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Automated Vehicle Principles for Healthy and Sustainable Communities

Purpose: Summarize key principles for maximizing alignment between California's automated vehicle[1] (AV) policy and goals for climate, air quality, health, environment, land use, quality of life, and equity. It complements other state efforts covering additional issues expected to arise with AV deployment[2].

What's at stake: The deployment of AVs will likely lead to a once-in-a-century transformation of our transportation system and our communities. California has the opportunity to exercise proactive leadership to steer this transformation towards the public benefit. With a clear policy framework to guide deployment, AVs could create a transportation system that gets people to destinations more quickly and provides more and better travel options, decreases greenhouse gas and criteria pollutant emissions, improves safety of all road users, encourages efficient land use, enhances public health, and improves transportation equity and economic opportunity. However, without attention to the broader environmental implications of AV deployment, AVs could increase congestion, commute times, vehicle miles traveled (VMT), and emissions of GHGs and other air pollutants; induce additional sprawl; increase poor health outcomes, and exacerbate social inequities.

Key Principles: The following are guiding principles for deploying AVs in alignment with the public interest and established state environmental and community goals:

- **Shared-use**. Maximize deployment of shared-use vehicles as an alternative to personal car ownership.
- **Pooled**. Maximize ride-sharing by encouraging pooling, prioritizing pooled vehicles' mobility, and providing for shared-vehicle passenger safety and comfort.
- **Low-emissions**. Maximize deployment of AVs as low-emission vehicles in the near term and zero-emission vehicles in the long term, and employ eco-driving strategies.
- **Right-sized.** Promote use of vehicles that are sufficiently sized, but not oversized, for the trip purpose.
- **Part of an efficient multimodal system.** Deploy AVs as part of a multimodal system that transports people and goods to destinations quickly and efficiently and, taken as a whole, that is energy-efficient, space-efficient, environmentally benign, and beneficial to human health. Particularly:
    - *Strengthen high-quality transit service rather than duplicating it.* Deploy AVs to transport people to transit stations rather than duplicating transit routes.

[1] There are many terms for these vehicles (driverless, automated, etc.) and details of definitions are not fully settled. This document addresses changes in travel behavior expected to be brought on by vehicles that transport passengers without requiring the attention of a driver.

[2] Critical issues outside the scope of this document include AV safety and expected changes in the labor market. Safety considerations have been identified and prioritized through the DMV (https://www.dmv.ca.gov/portal/dmv/detail/vr/autonomous/auto) and CPUC (http://cpuc.ca.gov/avcpilotinfo/) AV rulemakings

- *Replace low-quality transit service.* In some cases, pooled AVs can supply faster, lower-cost access to destinations via right-sized vehicles, reducing the public cost of providing subsistence transportation and reducing emissions and energy use.
- *Strengthen active transport.* Ensure AV behavior and AV-supporting infrastructure makes streets safer, and feel safer, for pedestrians, cyclists, and other vulnerable road users.
- *Efficient freight transport and delivery.* Ensure AV use for goods delivery reduces rather than increases overall vehicle travel, energy use, and emissions.

- **Efficient land use**. Facilitate compact infill development rather than accelerating sprawl; complement the deployment of AVs with implementation of robust policy supporting the State Planning Priorities[3].
- **Complete and livable streets**. Prioritize people rather than vehicles, improve real and perceived safety for vulnerable road users, provide an array of transportation mode options, and provide quality public space by taking advantage of shared AVs' reduced need for parking and right-of-way space.
- **Transportation Equity.** Improve affordable access to destinations and goods through AV deployment, particularly among low-income and disadvantaged communities and individuals with physical impairments. Approach AV vehicle travel, refueling, and AV storage in a manner that improves health, safety, environmental, and livability outcomes in those communities. Address the special transportation needs of rural residents and communities in a manner that improves access to destinations and goods without inducing sprawl.

These principles and strategies have greater potential working in synergy. Applying them broadly to policy affecting AV deployment would benefit not only the environment and human health, but also traffic congestion, the economy, equity, access to opportunity, and access to destinations generally.

For background, please see Keeping Vehicle Use and Greenhouse Gas Emissions in Check in a Driverless Vehicle World at https://bit.ly/2LOasXY.

California Multi-Agency Workgroup on AV Deployment for Healthy and Sustainable Communities

This document was created by the California Multi-agency Workgroup on AVs (automated vehicles), comprised of staff representatives from CalEPA, CalSTA, Caltrans, CARB, CDPH, CEC, DGS, DMV, Go-Biz, OPR, and SGC. Additionally, CPUC staff participates in the workgroup. This document does not yet represent an official position or decision of the participating agencies or commissions.

Mission of the workgroup: Recognizing that AVs have tremendous potential to improve transportation and our communities, the multi-agency working group works to ensure that connected and AV transformation accelerates in California with clear environmental benefits and attention to equity issues. This includes consideration of the effects of AVs on GHG and criteria pollutant emissions, land use patterns, VMT, health, economic development, and equitable access.

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[3] Gov. Code, § 65041.1.