Because Longmont wants to be more “green,” the city council has decided to try and alleviate the problem of rising carbon dioxide levels, which can be potentially harmful to residents. They would like to install devices around the city, both outdoors and inside buildings that would reduce the level of indoor carbon dioxide in the air, and/or inside buildings. The city plans on installing these devices on city owned property and buidings, and giving residents and businesses who install these devices on their own property a $1,000 property tax credit.

The City of Longmont needs your help in designing these devices because they feel that current residents of Longmont best understand the needs of its citizens. They are requesting that you come up with a professionally designed diagram of a possible device that could be installed outside, inside buildings, or on vehicles of Longmont residents. The diagram should be drawn to scale, detail all inner schematics, and be able to reduce CO2 levels. You will also include a one page explanation of how your diagram works that includes an explanation of the connections and processes detailed below.

Each device:

* must not violate any city ordinances
* cannot increase the homeowner’s energy bills significantly
* must decrease the amount of carbon dioxide by an appreciable amount
* must be designed in an eco-friendly way (driven by science)
* must be able to be easily mass-produced
* must be easy to maintain

You will be presenting your designs, and the best design will be chosen from the presentations. In order for your design to be considered for “best design,” it must meet the qualifications above, illustrate in detail how it works, and must include a written explaination of the scientific concepts listed below so the city can explain the scientific reasoning behind the design to all parties involved (homeowners, city planners, potential manufacturers, building inspectors, etc.).

* the connections between the photosythesis and cellular respiration processes involved in your design
* a description of the process of cell respiration and where it takes place in your device.
* a description of the process of photosynthesis, and where it takes place in your device.
* how your device is removing carbon from the atmosphere and recycling it as described in the carbon cycle.