

NOMINALIZATION OF HVAC ENERGY COSTS



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= Input by User
 = Computed DO NOT change

COMPARATIVE COST TABLE - HEATING and COOLING				
The Cost of Listed Fuels required to Match the LOW OPERATING COSTS of a				
Geothermal Heat Pump with a Heating Efficiency of		4.9	= TOTAL Efficiency/COP	
and a Cooling Efficiency of		27	= TOTAL Efficiency/EER	
and a local electric utility cost of		\$0.1700	per kWh for Heating	
HEATING by:		\$0.1955	per kWh for Cooling	
OIL	would have to Cost	\$1.01	per gallon, or	34% of the cost of Oil Heat
NATURAL GAS	would have to Cost	\$0.76	per CCF, or	31% of the cost of Gas Heat
PROPANE	would have to Cost	\$0.69	per gallon, or	22% of the cost of Propane Heat
ELECTRIC	would have to Cost	\$0.035	per kWh, or	20% of the cost of Electric Heat
COOLING by ELECTRICITY would have to cost		\$0.058	per kWh, or	34% of the cost of Electric Cooling

Engineering Section - Items below based on typical HVAC performance factors

The below information provides the assumptions and efficiencies used in the computation of the above equivalent fossil and electric HEATING COSTS. Also Listed, for Comparison Purposes are nominalized Heating Costs in Dollars per Million BTU of Delivered Heat.

The Average Home is 0.035 to 0.065 Btu per hour for heating

OIL	139,000	Btu/Gallon	90%	=Flame Conversion Efficiency
	\$3.00	PerGallon	85%	=Heat Exchanger & Stack Efficiency
			93%	=Electric Parasetic Effect
			0.71	= TOTAL Efficiency/COP
	98,892	=Btu/Gallon Delivered for Heating		\$30.34 =Cost Per Millon Btu
NATURAL GAS	100,000	Btu/CCF	90%	=Flame Conversion Efficiency
	\$2.50	Per CCF*	88%	=Heat Exchanger & Stack Efficiency
		(*incl winter pipe line charge)	95%	=Electric Parasetic Effect
			0.75	= TOTAL Efficiency/COP
	75,240	=Btu/CCF Delivered for Heating		\$33.23 =Cost Per Millon Btu
PROPANE	95,000	Btu/CCF	89%	=Flame Conversion Efficiency
	\$3.20	Per CCF	85%	=Heat Exchanger & Stack Efficiency
			95%	=Electric Parasetic Effect
			0.72	= TOTAL Efficiency/COP
	68,274	=Btu/Gallon Delivered for Heating		\$46.87 =Cost Per Millon Btu
ELECTRIC	3,413	= Btu/kWh	0.99	= TOTAL Efficiency/COP (Heating)
	\$0.1700	= per Kilo Watt (kW) Heating	8	= TOTAL Efficiency/EER (Cooling)
	\$0.1955	= per Kilo Watt (kW) Cooling		
			\$49.81	=Cost Per Million BTU Heating
		\$24.37	=Cost Per Million BTU Cooling	
GEOHERMAL HP	\$0.1700	= per Kilo Watt (kW) Heating		
	\$0.1955	= per Kilo Watt (kW) Cooling		
		from above	4.9	= COP
			27	= EER
			\$10.17	=Cost Per Millon Btu for Heating
			\$7.22	=Cost Per Millon Btu for Cooling