# Memo-Gas Fryers

# Gas Fryer Tier Analysis

## Executive Summary

This memo assesses the potential benefit of adding an advanced gas fryer tier to claim savings for equipment that exceeds ENERGY STAR® specifications. The analysis leverages the most recent appliance test data based on applicable ASTM standards and compares simple return on investment (ROI) based on published retailer equipment prices circa September 2020.

Based on the results of the analysis, it is recommended that a Super-Efficient tier be established for gas fryers with a heavy-load cooking energy efficiency ≥ 60% and an idle rate ≤ 6,100 Btu/h.

## Introduction

Frontier Energy analyzed the gas fryer qualifying products list (QPL) and compared the range of efficiencies and idle rates between qualifying standard and large vat gas fryer models. In both cases, there is a clear grouping of units with higher efficiencies and lower idle rates, indicating that there is room for an advanced gas fryer tier starting at 60%. Both standard and large vat categories also exhibit significantly lower idle energy rates among the more efficient models. Figures 1 and 2 compare the cooking-energy efficiency versus idle rate for standard and large vat gas fryers based on the QPL:

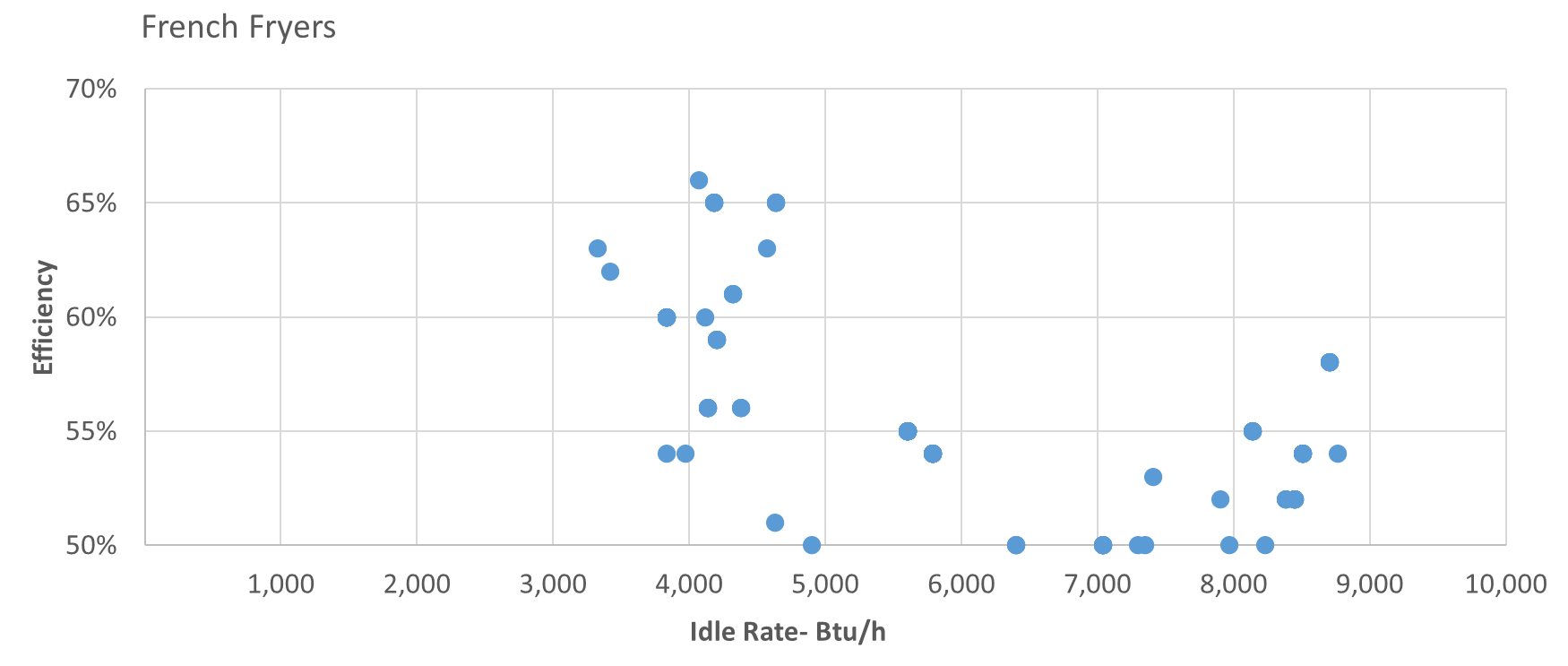


Figure 1. Standard Gas Fryers

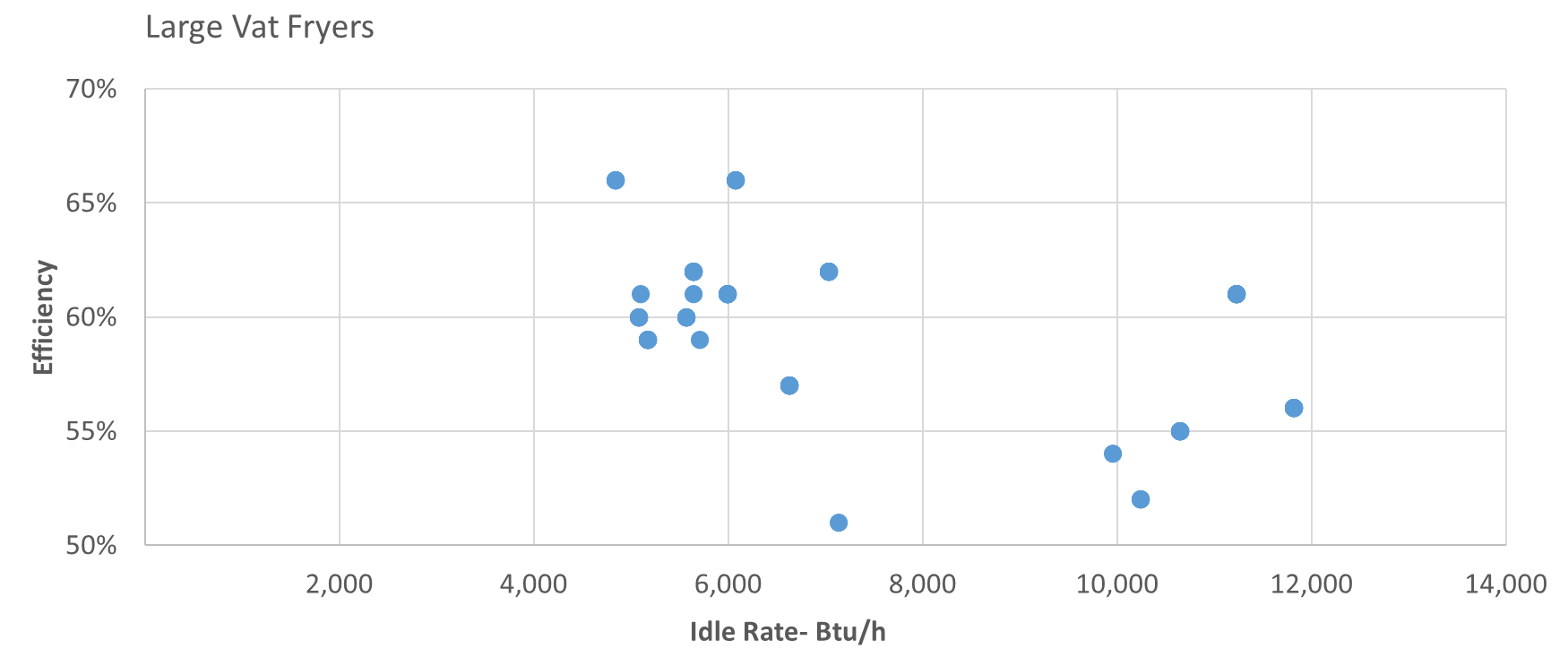


Figure 2. Large Vat Gas Fryers

## Baseline and Measure Case Efficiency Assumptions

Since commercial fryers are not covered by state or national codes, there is little incentive for fryer manufacturers to test their baseline equipment. Frontier Energy calculated base case assumptions using updated gas fryer data from testing by the Food Service Technology Center (FSTC) and Food Service Testing Lab (FSTL, SCG). The baseline dataset includes results from 21 different fryer models—17 standard fryers and 4 large vat fryers.

The measure case assumptions were based on data pulled from the September 2020 SoCalGas QPL as published on caenergywise.com. Analysis of the data listed in the QPL shows the top 30% most efficient models could be classified as Super-Efficient. These models have a measured cooking-energy efficiency of 60% or greater and an idle rate of 6,100 Btu/h or less based on ASTM F1361 (standard fryers) and F2144 (large vat fryers) test methods. Nine manufacturers currently offer models that meet these Super-Efficient specifications. Table 1 summarizes the average performance data for the three categories of gas fryer: Baseline, ENERGY STAR, and Super-Efficient based on ASTM F1361 and F2144.

Table 1. Gas Fryer Energy Performance Data

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Category** | **Equipment Type** | **Preheat Energy (Btu)** | **Idle Energy Rate (Btu/h)** | **Cooking-Energy Efficiency** | **Production Capacity (lb/h)** |
| **Baseline** | Fryer | 16,118 | 11,960 | 37% | 56 |
| Large Vat | 22,966 | 20,371 | 44% | 101 |
| **ENERGY STAR** | Fryer | 11,367 | 6,425 | 54% | 67 |
| Large Vat | 17,048 | 8,899 | 58% | 92 |
| **Super-Efficient\*** | Fryer | 8,587 | 4,148 | 63% | 71 |
| Large Vat | 15,557 | 5,521 | 63% | 93 |

\*Super-Efficient fryers have a heavy-load cooking energy efficiency ≥ 60% and an idle rate ≤ 6,100 Btu/h.

## Gas Savings

Frontier Energy modeled annual energy consumption based on the Unit Energy Consumption (UEC) calculations documented in the Statewide workpaper, SWFS011-02. The energy consumption model for the ENERGY STAR category excluded unit data that met or exceeded the Super-Efficient criteria. Table 2 compares the annual energy consumption and annual therm savings for the three categories of gas fryer—Baseline, ENERGY STAR, and Super-Efficient.

Table 2. Annual Energy Savings

|  |  |  |
| --- | --- | --- |
| **Category** | **Annual Energy Consumption (therms)** | **Annual Energy Savings (therms)** |
| **Baseline** | 1,138 | - |
| **ENERGY STAR** | 708 | 431 |
| **Super-Efficient\*** | 579 | 559 |

\*Super-Efficient fryers have a heavy-load cooking energy efficiency ≥ 60% and an idle rate ≤ 6,100 Btu/h.

## Baseline and Measure Case Cost

Frontier Energy updated equipment costs based on a query of published prices from online equipment and supply dealers. Updated pricing was collected for 47 Baseline models, 12 ENERGY STAR models, and 12 Super-Efficient models. 65% of the models were standard fryers and 35% of the models were large vat fryers. The models represent different grades ranging from basic, value-priced standard fryers to premium, high-production fryers with built-in oil filtration systems. *Standard* fryers have a tested production capacity less than 70 lb/h; *High-Production* fryers have a tested production capacity of 70 lb/h or greater.

Many manufacturers offer Baseline and ENERGY STAR fryers in both *Standard* and *High Production* classifications. Standard grade, value-priced ENERGY STAR models are comparable in performance to standard grade, value-priced Baseline models. Notably, all Super-Efficient models included in the price research were classified as High Production. To provide a relevant comparison, Baseline High Production models were compared to Super-Efficient High Production models. Table 3 summarizes the unit cost and ROI for ENERGY STAR and Super-Efficient fryers.

Table 3. Cost Effectiveness

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Category** | **Equipment Type** | **Baseline Unit Cost** | **Energy Efficient Unit Cost** | **Incremental Measure Cost (IMC)** | **Annual Cost Savings** | **ROI (yrs)** |
| **ENERGY STAR Fryer** | Fryer | $2,617 | $4,136 | $1,519 | $388 | 3.9 |
|  | Large Vat | $3,766 | $6,292 | $2,526 | $575 | 4.4 |
| **Super-Efficient Fryer\*** | Fryer | $4,016 | $5,246 | $1,230 | $534 | 2.3 |
|  | Large Vat | $5,122 | $6,292 | $1,170 | $733 | 1.6 |
|  |  |  |  |  |  |  |
| **ENERGY STAR Fryer** | All | $3,008 | $4,496 | $1,488 | $431 | 3.5 |
| **Super-Efficient Fryer\*** | All | $4,543 | $7,529 | $2,986 | $559 | 5.3 |

## Conclusion & Recommendation

Super-Efficient fryers are defined as models that exhibit a cooking-energy efficiency of 60% or greater and an idle energy rate of 6,100 Btu/h or less when tested in accordance with ASTM F1361 for standard fryers or ASTM F2144 for large vat fryers. Nine manufacturers offering a total of 56 models across 17 unique product families meet the proposed Super-Efficient fryer specifications.

Super-Efficient fryers offer 30% higher therm savings using the operating assumptions in the Statewide workpaper. As most Super-Efficient fryers are classified as *High-Production* models, greater savings could be realized for operations with higher daily usage.

Updated energy and cost analyses demonstrate that ENERGY STAR fryers have a 3.5-year ROI and Super-Efficient fryers have a 5.3-year ROI based on average incremental cost differences. These are well within acceptable bounds after a rebate has been applied to close the gap.

It is recommended that an advanced tier be established for gas fryers, beginning with the 2021 program year.

# Appendix: Data Sets

Table 4. Baseline Fryer Data

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Test**  **Lab** | **Nominal Vat**  **Width (in)** | **Preheat**  **Energy (Btu)** | **Idle Energy Rate (Btu/h)** | **Energy Efficiency (%)** | **Production Capacity (lb/h)** | **Test Date** |
| FSTC | 14 | 19,645 | 11,545 | 35% | 41 | Dec-01 |
| FSTC | 14 | 20,713 | 12,103 | 35% | 61 | Dec-01 |
| FSTC | 14 | 17,523 | 14,251 | 35% | 55 | Jul-18 |
| SCG | 14 | 13,583 | 13,269 | 39% | 61 | Mar-19 |
| SCG | 14 | 25,897 | 16,518 | 32% | 51 | Mar-19 |
| SCG | 14 | 18,692 | 12,856 | 38% | 65 | Mar-19 |
| FSTC | 18 | 23,138 | 29,039 | 48% | 95 | Aug-06 |
| SCG | 14 | 16,742 | 11,882 | 36% | 53 | Mar-19 |
| SCG | 14 | 10,863 | 13,891 | 37% | 45 | Feb-19 |
| FSTC | 14 | 13,800 | 5,600 | 49% | 62 | Apr-96 |
| FSTC | 14 | 12,354 | 9,403 | 36% | 51 | Jul-15 |
| FSTC | 14 | 17,516 | 14,955 | 32% | 64 | Oct-13 |
| FSTC | 14 | 11,841 | 10,791 | 29% | 23 | Sep-13 |
| SCG | 14 | 16,203 | 12,225 | 40% | 47 | Apr-19 |
| FSTC | 14 | 13,790 | 12,829 | 41% | 63 | Dec-00 |
| FSTC | 14 | 15,426 | 14,522 | 42% | 72 | Dec-00 |
| FSTC | 20 | 20,446 | 18,298 | 44% | 101 | Dec-00 |
| FSTC | 20 | 26,889 | 19,273 | 43% | 106 | Dec-00 |
| FSTC | 14 | 17,140 | 13,180 | 36% | 55 | Dec-00 |
| FSTC | 14 | 17,552 | 12,384 | 42% | 68 | Dec-00 |
| FSTC | 20 | 21,469 | 14,875 | 39% | 101 | Dec-00 |

Table 5. Fryer Qualifying Product List-Updated September 2020

| **Company** | **Model Number** | **Number of Vats** | **Vat Width** | **Shortening Capacity (lb)** | **Fuel Type** | **Preheat Energy (Btu)** | **Idle Energy Rate (Btu/h)** | **Energy Efficiency (%)** | **Production Capacity (lbs/h)** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Alto-Shaam | ASF-60G | 1 | 13 | 62 | Gas | 13,442 | 4,072 | 66% | 82 |
| Alto-Shaam | ASF-75G | 1 | 22 | 73 | Gas | 16,936 | 4,825 | 71% | 134 |
| American Range | AF35HE | 1 | 14 | 35 | Gas | 9,329 | 7,899 | 52% | 63 |
| American Range | AF50HE | 1 | 14 | 50 | Gas | 11,903 | 7,966 | 50% | 58 |
| Anets | AH55 | 1 | 14 | 50 | Gas | 13,456 | 4,632 | 51% | 67 |
| BKI | BLG-FC | 1 | 18 | 70 | Gas | 12,529 | 5,100 | 61% | 56 |
| Frymaster | 2FQG30U\*\*\* | 2 | 13 | 30 | Gas | 9,592 | 3,962 | 56% | 56 |
| Frymaster | 3FQG30U\*\*\* | 3 | 13 | 30 | Gas | 9,592 | 3,962 | 56% | 56 |
| Frymaster | 4FQG30U\*\*\* | 4 | 13 | 30 | Gas | 9,592 | 3,962 | 56% | 56 |
| Frymaster | BIGLA230\*\*\* | 2 | 13 | 30 | Gas | 9,592 | 3,962 | 56% | 56 |
| Frymaster | BIGLA330\*\*\* | 3 | 13 | 30 | Gas | 9,592 | 3,962 | 56% | 56 |
| Frymaster | BIGLA430\*\*\* | 4 | 13 | 30 | Gas | 9,592 | 3,962 | 56% | 56 |
| Frymaster | BIGLA530\*\*\* | 5 | 13 | 30 | Gas | 9,592 | 3,962 | 56% | 56 |
| Frymaster | BIH55 | 1 | 14 | 50 | Gas | 13,951 | 5,604 | 55% | 69 |
| Frymaster | BK55\*\* | 1 | 14 | 50 | Gas | 13,951 | 5,604 | 55% | 69 |
| Frymaster | BKFP255\*\* | 2 | 14 | 50 | Gas | 13,951 | 5,604 | 55% | 69 |
| Frymaster | BKFP355\*\* | 3 | 14 | 50 | Gas | 13,951 | 5,604 | 55% | 69 |
| Frymaster | BKFP455\*\* | 4 | 14 | 50 | Gas | 13,951 | 5,604 | 55% | 69 |
| Frymaster | BKFP55\*\* | 1 | 14 | 50 | Gas | 13,951 | 5,604 | 55% | 69 |
| Frymaster | ESG35T | 1 | 14 | 35 | Gas | 9,582 | 8,233 | 50% | 58 |
| Frymaster | F\*GL230 | 2 | 13 | 31 | Gas | 9,265 | 3,832 | 60% | 66 |
| Frymaster | F\*GL30 | 1 | 13 | 31 | Gas | 9,265 | 3,832 | 60% | 66 |
| Frymaster | F\*GL330 | 3 | 13 | 31 | Gas | 9,265 | 3,832 | 60% | 66 |
| Frymaster | F\*GL430 | 4 | 13 | 31 | Gas | 9,265 | 3,832 | 60% | 66 |
| Frymaster | F\*GL530 | 5 | 13 | 31 | Gas | 9,265 | 3,832 | 60% | 66 |
| Frymaster | FPH155 | 1 | 14 | 50 | Gas | 13,951 | 5,604 | 55% | 69 |
| Frymaster | FPH50 | 1 | 14 | 50 | Gas | 15,300 | 6,400 | 50% | 57 |
| Frymaster | FPPH155 | 1 | 14 | 50 | Gas | 13,951 | 5,604 | 55% | 69 |
| Frymaster | FPPH255 | 2 | 14 | 50 | Gas | 13,951 | 5,604 | 55% | 69 |
| Frymaster | FPPH355 | 3 | 14 | 50 | Gas | 13,951 | 5,604 | 55% | 69 |
| Frymaster | FPPH455 | 4 | 14 | 50 | Gas | 13,951 | 5,604 | 55% | 69 |
| Frymaster | FPPH555 | 5 | 14 | 50 | Gas | 13,951 | 5,604 | 55% | 69 |
| Frymaster | H55 | 1 | 14 | 50 | Gas | 13,951 | 5,604 | 55% | 69 |
| Frymaster | HD50G | 1 | 14 | 50 | Gas | 11,117 | 8,386 | 52% | 72 |
| Frymaster | HD60G | 1 | 18 | 80 | Gas | 16,362 | 10,242 | 52% | 107 |
| Frymaster | KH55 | 1 | 14 | 50 | Gas | 13,951 | 5,604 | 55% | 69 |
| Frymaster | MJH50 | 1 | 14 | 50 | Gas | 15,300 | 6,400 | 50% | 57 |
| Frymaster | MPH55 | 1 | 14 | 50 | Gas | 13,951 | 5,604 | 55% | 69 |
| Frymaster | PH155 | 1 | 14 | 50 | Gas | 13,951 | 5,604 | 55% | 69 |
| Frymaster | PH255 | 2 | 14 | 50 | Gas | 13,951 | 5,604 | 55% | 69 |
| Frymaster | PH355 | 3 | 14 | 50 | Gas | 13,951 | 5,604 | 55% | 69 |
| Frymaster | PH455 | 4 | 14 | 50 | Gas | 13,951 | 5,604 | 55% | 69 |
| Frymaster | PH555 | 5 | 14 | 50 | Gas | 13,951 | 5,604 | 55% | 69 |
| Frymaster | PMJH50 | 1 | 14 | 50 | Gas | 15,300 | 6,400 | 50% | 57 |
| Frymaster | YSCFH14G | 1 | 14 | 50 | Gas | 11,117 | 8,386 | 52% | 72 |
| Frymaster | YSCFH214G | 2 | 14 | 50 | Gas | 11,117 | 8,386 | 52% | 72 |
| Giles Enterprises, Inc. | GGF-400 | 1 | 13 | 45 | Gas | 7,998 | 3,835 | 54% | 39 |
| Giles Enterprises, Inc. | GGF-720 | 1 | 18.5 | 75 | Gas | 11,519 | 5,645 | 61% | 80 |
| Henny Penny | EEG-241 | 1 | 12 | 30 | Gas | 8,935 | 5,790 | 54% | 64 |
| Henny Penny | EEG-242 | 2 | 12 | 30 | Gas | 8,935 | 5,790 | 54% | 64 |
| Henny Penny | EEG-243 | 3 | 12 | 30 | Gas | 8,935 | 5,790 | 54% | 64 |
| Henny Penny | EEG-244 | 4 | 12 | 30 | Gas | 8,935 | 5,790 | 54% | 64 |
| Henny Penny | EEG-251 | 1 | 12 | 30 | Gas | 8,935 | 5,790 | 54% | 64 |
| Henny Penny | EEG-252 | 2 | 12 | 30 | Gas | 8,935 | 5,790 | 54% | 64 |
| Henny Penny | EEG-253 | 3 | 12 | 30 | Gas | 8,935 | 5,790 | 54% | 64 |
| Henny Penny | EEG-254 | 4 | 12 | 30 | Gas | 8,935 | 5,790 | 54% | 64 |
| Henny Penny | LVG-201 | 1 | 12 | 30 | Gas | 8,935 | 5,790 | 54% | 64 |
| Henny Penny | LVG-202 | 2 | 12 | 30 | Gas | 8,935 | 5,790 | 54% | 64 |
| Henny Penny | LVG-203 | 3 | 12 | 30 | Gas | 8,935 | 5,790 | 54% | 64 |
| Henny Penny | LVG-204 | 4 | 12 | 30 | Gas | 8,935 | 5,790 | 54% | 64 |
| Henny Penny | OFG-321 | 1 | 13 | 62 | Gas | 13,755 | 7,040 | 50% | 72 |
| Henny Penny | OFG-322 | 2 | 13 | 62 | Gas | 13,755 | 7,040 | 50% | 72 |
| Henny Penny | OFG-323 | 3 | 13 | 62 | Gas | 13,755 | 7,040 | 50% | 72 |
| Henny Penny | OGA-321 | 1 | 13 | 62 | Gas | 13,755 | 7,040 | 50% | 72 |
| Henny Penny | OGA-322 | 2 | 13 | 62 | Gas | 13,755 | 7,040 | 50% | 72 |
| Henny Penny | OGA-323 | 3 | 13 | 62 | Gas | 13,755 | 7,040 | 50% | 72 |
| Keating | 14 IFM | 1 | 14 | 38 | Gas | 7,999 | 3,971 | 54% | 58 |
| Keating | 18 IFM | 1 | 18 | 68 | Gas | 19,908 | 7,139 | 51% | 79 |
| Lincat | OG7115 | 1 | 13 | 35 | Gas | 9,902 | 3,326 | 63% | 55 |
| Paloma | PF-2S | 1 | 14 | 50 | Gas | 11,848 | 3,420 | 62% | 72 |
| PBI | 2600530 | 1 | 18 | 80 | Gas | 16,362 | 10,242 | 52% | 107 |
| PBI | 2600580 | 2 | 18 | 80 | Gas | 16,362 | 10,242 | 52% | 107 |
| Pearl City | P-30 | 1 | 30 | 75 | Gas | 17,596 | 8,352 | 71% | 156 |
| Pitco | BKSGH50SPC | 1 | 14 | 50 | Gas | 10,275 | 8,510 | 54% | 67 |
| Pitco | MGII | 1 | 14 | 50 | Gas | 10,275 | 8,510 | 54% | 67 |
| Pitco | SGC | 1 | 14 | 35 | Gas | 9,636 | 4,899 | 50% | 55 |
| Pitco | SGH50 | 1 | 14 | 50 | Gas | 10,275 | 8,510 | 54% | 67 |
| Pitco | SGH50-2\*\* | 2 | 14 | 50 | Gas | 10,275 | 8,510 | 54% | 67 |
| Pitco | SGH50-3\*\* | 3 | 14 | 50 | Gas | 10,275 | 8,510 | 54% | 67 |
| Pitco | SGH50-4\*\* | 4 | 14 | 50 | Gas | 10,275 | 8,510 | 54% | 67 |
| Pitco | SGH50-5\*\* | 5 | 14 | 50 | Gas | 10,275 | 8,510 | 54% | 67 |
| Pitco | SGH50-6\*\* | 6 | 14 | 50 | Gas | 10,275 | 8,510 | 54% | 67 |
| Pitco | SSH55-\*\* | 1 | 14 | 50 | Gas | 11,138 | 8,140 | 55% | 72 |
| Pitco | SSH55-2\*\* | 2 | 14 | 50 | Gas | 11,138 | 8,140 | 55% | 72 |
| Pitco | SSH55-3\*\* | 3 | 14 | 50 | Gas | 11,138 | 8,140 | 55% | 72 |
| Pitco | SSH55-4\*\* | 4 | 14 | 50 | Gas | 11,138 | 8,140 | 55% | 72 |
| Pitco | SSH55-5\*\* | 5 | 14 | 50 | Gas | 11,138 | 8,140 | 55% | 72 |
| Pitco | SSH55-6\*\* | 6 | 14 | 50 | Gas | 11,138 | 8,140 | 55% | 72 |
| Pitco | SSH60-\*\* | 1 | 14 | 60 | Gas | - | 8,705 | 58% | 76 |
| Pitco | SSH60-2\*\* | 2 | 14 | 60 | Gas | - | 8,705 | 58% | 76 |
| Pitco | SSH60-3\*\* | 3 | 14 | 60 | Gas | - | 8,705 | 58% | 76 |
| Pitco | SSH60-4\*\* | 4 | 14 | 60 | Gas | - | 8,705 | 58% | 76 |
| Pitco | SSH60-5\*\* | 5 | 14 | 60 | Gas | - | 8,705 | 58% | 76 |
| Pitco | SSH60-6\*\* | 6 | 14 | 60 | Gas | - | 8,705 | 58% | 76 |
| Pitco | SSH60R-\*\* | 1 | 14 | 60 | Gas | - | 8,446 | 52% | 74 |
| Pitco | SSH60R-2\*\* | 2 | 14 | 60 | Gas | - | 8,446 | 52% | 74 |
| Pitco | SSH60R-3\*\* | 3 | 14 | 60 | Gas | - | 8,446 | 52% | 74 |
| Pitco | SSH60R-4\*\* | 4 | 14 | 60 | Gas | - | 8,446 | 52% | 74 |
| Pitco | SSH60R-5\*\* | 5 | 14 | 60 | Gas | - | 8,446 | 52% | 74 |
| Pitco | SSH60R-6\*\* | 6 | 14 | 60 | Gas | - | 8,446 | 52% | 74 |
| Pitco | SSH60W-\*\* | 1 | 18 | 60 | Gas | 15,781 | 10,644 | 55% | 76 |
| Pitco | SSH60W-2\*\* | 2 | 18 | 60 | Gas | 15,781 | 10,644 | 55% | 76 |
| Pitco | SSH60W-3\*\* | 3 | 18 | 60 | Gas | 15,781 | 10,644 | 55% | 76 |
| Pitco | SSH60W-4\*\* | 4 | 18 | 60 | Gas | 15,781 | 10,644 | 55% | 76 |
| Pitco | SSH60W-5\*\* | 5 | 18 | 60 | Gas | 15,781 | 10,644 | 55% | 76 |
| Pitco | SSH60W-6\*\* | 6 | 18 | 60 | Gas | 15,781 | 10,644 | 55% | 76 |
| Pitco | SSH75-\*\* | 1 | 18 | 75 | Gas | 14,884 | 11,226 | 61% | 99 |
| Pitco | SSH75-2\*\* | 2 | 18 | 75 | Gas | 14,884 | 11,226 | 61% | 99 |
| Pitco | SSH75-3\*\* | 3 | 18 | 75 | Gas | 14,884 | 11,226 | 61% | 99 |
| Pitco | SSH75-4\*\* | 4 | 18 | 75 | Gas | 14,884 | 11,226 | 61% | 99 |
| Pitco | SSH75-5\*\* | 5 | 18 | 75 | Gas | 14,884 | 11,226 | 61% | 99 |
| Pitco | SSH75-6\*\* | 6 | 18 | 75 | Gas | 14,884 | 11,226 | 61% | 99 |
| Pitco | SSH75R-\*\* | 1 | 18 | 75 | Gas | 16,935 | 11,819 | 56% | 107 |
| Pitco | SSH75R-2\*\* | 2 | 18 | 75 | Gas | 16,935 | 11,819 | 56% | 107 |
| Pitco | SSH75R-3\*\* | 3 | 18 | 75 | Gas | 16,935 | 11,819 | 56% | 107 |
| Pitco | SSH75R-4\*\* | 4 | 18 | 75 | Gas | 16,935 | 11,819 | 56% | 107 |
| Pitco | SSH75R-5\*\* | 5 | 18 | 75 | Gas | 16,935 | 11,819 | 56% | 107 |
| Pitco | SSH75R-6\*\* | 6 | 18 | 75 | Gas | 16,935 | 11,819 | 56% | 107 |
| Pitco | SSHLV14 | 1 | 13 | 32 | Gas | 8,141 | 7,409 | 53% | 66 |
| Pitco | VF35S | 1 | 14 | 35 | Gas | 9,456 | 7,349 | 50% | 59 |
| Pitco | VF65S | 1 | 18 | 65 | Gas | 15,636 | 9,953 | 54% | 80 |
| Royal Range | REEF-35 | 1 | 14 | 35 | Gas | 10,592 | 8,764 | 54% | 60 |
| Royal Range | RHEF-45\*\* | 1 | 14 | 45 | Gas | 7,095 | 4,569 | 63% | 71 |
| Royal Range | RHEF-75\*\* | 1 | 18 | 75 | Gas | 12,941 | 5,017 | 72% | 129 |
| Ultrafryer Systems | B-IR-18-2-\*\*\* | 2 | 18 | 80 | Gas | 14,306 | 5,177 | 59% | 88 |
| Ultrafryer Systems | B-IR-18-3-\*\*\* | 3 | 18 | 80 | Gas | 14,306 | 5,177 | 59% | 88 |
| Ultrafryer Systems | B-IR-18-4-\*\*\* | 4 | 18 | 80 | Gas | 14,306 | 5,177 | 59% | 88 |
| Ultrafryer Systems | B-IR-18-5-\*\*\* | 5 | 18 | 80 | Gas | 14,306 | 5,177 | 59% | 88 |
| Ultrafryer Systems | B-IR-20-2-\*\*\* | 2 | 20 | 125 | Gas | 19,092 | 6,626 | 57% | 84 |
| Ultrafryer Systems | B-IR-20-3-\*\*\* | 3 | 20 | 125 | Gas | 19,092 | 6,626 | 57% | 84 |
| Ultrafryer Systems | B-IR-20-4-\*\*\* | 4 | 20 | 125 | Gas | 19,092 | 6,626 | 57% | 84 |
| Ultrafryer Systems | B-IR-20-5-\*\*\* | 5 | 20 | 125 | Gas | 19,092 | 6,626 | 57% | 84 |
| Ultrafryer Systems | B-IR-20-6-\*\*\* | 6 | 20 | 125 | Gas | 19,092 | 6,626 | 57% | 84 |
| Ultrafryer Systems | B-IRC-14-2-\*\*\* | 2 | 14 | 45 | Gas | 9,158 | 4,136 | 56% | 72 |
| Ultrafryer Systems | B-IRC-14-3-\*\*\* | 3 | 14 | 45 | Gas | 9,158 | 4,136 | 56% | 72 |
| Ultrafryer Systems | B-IRC-14-4-\*\*\* | 4 | 14 | 45 | Gas | 9,158 | 4,136 | 56% | 72 |
| Ultrafryer Systems | B-IRC-14-5-\*\*\* | 5 | 14 | 45 | Gas | 9,158 | 4,136 | 56% | 72 |
| Ultrafryer Systems | B-IRD-14-2-\*\*\* | 2 | 14 | 50 | Gas | 11,937 | 4,201 | 59% | 73 |
| Ultrafryer Systems | B-IRD-14-3-\*\*\* | 3 | 14 | 50 | Gas | 11,937 | 4,201 | 59% | 73 |
| Ultrafryer Systems | B-IRD-14-4-\*\*\* | 4 | 14 | 50 | Gas | 11,937 | 4,201 | 59% | 73 |
| Ultrafryer Systems | B-IRD-14-5-\*\*\* | 5 | 14 | 50 | Gas | 11,937 | 4,201 | 59% | 73 |
| Ultrafryer Systems | B-P20-18-2-\*\*\* | 2 | 18 | 100 | Gas | 16,923 | 5,641 | 62% | 68 |
| Ultrafryer Systems | B-P20-18-3-\*\*\* | 3 | 18 | 100 | Gas | 16,923 | 5,641 | 62% | 68 |
| Ultrafryer Systems | B-P20-18-4-\*\*\* | 4 | 18 | 100 | Gas | 16,923 | 5,641 | 62% | 68 |
| Ultrafryer Systems | B-P20-18-5-\*\*\* | 5 | 18 | 100 | Gas | 16,923 | 5,641 | 62% | 68 |
| Ultrafryer Systems | B-P20-18-6-\*\*\* | 6 | 18 | 100 | Gas | 16,923 | 5,641 | 62% | 68 |
| Ultrafryer Systems | B-P20-20-2-\*\*\* | 2 | 20 | 125 | Gas | 21,939 | 7,038 | 62% | 79 |
| Ultrafryer Systems | B-P20-20-3-\*\*\* | 3 | 20 | 125 | Gas | 21,939 | 7,038 | 62% | 79 |
| Ultrafryer Systems | B-P20-20-4-\*\*\* | 4 | 20 | 125 | Gas | 21,939 | 7,038 | 62% | 79 |
| Ultrafryer Systems | B-P20-20-5-\*\*\* | 5 | 20 | 125 | Gas | 21,939 | 7,038 | 62% | 79 |
| Ultrafryer Systems | B-P20-20-6-\*\*\* | 6 | 20 | 125 | Gas | 21,939 | 7,038 | 62% | 79 |
| Ultrafryer Systems | B-P30-14-2-\*\*\* | 2 | 14 | 50 | Gas | 7,450 | 4,180 | 65% | 73 |
| Ultrafryer Systems | B-P30-14-3-\*\*\* | 3 | 14 | 50 | Gas | 7,450 | 4,180 | 65% | 73 |
| Ultrafryer Systems | B-P30-14-4-\*\*\* | 4 | 14 | 50 | Gas | 7,450 | 4,180 | 65% | 73 |
| Ultrafryer Systems | B-P30-14-5-\*\*\* | 5 | 14 | 50 | Gas | 7,450 | 4,180 | 65% | 73 |
| Ultrafryer Systems | B-P30-14-6-\*\*\* | 6 | 14 | 50 | Gas | 7,450 | 4,180 | 65% | 73 |
| Ultrafryer Systems | B-P30-18-2-\*\*\* | 2 | 18 | 100 | Gas | 20,859 | 5,993 | 61% | 120 |
| Ultrafryer Systems | B-P30-18-3-\*\*\* | 3 | 18 | 100 | Gas | 20,859 | 5,993 | 61% | 120 |
| Ultrafryer Systems | B-P30-18-4-\*\*\* | 4 | 18 | 100 | Gas | 20,859 | 5,993 | 61% | 120 |
| Ultrafryer Systems | B-P30-18-5-\*\*\* | 5 | 18 | 100 | Gas | 20,859 | 5,993 | 61% | 120 |
| Ultrafryer Systems | B-P30-18-6-\*\*\* | 6 | 18 | 100 | Gas | 20,859 | 5,993 | 61% | 120 |
| Ultrafryer Systems | C-P30-14 | 1 | 14 | 30 | Gas | 9,816 | 4,120 | 60% | 60 |
| Ultrafryer Systems | F-IR-18-\*\* | 1 | 18 | 80 | Gas | 14,306 | 5,177 | 59% | 88 |
| Ultrafryer Systems | F-IR-20-\*\*\* | 1 | 20 | 125 | Gas | 19,092 | 6,626 | 57% | 84 |
| Ultrafryer Systems | F-IRC-14-\*\*\* | 1 | 14 | 45 | Gas | 9,158 | 4,136 | 56% | 72 |
| Ultrafryer Systems | F-IRD-14-\*\* | 1 | 14 | 50 | Gas | 11,937 | 4,201 | 59% | 73 |
| Ultrafryer Systems | F-P20-18 | 1 | 18 | 100 | Gas | 16,923 | 5,641 | 62% | 68 |
| Ultrafryer Systems | F-P25-18 | 1 | 18 | 100 | Gas | 15,372 | 5,710 | 59% | 89 |
| Ultrafryer Systems | F-P30-14 | 1 | 14 | 50 | Gas | 7,450 | 4,180 | 65% | 73 |
| Ultrafryer Systems | F-P30-18 | 1 | 18 | 100 | Gas | 20,859 | 5,993 | 61% | 120 |
| Vulcan | 1TR45\*\* | 1 | 14 | 45 | Gas | 7,548 | 4,318 | 61% | 69 |
| Vulcan | 1TR65\*\* | 1 | 20 | 65 | Gas | 12,278 | 5,083 | 60% | 82 |
| Vulcan | 1TR85\*\* | 1 | 20 | 85 | Gas | 15,072 | 5,575 | 60% | 87 |
| Vulcan | 1VEG35M | 1 | 14 | 35 | Gas | 9,785 | 7,296 | 50% | 57 |
| Vulcan | 1VK45\*\* | 1 | 14 | 45 | Gas | 8,192 | 4,636 | 65% | 78 |
| Vulcan | 1VK65\*\* | 1 | 20 | 65 | Gas | 11,914 | 4,838 | 66% | 91 |
| Vulcan | 1VK85\*\* | 1 | 20 | 85 | Gas | 15,039 | 6,075 | 66% | 100 |
| Vulcan | 2TR45\*\* | 2 | 14 | 45 | Gas | 7,548 | 4,318 | 61% | 69 |
| Vulcan | 2TR65\*\* | 2 | 20 | 65 | Gas | 12,278 | 5,083 | 60% | 82 |
| Vulcan | 2TR85\*\* | 2 | 20 | 85 | Gas | 15,072 | 5,575 | 60% | 87 |
| Vulcan | 2VK45\*\* | 2 | 14 | 45 | Gas | 8,192 | 4,636 | 65% | 78 |
| Vulcan | 2VK65\*\* | 2 | 20 | 65 | Gas | 11,914 | 4,838 | 66% | 91 |
| Vulcan | 2VK85\*\* | 2 | 20 | 85 | Gas | 15,039 | 6,075 | 66% | 100 |
| Vulcan | 3TR45\*\* | 3 | 14 | 45 | Gas | 7,548 | 4,318 | 61% | 69 |
| Vulcan | 3TR65\*\* | 3 | 20 | 65 | Gas | 12,278 | 5,083 | 60% | 82 |
| Vulcan | 3TR85\*\* | 3 | 20 | 85 | Gas | 15,072 | 5,575 | 60% | 87 |
| Vulcan | 3VK45\*\* | 3 | 14 | 45 | Gas | 8,192 | 4,636 | 65% | 78 |
| Vulcan | 3VK65\*\* | 3 | 20 | 65 | Gas | 11,914 | 4,838 | 66% | 91 |
| Vulcan | 3VK85\*\* | 3 | 20 | 85 | Gas | 15,039 | 6,075 | 66% | 100 |
| Vulcan | 4TR45\*\* | 4 | 14 | 45 | Gas | 7,548 | 4,318 | 61% | 69 |
| Vulcan | 4TR65\*\* | 4 | 20 | 65 | Gas | 12,278 | 5,083 | 60% | 82 |
| Vulcan | 4TR85\*\* | 4 | 20 | 85 | Gas | 15,072 | 5,575 | 60% | 87 |
| Vulcan | 4VK45\*\* | 4 | 14 | 45 | Gas | 8,192 | 4,636 | 65% | 78 |
| Vulcan | 4VK65\*\* | 4 | 20 | 65 | Gas | 11,914 | 4,838 | 66% | 91 |
| Vulcan | 4VK85\*\* | 4 | 20 | 85 | Gas | 15,039 | 6,075 | 66% | 100 |

Table 6. Baseline and Measure Cost Data

| **Category** | **Eq. Type** | **EE Type** | **Make** | **2020 Model** | **2020 GRADE** | **2020 Cost** |
| --- | --- | --- | --- | --- | --- | --- |
| B1 | Fryer | Baseline | American Range | AEF35/50 | Standard | $1,039 |
| B3 | Fryer | Baseline | American Range | HD17-2-0 | Standard | $2,365 |
| B5 | Fryer | Baseline | Anets | 45AS | Standard | $1,218 |
| B6 | Fryer | Baseline | Anets | 14GS | Standard | $1,339 |
| B10 | Fryer | Baseline | Dean | SR52G | Standard | $1,374 |
| B11 | Fryer | Baseline | Dean | SM150G | Standard | $1,924 |
| B12 | Fryer | Baseline | Electrolux | AFRG16 | Standard | $2,632 |
| B13 | Fryer | Baseline | Frymaster | PMJ135 | Standard | $3,259 |
| B15 | Fryer | Baseline | Frymaster | PMJ145 | High Production | $3,875 |
| B17 | Fryer | Baseline | Garland | GRL-C836-1-35F | High Production | $5,054 |
| B18 | Fryer | Baseline | Garland | GF-16-FR G | High Production | $5,352 |
| B19 | Fryer | Baseline | Garland | M35SS | Standard | $3,860 |
| B20 | Fryer | Baseline | Imperial | IFS-40 | Standard | $1,235 |
| B21 | Fryer | Baseline | Imperial | IFS-50-OP | Standard | $2,009 |
| B23 | Fryer | Baseline | Imperial | IRF-40 | High Production | $3,685 |
| B26 | Fryer | Baseline | Keating | 14AA | High Production | $3,392 |
| B27 | Fryer | Baseline | Montague | RF40 | High Production | $6,696 |
| B28 | Fryer | Baseline | Southbend | P16C-PF45 | High Production | $4,863 |
| B29 | Fryer | Baseline | Southbend | SB65S | Standard | $1,724 |
| B31 | Fryer | Baseline | Vulcan | 1GR45M-1 | High Production | $3,315 |
| B32 | Fryer | Baseline | Vulcan | 1GR65M | High Production | $3,860 |
| B33 | Fryer | Baseline | Vulcan | LG400-2 | Standard | $1,370 |
| B34 | Fryer | Baseline | Vulcan | LG500-1 | Standard | $1,780 |
| B59 | Fryer | Baseline | Frymaster | GF14 | Standard | $1,594 |
| B60 | Fryer | Baseline | Frymaster | GF40 | Standard | $2,144 |
| B61 | Fryer | Baseline | Pitco | SG-14-S | High Production | $1,715 |
| B62 | Fryer | Baseline | Pitco | SG14-RS | High Production | $2,365 |
| B63 | Fryer | Baseline | Royal Range | RFT-50 | Standard | $1,050 |
| B64 | Fryer | Baseline | Vulcan | LG300-1 | Standard | $1,050 |
| B65 | Fryer | Baseline | Vulcan | 1VEG35M-1 | Standard | $1,295 |
| B66 | Fryer | Baseline | Vulcan | 1GR35M | Standard | $2,695 |
| B35 | Large Vat | Baseline | American Range | AF75 | High Production | $2,079 |
| B43 | Large Vat | Baseline | Garland | M70SS | High Production | $7,293 |
| B44 | Large Vat | Baseline | Imperial | IFS-75-OP | High Production | $2,844 |
| B46 | Large Vat | Baseline | Imperial | IRF-75S-OP | High Production | $7,691 |
| B47 | Large Vat | Baseline | Keating | 18TS | High Production | $5,957 |
| B48 | Large Vat | Baseline | Keating | 20AA | High Production | $6,454 |
| B49 | Large Vat | Baseline | Keating | 24TS | High Production | $7,854 |
| B56 | Large Vat | Baseline | Vulcan | 1GR85M-1 | High Production | $4,110 |
| B61 | Large Vat | Baseline | Frymaster | MJ1CF | High Production | $4,206 |
| B64 | Large Vat | Baseline | Pitco | SG-18S | High Production | $2,735 |
| B67 | Large Vat | Baseline | Royal Range | RFT-75 | Standard | $2,095 |
| B70 | Large Vat | Baseline | Atosa | ATFS-75 | Standard | $1,167 |
| B73 | Large Vat | Baseline | Sierra Range | SRF-75/80-NG | Standard | $1,206 |
| B76 | Large Vat | Baseline | Admiral Craft | BDCTF-75/NG | Standard | $1,244 |
| B79 | Large Vat | Baseline | Royal Range | RFT-60 | Standard | $1,750 |
| B82 | Large Vat | Baseline | Dean | SR62G | Standard | $1,566 |
| EE3 | Fryer | Energy Efficient | Frymaster | PH155 | High Production | $4,536 |
| EE4 | Fryer | Energy Efficient | Frymaster | PH155-2 | High Production | $5,224 |
| EE5 | Fryer | Energy Efficient | Keating | 14IFM | Standard | $5,328 |
| EE6 | Fryer | Energy Efficient | Pitco | SCG-S | Standard | $4,369 |
| EE7 | Fryer | Energy Efficient | Pitco | SSH55-SSTC | High Production | $5,873 |
| EE8 | Fryer | Energy Efficient | Pitco | SSH60 | High Production | $6,181 |
| EE10 | Fryer | Energy Efficient | Pitco | VF-35S | Standard | $1,739 |
| EE12 | Fryer | Energy Efficient | Ultrafryer Systems | F-P30-14 | High Production | $5,414 |
| EE13 | Fryer | Energy Efficient | Royal Range | REEF-35 | Standard | $1,405 |
| EE14 | Fryer | Energy Efficient | Vulcan | 1VEG35M | Standard | $1,295 |
| EE14 | Large Vat | Energy Efficient | Dean | D160G | High Production | $5,829 |
| EE17 | Large Vat | Energy Efficient | Pitco | SSH75 | High Production | $6,755 |
| SE2 | Fryer | Super-Efficient | Frymaster | FPGL130C | High Production | $12,704 |
| SE5 | Fryer | Super-Efficient | Royal Range | RHEF-45-EM | High Production | $4,927 |
| SE7 | Fryer | Super-Efficient | Ultrafryer Systems | F-P30-14 | High Production | $5,414 |
| SE8 | Fryer | Super-Efficient | Vulcan | 1TR45D-1 | High Production | $6,413 |
| SE9 | Fryer | Super-Efficient | Vulcan | 1VK45D-1 | High Production | $7,265 |
| SE11 | Large Vat | Super-Efficient | BKI | BLG-FC | High Production | $13,937 |
| SE14 | Large Vat | Super-Efficient | Ultrafryer Systems | F-P20-18 | High Production | $5,938 |
| SE15 | Large Vat | Super-Efficient | Ultrafryer Systems | F-P30-18 | High Production | $6,164 |
| SE16 | Large Vat | Super-Efficient | Vulcan | 1TR65A-2 | High Production | $6,211 |
| SE17 | Large Vat | Super-Efficient | Vulcan | 1TR85A-1 | High Production | $6,571 |
| SE18 | Large Vat | Super-Efficient | Vulcan | 1VK65A-1 | High Production | $7,344 |
| SE19 | Large Vat | Super-Efficient | Vulcan | 1VK85A-1 | High Production | $7,456 |