Space Heating

Space heating fuel:

- [ ] Natural gas
- [ ] LP gas
- [ ] Electric
- [ ] Oil
- [ ] Other (describe)

If burner type, is unit **vented to outside**? (yes, no)

**Supplemental heat source use:** (estimate of electric conversion to Btu: 1h.p. = 1kW = 3400 Btu)

- Motors located to reclaim motor heat? (yes, no)
- Milk cooling compressor located to reclaim milk heat? (yes, no)
- Water heaters located to reclaim lost heat? (yes, no)

**Efficiency** of burner type heaters: (Older heaters and furnaces have low efficiency)

**Air Infiltration:** Evaluate general tightness of the heated area. Check doors, windows, and any other openings where cold air can enter and heat can escape. Comment in space provided.

**Insulation:** Check the following for insulation.

- [ ] Ceiling R-value ___ Type: [ ] blanket [ ] rigid [ ] loose fill [ ] spray-on
- [ ] Walls R-value ___ Type: [ ] blanket [ ] rigid [ ] loose fill [ ] spray-on
- [ ] Doors [ ] insulated [ ] not insulated [ ] storm door
- [ ] Windows [ ] single pane [ ] double pane [ ] single pane with storms

[ ] Is there condensation on ceiling in winter

[ ] Is there condensation and/or frost on windows in winter

**Ventilation:** Is the space provided with a ventilation fan to exhaust moisture?

If fan is used, provide cfm of fan or diameter of fan blades _______ cfm/watt _______

Number of fans _______ Hours used per day _______ Days per year _______

Fan controls [ ] switch [ ] thermostat [ ] timer
Thermostats and Controls (heating):

Are there areas that are heated to a higher temperature much of the time that could be heated to a lower temperature? (describe)

Temperature setting in use _______

Temperature setting not in use _______

Building Sketch: Provide general sketch of layout of heat sources and areas required to be heated.

(note locations of heat sources, any ventilation, and any air inlets)

Heat loss formula: Estimate heat by comparing present practices with improvements using an estimated average outside temperature during a cold month. To get the total estimate for the year add the estimates for each month of the heating season.

\[
\text{Area} \times \frac{(\text{Inside Temp} - \text{Avg. Outside Temp})}{\text{R-value}}
\]

Heat loss (Btu/hr) = __________________________________________________________

If temperature is set at different levels then multiply the result above by the hours per day at that temperature times 30 days and add results at each temperature. To estimate amount of fuel divide by the following heating values and efficiency. To estimate cost multiply by heating cost per fuel unit. Run comparison for improvements. (old heaters can have very low efficiency, 20 years or more)

<table>
<thead>
<tr>
<th>Fuel</th>
<th>Efficiency (eff.)</th>
<th>Heating Value</th>
<th>Cost per Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural gas</td>
<td>0.6 to 0.9</td>
<td>100,000 Btu/100 cu. ft.</td>
<td>Cost per CCF</td>
</tr>
<tr>
<td>LP gas</td>
<td>0.6 to 0.9</td>
<td>91,000 Btu/gal.</td>
<td>Cost per gallon</td>
</tr>
<tr>
<td>Oil</td>
<td>0.6 to 0.8</td>
<td>132,000 Btu/gal</td>
<td>Cost per gallon</td>
</tr>
<tr>
<td>Electricity</td>
<td>1.0</td>
<td>3,413 Btu/kWh</td>
<td>Cost per kWh</td>
</tr>
</tbody>
</table>

Approximate R-values: (minimize window area to conserve heat)

single glass window (R=1), double glass with air space (R=2), wall or ceiling 4 in. insulation (R=16), 6 in. insulation (R=20), 9 in. insulation (R=31)