



Waymo LLC
1600 Amphitheatre Pkwy
Mountain View, CA

September 1, 2021

Liane M. Randolph, Chair
California Air Resources Board
1001 I Street
Sacramento, CA 95814

RE: Advanced Clean Cars II

Dear Chair Randolph:

Waymo's mission is to make it safe and easy for people and things to get where they're going. As Waymo works to deliver the potentially transformative safety benefits of fully autonomous technology, we also see a unique opportunity for shared fleets of autonomously driven vehicles to expand access to zero emission transportation.

Waymo is headquartered in California and we value the opportunity to work alongside the California Air Resources Board (CARB) to improve air quality in our home state. CARB has made significant progress in advancing the manufacturing of zero-emission vehicles (ZEV) and advancing clean transportation under the Advanced Clean Cars (ACC) I program. Waymo's comments express our support for the goals of ACC II and offer additional suggestions for CARB's consideration toward our shared goal of connecting more Californians to the many benefits of zero-emission vehicles.

I. Waymo supports CARB's goal of expanding access and customer adoption of electric vehicle transportation.

We support CARB's efforts to increase Californians' access to EVs as a means to reduce criteria and greenhouse gas emissions (GHG). The transportation sector accounts for almost 50 percent of GHG emissions in California when accounting for fuel production, with light duty vehicles making up 70 percent of the transportation sector's direct emissions.¹ Waymo believes that autonomously driven electric vehicles (EV) and shared mobility can meaningfully contribute to achieving carbon reduction goals and expanding access to the benefits of electric vehicles to more Californians.

We're excited to share that we started providing zero-emission autonomous trips in our all-electric Jaguar I-PACE vehicles in San Francisco in August 2021. We began with an initial group to gain feedback from our riders that allows us to refine our product offering as we advance our service, and

¹ CARB Clean Miles Standard Website (retrieved 8/27/21) - <https://ww2.arb.ca.gov/our-work/programs/clean-miles-standard>

plan to expand our ridership to more San Franciscans over time. We aim to provide San Francisco residents with more clean mobility options while complementing the city’s robust public transportation infrastructure. Waymo’s chargers are powered by 100% renewable energy and we’re now participating in CARB’s Low Carbon Fuel Standard to help meet our collective climate goals. We look forward to continued partnership with CARB to create healthier, equitable, and more sustainable communities.

II. Shared mobility can accelerate ZEV access and generate more holistic benefits.

At the August 11, 2021, ACC II workshop, CARB sought suggestions on methods to increase access to electric vehicles (EVs) to more Californians. As CARB is aware, there is affordability, infrastructure, range, and parking challenges to the conventional EV ownership model for many Californians.

While all EVs reduce tailpipe emissions, not all EVs provide the same air quality, economic, and community benefits. Parking demand for personally-driven vehicles can contribute to higher development costs at transit-oriented developments and compete with housing.² Commercial EV-ride hail vehicles have higher utilization and can deliver four times the zero emission mileage than personally-driven vehicles, thereby serving more California households with fewer cars.³ Commercial EV-ride hail is a frictionless method for harder-to-reach Californians to access an EV when they need vehicle transportation. Higher renewable energy content for commercial EV charging infrastructure is supported through CARB’s Low Carbon Fuel Standard program. Commercial EV-ride hail is not reliant on public or multifamily charging infrastructure. Lastly, there is a lower barrier-to-enter with taking an EV trip as compared to purchasing an EV. Customers will not have to overcome battery warranty, reliability, or range anxiety concerns since that is the responsibility of the commercial transportation service provider.

Community Benefits	Reduces Local Air Pollution	Aligns with Local Parking & Transit-Oriented Development	Zero Emissions Miles Delivered per Vehicle per Year	More accessible to low income, renters, elderly, disadvantaged populations	Renewable Content of Energy	Requires public or multifamily charging infrastructure	Battery Warranty, Reliability & Range Anxiety
Personally-Driven EVs	●	●	~12K	●	California RPS: 2030 - 60% 2040 - 100%	●	●
Commercial EV-ride hail	●	●	Up to 50K	●	100% Renewable under LCFS Book & Claim	●	●

III. Zero Emission Vehicles that are placed into service for shared mobility services should be scored differently and eligible for additional ZEV credits.

CARB has proposed a simplified ZEV credit generation scoring for ACC II whereby each EV and PHEV sold will receive one ZEV credit with additional guidelines on vehicle range, maximum quantities for

² Nina Rizzo. [Measuring the Promise of Transit-Oriented Development: A Proposed Methodology for BART](#) (Transform, 2021)

³ World Economic Forum. [Electric taxis and urban fleets can speed decarbonisation - Here's how](#) (Retrieved 8/27/21) <https://www.weforum.org/agenda/2021/05/how-urban-fleets-in-madrid-paris-and-lisbon-will-speed-decarbonisation/>

transitional ZEVs, and additional environmental justice credits for discounted and used EVs. Waymo “upfits” EVs with the Waymo Driver — a combination of hardware sensors and software — that enables EV shared mobility services. Shared fleets of autonomous EVs represent an opportunity to more rapidly expand ZEV access and scale these benefits more broadly for Californians.

To that end, Waymo recommends that CARB score EVs placed into commercial service for the purpose of providing shared mobility services with a higher number of ZEV credits. The shared mobility ZEV credits should then be split between the ZEV manufacturer and transportation service provider that delivers EV trips with high mileage fleets. This revised model would reflect the greater community benefits that shared mobility services provide compared to personally-driven vehicles.

IV. ZEV trips are more affordable and accessible than purchasing a ZEV.

The CARB presentation on August 11th highlighted the SB 350 Barriers Report, which states that *“In making vehicle purchase decisions, clean vehicles are not yet viewed as affordable, reliable or as convenient as gas counterparts. Residents lack awareness of clean vehicles and have anxieties and fears of newer technologies, resulting in a reluctance to purchase advanced technology clean vehicles.”* The reluctance for Californians to adopt ZEVs can be significantly reduced if the options were simplified into paying for a trip in a ZEV instead of purchasing a vehicle and identifying charging solutions.

The delivery of commercial transportation services can play a significant role in expanding EV access to all Californians. Lower income communities have always had lower rates of automobile ownership. Research has shown that lower income communities have seen a significant improvement in mobility services from ride hailing.⁴ As Waymo seeks to provide transportation services equitably to the communities we serve, it is important to decouple electric vehicles incentives from personally-driven vehicles if the State’s goal is to expand EV access to more Californians.

In Waymo’s view, EV trip incentives represent an opportunity to increase access to EVs for all Californians — including renters, aging populations, low-income households, and disadvantaged communities — and should be prioritized over personally-driven EVs when possible. Specifically, an EV-trip incentive structure would allow more Californians to access the benefits of EVs without the financial burden of a lease or purchase, or the task of identifying or installing charging infrastructure. Nor would it require a community to prepare a grant application or needs assessment for an individual within that community to receive an EV trip incentive. By allowing for EV trip incentives through ACC II, the State can more rapidly increase the overall percentage of zero emission vehicle mileage on California roadways.

A ZEV trip incentive framework can use public data to maximize the impact of the State’s ZEV investments for each trip. It provides the option to geographically weight trip incentives for communities that would benefit most from improved access to zero emission vehicles. For example, the State could provide an increased ZEV incentive for trips that start or end in disadvantaged communities as identified by [CalEnviroScreen](#). The State may also choose to increase ZEV trip incentives in areas with a higher percentage of renters, areas more impacted by air pollution, or provide additional incentives during “Spare-the-Air” days. EV trip incentives could be facilitated through platforms similar to the Low Carbon

⁴Anne Brown. [Ridehail Revolution: Ridehail Travel and Equity in Los Angeles](#). (UCLA, 2018)


Fuel Standard whereby zero emission transportation providers could request incentives on a customer's behalf. Program guidelines, targets, and rules could be easily managed through an API or spreadsheet to reduce administrative costs and ensure maximum benefits for the State's investment in zero emission mobility.

Lastly, EV trip incentives could align with the Clean Miles Standard Regulation and Incentive Program adopted by the CARB in May 2021. We recommend that future EV trip incentives be made available to all driver types, including autonomous driving services, and not exclude certain business models. By aligning EV incentives through a trip and shared fleet framework, CARB can generate the maximum clean air and economic benefits for more Californians.

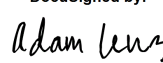
V. Conclusion

Cleaner mobility is a goal that Waymo and CARB share. We provide these comments in the spirit of collaboration to grow clean mobility solutions for more Californians.

Respectfully submitted,

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