

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;

$$\text{Fuel Savings} = \text{Fuel Cost} * \left(\frac{\text{New Efficiency} - \text{Old Efficiency}}{\text{New Efficiency}} \right)^1$$

$$\text{Fuel Cost} = 1230 * \$3.20 = \$3,936 \text{ annually}$$

$$\text{Fuel Savings} = \$3,936 * \left(\frac{85 - 70}{85} \right) = \$694.6 \text{ savings annually}$$

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.

¹Formula from Bhatia, 2014

References:

Bhatia, S. (2014). *Improving Energy Efficiency of Boiler Systems*.

Department of Energy. (2013, December 16). *Energy Saver 101 Infographic: Home Heating*. Retrieved from <https://www.energy.gov/articles/energy-saver-101-infographic-home-heating>