Do the Math!

For Ralph Vorse, a new customer with National Fuel, the numbers told the story. A former propane user, Ralph knew he wanted to convert to clean, comfortable, efficient natural gas after he did some quick calculations and determined what his personal savings could be. “I knew how much I spent on propane each year,” said Vorse. “When I did the math, I projected that switching to natural gas would cut my utility bill in half.”

Knowing the price per unit and the British Thermal Unit (Btu) for the fuel types you want to compare are the first steps to calculating your savings (see formula on the back). Prices can change frequently and although National Fuel is happy to provide comparison charts and estimates of potential savings, the fact remains that some homeowners prefer to do the math themselves. Conversion calculators are available online, as well, to help anyone who is thinking about converting to natural gas.

<table>
<thead>
<tr>
<th>FUEL TYPE</th>
<th>BTU/UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural Gas</td>
<td>100,000/Ccf</td>
</tr>
<tr>
<td>Electricity</td>
<td>3,412/Kwh</td>
</tr>
<tr>
<td>Propane</td>
<td>91,600/gallon</td>
</tr>
<tr>
<td>Heating Oil</td>
<td>140,000/gallon</td>
</tr>
<tr>
<td>Wood</td>
<td>22,000,000/cord</td>
</tr>
<tr>
<td>Pellets</td>
<td>16,500,000/ton</td>
</tr>
</tbody>
</table>

Group Effort Equals Shared Costs

Vorse was one of nine homes that participated in a Main Line Extension Project in Girard, PA. The process, called a Main Line Extension Project, relies on the collective effort of a community (no matter how big or small) to extend a gas line to their neighborhood. National Fuel has done projects with 2 or 3 homeowners to as many as 200.

Ralph knocked on several doors himself just to let people know what a great opportunity getting natural gas was for their neighborhood. “I’m thrilled we were able to get natural gas in my neighborhood,” said Vorse when asked about the conversion process. “I would definitely do it again.”

Savings and Payback

Homeowners also need to pay for their service line, house line, and new appliances. National Fuel will provide an estimate of main line and service line costs to interested homeowners who have completed an application. These can be important factors when calculating your payback for a natural gas conversion. (Steps for calculating savings and estimated payback time frame are on the back.)

Consulting with a licensed contractor or plumber is also recommended to homeowners when it comes to installing house lines or new appliances. Some appliances can be converted to natural gas by simply changing the orifice. And, bear in mind, you only need to convert one gas appliance when starting service with National Fuel. You can add others as your time and budget allow.

Ralph calculated his payback to be approximately three years when he converted his stove, furnace and water heater from propane to natural gas. A year later he decided to convert his wood burning fireplace as well. “We just push a button and it lights up. I’m done cutting wood!”

“...there’s no fuel out there that is better than natural gas.” – Ralph Vorse, National Fuel Customer
Conversion Formula

In order to compare different fuel types and the savings potential, you will need to consider several variables: type of fuel, unit cost, energy content and efficiency of the heating system.

**STEP 1:**
Identify the price per unit for the fuel types you want to compare. For instance, propane is sold by the gallon, electricity by the kilowatt (Kwh) and gas by cubic foot (Ccf). Our example use gas at $0.528 per Ccf and propane at $2.73 per gallon as indicated on the Comparative Energy Costs Chart.

**STEP 2:**
Find a common unit of measurement. A British Thermal Unit (BTU) is the most common unit for comparing fuel types. A Btu is the amount of energy required to raise the temperature of one pound of water by one degree Fahrenheit. (See the front page for BTU/unit.)

**STEP 3:**
Divide the price per unit by the BTU and multiply that answer by 1 million BTU to find your cost per million BTU (MMBtu).

**EXAMPLE:**
- Natural gas: ($0.528 per Ccf ÷ 100,000 Btu) X 1,000,000 BTU = $5.28
- Propane: ($2.73 per Gal. ÷ 91,600 Btu) X 1,000,000 BTU = $29.77

Here’s another way to look at it. Gas costs approximately one fifth (5.6) of what this customer would spend heating their home with propane ($29.77 ÷ $5.28 = 5.6). If a customer had $2,500 in fuel bills with propane, that same bill would have been approximately $500 with natural gas ($2,500 ÷ 5 = $500).

**STEP 4:**
Divide the MMBtu by the efficiency of the heating unit. In our example, even at 95% efficiency, it would still cost significantly more to heat with propane than with a natural gas unit that is only 90% efficient.

**EXAMPLE:**
- Natural gas: $5.28 ÷ .90 = $5.87
- Propane: $29.77 ÷ .95 = $31.34

Payback Example

In addition to calculating your personal savings, you may also want to calculate your payback for a natural gas conversion. The following example gives you an idea of how the formulas work.

- **Current fuel cost per year**
- **Home heating cost w/natural gas**

<table>
<thead>
<tr>
<th>Cost to install main line and service line</th>
<th>+ Cost to purchase/install house piping &amp; equip.</th>
</tr>
</thead>
<tbody>
<tr>
<td>$2,500</td>
<td>$3,000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>$5,500</td>
</tr>
</tbody>
</table>

**Example:**

$2,500 - $500 = $2,000

**Total Cost ÷ Annual Savings = Payback**

$5,500 ÷ $2,000 = 2.75 year payback

(For more information about the benefits of natural gas, to download an application, or to calculate your energy savings, visit nationalfuelgas.com.)