-in refrigerator, 50 ≤ V ft³** | Elec Refrig | 0.12V + 3.34 kWh/day | na | ≤ 0.110V + 1.500 kWh/day | na |
| **Solid-door reach-in freezer, 0 < V < 15 ft³** | Elec Refrig | 0.4V + 1.38 kWh/day | na | ≤ 0.250V + 1.25 kWh/day | na |
| **Solid-door reach-in freezer, 15 ≤ V < 30 ft³** | Elec Refrig | 0.4V + 1.38 kWh/day | na | ≤ 0.400V – 1.000 kWh/day | na |
| **Solid-door reach-in freezer, 30 ≤ V < 50 ft³** | Elec Refrig | 0.4V + 1.38 kWh/day | na | ≤ 0.163V + 6.125 kWh/day | na |
| **Solid-door reach-in freezer, 50 ≤ V ft³** | Elec Refrig | 0.4V + 1.38 kWh/day | na | ≤ 0.158V + 6.333 kWh/day | na |
| **Solid-door reach-in refrigerator, 0 < V < 15 ft³** | Elec Refrig | 0.1V + 2.04 kWh/day | na | ≤ 0.089V + 1.411 kWh/day | na |
| **Solid-door reach-in refrigerator, 15 ≤ V < 30 ft³** | Elec Refrig | 0.1V + 2.04 kWh/day | na | ≤ 0.037V + 2.200 kWh/day | na |
| **Solid-door reach-in refrigerator, 30 ≤ V < 50 ft³** | Elec Refrig | 0.1V + 2.04 kWh/day | na | ≤ 0.056V + 1.635 kWh/day | na |
| **Solid-door reach-in refrigerator, 50 ≤ V ft³** | Elec Refrig | 0.1V + 2.04 kWh/day | na | ≤ 0.060V + 1.416 kWh/day | na |
| **Clothes washer** | Gas Sanitation | 1.72 MEF | na | 2.00 MEF | na |
| **Door-type dish machine, high temp** | Elec Sanitation | na | 1.0 kW | na | 0.70 kW |
| **Door-type dish machine, low temp** | Elec Sanitation | na | 0.6 kW | na | 0.6 kW |
| **Multitank rack conveyor dish machine, high temp** | Elec Sanitation | na | 2.6 kW | na | 2.25 kW |
| **Multitank rack conveyor dish machine, low temp** | Elec Sanitation | na | 2.0 kW | na | 2.0 kW |
| **Single-tank rack conveyor dish machine, high temp** | Elec Sanitation | na | 2.0 kW | na | 1.5 kW |
| **Single-tank rack conveyor dish machine, low temp** | Elec Sanitation | na | 1.6 kW | na | 1.5 kW |
| **Undercounter dish machine, high temp** | Elec Sanitation | na | 0.9 kW | na | 0.5 kW |
| **Undercounter dish machine, low temp** | Elec Sanitation | na | 0.5 kW | na | 0.5 kW |

The energy efficiency, idle energy rates, and water use requirements, where applicable, are based on the following test methods:
ASTM F1275 Standard Test Method for Performance of Griddles
ASTM F1361 Standard Test Method for Performance of Open Deep Fat Fryers
ASTM F1484 Standard Test Methods for Performance of Steam Cookers
ASTM F1496 Standard Test Method for Performance of Convection Ovens
ASTM F1521 Standard Test Methods for Performance of Range Tops
ASTM F1605 Standard Test Method for Performance of Double-Sided Griddles
ASTM F1639 Standard Test Method for Performance of Combination Ovens
ASTM F1695 Standard Test Method for Performance of Underfired Broilers
ASTM F1696 Standard Test Method for Energy Performance of Single-Rack Hot Water Sanitizing, ASTM Door-Type Commercial Dishwashing Machines
ASTM F1704 Standard Test Method for Capture and Containment Performance of Commercial Kitchen Exhaust Ventilation Systems
ASTM F1817 Standard Test Method for Performance of Conveyor Ovens
ASTM F1920 Standard Test Method for Energy Performance of Rack Conveyor, Hot Water Sanitizing, Commercial Dishwashing Machines
ASTM F2093 Standard Test Method for Performance of Rack Ovens
ASTM F2140 Standard Test Method for Performance of Hot Food Holding Cabinets
ASTM F2144 Standard Test Method for Performance of Large Open Vat Fryers
ASTM F2324 Standard Test Method for Prerinse Spray Valves
ASTM F2380 Standard Test Method for Performance of Conveyor Toasters
ARI 810-2007: Performance Rating of Automatic Commercial Ice Makers
ANSI/ASHRAE Standard 72–2005: Method of Testing Commercial Refrigerators and Freezers with temperature setpoints at 38°F for medium-temp refrigerators, 0°F for low-temp freezers, and -15°F for ice cream freezers

Table 1b. Commercial Kitchen Appliance Prescriptive Measures and Baseline for Energy Cost Budget (SI units)

| | **Baseline energy usage for energy modeling path** | | | **Levels for prescriptive path** | |
|---|---|---|---|---|---|
| **Appliance type** | FuelFunction | Baseline efficiency | Baseline idle rate | Prescriptive efficiency | Prescriptive idle rate |
| **Broiler, underfired** | GasCooking | 30% | 50.5 kW/m2 | 35% | 37.9 kW/m2 |
| **Combination oven, steam mode (P = pan capacity)** | ElecCooking | 40% steam mode | 0.37P+4.5 kW | 50% steam mode | 0.133P+0.6400 kW |
| **Combination oven, steam mode** | GasCooking | 20% steam mode | (1 210P+ 35 810)/3 412 kW | 38% steam mode | (200P+6 511)/ 3 412 kW |
| **Combination oven, convection mode** | ElecCooking | 65% convection mode | 0.1P+1.5 kW | 70% convection mode | 0.080P+0.4989 kW |
| **Combination oven, convection mode** | GasCooking | 35% convection mode | (322P+ 13 563)/ 3412 kW | 44% convection mode | (150P+5 425)/ 3412 kW |
| **Convection oven, full-size** | ElecCooking | 65% | 2.0 kW | 71% | 1.6 kW |
| **Convection oven, full-size** | GasCooking | 30% | 5.3 kW | 46% | 3.5 kW |
| **Convection oven, half-size** | ElecCooking | 65% | 1.5 kW | 71% | 1.0 kW |
| **Conveyor oven, > 63.5 cm belt** | GasCooking | 20% | 20.5 kW | 42% | 16.7 kW |
| **Conveyor oven, < 63.5 cm belt** | GasCooking | 20% | 13.2 kW | 42% | 8.5 kW |
| **Fryer** | ElecCooking | 75% | 1,05 kW | 80% | 1.0 kW |
| **Fryer** | GasCooking | 35% | 4.1 kW | 50% | 2.64 kW |
| **Griddle (based on 90-cm model)** | ElecCooking | 60% | 4.3 kW/m2 | 70% | 3 .45 kW/m2 |

| | | | | | |
|---|---|---|---|---|---|
| **Griddle (based on 90-cm model)** | GasCooking | 30% | 11 kW/m2 | 33% | 8.35 kW/m2 |
| **Hot food holding cabinets (excluding drawer warmers and heated display) 0 < V < 0.368 m3 (V = volume)** | ElecCooking | na | 1.4 kW/m3 | na | (21.5*V)/0.0283 kW/m3 |
| **Hot food holding cabinets (excluding drawer warmers and heated display), 0.368 ≤ V < 0.793 m3** | ElecCooking | na | 1.4 kW/m3 | na | (2.0*V + 254)/0.0283 kW/m3 |
| **Hot food holding cabinets (excluding drawer warmers and heated display), 0.793 m3 ≤ V** | ElecCooking | na | 1.4 kW/m3 | na | (3.8*V + 203.5)/0.0283 kW/m3 |
| **Large vat fryer** | ElecCooking | 75% | 1.35 kW | 80% | 1.1 kW |
| **Large vat fryer** | GasCooking | 35% | 5.86 kW | 50% | 3.5 kW |
| **Rack oven, double** | GasCooking | 30% | 19 kW | 50% | 10.25 kW |
| **Rack oven, single** | GasCooking | 30% | 12.6 kW | 50% | 8.5 kW |
| **Range** | ElecCooking | 70% | na | 80% | na |
| **Range** | GasCooking | 35% | na | 40% and no standing pilots | **na** |
| **Steam cooker, batch cooking** | ElecCooking | 26% | 200 W/pan | 50% | 135 W/pan |
| **Steam cooker, batch cooking** | GasCooking | 15% | 733 W/pan | 38% | 615 W/pan |
| **Steam cooker, high production or cook to order** | ElecCooking | 26% | 330 W/pan | 50% | 275 W/pan |
| **Steam cooker, high production or cook to order** | GasCooking | 15% | 1.47 kW/pan | 38% | 1.26 kW/pan |
| **Toaster** | ElecCooking | **na** | 1.8 kW average operating energy rate | **na** | 1.2 kW average operating energy rate |
| **Ice machine, IMH (ice making head, H = ice harvest) H ≥ 204 kg/day** | ElecIce | 0.0015 - 5.3464E-07 kWh/kg ice | na | ≤ 13.52*H-0.298 kWh/100 kg ice | na |
| **Ice machine, IMH (ice making head), H < 204 kg/day** | ElecIce | 0.2262 - 4.18E-04 kWh/kg ice | na | ≤ 13.52*H-0.298 kWh/100 kg ice | na |
| **Ice machine, RCU (remote condensing unit, w/o remote compressor) H < 454 kg/day** | ElecIce | 0.1951 - 1.85E-04 kWh/kg ice | na | ≤ 111.5835H-0.258) + 2.205 kWh/100 kg ice | na |
| **Ice machine, RCU (remote condensing unit) 726 > H ≥ 454 kg/day** | ElecIce | 0.1124 kWh/kg ice | na | ≤ 111.5835H-0.258) + 2.205 kWh/100 kg ice | na |
| **Ice machine, RCU (remote condensing unit), H ≥ 726kg/day** | ElecIce | 0.1124 kWh/kg ice | na | ≤ -0.00024H + 4.60 kWh/100 kg ice | na |
| **Ice machine, SCU (self contained unit), H < 79 kg/day** | ElecIce | 0.3968 - 2.28E-03 kWh/kg ice | na | 236.59H-0.326 +0.176 kWh/100 kg ice | na |
| **Ice machine, SCU (self contained unit), H ≥ 79 kg/day** | ElecIce | 0.2161 kWh/kg ice | na | 236.59H-0.326 +0.176 kWh/100 kg ice | na |
| **Ice machine, water-cooled ice-making head, H ≥ 651 kg/day(must be on a chilled loop)** | ElecIce | 0.0882 kWh/kg ice | na | ≤ 8.11 kWh/100 kg ice | na |
| **Ice machine, water-cooled ice-making head, 227 ≤ H < 651 kg/day (must be on a chilled loop)** | ElecIce | 0.1230 - 5.35E-05 kWh/kg ice | na | ≤ 11.31 - 0.065H kWh/100 kg ice | na |
| **Ice machine, water-cooled ice-making head, H < 227 kg/day( must be on a chilled loop)** | ElecIce | 0.1720 - 2.67E-04 kWh/kg ice | na | ≤ 15.48 - 0.0238H kWh/100 kg ice | na |
| **Ice machine, water-cooled once-through (open loop)** | ElecIce | Banned | Banned | Banned | Banned |
| **Ice machine, water cooled SCU (self-contained unit) H < 91 kg/day (must be on a chilled loop)** | ElecIce | 0.2513 - 9.23E-04 kWh/kg ice | na | ≤ 23.37-0.086H kWh/100 kg ice | na |
| **Ice machine, water cooled SCU (self-contained unit) H ≥ 91 kg/day (must be on a chilled loop)** | ElecIce | 0.1676 kWh/kg ice | na | 15.57 kWh/100 kg ice | na |
| **Chest freezer, solid or glass door** | ElecRefrig | 15.90V + 0.943 kWh/day | na | 9.541V + 0.130 kWh/day | na |
| **Chest refrigerator, solid or glass door** | ElecRefrig | 3.53V + 2.04 kWh/day | na | ≤ 4.417 V + 0.475 kWh/day | na |
| **Glass-door reach-in freezer, 0 < V < 0.42 m3** | ElecRefrig | 26.50V + 4.1 kWh/day | na | ≤ 21.449V + 0.893 kWh/day | na |
| **Glass-door reach-in freezer, 0.42 ≤ V < 0.85 m3** | ElecRefrig | 26.50V + 4.1 kWh/day | na | ≤ 25.901V – 1.00 kWh/day | na |
| **Glass-door reach-in freezer, 0.85 ≤ V < 1.42 m3** | ElecRefrig | 26.50V + 4.1 kWh/day | na | ≤ 8.834V + 13.50 kWh/day | na |
| **Glass-door reach-in freezer, 1.42 ≤ V m3** | ElecRefrig | 26.50V + 4.1 kWh/day | na | ≤ 15.90V + 3.50 kWh/day | na |
| **Glass-door reach-in refrigerator, 0 < V < 0.42m3** | ElecRefrig | 4.24V + 3.34 kWh/day | na | ≤ 4.169V + 1.382 kWh/day | na |
| **Glass-door reach-in refrigerator, 0.42 ≤ V < 0.85 m3** | ElecRefrig | 4.24V + 3.34 kWh/day | na | ≤ 4.947V + 1.050 kWh/day | na |
| **Glass-door reach-in refrigerator, 0.85 ≤ V < 1.42 m3** | ElecRefrig | 4.24V + 3.34 kWh/day | na | ≤ 3.109V + 2.625 kWh/day | na |
| **Glass-door reach-in refrigerator, 1.42 ≤ V m3** | ElecRefrig | 4.24V + 3.34 kWh/day | na | ≤ 3.887V + 1.500 kWh/day | na |
| **Solid-door reach-in freezer, 0 < V < 0.42 m3** | ElecRefrig | 14.13V + 1.38 kWh/day | na | ≤ 8.834V + 1.25 kWh/day | na |
| **Solid-door reach-in freezer, 0.42 ≤ V < 0.85 m3** | ElecRefrig | 14.13V + 1.38 kWh/day | na | ≤ 4.819V – 1.000 kWh/day | na |
| **Solid-door reach-in freezer, 0.85 ≤ V < 1.42 m3** | ElecRefrig | 14.13V + 1.38 kWh/day | na | ≤ 5.760V + 6.125 kWh/day | na |
| **Solid-door reach-in freezer, 1.42 ≤ V m3** | ElecRefrig | 14.13V + 1.38 kWh/day | na | ≤ 5.583V + 6.333 kWh/day | na |
| **Solid-door reach-in refrigerator, 0 < V < 0.42m3** | ElecRefrig | 3.53V + 2.04 kWh/day | na | ≤ 3.145V + 1.411 kWh/day | na |
| **Solid-door reach-in refrigerator, 0.42 ≤ V < 0.85 m3** | ElecRefrig | 3.53V + 2.04 kWh/day | na | ≤ 1.307V + 2.200 kWh/day | na |
| **Solid-door reach-in refrigerator, 0.85 ≤ V < 1.42 m3** | ElecRefrig | 3.53V + 2.04 kWh/day | na | ≤ 1.979V + 1.635 kWh/day | na |
| **Solid-door reach-in refrigerator, 1.42 ≤ V m3** | ElecRefrig | 3.53V + 2.04 kWh/day | na | ≤ 2.120V + 1.416 kWh/day | na |
| **Clothes washer** | GasSanitation | 1.72 MEF | | 2.00 MEF | |
| **Door-type dish machine, high temp** | ElecSanitation | na | 1.0 kW | na | 0.70 kW |
| **Door-type dish machine, low temp** | ElecSanitation | na | 0.6 kW | na | 0.6 kW |
| **Multitank rack conveyor dish machine, high temp** | ElecSanitation | na | 2.6 kW | na | 2.25 kW |
| **Multitank rack conveyor dish machine, low temp** | ElecSanitation | na | 2.0 kW | na | 2.0 kW |
| **Single-tank rack conveyor dish machine, high temp** | ElecSanitation | **na** | 2.0 kW | na | 1.5 kW |
| **Single-tank rack conveyor dish machine, low temp** | ElecSanitation | na | 1.6 kW | na | 1.5 kW |
| **Undercounter dish machine, high temp** | ElecSanitation | na | 0.9 kW | na | 0.5 kW |
| **Undercounter dish machine, low temp** | ElecSanitation | na | 0.5 kW | na | 0.5 kW |

The energy efficiency, idle energy rates, and water use requirements, where applicable, are based on the following test methods:

ASTM F1275 Standard Test Method for Performance of Griddles
ASTM F1361 Standard Test Method for Performance of Open Deep Fat Fryers
ASTM F1484 Standard Test Methods for Performance of Steam Cookers
ASTM F1496 Standard Test Method for Performance of Convection Ovens
ASTM F1521 Standard Test Methods for Performance of Range Tops
ASTM F1605 Standard Test Method for Performance of Double-Sided Griddles
ASTM F1639 Standard Test Method for Performance of Combination Ovens
ASTM F1695 Standard Test Method for Performance of Underfired Broilers
ASTM F1696 Standard Test Method for Energy Performance of Single-Rack Hot Water Sanitizing, ASTM Door-Type Commercial Dishwashing Machines
ASTM F1704 Standard Test Method for Capture and Containment Performance of Commercial Kitchen Exhaust Ventilation Systems
ASTM F1817 Standard Test Method for Performance of Conveyor Ovens
ASTM F1920 Standard Test Method for Energy Performance of Rack Conveyor, Hot Water Sanitizing, Commercial Dishwashing Machines
ASTM F2093 Standard Test Method for Performance of Rack Ovens
ASTM F2140 Standard Test Method for Performance of Hot Food Holding Cabinets
ASTM F2144 Standard Test Method for Performance of Large Open Vat Fryers
ASTM F2324 Standard Test Method for Prerinse Spray Valves
ASTM F2380 Standard Test Method for Performance of Conveyor Toasters

ARI 810-2007: Performance Rating of Automatic Commercial Ice Makers
ANSI/ASHRAE Standard 72–2005: Method of Testing Commercial Refrigerators and Freezers with temperature setpoints at 38°F (3°C) for mediumtemp refrigerators, -18°C for low-temp freezers, and -26°C for ice cream freezers.

**Table 2. Supermarket refrigeration prescriptive measures and baseline for energy cost budget**

| Item | Attribute | Prescriptive measure | Baseline for energy modeling path |
|---|---|---|---|
| Commercial Refrigerator and Freezers | Energy Use Limits | ASHRAE 90.1-2010 Addendum g. Table 6.8.1L | ASHRAE 90.1-2010 Addendum g. Table 6.8.1L |
| Commercial Refrigeration Equipment | Energy Use Limits | ASHRAE 90.1-2010 Addendum g. Table 6.8.1M | ASHRAE 90.1-2010 Addendum g. Table 6.8.1M |

**Table 3. Walk-in coolers and freezers prescriptive measures and baseline for energy cost budget**

| Item | Attribute | Prescriptive measure | Baseline for energy modeling path |
|---|---|---|---|
| Envelope | Freezer insulation | R-46 | R-36 |
| | Cooler insulation | R-36 | R-20 |
| | Automatic closer doors | Yes | No |
| | High-efficiency low- or no-heat reach-in doors | 40W/ft (130W/m) of door frame (low temperature), 17W/ft (55W/m) of door frame (medium temperature) | 40W/ft (130W/m) of door frame (low temperature), 17W/ft (55W/m) of door frame (medium temperature) |
| Evaporator | Evaporator fan motor and control | Shaded pole and split phase motors prohibited; use PSC or EMC motors | Constant-speed fan |
| | Hot gas defrost | No electric defrosting. | Electric defrosting |
| Condenser | Air-cooled condenser fan motor and control | Shaded pole and split phase motors prohibited; use PSC or EMC motors; add condenser fan controllers | Cycling one-speed fan |
| | Air Cooled condenser design approach | Floating head pressure controls or ambient subcooling | 10°F (-12°C) to 15°F (-9°C) dependent on suction temperature |
| Lighting | Lighting power density (W/sq.ft.) | 0.6 W/sq.ft. (6.5 W/sq. meter) | 0.6 W/sq.ft. (6.5 W/sq. meter) |
| Commercial Refrigerator and Freezers | Energy Use Limits | N/A | Use an Exceptional Calculation Method if attempting to take savings |
| Commercial Refrigerator and Freezers | Energy Use Limits | N/A | Use an Exceptional Calculation Method if attempting to take savings |

**Table 4. Commercial kitchen ventilation prescriptive measures and baseline for energy cost budget**

| Strategies | Prescriptive measure | Baseline |
|---|---|---|
| Kitchen hood control | ASHRAE 90.1-2010 Section 6.5.7.1, except that Section 6.5.7.1.3 and Section 6.5.7.1.4 shall apply if the total kitchen exhaust airflow rate exceeds 2,000 cfm (960 L/s) (as opposed to 5,000 cfm (2,400 L/s) noted in the ASHRAE 90.1-2010 requirements) | ASHRAE 90.1-2010 Section 6.5.7.1 and Section G3.1.1 Exception (d) where applicable |


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