



September 3, 2021
California Air Resources Board
Clerk's Office
1001 I Street
Sacramento, California 95814

**RE: Comments in Response to 2022 Scoping Plan Update - Scenario Concepts
Technical Workshop**

Cruise LLC appreciates the opportunity to provide comments to the California Air Resources Board (CARB) regarding the 2022 Scoping Plan Update, specifically the Scenario Concepts Technical Workshop. Cruise is excited to see the Scoping Plan process begin, as the subsequent rulemakings will be critical in California achieving its greenhouse gas (GHG) reduction targets.

Cruise is an all-electric self-driving technology company with a mission to build the world's most advanced autonomous vehicles (AVs) to safely connect people to the places, things and experiences they care about. Our company has developed a fleet of AVs with the purpose of providing ridesharing service to all Californians. As the operator of the only fully-electric AV fleet in the country, we believe there is great promise in business models which provide electric vehicle (EV) access regardless of vehicle ownership. Not only is Cruise committed to an all-electric fleet, but in California our vehicles are powered by one hundred percent renewable energy, purchased via in-state Renewable Energy Credits (RECs) from family farms in California's Central Valley. We believe centralized EV ridesharing fleets can be a sustainable transportation option for Californians who may never own an EV or lack access to charging. Through centralized management and charging strategies, AV EV fleets also allow for fast and efficient electrification of California's transportation stock and support CARB's goals for quickly reducing GHG emissions.

Cruise has a myriad of interests related to the Scoping Plan. Generally we would like to ensure that innovative business models like ours, which hold tremendous potential for reducing GHGs while serving low income communities, are considered as the state plans for the future. Specifically, we are interested in electrification of the transportation sector, the Low Carbon Fuel Standard, and the Clean Miles Standard, among other issues. We are eager to see the AB 32 Scoping Plan completed expediently so subsequent rulemakings and programs can quickly address California's urgent need to reduce emissions.

The Scoping Plan Update Should Recognize Innovative Business Models

Cruise believes that meeting California's ambitious climate goals means being intentional, strategic, collaborative and creative in how we move toward sustainable transportation. We think that ride-hailing companies that are already zero-emission, or diligently working to transition the vehicles in their fleet or on their platforms, should be supported and encouraged to continue their efforts.

Centrally owned, all electric, ridesharing fleets can provide more access to green miles for the public, regardless of vehicle ownership or access to a charger. As CARB evaluates GHG reduction strategies, the benefits of greater public access to green miles from models like EV fleets should be taken into account. Specifically, we encourage CARB to not draw an arbitrary distinction between the owner of EV charging infrastructure and the populace which it serves. For example, despite Cruise chargers not being readily accessible to the general public due to charging coordination and maintenance requirements, Cruise vehicles directly serve the public 100 percent of the time.

For example, in the wake of the COVID-19 pandemic, Cruise launched Cruise for Good, a program to partner with two San Francisco-based non profits to provide meal delivery support to households experiencing hunger.¹ Since April 2020, Cruise has used its AV EV fleet and associated charging infrastructure to deliver over 1.6 million meals to food-insecure families in San Francisco. Through our renewable-powered fleet, Cruise has simultaneously offset over 80 metric tons of CO₂ that would have otherwise been emitted from gas-powered deliveries.

As Cruise For Good clearly demonstrates, private chargers deployed for business models like ours align with numerous California programs designed to expand EV charging infrastructure and increase the share of clean miles traveled. In fact, these chargers may actually serve more members of the public than traditional public chargers, which are only accessible to those who own an EV.

Zero-Emission Vehicles for Ride-Hailing Have Tremendous Potential to Reduce GHGs

Transportation is pivotal to achieving decarbonization in the state. It remains the largest source of GHGs in California, and is responsible for roughly 40 percent of the state's total emissions, emitting roughly 170M metric tons (MMT) of carbon dioxide per year. Under AB 32, California's objective is to reduce the state's total GHG emissions (including transportation) from its current level to an ambitious target of 260 MMT CO₂ per year by 2030 and achieve full carbon neutrality by 2045 as called for by [Executive Order B-55-18](#).

¹ Dan Ammann. [Introducing Cruise For Good](#). Medium. April 21, 2021.

Driving EV adoption within the passenger vehicle segment is critical to achieving these goals. California leads the U.S. in terms of EV adoption, with roughly half of the nation's registered EVs, but EV adoption alone is not the answer. Within the broader landscape of electrification, California also must leverage concurrent modal shifts that present opportunities to amplify impact. As EVs reach market maturity, there are a variety of promising new duty cycles, business models and use cases that have emerged. And while personal EVs will continue to play an important role in achieving our emissions targets, we need to also encourage and foster use cases that can convert the most amount of clean miles possible for the most people possible.

Ridesharing vehicles are an ideal use case for electrification. These vehicles often drive significantly higher miles than personally-owned vehicles and can reach a significant number of passengers. Thus, ridesharing EVs are doubly effective as they offset trips and mileage that might otherwise be taken in gas-powered cars.² Researchers from the University of California at Davis found that electrifying one full-time rideshare vehicle in California has the same emissions reduction impact as three private EVs due to the volume of clean miles traveled.³ Additionally, a study by the Union of Concerned Scientists states that electrified ridesharing service vehicles “generate 53 percent fewer GHG emissions than fossil-fuel vehicles.”⁴

Collective action is a major hurdle for fully renewable-powered ridesharing as it exists today. Even with the relatively few electric TNC vehicles on the road in California (estimated to be only roughly 0.8 percent of TNC VMT in 2018), arranging for all of those drivers to take advantage of fully renewable electricity rates - either at home or only at facilities committed to renewables - would be a logistical morass. In contrast, Cruise's current charging infrastructure is fully-owned and operated, using a centralized charging hub model. This allows for a number of benefits: co-location of vehicle maintenance, higher utilization, optimized charging, and - of most importance to the Scoping Plan - the ability to convert every mile we drive to fully renewable power. A shared AV EV can also serve a much broader segment of the population, and be used more efficiently than personal vehicles. Research from the University of Texas at Austin shows that a shared AV can replace up to 11 conventional, personally-owned vehicles and still serve the needs of those riders' travel patterns, only further amplifying the reach and impact of a fully-renewable, fully-electric ridesharing fleet.⁵

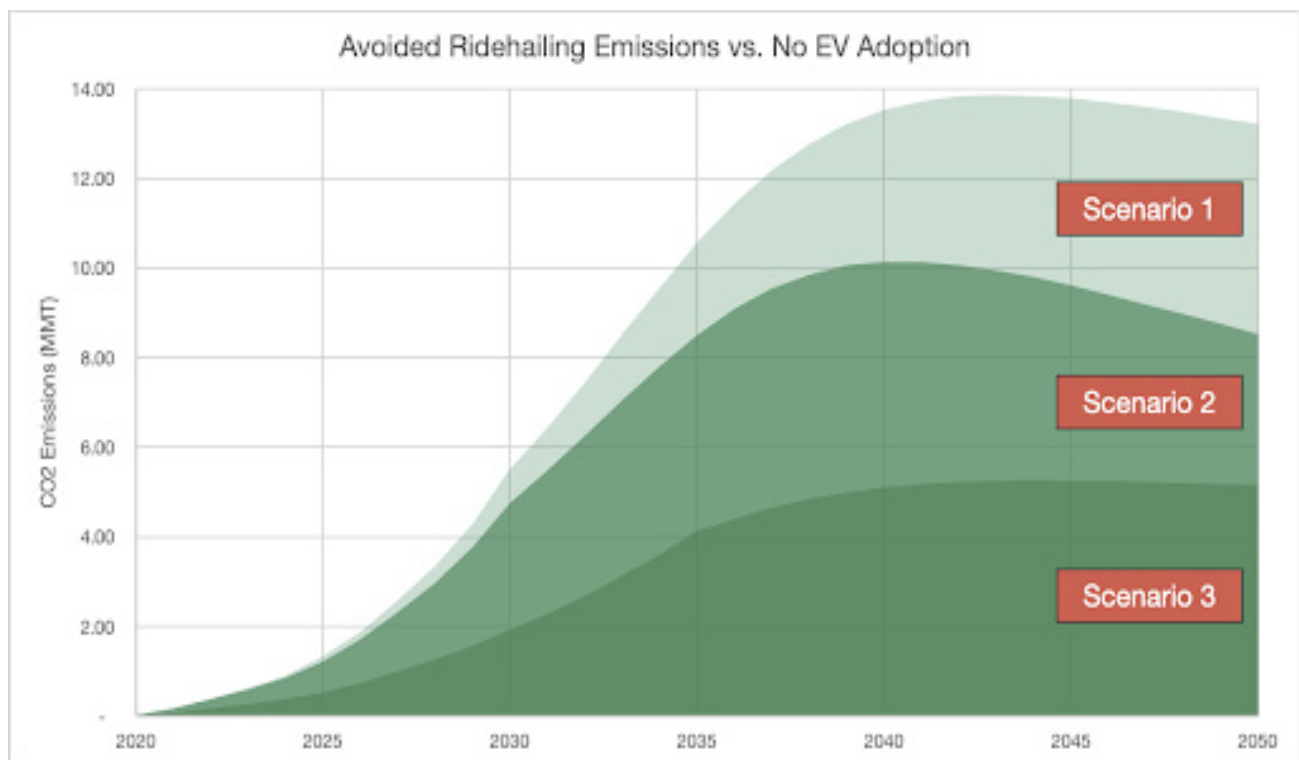
² Rocky Mountain Institute. [Racing to Accelerate EV Adoption: Decarbonizing Transportation with Ridehailing](#). 2021.

³ Alan Jenn. Emissions Benefits of Electric Vehicles in Uber and Lyft Services. National Center for Sustainable Transportation. August 2019. <https://escholarship.org/uc/item/15s1h1kn>.

⁴ CEC Draft 2020 IEPR Update, Volume I: Blue Skies, Clean Transportation, p44.

⁵ Kara Kockelman and Daniel Fagnant. [The Travel And Environmental Implications Of Shared Autonomous Vehicles, Using Agent-based Model Scenarios](#). Transportation Research Part C. 2014.

We believe that Cruise’s centralized EV AV ridesharing fleet is a fundamental differentiator for California’s sustainable transportation goals - particularly given our ability to offer 100 percent renewable-powered transportation to those who may never own an EV or have access to a charger. And via our new [Farm to Fleet](#) initiative, Cruise has now unlocked the ability to scale that value to California’s farmers and the agricultural sector. As calculated by Cruise and its partner BTR Energy, these two outcomes (emissions reduction and renewable energy credit revenue for farms) can scale dramatically. Cruise recently modeled three scenarios as part of launching Farm to Fleet, each offering different visions for the future of California’s transportation. Even under the moderate VMT growth scenario laid out in Caltrans’ Clean Transportation Plan 2050 report, an all-EV ride-hailing fleet charged by renewables could reduce 5.5M metric tons of CO2e per year by 2030 - 22 percent of the total needed to reach California’s targets under AB 32.



Source: Cruise [Farm to Fleet](#) Report, 2021

Furthermore, these electrified ride-hailing fleets present unique value add and benefits for California’s grid balancing, renewable curtailment, and resiliency strategies. For example, data from EVgo and others show a unique synergy between the demand curve for ride-hailing (with high ridership in the AM and PM rush and a midday trough) and renewable generation - peaking in that midday period. Simply by nature of their duty cycle, these fleets

can help capture emissions-free renewable energy through managed charging strategies in ways that would be tangibly more difficult for personal EV ownership.

The above not only shows how the ride-hailing industry is uniquely poised to positively contribute to sector-wide emissions reductions, but also how targeting this segment of travel can lead to other benefits, namely system-wide efficiencies.

Low Carbon Fuel Standard Enhancements

Cruise is actively working to do our part to help reduce emissions from the transportation sector. We were intentional in our decision to operate a fully-electric fleet, and by design, our business model of a centrally-owned and operated EV fleet also allows us to expand our impact via sustainable, fleetwide energy procurement decisions. As stated above, we currently power our fleet of vehicles with 100 percent renewable energy in California - a move that would not have been possible without the right policy via CARB's Low Carbon Fuel Standard (LCFS) and its inclusion of both a credit generation mechanism and a flexible design structure.

Programs like the LCFS have been incredibly effective in reducing the carbon intensity of California's transportation fuel stock, and it does so in a way that is metrics-driven and technology-neutral. Cruise encourages CARB to explore opportunities to enhance the LCFS, in particular efforts by CARB to allow for the stacking of incremental LCFS credit pathways (low-CI pathway and smart charging pathway) if it can be shown that there is an incremental benefit when an entity elects both pathways. Furthermore, Cruise supports the continued emphasis on REC generation from non-traditional fuel sources, such as Renewable Natural Gas and Short Lived-Climate Pollutants like methane captured from dairy digesters, that can deliver carbon-negative energy to the grid. We believe modest changes like this to the LCFS have the potential to further reduce GHG emissions quickly.

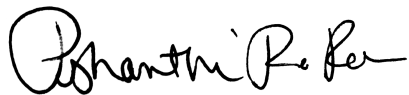
Cruise Input on Scenarios Proposed During Workshop

Cruise is supportive of the cases and scenarios presented that would achieve carbon neutrality by 2035. We support an increase of per capita VMT reductions so that VMTs are reduced to 20 percent below 2020 levels by 2045. While ambitious, we also support both Options A and B related to vehicle fleet electrification. Furthermore, Cruise encourages CARB to focus on even more granular metrics for transportation electrification, such as an emphasis on Passenger Miles Traveled (PMT) and electric VMT. We look forward to working with CARB through this Scoping Plan process to further refine these scenarios and measurements.

Conclusion

Cruise thanks CARB for the opportunity to weigh in on these important policy matters. The proposed regulation will have long-lasting impacts on the success of the state's electrification targets. Capturing the benefits of all available technologies and business models will therefore be critical in achieving our goals for a cleaner, more equitable California.

Sincerely,

A handwritten signature in black ink, appearing to read "Prashanthi Raman". The signature is fluid and cursive, with the first name being more prominent.

Prashanthi Raman
Head of Global Government Affairs
Cruise LLC