May 28, 2020

Mary Nichols, Chair
Members
California Air Resources Board
1001 "I" Street
Sacramento, CA 95814

Subject: Environmental Defense Fund SUPPORT for the Proposed Amendments to the Advanced Clean Truck (ACT) Rulemaking, Board Item: act2019

Dear Chair Nichols and California Air Resource Board Members:

Environmental Defense Fund (EDF) thanks CARB for moving forward with this critical rulemaking to protect public health. It is clear, now more than ever, that we need to make advancements in air pollution protections that reduce PM2.5, NOx, and other pollutants, especially when those policies can benefit California's economy. For these reasons, we urge the Board to adopt the Advanced Clean Truck ("ACT") rule, as strengthened in the "Proposed Amendments to the Advanced Clean Truck (ACT) Rulemaking" ("Proposed Modifications").

Emissions Benefits of the Rule

Thousands of people die each year in California due to transportation pollution.[1] Research has shown that pollution causes heart disease, diabetes and lung disease and people suffering from these diseases are at greater risk for serious illness from COVID-19. Preliminary nationwide analysis by Harvard University shows COVID death rates are higher in counties that had higher levels of air pollution in advance of the pandemic. This underscores the vital importance of pollution protections to protect human health both during and after the COVID-19 crisis.

CARB estimates that the Proposed Modifications will result in the rule avoiding emissions of criteria air pollutants as shown below. Energy Innovation's Energy Policy

[1] Union of Concerned Scientists, Inequitable Exposure to Air Pollution from Vehicles in California, https://www.ucsusa.org/sites/default/files/attach/2019/02/cv-air-pollution-CA-web.pdf

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Simulator (EPS), in a collaboration between Energy Innovation (EI) and EDF, will be corroborating CARB's findings in an upcoming report.

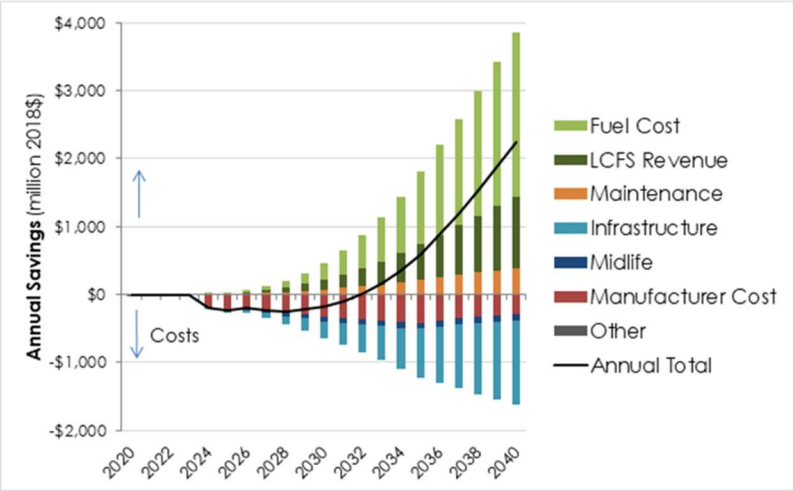
Table: CARB estimate of avoided criteria pollutant emissions from the rule with Proposed Modifications

Year	NOx (tons per day)	PM 2.5 (tons per day)
2031	6.9	0.24
2040	27.9	0.85

The rule also supports California's global warming pollution mitigation plan. CARB estimates that the rule will avoid 17.3 MMT CO2e[2] of greenhouse gas (GHG) emissions, whereas the EPS forecasts GHG benefits of 18.3 MMT CO2e.

Economic Benefits of the Rule

This rule is good for the economy, as CARB estimates it will yield almost $6 billion in direct savings for the trucking industry and the EPS analysis corroborates CARB's finding of significant economic benefits. These direct savings accrue mostly from lower fueling costs due to the switch away from fossil fuels.



Source: Upcoming EPS analysis

Operations and fuel savings will more than compensate for higher upfront vehicle and infrastructure costs. Installing electric truck charging infrastructure will also put thousands of people to work in the early years of the rule. These direct economic benefits are in addition to indirect economic benefits of nearly $9 billion in California from 2020 through 2040 related to avoided health impacts, according to CARB staff's analysis. Using vehicles that emit no pollution and operate at a lower cost will ensure we can continue to improve the environment and enable the trucking industry to drive California's economy.

[2] Updated Costs and Benefits Analysis for the Proposed Advanced Clean Trucks Regulation, April 28, 2020, https://ww3.arb.ca.gov/regact/2019/act2019/30dayattc.pdf (hereinafter "CARB *Updated Analysis*"), page 9

EDF encourages the Board to move forward with the rule expeditiously

CARB must not delay implementation of the Proposed Modifications. Both direct economic benefits and indirect health benefits will be significant. As written, the sales requirement does not begin until 2024, and ramps up gradually for the next several years, providing time to plan for investments that will help California's people and economy to thrive.

The ACT Rule Improves People's Health

The medium- and heavy-duty trucking industry is a major source of air pollution in California, with shipping facilities, warehouses, and freight routes tending to be located in disadvantaged communities. Medium- and heavy-duty trucks release 25% of statewide diesel PM emissions and 35% of total statewide NOx, despite making up a small proportion of vehicles on the road.[3] Business as usual technologies for these vehicles cannot continue.

Replacing conventional trucks with electric and other zero-emission vehicles will facilitate a demonstrable health improvement for the 12 million Californians – about third of the state's population - living in areas with unhealthy pollution levels.[4] This includes the state's vulnerable disadvantaged communities, who disproportionately suffer from respiratory health issues. Indeed, the staff's Updated Analysis estimates that the rule will result in nearly 1,000 lives saved and fewer overall hospital visits. These life-changing impacts lead to health benefits valued at $8.9 billion from 2020 to 2040.[5]

A recent study published by National Public Radio found that ozone air pollution has not declined apace with the reduction of economic activities in Los Angeles. The NPR analysis

> "...revealed that, in the vast majority of places, ozone pollution decreased by 15% or less, a clear indication that improving air quality will take much more than cleaning up tailpipes of passenger cars...In cities such as Los Angeles, stubbornly

[3] CARB, Proposed Advanced Clean Trucks Regulation Staff Report Initial Statement of Reasons, October 22, 2019, https://ww3.arb.ca.gov/regact/2019/act2019/isor.pdf (hereinafter, "CARB *ACT ISOR*"), page II-4
[4] CARB, "Heavy-duty Low NOx Program, Public Workshop," Sacramento, January 23, 2019, https://ww3.arb.ca.gov/msprog/hdlownox/files/workgroup_20190123/00-background_&_timing_ws01232019.pdf?_ga=2.124115660.717209197.1572561203-1119335516.1567614494
[5] CARB *Updated Analysis*, page 7

poor air quality during the coronavirus lockdown underscored how vast fleets of trucks are a dominant source of pollution."[6]

According to the New York Times, CARB Board Member Dr. John R. Balmes, "said the findings [of the Harvard study discussed above] were particularly important for hospitals in poor neighborhoods and communities of color, which tend to be exposed to higher levels of air pollution than affluent, white communities."[7] This is an environmental and social inequity that needs to be addressed. The ACT rule, with Proposed Modifications, complemented by emission reductions due to more stringent NOx and PM standards for fossil-fueled trucks the Board will be considering later this year, will promote cleaner air everywhere and critically reduce the high-levels of air pollution that contribute to this disparity.

The ACT rule, with the Proposed Modifications, ramps up to a nearly 20% reduction in NOx emissions in 2040 from Class 4-8 vehicles, with significant reductions in NOx emissions from other vehicle classes: 14% from Class smaller 2b-3 vehicles and 12% from larger 7-8 tractors, compared to a business as usual (BAU) case.[8] Similarly, the Proposed Modifications result in a nearly 11% PM 2.5 emissions reduction from Class 4-8 vehicles in 2040, with emissions reductions from Class smaller 2b-3 vehicles at 6% and from larger 7-8 at 4%, compared to BAU.[9]

The ACT Rule Reduces Greenhouse Gases (GHGs)

The Proposed Modifications are expected to reduce GHGs from medium- and heavy-duty trucks - which make up 8% of California's total GHG inventory[10] - by 17.3 MMT CO2e through 2040[11], a significant improvement from the 11.2 MMT[12] expected from the first ACT proposal. The Updated Analysis finds that the total benefits from reduced GHGs will add up to "$398 million to nearly $1.7 billion through 2040" (depending on the discount rate used).[13]

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[6] National Public Radio, "Traffic Is Way Down Because Of Lockdown, But Air Pollution? Not So Much," May 20, 2020, https://www.npr.org/sections/health-shots/2020/05/19/854760999/traffic-is-way-down-due-to-lockdowns-but-air-pollution-not-so-much

[7] "New Research Links Air Pollution to Higher Coronavirus Death Rates," https://www.nytimes.com/2020/04/07/climate/air-pollution-coronavirus-covid.html?searchResultPosition=1

[8] Calculated from CARB "Emissions Inventory Methods and Results for the Proposed Advanced Clean Trucks Regulation Proposed Modifications," https://ww3.arb.ca.gov/regact/2019/act2019/30dayattd.pdf, (hereinafter, "CARB *Emissions Inventory*"), page 15

[9] Calculated from CARB *Emissions Inventory*, page 16

[10] Calculation based on CARB's Greenhouse Gas Emission Inventory - Query Tool for years 2000 to 2017 (12th Edition), https://www.arb.ca.gov/app/ghg/2000_2017/ghg_sector.php

[11] CARB *Updated Analysis*, page 9

[12] CARB *ACT ISOR*, page VI-3

[13] CARB *Updated Analysis*, page 8

EI and EDF have corroborated the emission reductions benefits estimated by CARB in the upcoming EPS Study. The research corroborates the link between GHG reductions and on-the-ground savings for truck owners. According to both CARB and the EPS report, each ton of GHG reduced through this rule will save at least $300 in direct expenditures for industry, because replacement of fossil fuel with lower-cost electricity means direct savings for truck owners. Whereas CARB estimated the direct economic benefits to be +$341/MMT CO2e, the EPS savings are even higher.

The ACT Rule Supports The Economy

The ACT rule is also good for the economy. Because electricity is less expensive on a per-mile basis than fossil fuels, businesses can move goods at lower cost. The cost of electricity is also more predictable and stable, and that gives operators more operational certainty. In addition, electric trucks cost less to maintain over the lifetime of the vehicle. The Updated Analysis shows that there is *significant cost savings over the life of the rule, adding up to almost $6 billion dollars by 2040*,[14] an average savings of $577 million per year beginning in 2030.[15] As significant as these savings are, they are in discounted net present value. We concur the CARB staff's findings that, because of this savings, the Proposed Modifications will result in "*increased growth in the truck transportation industry*."[16]

We have carefully reviewed CARB's analysis of the initial rule proposal and Proposed Modifications. As part of our review, we have collaborated with EI in executing a California-customized version of their EPS,[17] augmenting work already published by EI that has been peer-reviewed. The EI findings, which will be released in an upcoming report, corroborate CARB's results, as shown in the following table. It is worth nothing that these findings are conservative because they truncate savings that will continue to accrue beyond 2040. The benefits findings from the EPS are greater than what CARB estimates, showing that CARB's estimates are conservative and demonstrating that there will likely be even greater benefits than expected.

The table below presents summary impacts when inputs in the EPS are aligned to reflect those used by CARB, including use of the same assumption with respect to future battery costs. (EPS results are from a discussion draft of the paper and subject to change in the final version of the report.) For example, CARB's analysis is based on a battery cost forecast from Bloomberg New Energy Finance (BNEF). The Bloomberg New Energy Finance is based on light duty passenger vehicle trends. ARB's approach is

[14] CARB *Updated Analysis*, Table IV-10: Estimated Fiscal Impacts on State Government (million 2018$), page 14
[15] Calculated from CARB *Updated Analysis*, Table IV-10: Estimated Fiscal Impacts on State Government (million 2018$), page 14
[16] CARB *Updated Analysis*, page 17
[17] For a detailed description of the Energy Policy Simulator, go to https://www.energypolicy.solutions/

to use the Bloomberg New Energy Finance battery cost forecast, except on a five year delay. Results can therefore be viewed as conservative; for example, a two-year lag for MHDV to adopt LDV innovations, rather than CARB's assumption of five years, would result in a finding of much higher net benefits.

Table: Comparison of EPS and CARB Findings about Proposed Modifications to the Advanced Clean Truck Rule

	EPS	CARB
Emission reductions, 2024 through 2040(MMT of CO2e)	17.6	17.3
Total Economic Savings* (2018$)	$7.3 Billion	$5.9 Billion
Average savings** (2018$)	$414 per metric ton	$341 per metric ton

Source: CARB, *Appendix C* (2020), Table IV-8, of the April 28 regulatory documents https://ww3.arb.ca.gov/regact/2019/act2019/30dayattc.pdf, and California Energy Policy Simulator

*Sum of undiscounted, direct effects on spending due to the proposed regulation. Categorization as in Figure IV-4 of the regulatory documentation released April 28, 2020, *Appendix C*.

**Average cost is calculated as Total Economic Costs and Savings by the sum of emissions reductions through 2040.

There are many other reasons why this rule is good for California's economy. EV's jumped to California's second largest export in 2019, and dozens of truck manufacturers and charging companies are established in California. Manufacturers need regulatory certainty - adopting the rule now, with implementation beginning in 2024, will support and buoy the investments that many manufacturers and suppliers have already made in this space. Both CARB and the EPS study find that this rule is likely to be a job-creator. Keeping in mind that the rule starts in 2024, CARB anticipates this rule will create 1,300 jobs in 2025, and will grow to approximately 8,200 jobs in 2035. These jobs will include skilled manufacturing and construction work. The rule is also able to attract private capital and investments into the state once it begins.

California is Making Significant Investments in Infrastructure

Infrastructure needs for medium- and heavy-duty vehicles are different than that of light-duty vehicles. Currently, the investor-owned utilities (IOUs) are already approved to invest over $700 million in charging infrastructure - with a significant focus on

medium- and heavy-duty programs - through 2024.[18] They may invest even more via their proposed programs subject to approval by the California Public Utilities Commission (CPUC). Other corporate investments by electric vehicle service providers include those by Electrify America, ChargePoint and the National Association of Truck Stop Operators. Additionally, numerous state programs provide financial support for charging infrastructure, including the Energy Commission's (CEC) Clean Transportation Program and CARB's Low Carbon Fuel Standard (LCFS).

CARB has played a significant leadership role in the adoption of electric vehicles, and this rule will continue to advance that agenda. EDF encourages CARB to continue to closely collaborate with its sister agencies who are working to enhance infrastructure deployment and dedicated electric rate options for the different fleet sizes and types.

EDF Urges Board Approval of ACT Rule

We cannot think of a more important road for CARB to travel right now than transforming our economy from one that damages people's health in pursuit of profits to one that supports people's lives and jobs and supports the economy. Any delay or postponement in the rule would delay permanent, critical, and needed air quality and economic benefits.

Sincerely,

Lauren Navarro

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[18] *See* CPUC "Zero-Emissions Vehicles," https://www.cpuc.ca.gov/zev/, and "Summary of CPUC Actions to Support Zero-Emission Vehicle Adoption" at page 6 "In May 2018, the CPUC adopted D.18-05-040, authorizing another $738 million in IOU infrastructure investments pursuant to SB 35024 . The Decision authorized PG&E and SCE to spend $210 million and $343 million, respectively, to install infrastructure to support medium- and heavy-duty electric vehicles such as semi-trucks, transit and school buses, fleet delivery trucks, and port equipment. PG&E is also authorized to spend up to $22.4 million to install infrastructure for 234 DCFC ports that will offer faster public charging options. SDG&E was approved to spend $137 million to offer rebates to residential customers that install charging stations at their homes. In September 2018, the CPUC issued D.18-09-034, authorizing the three smaller IOUs to spend about $7.3 million on TE programs related to infrastructure deployment:
• Bear Valley EV TOU Pilot Rate: install make-ready infrastructure for residential and commercial EV customers to take service on a new TOU rate.
• Bear Valley Destination Make-Ready rebate ($607,500): provide rebates for the make-ready infrastructure for Level 2 charging at public destinations.
• Liberty Utilities DC Fast Charger Project ($4 million): deploy and operate DCFC stations.
• Liberty Utilities Residential Make-Ready Rebate ($1.6 million): offer rebates for residential customers installing Level 2 charging stations.
• Liberty Utilities Small Business Make-Ready Rebate ($300,000): offer rebates for small-business customers installing Level 2 charging stations.
• Liberty Utilities Bus Infrastructure Program ($223,000): install and operate charging equipment for Tahoe Transit District electric buses.
• PacifiCorp Demonstration & Development Grant Program ($170,000): provide grants for nonresidential charging installations.