



# Analysis Of Berkeley Labs Study Details Flawed Science

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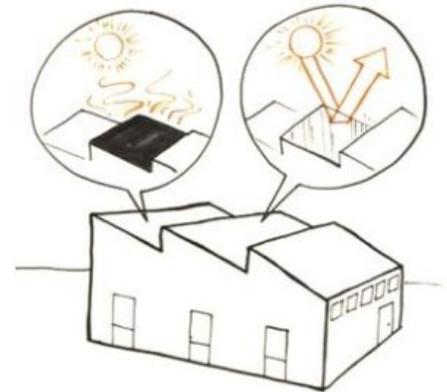
The EPDM Roofing Association (ERA) is challenging a study released by the Lawrence Berkeley National Laboratory which cites white roofs as the most “cost-effective” roofing option over a 50-year time span. The study also calls for the phasing out of black roofs.

“We strongly oppose any recommendation that irresponsibly promotes the use of one product over another based on faulty science. We question the validity of this study, since it is based on a sample size of only 22 roofs, and we are challenging the conclusions that the authors draw from the data,” said Ellen Thorp, Associate Executive Director of ERA. “Due to the complexity of roof and building science, prescriptive requirements that limit design choices are not in the best interests of architects, design professionals, or building owners.”

To help provide clarity regarding roofing system choice, and to refute some of the more egregious errors in the study, ERA convened a panel of experts to review the LBNL science and its conclusions. A summary of these findings follows; a complete analysis can be found [here](#).

Overall, the panel found that the LBNL study was marked by “a systematic failure to understand that roofs are systems, not a single component,” said Tom Hutchinson, principal of the Hutchinson Design Group and an internationally recognized expert on roof system design. “Additionally, the study completely ignored ballasted EPDM systems that, in other studies, have proven to be the roof system that provides the greatest service life and energy savings. To suggest that a comparatively ‘new’ roofing material will have a longer service life than EPDM, a material proven to last over 30 years, is naïve,” continued Hutchinson.

- First, the economic findings indicate a favorable conclusion for black roofs. Ignoring the economic results (the stated focus of the study), the authors appeal to largely non-quantified or highly uncertain environmental and human health effects to support their conclusion that black roofs should be “phased out.” This substitutionary appeal to information largely unaddressed or evaluated by the study is not the best way to conduct scientific research or support conclusions.



- Second, the ERA review group found cases in which evidence supporting black roofs was disregarded. For example, the researchers did not take geographical climate differences into consideration, even though black roofs absorb heat and offer energy savings, environmental benefits, and human health advantages in cold climates. Instead of recognizing the pros and cons in a balanced fashion, the researchers seemingly conducted their study and analysis with a selective bias against black roofs and a corresponding support of white roofs. Such an obvious bias indicates a failure to satisfy the fundamental purpose of scientific method.
- Third, the ERA group identified cases in which assumptions and approach were not reported in such a way that the study could be repeated. From a reporting standpoint, this indicates a failure to comply with scientific method, because the study is not reproducible. The authors themselves characterized their data as “somewhat sparse” and “lamentably thin” and the report frequently relies on incomplete sources and interpretations of data. For instance, the authors made the assumption that black and white roofs have “an equal 20-year service life” when many white roof systems have not been on the market long enough to demonstrate a lifespan of 20 years, and it is not uncommon for EPDM roof systems to last for more than 35 years. Heat aging tests of in situ EPDM materials already over 30 years showed potential for a 60-year service life on 45-mil membrane. Some consultants are now regularly designing “50-year” roof systems and papers on designing 60-year EPDM roof systems have been presented at international symposia

“We hope that architects, specifiers, and roofing consultants will continue to rely on their field-based knowledge about the comparative costs and effectiveness of roofing systems, rather than on flawed science based on flimsy and biased data” said Thorp.

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