Space heating cost calculation data and procedure used

Price information for propane and fuel oil obtained from (WI State Energy Office) – Average Winter Price (Oct – March) 2015 - 2016

- Heating oil : $2.10/gal
- LP/Propane: $1.16/gal
- Natural Gas: $0.7385/therm
- Electricity: $0.1457/kWh
- Wood pellets: $249/ton
- Average price of seasoned cord wood ($253*/cord)
    - **Pricing data collected from three companies distributed throughout the state.*

Efficiencies gathered from Forest Products Laboratory's Fuel Value Calculator (http://www.fpl.fs.fed.us/documnts/techline/fuel-value-calculator.pdf) and calculations done using Pellet Fuels Institute's compare fuel costs webpage (http://www.pelletheat.org/compare-fuel-costs)

According to US EIA's Residential Energy Consumption Survey (RECS) 2009, Wisconsin households use 103 million BTU of energy per home. Out of this 56% (or 58 million BTU) is used for space heating.

1. Natural Gas
   If cost per therm is $ 0.7385 and efficiency is 80%, then cost per million BTU = $9.01
   Cost for 58 million BTU is approximately $ 522

2. Propane
   If cost per gallon is $ 1.16 and efficiency is 79%, then cost per million BTU = $ 16.08
   Cost for 58 million BTU is approximately $ 933

3. Fuel oil (#2)
   If cost per gallon is $ 2.10 and efficiency is 83%, then cost per million BTU = $ 18.33
   Cost for 58 million BTU is approximately $ 1063

4. Electricity
   If cost per kWh is 14.57 cents and efficiency is 98%, then cost per million BTU = $ 43.57
   Cost for 68 million BTU is approximately $ 2527

5. Seasoned cord wood
   If cost per cord is $253 and efficiency is 77%, then cost per million BTU = $16.43
   Cost for 58 million BTU is approximately $ 953

6. Wood Pellet
   If cost per ton is $249 and efficiency is 83%, then cost per million BTU = $18.29
   Cost for 58 million BTU is approximately $ 1061

Map data and metadata

Source of the data for the percentage of occupied housing units using the various fuel types is the American Community Survey 5-year estimates of house heating fuels 2010-2014. http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_14_5YR_B25040&prodType=table

All maps were classified using Jenks Natural Breaks classifier with 5 categories. This classifier minimizes variance within each individual classification while maximizing variance between classifications.

Energy/Fuel Quantity Calculations

Energy source	Required quantity [1] (to produce 58 million BTU [2])
Natural gas (Mcf)	70.67
Propane (gal)	804.31
Electricity (MW)	17.34
Fuel oil (gal)	506.19
Wood pellets (tons)	4.26
Seasoned cordwood (cords)	3.77

[1]Based on net heating values from USFS Forest Products Laboratory Fuel Value Calculator and conversion factor for natural gas of 1 therm = 99.9761 cf.

[2]Average annual energy used to heat WI homes is 58 million BTU based on the US EIA's Residential Energy Consumption Survey (RECS) 2009.