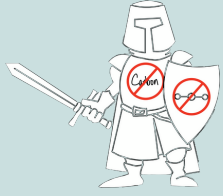
Created by: Gabe Espinosa, Jack Hanlon, and Alex Wadsworth



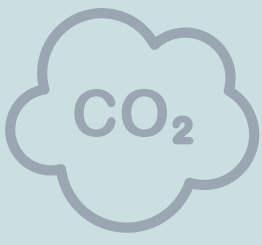
CARBON CAPTURE INITIATIVE

SMALL SCALE CARBON CAPTURE IMPLEMENTATION AND UTILIZATION

Problem

Humanity has placed itself in a carbon lock-in as a result of the Industrial Revolution and current day behaviors and beliefs. Climate change is severely affected by the rapidly increasing concentration of carbon in the world today, and carbon capture is one of our only hopes.

WPI Releases 7,432 tons of CO2 per year. That's the emission equivalent of driving around the Earth 583 times.



How can carbon capture be implemented on the WPI Campus?

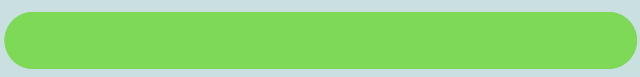
Faradaic Electro-Swing Reactive Adorption

A ground-breaking technology that relies on electrolytic cells to capture carbon dioxide at standard temperature and pressure.

Capture

Oxy-Fuel Combustion and Allam-Fetvedt Cycle

A revolutionary power cycle currently used by NET Power that captures 100% of emittied carbon



Capture

Greenhouse Application

Applying carbon dioxide to existing greenhouses will enhance photosynthesis and bolster plant growth/life

Application

Carbonation

The use of captured carbon dioxide to carbonate drinks or balance the pH levels of swimming pools

Application

Storage and Sale

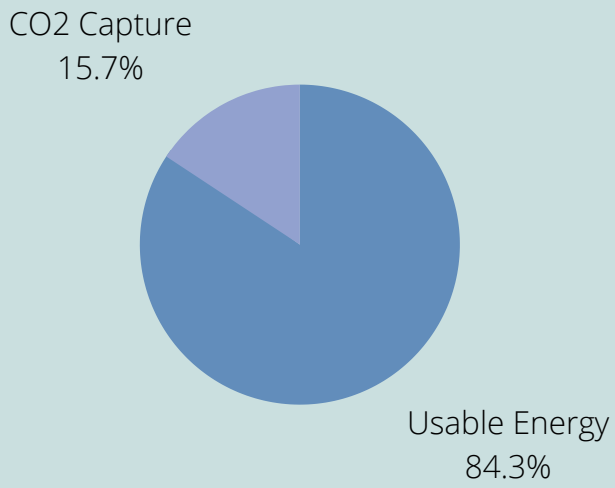
Captured carbon dioxide can be stored on campus and sold for profit

Application

Assessment

Implementing Electro-Swing Adsorption on Campus

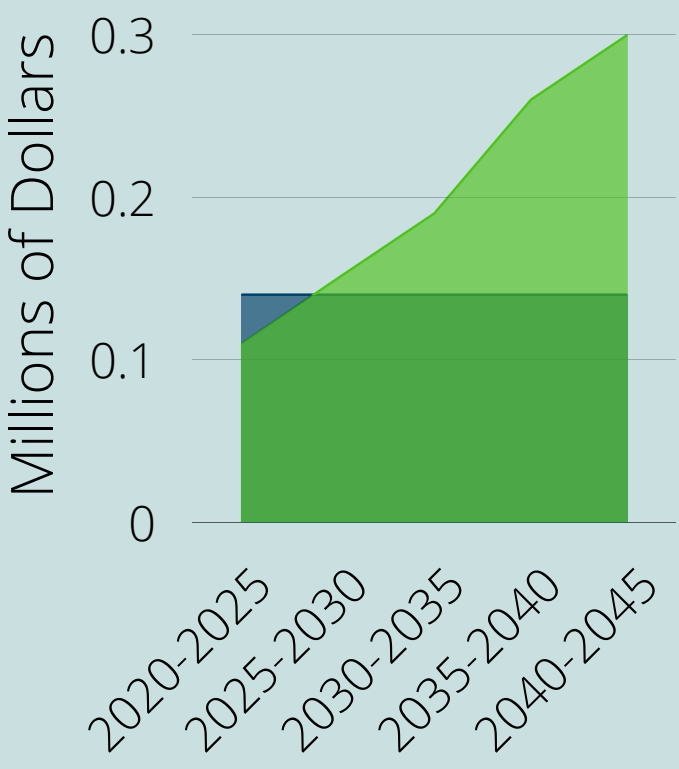
WPI Annual Energy Usage



Annual Cost:

$136,112

1/9rd Top Administrative Salary



WPI Carbon Capture Spending

CO2 Capture Cost

CO2 Sales Revenue

Carbon capture would pay for itself by 2025

Benefits

- Encourages Enrollment
- Community Leader
- Clean Campus
- Cost Effective