Midwestern Clean Fuels Policy 101

What is a clean fuels policy?

A clean fuels policy is a technology-neutral, performance-based policy that reduces the use of high-carbon transportation fuels while providing incentives to deploy lower-carbon alternatives such as electricity, hydrogen, and biofuels.

What are the benefits of a Midwestern clean fuels policy?

A clean fuels policy is a proven method for economic and environmental gains. The Midwestern Clean Fuels Policy Initiative white paper[1] (facilitated by the Great Plains Institute) found that a clean fuels policy in the Midwest would:

- *Benefit consumers through increased access to lower-carbon (and often lower-cost) transportation fuels;*

- *Result in net-positive economic benefits;*

- *Support investment in a portfolio of cleaner fuels, strengthening innovation and market access;*

- *Reduce greenhouse gas (GHG) emissions across transportation, electricity, and agriculture sectors, resulting in cleaner air and improved public health;*

- *Increase energy independence through reliance on domestic resources, generating local and rural revenue;*

- *Incentivize lower GHG emissions throughout supply chains, including rewards for climate-friendly practices at the farm level.*

Economic benefits for the Midwest

A clean fuels policy in Minnesota and Iowa (two representative Midwestern states), with a 15 percent carbon intensity reduction by 2030, would have large net-positive economic impacts for the region: [2]

- *Support nearly 15,000 jobs and $946 million in employment income.*

- *Contribute $1.98 billion in regional gross domestic product and $10.3 billion in economic output.*

- *Offer large net benefits to clean fuel sectors (electricity and biofuels including ethanol, biodiesel, renewable diesel, and renewable natural gas) and farmers.*

- *Provide net benefits to both gasoline users and the trucking sector (a primary user of diesel fuel) over the ten-year period.*

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[1] *Great Plains Institute, A Clean Fuels Policy for the Midwest (January 7, 2020), http://www.betterenergy.org/cleanfuelspaper.*
[2] *According to economic analysis performed by ICF using the IMPLAN model, produced for the Midwestern Clean Fuels Policy Initiative. IMPLAN is an economic input-output model that combines a set of databases related to economic factors, economic multipliers, and demographic statistics.*

Background

A Midwestern clean fuels policy could draw on lessons learned from other states but be designed for the Midwest. California was the first in the United States to adopt a clean fuels policy in 2011, called the Low Carbon Fuel Standard (LCFS). Similar programs exist in Oregon, British Columbia, Brazil, and the European Union and are under consideration in other parts of Canada and the US, including New York and various Midwestern states.

In California, the policy has driven the production and use of lower-carbon transportation fuels for consumers, growing the use of alternative fuels by 88 percent.[3] According to 2018 data from the California Air Resources Board, the LCFS greatly reduced greenhouse gas emissions caused by transportation fuels by just over 47 million metric tons, over-complying with the program by 8.7 million metric tons.[4] In their Driving California Forward study, Environmental Defense Fund and the American Lung Association estimated that the policy, along with AB32, contributed to a savings of $1.6 billion in air pollution-related health impacts.[5] Additionally, data from the US Energy Information Administration shows that California's gasoline prices have been lower on average since the program went into effect.[6]

A Midwestern clean fuels policy could similarly bolster the regional market for clean fuel producers, delivering economic and environmental benefits.[7]

What is the stakeholder vision for a Midwestern clean fuels policy?

According to the Midwestern Clean Fuels Policy Initiative, a clean fuels policy, whether adopted at the state level in the Midwest, in other states, or at the regional level, should seek to achieve the following outcomes for the region:

- *Contribute to meeting and exceeding existing goals and policies at the state level, including policies to replace petroleum, increase biofuel use, support electric vehicle goals, and more fully actualize transportation GHG goals and policies.*
- *Support a portfolio of clean fuels, including biofuels, low- and zero-carbon electricity for transportation, hydrogen, and other clean fuel options.*
- *Make the economic prize bigger by increasing demand for clean fuels and avoid pitting different clean fuels against each other.*
- *Create a backstop if federal policy supporting clean fuels is undermined.*
- *Create broad rural and urban economic development; benefits for communities, consumers, and agriculture; and increased energy security from increased reliance on clean fuels produced in the Midwest.*
- *Achieve additional GHG reductions through increased renewable content in transportation fuels over time.*
- *Support existing farmer-led efforts to adopt agricultural practices that benefit soil health and water quality while contributing to GHG reductions.*
- *Contribute to electricity sector decarbonization, increased use of renewable electricity, and benefits for electricity customers as managed electric vehicle charging enables efficient renewable electricity integration and puts downward pressure on electric rates.*
- *Improve air quality and public health.*

[3] *Calculated using data from https://ww3.arb.ca.gov/fuels/lcfs/lrtqsummaries.htm and converting to gasoline gallon equivalent terms*
[4] *Dave Clegern, "Cleaner fuels have now replaced more than 3 billion gallons of diesel fuel under the Low Carbon Fuel Standard," May 16, 2019, https://ww2.arb.ca.gov/news/cleaner-fuels-have-now-replaced-more-3-billion-gallons-diesel-fuel-under-low-carbon-fuel.*
[5] *Timothy O'Connor, Katherine Hsia-Kiung, Larissa Koehler, Bonnie Holmes-Gen, William Barrett, Michael Chan, and Karen Law, Driving California Forward (2014), https://www.edf.org/sites/default/files/content/edf_driving_california_forward.pdf.*
[6] *"California All Grades All Formulations Retail Gasoline Prices," Petroleum & Other Liquids, U.S. Energy Information Administration, accessed January 29, 2021, https://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=pet&s=emm_epm0_pte_sca_dpg&f=a.*
[7] *Great Plains Institute, A Clean Fuels Policy for the Midwest.*

How does a clean fuels policy market work?
Setting the Performance Standard

A clean fuels policy sets a requirement for reductions in the average carbon intensity of transportation fuels over time relative to the baseline carbon intensity of fuels in a reference year.

The policy determines carbon intensity values for conventional fuels (gasoline and diesel) and lower-carbon fuels (such as biodiesel, electricity, ethanol, hydrogen, renewable diesel, renewable natural gas, renewable propane, and others). Carbon intensity is measured in grams of carbon dioxide equivalent per megajoule (g CO2e / MJ) and incorporates all emissions in the fuel's "well-to-wheels" lifecycle, including production, conversion, and use.

A clean fuels policy determines a timeline for required emissions reductions in the transportation sector, relative to the original baseline (e.g., 15 percent carbon intensity reduction over 10 years). This carbon intensity reduction schedule then serves as the performance standard for the policy and sets a specific numeric target for each year of the policy that declines over time.

Low Carbon Fuels Generate Credits

Fuel producers with carbon intensities higher than the performance standard generate deficits while fuel producers with carbon intensities below the standard generate credits. To comply with the standard, fuel producers with deficits must blend low-carbon fuels with the petroleum products they make or purchase credits from other fuel producers. Once a credit is used to cover a deficit, it is retired.
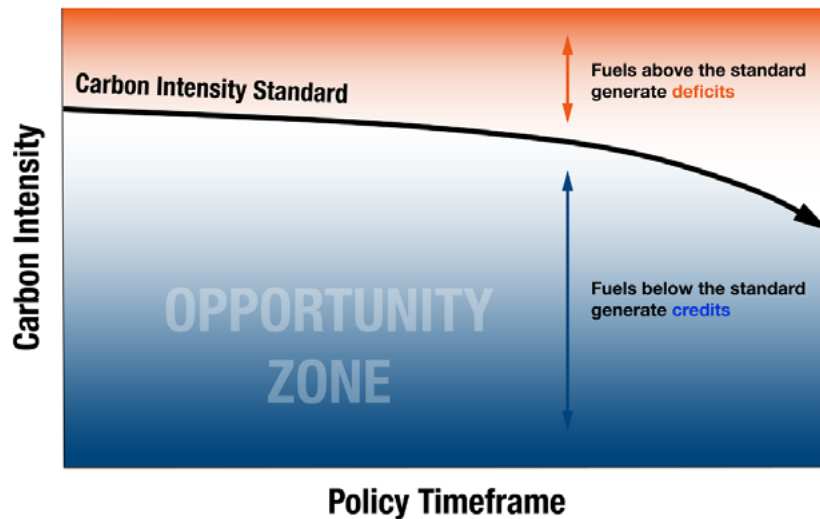
Figure 1. Clean fuels policy market logic

Figure 1 shows how the carbon intensity standard set by the policy declines overtime. Throughout the policy, fuels with carbon intensities above the standard generate deficits while fuels with carbon intensities below the standard generate credits. As the standard declines, additional action to reduce a fuel's carbon intensity is rewarded. Figure authored by Elizabeth Abramson, GPI, 2020.

To generate credits, low-carbon fuel producers must have an approved carbon intensity score based on their production practices. Electricity for electric vehicles has a different score based on the mix of resources used to produce the electricity, and ethanol varies depending on factors (e.g., energy used in the ethanol plant, farming practices, etc.).

WHO GETS THE CREDITS?

Credits have a market credit value (typically assigned in $/ton), which varies based on market forces, but have historically been between $35 and $200 per ton in states like California and Oregon with clean fuel policies. The policy framework and credit market determine the allocation and distribution of credits for a given fuel to different entities, including producers, feedstock suppliers, distributors, and consumers.

Stakeholder principles for a Midwestern clean fuels policy

The Midwestern Clean Fuels Policy Initiative aims to create a market specifically for regional clean fuel producers that simultaneously delivers environmental and economic benefits.

Over an approximately 20-month long process, the Initiative led stakeholder discussion to consider potential costs and benefits of a Midwestern clean fuels policy being adopted at the state level and coordinated regionally. When developing new policies, the following principles should be considered:

- *Design a market-based approach while remaining fuel and technology neutral, relying on a portfolio of clean fuels including biodiesel, ethanol, renewable natural gas, electricity as a transportation fuel, hydrogen, and other renewable and low-carbon fuels. Design the policy based on the lifecycle assessment of fuels. Lifecycle assessments should be consistent for all fuel types, science- and engineering-based, up to date, incorporate upstream emissions, and reflect differences in vehicle fuel efficiency with different drive trains. The latest Argonne GREET (greenhouse gases, regulated emissions, and energy use in transportation) model should be used as a basis for conducting lifecycle assessments. The Argonne GREET model uses a rigorous process based on the best available science. It is maintained by Argonne National Laboratory, a US Department of Energy laboratory that has the capacity to keep the model updated.*

- *Consider regional factors in the Midwest, including the impact of renewable electricity development on the electric grid, current production practices at biofuel facilities, adoption of farming practices that impact soil organic carbon and nitrous oxide emissions, and current and aspirational biofuel blending levels.*

- *Build on existing state policies rather than replacing those policies. Great progress has been made in the region to develop a mature ethanol and biodiesel industry and a small but growing electric vehicle and renewable natural gas sector. Any new policies should build on rather than replace existing state and federal fuel and GHG emissions policies, such as state biofuel blending requirements and incentives, state electric vehicle goals, state GHG emissions goals, and the federal Renewable Fuel Standard.*

- *Reinforce and complement existing efforts by the agricultural sector to increase the adoption of practices that improve soil health and water quality and have the potential to lower the carbon intensity of biofuel production by storing more soil organic carbon and reducing nitrous oxide emissions related to farming. Support methane reduction efforts by supporting increased use of renewable natural gas.*

- *Recognize emissions reductions at the farm level that contribute to the reduced carbon intensity of fuels.*

- *While recognizing state autonomy in policy making, states should collaborate and seek to create a uniform regional approach where possible. If possible, states should seek to achieve interoperability and explore credit fungibility with other clean fuels programs, both within and outside the region.*

> The Midwestern Clean Fuels Policy Initiative is unique in its ability to draw in a broad range of organizations that do not always work together, creating economic benefits for the region through policy, research, and education on the production and use of cleaner fuels. The Initiative includes agriculture, biofuels, the nonprofit sector, the electric vehicle community, auto manufacturing, and the electric utility sector. This group sees power in a collaborative approach and will continue working together to refine a Midwestern clean fuels policy to achieve its vision with broad economic and environmental benefits. It is facilitated by the Great Plains Institute, a nonpartisan, nonprofit organization that is transforming the energy system to benefit the economy and environment. Learn more at BetterEnergy.org.

For more information and to stay updated on this effort, contact Brendan Jordan at bjordan@gpisd.net or visit www.betterenergy.org.