

Green Roofs

What's better than a roof over your head? A green roof over your head. Green roofs are highly effective at mitigating stormwater runoff. This form of green infrastructure has been utilized for years, but it still may seem like an overwhelming project for a residential property owner or business. This article aims to inspire and educate by discussing the functions, benefits, and design of green roofs.

Let's start with some of the benefits:

- **Reduced stormwater runoff.** Runoff is one of the largest contributors to water pollution. It picks up chemicals, fertilizers, litter, and sediments as it flows across impervious surfaces. By stopping, slowing, and filtering stormwater a green roof is a first line of defense in preventing this type of pollution. According to a study by researchers at Pennsylvania State University [Center for Green Roof Research](#), average roof retention at peak runoff is 26% for a standard roof while a green roof can retain 80% of stormwater. That means a green roof could capture over 50% of stormwater before it even hits the pavement.
- **Reducing the "heat island" effect.** Temperatures in the city are typically higher than areas with more greenspace. This is due to the [heat island effect](#). A heat island is created when greenspace is removed, and replaced with pavement, businesses, homes, and cars. Pavement is a great absorber of heat, and cars along with other machines generate heat as they work. Plants and trees help to cool the environment not only by shade, but by transpiration. This happens when plants release water into the air. As the water evaporates the surrounding air is cooled. According to the EPA "On hot summer days, the surface temperature of a green roof can be cooler than the air temperature, whereas the surface of a conventional rooftop can be up to 90°F warmer."
- **Passive solar design.** Passive solar design works by utilizing the sun at times of the year when it is needed, such as winter, and reflecting the sun when it is hot. Having a green roof can cut back on summer cooling bills and help to insulate a home in the winter.
- **Increased habitat.** A variety of plants may be used on a rooftop supporting a multitude of wildlife, such as insects, birds, and bats.

How to make the change: Here are a few guidelines when considering a green roof. These are not comprehensive, but are good starting points.

- **Know your roof.** What is the slope, where are the access points, what is the waterproofing situation, and how much sunlight does it receive? For further assistance with planning a green roof try contacting a landscape architect specializing in green roofs such as [Inhabitect](#) or a [Green Roof Professional](#) (GRP); they can offer important insights during the planning process.
- **Hire a structural engineer.** There are more than a few ways to install a green roof on a house. The most important step before any of them is hiring a structural engineer. They can assess the current roof structure to see if any additional support is needed before the project begins. A green roof may add substantial weight to the structure that was probably not taken into consideration when built.
- **Keep in mind you don't have to go big; any effort helps.** Roofs on covered porches, sheds, and even dog houses are a great way to start. These projects are fun and still beneficial without the commitment and cost of converting the roof of an entire home.
- **Choose a planting style.** There are a couple different ways to plant a green roof. One involves planting the entire roof as a unit. The other involves using individual trays that connect together on top of the roof. There are pros and cons to each design, depending on

specific needs. Check out the link from This Old House about installing the tray system: <https://www.thisoldhouse.com/how-to/how-to-install-green-roof/>,

- **Create a maintenance plan.** Green roofs are not maintenance free. Keep that in mind when choosing plants and planting style, along with access points and who will be responsible for the rooftop care.
- **Do your research.** It's a good idea to spend some time investigating different types of green roofs. Talking to professionals is a good resource and you may consider hiring a professional, especially when considering an entire rooftop.

References:

1. <https://www.epa.gov/heat-islands/using-green-roofs-reduce-heat-islands>
2. <https://www.nationalgeographic.org/encyclopedia/runoff/>
3. <https://www.nps.gov/tps/sustainability/new-technology/green-roofs.htm>
4. <http://www.greenroof.hrt.msu.edu/index.html>

Inspirations:



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