PUTTING CARBON TO WORK:
BIOREFINERIES' CRITICAL CONTRIBUTIONS TO NET-ZERO

growth energy
America's Ethanol Supporters

Biofuels reduce carbon emissions and can play a key role in actively removing or utilizing carbon to improve our air. At Growth Energy, we're proud to represent the nation's top biofuel producers who are leading the charge.

Carbon capture, utilization, and storage — or CCUS — consists of carbon reduction technologies that have the power to offset emissions from the biorefinery process and help achieve the tremendous decarbonization needed to reach ambitious climate goals by 2050.

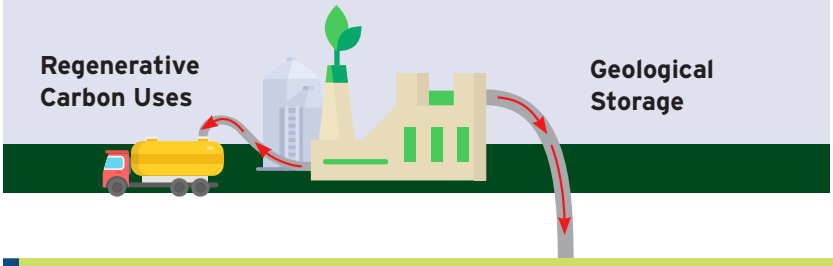
New innovations at biorefineries throughout the U.S. allow pure, biogenic carbon dioxide (CO_2) — or carbon dioxide released from organic material — to be captured at a massive scale, and multiple projects are already underway that repurpose or provide a permanent storage solution for the majority of that CO_2.

SOURCE: IEA Bioenergy

HOW CCUS WORKS:

During the bioethanol production process, CO_2 emissions from fermentation (a process nearly identical to any distillery) are captured, rather than released into the atmosphere. From there, the captured emissions can be permanently stored underground or can be re-used in various important ways.

The CO_2 captured at the biorefineries is 99.9% pure — due to the fermentation process of ethanol — and does not contain other pollutants that need to be scrubbed to get pure, clean carbon.



GROWTH ENERGY MEMBERS ARE INNOVATING TO LEAD THE INDUSTRY ON CCUS

- 25% of the bioethanol industry already captures CO_2
- +15 locations are planning CO_2 projects
- An average 60 million gallon bioethanol plant can capture 150,000 tons of CO_2 annually
- CCUS reduces bioethanol's carbon intensity by 50 percent or more for an average plant (or 25-30 CI points)

USES FOR REGENERATIVE CARBON

That near-perfect biogenic CO_2 can then be repurposed to produce dry ice needed for vaccine storage; to treat municipal water, to carbonate beverages or preserve fresh food. Aside from production of these useful co-products, many in our industry are investing in permanent sequestration underground of this pure, biogenic CO_2, a technique that scientists agree is critical to achieving global climate goals.

Carbon capture is emerging as a vital measure to bring down emissions in time to meet our reduction goals by 2050 and the biofuel industry is leading the charge.

Biogenic carbon capture from a bioethanol plant makes it ideal for applications like:

- Dry Ice
- Municipal Water Treatment
- Beverage Carbonation
- Food Preservation

As humankind mobilizes to reduce carbon and combat climate change, we must ensure that we are prioritizing innovations that can efficiently and effectively make a meaningful impact in carbon reduction immediately.