

Comparative energy costs for heating

Electricity (Cents/kWh)	Fuel Oil Regular Furnace (\$/Gal.) - 60% Efficiency	Fuel Oil Super Efficient Furnace (\$/Gal.) - 80% Efficiency	Propane Regular Furnace (\$/Gal.) - 60% Efficiency	Propane Super Efficient Furnace (\$/Gal.) - 90% Efficiency	Natural Gas Regular Furnace (\$/MCF) - 60% Efficiency	Natural Gas Super Efficient Furnace (\$/MCF) - 90% Efficiency
4.0	0.98	1.31	0.64	0.97	7.03	10.55
4.2	1.03	1.38	0.68	1.01	7.38	11.08
4.4	1.08	1.44	0.71	1.06	7.74	11.60
4.6	1.13	1.51	0.74	1.11	8.09	12.13
4.7	1.16	1.54	0.76	1.14	8.26	12.39
4.8	1.18	1.58	0.77	1.16	8.44	12.66
4.9	1.21	1.61	0.79	1.18	8.61	12.92
5.0	1.23	1.64	0.81	1.21	8.79	13.18
5.1	1.26	1.67	0.82	1.23	8.97	13.45
5.2	1.28	1.71	0.84	1.26	9.14	13.71
5.3	1.30	1.74	0.85	1.28	9.32	13.98
5.4	1.33	1.77	0.87	1.30	9.49	14.24
5.5	1.35	1.80	0.89	1.33	9.67	14.50
5.6	1.39	1.84	0.90	1.35	9.84	14.77
5.7	1.40	1.87	0.92	1.38	10.02	15.03
5.8	1.43	1.90	0.93	1.40	10.20	15.30
5.9	1.45	1.94	0.95	1.43	10.37	15.56
6.0	1.48	1.97	0.97	1.45	10.55	15.82
6.5	1.60	2.13	1.05	1.57	11.43	17.14
6.7	1.65	2.20	1.08	1.62	11.78	17.67
7.0	1.72	2.30	1.13	1.69	12.31	18.46
7.5	1.85	2.46	1.21	1.81	13.18	19.78
7.7	1.90	2.53	1.24	1.86	13.54	20.30
8.0	1.97	2.63	1.29	1.93	14.06	21.10
8.5	2.09	2.79	1.37	2.05	14.94	22.41
8.6	2.12	2.82	1.38	2.08	15.12	22.68
8.7	2.14	2.85	1.40	2.10	15.29	22.94
8.9	2.19	2.92	1.43	2.15	15.65	23.47
9.0	2.22	2.95	1.45	2.17	15.82	23.73
10.0	2.46	3.28	1.61	2.42	17.58	26.37
12.0	2.95	3.94	1.93	2.90	21.10	31.64
14.0	3.45	4.59	2.25	3.38	24.61	36.92

The above figures are based on the assumptions and formulas listed below.

Assumptions

Annual Seasonal Operating Efficiency

Fuel Source	Btu Heat Content	Regular Furnace	Super Efficient Furnace
Electricity	3,413 Btu/kWh	100%	100%
#2 Fuel Oil	140,000 Btu/Gal.	60%	80%
Propane	91,600 Btu/Gal.	60%	90%
Natural Gas	1,000,000 Btu/MCF	60%	90%

Formulas

Alternate fuel price to electric rate conversion formula:

$$(\text{Fuel Price}) \div (\text{Efficiency}) \times (341,300) \div (\text{Btu Heat Content}) = \text{Electric Rate}$$

Example of \$1.21/Gal. Propane to Electricity with a Super Efficient Furnace:

$$(1.21) \div (0.90) \times (341,300) \div (91,600) = 5.0\text{¢/kWh}$$

Electricity rate to alternate fuel price conversion formula:

$$(\text{Electric Rate}) \times (\text{Efficiency}) \times (\text{Btu Heat Content}) \div (341,300) = \text{Fuel Price}$$

Example of 5¢/kWh Electricity Rate to #2 Fuel Oil with a Regular Furnace:

$$(5.0) \times (0.60) \times (140,000) \div (341,300) = \$1.23/\text{Gal.}$$

When comparing the price of off-peak electricity for heating to the price of alternative heating fuels, it is important to compare equipment efficiency, energy rates and monthly service charges.

The seasonal efficiency for electric heating systems ranges from 100-300 percent or more. The comparable efficiency for gas and oil heating systems ranges from a low of approximately 60 percent to a high of 95 percent. Most older gas and oil systems have an efficiency of 70 to 80 percent and most newer models have an efficiency in the 90 percent range.

Cost comparisons must also take into account actual energy cost and facilities charges or service charges that often are required by utilities.

An energy specialist from your local cooperative or municipal will be happy to help you sort out all the factors that should be considered in your energy cost comparisons.

How to compare cost