

This document has been prepared as part of the implementation project of Legal Pathways to Deep Decarbonization (Michael B. Gerrard and John C. Dernbach, eds. Environmental Law Institute [2019]) (LPDD). For background information on the project, see <https://lpdd.org>

## **Memorandum to Accompany Model E Bike Rebate Law**

A book published by the Environmental Law Institute, entitled *Legal Pathways to Deep Decarbonization in the United States* (Michael Gerrard & John Dernbach, Eds., ELI 2019) (“LPDD”)<sup>1</sup>, has identified more than 1000 legal strategies that can be taken to achieve dramatic greenhouse gas emission reductions in the United States. Many of those pathways are focused on shifting transportation fuel sources in the U.S. away from fossil fuels. “The goal is to shift 80%-95% of the miles driven from gasoline to lower carbon energy sources like electricity and hydrogen.”<sup>2</sup>

The importance of achieving this goal is readily apparent: in the United States the transportation sector accounts for 28% of the total energy consumed, 72% of petroleum usage and about a third of GHG emissions.<sup>3</sup> Cars and trucks use about half the total energy consumed by the transportation sector, which also includes trains, subways, planes, ships and other watercraft.

Substantial progress has been made over the past decade towards increasing public acceptance and use of alternative fuel vehicles (“AFVs”), including plug-in hybrid electric vehicles, battery powered electric vehicles and vehicles designed to use hydrogen as fuel. One important strategy employed by federal and state authorities to increase AFV utilization has been to make financial incentives, such as tax credits and rebates, available for the purchase or lease of AFVs.

However, scant attention has been paid to measures that could promote the use of another type of AFV – electric bicycles or “E Bikes”-- which have the potential to contribute significantly to the reduction of carbon emissions from the transportation sector. A recent study performed by the Centre for Research into Energy Demand Solutions at the University of Leeds in the U.K. found that the use of E Bikes in lieu of car travel is capable of reducing vehicle-related carbon emissions substantially. In fact, the researchers found that replacing 20 percent of car miles traveled with E-Bike travel could result in a reduction of 4-8 million tons of carbon in the U.K. annually.<sup>4</sup>

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<sup>1</sup> Michael Gerrard and John Dernbach, *Legal Pathways to Deep Decarbonization in the United States* (“LPDD”)(Environmental Law Institute, 2019).

<sup>2</sup> LPDD, Ch. 14, at 353; *see also*, Chris Gearhart, *Implications of Sustainability for United States Light-Duty Transportation Sector*, 3 MRS Energy & Sustainability 1, 7, note 6 (2016)

<sup>3</sup> U.S. Energy Information Agency: Annual Energy Review: 2011 (2012), available at: <http://www.eia.gov/totalenergy/data/annual/>; *see also*, <http://www.eia.gov/todayinenergy/detail.php?id=29612>.

<sup>4</sup> Ian Philips, Jillian Anable and Tim Chatterton, *E Bike Carbon Savings – How Much and Where?*, Centre for Research into Energy Demand Solutions, available at <https://www.creds.ac.uk/wp-content/uploads/CREDS-e-bikes-briefing-May2020.pdf>

Closer to home, a study prepared by researchers at the College of Engineering at Portland State University found, in a study keyed to Portland, Oregon, that a 15 percent increase in person miles traveled by E Bike instead of cars could reduce carbon emissions from passenger transportation by about 12 percent – a reduction of about 1,000 metric tons of CO<sub>2</sub> per day.<sup>5</sup>

Since E Bikes are orders of magnitude less expensive than other types of AFVs, government subsidies aimed at increasing E Bike mode share could achieve such reductions at a relatively modest cost. Thus, subsidies targeting E Bikes could be a notably more efficient way to reduce carbon emissions from the transportation sector. Moreover, such subsidies would likely be more useful to economically disadvantaged members of the public than those aimed at other, more expensive types of AFVs, while also providing increased health benefits as compared to other forms of AFVs.

The model law accompanying this memorandum would establish a rebate program for the purchase of new or used E Bikes from participating dealers. Under the program, purchasers of E Bikes would receive a rebate from the State in an amount set by the legislature. As drafted, the bill would provide a different and more generous “enhanced rebate” for “Qualified Residents of the Commonwealth,” defined as those residents whose household income is less than 300 percent of the federal poverty guidelines.

The program would be administered by the Department of Transportation (or other appropriate agency designated by the legislature). Among other duties, the Department would be directed to establish, by a specified date, an alternative incentive system for Qualified Residents of the Commonwealth, whereby a voucher could be presented at the time of purchase to reduce the cost of an E Bike, with the dealer being reimbursed by the Commonwealth in the amount of the voucher. This voucher structure would make the incentive program more accessible to low income households that may not have the funds upfront to purchase an electric bicycle, as would be required with the rebate incentive under the program. Incentive payments would be available for dealers participating in the voucher program. The Department also would be required to create a website to provide the public and E Bike dealers with information about the E Bike incentive program.

A nonreverting fund to be known as the “Electric Bicycle Rebate Program Fund” would be established in the Commonwealth Treasury to support the program, with percentage amounts

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<sup>5</sup> Michael McQueen, John MacArthur and Christopher Cherry, *The E Bike Potential: Estimating Regional E-Bike Impacts on Greenhouse Gas Emissions*, Transport Research Part D: Transport and Environment, Volume 87, October 2020, 102482, available at <https://www.sciencedirect.com/science/article/abs/pii/S1361920920306696?via%3Dihub>

earmarked for the payment of rebates, enhanced rebates/enhanced rebate vouchers and dealer voucher incentive payments.