



Gelato Classico San Francisco, CA

A water heater's first hour delivery capacity, measured in gallons per hour (gph), determines whether it can meet the hot water demands of a commercial foodservice operation. Miss the mark and an operation will run afoul of Environmental Health Code standards. Replacing an undersized water heater with a right sized one, especially a standard electric resistance tank-type heater, can prove costly if the facility's existing electrical service is inadequate.

The owners of Gelato Classico found themselves in just this situation following a San Francisco Public Health Department inspection. After consulting an electrician, not only would their electrical panel capacity need to be increased to accommodate a new 7.5 kW electric water heater, but their building would also need to be re-wired. Working to find another possible solution, the SF Public Health Department reached out to the energy efficiency and equipment experts at Frontier Energy's Food Service Technology Center (FSTC) to explore the possibility of installing a Heat Pump Water Heater (HPWH).

Working with senior engineer Michael Slater, the department learned that HPWHs could offer a viable option for solving Gelato Classico's problem without having to increase electrical panel service capacity. By capturing heat energy from the surrounding ambient air and transferring it to the water in the tank, HPWHs are designed with lower wattage resistance heating elements and have the added benefit of rejecting cool air into the surrounding space.

After determining Gelato Classico's first hour hot water demand of 43 gph, Michael Slater identified an 80-gallon, 4.5 kW rated HPWH more than capable of meeting the store's hot water needs. The new model's storage capacity doubled that of the original 40-gallon, 4.5 kW resistance-type water heater, an all-too-common specification found in small commercial foodservice operations.



*Original 40-gal
Electric Resistance
Water Heater.*

Estimated energy savings on the water heater changeout figure to be 800 kWh/yr, or about \$250 annually on operating costs. The water heater replacement at Gelato Classico will serve to validate specification of electric HPWHs in similar foodservice operations as PG&E continues to promote electrification of their customer's homes and businesses. Ultimately, this collaboration between the owner of Gelato Classico, the SF Public Health Department, and Frontier Energy's FSTC demonstrated how PG&E energy efficiency programs can reduce a business's energy use and help avoid costly service upgrades.

Performance Comparison:

Electric Resistance vs. Electric Heat Pump Water Heater

	Estimated Energy Use (kWh/yr)*	Annual Operating Cost**
Original 40-gal Electric Resistance Water Heater	3,200	\$920
Replacement 80-gal Electric Heat Pump Water Heater	2,400	\$670
Estimated Savings	800	\$250

*Based on a 95% thermal efficiency of original water heater and a 2.5 coefficient of performance (COP) of replacement HPWH. Includes correction factor for fluctuations in heat pump operation.

**PG&E 2022 utility rate: \$0.28/kWh.