Efficiency Primer

A household’s investment in energy efficiency is an effective and efficient way to decrease energy costs and save money. Heating appliances with low energy efficiency ratings can have a larger than expected impact on the household budget compared to heating appliances with higher efficiency levels.

For example, a household that uses 1,230 gallons of heating oil per year, at an oil price of $3.20 per gallon that upgrades to an 85% efficient boiler from a 70% efficiency boiler would have household savings as shown below;

\[
Fuel\ Savings = Fuel\ Cost \times \left(\frac{New\ Efficiency - Old\ Efficiency}{New\ Efficiency}\right)^1
\]

\[
Fuel\ Cost = 1230 \times 3.20 = 3,936\ annually
\]

\[
Fuel\ Savings = 3,936 \times \left(\frac{85 - 70}{85}\right) = 694.6\ savings\ annually
\]

Assuming constant heating oil prices, and household characteristics, over a ten-year period: savings from upgrading to a more energy efficient boiler could total $6,946. The average lifespan of a new high-efficiency central oil boiler is anywhere from 15-30 years, with a cost of anywhere from $5,500 to $7,500 (Department of Energy, 2013). Given the approximate savings of $6,946, a new high-efficiency central-oil boiler would recover the capital cost of purchase and installation within 8-10 years. This figure does not include the decrease in maintenance costs of a newer high efficiency central oil boiler. As a boiler ages the maintenance costs and chances of emergency repairs are far higher.

\[Formula\ from\ Bhatia,\ 2014\]
References:
