



Webinar: How Advocates Can Accelerate E-Bike Adoption Using RMI's Free E-Bike Calculator

Audience Q&A

Below, we provide answers to several questions during RMI's [webinar](#) on February 13th, 2025. The responses include answers from panel participants, who were:

- **Maddie Godby, People for Bikes**
- **Todd Scott, Detroit Greenways Coalition**

- **How is the carbon impact of an e-bike calculated per mile compared to other modes of transportation?**
 - In the e-bike calculator, we calculate the carbon impact of an e-bike per mile by combining the average e-bike energy demand per mile with the state-specific CO₂ output of energy generation: :
 - We calculate the average efficiency of e-bikes by dividing their average battery capacity (in kilowatt hours, or kWh) by their average range on a single charge (in miles). Battery capacity and range data was taken from [Electric Bike Review](#). This gives us an e-bike efficiency in kWh per mile.
 - We then use data from the National Renewable Energy Laboratory's Cambium model to estimate the number of tons of CO₂ emitted per kWh of electricity generation in each state and modeled year. This number is expected to decrease as states' grids become more and more clean, replacing fossil fuels with renewables.
 - The product of the e-bike efficiency and the number of tons of CO₂ per generated kWh is the carbon impact per e-bike mile.
 - We use a similar process to calculate the carbon impact of EVs and ICE vehicles:
 - For electric vehicles, we calculate the average efficiency in kWh per mile using a list of EV models and combine it with CO₂e tons per kWh from the same Cambium dataset to determine the tons of CO₂e per EV mile.
 - For ICE vehicles, we calculated the average efficiency of different types of vehicles (hatchbacks, pickups, sedans, and SUVs) in gallons of gasoline per mile. This is then multiplied by the carbon intensity of gasoline (tons CO₂e per gallon of gas) to get tons of CO₂e per ICE vehicle mile.
 - If you have further questions about our calculator and our calculations, please download it and click through the light-blue colored tabs. These tabs contain our calculations. On the tab labeled Tab Index, you will find a description of the tabs, their utility in the calculator, and a citation for any data used. The Introduction tab



has a section labeled Assumptions and Notes, which will explain the assumptions we made in the calculations.

- **Can you share any ongoing efforts to develop e-bikes designed for the elderly and individuals with limited mobility? Specifically, I'm interested in three-wheeled e-bikes and models with optional enclosures to enhance usability in inclement weather.**
 - Many e-bike incentive programs are offering adaptive e-bike incentives, such as [Denver](#). These are e-bikes designed with three wheels or recumbent-style e-bikes, which are meant to be adaptive to people with disabilities.
 - E-bikes can allow for people who might feel unable to bike on an acoustic bicycle to be able to bike. This includes older individuals, people with disabilities, and people who struggle with fitness. [Research](#) has shown e-bikes to be an inclusive mobility enabler.
- **How much mode shift do you think is reasonable to expect based on real-world examples?**
 - The mode-shift will depend on a combination of factors, such as the quality of the infrastructure, seasonality, and perceived safety. However, work into both incentive programs and building out infrastructure show that large shifts are possible.
 - In Denver, the city conducted a [follow-up survey](#) after the first year of the program in 2022. The survey found that on average, participants biked 26 miles a week and replaced 3.4 round-trip car trips.
 - E-bikes have been shown to reduce car use, resulting in up to a [19% reduction in car usage](#) in a dual-mode household
- **Are there any good examples of e-bike subsidies from overseas?**
 - Many countries in Europe and the UK offer [e-bike incentives](#).
 - In 2021, [France](#) began a program to offer €2,500 (\$2,975) towards an e-bike if residents traded in their aging vehicle for scrap. This is in addition to building out bike infrastructure. In 2023, France announced plans to spend [€2 billion by 2027](#) supporting cycling. To enhance cycling infrastructure, the government plans to double the cycle lane network to 100,000 km by 2030, investing €250 million annually until 2027, prioritizing provincial and rural areas. Further investments include secure bike parking, €500 million in bicycle purchase subsidies, and initiatives to boost the cycling industry, with a goal of assembling 2 million bicycles in France by 2030.
- **I'd be curious to learn more about the data behind the calculator, and specifically the impacts of incentives. Has there been sufficient data gathered about the results of incentive programs to be confident in calculator projections?**



- All data sources used in the e-bike calculator are cited on the Tab Index tab, which is the first tab in the calculator. Please look there first to see what data is used in the calculator. The Tab Index further explains what the data is used for on each tab.
- The calculator is a living document and changes with best practices to e-bike incentive programs. For example, when the calculator was first launched in 2023, it had the following split for incentives - different levels for low-income and market-rate, and a split for commuting e-bikes and cargo e-bikes. This was based on Denver's program at the time, which was considered the nation-wide leader. Denver completed follow-up work that indicated that future incentive designs should focus more on income levels, rather than e-bike type, and changed the incentive levels to include low-income, moderate-income, and market-rate incentives. The calculator was updated in V2 to reflect the focus on equity.
- **One of the biggest appeals of e-bikes for potential riders is the opportunity to become active again after years of inactivity, recover from injury or disability, or explore further and faster. Have any of you experienced this?**
 - Research has shown that e-bikes can provide [moderate to intense exercise](#), without the same barriers as acoustic cycling. Those riding e-bikes often ride more often and for longer distances than those with acoustic cycles. This can help with recovering fitness and provide a low-stress way to get into movement, while making it a more common part of a daily routine.
- **Have there been any successful launch events, such as mini-parades or ribbon-cutting ceremonies, to celebrate the opening of a new mobility lane?**
 - Cities do host ribbon-cutting events to celebrate the opening of new bike lanes. For example, the [City of Lakewood](#) in Colorado hosted a ribbon-cutting to celebrate the opening of their first protected bike lane in August 2024. Eagle County in Colorado hosted a [bike parade](#) to celebrate Bike to Work day. These events can promote the new infrastructure or bring attention to biking as a means of transportation.
- **How frequently are e-bikes stolen, and what measures can be taken to minimize theft?**
 - It is [difficult](#) to tell how often e-bikes are stolen compared to other bike types. Partially this is because 80% of bike thefts are not reported to the local police. The FBI estimates that over 175,000 bikes are stolen each year. However, this is likely an underestimation, with other organizations suggesting more than a million bikes are stolen each year.
 - E-bikes are particularly attractive to thieves, due to the high resale value of the bike and its parts and the lack of secure bike parking.



- Many things can be done to minimize the risk and impact of an e-bike being stolen. This includes using a high-quality, durable lock, using an e-bike with GPS tracking available, purchasing bike insurance, and always locking bikes.
- Cities can also support the reduction in theft by providing safe, secure places for users to lock their bikes. This could include placing security cameras near bike spots, having bike parking be in a public location, working with local businesses to provide a place to securely lock a bike, and working with local bike organizations or the state to create a stolen bike index to track the serial numbers of stolen bikes.
- **Out-of-Class Electric Vehicles (OCEVs), essentially mini motorcycles, are presenting challenges for both urban infrastructure and rural trails. What are your thoughts or recommendations on effectively integrating these emerging transportation modes, including Class 1-3 e-bikes, into existing infrastructure and transportation networks?**
 - For this very reason, it is important for cities to designate where e-bikes and motorized micromobility can operate and where they can't, while making these limits clear to the public.
- **The calculator calculates savings at an aggregate level, such as for a city or county. Does it also generate data on individual savings that could be relevant to residents within these communities? Case studies like this could provide compelling storytelling opportunities.**
 - RMI has also produced the [Green Upgrades](#) calculator, which is designed to help individuals assess the impact of changes to their home or transportation setup. Outputs include both an estimation of cost changes, emissions changes, and time for the investment in the greener technology to be recouped.
 - The calculator has the option to let users assess the impact of replacing a portion of their trips with an e-bike. The calculator also has an API. Cities or states with a program interface could use the API to display just the results for an e-bike on their program website if they wish to do so.
 - The Green Upgrades calculator is more useful for providing understanding on the individual level. The tool also has the ability for a user to input an e-bike incentive.
- **How do you think this tool can be used to make the case for cities to fund better infrastructure as well as e-bike incentive policies?**
 - By illustrating the percent of light duty vehicle trips that are actually short 3-5 mile trips, along with potential for pollution reduction, plus health and economic impacts if these trips were shifted to e-bikes, RMI has given major US cities data they need to make the case to shift policy and infrastructure spending toward supporting micromobility.



- **Can you share more information about cargo e-bikes? Do you have examples of the types of cargo trips they can effectively replace?**
 - Denver's [survey](#) that followed the first round of their incentive program found there was not much variation in riders who used commuting bikes compared to those who used cargo.
 - However, cargo e-bikes are extremely valuable to use. They can replace trips that require the ability to haul more weight or can be used as part of a job, such as delivery services.
 - Survey work done in [Germany](#) found that among people with access to a cargo e-bike share program, interest in cars dropped. People prioritized cargo e-bikes for the cost and the environmental factors when compared to cars.
- **What is the most effective way to present state-level data to legislators? Legislators often prefer concise one-pagers with links to the relevant datasets. Do you have existing materials available, or can you provide recommendations on compiling this information into a clear and impactful deliverable?**
 - The e-bike calculator's output pages were designed to be easily screenshot or copied and inserted into a one-pager. The outputs' explanation boxes can also be easily reconfigured into a one pager, depending on the priorities you would like to highlight with the outreach materials.