

## Fuel Conversions Needed in the Weatherization Assistant

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### NEAT AND MHEA UTILITY BILLS TAB

NEAT and MHEA require that natural gas billing data be entered in units of therms (data on bulk fuels such as propane, kerosene, and fuel oil may also be entered but should be used with caution because the amount of fuel delivered may not be equal to the amount of fuel consumed since the previous delivery). To convert energy use of natural gas, propane, kerosene, and fuel oil into units of therms, do the following:

1. Multiply energy use of natural gas in units of MBtu by 10.0 to obtain therms.
2. Multiply energy use of natural gas in units of Mcf by 10.25 to obtain therms.
3. Multiply energy use of natural gas in units of ccf by 1.025 to obtain therms.
3. Multiply energy use of propane in units of gallons by 0.916 to obtain therms.
4. Multiply energy use of kerosene in units of gallons by 1.35 to obtain therms.
5. Multiply energy use of fuel oil in units of gallons by 1.4 to obtain therms.

For example, if a monthly bill said that 7 MBtus of natural gas had been used, then this is equivalent to a use of 70 therms of natural gas. If 150 gallons of propane were delivered to a house, this would be equivalent to a delivery of 137.4 therms of energy.

### FUEL COSTS IN THE SETUP LIBRARY

NEAT and MHEA need costs for natural gas to be in units of \$/Mcf. To convert the cost of natural gas from \$/MBtu, \$/therm, or \$/ccf to \$/Mcf, do the following:

1. Multiply \$/MBtu by 1.025 to obtain the cost in units of \$/Mcf.
2. Multiply \$/therm by 10.25 to obtain the cost in units of \$/Mcf.
3. Multiply \$/ccf by 10 to obtain the cost in units of \$/Mcf.

For example, if the cost of natural gas is \$12.00/MBtu, then this is equivalent to a cost of \$12.30/Mcf. If the cost of natural gas is \$0.90/therm, then this is equivalent to a cost of \$9.225/Mcf. If the cost of natural gas is \$1.10/ccf, then this is equivalent to a cost of \$11.00/Mcf.

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Sources:

U.S. Department of Energy from Cornell paper: kerosene (No. 1 fuel oil) – 134,000 Btu/gal; No. 2 fuel oil – 140,000 Btu/gal; and propane – 91,600 Btu/gal.

ASHRAE Fundamentals, page 17.4: No. 1 fuel oil – 134,950 Btu/gal (midpoint of range); No. 2 fuel oil – 139,400 Btu/gal (midpoint of range); and natural gas 1025 Btu/ft<sup>3</sup> (1.025 MBtu/Mcf).

DOE 2004 Buildings Energy Databook, Table 4.1.1, Note 3: average natural gas price was \$7.15/MBtu (\$7.40/Mcf), so that Mcf = 1.035 MBtu.