# Fuel Switch Request - Electric to Fossil Fuel

The Equivalent Price Performance Method

Premise: Evaluate switching from electricity to fossil fuel heating equipment. Adjust the SSE of the existing equipment based upon the ratio of fuel prices.

Process:

1. Complete an assessment of home with an electric furnace.

2. First evaluate replacing the electric furnace with a heat pump.

3. Then evaluate the building for a fuel switching opportunity.
   a. Change the existing fuel source to the proposed new fuel.
   b. Calculate the fuel ratio:

$$\frac{45.385}{\frac{\textit{Price per MMBTU of Electricity}}{\textit{Price per MM BTU of Fossil Fuel}}} = \textit{Fuel Ratio}$$

   c. Calculate an adjusted SSE by the price difference in electricity and fossil fuel:

$$\frac{\textit{Existing SSE}}{\textit{Fuel Ratio}} = \textit{Equivalent Performance SSE}$$

   d. Enter the equivalent performance SSE into the Steady State Efficiency of NEAT/MHEA
   e. Run NEAT/MHEA to evaluate all measures

4. After both runs are done, compare the audits to identify which has the highest cumulative SIR. The audit with the highest SIR should be the scope of work. If no heating system is recommended in either runs, default to the initial assessment.

Advantages: By using this method, we can use the built in prioritization and cumulative SIR calculations without having to pull information outside of the tool. It also allows us to see where the furnace ends up in prioritization without doing iterative calculations outside of the audit tool. In this way, the auditor can simply use NEAT with little need for a separate calculation tool, and the most cost effective audit of the two is chosen.

| Fuel Type | In Unis of | Unit Cost | Heat Content (MMBtu) | Cost/(mmbtu) |
|---|---|---|---|---|
| Natural Gas | MCF | 12.308 | 1.000000 | $12.308 |
| Propane | Gallon | 2.5248 | 0.090000 | $28.053 |
| Oil | Gallon | 4.7801 | 0.140000 | $34.144 |
| Electricity | kWh | 0.1549 | 0.003413 | $45.385 |