

Governor's Sustainable Aviation Fuel Tax Credit Proposal

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SUMMARY

The Governor proposes budget trailer legislation to create a new tax credit against diesel excise tax liability to incentivize the use of sustainable aviation fuel (SAF) in California. The administration estimates this credit could reduce diesel excise tax liability by as much as \$165 million per year initially, then ultimately growing to \$300 million per year. In our assessment, the proposed tax credit is not a cost-effective approach to reducing greenhouse gas emissions (GHGs) and may result in lower than anticipated environmental benefits. Moreover, the implementation of the tax credit could have negative implications for transportation funding—potentially even larger than those estimated by the administration—and would not be consistent with the spirit of voter-approved restrictions on the use of diesel tax revenues. In light of these concerns, we recommend the Legislature reject the Governor's proposed tax credit.

Background

Aircraft Produce Relatively Small Share of GHG Emissions... Aircraft are not among the largest contributors to GHG emissions. According to the California Air Resources Board's (CARB's) GHG inventory, aviation accounts for only roughly 1 percent of the state's emissions. While this estimate may be somewhat understated, as it only accounts for intrastate travel, estimates of the relative contribution of aircraft to national and global GHG emissions are still relatively modest, totaling about 3 percent.

...But Are Particularly Hard to Decarbonize. Despite the aviation sector's relatively small contribution to GHG emissions, policymakers have shown significant interest in addressing aircraft emissions as the sector is viewed as among the more difficult to decarbonize. For example, while batteries are a feasible—if sometimes relatively expensive—alternative to gasoline and diesel for cars and trucks, they are not currently viewed as viable for aircraft due to their weight, size, and potential fire hazards.

SAF Is a Non-Petroleum Alternative to Conventional Jet Fuel. One of the main existing approaches to help reduce the aviation sector's GHG impacts is reducing the carbon emissions from aviation fuel. This can be done by replacing conventional, petroleum-based jet fuel with

non-petroleum-based alternatives known as SAF. SAF can be made from a variety of plant and animal-based feedstocks—such as distillers corn oil (a byproduct of the production of corn ethanol), used cooking oil, and animal tallow—as well as some alternative processes. A key advantage of SAF is that, due to its chemical similarity to conventional jet fuel, it can be used in place of traditional fuel without modifications to aircraft engines or infrastructure. Conversely, a major barrier to the use of SAF is its relatively high production cost, resulting in prices that are generally at least twice those for conventional jet fuel. In large part due to this cost differential, currently only a small share—less than 2 percent—of aviation fuel used in the United States is SAF.

SAF Production Occurs Alongside Other Renewable Fuels. Currently, a few refineries in the United States are set up to convert feedstocks into both renewable diesel (RD)—which accounts for the majority of diesel purchased in California—and SAF. These refineries can shift production between these two types of fuels with relative ease depending on market conditions, as the industrial processes for producing RD and SAF are similar, using the same feedstocks and much of the same equipment. There also are a number of other refiners in the United States that currently produce RD and could, with the purchase of some additional equipment,

be converted to produce SAF in addition to, or instead of, RD. In either case, as a result of the interchangeability of the production processes for these two fuels, without significant additional investments in overall production capacity for renewables or innovation in the production process, an increase in SAF production likely would result in a roughly equivalent decrease in RD production.

State and Federal Governments Have Various Existing Policies to Incentivize SAF. In recent years, both the state and federal governments have implemented various policies that encourage the adoption of renewable fuels, including SAF. The main such policies affecting California include:

- **California Low Carbon Fuel Standard (LCFS).** LCFS establishes statewide “carbon intensity” (CI) standards for diesel and gasoline supplied in California. LCFS uses a system of tradeable credits to determine compliance with the program. Entities that supply regulated fuels with a CI above the standard accrue deficits, whereas those that supply fuels with a CI below the standard generate credits. Unlike diesel and gasoline, jet fuel is not regulated under LCFS. However, producers of SAF can voluntarily participate in the program and receive credits for the gallons they supply to California. These producers can then sell the credits they generate, producing revenue that serves as a subsidy for SAF production.
- **Federal Renewable Fuel Standard (RFS).** At the federal level, RFS is a policy that requires a designated level of renewable fuels to be sold annually in the United States. Refiners and importers must either sell their share of the required volumes themselves or buy credits (known as Renewable Identification Numbers or RINs) from other producers that generate an excess of credits. Because producers of SAF can sell the RINs they generate, this program can provide an additional production subsidy.
- **Federal Tax Credit.** The federal government also currently offers a tax credit of up to \$1 per gallon for SAF that meets certain requirements.

The above policies work together to create a “stack” of incentives for SAF production. The total value of this stack depends on various factors such as LCFS and RFS credit prices, as well as the feedstocks used, but cumulatively could total a couple dollars per gallon for SAF producers.

State Imposes Excise Taxes on Aviation and Other Transportation Fuels. The state levies per-gallon excise taxes on various fuels sold and consumed in the state. These include a 2-cent-per-gallon excise tax on jet fuel, which is applied to both petroleum-based jet fuel and SAF. The tax generates about \$4 million annually and supports airports and other aviation-related activities. The state also imposes an excise tax on diesel fuel, which is assessed on both petroleum-based diesel and RD. Diesel is primarily used by medium- and heavy-duty trucks, buses, and other large vehicles. The diesel excise tax is currently 46.6 cents per gallon and is adjusted each July for inflation. In 2026-27, the tax is projected to increase to 48.2 cents per gallon and generate about \$1.5 billion. Diesel excise tax revenues support state and local transportation activities. These include (1) support for the California Department of Transportation (Caltrans) and its highway maintenance and rehabilitation programs, (2) direct suballocations to cities and counties for local streets and roads, and (3) competitive infrastructure grants on freight corridors through the Trade Corridor Enhancement Program (TCEP).

Governor’s Proposal

Provides Tax Credit for Producers of SAF.

The Governor proposes budget trailer legislation that would create a new diesel excise tax credit for producers of SAF meeting at least a specified CI as calculated by CARB, with the goal of lowering the state’s GHG emissions by encouraging airlines to use more SAF instead of petroleum-based jet fuel. The credit would be worth \$1 to \$2 per gallon of SAF produced for use in California—higher for production that CARB determines to be less carbon intensive—and apply to production between January 2026 and December 2035 (though the credit could not be claimed by taxpayers until November 2027). Producers could only claim the credit if they also have diesel excise tax liability

within the state—that is, if they also sell diesel fuel in California. However, the proposal allows for a carryover period wherein producers would be able to claim the credit on any diesel excise tax liability they incurred over a five-year period after producing the SAF. The administration estimates the tax credit would lead to foregone diesel excise tax revenue of as much as \$165 million in 2027-28, potentially climbing to \$300 million annually in the long run.

LAO Assessment

Proposal Represents Relatively Expensive Approach to Decarbonization. According to the administration, the main purpose of the proposal is to reduce GHGs. We find that encouraging SAF is a relatively costly approach to achieving this goal. SAF is much more expensive to produce than conventional fuel, so enabling it to be cost competitive requires subsidies—in aggregate across all policies—that are quite large relative to its potential emission reduction benefits. Specifically, we estimate that the proposed tax credit alone implies a carbon price of over \$170 per metric ton of carbon dioxide equivalent. (That is, if all the estimated carbon emission reductions from each gallon of SAF are attributed exclusively to the proposed policy, we estimate that the cost per metric ton for these reductions would be over \$170.) When considered along with the other existing incentives for SAF production, however, the total cost of each ton of carbon reduced would be significantly larger, perhaps several hundred dollars in aggregate per ton. These costs are well above the costs of a variety of other possible approaches to reducing GHGs. For example, the amount emitters recently have had to pay for each ton of carbon dioxide equivalent they emit through the cap-and-invest program has been below \$30 per ton and LCFS credits have been between \$50 and \$70 per ton. (In our view, these cap-and-invest allowance and LCFS credit prices can serve as very rough proxies for the marginal costs these programs assess for near-term GHG emission reductions.)

With Limited Exceptions, Makes Sense to Focus on Most Cost-Effective Approaches to Reducing GHGs. In our view, generally the state should focus on pursuing the easiest and

most cost-effective approaches to reducing GHGs prior to undertaking more difficult and costly ones. We acknowledge that reasons might exist to deviate from this general principle under certain circumstances. For example, supporting more costly approaches could make sense if they help bring new, transformative technologies into the marketplace that substantially bring down long-term costs or achieve other societal benefits (such as reducing local air pollution). However, in our assessment, the Governor’s proposal is not structured to incentivize the development or implementation of novel technologies for SAF production. Instead, it appears more likely to increase in-state use of SAF made from established approaches. The administration asserts that while the proposal may not be the most cost-effective approach to reducing GHGs, encouraging SAF still is important as aviation is very difficult to decarbonize and very few, if any, viable alternatives exist. In our view, this argument might make more sense in the future, once other easier and more cost-effective approaches to reducing GHGs have been exhausted. However, given the existing ample availability of other, likely more cost-effective GHG-reduction programs and policies, such a costly focus on the aviation sector is not compelling to us at this time.

Environmental Benefits of Incentivizing SAF Are Uncertain. The environmental benefits of SAF are subject to substantial uncertainty and some research indicates they could be notably smaller than certain estimates suggest. This is in part because—due to interactions with other existing policies and the interchangeability of many production inputs and processes discussed above—any additional SAF production induced by this proposed policy could correspondingly result in lower RD production. To the extent this is the case, the policy would result in “shuffling,” or replacing one lower carbon fuel with another rather than simply increasing overall use, thus limiting any net environmental benefits. Moreover, even if the policy were to increase the overall use of renewable fuels, we note that the academic literature contains significant disagreement on the environmental benefits that these fuels produce. For example, some research suggests that existing calculation

methodologies used by CARB may overstate the environmental benefits of SAF and other renewable fuels, such as by underestimating indirect effects on carbon emissions of diverting resources to produce such fuels. If CARB's methodology is not adequately robust and the actual GHG benefits ultimately are less than it assumes, the cost-effectiveness of the proposed policy would also be less than projected.

Magnitude of Diesel Excise Tax Revenue Reduction Is Uncertain, but Could Be Much Smaller or Larger Than Anticipated. The complexity of renewable fuel production and distribution—as well as the overlapping state and federal policies—also create significant uncertainty in estimating the fiscal impact of the Governor's proposed credit. In discussions with our office, the Department of Finance indicated that it based its fiscal estimate on existing SAF producers' total diesel excise tax liability, which it believes represents a rough upper bound on the size of the potential revenue loss. However, actual claims and associated revenue loss could be much less or more than this estimate. If SAF production costs remain high enough to limit demand, even with the credit, revenue losses could be much smaller. Conversely, if the credit makes SAF production more attractive than RD for some producers, it could cause a dramatic increase in SAF sales in California, both among existing SAF producers and among other producers and distributors who sell diesel in the state. The only limit on the amount of credits that eligible producers could claim under the proposed policy is the amount of their California diesel excise tax liability—currently totaling about \$1.5 billion across all producers—and the amount of SAF that could be produced or imported to California. Researchers at the University of Illinois and the United States Department of Agriculture [recently estimated](#) national SAF production capacity at more than 800 million gallons per year (though the exact amount is uncertain due to the proprietary nature of refinery operations). This means that more than \$1 billion in credits could be claimed if all available SAF were sold in California, even if no additional production capacity were created. While such a scenario may seem far-fetched, the most recent federal data

show that California consumes more RD than is produced in the entire United States, indicating that producers have responded strongly to existing state policy incentives for renewable fuels by selling in California. [Some experts](#) we consulted indicated that the proposed tax credit may be large enough to encourage a dramatic shift toward SAF sales in California, suggesting that foregone tax revenues could be substantially higher than the administration estimates.

Reducing Diesel Excise Tax Revenues Would Negatively Impact Transportation Programs. While the size of the revenue losses from the Governor's proposed tax credit is somewhat uncertain, they have the potential for negative impacts on transportation programs. For example, based on the administration's near-term estimate of potential foregone diesel excise tax revenues—\$165 million per year beginning in 2027-28—the proposal would result in the following impacts based on the existing statutory allocations of these revenues:

- ***Caltrans.*** Annual reduction of \$70 million to Caltrans and its highway maintenance and rehabilitation programs. This reduction would specifically affect Caltrans' State Highway Operation and Protection Program (SHOPP), which funds rehabilitation, reconstruction, and safety projects on the state highway system. SHOPP is supported by a combination of state and federal funds and is projected to receive around \$4.4 billion annually—meaning this proposal would result in a reduction of about 2 percent each year.
- ***Local Streets and Roads.*** Annual reduction of \$49 million to transportation funding that the state provides to cities and counties for work on their local streets and roads. State transportation funding suballocated to cities and counties for these purposes is projected to be around \$3.9 billion annually—meaning this proposal would result in a reduction of about 1 percent each year.
- ***TCEP.*** Annual reduction of \$46 million to TCEP. The program is supported by state and federal funds and receives around \$540 million annually—meaning this proposal would result in a reduction of about 9 percent each year.

Overall, these reductions would result in fewer state and local transportation projects being funded each year. Additionally, the administration projects the credit could grow over time, potentially reaching about \$300 million annually—nearly doubling the reductions and corresponding fiscal and programmatic impacts. Moreover, should the amount of the tax credit that is claimed end up even larger than currently anticipated—as discussed above—the reductions to transportation funding would increase accordingly. We note that the state is already projected to face future transportation funding challenges due to existing trends and policies that increase zero-emission vehicle (ZEV) adoption, which in turn will reduce diesel and gasoline excise tax revenues. These pressures are expected to grow as the state works to further increase ZEV adoption to meet its ambitious climate goals, as we discuss in our 2023 report, *Assessing California’s Climate Policies—Implications for State Transportation Funding and Programs*. The Governor’s SAF proposal would expedite and add to those projected fiscal and programmatic impacts.

Deviates From Spirit of Transportation Funding Approach Embraced By Voters.

Historically, the state has used the revenues from the taxes that road users pay to support activities that benefit those users, such as for the operation, maintenance, and improvement of the

state’s surface transportation system. California voters have signaled their support for this general approach by amending the State Constitution to restrict the use of gasoline and diesel fuel tax revenues for streets, highways, and certain mass transit activities. In our view, the administration’s proposal deviates from the spirit of these voter-approved restrictions, as a portion of the diesel tax revenues that historically have been used to support the streets and highways that benefit drivers would instead be used to subsidize the decarbonization of the aviation sector. In our view, the administration has not articulated a sufficiently strong rationale for deviating from the state’s longstanding approach.

Recommendation

Reject Proposed Tax Credit. We recommend the Legislature reject the proposed budget trailer legislation establishing a credit against diesel excise tax revenue for sale of SAF in California. The proposal appears to be a relatively expensive approach to reducing GHGs and may not result in the full anticipated environmental benefits. Moreover, the implementation of the proposed tax credit could have negative implications for transportation funding—potentially even larger than those estimated by the administration—and would not be consistent with the spirit of voter-approved restrictions on the use of diesel tax revenues.

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This report was prepared by Alexander Bentz, Frank Jimenez, and Helen Kerstein, and reviewed by Rachel Ehlers and Ross Brown. The Legislative Analyst's Office (LAO) is a nonpartisan office that provides fiscal and policy information and advice to the Legislature.

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