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March 4, 2024

Senate File 2584 (Dibble)

Dear Chair Dibble and Members of the Senate Transportation Committee,

The National Federation of Independent Business (NFIB) represents over 10,000 small businesses across Minnesota. Our mission is to promote and protect the right of our members to own, operate, and grow their business.

NFIB Minnesota opposes Senate File 2584, which imposes an expensive low carbon fuel standard (LCFS) on the hardworking people of our state. **Ninety-one percent of small business owners surveyed by NFIB oppose an LCFS mandate in Minnesota.**

The cost of this regressive mandate will be borne by nearly everyone who uses transportation fuel. According to a Stillwater Associates analysis of LCFS mandates, California's LCFS equated to a 22 cents per gallon tax on diesel and gasoline while delivering just a 7.5 percent reduction in transportation fuel carbon intensity in 2020.[1]

By 2030, the California Legislative Analyst's Office projects the state's LCFS will add a tax of 46 cents per gallon to the price of gasoline and 50 cents per gallon for diesel.[2]

SF 2584 sets Minnesota down a similar road. Gas tax hikes of this magnitude would have a devastating impact on small businesses.

Further, LCFS mandates include credit systems that are used, among other things, to subsidize electric vehicles (EVs) and related equipment. **Ninety-four percent of small business owners surveyed by NFIB oppose new fees or taxes to subsidize EVs and EV infrastructure.**

EV subsidies largely benefit car buyers who don't need them ("70 percent of the credits were obtained by households that would have bought an EV without the credits"[3]) and multinational auto manufacturers who are increasingly backing away aggressive and unrealistic EV sales projections in the face of waning consumer interest.[4]

Last year, state lawmakers set aside tens of millions for EV purchase, lease, and charging subsidies and put electric utility customers on the hook for even more every year through mandatory Transportation Electrification Plans (TEPs).

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[1] Stillwater Associates, "*Stillwater's Projected Costs of the Approved HB 1091 Clean Fuels Standard*," June 15, 2021.
[2] Taylor, Mac, "*Assessing California's Climate Policies— Transportation*," California Legislative Analyst's Office, December 2018.
[3] Xing, Leard, Li, "*What Does an Electric Vehicle Replace*," National Bureau of Economic Research, February 2021.
[4] Carey, White, "*Industry pain abounds as electric car demand hits slowdown*," Reuters.com, 1/30/2024.

Policymakers would be wise to evaluate the impact of these new laws before layering on yet another expensive mandate.

Sincerely,

John L. Reynolds
Minnesota State Director
National Federation of Independent Business
john.reynolds@nfib.org

Creating connections to
empower agriculture

March 4, 2024

The Honorable Senator Scott Dibble
3107 Minnesota Senate Bldg.
St. Paul, MN 55155

RE: SF2584 – clean transportation standard

Chairman Dibble:

CHS Inc. respectfully submits the following written testimony on SF 2584, the Clean Transportation Standard Act.

CHS, the nation's largest producer-owned cooperative and Fortune 100 company, is headquartered in Inver Grove Heights, MN. CHS's breadth of transportation, fuel supply and infrastructure operations and combined with clean fuel standard experience provides a unique policy perspective. CHS is actively engaged in the nation's energy transition, including implementation of the clean fuels programs in Washington and Oregon. In Minnesota, CHS is a member of Biodiesel Task Force and the Clean Transportation Fuel Standard Working Group.

Minnesota Department of Transportation and Minnesota Department of Agriculture representatives facilitated a comprehensive dialogue that highlighted the technological challenge and cost implications to implement Minnesota's statutory greenhouse gas (GHG) reduction goals and the current trajectory of existing GHG reduction policies providing for a 30% carbon intensity reduction by 2050. The Clean Transportation Fuel Standard Working Group modeling and recommendations did not include a cost benefit analysis.

CHS is opposed to SF 2584 due to concerns about cost impacts of a clean transportation standard and program design elements.

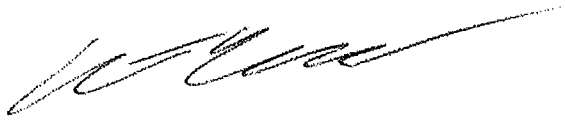
1. CHS requests SF2584 incorporate a cost-benefit analysis. Like Washington residents and farmers, Minnesotans will pay more for gasoline and diesel upon implementation of a clean transportation standard.

2. Certain policy provisions of a clean transportation standard should be determined by the Minnesota Legislature and not through state agency rulemaking. These provisions include, but not be limited to, program implementation, carbon intensity model and rate, obligated parties (i.e., deficit generators), credit program, climate-smart agriculture practices and cost containment.

CHS appreciates the opportunity to submit written testimony and if you have specific questions you can contact Jake Hamlin, State Government Affairs Director, at jake.hamlin@chsinc.com.

CHS is engaged in the production and distribution of transportation fuels. CHS produces ethanol, propane, CNG/LNG, gasoline, diesel and distributes these branded fuels to wholesale customers and through its network of over 1400 Cenex® retail locations. Furthermore, CHS supports electric vehicle infrastructure at branded retail sites and owns and operates a large-scale truck transportation fleet that has explored alternative fuels for future application.

Sincerely,



Dustin Haaland
Director, Fuels Trading
CHS Inc.

March 4, 2024

Chair Dibble
Senate Transportation Committee
Room 3107 Minnesota Senate Building
95 University Ave W
St Paul, MN 55103

RE: S.F. 2584 – "Clean Transportation Standard"

Dear Chair Dibble and Committee Members,

Youth N' Power is a training program that brings youth of all ages together to learn about and act on issues at the intersection of climate and environmental justice. Over the past year we have been learning more about False Climate Solutions – the technologies or policies that sound good at the surface, but upon further digging turn out to be a distraction from the focused and rapid action we need to both address the climate crisis and reduce the pollution harms facing so many communities around the country. I have traveled to the international climate conferences and met youth from around the world. One consistent theme is that carbon pipelines are poised to harm the not only the climate but the communities along the way.

The practice of capturing carbon sounds like a good idea. But the truth is that major greenhouse gas emission polluters see the act of capturing carbon as their ticket to continuing business as usual: burning fossil fuels.

What's worse, very often the "captured carbon" ends up being used for "Enhanced Oil Recovery" – the process of injecting CO_2 into marginally producing oil wells in order to push out more oil. *(Please see Exhibit 1, a March 1, 2024 article from Scientific American "The False Promise of Carbon Capture as a Climate Solution.)*

Did you know there are natural reservoirs of CO_2 in underground pockets around the country?

I was surprised to hear that instead of leaving these naturally sequestered greenhouse gasses alone in the ground, fossil fuel companies have connected pipelines to them to bring the CO_2 to their oil fields. *(Please see Exhibit 2.)*

These natural pockets of CO_2 were discovered by accident. But now strategic efforts to find more are underway. Since these natural sources are likely to be emptied in the next 5-7 years, the fossil fuel industry is looking for new and ongoing supplies. Carbon capture can provide an endless source of CO_2 for enhanced oil recovery – as long polluting industries keep making the pollution.

As of December 2024, 13 of the 15 carbon capture operations in the United States were being used for enhanced oil recovery.

Network of Pipelines Facilitates Enhanced Oil Recovery

Now I am concerned about the fossil fuel industry's plans to build out a network of pipelines that will carry CO_2 pollution from ethanol plants to the oil wells of North Dakota, inevitably to be used for enhanced oil recovery. *(Please see Exhibit 3.)* Summit Carbon Solutions is seeking to build the first one in Minnesota starting in OtterTail and Wilkin counties. We are concerned because no part of this plan is a climate solution:

- Monetizing the pollution from corn ethanol incentivizes its continued production. Now this asset needs to get where it is most valuable....via pipelines.
- Building pipelines destroys habitat and pollutes waters only to leave the rural communities and ecosystems nearby continually at risk.
- Using this CO_2 for enhanced oil recovery continues the fossil fuel cycle and its harms.

I ask the members of this committee to reject proposals that

1) further invest in or incentivize fossil fuel and pollution infrastructure
2) invests in or incentivize pipelines
3) facilitates enhanced oil recovery.

Thank you for your consideration,

Analyah Schlaeger dos Santos

Youth N'Power Team Director

Encl:

Exhibit 1: *Scientific American* "The False Promise of Carbon Capture as a Climate Solution," March 1, 2024.

Exhibit 2: Natural Reservoirs of CO_2 and EOR

Exhibit 3: Fossil Fuel's Quiet Business Model

Marathon Petroleum Company LP

Marathon Petroleum
St. Paul Park Refinery
301 St. Paul Park Road
St. Paul Park, MN 55071

March 4, 2024

RE: SF 2584, Clean Transportation Standard Act establishment and appropriation

Dear Chair Dibble and members of the Senate Transportation Committee,

Marathon Petroleum Corporation (MPC) is a leading, integrated, downstream energy company headquartered in Findlay, Ohio. The company operates the nation's largest refining system. MPC's marketing system includes branded locations across the United States, including Marathon brand retail outlets. MPC also owns the general partner and majority limited partner interest in MPLX LP, a midstream company that owns and operates gathering, processing, and fractionation assets, as well as crude oil and light product transportation and logistics infrastructure.

MPC is sharpening our focus on meeting the world's energy needs while lowering the carbon intensity of our operations and the products we manufacture. Our approach to sustainability includes increasing the volume of renewable fuels we produce and market, seeking ways to expand use of renewable energy in our operations, and innovating and deploying emerging technologies that reduce environmental impact while enhancing business performance. MPC operates renewable diesel facilities in California and North Dakota in addition to maintaining ownership interests in pretreatment, aggregation and crush facilities in Nebraska, North Dakota, and Ohio. The North Dakota facilities process 150,000 bushels of regionally sourced soybeans per day, which supports farmers and emissions reductions. Our company also participates in two joint ventures, one with The Andersons to produce ethanol in Iowa, Indiana, Michigan and Ohio, and with LF Bioenergy to produce renewable natural gas. Many of these renewable fuels are already imported into Minnesota.

Our St. Paul Park refinery (SPPR) is located along the Mississippi River and part of the Twin Cities community. Originally built in 1939, it has a crude oil refining capacity of 105,000 barrels per calendar day (bpcd). We are proud to provide good-paying jobs to 370 full-time employees, including 206 employees represented by Teamsters Local 120, and thousands of contractors that call Minnesota home. The refinery manufactures gasoline, distillates, asphalt, heavy fuel oil, propane and refinery-grade propylene, which is produced using sweet crude from the Bakken region in North Dakota as well as various grades of Canadian sweet and heavy sour crude. Products are delivered from the refinery by pipeline, truck, rail, and barge. SPPR supplies Minnesotans with nearly a third of their gasoline and more than a quarter of their diesel while other facilities in MPC's network provide additional fuel supply to the state. Our Midwest fuel-production capacity and infrastructure also enable MPC to help buffer the impacts from unexpected refinery outages across the Midwest region.

Thank you for the opportunity to comment on Senate File 2584. MPC has been engaged in the state's multi-year efforts to study transportation emissions and clean fuels. Our St. Paul Park Refinery is one of the two refineries in the state affected by this bill. MPC is committed to reducing emissions and

increasing use of renewable fuels but objects to this bill for several reasons. First, and chief among them, is the fact the clean transportation fuel program as proposed will significantly impact prices to consumers and harm Minnesota's economy. Of equal importance is the fact that the aggressive greenhouse gas (GHG) reduction schedule in the program does not support agriculture and biofuels, particularly farmers and producers in the state. Finally, the GHG targets in the bill are unachievable as evidenced by the state's own studies. Details for these objections are outlined below and MPC is asking for careful consideration of each to avoid harming consumers, the liquid renewable fuels industry, and the broader Minnesota economy.

Clean transportation programs raise the price of fuel for consumers, as evidenced by the state-level fuel programs implemented on the U.S. West Coast. Reports stating the contrary ignore that there is real-time, publicly available data to support this fact, as every state that has passed a similar clean transportation standard has experienced fuel price increases. These states have, on average, the highest motor fuel prices in the country. With the current targets in this bill, Stillwater & Associates estimates the bill as proposed would raise the cost of a gallon of gasoline for Minnesotans by $0.20-$0.40 and a gallon of diesel by $0.23-$0.51. Because Minnesota's targets require more aggressive decreases in GHG emissions from the baseline than the other state programs require, the study's estimated per gallon costs are greater than seen in the other states.

The aggressive GHG reduction schedule in the program does not support long-term growth in agriculture and biofuels. Unlike California, which had little to no biofuel infrastructure when it first started its low carbon fuel standard program, Minnesota's farming and biofuel industry's contributions to current GHG reductions in Minnesota are robust. EIA data shows Minnesota's production of both ethanol and biodiesel consistently ranks in the top 10 across all US states. MPC supports and contributes to these industries as we produce renewable fuels and purchase and blend liquid renewable fuels into transportation fuels in the state. However, the long-term effect of Minnesota's Clean Transportation Standard will ultimately be a complete phase out of these liquid renewable fuels. And in the short term, many of these renewable fuels will quickly be deficit-generating unless significant financial investments are made in facilities and processes. Additionally, because the proposed clean transportation program is not fully technology neutral, the farming and biofuels industries have been given very few tangible and realistic approaches to decarbonize their feedstocks and fuels in order to incentivize investments of time, resources and money.

MPC shares the author's goal of reducing emissions, but the current Clean Transportation Standard is not achievable, as confirmed in an assessment of the proposed program. An analysis of Minnesota's GHG reduction targets found in the current bill was completed by ICF Consulting ("ICF") and showed that - even using optimistic assumptions - the targets for 2030 and 2040 could not be met. ICF also observed that meeting the 2050 target would be difficult because the technology necessary to meet that target is "difficult to conceive of today." ICF explained that the stringency of the CI reduction trajectory outpaces deployment of CI-reducing technology causing the program to become insolvent before critical targets can be achieved. It is important to note that ICF also showed that Minnesota will see a decrease in emissions of 15% by 2040 and 30% by 2050 by simply continuing on its current path *without a clean transportation standard*. As a gauge, California's LCFS program came into effect in 2009 and has only seen a 12.6% reduction in the carbon intensity of transportation fuels within the state by end of 2022. Unrealistic GHG targets may also impact the fuel supply in the state, leading to potential closures of facilities, which may further exacerbate supply issues.

This proposed clean transportation fuel program will significantly impact prices to consumers and harm Minnesota's economy. As written, it does not support agriculture and biofuels, particularly farmers and

producers in the state, and will quickly phase out the robust renewable fuels programs that support the state. Finally, the GHG targets in the bill are unachievable as evidenced by the state's own studies and should not be the basis of a transportation program that will affect every consumer in the state.

Thank you for your consideration of these points. MPC strongly opposes the passage of this bill and looks forward to working with the legislature on an alternative approach that best protects consumers, supports Minnesota farming and industry, reduces emissions, and increases renewable fuel production and use.

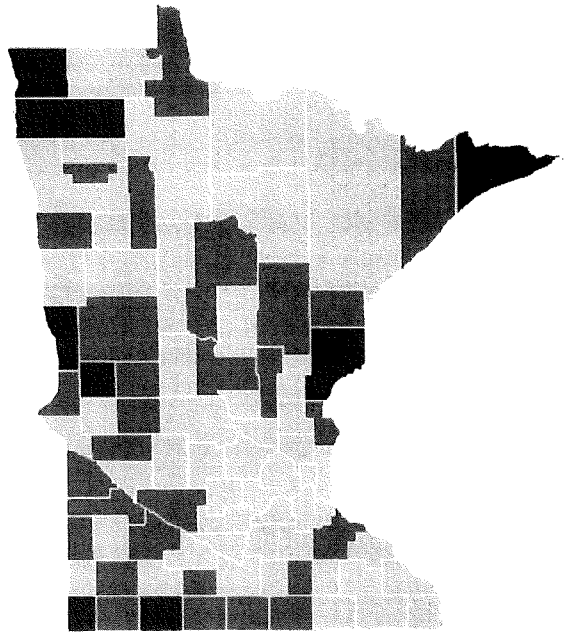
GAS STATION INFLATION VOLUME 2: CRAZIER THAN CALIFORNIA

In 2022, Gov. Tim Walz proposed the adoption of California's "Clean Fuel Standard." This new regulation would act as a stealth gas tax, increasing the cost of gasoline and diesel for families and businesses but provide no money for roads and bridges.

Since that time, liberal lawmakers in St. Paul have introduced a new, more extreme version of this proposal, rebranded as a "Clean Transportation Standard," or CTS, that will make Minnesota's mandates the most extreme and most expensive in the country, surpassing California, Oregon, and Washington.

- Center of the American Experiment has calculated that this more aggressive CTS could increase gasoline and diesel prices by **39 to 45 cents per gallon by 2030**.
- This would increase the cost of driving for Minnesota families by an average of **$350 to $476 per household in 2030**, but families in rural counties would pay far more under these new regulations than Minnesotans living near the Twin Cities.
- Households in Ramsey, Carver, and Hennepin counties would pay the least under a CTS, paying **$343, $362, and $375 per household**, respectively.
- Families in Grant, Jackson, and Wilkin counties would pay the most, paying an **additional $962, $1,150, and $1,151 in 2030**, respectively as a result of these regulations.

CTS Household Cost By County 2030



Data Source: Stillwater Associates, U.S. EIA, and Oregon Department of Environmental Quality

Not only would rural families pay more under a CTS, but the new version of these regulations is so strict that it would effectively mandate a **phaseout of common ethanol biofuel blends** by 2025. This would harm small towns in rural Minnesota by undermining the economies of farming communities throughout the state.

All Minnesotans want a clean environment to pass on to future generations. However, environmental policies in Minnesota need to prioritize affordable measures that do not burden residents with dramatic price increases for little to no environmental gain. Unfortunately, the Walz administration's proposed CTS will increase costs to Minnesotans for zero measurable environmental benefits.

MINNESOTA GROCERS ASSOCIATION

1360 Energy Park Drive, Suite #110 • St. Paul, MN 55108 • 651-228-0973 • 1-800-966-8352 • www.mngrocers.com

March 4, 2024

Chair Dibble, Minority Lead Jasinski, and members of the Senate Transportation Committee,

The Minnesota Grocers Association appreciates the opportunity to provide input on SF2584, the proposed creation of a clean transportation fuel standard in Minnesota. This approach to lowering the state's greenhouse gas emissions would have a dramatic impact on the food industry of Minnesota and the communities they serve.

The Minnesota Grocers Association is the only state trade association representing the food industry of Minnesota. Minnesota has a unique culture of hundreds of hometown grocers and convenience stores, many of whom are independent, multi-generational, and locally owned. We have over 300 members with over 1,300 locations statewide, which includes food producers, manufacturers, brokers, and wholesaler members. Our industry provides over 150,000 jobs in the state – both union and non-union. The retail food industry is the backbone of Minnesota's prosperity.

An effective, efficient, and responsible transportation system is critically important to the movement of goods across the nation. The movement of goods is complex, and the food industry – from farm to fork is reliant on a consistent set of guidelines and regulations. Transportation is a significant cost factor for the commodities industry. When transportation inputs rise, the costs increase all across the supply chain. As industry continue to grapple with the residual effects of the COVID crisis, it is important that any changes to the structural transportation system be well vetted, involve responsible stakeholder engagement and not create unintended consequences. The understanding of cost drivers and funding support must be a part of the equation.

Adopting a Minnesota-only standard will put Minnesota brick and mortar at a direct disadvantage. Consumers are price-conscious and will fill their gas tanks and grocery carts where it is most economical. Grocers and convenience stores near the states border will be unable to compete with the pricing offered by competitors across state lines. Increased costs will ultimately affect customers baskets. We must also consider that today's consumers also have a multitude of choices beyond traditional brick and mortar for their day to day purchases - online marketplaces are a competitive reality.

In a time of inflation and real economic pressures, we ask that the committee take measured steps to promote increased sustainability efforts, instead of implementing changes that will disproportionally impact Minnesota businesses and consumers. We thank members of the committee for giving due consideration to the impacts to the food industry and Minnesota consumers, and look forward to working together on this issue.

Sincerely,

Jamie L. Pfuhl
President

Minnesota
INTERFAITH
POWER&LIGHT

March 4, 2024

Chair Dibble
Senate Transportation Committee
Room 3107 Minnesota Senate Building
95 University Ave W
St Paul, MN 55103

RE: S.F. 2584 – "Clean Transportation Standard"

Dear Chair Dibble and Committee Members,

MN Interfaith Power & Light is a non-profit organization working with faith and spiritual communities around the state to enact equitable climate justice.

We appreciate the work of this committee to explore policies that will rapidly lower greenhouse gas emissions while repairing the harm to communities brought by decades of fossil fuel extraction, transmission and burning.

We are concerned that the "Clean Transportation Standard" (CST) as constructed in SF 2584 will not necessarily result in saved emissions but actually increase emissions and perpetuate the fossil fuel cycles that have put the planet and people in such a perilous position.

At COP 28, the world's climate conference held in Dubai this past November, United Nations Secretary General Antonio Guterres spoke with clarity about the only path holding hope to limiting global climate catastrophe:

> "The science is clear. The 1.5 limit is only possible if we ultimately stop burning all fossil fuels. Not reduce. Not abate. Phaseout with a clear timeframe aligned with 1.5 degrees."

While we recognize the potential benefit of continuous living cover on the landscape and support raising funds for electrification of our state highway system, it is our perspective that the proposed CST will encourage investment in Carbon Pipelines that will likely result in enhanced oil recovery (EOR). EOR is on the top of our list of "false solutions" because it gives federal economic incentives for sequestering carbon only to pump otherwise unavailable oil out of the ground.

The Draft Environmental Impact Statement for the Carbon Summit Solutions CO_2 pipeline in OtterTail and Wilkin County stated that its purpose is to "reduce the carbon intensity of the ethanol produced and thereby improve the ethanol plant's ability to compete in low carbon fuel standard (LCFS) markets."

A great deal of evidence (referenced in the attached Comment MNIPL submitted to the PUC) suggests the captured CO_2 would inevitably be used for enhanced oil recovery to facilitate the extraction of more oil than would otherwise be accessible.

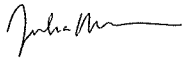
EOR uses CO_2 to bring new oil to the surface, and while it ultimately captures the CO_2, it unleashes other fossil fuels to be burned. The language in Sec. 3, Subd. 3 (2)(1) that prohibits credit generation from "carbon capture and storage lacking permanence certification from a recognized saline aquifer or other permanent sequestration technique" does not necessarily prevent the CO_2 from being used for enhanced oil recovery.

In addition, as a pipeline is considered a "Common Carrier," there is no way to ensure that the CO_2 captured and transported via those pipelines will not end up being used for EOR.

We stand ready to work with you in pursuit of equitable climate action that protects the health of communities and puts us on a path to meeting the climate imperative before us.

Thank you for your consideration.

Sincerely,



Julia Nerbonne
Executive Director
MN Interfaith Power & Light

Low carbon mandate could increase carbon emissions in Minnesota

It's one thing to have a policy that is ineffective in achieving its goal. It's another to have one that makes the problem worse.

By Jason Hill

FEBRUARY 2, 2024 — 5:30PM

•••

Last year, the Minnesota Legislature established the Clean Transportation Standard Work Group to explore the design and implementation of a Clean Transportation Standard in our state. This week, the group released its report, which states that such a standard "could be the largest single policy for reducing carbon pollution from transportation in Minnesota."

This is incorrect. This sort of policy would be unlikely to reduce emissions; in fact, it would likely increase them.

To understand why, let's start with how a Clean Transportation Standard, also known as a low carbon fuel standard, might work. First, each fuel available to Minnesotans — whether liquid or electricity — would be assigned a carbon intensity score, which is more-or-less akin to its carbon footprint. Second, the state would incentivize the use of those fuels with the lowest scores, thereby promoting their use and, as it is thought, reducing total emissions.

This may sound like a good idea, but in practice it is deeply flawed. The fundamental problem is that carbon intensity scores are calculated using a method of greenhouse gas accounting that is entirely not up to the task. Such a method leaves out important sources of emissions arising from fuel production and use.

When calculating carbon intensity scores for biofuels, for example, major sources of emissions from changes in energy and agricultural markets are commonly ignored. It's as if in calculating your net worth, you were to forget about your home loan. Or if, when budgeting for your anticipated household expenses, you were to ignore inflation.

The consequence of this is that carbon intensity scores are essentially meaningless. A recent committee convened by the National Academies of Sciences, Engineering, and Medicine to explore standards such as the one being proposed here concluded that we should place little credence in the carbon intensity scores that these standards rely upon. All 16 members of the committee, myself included, noted that "the carbon intensities of fuels ... are not necessarily equivalent to the full climate consequences of their adoption." In other words, we should be skeptical.

The committee goes on to state, even more bluntly, that "increased use of a fuel with a low carbon intensity ... could potentially decrease or increase carbon emissions." Let the last part of that sentence sink in. A Clean Transportation Standard that promotes fuels that it deems to be "low carbon" may result in higher, not lower, greenhouse gas emissions.

It's one thing to have a policy that is ineffective in achieving its goal. It's another to have one that makes the problem worse.

Such has been the case in other states like California, where their Low Carbon Fuel Standard has led to increased use of corn ethanol, which has higher greenhouse gas emissions associated with it than gasoline but received a lower carbon intensity score. This may well happen here in Minnesota, too, where political pressure to use a locally produced product may supersede any scientific basis for excluding ethanol as a particularly dirty fuel.

So if a Clean Transportation Standard would likely take Minnesota in the wrong direction with respect to our climate policy, what can we do to reduce greenhouse gas emissions from transportation? The answer lies in improving vehicle efficiency, investing in public transportation, and rethinking the design and infrastructure of our cities and towns.

In short, we need to move away from thinking about how we can produce more fuel, which is what a Clean Transportation Standard does, and toward thinking about how we can use less. For the fuel that we must use, our focus should be on promoting vehicle electrification supplied by truly low-carbon sources of electricity such as wind and solar. Taken together, these actions would greatly reduce our use of highly polluting liquid fuels and help Minnesota meet its climate mitigation goals.

Jason Hill is a professor in the Department of Bioproducts and Biosystems Engineering, University of Minnesota. The views expressed here are solely his own.

February 15, 2024

Members of the Senate
Members of the House of Representatives

On February 1, 2024, four state agencies submitted a report on transportation fuels which recommended that Minnesota adopt a Low Carbon Fuel Standard (LCFS), which they refer to as a "Clean Transportation Standard" or (CTS). The agencies said their proposal is the best alternative despite not considering any others. **We ask you to reject their proposal.**

Four organizations, in response to the fuels report, published a Minority Report which details the reasons a Midwestern LCFS will not be a climate solution. The proposed technology-neutral LCFS using the Argonne GREET model to estimate carbon intensity is not neutral but is **so strongly biased in favor of ethanol** and other biofuels that it **will likely increase emissions, not decrease emissions**.

On Saturday, the StarTribune published a commentary article by University of Minnesota Professor Jason Hill titled "Low carbon mandate could increase emissions in Minnesota." Dr Hill wrote that the proposed carbon intensity scores are "essentially meaningless."

The state agencies' report is based on fundamental errors, including the faulty assumption that ethanol is helping the climate. In reality, **ethanol is likely 24% worse than gasoline.** A recent study from the University of Wisconsin found that the carbon intensity of corn ethanol produced under the federal Renewable Fuel Standard (RFS) is "no less than gasoline and likely at least 24% higher." The proposed LCFS is, like ethanol itself, out of date. They have both been left behind by electrification. Electric vehicles (EVs) are already significantly less polluting today and EVs existing superiority over vehicles with internal combustion engines will only grow as our electric grid continues to decarbonize.

Other Flaws in the Proposed LCFS:

Encourages Carbon Pipelines and Enhanced Oil Recovery. Oil and ethanol industries mutually benefit from their plan to capture carbon emissions from ethanol plants. The captured carbon would be piped to North Dakota where it will almost certainly be used to push more oil out of the ground in a process called enhanced oil recovery (EOR). Ensuring the continued availability of a pure stream of CO_2 from ethanol plants is an essential part of the oil and ethanol business plan. Their business plan doesn't care about the long-term success of our farmers, and instead hopes to ensure their reliance on a single crop - thereby locking in the availability of CO_2 pollution from corn ethanol production for years to come.

Provides Perverse Incentives to Never Stop Polluting. The proposed LCFS could worsen the climate crisis by delaying real climate action and by extending the economic lifespan of fossil fuels. Even if direct credits for EOR are prohibited, further commodification of CO_2 (selling CO_2 pollution from ethanol plants) creates a perverse economic incentive to never stop producing CO_2, a cycle which has been described as "the more you burn, the more you earn." This will further incentivize the pipeline. Economic effects such as these are not included in the recommended GREET model to estimate climate impact.

Misplaced Spending: Nearly $800 Million "needed" to "Upgrade" Gas Stations & Distribution Systems. Minnesota's existing fuel-dispensing infrastructure is not designed to handle higher blends of ethanol like E15 or E20. The industry-dominated Governor's Council on Biofuels therefore recommended spending approximately $771 million to $784 million to "upgrade" gas stations to handle higher ethanol blends. These "upgrades" would constitute a massive reinvestment in the liquid fuel infrastructure that science tells us is a dead-end pathway. This spending would also have an opportunity cost as Minnesota could have far greater positive effects on climate by investing nearly $800 million in electrification or other solutions. Again, economic effects such as these are not included in the recommended GREET model to estimate climate impact.

Impacts on Water & Soil. The proposed LCFS fails to consider other environmental impacts of biofuel production and consumption and perpetuates the harms of fossil fuels and ethanol, which are responsible for significant air, soil, and water pollution, as well as contamination of drinking water due to pesticides and nitrates. Ethanol production is also very water intensive, depleting Minnesota aquifers. In addition, standard row crop corn growing causes contamination of soil with pesticides and loss of valuable topsoil.

Public Health Impacts. Rural communities in Minnesota disproportionately suffer the air and water pollution emitted from the increased use of pesticides and chemical fertilizers associated with ethanol production. Pesticides pose the most risk to agricultural workers and their families. Nitrates in well water contribute to blue baby syndrome, increased risk for gastric cancer, and other health problems. In addition, BIPOC communities that live near refineries and other fossil fuel facilities continue to be exposed to fossil fuel pollution that puts them at higher risk for cancer and respiratory problems due to living near these facilities.

Selective Application of West Coast Approaches. Promoters of an LCFS say they are inspired by LCFS policies in California, Oregon and Washington. But in those states, the LCFS is one part of a suite of tools to address transportation emissions. LCFS proponents, including among state agencies, ignore the effective tools and pick the one tool that promotes ethanol, the buildout of carbon pipelines and enhanced oil recovery.

Delay in climate action through implementation of an LCFS does not meet the need for swift reduction in carbon emissions to save lives. It could extend the life of liquid fossil fuels for decades, delaying climate action and consequent air pollution linked to excess numbers of premature deaths and increased rates of respiratory and other chronic illnesses.

One Area of Agreement

The Minority Report noted that, "industry representatives have also repeatedly argued that they cannot meet the carbon reduction targets" set out in the CTS bill. In this one key regard, we agree. Not only are the fossil fuel and ethanol industries not able to meet these targets required by science, they are not motivated to try: making such reductions would hurt their bottom line and business model. They do not

think they can meet the targets with their technologies and this LCFS tool. And we agree. So we must change the technologies and tools, not the targets."

Politics of Passing A Bill

The political rationale behind passing a LCFS is as concerning as the proposal itself. We're told that the LCFS "needs to increase ethanol in the short term" and the agriculture industry "needs to get something out of this" or it can't get a majority vote in the Senate.

Undoubtedly, some of those advocating for an LCFS have the best intentions. But very powerful oil and ethanol interests want a LCFS for the worst reasons. And their influence over state agencies, as demonstrated by the CTS work group process itself, is highly concerning. The administration's choice to leave details of the program to rulemaking effectively cuts legislators out of true decision making. Legislators are being asked to vote for a program whose results will likely look very different from their expectations.

The Minnesota Legislature passed historic climate bills in 2023. Thank you for your leadership. We need to stay focused on real solutions.

Signed,

Victoria Bogdan Tejeda, Center for Biological Diversity

B Rosas, Climate Generation

Carolina Ortiz, COPAL

Sarah Mooradian, CURE (formerly Clean Up the River Environment)

Dani Replogle, Food & Water Watch

Kathleen Schuler, Health Professionals for a Healthy Climate (HPHC)

Ben Lilliston, Institute for Agriculture and Trade Policy (IATP)

Krystle D'Alencar, Minnesota Environmental Justice Table

Tee McClenty, MN350 Action

Laurie Schneider, Pollinator Friendly Alliance

Peter Wagenius, Sierra Club North Star Chapter

Robert Haider, Take Action MN

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March 2, 2024

VIA ELECTRONIC MAIL
Senate Transportation Committee
Room 1100, Minnesota Senate Building
95 University Avenue W.
Saint Paul, MN 55155

RE: Senate File 2584

Dear Chair Dibble, Vice Chair Morrison, Ranking Minority Member Jasinski, and members of the Senate Transportation Committee:

Suburban Propane writes in regards to Senate File 2584, which establishes a clean transportation standard ("CTS"). While generally in favor of adopting a CTS, we are concerned that the bill does not permit credit generation for renewable natural gas from any new or expanded agricultural livestock production facility or manure digesters and urge the Committee to remove this prohibition.

Suburban Propane has been serving customers for more than 95 years and is the nation's third-largest propane retailer with operations in 42 states, including Minnesota. We support the State's goal of decarbonizing its transportation sector, and one of the most effective tools in lowering emissions is a technology-neutral CTS which embraces all low carbon fuels. Such a policy allows diverse clean fuel technologies to compete in the marketplace, instead of picking winners and losers and promoting any one industry over others. A CTS has the added benefit of spurring innovation in developing clean energy.

The effectiveness and benefits of a technology-neutral clean transportation standard is evident in California's highly successful Low Carbon Fuel Standard ("LCFS") program. The California Air Resources Board ("CARB") reported that, from 2011 through 2022, the state achieved a 12.63 percent reduction of the carbon intensity of California's transportation fuel pool, exceeding its target by more than two percentage points.[1] Oregon and Washington enacted similar standards in 2015 and 2021 respectively. New Mexico will become the fourth state to adopt such a program on March 5, 2024, and other states are

[1] https://ww2.arb.ca.gov/resources/documents/lcfs-data-dashboard

Go Green with Suburban Propane

considering their own clean fuel standards, including Illinois, Massachusetts, and New York. In a program review submitted to the Oregon Legislature in 2022, the state Department of Environmental Quality stated,

"The Clean Fuels Program is one of Oregon's most successful statewide policies for addressing the state's contribution to global climate change. This program has made significant strides in reducing greenhouse gas emissions from Oregon's transportation fuels and is on track to achieve the goal of a 10% reduction by 2025. The program's success and progress thus far can be summarized in three distinct outcomes that are happening since the outset of the program in 2016:

- Companies producing biofuels are making those fuels more cleanly and delivering them in greater volumes to Oregon
- The transition to biofuels and electricity are reducing tailpipe pollution and improving public health of Oregonians
- The transition away from fossil fuels has spurred innovation and investments without impacting the price at the pump."[2]

In addition to the significant reduction in carbon emissions, a CTS incentivizes fuel producers to innovate and develop ultra-low carbon, carbon-neutral, and even carbon-negative fuels in order to meet or exceed the annually-decreasing carbon intensity benchmark and maximize the reduction in the carbon intensity of the energy they produce. This leads to further economic development and good-paying job creation in the fast-growing clean energy industry.

Suburban Propane has been actively engaged in California's LCFS and Oregon's Clean Fuels Program with traditional propane and is innovating to bring the next generation of even lower carbon energy sources to market, including renewable propane, renewable dimethyl ether ("rDME"), renewable natural gas ("RNG"), hydrogen, and other blends of ultra-low carbon renewable products.

The above-referenced benefits stem from the technology-neutral nature from a CTS, allowing all available low-carbon fuels participate. However, Senate File 2584 leaves certain carbon-negative energy sources on the table, make a CTS less effective. As currently drafted, Section 3, Subdivision 3(a)(2)(iii) prohibits the generation of credits from "renewable natural gas produced from any new or expanded agricultural livestock production facility or manure digesters." With a CARB-certified carbon intensity score as low as -532.74, RNG produced from manure digesters is one of the most powerful tools in reducing transportation-related emissions. According to the U.S. Department of Energy, more than 136 million gasoline gallon equivalents (GGEs) of natural gas was consumed as transportation fuel in Minnesota in 2021.[3] If those gallons were replaced with carbon-negative RNG, it would accelerate the decarbonization of the transportation sector. The curtailment of RNG from new or expanded agricultural livestock production facilities and manure digesters will limit the use of these important fuels, making it harder to achieve the emissions reduction timeline proposed in the legislation.

[2] https://www.oregon.gov/deq/ghgp/Documents/CFPProgramReview.pdf
[3] See https://afdc.energy.gov/states/mn.

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We urge you to amend Senate File 2584 by removing the prohibition on credit generation for renewable natural gas from any new or expanded agricultural livestock production facility or manure digesters and support a technology-neutral clean transportation standard that embraces all low-carbon, carbon-neutral, and carbon-negative fuels. This will assist Minnesota in achieving its goal of reducing GHG emissions and mitigating the impacts of climate change. Thank you for your consideration.

Sincerely,

/s/ Paul M. Rozenberg

Paul M. Rozenberg
Sr. Manager, Government Affairs &
Corporate Communications
Suburban Propane

March 1, 2024

Senator Scott Dibble
3107 Minnesota Senate Building
95 University Ave. W.
St Paul, Minnesota 55155

Re: Senate File 2584

Dear Chairman Dibble,
On behalf of the Minnesota Propane Association (MPA), which represents propane marketers, wholesalers, suppliers, distributors, and equipment manufacturers across the state, we appreciate the opportunity to provide comment on Senate File (SF) 2584, the Clean Transportation Standard Act. Our members provide clean-burning and critical energy to residential, commercial, agricultural, and industrial customers across the state. In the engine market specifically, Minnesota's propane marketers provide fuel for use in on-road vehicles such as school buses and delivery trucks, and off-road applications like forklifts and lawnmowers. The state's propane industry provides thousands of good-paying jobs and contributes more than $2.5 billion in economic activity annually.[1]

MPA supports efforts to reduce aggregate greenhouse gas (GHG) emissions from our transportation sector and improve air quality, but we cannot support SF 2584. This legislation is a misguided approach. The creation of a Clean Transportation Standard (CTS) will needlessly increase energy prices for consumers and businesses. The producers and suppliers of fuels – gasoline and diesel – that will generate deficits under the programmatic structure will not simply absorb these new, additional costs. Rather, they will be passed along to end-users.

Notably, the three states that have a CTS or equivalent program (i.e., low-carbon fuel standard) in place – California, Oregon, and Washington State, all have retail gasoline and diesel prices well above the national average.[2] Our transports and bobtails must travel long distances to acquire fuel and make deliveries to homes and businesses. This is a reality of our industry and the delivered fuels business. Artificially raising the price of motor fuel will increase our operational costs and hurt energy consumers.

As noted by the CTS Working Group itself, it will be very difficult to achieve the Legislature's desired emission reductions targets over the prescribed timeframe. This will wreak havoc in the CTS credit marketplace. Minnesotans have been grappling with historic inflation since the pandemic. Now is the exact wrong time to try and implement a complex program to tax carbon

[1] *Propane's Impact on Economy: 2018 Minnesota*, National Propane Gas Association, (2020), https://www.npga.org/wp-content/uploads/2020/06/Minnesota_Propane-1-Pager_2020.pdf

[2] *State Gas Price Averages*, AAA, (March 1, 2024), https://gasprices.aaa.com/state-gas-price-averages/

emissions from the transportation sector. This will make our citizens poorer and drive business investment to neighboring states.

If the Legislature is interested in reducing GHG emissions in a pragmatic and cost-effective manner, MPA would be happy to work with legislators on legislation we can fully endorse. Thank you again for the opportunity to provide comment.

Respectfully submitted,

Dave Wager
Executive Director
Minnesota Propane Association
12475 273rd Ave. NW
Zimmerman, MN 55398
dave@mnpropane.org / 763-633-4271 / Telephone: 763-633-4271

Health Professionals for a Healthy Climate

March 4, 2024

RE: Opposition to SF 2584

Dear Chair Dibble and Members of the Senate Transportation Committee,

My name is Kathleen Schuler and I'm Policy Director with Health Professionals for a Healthy Climate, a network of Minnesota doctors, nurses, and other health professionals working to protect human health from the growing impacts of climate change. We oppose SF 2584 because a Minnesota Clean Transportation Standard supports the continued use of fossil fuel and incentivizes fossil fuel infrastructure in the form of CO2 pipelines. It also fails to prevent harm to water, soil, air and human health.

The urgency of the climate crisis requires that we pursue the most cost-effective strategies to reduce greenhouse gasses (GHGs). Fossil-fuel caused air pollution is responsible for 350,000 premature deaths in the U.S. each year. The faster we get to a zero-carbon economy, the faster we clean up air pollution, which results in more lives saved. The Intergovernmental Panel on Climate Change (IPCC) states, "The continued installation of unabated fossil fuel infrastructure will 'lock-in' GHG emissions." [1] The CTS provides credit for carbon intensity reductions achieved through the use of carbon storage and sequestration (CCS), thus incentivizing CCS and the business plan of the fossil fuel industry. Existing CCS projects overwhelming use the CO2 for enhanced oil recovery (EOR). The proposed language in the bill will not prevent the use of CO2 for EOR. CCS is in fact the new fossil fuel infrastructure because most of this CO2 has been and will be used for EOR.

Minnesota would be the first corn growing state to adopt a low carbon fuel standard. Therefore, we must carefully consider and prevent harms to human health and ecosystems from the continued use of liquid fuels and from incentivizing ethanol production. I served on the MN CTS Work Group and raised these problems, as did other members. These harmful side effects were not addressed or inadequately addressed in the work group process or the final report and are not addressed in this bill.

Impacts of this policy on water and soil. The proposed CTS fails to consider the environmental impacts of biofuel production and consumption and perpetuates the harms of fossil fuels and ethanol, which are responsible for significant air, soil, and water pollution, as well as contamination of drinking water due to pesticides and nitrates. Ethanol production is also very water intensive, putting Minnesota aquifers at risk of

[1] IPCC, 2022, Summary for Policymakers & Mitigation of Climate Change - https://www.ipcc.ch/report/ar6/wg3/

depletion. In addition, standard row crop corn growing causes contamination of soil with pesticides and loss of valuable topsoil. Credits for ag practices in the bill will not be enough to prevent this harm.

Public health impacts of this policy. Rural communities in Minnesota disproportionately suffer the air and water pollution emitted from the increased use of pesticides and chemical fertilizers associated with corn growing and ethanol production. Pesticides pose the most risk to agricultural workers and their families. Nitrates in well water contribute to blue baby syndrome, increased risk for gastric cancer, and other health problems. In addition, BIPOC communities that live near refineries and other fossil fuel facilities continue to be exposed to pollution that puts them at higher risk for cancer and respiratory problems due to living near these facilities.

In health care our motto is "first do no harm". Real climate solutions should not cause harm to human or ecosystem health. A swift transition to cleaner transportation and electricity will benefit everyone's health. A new report from the American Lung Assn. notes that a nationwide transition to zero-emission transportation and electricity generation by 2050 could prevent 3 million pediatric asthma attacks and millions of other health impacts on children. Delay in climate action through implementation of an LCFS does not meet the need for swift reduction in carbon emissions to save lives. It could extend the life of liquid fossil fuels for decades, delaying climate action and consequent air pollution linked to excess numbers of premature deaths and increased rates of respiratory and other chronic illnesses.

A CTS is projected to achieve modest and time limited benefits in GHGs reduction compared with increased EV sales, reducing vehicles miles traveled and stricter fuel economy standards. Yet the CTS is positioned as the centerpiece of transportation policy in our state. To meet our goal of 80% reduction in GHGs by 2040, we need to invest in these more effective strategies to reduce GHGs swiftly without harmful side effects. A CTS is not the policy we need in 2024. Instead of generating credits for indirectly supporting electrification, Minnesota should adopt policies and investments that electrify all passenger vehicles and reduce vehicle miles traveled as quickly as possible.

Thank you for the opportunity to submit testimony on SF2584.

Sincerely,
Kathleen Schuler, MPH
Health Professionals for a Healthy Climate

3/4/2023 Clean Transportation Standard bill hearing – testimony on bill S.F. 2584
Senators and members of the public,

I am a retired chemist who has been working on the problem of reducing the concentration of carbon dioxide (CO2) greenhouse gas in the atmosphere for over 17 years. I attended and provided public comments to the last 4 meetings of the Clean Transportation Standard Work Group. I pointed out that it is possible to achieve a 100% reduction in the carbon intensity of the Minnesota transportation sector by including "electrifying the fuels" by using renewable energy to "recycle" CO2 from unavoidable sources like cement production into synthetic hydrocarbon fuels, often called electrofuels or e-fuels. This process uses existing technologies, and large-scale projects are currently underway around the world. One example is the E-Jet® sustainable aviation fuel plant under construction by company Twelve and their partners. Starting construction of the e-fuels "power-to-liquid" infrastructure soon in Minnesota would allow achieving the 75% carbon intensity reduction by 2040 and 100% carbon intensity reduction by 2050.

However, the modeling results presented to the Work Group were limited to biofuels and electric (or hydrogen powered) vehicles. This resulted in very conservative estimates, which helped the biofuels industry argue for weakening the carbon intensity reduction targets, including changing the 2050 target to simply a perhaps unattainable "goal". I strongly believe bill S.F. 2584 should stick to the carbon intensity reduction targets of 75% by 2040 and 100% by 2050.

Dale R. Lutz, PhD

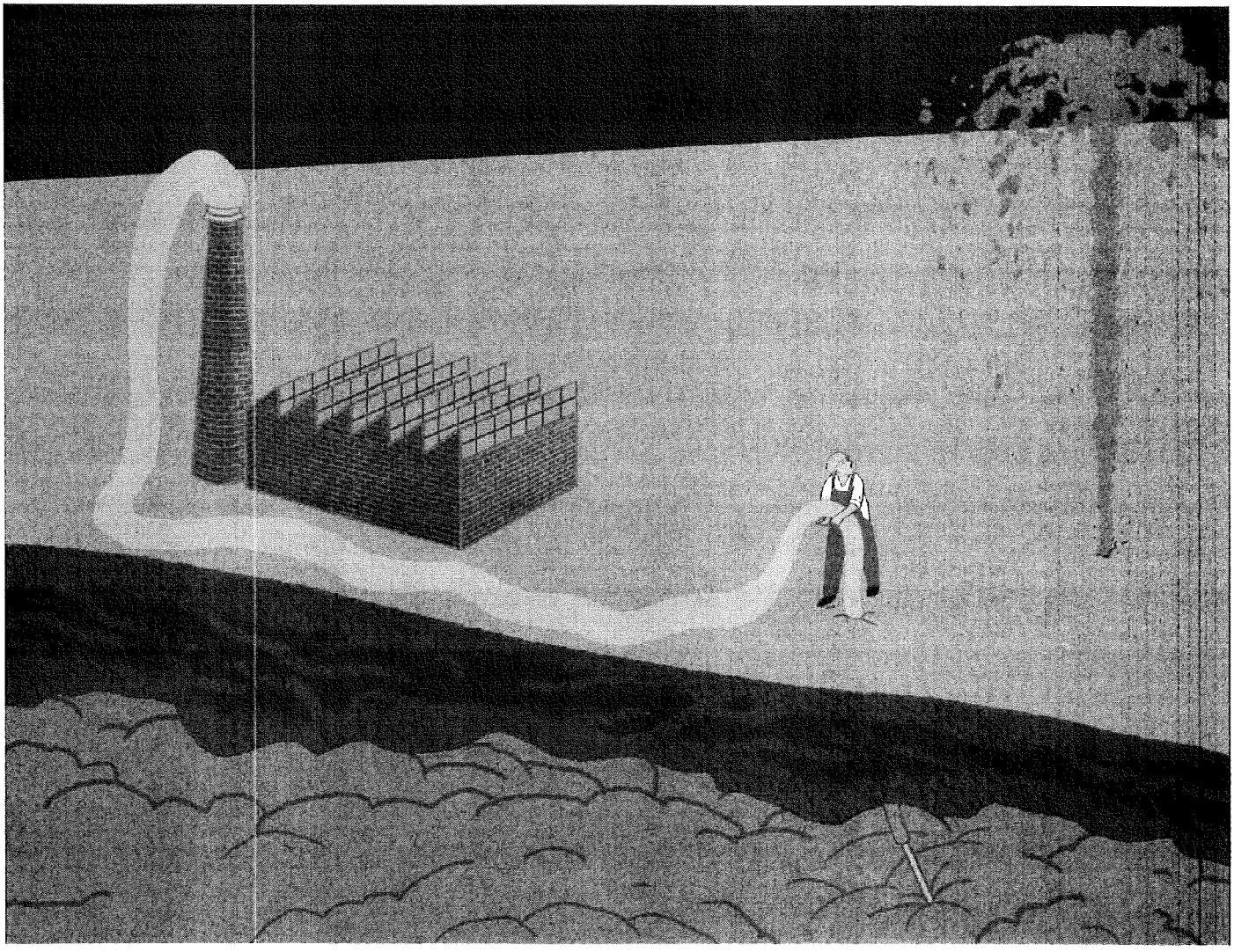
Maplewood, MN

MARCH 1, 2024 | 4 MIN READ

The False Promise of Carbon Capture as a Climate Solution

Fossil-fuel companies use captured carbon dioxide to extract more fossil fuels, leading to a net increase in atmospheric CO_2

BY NAOMI ORESKES



Credit: Izhar Cohen

March 2024 Issue | Fossil Fuels

Last December the leaders of the United Nations Climate Change Conference (COP28) in Dubai declared victory as the parties agreed to "transition away" from fossil fuels. But there's a big issue that will remain contentious as countries try to define what counts as a transition: so-called unabated fossil-fuel use. Among its provisions, the agreement called for "accelerating efforts towards the phase-down of unabated coal power."

Abatement in this context means carbon capture and storage (CCS). It's the idea that we can still use fossil fuels as long as the carbon dioxide emitted is captured and stored in the ground. In the U.S., the oil and gas industries have been pushing this approach as one of the key solutions to the climate crisis. But how realistic is it?

Let's start with a few facts. Oil is sticky stuff, and when you try to pump it out of a reservoir, most of it gets left behind, stuck to the rocks. But if you flood a field with water, detergents or gas (such as CO_2), you can flush out much of the remaining oil. This technique is known as enhanced oil recovery, and it's been standard industry practice for a long time. According to the U.S. Department of Energy, gas injection accounts for more than half of the enhanced oil recovery in the U.S. and has helped to add decades of life to fields that would otherwise by now have run dry. The same approach is used in gas fields to maintain the pressure that keeps the gas flowing.

In recent years the oil industry has tried to pour this old wine into new bottles, casting the practice as a method of mitigating climate change because some of the injected CO_2 might otherwise end up in the atmosphere. In theory, it's a good idea. In practice, there are big problems.

We all know the saying that what goes up must come down, but the opposite is largely true, too (at least if the materials involved are liquid or gas), because

fluids migrate through the microscopic holes and fractures that are found in even the most solid of rocks. After the U.S. government spent billions evaluating a potential civilian nuclear waste disposal site at Yucca Mountain in Nevada, the proposal failed in part because scientists could not guarantee that the waste would stay put. That waste was mostly a mix of solids and liquids. The waste CO_2 that we would be storing to stop climate change would be a buoyant, low-viscosity "supercritical" fluid—that is, a fluid maintained at such a high temperature and pressure that distinct gas and liquid phases do not exist. Like all fluids, it would have the capacity to migrate through the ground and find its way back to the surface and, from there, the atmosphere.

Many geologists (myself included) believe there are places on Earth where long-term CO_2 storage could be safely achieved, but it would require what scientists call "site characterization." That means studying the location in enough detail to be confident that things put there will stay there. For example, the U.S. currently stores military radioactive waste in low-permeability salt formations in New Mexico, and there are numerous pending proposals to store CO_2 in sandstones overlain by low-permeability shales in North Dakota.

But site characterization takes time that we don't have. The DOE spent more than 20 years evaluating Yucca Mountain. It spent some 14 years studying the New Mexico site. The Intergovernmental Panel on Climate Change concluded in 2018 that we have only until 2030 to stop irreversible climate damage, so it's urgent that we focus our attention on solutions that can be implemented right now.

We could jump-start the project by expanding existing carbon capture and storage sites. The problem, as Massachusetts Institute of Technology professor Charles Harvey and entrepreneur Kurt House have explained, is that nearly all

CCS projects in the U.S. are actually enhanced-recovery projects that keep the oil and gas flowing, and every new barrel of oil and cubic foot of gas sold and burned is putting more CO_2 into the atmosphere. So not only do these kinds of projects not help, but they perpetuate our use of fossil fuels at a critical moment in history when we need to do the opposite.

Despite the U.S. government having spent billions on failed CCS projects, under the Inflation Reduction Act (IRA), it is set to spend many billions more, a lot of it in tax subsidies to fossil-fuel companies. In theory, IRA tax credits are to be used for "secure" carbon storage, but the mechanisms for ensuring that CO_2 is not leaking back into the atmosphere are flimsy at best. And it gets worse: the Environmental Protection Agency has concluded that if the price of CCS falls—because of tax credits, for example, or economies of scale—some currently closed oil or gas fields might reopen.

There is another model for CCS: the Orca plant in Iceland, where CO_2 is taken directly from the air and dissolved in water, which then reacts with basalt—the rock that makes up both Iceland and the ocean floor—to create stable carbonate minerals. But it's wildly expensive: $1,200 per metric ton of captured CO_2. (Bill Gates has negotiated a bulk deal for Microsoft at "only" $600 per ton.) The U.S. produces about 6,000 million metric tons of CO_2 per year. If for ease of arithmetic we assume a cost of $1,000 per ton, then offsetting U.S. emissions would cost about *$6 trillion every year.* In time these costs will probably come down, but time is what we don't have.

It is said that Mahatma Gandhi was once asked what he thought of Western civilization. He replied, "It would be a good idea." The same could be said about carbon capture and storage as a solution to the climate crisis. Although it might be part of the solution down the road, right now it's mostly a dangerous

distraction. Our focus—and our tax dollars—should be trained on scaling up production of cost-competitive renewable energy, grid-scale batteries for storing that energy and efficiency measures to conserve it as fast as we possibly can.

NAOMI ORESKES is a professor of the history of science at Harvard University. She is author of *Why Trust Science?* (Princeton University Press, 2019). She also writes the Observatory column for *Scientific American*.

More by Naomi Oreskes

This article was originally published with the title "The False Promise of Carbon Capture" in Scientific American Magazine Vol. 330 No. 3 (March 2024), p. 80

doi:10.1038/scientificamerican0324-80

View This Issue

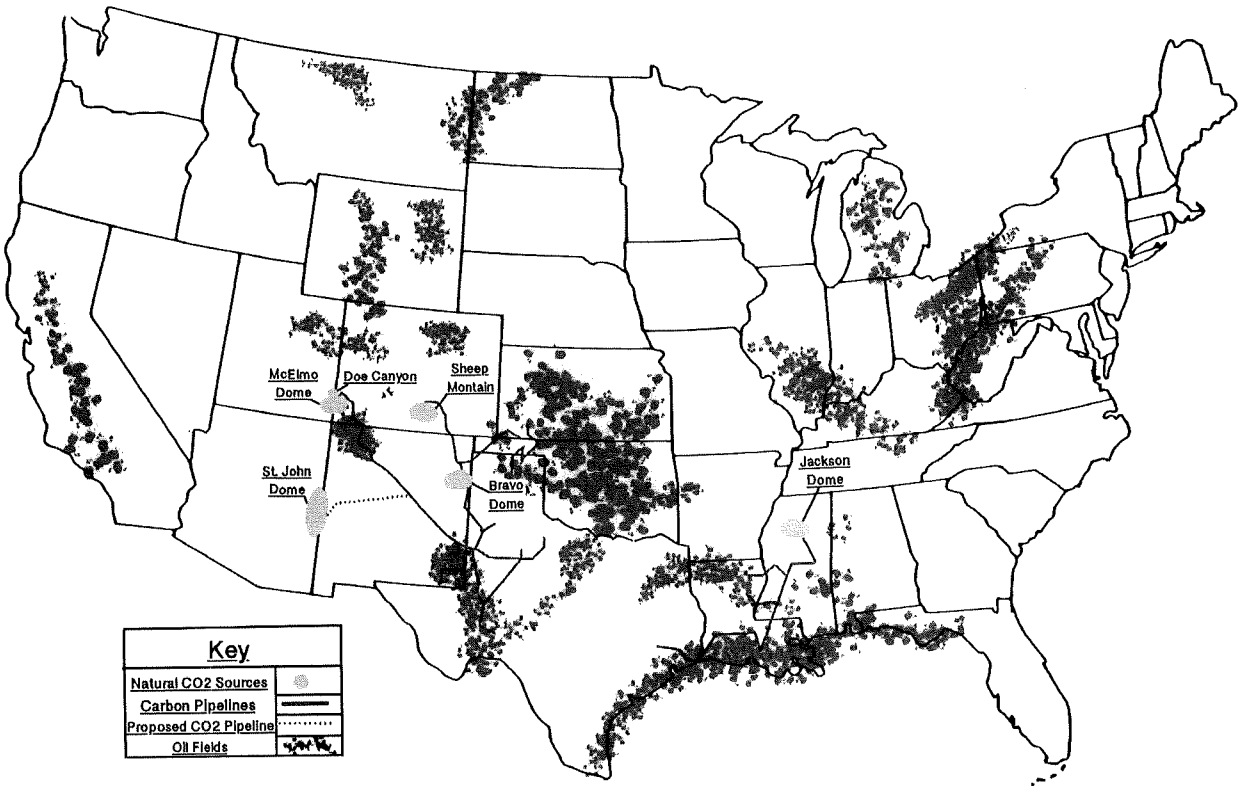
Natural Reservoirs of CO2 and EOR

CARBON CAPTURE POLICIES FUND THE RELEASE OF MORE CARBON

At a time when we should be doing everything to keep CO2 in the ground – the Fossil Fuel industry is unearthing it

Reservoirs were accidentally discovered, but now are being strategically searched for

The Fossil Fuel Industry is already depleting the natural reservoirs of CO2 across the country



MOST TERRESTRIAL CO2 DRILLING HAPPENS IN THE US

- 10.05 TCF (Trillion Cubic Feet) of CO2 from natural sources is extracted per year
- Only an estimated 76 TCF of natural CO2 has been discovered and is available for extraction
- This leaves approx. 7 more years of natural sources in the ground

As of 2019, Natural carbon dioxide was the source of over 80% of the CO2 for CO2 EOR in the United States

Carbon pipeline networks deliver the carbon directly to oil fields

The Reality of CO2 Extraction

Discovered Sites

Five active sites:
- Jackson Dome
- Bravo Dome
- McElmo Dome
- Doe Canyon
- Sheep Mountain

One discovered site with a proposed pipeline plan
- St. John Dome

Affects on Communities and Land

Communities near McElmo Dome and Doe Canyon have documented complaints including:
- noise complaints about the Yellow Jacket Compressor Station
- local road damage
- grievances about power lines on agricultural properties
- the sensing of foul-smelling odors which have led to public health impacts

The Myth of Sequestration

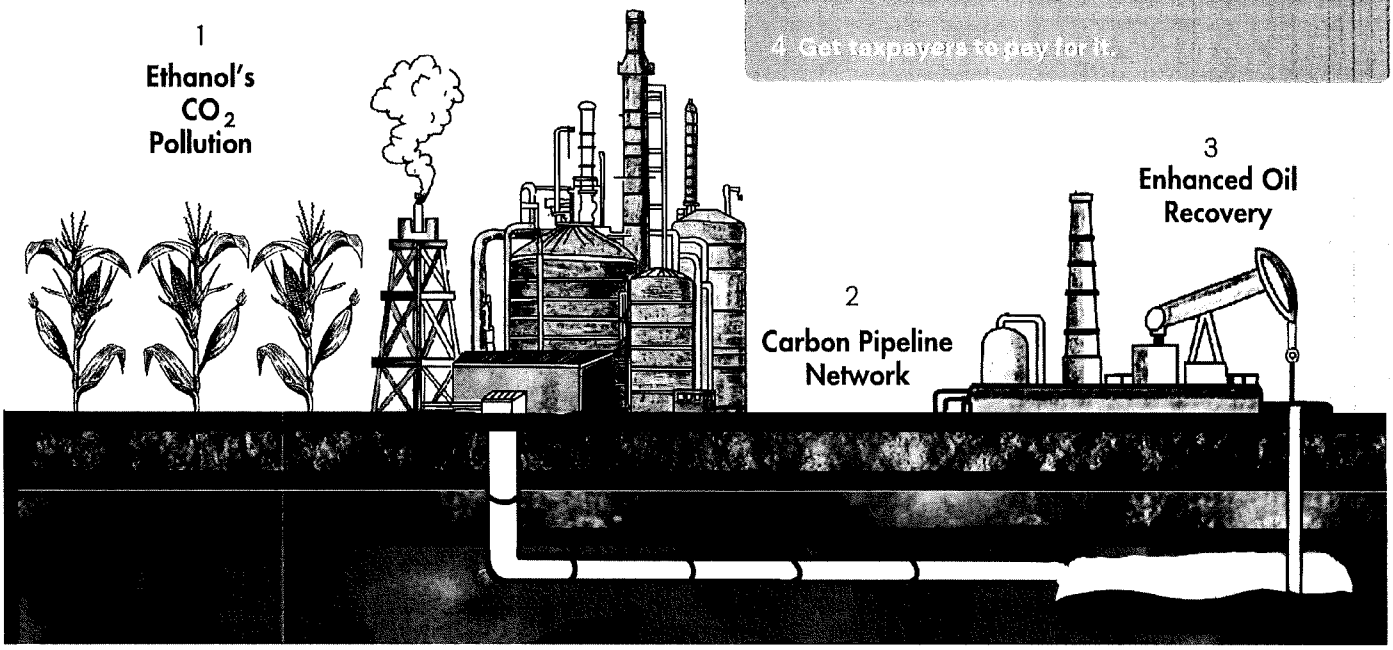
Taxpayer money is funding the Fossil Fuel Industry's efforts to sequester CO2 in the ground through Carbon Capture policies

– while the Fossil Fuel Industry unearths it from natural sources for EOR

Fossil Fuel's Quiet Business Model

THE MORE YOU BURN THE MORE YOU EARN

1. Capture CO_2 from ethanol production.
2. Build a network of pipelines through the midwest to ferry the CO_2 through the ground.
3. Don't tell people you will inevitably inject that CO_2 into low-producing oil wells to push out more oil -- something called Enhanced Oil Recovery.
4. Get taxpayers to pay for it.



4 Policies supporting this business model

Federal Level - 45Q Tax Credit

Section 45Q provides a tax credit for capture and storage of CO_2 that would otherwise be emitted

State Level - LCFS

The Low Carbon Fuel Standard assigns transportation fuels a CI (Carbon Intensity) score:
Higher CI-scored fuels accrue deficits which pay for credits for lower CI-scored fuels.

Fossil Fuel's Quiet Business Model Impacts our Water and Climate

Ethanol

- 5% of MN's total surface area is dedicated to ethanol production
- Industrial farming practices - CAFOs and row crops - have led to rising nitrate levels in drinking water across the state
- Emissions from ethanol are 24% worse than gas
- CO_2 pollution from ethanol production is 99% pure - perfect for EOR

Pipelines

- Building pipelines is inherently destructive to aquifers, surface water, trees, land, and family farmers.
- CI (carbon intensity) scores often fail to incorporate the emissions from EOR
- 2000+ miles of Carbon Capture Utilization and Storage (CCUS) pipelines are proposed across the midwest, including in Minnesota.
- Once in operation, leaks and exposions present a constant danger to people and ecosystems

Enhanced Oil Recovery

- Oil companies are desperate for CO_2 to inject into the ground to get more oil out of their marginally producing wells.
- 13 out of 15 Carbon Capture facilities are for Enhanced Oil Recovery.
- Both EOR and sequestration processes leak CO_2 into the atmosphere, adding to the lifetime emissions of these methods