



Estimated Annual Cost of Operation

You can calculate the estimated yearly cost of operation for a water heater by using one of the following formulas:

For natural gas or propane (LP) gas:

$$\frac{41045 \text{ Btu}}{\text{EF}} \times \text{Unit Cost of Fuel} \$ \text{ per Btu} \times 365 = \text{Estimated Annual Cost of Operation}$$

For Example: Assuming a natural gas unit with an EF of .57 and fuel costs of \$.904 per therm -

$$\frac{41045 \text{ Btu}}{.57} \times \$.00000904 \times 365 = \$237 \text{ estimated annual cost of operation}$$

Unit cost of fuel = \$.904 per therm or \$.904 per 100,000 Btu or \$.00000904 per Btu

For electricity:

$$\frac{12.03 \text{ kWh}}{\text{EF}} \times \text{Unit Cost of Fuel} \$ \text{ per kWh} \times 365 = \text{Estimated Annual Cost of Operation}$$

For Example: Assuming an electric water heater with an EF of .88 and electric costs of \$.0817 per kWh -

$$\frac{12.03 \text{ kWh}}{.88} \times \$.0817 \times 365 = \$407 \text{ estimated annual cost of operation}$$

Definitions:

Energy Factor

Energy factor is a measure of the overall efficiency rating of a water heater. The higher the EF number, the more efficient the water heater.

First Hour Rating (1st Hour Rating)

First hour rating is the amount of hot water that the water heater can supply in the first 60 minutes of operation. It is a combination of how much water is stored in the water heater and how quickly the water heater can reheat cold water to the desired temperature.

Fuel Conversions:

- 1 therm of natural gas = 100,000 Btu
- 1 gallon of LP gas = 91,333 Btu
- 1 kWh (kilowatt hour) = 3,412 Btu

National average unit fuel costs as determined by the Department of Energy, Winter 2001 have been used in these calculations.

See the complete GAMA book and web site at: www.gamanet.org

Check for fuel data and prices at the Dept of Energy website at: www.energy.gov/dataandprices/index.html