



DURABILITY, AESTHETICS, OPTIMAL PERFORMANCE

Minnesota Homeowner Records Energy Usage Pre- and Post-Hailstorm Retrofit

By Robin Anderson

HAILSTORMS CONTINUE to wreak costly damage to roofs and homes and are now the leading cause of homeowner insurance claims. A recent UN science report found that hail season is now starting earlier in the year and larger hailstones are increasing in frequency across broad regions of the United States. While hail impacts Nebraska, Colorado, and Wyoming particularly hard, many other areas in the United States are also negatively affected, including Minnesota.

Minnesota homes incurred \$2.6 billion in damages from a May 19, 2022 storm alone, according to the Minnesota Department of Natural Resources. One home in the state that was in the direct path of this hailstorm sits just north of St. Paul, in the country's upper hail belt.

Solid two-inch sized ice balls rained onto the home and shed, causing significant damage to the asphalt shingle roof, as well as to downspouts, soffit and fascia. The asphalt roof was just 11 years old and originally installed during the home's build in 2011.

"Hail is all but expected in this area and some of these storms can be brutal, producing golf ball sized or larger hailstones," says Alan Burney of A.M. Burney Exteriors, Inc., a Minnesota-based metal roofing contractor who was brought in to repair the damaged roof. "This homeowner's asphalt roof was hit with one of these damaging hailstorms."

Active in Minnesota since 2009, A.M. Burney Exteriors has witnessed repeating storm damage to area roofs. They are known for their metal roof installations,

custom designing each metal roof to their homeowners' preferences and concerns. Installing metal roofs to manufacturer's specifications, they review the entire roof as a science to ensure optimum functionality and longevity. The company recommended a more permanent roofing solution, a Unified Steel Stone Coated Roofing system with multiple advantages including the highest hail resistance ratings.

"In this case, the homeowner knew that if he chose asphalt again, he'd need to replace it another time perhaps in the not-too-distant future considering our extreme weather fluctuations," says Burney. "Instead, he chose stone coated steel to get a positive return on his investment."

Installing Stone-Coated Steel

A steep-slope option, Unified Steel Stone Coated Roofing is growing in popularity in Minnesota and beyond because of the aesthetics it provides along with its durability and resilience in the face of hail and other extreme weather impact such as ice damming, snow loads, wind uplift and fire. Weighing just 1.5 pounds per square foot, the material is extremely lightweight, yet it benefits from the structural strength of steel and is thus well suited for retrofit applications. Manufactured in the U.S.A., Unified Steel offers both a Class 4 Hail Rating and Very Severe Hail (VSH) rating, which is the highest independently tested hail rating available for steep-slope roofing products.

The retrofit for this home was designed to enhance protection from future hailstorms and other weather concerns. In addition, this roof was designed to optimize energy performance. To maximize energy efficiency, Unified Steel was paired with Sol-R-Skin BLUE, a thermal insulating underlayment which serves as secondary water protective layer, energy-saving radiant barrier, and above deck roof insulation blanket all-in-one.

"In addition to the insulating

underlayment, the retrofit included above sheathing ventilation to reduce thermal intake into the attic, as well as ridge venting to enable air flow and exhaust," says Burney. "As a result, the home's energy consumption and energy bills have been substantially reduced and the homeowner is enjoying ongoing savings."

Documenting Improved Energy Performance

Data proves the homeowner's savings aren't just lip service. He measured gas and electric energy usage and energy bills for the 12 consecutive months prior to the roof retrofit, as well as for the 12 consecutive months after it was completed. The data includes recordings of summertime attic temperatures just before and just after the roof retrofit. These recordings were made possible via roof probes installed by the homeowner on the roof deck and in the air space.

Highlights of the homeowner's extensive data include a post retrofit 12-month overall reduction in electricity demands of 33.29%, as well as a 7.68% reduction in gas energy demands. The homeowner saved \$328.88 in electric bills and \$124.33 in gas annually compared to the year prior to the retrofit. (Actual energy saving results

may vary customer to customer.)

The key driver of the improved energy performance was the reduction of heat gain in the attic. The heat probes recorded attic temps as high as 135 – 140 degrees with the asphalt shingles. Attic temperatures were reduced by as much as 34.4% following the installation of the Unified Steel roof. This resulted in the homeowner's air conditioner running more efficiently and creating energy savings.

"The lower energy bills are noteworthy, especially when considering that the cost of energy continually increases over time," adds Burney. "This homeowner's ongoing savings will be even more meaningful in the long-term since his stone coated steel roof has a long 50-year life expectancy. He'll get to enjoy a nice return on his investment and end the reroofing cycle."

The homeowner is also enjoying an annual roof insurance premium savings, post retrofit, of more than \$500, simply from choosing the stone coated steel.

"With energy savings, lower insurance premiums, lasting beauty, and peace-of-mind, this roof is but one example of why stone coated steel is on the rise," says Burney. **R**



MINNESOTA RESIDENCE

ST. PAUL, MINNESOTA

TEAM

ROOFING CONTRACTOR: A.M. Burney Exteriors, Inc., Otsego, Minnesota, amburneyexteriors.com

MATERIALS

METAL ROOFING: Unified Steel Stone Coated Roofing, Westlake Royal Building Products, westlakeroyalroofing.com/unified-steel/

UNDERLAYMENT: Sol-R-Skin BLUE, Westlake Royal Building Products