

Equipment Capital Budget Justification

Request

I, yimeng Ma , am requesting a new steamer to replace an old one. As the Manager of the Foodservice Department, I am requesting this capital improvement because a new steamer is the highest priority project for the 2014 fiscal year. This project is critical to continue operations, as a new steamer is needed to produce the quantity of food required during peak production periods. I have selected six steamers to compare: three gas steamers and three electric steamers. The three gas ovens are the Garland MCO-GS-10-D oven, the Base Efficiency steamer, and the Energy Star steamer. The three electric ovens are the CLEVELAND 22CET 6.1 electric steamer, the Base Efficiency steamer, and the Energy Star steamer. The current electric steamer is broken due to the broken heating wires. One of the former employees was steaming chickens, and forgot to set a timer; after that, the steamer is not producing heat properly, it turns out the heating wires are broken. This steamer is currently unusable, as the glass door had shattered.

Purchase Costs: Initial and Annual Maintenance

Full-Size Gas steamer

Type of Gas Convection steamer	Initial Cost	Annual Maintenance Cost
	\$8,773.00	\$120.00
Base Efficiency steamer	\$6,679.00	\$120.00
Energy Star steamer	\$10,065.00	\$120.00

Full-Size Electric Steamer

Type of Electric steamer	Initial Cost	Annual Maintenance Cost
CLEVELAND 22CET 6.1	\$6575.00	\$125.00
Base Efficiency steamer	\$5225.00	\$125.00
Energy Star steamer	\$7735.00	\$125.00

Equipment Performance

Full-Size Gas steamer

	Type of Gas steamer		
	Garland MCO-GS-10-D Gas Oven	Base Efficiency Oven	Energy Efficient Oven
Preheat Energy (Btu)	12,491 Btu	1.50	11,000 Btu
Idle Energy Rate (Btu)	17,387 Btu	18,000 Btu	11,758 Btu
Heavy-Load Energy Efficiency (%)	44.0 %	30.0 %	45.0 %
Production Capacity (lbs/h)	94.0 lbs/h	70.0 lbs/h	83.0 lbs/h

Full-Size Electric steamer

	Type of Electric steamer		
	Cleveland 22CET 6.1	Base Efficiency steamer	Energy Efficient steamer
Preheat Energy (kWh)	1.33 kWh	1.50 kWh	1.50 kWh
Idle Energy Rate (kWh)	0.49 kW	1.00 kW	0.26 kW
Heavy-Load Energy Efficiency (%)	62 %	26%	68%
Production Capacity (lbs/h)	94.0 lbs/h	70.0 lbs/h	88.0 lbs/h

Estimated Annual Costs

Full-Size Gas Convection Ovens

Type of Gas Convection Oven	Annual Energy Cost	Annual Maintenance Cost	Total Annual Cost
Garland MCO-GS-10-D Oven	\$931	\$120	\$1,051
Base Efficiency Oven	\$1,052	\$150	\$1,202
Energy Star Oven	\$695	\$97	\$792

Full-Size Electric Convection Ovens

Type of Electric Convection Oven	Annual Energy Cost	Annual Maintenance Cost	Total Annual Cost
Moffat E32D4 Oven	\$974	\$105	\$1,079
Base Efficiency Oven	\$1,585	\$120	\$1,705
Energy Star Oven	\$1,223	\$88	\$1,311

Estimated Lifetime Costs

Full-Size Gas Convection Ovens

Type of Gas Convection Oven	Lifetime Energy Cost	Lifetime Maintenance Cost	Total Lifetime Cost
Garland MCO-GS-10-D Oven	\$11,172	\$1,440	\$17,382
Base Efficiency Oven	\$12,624	\$1,800	\$17,466
Energy Star Oven	\$8,340	\$1,164	\$15,573

Full-Size Electric Convection Ovens

Type of Electric Convection Oven	Lifetime Energy Cost	Lifetime Maintenance Cost	Total Lifetime Cost
Moffat E32D4 Oven	\$11,688	\$1,260	\$15,997
Base Efficiency Oven	\$19,020	\$1,440	\$22,620
Energy Star Oven	\$14,676	\$1,056	\$20,853

Objective/Impact

The use of this steamer is critical for this foodservice department to operate efficiently. Both ovens that are selected can adequately produce the quantity of food this foodservice requires during peak production periods. The Garland MCO-GS-10-D gas oven can produce 94.0 lbs of food per hour, and the Moffat E32D4 electric oven can produce 72.1 lbs of food per hour. According to the following calculations, the convection oven that is purchased must be able to produce 25 – 50 lbs of food per day, based on the typical preparations of 100 servings of 4-8 ounces of convection-baked foods:

$$(100 \text{ servings}) \times (4\text{-}8 \text{ ounces}) = 400 - 800 \text{ ounces of convection-baked foods}$$

$$(400 - 800 \text{ ounces}) \times (1 \text{ lb} / 16 \text{ ounces}) = 25 - 50 \text{ lbs of convection-bake food}$$

Both the Garland MCO-GS-10-D gas oven and the Moffat E32D4 electric oven can produce the quantity of food that is required during peak production periods.

Gas vs. Electric

In the state of California, natural gas is among the most commonly used resources; and electricity is created from converting natural gas. In the foodservice industry, it is more energy efficient to have a gas convection oven because excess energy is not being used to convert the gas into electricity. Based on the above tables, for all three categories of convection ovens that were compared, the lifetime energy cost of gas is less expensive than electricity. The amount of energy consumed by a Garland MCO-GS-10-D gas oven will cost \$615 less than the Moffat E32D4 electric oven, over a lifetime. The Base Efficiency gas oven and the Energy Star gas oven will both cost less than the electric versions for the lifetime energy cost, by 34% and 43%, respectively. However, the lifetime maintenance cost of a gas convection oven is overall more expensive than for an electric convection oven. For the cost of maintenance over a lifetime, the Moffat E32D4 electric oven will cost \$180 less than the Garland MCO-GS-10-D gas oven; the Base Efficiency gas oven will cost \$360 less than the electric version; and the Energy Star gas oven will cost \$108 less than the electric version. The total lifetime cost for the Base Efficiency and Energy Star ovens are less

expensive for the gas convection ovens, than the electric convection ovens. However, the Garland MCO-GS-10-D gas oven is actually more expensive than the Moffat E32D4 electric oven.

Overall, the Garland MCO-GS-10-D gas convection oven is less expensive to maintain and use annually; compared to the other five ovens selected. Even though, the Base Efficiency electric oven is the least expensive purchase to make.

Recommendation

For this foodservice department, I recommend the purchase of Garland MCO-GS-10-D gas convection oven. An electric convection oven would be less expensive for the department to purchase. For a gas convection oven than is not Energy Star certified, this oven will be slightly more expensive in terms of the total lifetime cost; however will be less expensive initially. The initial cost for this oven is \$4,770. Since most of our department uses gas appliances, it would be an easy transition for all of the employees to continue using a gas convection oven; also gas itself is less expensive than electricity. Electric convection ovens are known for being “energy efficient”, but it actually costs more natural gas to convert to the energy to electricity.

The Garland MCO-GS-10-D gas convection oven is the best choice for this foodservice operation as it is less expensive for maintenance and energy costs, and can produce the amount of daily food required during peak production.