



CARBON CRUSADERS

SMALL SCALE CARBON CAPTURE IMPLEMENTATION AND UTILIZATION

Problem

Humanity has been 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 8,753.648 tons of CO₂ per year.
That's the emission equivalent of driving around the Earth 683 times.



How can carbon capture be implemented on the WPI Campus?

Faradaic Electro-Swing Reactive Adsorption

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



Capture

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

Oxy-Fuel Combustion and Allam-Fetvedt Cycle

100%

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

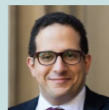


Application

Contacts



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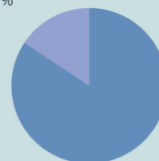


Assessment

Implementing Electro-Swing Adsorption on Campus

WPI Annual Energy Usage

CO₂ Capture
15.7%

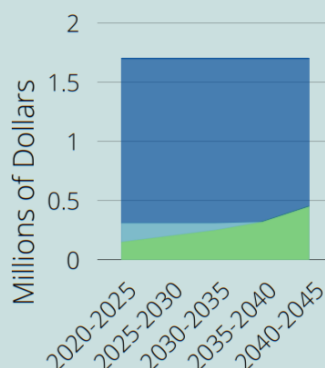


Usable Energy
84.3%

Annual Cost:

\$331,223

1/3rd Top
Administrative Salary



WPI Annual Energy Spending

- Total Energy Cost
- CO₂ Capture Cost
- CO₂ Sales Revenue

Carbon capture would pay for itself by 2035



References

