



**ClimatePlan**



October 22, 2020

California Department of Transportation  
1120 N Street  
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Via email: [CTP@dot.ca.gov](mailto:CTP@dot.ca.gov)

**RE: California Transportation Plan 2050 (CTP)**

INTRODUCTION

The Climate Center is a California nonprofit 501(c)(3) organization founded in 2001 with a mission to achieve rapid greenhouse gas (GHG) reductions at scale, starting in California.

The Climate Center acknowledges that the CTP is a significant accomplishment, with comprehensive goals and strategies that go beyond old plans focused mostly on building and maintaining more roads. We applaud Caltrans for addressing racial injustice, striving to reduce GHG emissions, and closing the wealth gap, as well as recognizing that efficient land-use policies for sustainable development are essential to meet State goals.

Shared responsibility and equitable, inclusive solutions are fundamental values embodied in our efforts to realize GHG reductions at the speed and scale required by science. California's urgent climate policy goals will only be achieved if communities of color, that today are disproportionately harmed, become the primary beneficiaries of change. There cannot be climate justice without social and racial justice.

Unprecedented wildfires raging across the West, record-breaking extreme weather elsewhere, and the rampant spread of COVID-19 are stark reminders that science is ignored at our peril and that proactive action can save lives. The latest climate science dictates bold and swift climate solutions to avoid runaway climate chaos.

We must accelerate existing state policy timelines now to phase out fossil fuels and build resilient communities while also inspiring global climate action. The transportation sector, as California's largest single source of GHG emissions, is clearly an important part of this effort. Our [Climate-Safe California](#) campaign aims to reach net-negative emissions by 2030 while securing climate justice for lower-income communities and a just transition for the fossil fuel-dependent workforce.

THE CLIMATE CENTER'S GOALS AND SUMMARY OF RECOMMENDATIONS

Our Climate Safe California campaign calls for the state to achieve the following goals to have hope of stopping catastrophic climate change:

- GHG emissions 80% below 1990 levels by 2030
- Net-negative emissions by 2030 made possible by carbon sequestration

To achieve these GHG goals and support a just transition and racial equality, we recommend the following improvements to the CTP:

1. Achieve and exceed Executive Order N-79-20 for 100% new car and truck sales to be zero-emissions from 2035 to 2030;
2. Increase the goal for EV chargers everywhere starting in disadvantaged communities;
3. Accelerate adoption of vehicle to grid (V2G) technologies to advance both energy grid resilience and EV adoption via a synergistic value proposition;
4. Begin immediately to support infrastructure investment and policies for green hydrogen;
5. Increase efficient land use policy and affordable housing development near public transit and jobs through investments to reduce vehicle miles traveled (VMT) by Connected Autonomous Vehicles (CAV) and amplify reduction in VMT for all vehicles;
6. Institute a Road Use Charge to replace gasoline taxes to fund transportation system improvements.

## RECOMMENDATIONS

### **1) Achieve and exceed Executive Order N-79-20 for 100% new car and truck sales to be zero-emissions from 2035 to 2030.**

The CTP, which was drafted before the Governor's executive order for zero-emission vehicles, states on page 99: "Figure 37 shows that with only a small increase in ZEV adoption beyond what is estimated in the Climate Change Scoping Plan, California would reach the 2050 target of 32 MMCO<sub>2e</sub>." The underlying silver lining is that the data is four years old and estimates for 2050 ZEV fleet mix were sourced from the Air Resources Board's (ARB's) 2016 Mobile Source Strategy.

While these reductions may have seemed ambitious at the time, today the goals are clearly inadequate to avoid catastrophic consequences. With recent unprecedented wildfires and severe weather, growing public awareness and political will demand a rapid response. In the last six months, Wall Street has shown signs of its disaffection for fossil fuels. Banks are refusing to finance Arctic oil extraction ventures, oil companies are writing off oil assets and shifting their investments to clean fuels and storage, and investors are moving to clean energy investments, including renewable hydrogen. We are experiencing a rapid sea change movement toward clean energy. The CTP should lead and help accelerate this profound transformation. To do anything less would be a missed opportunity with tragic consequences. As stated by the CTP (page 67), "The CTP 2050 must take bold action to ensure that we go beyond existing plans."

### **2) Increase the goal for EV chargers everywhere starting in disadvantaged communities (page 67).**

The CTP points out that EO B-48-18 sets a target of 200 hydrogen fueling stations and 250,000 EV chargers to support 1.5 million ZEVs by 2025. With new EO N-79-20 EV adoption goals, dramatic increases in EV charging infrastructure will be essential. Given the CTP's commitment to addressing racial injustice and closing the wealth gap, State efforts should focus on EV charging/refueling infrastructure for disadvantaged communities and low-income multi-family housing. Simultaneously, enhanced market conditions will be able to respond to the requirements of affluent communities via technology commercialization and economies of scale.

**3) Broaden CTP 2050 objectives to incorporate enabling technologies such as vehicle-to-grid (V2G) interconnectivity that can advance both electric grid resilience and EV adoption via a synergistic value proposition.**

Although the CTP often references challenges and opportunities facing California and the impact of transportation on other societal sectors, there is little focus on how different sectors can work together to pool resources in solving a range of issues. For example, it is only on page 107 that implementation of the Vehicle-Grid Integration (VGI) Roadmap<sup>1</sup> is mentioned as a possible action item, when the prioritization and integration of both efforts can accelerate mutual adoption throughout the state. A commercially viable technology, V2G enables zero-emission vehicles (ZEVs) to both charge from an energy source and discharge power into a residence, business or the energy grid. Current conventional wisdom dictates that transitioning to a 100% renewable energy economy will require massive reserves of energy storage capacity to balance affordable but intermittent renewable generation. What if California could tap into a burgeoning EV resource, increasing energy storage capacity by orders of magnitude while also radically reducing vehicle emissions?

The synergies made possible by implementing V2G technologies are manifold<sup>2</sup>:

- a. Enhanced Electric Grid Resilience.** V2G offers a compelling value proposition to EV ownership by allowing the vehicle to also serve as both a load and power center, thereby enabling residential and business properties to maximize solar generation while also maintaining critical operations during more frequent power outages. If properly implemented, widespread adoption of V2G-enabled EVs across the production spectrum would provide substantial insulation against power outages of various durations.
- b. Promotion of Mobility as a Service.** As V2G product offerings establish an energy umbilical cord between EVs and property sites, real estate developers will seek to incorporate EVs as a property feature, particularly in multi-family developments where residents have the option to reserve shared vehicles as part of a multi-modal transportation system.
- c. Correcting Social and Environmental Injustices.** As noted in the CTP, “Pollution attributed to freight-related sources are linked to numerous health and environmental problems, which are elevated in low-income communities and communities of color.”<sup>3</sup> Clearly, a tragic consequence of systemic environmental injustice is the historic co-location of low-income communities adjacent to commercial-industrial zones with high particulate pollution levels. By reducing particulate emissions and enhancing local energy resiliency, the V2G value proposition can potentially convert a disadvantaged community’s biggest liability into its greatest asset, with local economic and tax revenues flowing from V2G benefits to transition to a cleaner environment with local development leading to creation of good jobs and a sustainable local economy.

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<sup>1</sup> California Public Utilities Commission DRIVE OIR Rulemaking (R. 18-12-006), [“Final Report of the Joint Agencies Vehicle-Grid Integration Working Group,”](#) June 30, 2020 (the “VGI Report”).

<sup>2</sup> Robert Perry, [“V2G Synergies can Help California Deliver on Its Promises,”](#) October 9, 2020.

<sup>3</sup> CTP 2050, p. 56

**d. Jumpstarting California’s Economic Recovery.** Economically, California has moved from a surplus to a deficit increasing at a geometric rate, and each dollar spent must resolve as many problems as possible. As an enabling technology, V2G can serve to pool resources that would otherwise be siloed, reducing overall economic cost. For example, the current strategy to ensure energy resilience is to “invest” in fleets of mobile diesel generators on a standby basis until needed during power outages. The cost of these seldom-used “assets” is significant and serves no purpose other than during outages, whereas development of V2G infrastructure allows for dual-purposing transportation resources to provide valuable services during both normal and emergency conditions. By taking the lead in this emerging technology, California’s economy can be transformed through development of an agile, resilient zero-carbon energy system.<sup>4</sup>

**4) Prioritize development of renewables-based hydrogen production, on both utility and distributed scales, to fuel commercial transit and medium/heavy-duty EVs pursuant to mandates established by the ARB’s Advanced Clean Trucks (ACT) Regulation<sup>5</sup> and Gov. Newsom’s Executive Order N-79-20<sup>6</sup>.**

Renewables-based (aka “green”) hydrogen production, as a dispatchable zero-carbon fuel and seasonal energy storage resource, facilitates key energy and transportation objectives of increasing system resiliency while opening markets to supply a nascent refueling infrastructure critical for medium to heavy-duty EV adoption. The addition of electrolysis capacity to microgrid and distributed energy resource (DER) configurations incentivizes maximum on-site generation, while also significantly increasing energy resilience under a wide range of scenarios, with planned usage of excess energy as both an on-site/mobile energy resource and a transportation fuel. During normal “blue sky” operating conditions, excess energy can be exported, stored or electrolyzed as a dispatchable resource. Conversely, on low solar generation (rainy, cloudy, smoky) days, reduced on-site generation of an “over-sized” solar array can still meet site load requirements. Last but not least, during extended power outages, a property can suspend electrolysis activity and either export excess energy via the distribution grid and/or dispatch V2G-enabled vehicles to supply critical loads at other impacted locations. In all cases, a fundamental design prerequisite is to have planned uses for all energy generated, and an electrolysis DER component effectively prevents curtailment under most circumstances.

**5) Encourage efficient land use policy and affordable housing near public transit and jobs through investments to check VMT increases by Connected Autonomous Vehicles (CAV) and amplify reduction in VMT for all vehicles.**

The CTP raises issues with CAVs on 11 pages, mostly for the uncertainties they pose and the threat to increase VMT (Page 63). According to different studies, anywhere from 20 percent to 95 percent of miles traveled on U.S. roads could be in automated vehicles by 2030. According to one report, fully automated taxi fleets could become a reality between 2023 and 2030.

The Climate Center strongly supports the following position (Page 14): “Transportation improvements that support production and preservation of affordable housing in transit-supportive areas, paired with anti-displacement policies, can help California address these pressing issues.” We must also engage in

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<sup>4</sup> CPUC Proceeding No. R19-09-009, “[Vote Solar and The Climate Center Opening Comments](#) on the Assigned Commission and Administrative Law Judge’s Ruling on Policy Questions and Interim Approach for Minimizing Emissions from Generation during Transmission Outages,” September 25, 2020

<sup>5</sup> California Air Resources Board, “[Advanced Clean Trucks](#),” June 25, 2020.

<sup>6</sup> [Executive Order N-79-20](#), September 23, 2020.

more proactive measures to improve the walkability of existing and planned communities to reduce VMT and increase our quality of life.

VMT must be minimized given that the current carbon footprint of asphalt pavement is already significant and current trends push demand for road widening. A Yale study released in September 2020 indicates asphalt continues to off-gas GHG long after it is installed. In measurements taken in Los Angeles, on a hot day the potential formation of secondary organic aerosols, a major contributor of PM 2.5, is comparable to motor vehicle emissions. Asphalt also contributes to the urban heat island effect.<sup>7</sup>

We fully support the CTP's calls for more efficient land use (Page 32): "Integrating transportation and land use planning to reduce the jobs-housing imbalance, reduce super commuting, and ensure that Californians have access to affordable housing and mobility options can help alleviate economic hardships associated with the housing shortage." And (Page 64): "Denser land use offers an opportunity to accommodate travel demand with transit, shared mobility, biking, walking, and other low-carbon modes."

The Climate Center strongly supports these changes and calls for even greater progress. While land use planning is highly guarded by local governments, the CTP can encourage efficient land use (Page 111) by "supporting infrastructure investments such as complete streets, transit and active transportation infrastructure, and last-mile connections that support compact, mixed-use developments." Alternatively, significant disincentives that impede progress must be identified and eliminated. The Climate Center also strongly supports the CTP's commitment to ensure that tenant protections, anti-displacement, and housing affordability measures are in place to protect low-income residents.

## **6) Implement a Road Use Charge (RUC) or Vehicle Mile Traveled (VMT) fee.**

As revenue from gasoline and diesel taxes dwindle, new ways to generate revenue are essential and alternative revenue models must be developed and implemented by the time ZEVs capture a significant share of the market and are rapidly expanding. However, such alternative revenue streams must not contribute to systemic poverty and racism, a CTP goal highlighted on page 7 and reiterated throughout. A flat rate RUC/VMT tax or fee will discriminate against workers who cannot afford housing near where they work. The same is true if the fee is based on kilowatt-hours of power metered for vehicle charging.

Recommendation: A statewide, global positioning system (GPS)-based, progressive RUC/VMT fee could be calibrated to income level as reported in most recent tax returns and an entry on state income tax reforms reporting vehicle use for work-related travel. This would be a fee that protects privacy, includes a congestion-pricing algorithm, has a progressive (means-testing) pricing structure, and takes into account GHG emissions-per-mile. GHG emissions-per mile reporting would retain the per-mile price incentive to drive energy-efficient cars. A GPS-based fee was shown to be feasible in the [SB 1077](#) (Desaulnier, 2014)<sup>8</sup> [road use charge pilot study](#).<sup>9</sup>

## **CONCLUSION**

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<sup>7</sup> <https://www.epa.gov/heatislands/using-cool-pavements-reduce-heat-islands>

<sup>8</sup> [https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill\\_id=201320140SB1077](https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201320140SB1077)

<sup>9</sup> <https://dot.ca.gov/-/media/dot-media/programs/road-charge/documents/rcpp-final-report-a11y.pdf>

Californians, along with the rest of humanity, are in a climate crisis and a great deal of credit has to be given to those who crafted the California Transportation Plan 2050 for delivering comprehensive strategies that will move California forward. At the same time, it is imperative that the timeline for achieving its goals be dramatically accelerated. 2030 gives us hope; 2050 is too late.

Thank you for your consideration,

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