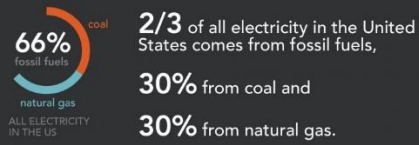


# Carbon Capture 101

## WHAT IS CARBON CAPTURE?

It refers to the gathering and permanent storage of carbon dioxide (CO<sub>2</sub>) to prevent it from releasing into the atmosphere.

## WHY DO WE NEED IT?



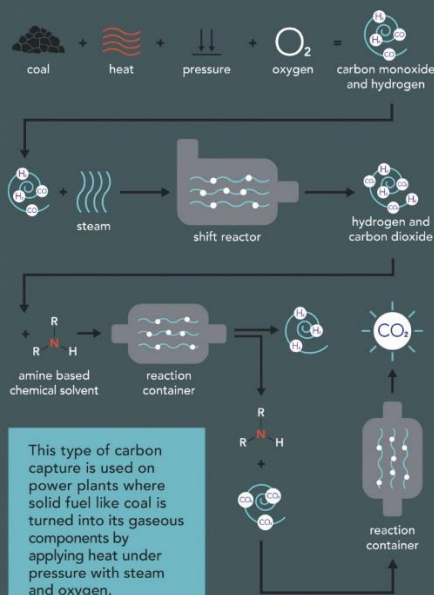
Power plants account for ~35% of total CO<sub>2</sub> emissions in the U.S.

## HOW DOES IT WORK?

There are two kinds of carbon capture: pre-combustion and post-combustion.

### PRE-COMBUSTION

Pre-combustion captures CO<sub>2</sub> through a series of chemical reactions before the fossil fuel is burned.



This type of carbon capture is used on power plants where solid fuel like coal is turned into its gaseous components by applying heat under pressure with steam and oxygen.

These power plants carefully control the amount of oxygen present in the process, which results in a mix of carbon monoxide, hydrogen and some impurities.

This is mixed with steam in a shift reactor which produces more hydrogen and CO<sub>2</sub>.

These gases are fed into a reaction container and a chemical called amine is added, which binds with the CO<sub>2</sub> and brings it to the bottom of the container.

The separated CO<sub>2</sub> is then captured and stored, while the rest of the fuel goes off to be burned.

### POST-COMBUSTION

This type of carbon capture happens in power plants where fossil fuel is burned with air in a boiler.

This produces steam, which drives a turbine or generator to produce electricity.

But in addition to the steam, these power plants give off flue gas, including sulfur dioxides, nitrogen oxides and large amounts of CO<sub>2</sub>.

Post-combustion uses a process that captures and stores CO<sub>2</sub> before it is released into the chimney.

The best part? Post-combustion carbon capture can be retrofitted onto existing power plants!



In April 2015 the Department of Energy announced that a group of Department-supported carbon capture projects safely and permanently stored

10 MILLION metric tons OF CO<sub>2</sub>.

That's the equivalent of removing more than 2 MILLION CARS from American roads for an entire year!

