

# Green Roof

## What is it?

A green roof is a roof specially designed to include plants, usually in a soil-like growing medium, layered above a waterproof membrane. They are becoming increasingly popular because of the wide range of benefits provided, and are now common in many major cities in the U.S. and elsewhere. In Stuttgart, Germany, for instance, 25% of the flat roofs are now green roofs.

## Why do it?

Green roofs provide a number of benefits to the building owner, the surrounding neighborhood, and the city including:

- Decreased storm water runoff
- Cooling of surrounding air during warm summer months
- Improved air quality - plants take in carbon dioxide and breathe out oxygen
- Decreased noise levels inside building
- Increased roof lifespan
- Excellent roof insulation, reducing building heating and cooling costs
- Beautification that increases property value
- Habitat for pollinating insects and other parts of the ecosystem



## Key Factors to Consider

- Size and slope of roof: pretty much any roof can be turned into a green roof, but design and engineering will vary based on the size and slope.
- Green roofs are most environmentally useful in dense urban settings where they can provide a much needed patch of cooling green space.
- Determine what kind of roof you want: extensive (shallow soil, minimal management, limited plant choices) or intensive (deep soil, more management, many plant options).
- The weight bearing capacity of the roof will determine whether it will need to be reinforced to support a green roof.
- Weather conditions are always more extreme on a roof than on the ground: wind is stronger and soils dry out quicker.



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## How to get started

Building a green roof is most likely not a DIY project, so a good place to start is to gather information including the “key factors to consider” list, and then contact a green roof professional from one or more roofing companies with green roof specialization. To learn more about green roofs, the “Green Roofs for Healthy Cities” website ([www.grhc.org](http://www.grhc.org)) is an excellent resource. To find a green roof designer, installer, or materials supplier, see the searchable green business database at [www.greenlearningstation.org/green-businesses.aspx](http://www.greenlearningstation.org/green-businesses.aspx).

## What will it cost?

Costs vary widely depending on the type of installation, but currently expect to spend on the order of 2-3 times as much for a green roof as a traditional roof surface of the same area. The good news is the costs of green roofs are decreasing as technology advances, and the costs of traditional roofing are rising as oil prices increase. Most green roofs will pay for themselves within 20 years because they allow the owner to skip one or more roof replacements. There are other benefits to offset the initial cost of a green roof. Many urban municipalities including Cincinnati have loan programs or other incentives specifically for green roof construction ([www.cincinnati-oh.gov/oeq/residential-programs/green-roof/loans](http://www.cincinnati-oh.gov/oeq/residential-programs/green-roof/loans)). Green roofs lower energy consumption in buildings, which adds up for additional savings. Other benefits, like improved air quality and decreased stormwater runoff, are currently providing a common good, which may be paid for in incentive programs in the future in the U.S., as they already are in some other countries.

## Local Resources

- Green roof classes and demonstration projects at the Civic Garden Center’s Green Learning Station
- Green roof research program at the University of Cincinnati (Buffam, Boccelli, Russell)
- Green City Resources ([www.greencityresources.com](http://www.greencityresources.com)): a locally owned company that installs and maintains green roofs
- Tremco, Inc. for commercial buildings ([tremcoroofing.com/greenroofing.asp](http://tremcoroofing.com/greenroofing.asp))

## Recommended Reading

- *The Rise of Living Architecture*, by Ian Rapsey
- *Green Roof Plants*, by Edmund C. Snodgrass and Lucie L. Snodgrass

