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Monetizing CO_2

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Abstract

To monetize carbon dioxide the need for carbon capture, utilization, and storage, or CCUS is essential to provide affordable, reliable energy to the world's growing demand, while addressing climate change. Section 45Q of the federal tax code is a keyway to create this market movement and to support the objective of sustainable business investment. First enacted on October 3, 2008, and subsequently modified, 45Q addresses all manmade, captured carbon emissions and required new projects to begin construction prior to January 1, 2026, in order to qualify for the credits, in addition to CCUS the credits had been extended for direct air capture technologies, and the credits for geological storage and enhanced oil recovery had been increased. Since then, on August 16, 2022, President Joe Biden signed into law the Inflation Reduction Act (IRA) of 2022, which is a milestone for the carbon capture use and storage technologies (CCUS) extending start of construction to December 31, 2032, and increasing tax credit amounts once again. We assess the economics of three carbon capture opportunities. These are carbon capture from, (1) corn-derived ethanol production case I, using 4 trains for compression (2) corn-derived ethanol production case II, using single train for compression (3) natural gas treating, using the Selexol™ process. In addition to evaluation of carbon capture economics we will estimate cost of transport via pipeline to a sequestration site, and the value of CO_2 for enhanced oil recovery, EOR.

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