## NATIONAL CARBON CAPTURE CENTER

## ADVANCING FOSSIL ENERGY TECHNOLOGY SOLUTIONS

## **CARBON UTILIZATION**

As the primary carbon capture research facility for the U.S. Department of Energy (DOE), the National Carbon Capture Center is broadening its work to include technologies for utilization of carbon dioxide (CO<sub>2</sub>).

Located in Wilsonville, Alabama, the center provides a unique test bed for third-party developers to advance  $CO_2$  utilization technologies using fossil fuel-derived flue gas and/or captured  $CO_2$  from the facility's postcombustion carbon capture system.

There are many applications for the emerging field of  $CO_2$  utilization such as fuels, plastics, chemicals, food and feeds, building materials, enhanced resource recovery, energy storage and wastewater treatment.

Testing will evaluate advanced catalysts, reactor systems and processes to develop technologies that will efficiently, economically and cleanly convert  $CO_2$  into value-added products – partially offsetting  $CO_2$  capture costs from power generation and providing an alternative to conventional manufacturing processes.

## FOCUS AREAS

Early-stage research will address the following CO<sub>2</sub> utilization pathways:

- ▶ CO<sub>2</sub> conversion to biomass via agriculture and aquaculture (algae)
- Synthesis of fuels and organic chemicals
- Conversion of CO<sub>2</sub> to inorganic products such as construction materials
- Synthesis of inorganic materials and chemicals
- CO<sub>2</sub> as a working fluid for enhanced oil recovery and as solvents and refrigerants

























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Carbon utilization testing will support DOE's development of a toolbox for beneficial uses of CO<sub>2</sub>.