

## Electric Heating: Estimating Costs with Changing Prices

We purchase fuel to heat our homes. Our heating system changes the fuel into heat.

Heat can be measured by using a term called a "BTU". (British Thermal Unit)

A BTU is a small unit of heat, comparable to the amount of heat from one wooden match.

An average Midwest home may use 60 to 80 million BTUs each winter.

The table below shows the cost of producing one million BTUs for home heating with electric heating systems.

The cost per million BTUs will depend on the heating system efficiency and the price per kilowatt hour (kWh).

The "Cost per Million BTUs" is the best way to compare heating costs of all fuels and heating systems.

Electric Heating Estimates: Cost per Million BTUs										
Select the type of heating system, the efficiency and your heating cost per kWh.										
The dollar amount is your cost to purchase one million BTUs with this system.										
Type of electric system →	Electric Furnace & other electric elements	Heat pumps, ("Air to Air" heat pumps) Costs are based on age of system and average seasonal efficiencies							Geothermal heat pumps	
		HP age reference	10 to 15 yrs old	0 to 10 yrs old	0 to 10 yrs old	0 to 10 yrs old	0 to 5 yrs old	0 to 5 yrs old	More than 10 yrs old	0 to 10 yrs old
HP Seer reference	Any age	More than 15 yrs old	10 to 15 yrs old	0 to 10 yrs old	0 to 10 yrs old	0 to 10 yrs old	0 to 5 yrs old	0 to 5 yrs old	More than 10 yrs old	0 to 10 yrs old
Avg COP /winter	none	6 - 8 Seer	10 Seer	10 Seer	12 Seer	13 Seer	14 Seer	15 - 17 Seer	All	18 plus Seer
BTU multiplier	1.00	1.60	1.80	2.00	2.20	2.30	2.40	2.60	2.80	3.20
Cost/kWh ↓	3413	5,461	6,143	6,826	7,509	7,850	8,191	8,874	9,556	10,922
	Cost per MBTUS	Cost per MBTUS	Cost per MBTUS	Cost per MBTUS	Cost per MBTUS	Cost per MBTUS	Cost per MBTUS	Cost per MBTUS	Cost per MBTUS	Cost per MBTUS
\$0.110	\$32.23	\$20.14	\$17.91	\$16.11	\$14.65	\$14.01	\$13.43	\$12.40	\$11.51	\$10.07
\$0.100	\$29.30	\$18.31	\$16.28	\$14.65	\$13.32	\$12.74	\$12.21	\$11.27	\$10.46	\$9.16
\$0.090	\$26.37	\$16.48	\$14.65	\$13.18	\$11.99	\$11.47	\$10.99	\$10.14	\$9.42	\$8.24
\$0.085	\$24.90	\$15.57	\$13.84	\$12.45	\$11.32	\$10.83	\$10.38	\$9.58	\$8.89	\$7.78
\$0.080	\$23.44	\$14.65	\$13.02	\$11.72	\$10.65	\$10.19	\$9.77	\$9.02	\$8.37	\$7.32
\$0.075	\$21.97	\$13.73	\$12.21	\$10.99	\$9.99	\$9.55	\$9.16	\$8.45	\$7.85	\$6.87
\$0.074	\$21.68	\$13.55	\$12.05	\$10.84	\$9.86	\$9.43	\$9.03	\$8.34	\$7.74	\$6.78
\$0.070	\$20.51	\$12.82	\$11.39	\$10.25	\$9.32	\$8.92	\$8.55	\$7.89	\$7.32	\$6.41
\$0.067	\$19.63	\$12.27	\$10.91	\$9.82	\$8.92	\$8.54	\$8.18	\$7.55	\$7.01	\$6.13
\$0.065	\$19.04	\$11.90	\$10.58	\$9.52	\$8.66	\$8.28	\$7.94	\$7.32	\$6.80	\$5.95
\$0.060	\$17.58	\$10.99	\$9.77	\$8.79	\$7.99	\$7.64	\$7.32	\$6.76	\$6.28	\$5.49
\$0.057	\$16.70	\$10.44	\$9.28	\$8.35	\$7.59	\$7.26	\$6.96	\$6.42	\$5.96	\$5.22
\$0.055	\$16.11	\$10.07	\$8.95	\$8.06	\$7.32	\$7.01	\$6.71	\$6.20	\$5.76	\$5.04
\$0.050	\$14.65	\$9.16	\$8.14	\$7.32	\$6.66	\$6.37	\$6.10	\$5.63	\$5.23	\$4.58
\$0.045	\$13.18	\$8.24	\$7.32	\$6.59	\$5.99	\$5.73	\$5.49	\$5.07	\$4.71	\$4.12
\$0.040	\$11.72	\$7.32	\$6.51	\$5.86	\$5.33	\$5.10	\$4.88	\$4.51	\$4.19	\$3.66

### Example: Estimated Electric Heat comparison using the chart above.

If you own an electric furnace with no heat pump and your heating rate is about \$.06 per kWh then from the table above, you will spend about \$17.58 for one million BTUs.

If your home requires 60 million BTUs per winter, your winter heating costs will be about

$$60 \times \$17.58 = \$1055 \text{ per winter}$$

If you changed to a new 13 SEER heat pump, your cost per million BTUs is now \$7.64

In the same winter which required 60 million BTUs, your heating costs would be about

$$60 \times \$7.64 = \$458 \text{ per winter}$$

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