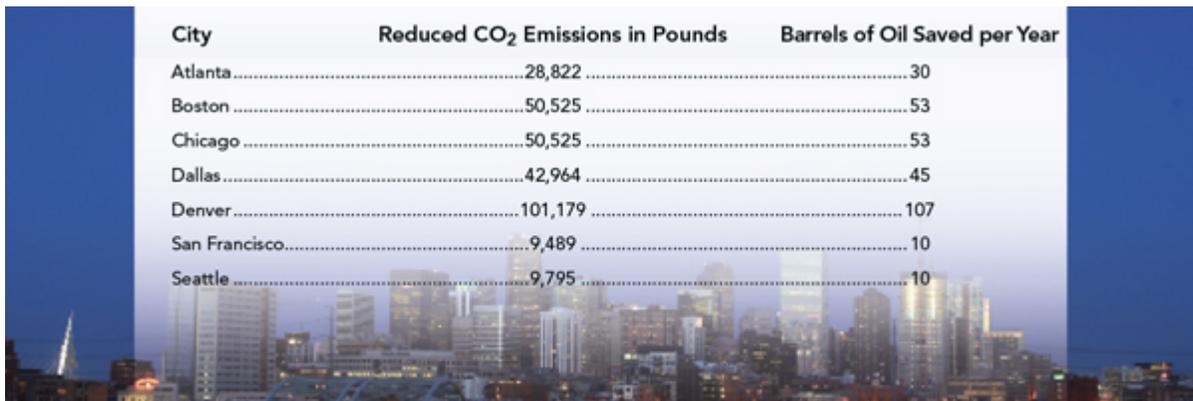


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The Importance of Existing Insulation Technology

Insulation is one of the most important components in a building when it comes to reducing energy costs and reducing carbon footprints



City	Reduced CO ₂ Emissions in Pounds	Barrels of Oil Saved per Year
Atlanta	28,822	30
Boston	50,525	53
Chicago	50,525	53
Dallas	42,964	45
Denver	101,179	107
San Francisco	9,489	10
Seattle	9,795	10

If asked what the most exciting or important feature of a building is, few people would answer: “the insulation in the roof.” You can’t see it, and it’s certainly not one of the items highlighted (like the marble entryway or glass curtainwall) when the building is promoted; however, as three new research papers indicate, insulation is, through its consistent and persistent performance, one of the most important components in a building when it comes to reducing energy costs and reducing carbon footprints.

A study from Bayer MaterialScience – *Energy and Environmental Impact Reduction Opportunities for Existing Buildings with Low-Slope Roofs* – shows that significant energy savings and carbon-dioxide emission reductions can be achieved through higher insulation levels in commercial roofs. According to the study, if 1.5 billion square feet of roofs are replaced for each of the next 5 years (for a total of 7.5 billion square feet of roofs):

- The energy saved over 5 years would be 0.08 quads (0.17 quads of source energy), and the 20-year cumulative energy saved from that 7.5 billion feet would be 0.47 quads (1.03 quads of source energy). One quad is equal to 1 quadrillion BTU (about 1 percent of the total U.S. energy consumption in 2005).
- The energy cost savings for the first 5 years would be \$1.2 billion, and the cumulative energy cost savings over 20 years would be \$10 billion.
- The reduction in carbon-dioxide emissions, based on source energy, over the first 5 years would be 12.2 million metric tons (MMT), and 73.5 MMT over the cumulative 20-year

time period (73.5 MMT are equal to the carbon-dioxide emissions from an average coal-fired power plant over 16 years).

The Bayer report only considers the impact of roof replacements on existing buildings – upon which there are approximately 60 billion square feet of roof space; however, new legislation would cover new and existing buildings, which would result in benefits that Bayer estimates to be approximately 15- to 25-percent higher.

Another study – *Environmental Effects Associated with Upgrading Roof Insulation Levels* – completed by the Fuel Management Group, together with EBL Engineers for the Polyisocyanurate Insulation Manufacturers Association (PIMA), looks at the environmental effects associated with upgrading roof insulation from *ASHRAE 90.1-2007 Energy Standard for Buildings Except Low-Rise Residential Buildings* requirements to the proposed *ASHRAE 189 Standard for the Design of High-Performance Green Buildings* using polyisocyanurate roof insulation.

Company Profile: [Polyisocyanurate Insulation Mfrs Assn-PIMA](#)

The study was performed for seven cities across the nation, including Atlanta, Boston, Chicago, Dallas, Denver, San Francisco, and Seattle. The chart on this page illustrates how many pounds of carbon and barrels of oil can be saved each year by increasing the insulation on a single-story, 100,000-square-foot structure.

The cornerstone of these three projects is research by McKinsey & Co. With the support of 10 leading global companies and organizations – The Carbon Trust, ClimateWorks, Enel, Entergy, Holcim, Honeywell, Shell, Vattenfall, Volvo, and WWF – McKinsey has assessed more than 200 mechanisms for reducing carbon emissions across 10 major sectors and 21 world regions between now and 2030. The results, found in [Pathways to a Low-Carbon Economy](#), offer an in-depth evaluation of the potential costs and investments required for each of those measures.

According to McKinsey, the product that can provide the greatest return and offer the most carbon abatement is insulation. Not only will insulation help improve the energy efficiency of a structure, but it can also reduce the cost of heating and cooling the structure.

Today's rush to promote solutions for climate change and the related energy security issues often attract the lion's share of attention. But, unassuming insulation boardstock that no one sees is working 24/7 to ensure that your building measures up to 21st-century performance standards.

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