

OPERATING COST FOR DIFFERENT HEATING SYSTEMS

Heating System	Energy Performance Per Usable Btu x 10 ⁶ In Dollar	Annual Energy Cost	Annual Maintenance	Total Annual Cost	Pay-off Time / Season
STEP WarmFloor (COP=1)	26 x 10 ⁶ Btu x \$15.39/Btu x 10 ⁻⁶ =	\$ 401	\$ 0	\$ 401	
Hydraulic Floor Heating Gas Boiler (AFUE=93%)	61 x 10 ⁶ Btu x \$ 6.95/Btu x 10 ⁻⁶ =	\$ 424	\$ 200	\$ 624	0
Central Heating Gas Boiler (AFUE=93%)	68 x 10 ⁶ Btu x \$ 6.95/Btu x 10 ⁻⁶ =	\$ 473	\$ 200	\$ 673	0
Natural Gas Furnace (AFUE=93%)	68 x 10 ⁶ Btu x \$ 6.95/Btu x 10 ⁻⁶ =	\$ 473	\$ 200	\$ 673	2.1
Geothermal Heat Pump (COP=3.3)	68 x 10 ⁶ Btu x \$ 7.07/Btu x 10 ⁻⁶ =	\$ 481	\$ 200	\$ 681	2.0
Fuel Oil Furnace (AFUE=91%)	68 x 10 ⁶ Btu x \$ 7.21/Btu x 10 ⁻⁶ =	\$ 490	\$ 200	\$ 690	1.9
Heat Pump (HSPF=10.0)	68 x 10 ⁶ Btu x \$ 8.02/Btu x 10 ⁻⁶ =	\$ 545	\$ 200	\$ 745	1.5
Natural Gas Furnace (AFUE=78%)	68 x 10 ⁶ Btu x \$ 8.22/Btu x 10 ⁻⁶ =	\$ 559	\$ 200	\$ 759	1.4

Fuel Oil Furnace (AFUE=78%)	$68 \times 10^6 \text{Btu} \times \$ 8.36/\text{Btu} \times 10^{-6} =$	\$ 568	\$ 200	\$ 768	1.3
Heat Pump (HSPF=8.0)	$68 \times 10^6 \text{Btu} \times \$ 9.16/\text{Btu} \times 10^{-6} =$	\$ 623	\$ 200	\$ 823	1.2
Heat Pump (HSPF=6.8)	$68 \times 10^6 \text{Btu} \times \$10.11/\text{Btu} \times 10^{-6} =$	\$ 687	\$ 200	\$ 887	1.0
Electric Floor Heating Cable (COP=1)	$61 \times 10^6 \text{Btu} \times \$15.39/\text{Btu} \times 10^{-6} =$	\$ 939	\$ 0	\$ 939	0.3
Electric Baseboard Heater (COP=1)	$68 \times 10^6 \text{Btu} \times \$15.39/\text{Btu} \times 10^{-6} =$	\$ 1046	\$ 0	\$1046	2.0
Electric Radiant Ceiling (COP=1)	$68 \times 10^6 \text{Btu} \times \$15.39/\text{Btu} \times 10^{-6} =$	\$ 1046	\$ 0	\$1046	2.3
Propane Furnace (AFUE=93%)	$68 \times 10^6 \text{Btu} \times \$13.80/\text{Btu} \times 10^{-6} =$	\$ 938	\$ 200	\$1138	0.6
Propane Furnace (AFUE=78%)	$68 \times 10^6 \text{Btu} \times \$16.40/\text{Btu} \times 10^{-6} =$	\$ 1115	\$ 200	\$ 1315	0.5

PAY-OFF TIME :

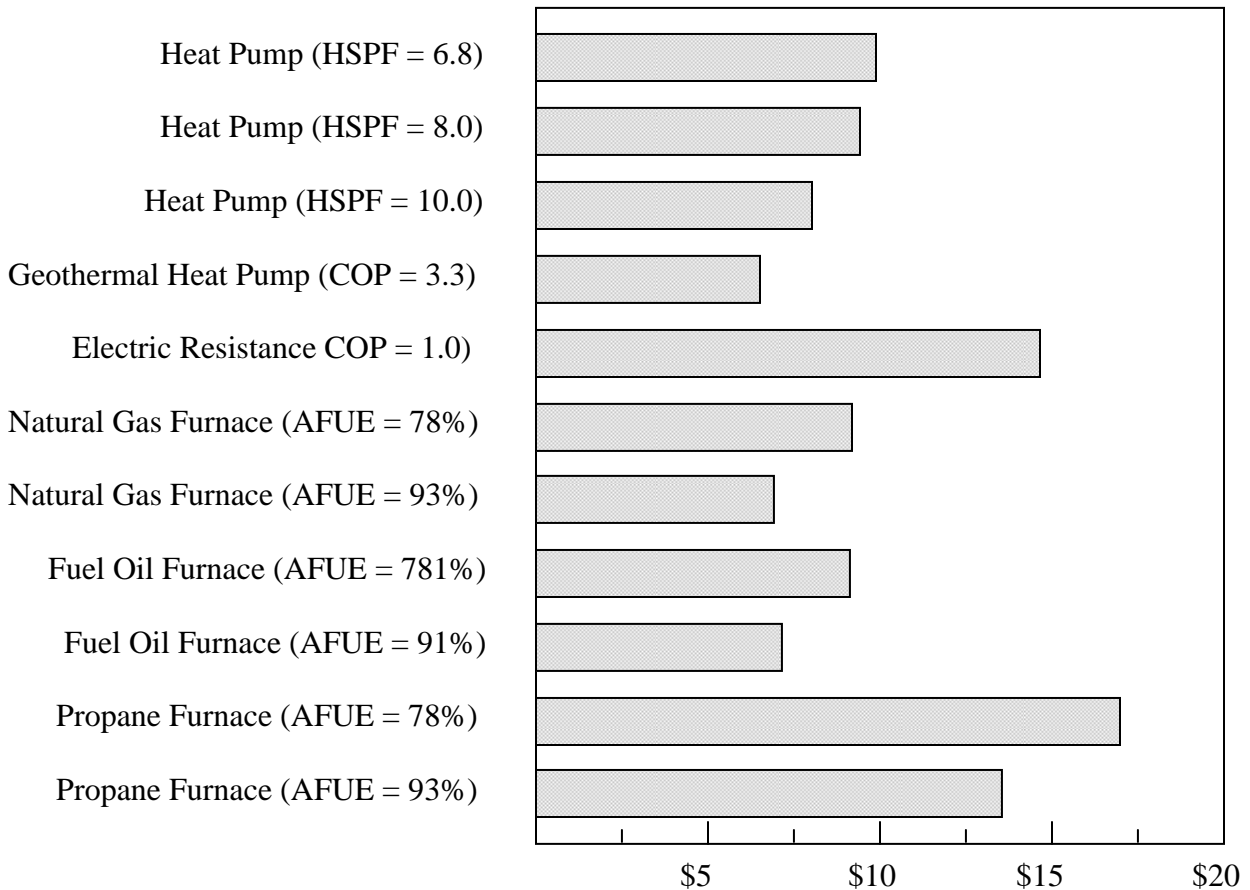
This is the number of heating seasons for fuel or electricity savings and operating expenses needed to pay-off the extra cost of STEP WARMFLOOR heating system.

$$\text{Pay-off time} = \frac{[\text{Total installation cost of STEP}] - [\text{Total installation cost of Competitor}]}{[\text{Competitor annual operating cost} - \text{STEP annual operating cost}]}$$

RESIDENTIAL HEATING COSTS

THE UNION LIGHT, HEAT AND POWER COMPANY

Heating Systems



Fuel Prices Used For Comparison:
 Natural Gas @ \$0.6072 / Ccf
 Electricity @ \$0.0496 / kWh
 Fuel Oil @ \$0.8264 / gal (incl. tax)
 Propane @ \$1.047 / gal (incl. tax)

Dollars Per Usable MMBtus

The chart estimates the energy performance of residential heating systems in the Greater Cincinnati Area and is not valid for comparing raw fuel prices only.

Heating system assumptions: electric resistance is baseboard, wall, or ceiling heat; all the other systems lose 10% of the heat through the ducts to the unconditioned basement and include a 340-watt blower motor.

Data shown are for energy costs and do not reflect the initial purchase price or the maintenance costs of the different heating systems.

HSPF=Heating Seasonal Performance Factor, COP=Coefficient Of Performance, and AFUE=Annual Fuel Utilization Efficiency.

Prices for fuel oil and propane are subject to change and do not represent the average of all area suppliers.