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Sequester Carbon to Mitigate Climate Change

ReScape Principle:
Sequester Carbon

The principal Sequester Carbon recognizes the powerful potential for slowing climate change by increasing the amount of carbon pulled from the atmosphere and stored in plant material and the soil; a process called carbon sequestration.

Problem

The Earth's soils hold more carbon than the atmosphere and all plant life combined, but more than half of this carbon has been released into the atmosphere [1]. Traditional landscape practices such as soil compaction and erosion, grading and tilling, removing mature trees and vegetation, and the use of synthetic herbicides and pesticides, contribute directly and indirectly to greenhouse gas emissions and air pollution.

Solution

In addition to drastically reducing these emissions, it is essential that we also increase efforts to sequester this carbon back in our landscapes. Healthy vegetation works together with soil rich in organic matter and beneficial microorganisms to remove carbon dioxide from the air and store it as soil carbon, an important strategy for addressing climate change. In addition to regenerative soil management practices, design landscapes to protect mature trees, plant large stature trees and avoid using synthetic chemicals in the landscape.

Research Shows:

- Soils can hold three times the amount of carbon currently in the atmosphere or almost four times the amount held in living matter. [2]
- A one-time, half-inch application of compost can increase the amount of carbon stored in the soil by 1 ton per hectare per year, and forecasts estimate that this benefit will continue for more than 30 years. [3]
- If we increase soil carbon content by 4% a year it would offset the annual increase in atmospheric carbon dioxide. [4]
- A 19-year study by UC Davis researchers concluded that the use of cover crops combined with adding compost to the soil increased soil carbon content by 12.6%! [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.

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Reduce Waste & Mitigate Climate Change

- **Apply compost and feed the soil food web** which will jump-start the conversion of atmospheric carbon into soil organic matter and plant material. Compost will improve conditions in the soil to support beneficial microorganisms and increase water-holding capacity, resulting in greater plant growth and even more carbon storage.
- **Add organic mulch to bare soil** which will encourage microbial activity and soil carbon storage, help soil retain moisture; and prevent erosion, which will release carbon back into the atmosphere.
- **Limit soil compaction and minimize disturbance.** Compacted soils reduce the pore space for air and water, which in turn can negatively impact plant and soil microbe health, reducing the ability to sequester carbon. Exposed and tilled soils release stored carbon back into the atmosphere.
- **Protect mature trees** for multiple climate benefits and to avoid releasing stored carbon. Plant large stature trees to help mitigate climate change by removing atmospheric carbon dioxide, releasing oxygen and sequestering carbon. [6]
- **Avoid using synthetic fertilizers, pesticides, and herbicides** which can harm the soil microorganisms that sequester carbon. In addition, applications of synthetic nitrogen fertilizer can cause emissions of nitrous oxide, a greenhouse gas that is 300 times more potent than carbon dioxide.

More Resources

Marin Carbon Project seeks to enhance carbon sequestration in rangeland, agricultural, and forest soils through applied research, demonstration and implementation.

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.

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

Earth Institute, Columbia University, blends research in the physical and social sciences, education and practical solutions to help guide the world onto a path toward sustainability.

Carbon Cycle Institute aims to stop and reverse global climate change by advancing science-based solutions that reduce atmospheric carbon while promoting environmental stewardship, social equity and economic sustainability.

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

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