



Corn, Farmers, Ethanol, Markets, CO2

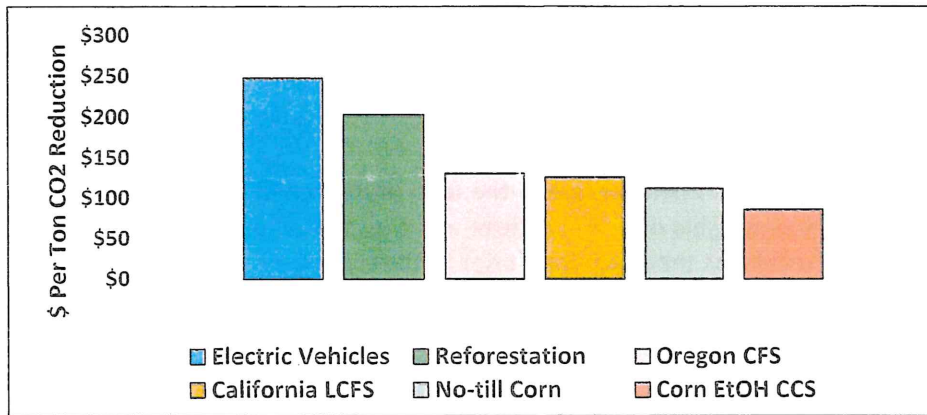
- 1) **Is the Federal Government subsidizing the cost of the CO2 pipeline?** No, not directly. The cost of the pipeline is being born by private investment plus bank financing. For the past 15 years, IRS Code 45Q provided a tax credit for companies (similar to Summit Carbon Solutions) that permanently store CO2 in geologic formations. In 2008, the tax credit was \$20 per ton. It has been increased gradually over the years and is now \$85 per ton. The IRS legislation also created the 45Z tax credit for Biofuel producers that are able to reduce their carbon intensity below a set target. Ethanol plants that are able to sequester their CO2 will easily be below this target and receive even more valuable tax credits. However, Ethanol producers cannot receive both 45Q and 45Z tax credits for CCS (Carbon Capture and Sequestration).
- 2) **What national activist, NGO groups and individuals are trying to impose their values on SD farmers and their local communities?** Actively opposing CO2 pipelines are: Sierra Club, Food and Water Watch, Bold Alliance, Congressional Progressive Caucus Center, the Center for International Environmental Law, Climate Justice Alliance. Recently, US Representatives Ilhan Omar (D-MN), Chuy Garcia (D-IL), Rashida Tlaib (D-MI), Alexandria Ocasio-Cortez (D-NY), Jerry Nadler (D-NY), Delia Ramirez (D-IL), Jamaal Bowman (D-NY), Andre Carson (D-IN), Raul Grijalva (D-AR), Jared Huffman (D-CA), Henry Johnson Jr. (D-GA), Barbara Lee (D-CA), and Summer Lee (D-PA) authored a letter to President Biden urging him to impose an immediate Federal moratorium on CO2 pipelines (Carbon Herald).
- 3) **Would the SD Ethanol Plants benefit from the same IRS tax credits?** Yes. An average sized ethanol plant in SD (73 million gal/year) would earn an estimated \$5 million annually for their share of 45Q tax credits. These ethanol plants could also earn approximately \$7 million annually in CO2 reduction credits in Low Carbon Fuel markets in California, Oregon, Washington State and Canada.
- 4) **Who owns the ethanol plants in SD?** The ownership varies from plant to plant (0 to 95%), but individual family farming operations financed the early build and growth of SD Ethanol industry and still own a majority of stock.
- 5) **Are there low carbon/high value markets available now?** Yes, our SD ethanol plants have been able to access markets in California, Oregon, Washington State and Canada, but are currently limited by their carbon intensity score. Ethanol plants with CCS will be able to reduce their carbon intensity score by approximately 50% or more and will have much greater access in these low carbon fuel markets.
- 6) **What is limiting our SD ethanol plant's access to low carbon/high value markets?** One of the co-products of corn fermentation for ethanol is CO2. Add to that the Carbon Intensity score of the natural gas (or propane) used to dry the distillers grains for the livestock market. There is a limited market for the wet distillers grains. Distillers grains feed "wet", save the drying cost and significantly lowers the Carbon Intensity score of that percentage of ethanol which open up those high value/low carbon markets. But, this small percentage of production, sold to a high value market gained one farmer owned plant an additional \$10 million in revenue in 2023. So, there is a market, if we can sequester more of the CO2.
- 7) **Why do our SD ethanol production facilities have to ship their CO2 out of state?** SD does not have the appropriate geology available. (see map on RFA FAQ)

- 8) **Why not transport the CO2 liquid on a rail car or truck/trailer to the sequestration site?** By federal law, these containers would have to be double walled, insulated and cooled to keep the CO2 in the liquid state. According to the National Petroleum Council, that transportation would be 10X more expensive than a pipeline.
- 9) **Would there be any setbacks imposed on trucks or railcars as they went through communities?** No, some CO2 used for the food and beverage industry has and is being transported by truck and rail around the US and there are no setbacks required.
- 10) **Are there alternative uses for CO2?** At this time, a very small percentage of the CO2 from ethanol production is being used for beverage carbonation, dry ice, fire extinguishers and some industrial cooling systems.
- 11) **Can CO2 be used as a fuel?** No, not in its pure form. CO2 is non-combustible. If we found an economical process to separate hydrogen from the water molecule, using 100% renewable energy, and then adding a hydrogen atom to the CO2 molecule, we could produce a combustible fuel called “green methanol”.
- 12) **Why not put CO2 back into the soil?** Many corn producers are doing just that! Plants, especially corn, do an excellent job of taking CO2 out of the atmosphere and fixing that carbon in the corn grain, stover (dead leaves and stalk) and roots. Soil Scientists have found that about 5-7% of the carbon in the stover (if left on fields), and roots, can be sequestered in soil in the form of Soil Organic Carbon/Organic Matter if reduced/no-till is used. This means that about 1500 lbs. of CO2 can be sequestered per acre per year from a 180 bu/acre corn crop. When a bushel of corn is processed at a dry-mill ethanol plant, it produces about 17# of ethanol, 17# of CO2 and 17# of distiller’s grains. So, approximately 3000 lbs. of CO2 is produced and can be captured and sequestered from a 180 bushel per acre corn crop during ethanol production, double the per acre CO2 sequestered in soil by no-till. We **must** sequester CO2 via reduced/no-till **AND** sequester ethanol plant CO2 w/ CCS.
- 13) **Is there a correlation between ethanol production (demand for corn) and farmland values?** Yes, (see POET chart) The pipeline is a tool for the ethanol industry to meet the “low carbon” threshold necessary to penetrate a new (SAF) market and reignite the growth of bioethanol that we all enjoyed from 2000-2013.
- 14) **Will increased ethanol demand change the land use decisions of farmers and re-ignite the “Food vs Fuel” debate?** One of the recurring themes of this whole debate has been on landowner rights and landowner choice. Landowners should have the choice to react or respond to market signals or demands. Fact . . . according to the NRCS (National Resources Conservation Service), in the last 25 years, 45 million acres of land have been taken out of production due to development (residential, commercial, industrial and recreational). 17 million of those 45 million acres were classified as “Prime” farmland. That breaks down to 1.3 acres of prime farmland and another 2.1 acres of marginal land taken out of production **every minute** for the last 25 years.
- 15) **Why not focus on getting an E-30 blend approved by the EPA instead of focusing on the low carbon market opportunities?** The ethanol industry and associations have spent millions of dollars on E-30 promotions and price discounts to entice its use, with no long-lasting momentum. The EPA continues to resist increasing blend rates as it has taken the industry 10+ years to go from E10 to some E15 usage. The quickest way to bring E30 to the market would be if it is a “low carbon” alternative.
- 16) **What is the potential market volume for Sustainable Aviation Fuel (SAF)?** US demand for SAF is expected to reach 35 billion gallons. World demand could reach 100 Billion gallons. The current total annual ethanol production of all the US ethanol plants is 16 Billion gallons.

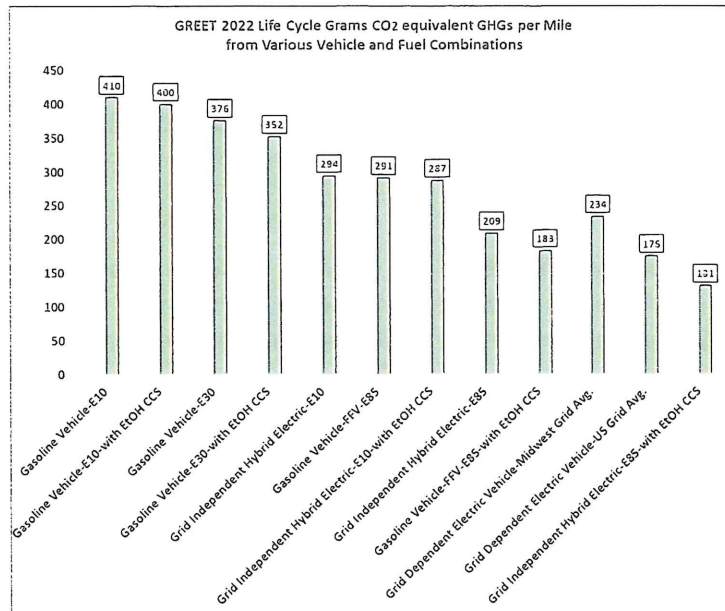
17) **Will US Farmers be able to grow enough corn to supply these markets?** This is the same argument heard 15 – 20 years ago when our SD ethanol plants were being built. SD Farmers are currently producing 800 million bushels of corn and the SD ethanol plants are using about 2/3 of that total or about 500 million bushels. As genetics and management practices continue to improve, the US corn yield trend line yields continue to increase. There was a new world record set this year in the National Corn Yield contest at 623 bu./acre. The US average yield per acre is just under 178 bu. The genetics and management know how are available. Corn ending stocks have gotten burdensome in the last year, w/ approximate 30% decline in per bushel price of corn.

18) **What about exports?** Our industry has spent millions of dollars investing in export facilities and developing relationships around the world. That being said, those demand markets fluctuate as the geopolitics, their economies and the value of the US dollar vary. A sizable, consistent, value added US demand base would not be a bad thing. Brazil just surpassed the US as the world’s largest corn exporter and they are building new corn ethanol plants at an exponential rate. If we sit idly by and US corn supplies continue to grow at a pace that outstrips demand, corn prices will drop below breakeven levels. If agriculture is going to meet its potential, we need to advance its opportunities.

19) **How does the 45Q tax credit cost per ton of CO2 reductions compare to other CO2 reduction strategies?** There have been various analyses of the various CO2 reduction methods. EV tax credits are very costly, followed by reforestation of cropland, Low Carbon Fuel Standard programs, tillage reductions on Cropland and EtOH CCS. Following is a chart of those estimations:



20) **Corn Ethanol’s opportunity to compete with EVs depends on CCS!**



- 21) **How much more money will SD corn farmers expect to make?** In the last 15 years, ethanol has narrowed the basis or returned to the farmers and additional 15-20 cents per bushel. On an average sized SD farm with a corn/soybean rotation and a 180 bu/A yield, ethanol demand has added \$22,000 per year to that farm's bottom line. That number is expected to double with the market access to a higher value product. In addition, those farmer/ethanol shareholders would look to see their annual dividends double. 1/3 of those extra dividends from IRS tax credits and 2/3 from the additional value of the low carbon ethanol sold. This would not account for any expected appreciation of their stock value.
- 22) **Will there be enough water to support the CO2 liquefaction process at the ethanol facilities?** Yes. These facilities are located in areas with sufficient water supplies and those aquifers are monitored by the SD DANR. Much of the cooling water will be recycled.

Eminent Domain and Landowner's Options

- 1) **What should a landowner expect for a fair compensation on the land that is purchased for the easement?** That number is negotiable, with the minimum being the current market sale value for the land depending on its use (crop or pastureland).
- 2) **What else is negotiable?** 1) the depth of the pipe, 2) the route across the landowner's field, 3) crop loss of 3 to 5 years at up to 100% of the value based on your proven corn and soybean yields, 4) any drain tile repair for the life of the easement, 5) any fencing repaired or added along the easement (in pasture land) to allow the grass to re-establish for a minimum of 5 years before allowing grazing to resume, 6) whatever else the landowner feels is relevant or he/she may be prohibited from doing on that land due to the pipeline easement.
- 3) **Does the landowner lose the ownership or use of the land under the easement?** No, there are some restrictions, but the land's ownership does not change and the landowner can still do the same normal farming or ranching practice on the land as they had done prior to the easement.
- 4) **When should eminent domain be used?** As an absolute last resort, just as it has always been.
- 5) **What percentage of landowners should voluntarily sign up before eminent domain is invoked?** There is a wide range of opinions. Some groups believe a super majority (67%) is sufficient while others believe one landowner's property rights should supersede the rights of everyone else that has signed on.
- 6) **Is a survey crew or any third party ever allowed to come on a landowner's property with out permission?** No
- 7) **What types of surveys are Summit Carbon Solutions doing along the construction route?** They are required to do a search for any endangered species and a search for any historic relics on top of their normal topographical and geographical surveys.
- 8) **Has Eminent Domain been used before in SD?** Yes, Eminent Domain has been used for Natural Gas and Crude Oil Pipelines, rail roads, and electric power lines which are privately owned and operated for-profit. SD Farmers, the SD Ethanol Industry, SD local businesses, SD local governments, and SD schools will all benefit (Gain) from this once in a generation infrastructure investment . . . not just a pipeline company.
- 9) **"What If" a use for CO2 is developed?** SD would be uniquely positioned, with infrastructure in place, for any new, state of the art business to locate anywhere along the main pipeline.

Pipeline Safety – 5 questions to Brigham McCown, former administrator of the Federal Pipeline and Hazardous Materials Safety Administration (PHMSA)

- 1) Special interest groups opposing the pipelines says, “CCS (Carbon Capture & Sequestration) is a dangerous and failed technology”. How old is this technology, and how long has this been used in practice?** The technology for carbon capture and sequestration has actually been around for 50 years, and is improving all the time. In Europe, such as Germany and UK, they’re very excited for this technology to capture and sequester carbon. In their view, if we have to change the way we do business, we cannot get away from today’s types of energy production without intermediary steps. We must continue to rely on existing sources of energy while we add new ones into the mix. Carbon capture has implications for other industries besides ethanol, such as hooking up pipelines to large plants for steel and concrete. There is worldwide recognition that carbon capture technology is critical for the future.
- 2) Opponents are also claiming that people have been, “gassed and poisoned in their own homes”. Is this fear-mongering? Have there been any fatalities from a CO2 pipeline rupture?** No one in the US and I don’t believe the world, has ever died as the result of a broken CO2 pipeline. There is a single pipeline break that opponents cite heavily, where there were people treated for exposure as a result of the break in Mississippi. However, the pipeline was one that piped CO2 and Hydrogen Sulfide together, and the injuries were from the Hydrogen Sulfide. That is not being done in this project. The break in that pipeline was a result of a pipeline operator not doing their geology correctly, as the ground shifted from heavy rainfall.
- 3) How safe are CO2 pipelines in comparison to another pipeline, such as natural gas? In SD, I believe we have four natural gas pipelines, and I don’t believe they’ve received the same level of anti-pipeline sentiment or pushback this CO2 pipeline has. Why is a pipeline better than rail or truck? Are those even practical for CO2?** For transporting materials, if a CO2 pipeline is a 1 out of 10 for a risk, trains are a 15/10 and off the scale for the risk of something happening along the transport route. When looking at pipelines, you have those that transport HVL’s (Highly volatile liquids). That is your natural gas, etc. that are explosive or flammable. You don’t have those same issues with CO2 pipelines, and it’s considered safe. This is a product currently being released in the air. When there are issues with pipelines, it is typically because someone dug where they were not supposed to and they hit a pipeline. I’m proud to note that while at PHMSA, I introduced the national 811 system to help prevent pipeline damage.
- 4) Argument over setbacks pushed by opponents’ arguments about safety are a big part of what is happening in South Dakota right now in terms of the Summit Project. Can you provide more background?** Setbacks are designed to keep people away from pipelines, not pipelines away from people. When pipeline routes are planned, regulations and safety concerns dictate that when creating routes, planners avoid houses and buildings as much as you can. As opponents go to counties to create ordinances to dictate setbacks, claiming they are improving safety, they need to understand that county ordinances are going to fail, as it is settled law that only the Federal Government, such as through PHMSA and the Department of Transportation have exclusive jurisdiction when it comes to pipeline safety. In Iowa, under 2 different cases, county ordinances were pre-empted, and it was specifically cited by the judge that counties can’t use the safety argument.
- 5) Any other thoughts when it comes to Carbon Capture Pipelines and the debates we are currently having in South Dakota?** As I have taught in my US Energy Policy Class, pipelines are the unsung hero of the economy, and often taken for granted. In South Dakota, the pipeline will provide tax revenue for counties, which can have a significantly positive impact for their budget for rural counties with a limited tax base. People should understand that the world’s energy mix will change over time. The concern is to provide as much as we need and to keep it affordable. Ethanol has an important role to play. And more importantly, a Carbon Capture & Sequestration pipeline will extend the ramp for ethanol’s longevity and keep it around for generations