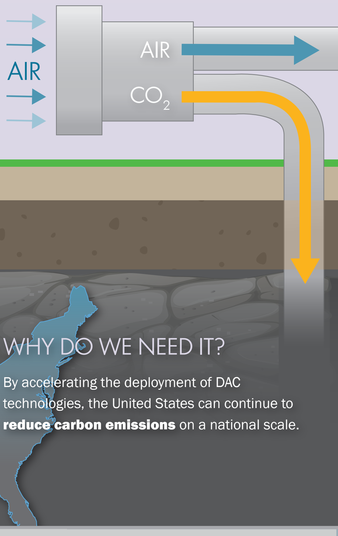
DIRECT AIR CAPTURE

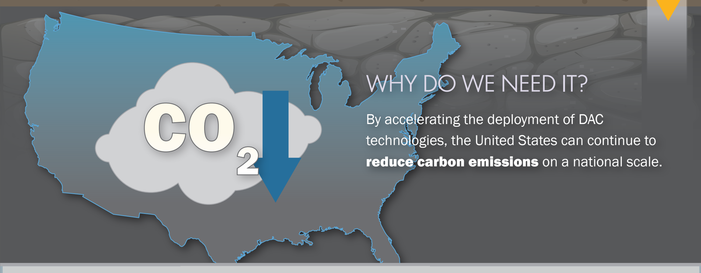
Research and Development Activities

As a global leader in the advancement of carbon capture, utilization, and storage technologies, the U.S. Department of Energy is researching and investing in **direct air capture** (DAC) technologies to help scale them to the commercial market.

WHAT IS DIRECT AIR CAPTURE?

DAC is a process that separates carbon dioxide (CO_2) from ambient air. The separated CO_2 can then be used for enhanced oil recovery, converted into value-added products, or be safely and permanently stored underground.





WHY DO WE NEED IT?

By accelerating the deployment of DAC technologies, the United States can continue to **reduce carbon emissions** on a national scale.

CURRENT RESEARCH ACTIVITIES

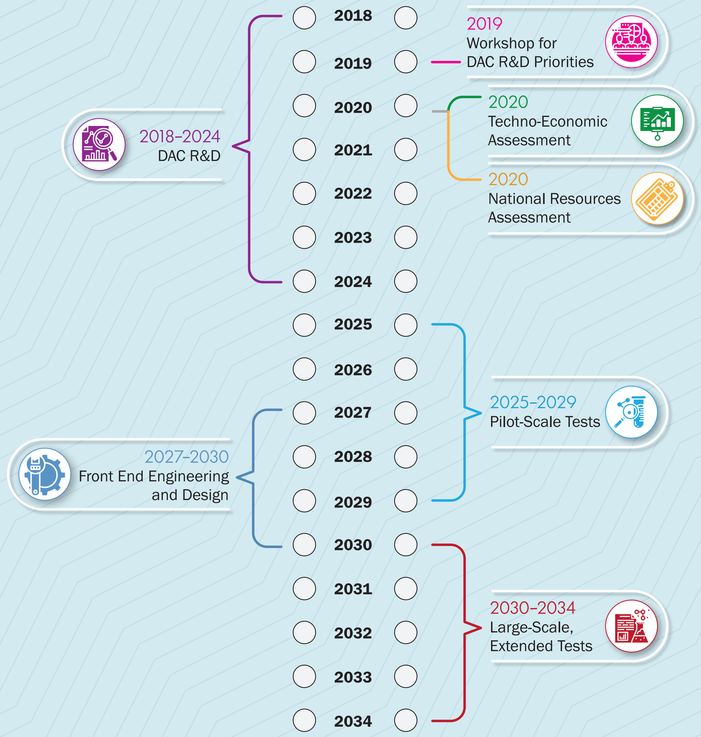
More than $1 billion has been invested by government agencies and by private investors to develop technologies for point-source carbon capture at power plants. The method collects CO_2 directly from the plants. The Office of Fossil Energy is leveraging that research to accelerate the development of DAC processes.

This billion-dollar investment is in addition to major carbon capture, utilization, and storage demonstration projects such as Petra Nova, Archer Daniels Midland's Illinois Industrial Carbon Capture and Storage, and Air Products' Industrial Capture project. Those projects have successfully captured and injected over 9 million metric tons of CO_2.

And, over $250 million has been invested in the National Carbon Capture Center, located in Wilsonville, AL, a user facility that hosts developers of carbon capture technologies. At this center, approximately 80 engineers and scientists support the research and development of carbon capture systems and technologies.

FUTURE RESEARCH ACTIVITIES

Following a research agenda designed by the National Academies of Sciences, the U.S. Department of Energy developed a timeline of future research and development (R&D) plans for DAC technologies. The aim is to develop and scale second-generation DAC technologies to make the most efficient use of existing carbon capture, utilization, and storage program activities and infrastructure.



These advances are a part of a diverse portfolio of industry cost-shared technology development projects, university research grants, and collaborative work with other National Laboratories. The Office of Fossil Energy will continue to build on that work to make great strides in DAC efficiency improvements.

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