RE: **Transportation emissions reductions thru e-bikes and safe and connected walking & biking infrastructure**
Comments on the Public Workshop Series to Commence Development of the 2022 Scoping Plan Update to Achieve Carbon Neutrality by 2045.
Focus Area Discussion: Transportation Sector (June 10, 2021 9:30 a.m.)
DT: June 30, 2021
FR: Tom Lent, E-bike Project Coordinator, Walk Bike Berkeley

Thank you for the excellent presentations. In the Workshop webinars and the ITS UC Davis Transportation study Driving California's Transportation Emissions to Zero to which it referred, I appreciate the acknowledgement that while it is critical to continue to push adoptions of ZEVs as rapidly as possible, the shift to electric cars and trucks will not get us to the emission goals required to avert the predicted climate catastrophes. It is clear from the analysis that the time it will take to turn over the fleet even under the most optimistic circumstances will result in our not getting anywhere near sufficient reductions in emissions by 2045.

I also heard strong acknowledgement that due to this problem, we also need to seek dramatic vehicle miles travelled (VMT) reductions soon in parallel with our EV work. Two policy options can help bridge this gap and are currently under represented or entirely missing from current Scoping planning as presented:
1) E-bikes
2) Safe and connected walking & biking infrastructure
Simply put, California can not drive its transportation emissions to zero in a time without e-bikes and better walk & bike infrastructure. We strongly encourage the inclusion of these in the Scoping Plan.

1) E-bikes are underappreciated as a Zero Emission Vehicle (ZEV), VMT reducer and overall climate cooling tool and should be an important part of California's policy toolkit.

E-bikes can be a game changer for helping people take more trips without their cars. They have a number of attributes that make them substantially different from either electric cars or pedal only bicycles as a policy tool:

- **E-bikes overcome many of the challenges people have with bicycles** - E-bikes are great at climbing hills, beating headwinds, hauling kids & loads and tackling long commutes all with no sweat (unless you want it). Plus e-bike riders feel safer navigating traffic with the extra acceleration power.
- **E-bikes are cheaper and faster to deploy than electric cars** - E-bikes cost about 10% as much as an electric car. With reduced capital costs we do not have to wait until an individual owner - or fleet operator - is ready to fully replace a gas powered vehicle to put an e-bike in service and start reducing gas powered trip miles.

- **No expensive charging infrastructure required**. - E-bikes charge in 2-6 hours with a small handheld portable unit from a regular household outlet. No panel upgrades. No permitting. No charger installation.
- **Insignificant demand on the grid** - E-bike chargers only pull 150-400 watts from a 120 volt circuit and provide 10-20 miles of range per hour of charging. Getting this rate of recovery for charging an electric car requires a Level 2 charger pulling 3-6 kW from a 240 volt circuit.
- **High energy efficiency plus major climate & material savings -** E-bikes get 1000 to 4000 MPGe and are 20 times more efficient than electric cars - meaning they can go twenty times farther than an electric car for the same charging electricity carbon emissions. The manufacture of an e-bike takes at least an order of magnitude less embodied energy and carbon. An e-bike will go at least 30 times farther than an electric car per pound of battery - stretching those limited lithium supplies farther.
- **Same benefits as regular bikes** - E-bikes, like all bikes. produce virtually none of the particulate emissions that are generated by car tires and brakes. They reduce congestion and road damage. They vastly reduce pedestrian injury & deaths. Up to 10 bikes or 2-4 cargo bikes can park in the space taken by one car.
- **Expand the trips for which cycling is applicable** - E-bikes provide a pathway to greater reductions in VMT by making it practical to cycle for longer trips, steeper hills, larger loads (including kids). hotter environments, and more challenging traffic. An E-bike is not a replacement for safer bicycle and pedestrian infrastructure but can help us get VMT reductions while we are undertaking the longer project of adding bike lanes and other safety changes to our road infrastructure.
- **Low cost carbon savings** - Studies have shown that e-bike incentives are cost effective. E-bike users use their bikes for day to day commuting and errands, not just recreation. Subsidy dollars go farther. generating equal or higher carbon savings with incentive programs for e-bikes than for electric cars.
- **Increase equity and impact** - The same dollars can get many more people on e-bikes than in electric vehicles and the relatively low cost of e-bikes opens up opportunities to take electric vehicle incentive programs that have mostly catered to wealthier people into low income communities.
- **Good for elderly and handicapped people** - Electric trikes are proving to be liberating to people who are getting less steady on their feet with age or who have lost use of a leg.

References for many of the statistics I mention here are cited at *"E-Bike Programs: Why they are good policy - plus options for design"* on the ClimateAction Center website at https://www.climateaction.center/e-bike-policy-options

E-bikes can play an important role far beyond bike share

Despite all of the aforementioned advantages of e-bikes, to date there has been little policy attention given to e-bikes other than as an add-on to bike share programs. E-bikes, however, may have a far larger impact on our transportation emissions challenges as personal vehicles outside of the short term bike share model.

Just as with cars, e-bikes can be purchased outright, leased, or borrowed through long term rentals. In these modes, with the e-bike based at the bike rider's home, the rider can take advantage of more of the advantages of e-bikes to extend range, topography and hauling capacity, that may be unavailable in the time and geographic constraints of bike share programs. This allows riders to integrate the bikes more fully into their lives, as they do cars, from home and in a wider range of situations and environments than bike shares that are limited to relatively dense urban settings can ever serve. This means more mode shift - more gas car VMT reduction

There are a broad range of program options for encouraging e-bike use

E-bikes are more expensive than regular bikes. Furthermore, most people are not familiar with how they work and how they may open options for them to use a bicycle in ways they currently assume they cannot. They also don't know that e-bikes are fun. :-) To capture the potential car VMT reductions that e-bikes offer and at the speed required, will require incentive programs. This is particularly important to ensure that e-bikes are available and relevant to disadvantaged low income communities.

Government agencies, utilities, nonprofits and corporations are all demonstrating the efficacy of a wide range of policy approaches, including purchase incentives (such as tax credits, vouchers and rebates), lending libraries, leasing and long term rentals, subscriptions, low and no interest financing, and education. Different sectors may respond better to a different range of approaches.
The Scoping Plan should include a set of aggressive programs using a flexible range of program types to educate California citizens about e-bikes, incentivize their use by all and provide extra assistance to disadvantaged low income households to participate.

More information on the different program types mentioned here is provided at *"E-Bike Programs: Why they are good policy - plus options for design"* on the ClimateAction Center website at https://www.climateaction.center/e-bike-policy-options . A listing of programs that have been implemented around the world is provided at *"E-Bike Incentive Programs"* on the ClimateAction Center website at https://www.climateaction.center/e-bike-programs

2) Safe and connected pedestrian and cycling infrastructure is key to reducing car VMT

To fully realize the VMT reductions available from e-bikes we need to provide riders access to the roads that are safe and connect to where they need to go, just as is also true for regular pedal bicycles and pedestrians. Without this walking and cycling will continue to be seriously discouraged by danger and lack of connection options.

The Scoping Plan should include aggressive programs for

- Requiring application of the Complete Streets program on state and local thoroughfares
- Supporting communities financially and with planning tools to do complete integrated planning of connected bicycling and walking networks within their communities
- Working regionally to develop connecting bike highways for longer distances between communities.