E-Bike Incentives to Increase Bike Mode Share

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There is an untapped potential for bicyclists in the people who self-identify as "Interested but Concerned," but hit barriers to jumping on a bike. Maybe they've got knee trouble, or they're a parent toting children and groceries, or maybe they got pushed 15 miles out of the city center and don't want to arrive to work dripping with sweat.

Enter lane right: the e-bike. Many U.S. cities have climate crisis goals for reducing automotive vehicles miles traveled (VMT) in order to reduce tailpipe emissions, so they make neighborhood greenways and car-free bridges hoping the choked arterials will be left behind. But that mass migration isn't happening. How do we reach the untapped poten tial for new bicyclists? Researchers found that wider adoption of e-bikes might be the answer.

WHY INCREASE BICYCLE MODE SHARE?

Related to ongoing studies supported by the National Science Foundation, People For Bikes and the Bicycle Product Suppliers Association, the authors used data from their earlier national survey of e-bike owners.

Following the lead of a UC Davis global analysis in 2014, MacArthur and Cherry found that car person miles travelled and total transportation emissions in Portland could be significantly reduced as e-bike mode share increases. Findings from the white paper are consistent with the global high shift cycling scenario. Given a 15% e-bike mode share in Portland, Oregon — the city's CO2 emissions would be reduced by over 900 metric tons per day. The researchers conclude that the strategy of increasing e-bike mode share within a given region can be used confidently as a tool to help meet that region's carbon emission reduction goals. In Estimating the Effect of E-bikes On Person Miles Travelled and Greenhouse Gas Emissions, the researchers provide tools and recommendations for your city to determine the most accurate performance measures for mode shift goals. So the "why" is clear, but this poses the question—*how* do we get people on e-bikes?

FOUR TYPES OF E-BIKE INCENTIVE PROGRAMS

A key finding from a previous study was that the high cost of e-bikes was a barrier to entry. The researchers explored techniques to develop and structure e-bike incentive programs to reduce that barrier and identified four main program structures:

- **Partial Purchase Subsidies**—The most common program, participants receive a purchase rebate funded by the program organizer.
- **Vendor-Funded Discounts**—Instead of a government funded flat rate rebate, some programs offer a discount that is unique to each specific model at the point of purchase and is funded exclusively by preferred retailers.
- **Employer-Sponsored Programs**—Employers can partner with an e-bike retailer to provide e-bikes for their employees to purchase or borrow.
- **Government-Sponsored Loans**—Governments can incentivize residents to buy e-bikes by offering interest-free loans.

Naturally, there are also hybrid versions such as the UK's unique "Cycle to Work" program, which enjoys both government backing and employer participation.

After an international inventory of existing programs, the researchers found that the most popular were partial

purchase subsidies. For example, Austin Energy in Austin, TX has offered incentives for e-ride devices since 2007, including e-bikes, scooters, mopeds and motorcycles. They offer a flat rate based on the price of the vehicle. The program has seen relatively high levels of participation, averaging about 100 rebates per year since the program began, with almost all of the awarded rebates having been for e-bikes.

DO YOUR HOMEWORK: CHOOSE THE RIGHT INCENTIVE PROGRAM FOR YOUR REGION

Incentive programs are not a one-size-fits-all, and local surveying is the ideal first step to determining which program will be most effective for your region. For example, a case study in Hanoi, Vietnam discovered that a change in sales tax had a stronger effect on vehicle choice than an equivalent change in purchase price. Further investigation would be necessary to measure the magnitude of an American aversion to sales tax to determine if this is a viable strategy for the U.S. How much are people willing to pay? It depends. Surveys can reveal the "target price" of an e-bike for a given region. An incentive could be developed which lowers residents' cost to an optimized value determined by a localized study.

Finally, the team identified an important commonality in implementing the e-bike incentive programs. In all program types, they found that experience-based education was an important tool to increase participation. Researchers asked what makes a successful e-bike incentive program. One program leader said,

> "When people hop on e-bikes, that's when everything changes."

Another program leader referred to the experience of riding an e-bike as "joyful." It seems that just getting people on the e-bike in the first place is an effective hook.

One format of such an experience-based campaign is Local Motion, an e-bike lending library in Vermont. This program lets you borrow an e-bike for one week. It saw 106 e-bike loans in a 9-month period, with a 6 to 12-month post-loan purchase rate of 17%. One participant noted,

> "I definitely wouldn't have gotten the cargo e-bike if I hadn't borrowed Local Motion's first. Now I ride to commute every day with my sons in tow."

OVERVIEW OF CASE STUDIES

This chart provides an overview of program types, funders and budgets for the U.S. case studies. More comprensive information, including specifics about the non-U.S. case studies, is available in the white paper.

Location	Funder	Type	Total earmark	Time Period
Burlington, VT	Municipally owned Utilities	Partial purchase subsidy flat rate	$52,000	May 2018-
Roseville, CA	Municipal Government	Partial purchase subsidy	$3,000	2018
California	State Government	Partial purchase subsidy with cap	$10 million	Proposed
San Gabriel County, CA	Municipal Govt / Highway Tolls	Partial purchase subsidy flat rate	$70,000	2017
Boulder County, CO	Select private businesses	Public/private agree. - discounts	ND	2013-2018
Austin, TX	Municipal Utilities Company	Partial purchase subsidy flat rate	ND	2007-
Utah	Select private businesses	com./prov agree. -discounts	ND	2018

ABOUT THE AUTHORS

The research team consisted of John MacArthur and Michael McQueen, Portland State University; and Christopher Cherry, University of Tennessee, Knoxville.

ABOUT THE FUNDERS

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THE FULL REPORT and ONLINE RESOURCES

For more details about the study, download the two white papers at: https://nitc.trec.pdx.edu/research/project/1332

- Estimating the Effect of E-bikes On Person Miles Travelled and Greenhouse Gas Emissions
- How E-Bike Incentive Programs are Used to Expand the Market

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