



BUILDING IN ALASKA

EEM-01152

Comparative Unit Fuel Costs for Equivalent Dollar Net Heat Output

Energy costs continue to rise. This has resulted in a need for comparing fuel costs between different sources such as natural gas, fuel oil, electricity, propane, and wood. The following table provides a method for comparing the unit fuel costs. Each fuel cost on the table is indexed to the cost of fuel oil per gallon. These are incrementally raised by one penny and all the other costs are compared to the cost of fuel oil, as a base of comparison.

The heating output for different heating source efficiencies are shown at the end of the table. The heating appliance efficiencies depend on many things, such as the method in which the fuel is burned, the air supply for combustion, the cleanliness of the combustion chamber, and how efficient the device is in using the fuel.

Over the past two decades, particularly fuel oil and propane heaters, as well as natural gas burners and boilers have all increased their efficiencies. These efficiencies have been adjusted upwards making fuel a little more productive than in the past, meaning you actually get more heat from the fuel with these newer, more efficient, heaters.

For this particular cost comparison (done in 2005) we use the following efficiencies of burning for various fuels. For fuel oil—we assume a minimum of 80% heating efficiency, which means you get 80% of the gross fuel content per gallon. For electricity—you are assumed to get 100% of everything that comes into your home, so even though it's not produced at a 100% efficiency from the coal, which is burned, you get 100% of what you pay for with electricity.

Natural gas—the heating plant efficiency is assumed to be at least 80%. You certainly can do better but

we have assumed the minimum. For propane—we have kept it at 70%. It's hard to know how efficient propane fueled appliances are. For bituminous coal—we've also kept that at 55% since that is about the efficiency of a coal-fired hydronic boiler. And for soft wood—we've raised the efficiency slightly from 50 to 65% owing to the better efficiency of new fuel burning stoves. There are masonry stoves that can do better than the standard airtight stoves with regard to complete combustion of wood.

To use the table, simply start with the comparison you want to make for a fuel. Suppose you want to know how good a buy soft wood per cord is if you have to pay \$110 per cord. To compete with wood at that price, fuel oil would have to cost \$1.34 a gallon and propane would have to cost 78¢ a gallon. In 2005 both of these fuels are much more expensive than this. Fuel oil is about \$1.85 a gallon and propane is about the same. So comparing those three fuels, soft wood is by far the least expensive per BTU heat output.

One of the cost comparisons you might want to make is how expensive does fuel oil have to be before it's equal to the cost of electricity for heat? Most of the electricity in Alaska costs between 9¢ and 11¢ per kwh. If electricity costs 11¢ a kwh, fuel oil would have to cost \$3.56 a gallon to be equivalent. For comparison, natural gas would have to cost \$25.80 per thousand cubic feet to compete with electricity at 11¢ a kwh. Those are just a few of the comparisons it's possible to make with a table like this.

The calculation formulas used to make this table are shown at the end of the table.

**TABLE 1a
COMPARATIVE UNIT FUEL COSTS FOR EQUIVALENT DOLLAR NET HEAT OUTPUT**

| Net Heat Production BTU/Dollar | COMPARATIVE UNIT FUEL COST (DOLLARS) | | | | | |
|--------------------------------------|--------------------------------------|-----------------------------|--------------------------------|-------------------------------|-------------------------|-------------------------------|
| | Fuel Oil Cost per Gallon | Electric Cost per KWH | Natural Gas Cost per CCF | Propane Cost per Gallon | Coal Cost per Ton | Soft Wood Cost per Cord |
| 48850 | 2.26 | 0.0699 | \$1.64 | \$1.32 | \$191.40 | \$186.29 |
| 48634 | 2.27 | 0.0702 | \$1.64 | \$1.32 | \$192.25 | \$187.11 |
| 48421 | 2.28 | 0.0705 | \$1.65 | \$1.33 | \$193.10 | \$187.93 |
| 48210 | 2.29 | 0.0708 | \$1.66 | \$1.33 | \$193.94 | \$188.76 |
| 48000 | 2.30 | 0.0711 | \$1.67 | \$1.34 | \$194.79 | \$189.58 |
| 47792 | 2.31 | 0.0714 | \$1.67 | \$1.34 | \$195.64 | \$190.41 |
| 47586 | 2.32 | 0.0717 | \$1.68 | \$1.35 | \$196.49 | \$191.23 |
| 47382 | 2.33 | 0.0720 | \$1.69 | \$1.36 | \$197.33 | \$192.06 |
| 47179 | 2.34 | 0.0723 | \$1.70 | \$1.36 | \$198.18 | \$192.88 |
| 46979 | 2.35 | 0.0726 | \$1.70 | \$1.37 | \$199.03 | \$193.70 |
| 46780 | 2.36 | 0.0730 | \$1.71 | \$1.37 | \$199.87 | \$194.53 |
| 46582 | 2.37 | 0.0733 | \$1.72 | \$1.38 | \$200.72 | \$195.35 |
| 46387 | 2.38 | 0.0736 | \$1.72 | \$1.39 | \$201.57 | \$196.18 |
| 46192 | 2.39 | 0.0739 | \$1.73 | \$1.39 | \$202.41 | \$197.00 |
| 46000 | 2.40 | 0.0742 | \$1.74 | \$1.40 | \$203.26 | \$197.83 |
| 45809 | 2.41 | 0.0745 | \$1.75 | \$1.40 | \$204.11 | \$198.65 |
| 45620 | 2.42 | 0.0748 | \$1.75 | \$1.41 | \$204.95 | \$199.47 |
| 45432 | 2.43 | 0.0751 | \$1.76 | \$1.41 | \$205.80 | \$200.30 |
| 45246 | 2.44 | 0.0754 | \$1.77 | \$1.42 | \$206.65 | \$201.12 |
| 45061 | 2.45 | 0.0757 | \$1.78 | \$1.43 | \$207.50 | \$201.95 |
| 44878 | 2.46 | 0.0761 | \$1.78 | \$1.43 | \$208.34 | \$202.77 |
| 44696 | 2.47 | 0.0764 | \$1.79 | \$1.44 | \$209.19 | \$203.60 |
| 44516 | 2.48 | 0.0767 | \$1.80 | \$1.44 | \$210.04 | \$204.42 |
| 44337 | 2.49 | 0.0770 | \$1.80 | \$1.45 | \$210.88 | \$205.24 |
| 44160 | 2.50 | 0.0773 | \$1.81 | \$1.46 | \$211.73 | \$206.07 |
| 43984 | 2.51 | 0.0776 | \$1.82 | \$1.46 | \$212.58 | \$206.89 |
| 43810 | 2.52 | 0.0779 | \$1.83 | \$1.47 | \$213.42 | \$207.72 |
| 43636 | 2.53 | 0.0782 | \$1.83 | \$1.47 | \$214.27 | \$208.54 |
| 43465 | 2.54 | 0.0785 | \$1.84 | \$1.48 | \$215.12 | \$209.37 |
| 43294 | 2.55 | 0.0788 | \$1.85 | \$1.48 | \$215.96 | \$210.19 |
| 43125 | 2.56 | 0.0791 | \$1.86 | \$1.49 | \$216.81 | \$211.01 |
| 42957 | 2.57 | 0.0795 | \$1.86 | \$1.50 | \$217.66 | \$211.84 |
| 42791 | 2.58 | 0.0798 | \$1.87 | \$1.50 | \$218.51 | \$212.66 |
| 42625 | 2.59 | 0.0801 | \$1.88 | \$1.51 | \$219.35 | \$213.49 |
| 42462 | 2.60 | 0.0804 | \$1.88 | \$1.51 | \$220.20 | \$214.31 |
| 42299 | 2.61 | 0.0807 | \$1.89 | \$1.52 | \$221.05 | \$215.14 |
| 42137 | 2.62 | 0.0810 | \$1.90 | \$1.53 | \$221.89 | \$215.96 |
| 41977 | 2.63 | 0.0813 | \$1.91 | \$1.53 | \$222.74 | \$216.78 |
| 41818 | 2.64 | 0.0816 | \$1.91 | \$1.54 | \$223.59 | \$217.61 |
| 41660 | 2.65 | 0.0819 | \$1.92 | \$1.54 | \$224.43 | \$218.43 |
| 41504 | 2.66 | 0.0822 | \$1.93 | \$1.55 | \$225.28 | \$219.26 |
| 41348 | 2.67 | 0.0825 | \$1.93 | \$1.55 | \$226.13 | \$220.08 |
| 41194 | 2.68 | 0.0829 | \$1.94 | \$1.56 | \$226.97 | \$220.91 |
| 41041 | 2.69 | 0.0832 | \$1.95 | \$1.57 | \$227.82 | \$221.73 |
| 40889 | 2.70 | 0.0835 | \$1.96 | \$1.57 | \$228.67 | \$222.55 |
| 40738 | 2.71 | 0.0838 | \$1.96 | \$1.58 | \$229.52 | \$223.38 |
| 40588 | 2.72 | 0.0841 | \$1.97 | \$1.58 | \$230.36 | \$224.20 |
| 40440 | 2.73 | 0.0844 | \$1.98 | \$1.59 | \$231.21 | \$225.03 |

**TABLE 1b
COMPARATIVE UNIT FUEL COSTS FOR EQUIVALENT DOLLAR NET HEAT OUTPUT**

| Net Heat Production BTU/Dollar | COMPARATIVE UNIT FUEL COST (DOLLARS) | | | | | |
|--------------------------------------|--------------------------------------|-----------------------------|--------------------------------|-------------------------------|-------------------------|-------------------------------|
| | Fuel Oil Cost per Gallon | Electric Cost per KWH | Natural Gas Cost per CCF | Propane Cost per Gallon | Coal Cost per Ton | Soft Wood Cost per Cord |
| 40292 | 2.74 | 0.0847 | \$1.99 | \$1.59 | \$232.06 | \$225.85 |
| 40145 | 2.75 | 0.0850 | \$1.99 | \$1.60 | \$232.90 | \$226.68 |
| 40000 | 2.76 | 0.0853 | \$2.00 | \$1.61 | \$233.75 | \$227.50 |
| 39856 | 2.77 | 0.0856 | \$2.01 | \$1.61 | \$234.60 | \$228.32 |
| 39712 | 2.78 | 0.0859 | \$2.01 | \$1.62 | \$235.44 | \$229.15 |
| 39570 | 2.79 | 0.0863 | \$2.02 | \$1.62 | \$236.29 | \$229.97 |
| 39429 | 2.80 | 0.0866 | \$2.03 | \$1.63 | \$237.14 | \$230.80 |
| 39288 | 2.81 | 0.0869 | \$2.04 | \$1.64 | \$237.98 | \$231.62 |
| 39149 | 2.82 | 0.0872 | \$2.04 | \$1.64 | \$238.83 | \$232.45 |
| 39011 | 2.83 | 0.0875 | \$2.05 | \$1.65 | \$239.68 | \$233.27 |
| 38873 | 2.84 | 0.0878 | \$2.06 | \$1.65 | \$240.53 | \$234.09 |
| 38737 | 2.85 | 0.0881 | \$2.07 | \$1.66 | \$241.37 | \$234.92 |
| 38601 | 2.86 | 0.0884 | \$2.07 | \$1.66 | \$242.22 | \$235.74 |
| 38467 | 2.87 | 0.0887 | \$2.08 | \$1.67 | \$243.07 | \$236.57 |
| 38333 | 2.88 | 0.0890 | \$2.09 | \$1.68 | \$243.91 | \$237.39 |
| 38201 | 2.89 | 0.0893 | \$2.09 | \$1.68 | \$244.76 | \$238.22 |
| 38069 | 2.90 | 0.0897 | \$2.10 | \$1.69 | \$245.61 | \$239.04 |
| 37938 | 2.91 | 0.0900 | \$2.11 | \$1.69 | \$246.45 | \$239.86 |
| 37808 | 2.92 | 0.0903 | \$2.12 | \$1.70 | \$247.30 | \$240.69 |
| 37679 | 2.93 | 0.0906 | \$2.12 | \$1.71 | \$248.15 | \$241.51 |
| 37551 | 2.94 | 0.0909 | \$2.13 | \$1.71 | \$248.99 | \$242.34 |
| 37424 | 2.95 | 0.0912 | \$2.14 | \$1.72 | \$249.84 | \$243.16 |
| 37297 | 2.96 | 0.0915 | \$2.14 | \$1.72 | \$250.69 | \$243.99 |
| 37172 | 2.97 | 0.0918 | \$2.15 | \$1.73 | \$251.54 | \$244.81 |
| 37047 | 2.98 | 0.0921 | \$2.16 | \$1.73 | \$252.38 | \$245.63 |
| 36923 | 2.99 | 0.0924 | \$2.17 | \$1.74 | \$253.23 | \$246.46 |
| 36800 | 3.00 | 0.0927 | \$2.17 | \$1.75 | \$254.08 | \$247.28 |
| 36678 | 3.01 | 0.0931 | \$2.18 | \$1.75 | \$254.92 | \$248.11 |
| 36556 | 3.02 | 0.0934 | \$2.19 | \$1.76 | \$255.77 | \$248.93 |
| 36436 | 3.03 | 0.0937 | \$2.20 | \$1.76 | \$256.62 | \$249.76 |
| 36316 | 3.04 | 0.0940 | \$2.20 | \$1.77 | \$257.46 | \$250.58 |
| 36197 | 3.05 | 0.0943 | \$2.21 | \$1.78 | \$258.31 | \$251.40 |
| 36078 | 3.06 | 0.0946 | \$2.22 | \$1.78 | \$259.16 | \$252.23 |
| 35961 | 3.07 | 0.0949 | \$2.22 | \$1.79 | \$260.00 | \$253.05 |
| 35844 | 3.08 | 0.0952 | \$2.23 | \$1.79 | \$260.85 | \$253.88 |
| 35728 | 3.09 | 0.0955 | \$2.24 | \$1.80 | \$261.70 | \$254.70 |
| 35613 | 3.10 | 0.0958 | \$2.25 | \$1.80 | \$262.55 | \$255.53 |
| 35498 | 3.11 | 0.0961 | \$2.25 | \$1.81 | \$263.39 | \$256.35 |
| 35385 | 3.12 | 0.0965 | \$2.26 | \$1.82 | \$264.24 | \$257.17 |
| 35272 | 3.13 | 0.0968 | \$2.27 | \$1.82 | \$265.09 | \$258.00 |
| 35159 | 3.14 | 0.0971 | \$2.28 | \$1.83 | \$265.93 | \$258.82 |
| 35048 | 3.15 | 0.0974 | \$2.28 | \$1.83 | \$266.78 | \$259.65 |
| 34937 | 3.16 | 0.0977 | \$2.29 | \$1.84 | \$267.63 | \$260.47 |
| 34826 | 3.17 | 0.0980 | \$2.30 | \$1.85 | \$268.47 | \$261.30 |
| 34717 | 3.18 | 0.0983 | \$2.30 | \$1.85 | \$269.32 | \$262.12 |
| 34608 | 3.19 | 0.0986 | \$2.31 | \$1.86 | \$270.17 | \$262.94 |
| 34500 | 3.20 | 0.0989 | \$2.32 | \$1.86 | \$271.01 | \$263.77 |
| 34393 | 3.21 | 0.0992 | \$2.33 | \$1.87 | \$271.86 | \$264.59 |

**TABLE 1c
COMPARATIVE UNIT FUEL COSTS FOR EQUIVALENT DOLLAR NET HEAT OUTPUT**

| Net Heat Production BTU/Dollar | COMPARATIVE UNIT FUEL COST (DOLLARS) | | | | | |
|--------------------------------------|--------------------------------------|-----------------------------|--------------------------------|-------------------------------|-------------------------|-------------------------------|
| | Fuel Oil Cost per Gallon | Electric Cost per KWH | Natural Gas Cost per CCF | Propane Cost per Gallon | Coal Cost per Ton | Soft Wood Cost per Cord |
| 34286 | 3.22 | 0.0995 | \$2.33 | \$1.87 | \$272.71 | \$265.42 |
| 34180 | 3.23 | 0.0999 | \$2.34 | \$1.88 | \$273.56 | \$266.24 |
| 34074 | 3.24 | 0.1002 | \$2.35 | \$1.89 | \$274.40 | \$267.07 |
| 33969 | 3.25 | 0.1005 | \$2.36 | \$1.89 | \$275.25 | \$267.89 |
| 33865 | 3.26 | 0.1008 | \$2.36 | \$1.90 | \$276.10 | \$268.71 |
| 33761 | 3.27 | 0.1011 | \$2.37 | \$1.90 | \$276.94 | \$269.54 |
| 33659 | 3.28 | 0.1014 | \$2.38 | \$1.91 | \$277.79 | \$270.36 |
| 33556 | 3.29 | 0.1017 | \$2.38 | \$1.91 | \$278.64 | \$271.19 |
| 33455 | 3.30 | 0.1020 | \$2.39 | \$1.92 | \$279.48 | \$272.01 |
| 33353 | 3.31 | 0.1023 | \$2.40 | \$1.93 | \$280.33 | \$272.84 |
| 33253 | 3.32 | 0.1026 | \$2.41 | \$1.93 | \$281.18 | \$273.66 |
| 33153 | 3.33 | 0.1029 | \$2.41 | \$1.94 | \$282.02 | \$274.48 |
| 33054 | 3.34 | 0.1033 | \$2.42 | \$1.94 | \$282.87 | \$275.31 |
| 32955 | 3.35 | 0.1036 | \$2.43 | \$1.95 | \$283.72 | \$276.13 |
| 32857 | 3.36 | 0.1039 | \$2.43 | \$1.96 | \$284.57 | \$276.96 |
| 32760 | 3.37 | 0.1042 | \$2.44 | \$1.96 | \$285.41 | \$277.78 |
| 32663 | 3.38 | 0.1045 | \$2.45 | \$1.97 | \$286.26 | \$278.61 |
| 32566 | 3.39 | 0.1048 | \$2.46 | \$1.97 | \$287.11 | \$279.43 |
| 32471 | 3.40 | 0.1051 | \$2.46 | \$1.98 | \$287.95 | \$280.25 |
| 32375 | 3.41 | 0.1054 | \$2.47 | \$1.98 | \$288.80 | \$281.08 |
| 32281 | 3.42 | 0.1057 | \$2.48 | \$1.99 | \$289.65 | \$281.90 |
| 32187 | 3.43 | 0.1060 | \$2.49 | \$2.00 | \$290.49 | \$282.73 |
| 32093 | 3.44 | 0.1063 | \$2.49 | \$2.00 | \$291.34 | \$283.55 |
| 32000 | 3.45 | 0.1067 | \$2.50 | \$2.01 | \$292.19 | \$284.37 |
| 31908 | 3.46 | 0.1070 | \$2.51 | \$2.01 | \$293.03 | \$285.20 |
| 31816 | 3.47 | 0.1073 | \$2.51 | \$2.02 | \$293.88 | \$286.02 |
| 31724 | 3.48 | 0.1076 | \$2.52 | \$2.03 | \$294.73 | \$286.85 |
| 31633 | 3.49 | 0.1079 | \$2.53 | \$2.03 | \$295.58 | \$287.67 |
| 31543 | 3.50 | 0.1082 | \$2.54 | \$2.04 | \$296.42 | \$288.50 |
| 31453 | 3.51 | 0.1085 | \$2.54 | \$2.04 | \$297.27 | \$289.32 |
| 31364 | 3.52 | 0.1088 | \$2.55 | \$2.05 | \$298.12 | \$290.14 |
| 31275 | 3.53 | 0.1091 | \$2.56 | \$2.05 | \$298.96 | \$290.97 |
| 31186 | 3.54 | 0.1094 | \$2.57 | \$2.06 | \$299.81 | \$291.79 |
| 31099 | 3.55 | 0.1097 | \$2.57 | \$2.07 | \$300.66 | \$292.62 |
| 31011 | 3.56 | 0.1101 | \$2.58 | \$2.07 | \$301.50 | \$293.44 |
| 30924 | 3.57 | 0.1104 | \$2.59 | \$2.08 | \$302.35 | \$294.27 |
| 30838 | 3.58 | 0.1107 | \$2.59 | \$2.08 | \$303.20 | \$295.09 |
| 30752 | 3.59 | 0.1110 | \$2.60 | \$2.09 | \$304.04 | \$295.91 |
| 30667 | 3.60 | 0.1113 | \$2.61 | \$2.10 | \$304.89 | \$296.74 |
| 30582 | 3.61 | 0.1116 | \$2.62 | \$2.10 | \$305.74 | \$297.56 |
| 30497 | 3.62 | 0.1119 | \$2.62 | \$2.11 | \$306.59 | \$298.39 |
| 30413 | 3.63 | 0.1122 | \$2.63 | \$2.11 | \$307.43 | \$299.21 |
| 30330 | 3.64 | 0.1125 | \$2.64 | \$2.12 | \$308.28 | \$300.04 |
| 30247 | 3.65 | 0.1128 | \$2.64 | \$2.12 | \$309.13 | \$300.86 |
| 30164 | 3.66 | 0.1131 | \$2.65 | \$2.13 | \$309.97 | \$301.68 |
| 30082 | 3.67 | 0.1135 | \$2.66 | \$2.14 | \$310.82 | \$302.51 |
| 30000 | 3.68 | 0.1138 | \$2.67 | \$2.14 | \$311.67 | \$303.33 |
| 29919 | 3.69 | 0.1141 | \$2.67 | \$2.15 | \$312.51 | \$304.16 |

**TABLE 1d
COMPARATIVE UNIT FUEL COSTS FOR EQUIVALENT DOLLAR NET HEAT OUTPUT**

| Net Heat Production BTU/Dollar | COMPARATIVE UNIT FUEL COST (DOLLARS) | | | | | |
|--------------------------------------|--------------------------------------|-----------------------------|--------------------------------|-------------------------------|-------------------------|-------------------------------|
| | Fuel Oil Cost per Gallon | Electric Cost per KWH | Natural Gas Cost per CCF | Propane Cost per Gallon | Coal Cost per Ton | Soft Wood Cost per Cord |
| 29838 | 3.70 | 0.1144 | \$2.68 | \$2.15 | \$313.36 | \$304.98 |
| 29757 | 3.71 | 0.1147 | \$2.69 | \$2.16 | \$314.21 | \$305.81 |
| 29677 | 3.72 | 0.1150 | \$2.70 | \$2.17 | \$315.05 | \$306.63 |
| 29598 | 3.73 | 0.1153 | \$2.70 | \$2.17 | \$315.90 | \$307.45 |
| 29519 | 3.74 | 0.1156 | \$2.71 | \$2.18 | \$316.75 | \$308.28 |
| 29440 | 3.75 | 0.1159 | \$2.72 | \$2.18 | \$317.60 | \$309.10 |
| 29362 | 3.76 | 0.1162 | \$2.72 | \$2.19 | \$318.44 | \$309.93 |
| 29284 | 3.77 | 0.1165 | \$2.73 | \$2.19 | \$319.29 | \$310.75 |
| 29206 | 3.78 | 0.1169 | \$2.74 | \$2.20 | \$320.14 | \$311.58 |
| 29129 | 3.79 | 0.1172 | \$2.75 | \$2.21 | \$320.98 | \$312.40 |
| 29053 | 3.80 | 0.1175 | \$2.75 | \$2.21 | \$321.83 | \$313.22 |
| 28976 | 3.81 | 0.1178 | \$2.76 | \$2.22 | \$322.68 | \$314.05 |
| 28901 | 3.82 | 0.1181 | \$2.77 | \$2.22 | \$323.52 | \$314.87 |
| 28825 | 3.83 | 0.1184 | \$2.78 | \$2.23 | \$324.37 | \$315.70 |
| 28750 | 3.84 | 0.1187 | \$2.78 | \$2.24 | \$325.22 | \$316.52 |
| 28675 | 3.85 | 0.1190 | \$2.79 | \$2.24 | \$326.06 | \$317.35 |
| 28601 | 3.86 | 0.1193 | \$2.80 | \$2.25 | \$326.91 | \$318.17 |
| 28527 | 3.87 | 0.1196 | \$2.80 | \$2.25 | \$327.76 | \$318.99 |
| 28454 | 3.88 | 0.1199 | \$2.81 | \$2.26 | \$328.61 | \$319.82 |
| 28380 | 3.89 | 0.1203 | \$2.82 | \$2.26 | \$329.45 | \$320.64 |
| 28308 | 3.90 | 0.1206 | \$2.83 | \$2.27 | \$330.30 | \$321.47 |
| 28235 | 3.91 | 0.1209 | \$2.83 | \$2.28 | \$331.15 | \$322.29 |
| 28163 | 3.92 | 0.1212 | \$2.84 | \$2.28 | \$331.99 | \$323.12 |
| 28092 | 3.93 | 0.1215 | \$2.85 | \$2.29 | \$332.84 | \$323.94 |
| 28020 | 3.94 | 0.1218 | \$2.86 | \$2.29 | \$333.69 | \$324.76 |
| 27949 | 3.95 | 0.1221 | \$2.86 | \$2.30 | \$334.53 | \$325.59 |
| 27879 | 3.96 | 0.1224 | \$2.87 | \$2.30 | \$335.38 | \$326.41 |
| 27809 | 3.97 | 0.1227 | \$2.88 | \$2.31 | \$336.23 | \$327.24 |
| 27739 | 3.98 | 0.1230 | \$2.88 | \$2.32 | \$337.07 | \$328.06 |
| 27669 | 3.99 | 0.1234 | \$2.89 | \$2.32 | \$337.92 | \$328.89 |
| 27600 | 4.00 | 0.1237 | \$2.90 | \$2.33 | \$338.77 | \$329.71 |
| 27531 | 4.01 | 0.1240 | \$2.91 | \$2.33 | \$339.62 | \$330.53 |
| 27463 | 4.02 | 0.1243 | \$2.91 | \$2.34 | \$340.46 | \$331.36 |
| 27395 | 4.03 | 0.1246 | \$2.92 | \$2.35 | \$341.31 | \$332.18 |
| 27327 | 4.04 | 0.1249 | \$2.93 | \$2.35 | \$342.16 | \$333.01 |
| 27259 | 4.05 | 0.1252 | \$2.93 | \$2.36 | \$343.00 | \$333.83 |
| 27192 | 4.06 | 0.1255 | \$2.94 | \$2.36 | \$343.85 | \$334.66 |
| 27125 | 4.07 | 0.1258 | \$2.95 | \$2.37 | \$344.70 | \$335.48 |
| 27059 | 4.08 | 0.1261 | \$2.96 | \$2.37 | \$345.54 | \$336.30 |
| 26993 | 4.09 | 0.1264 | \$2.96 | \$2.38 | \$346.39 | \$337.13 |
| 26927 | 4.10 | 0.1268 | \$2.97 | \$2.39 | \$347.24 | \$337.95 |
| 26861 | 4.11 | 0.1271 | \$2.98 | \$2.39 | \$348.08 | \$338.78 |
| 26796 | 4.12 | 0.1274 | \$2.99 | \$2.40 | \$348.93 | \$339.60 |
| 26731 | 4.13 | 0.1277 | \$2.99 | \$2.40 | \$349.78 | \$340.43 |
| 26667 | 4.14 | 0.1280 | \$3.00 | \$2.41 | \$350.62 | \$341.25 |
| 26602 | 4.15 | 0.1283 | \$3.01 | \$2.42 | \$351.47 | \$342.07 |
| 26538 | 4.16 | 0.1286 | \$3.01 | \$2.42 | \$352.32 | \$342.90 |
| 26475 | 4.17 | 0.1289 | \$3.02 | \$2.43 | \$353.17 | \$343.72 |

**TABLE 1e
COMPARATIVE UNIT FUEL COSTS FOR EQUIVALENT DOLLAR NET HEAT OUTPUT**

| Net Heat Production BTU/Dollar | COMPARATIVE UNIT FUEL COST (DOLLARS) | | | | | |
|--------------------------------------|--------------------------------------|-----------------------------|--------------------------------|-------------------------------|-------------------------|-------------------------------|
| | Fuel Oil Cost per Gallon | Electric Cost per KWH | Natural Gas Cost per CCF | Propane Cost per Gallon | Coal Cost per Ton | Soft Wood Cost per Cord |
| 26411 | 4.18 | 0.1292 | \$3.03 | \$2.43 | \$354.01 | \$344.55 |
| 26348 | 4.19 | 0.1295 | \$3.04 | \$2.44 | \$354.86 | \$345.37 |
| 26286 | 4.20 | 0.1298 | \$3.04 | \$2.44 | \$355.71 | \$346.20 |
| 26223 | 4.21 | 0.1302 | \$3.05 | \$2.45 | \$356.55 | \$347.02 |
| 26161 | 4.22 | 0.1305 | \$3.06 | \$2.46 | \$357.40 | \$347.84 |
| 26099 | 4.23 | 0.1308 | \$3.07 | \$2.46 | \$358.25 | \$348.67 |
| 26038 | 4.24 | 0.1311 | \$3.07 | \$2.47 | \$359.09 | \$349.49 |
| 25976 | 4.25 | 0.1314 | \$3.08 | \$2.47 | \$359.94 | \$350.32 |
| 25915 | 4.26 | 0.1317 | \$3.09 | \$2.48 | \$360.79 | \$351.14 |
| 25855 | 4.27 | 0.1320 | \$3.09 | \$2.49 | \$361.63 | \$351.97 |
| 25794 | 4.28 | 0.1323 | \$3.10 | \$2.49 | \$362.48 | \$352.79 |
| 25734 | 4.29 | 0.1326 | \$3.11 | \$2.50 | \$363.33 | \$353.61 |
| 25674 | 4.30 | 0.1329 | \$3.12 | \$2.50 | \$364.18 | \$354.44 |
| 25615 | 4.31 | 0.1332 | \$3.12 | \$2.51 | \$365.02 | \$355.26 |
| 25556 | 4.32 | 0.1336 | \$3.13 | \$2.51 | \$365.87 | \$356.09 |
| 25497 | 4.33 | 0.1339 | \$3.14 | \$2.52 | \$366.72 | \$356.91 |
| 25438 | 4.34 | 0.1342 | \$3.14 | \$2.53 | \$367.56 | \$357.74 |
| 25379 | 4.35 | 0.1345 | \$3.15 | \$2.53 | \$368.41 | \$358.56 |
| 25321 | 4.36 | 0.1348 | \$3.16 | \$2.54 | \$369.26 | \$359.38 |
| 25263 | 4.37 | 0.1351 | \$3.17 | \$2.54 | \$370.10 | \$360.21 |
| 25205 | 4.38 | 0.1354 | \$3.17 | \$2.55 | \$370.95 | \$361.03 |
| 25148 | 4.39 | 0.1357 | \$3.18 | \$2.56 | \$371.80 | \$361.86 |
| 25091 | 4.40 | 0.1360 | \$3.19 | \$2.56 | \$372.64 | \$362.68 |
| 25034 | 4.41 | 0.1363 | \$3.20 | \$2.57 | \$373.49 | \$363.51 |
| 24977 | 4.42 | 0.1366 | \$3.20 | \$2.57 | \$374.34 | \$364.33 |
| 24921 | 4.43 | 0.1370 | \$3.21 | \$2.58 | \$375.19 | \$365.15 |
| 24865 | 4.44 | 0.1373 | \$3.22 | \$2.58 | \$376.03 | \$365.98 |
| 24809 | 4.45 | 0.1376 | \$3.22 | \$2.59 | \$376.88 | \$366.80 |
| 24753 | 4.46 | 0.1379 | \$3.23 | \$2.60 | \$377.73 | \$367.63 |
| 24698 | 4.47 | 0.1382 | \$3.24 | \$2.60 | \$378.57 | \$368.45 |
| 24643 | 4.48 | 0.1385 | \$3.25 | \$2.61 | \$379.42 | \$369.28 |
| 24588 | 4.49 | 0.1388 | \$3.25 | \$2.61 | \$380.27 | \$370.10 |
| 24533 | 4.50 | 0.1391 | \$3.26 | \$2.62 | \$381.11 | \$370.92 |
| 24479 | 4.51 | 0.1394 | \$3.27 | \$2.63 | \$381.96 | \$371.75 |
| 24425 | 4.52 | 0.1397 | \$3.28 | \$2.63 | \$382.81 | \$372.57 |
| 24371 | 4.53 | 0.1400 | \$3.28 | \$2.64 | \$383.65 | \$373.40 |
| 24317 | 4.54 | 0.1404 | \$3.29 | \$2.64 | \$384.50 | \$374.22 |
| 24264 | 4.55 | 0.1407 | \$3.30 | \$2.65 | \$385.35 | \$375.05 |
| 24211 | 4.56 | 0.1410 | \$3.30 | \$2.65 | \$386.20 | \$375.87 |
| 24158 | 4.57 | 0.1413 | \$3.31 | \$2.66 | \$387.04 | \$376.69 |
| 24105 | 4.58 | 0.1416 | \$3.32 | \$2.67 | \$387.89 | \$377.52 |
| 24052 | 4.59 | 0.1419 | \$3.33 | \$2.67 | \$388.74 | \$378.34 |
| 24052 | 4.59 | 0.1419 | \$3.33 | \$2.67 | \$388.74 | \$378.34 |
| 24000 | 4.60 | 0.1422 | \$3.33 | \$2.68 | \$389.58 | \$379.17 |
| 23948 | 4.61 | 0.1425 | \$3.34 | \$2.68 | \$390.43 | \$379.99 |
| 23896 | 4.62 | 0.1428 | \$3.35 | \$2.69 | \$391.28 | \$380.82 |
| 23844 | 4.63 | 0.1431 | \$3.36 | \$2.69 | \$392.12 | \$381.64 |
| 23793 | 4.64 | 0.1434 | \$3.36 | \$2.70 | \$392.97 | \$382.46 |

**TABLE 1f
COMPARATIVE UNIT FUEL COSTS FOR EQUIVALENT DOLLAR NET HEAT OUTPUT**

COMPARATIVE UNIT FUEL COST (DOLLARS)

| Net Heat Production BTU/Dollar | Fuel Oil Cost per Gallon | Electric Cost per KWH | Natural Gas Cost per CCF | Propane Cost per Gallon | Coal Cost per Ton | Soft Wood Cost per Cord |
|---|---|--------------------------------------|---|--|----------------------------------|--|
| 23742 | 4.65 | 0.1438 | \$3.37 | \$2.71 | \$393.82 | \$383.29 |
| 23691 | 4.66 | 0.1441 | \$3.38 | \$2.71 | \$394.66 | \$384.11 |
| 23640 | 4.67 | 0.1444 | \$3.38 | \$2.72 | \$395.51 | \$384.94 |
| 23590 | 4.68 | 0.1447 | \$3.39 | \$2.72 | \$396.36 | \$385.76 |
| 23539 | 4.69 | 0.1450 | \$3.40 | \$2.73 | \$397.21 | \$386.59 |
| 23489 | 4.70 | 0.1453 | \$3.41 | \$2.74 | \$398.05 | \$387.41 |
| 23439 | 4.71 | 0.1456 | \$3.41 | \$2.74 | \$398.90 | \$388.23 |
| 23390 | 4.72 | 0.1459 | \$3.42 | \$2.75 | \$399.75 | \$389.06 |
| 23340 | 4.73 | 0.1462 | \$3.43 | \$2.75 | \$400.59 | \$389.88 |
| 23291 | 4.74 | 0.1465 | \$3.43 | \$2.76 | \$401.44 | \$390.71 |
| 23242 | 4.75 | 0.1468 | \$3.44 | \$2.76 | \$402.29 | \$391.53 |
| 23193 | 4.76 | 0.1472 | \$3.45 | \$2.77 | \$403.13 | \$392.36 |
| 23145 | 4.77 | 0.1475 | \$3.46 | \$2.78 | \$403.98 | \$393.18 |
| 23096 | 4.78 | 0.1478 | \$3.46 | \$2.78 | \$404.83 | \$394.00 |
| 23048 | 4.79 | 0.1481 | \$3.47 | \$2.79 | \$405.67 | \$394.83 |
| 23000 | 4.80 | 0.1484 | \$3.48 | \$2.79 | \$406.52 | \$395.65 |
| 22952 | 4.81 | 0.1487 | \$3.49 | \$2.80 | \$407.37 | \$396.48 |
| 22905 | 4.82 | 0.1490 | \$3.49 | \$2.81 | \$408.22 | \$397.30 |
| 22857 | 4.83 | 0.1493 | \$3.50 | \$2.81 | \$409.06 | \$398.12 |
| 22810 | 4.84 | 0.1496 | \$3.51 | \$2.82 | \$409.91 | \$398.95 |
| 22763 | 4.85 | 0.1499 | \$3.51 | \$2.82 | \$410.76 | \$399.77 |
| 22716 | 4.86 | 0.1502 | \$3.52 | \$2.83 | \$411.60 | \$400.60 |
| 22669 | 4.87 | 0.1506 | \$3.53 | \$2.83 | \$412.45 | \$401.42 |
| 22623 | 4.88 | 0.1509 | \$3.54 | \$2.84 | \$413.30 | \$402.25 |
| 22577 | 4.89 | 0.1512 | \$3.54 | \$2.85 | \$414.14 | \$403.07 |
| 22531 | 4.90 | 0.1515 | \$3.55 | \$2.85 | \$414.99 | \$403.89 |
| 22485 | 4.91 | 0.1518 | \$3.56 | \$2.86 | \$415.84 | \$404.72 |
| 22439 | 4.92 | 0.1521 | \$3.57 | \$2.86 | \$416.68 | \$405.54 |
| 22394 | 4.93 | 0.1524 | \$3.57 | \$2.87 | \$417.53 | \$406.37 |
| 22348 | 4.94 | 0.1527 | \$3.58 | \$2.88 | \$418.38 | \$407.19 |
| 22303 | 4.95 | 0.1530 | \$3.59 | \$2.88 | \$419.23 | \$408.02 |
| 22258 | 4.96 | 0.1533 | \$3.59 | \$2.89 | \$420.07 | \$408.84 |
| 22213 | 4.97 | 0.1536 | \$3.60 | \$2.89 | \$420.92 | \$409.66 |
| 22169 | 4.98 | 0.1540 | \$3.61 | \$2.90 | \$421.77 | \$410.49 |
| 22124 | 4.99 | 0.1543 | \$3.62 | \$2.90 | \$422.61 | \$411.31 |
| 22080 | 5.00 | 0.1546 | \$3.62 | \$2.91 | \$423.46 | \$412.14 |
| 22036 | 5.01 | 0.1549 | \$3.63 | \$2.92 | \$424.31 | \$412.96 |
| 21992 | 5.02 | 0.1552 | \$3.64 | \$2.92 | \$425.15 | \$413.79 |

FOOT NOTES:

- | | | | |
|-----------------|-----|-----------|--|
| 01. Fuel Oil | Gal | 138000. | BTU at Heating Plant efficiency of 0.80. |
| 02. Electric | KWH | 3413. | BTU at Heating Plant efficiency of 1.00 |
| 03. Natural Gas | CCF | 100000. | BTU at Heating Plant efficiency of 0.80. |
| 04. Propane | GAL | 91800. | BTU at Heating Plant efficiency of 0.70. |
| 05. Bit Coal | TON | 17000000. | BTU at Heating Plant Efficiency of 0.55. |
| 06. Soft Wood | CRD | 14000000. | BTU at Heating Plant Efficiency of 0.65. |

THESE COSTS ARE STRICTLY FUEL COSTS AND DO NOT INCLUDE EQUIPMENT AND OPERATING COSTS.

Formula:
$$\text{FUEL COST} = \frac{\text{FUEL BTUs} * \text{EFFICIENCY}}{\text{NET HEAT OUTPUT}}$$

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Revised April 2007



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