Iowa Chapter
Physicians for Social Responsibility

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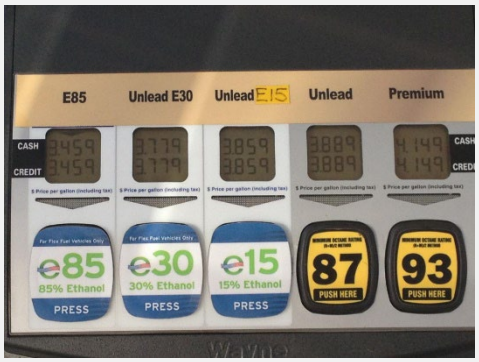

Ethanol Blending Pump
Source: *Driver127 Public Domain*

FACT SHEET

Low Carbon Fuel Standard, Ethanol, and Carbon Capture

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What is a Low Carbon Fuel Standard?

California Air Resources Board (CARB) is in the process of updating its climate Scoping Plan that unfortunately includes the Low Carbon Fuel Standard (LCFS), a fuel policy that incentivizes the production of ethanol produced with carbon capture and storage (CCS) in the Midwest and other corn-producing states. Many governments *in the U.S. and Canada* are not far behind California in making this climate mistake. More ethanol plus carbon capture and storage will actually increase climate-damaging greenhouse gas emissions, further pollute the water from Iowa to Louisiana and divert needed funds away from real climate solutions.

What is Carbon Capture and Storage?

Carbon capture and storage (CCS) is a process in which large, complex machinery is built onto an existing source of carbon dioxide (CO_2) emissions. The purpose is to continue burning fossil fuels while capturing some of the carbon dioxide gas that would otherwise be emitted into the atmosphere. Once the CO_2 is captured, it must be condensed to a super-critical liquid and transported via pipelines to a sequestration site. At the storage site, the high-pressured liquid must be pumped into the earth, where it must remain permanently.

Often CCS projects claim they will reduce CO_2 emissions by 90 percent when in reality they capture as *little as 7 percent*. In many cases, they actually *increase* CO_2 emissions because of the extra energy required to power the

machinery that captures and compresses the CO_2. In addition, most of the CO_2 currently captured is used for enhanced oil recovery, thereby defeating the purpose.

What does this have to do with the Midwest and corn-producing states?

CCS will require thousands of miles of CO_2 pipelines across six states. Three massive pipeline projects are in the proposal and development stages in Iowa and five other Midwest states. Sections of the pipeline paths run adjacent to the existing Dakota Access pipeline, the pipeline that prompted the immense Indigenous resistance at Standing Rock, North Dakota. Landowners already impacted by the Dakota Access pipeline could be impacted by a CO_2 pipeline.

How much ethanol does California consume?

California's transportation sector is the second highest US *consumer of ethanol*. In 2021, *95 percent* of US ethanol was produced in the Midwest.

Ethanol is green, isn't it?

Ethanol is mixed with gasoline as a "low carbon" additive, but in reality, it has a *higher carbon intensity* than gasoline alone. Fertilizers used in corn production cause massive water pollution extending from drinking water in Iowa to the *Dead Zone* in the Gulf of Mexico. The enormous rise in nitrogen fertilizer has increased nitrous oxide (N_2O) emissions, a potent greenhouse gas—289 times as powerful as CO_2. Carbon capture and storage (CCS) will only compound these problems.

Building carbon capture infrastructure for ethanol locks in ethanol and gasoline for decades by diminishing incentives for investors or policymakers to transition towards more sustainable transportation. Iowa politicians are *fighting every policy and law* that might move the nation towards electric vehicles or public transportation. The LCFS is making their obstruction that much easier.

How is the CO_2 in CCS utilized?

In the U.S., 95% of captured CO_2 is used for enhanced oil recovery (EOR). EOR is simply another way of "drilling" for oil. Subsidizing captured CO_2 for use in EOR undermines climate goals since it puts new, additional CO_2 into the atmosphere.

Are the pipelines safe?

CO_2 pipelines pose serious public health hazards. *Rupture* of a highly pressurized liquid CO_2 pipeline results in an explosive release of extremely cold liquid CO_2 that forms a cloud that settles on the ground and displaces oxygen—potentially sickening or killing people and animals for miles around and rendering internal combustion engines inoperable. This would mean that emergency responders can't get to pipeline rupture victims. Mass casualties could overwhelm rural emergency health systems.

This is not theoretical. In 2020, a *CO_2 pipeline in Satartia, MS ruptured*, sending 49 people to the hospital and leaving many with long-term health impacts. More than 250 people required evacuation. First responders needed self-contained breathing

apparatuses to conduct their rescues. Residents' cars ceased to run, and victims were found dazed or even unconscious.

The highly pressurized state of liquid CO_2, along with its corrosive nature when in contact with even trace amounts of water, increases the risk of leaks and ruptures in the pipelines. In response to the Satartia pipeline rupture, the Pipeline and Hazardous Materials Safety Administration (PHMSA) issued a *report* in May 2022, warning about the potential for damage to pipelines caused by earth movement as a result of climate change, such as increased rainfall, higher temperatures or severe drought. In the Midwest, the pipelines are slated to be buried in farmland, where farm machinery that can weigh as much as 70,000 pounds each, moves over the land, further increasing the risks of ruptures.

Why are landowners concerned?

Midwest farmers are acquainted with the harms caused by pipeline construction because of their bad experience with the Dakota Access Pipeline. Farmers have contended with soil compaction, drainage issues, and a 60-90 percent reduction in crop yields along the pipeline's route. Academic *studies* and media *reports* corroborate these experiences.

Can't the landowners just say No?

If the carbon capture projects are unable to obtain voluntary easements from the landowners, they can seize the land against the landowners' wishes using eminent domain. Landowners' opposition to the pipelines is *fierce*.

Is carbon capture an Environmental Justice issue?

The harms listed above resulting from California's LCFS and its impact on the Midwest, come back to harm Californians when Midwest ethanol is used as an offset or a carbon credit for polluting industries in California. California Environmental Justice groups have already *described the problems* with carbon credits and offsets.

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