With gas-fueled car ban, California hopes to lead the nation. Can it deliver?

September 9 2022, by Hayley Smith and Tony Briscoe

Credit: Pixabay/CC0 Public Domain

It was the sort of bold, climate-focused initiative that California has developed a reputation for—an effective ban on the sale of new gasoline-powered cars by 2035.

But last week's historic vote by the California Air Resources Board follows a number of sweeping state environmental actions that have met with varying degrees of success.

Now, as officials seek to fundamentally change California's automotive culture—thereby reducing its largest source of planet-warming carbon emissions and air pollution—experts say those past initiatives may shed light on whether California's nation-leading auto plan can work.

Air quality and smog

In Los Angeles, the dense smog that once smothered the city is regarded today as folklore. At its worst, between the 1950s and 1980s, the caustic haze was so thick that people could see only as far as a city block. It irritated people's throats and lungs, and gave them bloodshot eyes. Back then, there were more than 200 days with unhealthy air annually, according to the Air Resources Board.

Since that time, there has been tremendous progress toward reducing smog and air pollution, much of it due to cleaner cars. The amount of smog-forming nitrogen oxides has been slashed by more than 50% in the last two decades, substantially improving public health.

But California's progress in fighting air pollution has stagnated in recent decades, and the state is still home to the worst air pollution in the nation. The South Coast air basin—Los Angeles, Orange, Riverside and part of San Bernardino counties—has yet to meet any federal health standards for ozone levels, including the oldest measure enacted in 1979.

"If you're looking back 70 years, we've done a wonderful job," said Joe Lyou, president of the Coalition for Clean Air. "If you're looking back over the last decade or two, not so good. And if you're looking at the legal standards that demand that we provide healthy air for people to

breathe, we're not doing well at all."

Global warming has further exacerbated the problem by fueling wildfires and conditions that are more conducive to smog formation.

"Hazardous air pollution days are off the charts because of growth in climate-driven wildfires," said Will Barrett, national senior director for clean air advocacy for the American Lung Association. "We also know ozone is formed when tailpipe emissions and other emissions mix in the atmosphere on hot, sunny days. We are seeing more heat, more extreme weather events, creating better conditions for the formation of ozone and threatening health on the ground. These are dual crises. They stem from the same sources—transportation sources."

But it was the state's ability to tackle and solve a major smog crisis that gives some experts hope that it can also transform transportation.

"The Air Resources Board's greatest claim to fame before the climate era was its role in creating and enforcing the adoption of catalytic converters and other technologies to reduce the emissions of smog-forming pollution, which was choking the major metropolitan centers in both the Bay Area and on the South Coast," said Danny Cullenward, policy director at the nonprofit climate research organization CarbonPlan. "So the Air Resources Board as an institution really sort of cut its teeth, and was extraordinarily successful in earlier decades, in tackling just a massive problem that involved complicated technologies, powerful industries … and issues that affected people's everyday lives."

Cap-and-trade

One of California's landmark climate programs, cap-and-trade was initially launched in 2006 with the aim of reducing the state's greenhouse gas emissions to 1990 levels by 2020. It exceeded expectations, and in

fact reached the target four years ahead of time.

In 2017, the program was reauthorized with a much more ambitious goal: Slashing greenhouse gas emissions to 40% of 1990 levels by 2030. To get there, the program uses a system of pollution credits that essentially lets large carbon emitters buy and sell unused credits with the aim of keeping everyone at or below a certain total.

Experts say it only sort of worked. While the program has remained a key element of California's climate strategy, emissions were down about 11% in 2020—far from the 40% goal. What's more, that number likely accounts for emissions reductions tied to the start of the COVID-19 pandemic.

"The evidence is pretty clear that we're not on track for that target, and the reliance on this program is a big part of the reason why we're not on track," Cullenward said.

Air Resources Board spokesman David Clegern said via email that the state has the policies in place to meet its target, "but getting there means concerted action needs to happen on implementing policies to reduce transportation, short-lived climate pollutants, electricity and other emissions to achieve 2030."

"The fact that the state achieved its 2020 goal four years early and the success of programs such as the Low Carbon Fuel Standard and the addition of new programs means the role of cap-and-trade may be smaller in the future, but that will be evaluated after release of the 2020 Scoping Plan later this year," he said. The scoping plan is a roadmap for achieving carbon neutrality in the state, and is updated every five years.

Cullenward noted that the cap-and-trade program has some clear parallels to the advanced clean cars rule, including its plan to provide

credits to auto manufacturers who sell more electric vehicles than they're required to. However, there are also some key differences that made him more optimistic about the gas car ban's prospects of success.

For one, he said, the Air Resources Board has historically had more strength as a regulator of mobile emission sources (such as cars) than of stationary ones such as factories and power plants, as evidenced by its earlier success with catalytic converters and smog reduction. What's more, while the industries regulated by cap-and-trade are "local, powerful and politically organized," the state has little in the way of combustion engine production.

Fossil fuels

Despite California's green reputation, it remains the seventh-highest oil producing state in the nation, extracting about 358,000 barrels per day, according to state data.

However, oil production has been declining for decades, and the California Geologic Energy Management Division, or CalGEM, reported that "more permits have been issued to plug and permanently seal existing wells than to drill new ones since 2019." The agency issued 564 new well permits in 2021, down from 1,917 in 2020 and 2,665 in 2019.

Some experts said that's not aggressive enough.

"This transition can't happen too slowly, because there is a climate crisis, and there are significant public health impacts on frontline communities," said Bahram Fazeli, director of research and policy at Communities for a Better Environment.

Although there are ambitions to phase out California's oil and gas production completely—most recently, Gov. Gavin Newsom set his

sights on 2045—there has yet to be an official deadline such as the one for the gas car ban.

But the state has made some efforts to control or reduce oil production, including a proposed ban on new oil and gas wells within 3,200 feet of homes, schools and healthcare facilities. Newsom last summer also ordered a ban on new permits for hydraulic fracturing, or fracking, beginning in 2024.

"As we move to swiftly decarbonize our transportation sector and create a healthier future for our children, I've made it clear I don't see a role for fracking in that future and, similarly, believe that California needs to move beyond oil," the governor said at the time.

Fazeli noted that a recent study out of the University of Massachusetts Amherst found that achieving that transition by 2045 is feasible in California, though it would require a significant investment: About $138 billion per year, according to the study. But the fossil fuel industry is, by nature, opposed to such an existential threat, Fazeli said, and even passing "common sense" legislation such as the 3,200-foot buffer zone has proven challenging.

"California's economy is not different from other economies—the economy is a fossil fuel economy," he said. "So California is going through this growing pain of, how do we become a clean energy economy? How do we transition from a fossil fuel economy to a clean energy economy, and also provide good paying jobs? That's a key part of the puzzle."

Another part of the puzzle is balance, according to Kyle Meng, an associate professor of environmental economics at the University of California, Santa Barbara.

"When it comes to gasoline, you really need policies to deal with both the demand side—like the new car ban and subsidies for EVs—as well as the supply side, which is the production of oil," he said. "One without the other would lead to unexpected, adverse consequences."

For example, reducing demand without supply could mean California ends up exporting its excess oil, Meng said, while reducing supply too quickly could leave communities that rely on the industry in bad shape. In Kern County, one of the state's top producing regions, oil and gas extraction provide as much as 20% of the area's property tax revenue.

As in other sectors, equity remains a major concern, especially when it comes to the communities suffering the worst effects of oil and gas drilling, Meng said. But when considering the state's climate efforts thus far, he said there has been good progress.

"If you were to tell me that California would hit the state's 2020 greenhouse gas goals back in 2005, I wouldn't have believed it. But California did it," he said. "However, looking forward, the task for this decade is even more ambitious. The big open question is not just whether California can meet its 2030 greenhouse gas goals, but whether those goals are met in a way that doesn't exacerbate existing inequities across the state."

Vehicle miles traveled

Although phasing out gas-powered cars is one of the state's greatest priorities, that alone won't be enough. Driving habits must change, too, if the state expects to achieve carbon neutrality.

The state climate plan depends on motorists driving at least 12% fewer miles by 2030, and no fewer than 22% by 2045.

Since the advent of the automobile and the construction of the highway system, large cities like Los Angeles and San Francisco have become car-centric. Today, around 75% of daily commuting trips consist of one person driving with no passengers—a practice that remains the primary mode of transportation in California.

"Highway building and sprawl go hand in hand," said Susan Handy, a researcher at UC Davis who has studied strategies to reduce automobile dependence. "That's true in California, and it's also true everywhere else. When we built highways, it made it possible to develop farther from city centers than ever before. And now we're in a situation where we've got these sprawling development patterns and it makes it very hard to get around by means other than the car."

As the state's population has risen and more cars are on the road, state officials funded highway construction and expansion to ease congestion, which ironically fostered more driving.

The only major significant decreases in miles driven occur during economic downturns and, recently, with the onset of the COVID-19 pandemic in 2020 as more people have worked remotely. However, driving has rebounded to pre-pandemic levels.

Public policy strategy to reduce driving has historically included gas tax hikes or tolls, which could serve as a deterrent. But the state could do better at investments and incentivizing other forms of transportation like biking and mass transit, Handy said.

Much of California's plans have depended on providing financial incentives to trade in gas-powered cars for zero-emission vehicles. But some state officials have requested the state look into how driving behaviors might change if the state invests more in mass transit.

"I think it's tough, because we're a car culture, right?" Air Resources Board chair Liane Randolph said at a meeting in June. "We know how to help people buy cars. What we don't know is how to help people change the culture so that they are able to ride public transit in a way that's economical and equitable and efficient for them to get to work and to school and wherever they need to go."

Infrastructure

Infrastructure will play a huge role in California's transition away from gas cars, multiple experts said. Charging stations will be needed to help power electric vehicles, and electricity will be needed to power those charging stations, among myriad considerations.

So far, the state has established many goals to help get there, including plans to construct at least 250,000 public vehicle charging stations by the middle of the decade; 10,000 of which should be fast chargers, according to the California Public Utilities Commission. The state also plans to require landlords of multifamily housing units to provide residents with a means to charge electric cars, though those details are still being worked out.

And it's not only personal vehicles that will need the stations, but also the heavy-duty trucks that transport goods throughout the state every day. The twin ports of Los Angeles and Long Beach have the goal of being serviced exclusively by zero-emission trucks by 2035, but they have a long way to go: Only 35 of the 22,000 trucks that serve the port complex are "electric," "battery electric" or "hydrogen fuel cell," according to data from their clean truck program.

Though the state has made efforts to streamline the permit process for charging stations, mapping tools show huge gaps in their locations, particularly in inland Central California and far Northern California.

"We're nowhere close to where we need to be on infrastructure, especially charging infrastructure for electric vehicles, electric trucks, electric buses, electric off-road equipment," said Lyou, of the Coalition for Clean Air. "And it's emerged as the most challenging thing we have to do."

Another part of the problem is that recharging the batteries of electric cars and trucks could also lead to increased greenhouse gas emissions, depending on where that energy is coming from.

"If you're talking about California trying to move its emissions from gasoline cars into EVs, you're talking about probably doubling the amount of electricity demand on the grid," said Meng, of UC Santa Barbara. "Where's that going to come from? You could imagine large utility-scale solar in places like Kern County, but with the laws as they're written now, it's very hard for Kern County to get property tax benefits from a solar farm than it could from oil drilling."