

# An Easy Way to Calculate Thermal Performance and Energy Costs

# RoofWise

By Jared Blum



As energy prices continue to rise, roofing contractors and consultants need tools to help them reduce customers' energy bills, illustrate the roll of the optimum amount of roof insulation, and demonstrate that roofs are long-term assets. RoofWise version 2.0, an interactive software application, is just that tool. It provides an easy-to-use, graphical method for constructing roof assemblies that evaluate thermal efficiency and estimate energy costs under normal operating conditions.

Sponsored jointly by National Roofing Contractors Association (NRCA) and the Polyisocyanurate Insulation Manufacturers Association (PIMA), RoofWise version 2.0 prompts users to enter specific information about a roof assembly, the region and the building, such as:

- Roof dimensions
- Major penetration dimensions
- Existing insulation if recovering
- Type of deck
- Building energy sources for heating and cooling

RoofWise then uses these details to generate a report summarizing the proposed roof assembly design, estimated heating and cooling costs, proper vapor retarder placement and minimum thermal requirements.

The program uses ASHRAE Standard 90.1-1999, to determine the minimum thermal insulation requirements for roof systems in a manner that is consistent with most state energy codes. In addition, the program assesses a roof assembly's

solar reflectance (reflectivity of the roof surface) when determining the building's minimum thermal insulation requirements and the associated heating and cooling costs.

## Benefits

Roofing professionals will benefit from RoofWise in many ways:

- The program analyzes roof assembly configurations in a fraction of the time it would take to manually calculate the results for a single roof assembly configuration.
- The program easily illustrates the potential to save building owners money in heating and cooling costs.
- Many building owners do not recognize the magnitude of potential heating and cooling savings that are possible with effective insulation. RoofWise can easily show the heating and cooling costs associated with various roof system designs (such as combinations of thermal insulation and roof surface reflectivity).

## How it Works

The owner of the Widget Company decides he needs a new roof. In making his decision about that roof, he considers some of these criteria:

- Money is tight so the pricing will be a factor.
- He wants a contractor or consultant who will make solid recommendations.
- The roof is 200 squares.
- The new roof will be a smooth-surface built-up roof over 1-inch perlite.
- The roof has a metal deck.

- The building is both heated and air conditioned.
- The building is located in Binghamton, N.Y.

Using RoofWise to estimate the job, one contractor submits a bid for \$36,000, which includes a recommendation to upgrade the amount of roof insulation, adding another \$7,000 to the cost. RoofWise also calculates the energy savings for that building over a 15-year period. The results show that in two years, the energy savings will be over \$11,000 more than covering the cost of the increased insulation. More importantly, in eight years, the savings will be in excess of \$44,000, allowing the building owner to recover the cost of the reroofing job.

The benefits of RoofWise are many. It is complete and easy to use. Owners can easily see the benefits of proper insulation and the money savings that it will bring. And perhaps most importantly, it can help contractors secure jobs.

The RoofWise CD Rom is available from NRCA, [www.nrca.net](http://www.nrca.net), and PIMA, [www.PIMA.org](http://www.PIMA.org), and all of PIMA's polyiso manufacturing members. +

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