

Annual Energy Outlook 2025 Fact Sheet: **Carbon Capture, Allocation, Transportation, and Sequestration** **Module**

We are introducing the Carbon Capture, Allocation, Transportation, and Sequestration (CCATS) Module in our modeling system (National Energy Modeling System [NEMS]) for the *Annual Energy Outlook 2025* (AEO2025) to better reflect the emerging market for captured carbon dioxide (CO₂). We designed CCATS to be flexible to incorporate future policies and to more accurately project long-term trends in U.S. energy markets.

At its core, CCATS is an optimization module that minimizes various operation and investment costs for capturing, transporting, and sequestering or utilizing CO₂. After applying policy incentives, the module determines the most cost-effective network flow of CO₂ from supply sources to demand locations and projects the development of CO₂ infrastructure for both transportation and saline storage until 2050.

CO₂ supply representation

CCATS receives quantities of captured CO₂ from other modules in NEMS. In NEMS, CO₂ supply comes from a variety of sources, including hydrogen production facilities, hydrocarbon (oil and natural gas) extraction processes, natural gas processing facilities, ethanol plants, cement kilns, and fossil fuel-fired power plants. Given limited data and resources, CCATS will not represent direct air capture (DAC) for AEO2025.

CO₂ demand representation

For AEO2025, CO₂ demand in CCATS comes from either CO₂ enhanced oil recovery (EOR) or geologic storage in saline formations. Today, the overwhelming majority of captured CO₂ is directed toward CO₂ EOR, a process in which CO₂ is injected into oil and natural gas wells to extract additional hydrocarbon resources.¹ Demand from other sources of CO₂ utilization such as the food and beverage industry and **electrofuels**, or e-fuels, will not be included as sources of CO₂ demand.

Policy and legislation representation

In representing existing policy and legislation for AEO2025, CCATS focuses on the expansion and enhancement of 45Q tax credits in the Inflation Reduction Act.² In particular, the module will represent tax credits of \$85 per metric ton of CO₂ permanently stored and \$60 per metric ton of CO₂ used for EOR. Eligible projects must meet minimum quantity thresholds and begin construction by 2033 to qualify for the tax credits, which last for 12 years after the carbon capture equipment associated with the project is placed into service. The tax credits are also tied to apprenticeship and prevailing wage requirements.

Geographic representation

Currently, carbon capture and sequestration operations are active in three main geographical areas, which are represented in CCATS: the Gulf Coast, the Permian Basin, and the Rocky Mountains/Great Plains. Each of these markets is local, and no existing pipelines move CO₂ between these regions. CCATS is designed to build on this local transportation infrastructure to support additional volumes.

¹ U.S. Environmental Protection Agency, GHGRP,

<https://www.epa.gov/ghgreporting/supply-underground-injection-and-geologic-sequestration-carbon-dioxide>.

² H.R.5376 Inflation Reduction Act of 2022, Pub. L. No. 117-169 (2022), <https://www.congress.gov/bill/117th-congress/house-bill/5376/text>.