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Conserve Energy to Reduce Greenhouse Gas Emissions



ReScape Principle: **Conserve Energy**

The impact of energy use on climate change is far-reaching. Energy use on a global scale accounts for nearly two-thirds of total greenhouse gas emissions.[1] **Conserve Energy** recognizes that landscapes can be designed, installed and maintained to reduce energy use at all scales - from reducing energy use in our homes and offices, to cooling neighborhoods, streets and cities.

✘ Problem

Conventional landscape practices consume large amounts of fossil fuels. Nationally, it has been estimated that 600 million gallons of gas are used annually to mow and trim lawns, releasing potent greenhouse gases into the atmosphere.[2] In addition, the power required to supply the water needed to irrigate our California landscapes is expected to increase as temperatures rise and drought conditions continue throughout the West.

✔ Solution

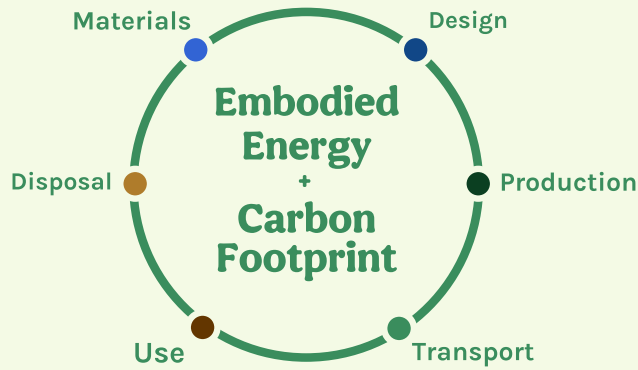
Landscape designers, installers and professional maintenance staff can play an important role in conserving energy to mitigate climate change through shading buildings and paving to moderate temperatures and reduce the heat island effect, designing site lighting to use less energy and minimize light pollution and trespass, choosing and maintaining equipment for fuel conservation, and specifying materials with a low carbon footprint and embodied energy.

Research Shows:

- A landscape designed to conserve energy and reduce water use can, on average, save enough energy to pay for itself in eight years. [3]
- Planting large deciduous trees on the west and northwest sides of your home or building can provide cooling shade from the hot western summer sun and which can reduce summer air conditioning costs by up to 35%. [4]
- An estimated 30 percent of all outdoor lighting in the U.S. is wasted, primarily by light fixtures that are not shielded, adding up to as much as a \$3.3 billion loss and the release of 21 million tons of carbon dioxide per year. To offset these emissions would require planting a minimum of 875 million trees per year! [5]



ReScape and PG&E are partnering to offer eight webinars about landscaping practices that address climate change, with a focus on carbon sequestration. This Speaker Series is a part of ReScape’s Climate Change Consortium Demonstration Projects to educate about climate change landscaping challenges and the solutions available using regenerative practices.



A material's embodied energy refers to the energy used to extract and process raw materials, manufacturing, shipping, installing and eventually demolishing the item. The Carbon Footprint is the measure of the total direct and indirect carbon emissions during a product's lifetime. [6]

Ways to Conserve Energy and Mitigate Climate Change

- **Reduce the need for mowing and shearing** by reducing or eliminating turf, or choose no-mow varieties. Select and place shrubs and trees to allow for mature growth within the space provided. Choosing smaller sized plant material will also conserve energy.
- **Shade buildings, parking lots and streets.** Plant deciduous trees along the west and southwest sides of buildings, providing sufficient room for roots and canopy.
- **Design outdoor lighting carefully.** Use the minimum required lighting levels and specify low energy, cut-off fixtures to avoid light overspill onto adjacent properties.
- **Choose and maintain equipment for reduced emissions.** Minimize the use of gas-powered equipment and use hand-powered options when feasible. Keep plant debris onsite and incorporate into the mulch layer, rather than transport offsite.
- **Buy locally and specify low embodied energy/carbon footprint materials** that consume less energy and fuel in the material procurement, manufacture, shipping and installation, as well as end use disposal.

ReScape is a non-profit organization that advocates for a regenerative, whole systems approach to landscaping education and advocacy, addressing earthscape climate change issues.

www.rescapeca.org

As a provider of gas and electricity to millions of Californians, **PG&E** strives to be an environmental leader, demonstrating this commitment through action. Doing so is integral to their ongoing efforts to provide safe, reliable, affordable and clean energy.

www.pge.com

More Resources

Climate Positive Design provides resources to designers of the built environment in order to help ensure the future of our planet by reducing carbon footprint and increasing sequestration.

Project Drawdown is a global research organization that identifies, reviews, and analyzes the most viable solutions to climate change, and shares these findings with the world.

American Society of Landscape Architects (ASLA) promotes the planning and design of nature-based solutions to mitigate greenhouse gas emissions, while also helping communities adapt to a changing climate.

Materials for Sustainable Sites by Meg Calkins, provides solid research and data comparing the resource efficiency, embodied energy and carbon, and toxicity of commonly used construction materials and products in the landscape industry.

ReScape Landscape Guidelines provide specific, actionable steps to the design, installation and maintenance of landscapes that maximize energy conservation, reduce GHG emissions, and sequester carbon.

1. The International Energy Agency, "Climate change: The Energy Sector Is Central To Efforts To Combat Climate Change," <https://www.iea.org/topics/climate-change> (Accessed: 12.14.2020)
2. Dr. Leonard Perry, Extension Professor, University of Vermont, "Fuel-Efficient Lawns and Landscapes", <https://pss.uvm.edu/ppp/articles/fuels.html>, (Accessed 12.10.2020)
3. "Energy Saver 101: Everything You Need to Know About Landscaping," https://www.energy.gov/sites/prod/files/2014/04/f14/Landscaping101_finalv2.pdf (Accessed:12.12.2020)
4. Arbor Day Foundation, "How to Plant Trees to Conserve Energy for Summer Shade," <https://www.arborday.org/trees/climatechange/summershade.cfm>, (Accessed: 12.10.20)
5. International Dark Sky Association, "Light Pollution Wastes Energy and Money," <https://www.darksky.org/light-pollution/energy-waste/> (Accessed: 12.12.2020)
6. A.A. Morini et al., "Early-Stage Materials Selection," *Materials and Design* 178 (2019), <https://www.sciencedirect.com/science/article/pii/S0264127519302990> (Accessed: 12.14.2020)