

Comments of Alternative Jet Fuel - Proposed Amendments to the Low Carbon Fuel Standard

Dear California Air Resources Board,

Thank you for the opportunity to submit comments on the proposed amendments to the Low Carbon Fuel Standard (LCFS). We have been actively engaged in researching how to promote aviation decarbonization in California, focusing on both technical feasibility and policy implications. Sustainable aviation fuel (SAF) or alternative jet fuel is one of our main areas of focus. Based on our research, our comments on the proposed amendments to the LCFS are twofold, addressing both policy analysis and legal considerations.

Policy Analysis

We conducted policy analyses for both 2030 and 2035 using a supply and demand framework. The jet fuel price forecast is \$16.44 per million Btu for 2030 and \$17.77 per million Btu for 2035, based on EIA forecasts. Our supply model for alternative jet fuel use (SAF) is based on the California Transportation Supply Model (CATS), while the demand curve is established using a log-log model incorporating total jet fuel demand and fuel prices, along with fuel price elasticities. We considered two scenarios for jet fuel price elasticity: -0.03 for short-term price responses and -0.35 for long-term responses.

Three scenarios were evaluated: the baseline scenario, consistent with the existing design of the LCFS without eliminating the jet fuel exemption from fossil jet fuels; the proposed scenario, based on proposed amendments to the LCFS with the elimination of the jet fuel exemption from intrastate fossil jet fuels; and the enhanced scenario, considering the elimination of the jet fuel exemption from domestic fossil jet fuels (both intrastate and interstate). Under the proposed and enhanced scenarios, we evaluated both cases where the carbon intensity standard (benchmark) reduces as stated in the proposal (Low CI_{standard}) and cases where the carbon intensity standard does not reduce (High CI_{standard}), reflecting the current policy.

The following tables show the change in the total demand, SAF consumption, CO₂e emission, and environmental impacts under various scenarios and assumptions regarding jet fuel elasticity.

Table 1. The Results of 2030 (when jet fuel elasticity is -0.03)

Scenario	Baseline	Proposed Scenario		Enhanced Scenario	
		Low CI _{standard}	High CI _{standard}	Low CI _{standard}	High CI _{standard}
Total Demand (Million Gallon)	5195	5193	5193	5183	5185
SAF Consumption (Million Gallon)	972	960	974	976	983
SAF Percentage (%)	18.7%	18.5%	18.8%	18.9%	19%
CO ₂ e emission (Million ton CO ₂ e)	55.9	55.9	55.1	55.7	55.7
CO ₂ e Change (%)	-	0%	-1%	-0.4%	-2%

Table 2. The Results of 2030 (when jet fuel elasticity is -0.35)

Scenario	Baseline	Proposed Scenario		Enhanced Scenario	
		Low CI _{standard}	High CI _{standard}	Low CI _{standard}	High CI _{standard}
Total Demand (Million Gallon)	5195	5184	5188	5135	5160
SAF Consumption (Million Gallon)	972	960	974	976	983
SAF Percentage (%)	18.7%	18.5%	18.8%	19%	19%
CO ₂ e emission (Million ton CO ₂ e)	55.9	55.8	55.8	55.1	55.4
CO ₂ e Change (%)	-	-0.2%	-0.4%	-1.4%	-0.9%

Table 3. The Results of 2035 (when jet fuel elasticity is -0.03)

Scenario	Baseline	Proposed Scenario		Enhanced Scenario	
		Low CI _{standard}	High CI _{standard}	Low CI _{standard}	High CI _{standard}
Total Demand (Million Gallon)	5583	5557	5560	5564	5574
SAF Consumption (Million Gallon)	1101	984	1105	1018	1113
SAF Percentage (%)	19.7%	17.7%	21.7%	18.2%	20%
CO ₂ e emission (Million ton CO ₂ e)	59.3	60.0	59.2	59.7	59.0
CO ₂ e Change (%)	-	+1%	-0.2%	+0.7%	-0.5%

Table 4. The Results of 2035 (when jet fuel elasticity is -0.35)

Scenario	Baseline	Proposed Scenario		Enhanced Scenario	
		Low CI _{standard}	High CI _{standard}	Low CI _{standard}	High CI _{standard}
Total Demand (Million Gallon)	5583	5538	5569	5331	5511
SAF Consumption (Million Gallon)	1101	983	1105	1055	1122
SAF Percentage (%)	19.7%	17.7%	19.8%	19.8%	20.4%
CO ₂ e emission (Million ton CO ₂ e)	59.3	59.6	59.1	56.7	58.3
CO ₂ e Change (%)	-	+0.5%	-0.3%	-4%	-2%

Based on the tables above, our main three observations are as follows:

1. **Effectiveness of carbon intensity standards:** Strengthening the annual carbon intensity benchmarks in the aviation sector as proposed may not be as effective as maintaining the current higher carbon intensity standard.
2. **Scope of exemptions for fossil jet fuel:** Eliminating the exemption for domestic fossil jet fuel (both intrastate and interstate) appears to be more beneficial than eliminating it for intrastate only.
3. **Influence of jet fuel elasticity:** Jet fuel elasticity significantly influences the outcomes, highlighting its importance in policy formulation.

Legal Considerations

While we are not trained lawyers, our research background includes several studies that involved understanding legal constraints pertaining to taxes and fees imposed on airlines and air transportation. Based on this knowledge and a review of relevant case law, we offer a few observations:

The LCFS is sometimes viewed as an “implicit tax.” If extending the LCFS to incorporate jet fuel were considered a form of airline taxation, then it would be subject to strict limitations. According to 64 Fed. Reg. 7696, which implements the several federal statutes:

“State or local taxes on aviation fuel (except taxes in effect on December 30, 1987) are considered to be airport revenue subject to the revenue-use requirement. However, revenues from state taxes on aviation fuel may be used to support state aviation programs or for noise mitigation purposes, on or off the airport.”

This would seem to preclude the use of LCFS revenue to pay for credits. Notably, this restriction would apply irrespective of whether the LCFS was applied to fuel for intrastate flights only or a larger set of flights.

If the LCFS is not considered a form of airline taxation, then the most significant legal constraint is the Dormant Commerce Clause. Here, the application of the LCFS to interstate flights might be considered to violate the DCC. However, the issue is by no means clear cut. Since the LCFS has been held not to be discriminatory against out-of-state businesses, the question would be whether the state interests it promotes offset the burden it places on interstate commerce. There is ample precedent that controlling global warming is a legitimate state interest, which increases the possibility that an LCFS that applies to all domestic flights would survive a DCC challenge.

Sincerely,

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