

## INCREMENTAL PAYBACK OF RIGID INSULATION

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Table 1 indicates the fuel use per square foot and the simple payback resulting from adding rigid insulation in one inch increments to a roof assembly.

<b>Table 1. Payback to increase R-value of rigid insulation on roof.</b>		
<b>System</b>	<b>Fuel Use \$/Yr/SF</b>	<b>Incremental Simple Payback to add 1"(yr)</b>
3" Rigid	0.090	---
4" Rigid	0.068	15.0
5" Rigid	0.054	23.6
6" Rigid (R-38 fiberglass)	0.045	36.7
Assuming	<ul style="list-style-type: none"> <li>• 7500 degree-days.</li> <li>• \$1.25/gal. oil</li> <li>• 85% efficient</li> <li>• R-7 per inch</li> <li>• \$.33/sf/in.</li> </ul>	

**ASHRAE 90.1-1989 specifies 3" rigid (R-20) for this climate. Energy costs have almost doubled since this guideline was developed. A minimum of 4" has an incremental payback of 15 years, which is probably reasonable.**

**Note that the difference in energy savings between 4" rigid (R-20) and 12" (R-38) fiberglass is also only about \$115/yr. for a 5000 square foot roof assuming the fiberglass works perfectly, which of course, it doesn't. In reality, 4" of rigid insulation will probably perform better than 12" of fiberglass because there will be much less infiltration.**