

For individuals or larger entities interested in reducing and mitigating their impact on the environment, there are two important strategies. One is reducing energy use. This can include switching to alternative or fuel efficient modes of transportation, utilizing energy efficient appliances and fixtures, setting back the thermostat at night, and making purchases from “green” companies. A second strategy for reducing one’s emission footprint is acquiring emission offsets. Offsets are reductions in emissions in one place that can be used to compensate for emissions elsewhere, and are usually denominated in metric tons of a reduced emission or megawatt hours of renewable energy produced. By purchasing an offset, one is in essence paying someone else to reduce *their* emissions, and the purchaser then owns that environmental benefit. If the purchaser uses the offset to reduce their own inventory of emissions, they must permanently retire it so that it can never again be bought or sold. A good way to look at these two paths for reducing emissions is through a comparison to how we acquire food. We may grow some (if we garden), and we pay someone else to grow the rest (as when we buy food at the store or market).

Emission offsets come from a number of different types of projects:

- ***Emission reduction projects***
- **Renewable energy projects.** This may include wind, solar, hydro, and other forms of renewables. By supplying emission-free electricity, these projects reduce emissions by replacing electricity from conventional power plants. Because power plants typically combust fuel that releases a variety of greenhouse gas and other emissions related to health, replacing this electricity with renewable generation serves to offset all of these emissions. These offsets are called Renewable Energy Certificates (RECs) if denominated in megawatt-hours.
- **Energy efficiency projects.** These projects create offsets (also called white tags) by reducing energy use below a “business as usual” baseline. These projects also offset the whole range of emissions that would have resulted from the energy use that was avoided.
- **Methane destruction.** Methane (CH₄) is a greenhouse gas 25 times more potent than carbon dioxide. Methane is emitted in large quantities from landfills, coal mines, and animal waste in agricultural operations. When this methane is collected and flared, it is largely converted to CO₂, and therefore results in a reduction in greenhouse gas emissions.

- ***Sequestration projects***
- **Forestry and agricultural soil projects.** Vegetation absorbs CO₂ from the air, and forestry projects include both the sustainable management of existing forests as well as the establishment of new forest land. Agricultural soil projects involve employing farming practices that increase the ability of the soil to sequester carbon, such as decreasing tillage and planting grasses.
- **Carbon capture and storage.** In carbon capture and storage projects, CO₂ emissions are collected and transported to underground geological or ocean formations where they cannot

impact the atmosphere.

In the US, greenhouse gas emissions are not currently federally regulated (though this is likely to change under the Obama administration), and accordingly, the market for carbon and other emissions offsets is at present a “voluntary market.” This is not unusual since most competitive markets are not subject to major federal regulation. As in all voluntary markets, it is up to the buyer to make sure that what is purchased is of high quality. Standards (e.g. Green-e Climate, Gold Standard, Voluntary Climate Standard, LEO-001) are available to assure this quality for emission offsets.

See the Leonardo Academy [Emissions Consulting Services web page](#).

For additional information contact Leonardo Academy at:

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