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E-bike Lending Libraries: Trends and Practices in The United States

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Final Report

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Foreword

This report was produced for the Oregon Department of Transportation under the guidance and direction of Amanda Howell, Innovative Mobility Program Manager, Public Transportation Division; Hope Estes, Transportation Options Program Manager, Public Transportation Division; Sara Pimentel, Multimodal Transportation Planner, Public Transportation Division; and Greg Griffin, Research Coordinator, ODOT Research Program.

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Executive Summary

E-bike lending libraries are emerging as a potential tool to promote sustainable transportation, reduce greenhouse gas emissions, and enhance mobility equity across communities in the United States. By offering residents the opportunity to borrow e-bikes for periods ranging from a couple of hours to several months, these programs help address barriers to e-bike ownership, such as high initial costs, limited riding experience, a vehicle for special purposes, and the need for daily utility. E-bike lending libraries aim to familiarize users with the potential of e-bikes to increase mobility options or replace car trips, thereby reducing vehicle miles traveled (VMT) and advancing city and state climate goals.

Key Features of E-Bike Lending Libraries

E-bike lending libraries operate under three main models: **community resource** libraries, **ride-to-purchase** programs, and **long-term access** programs. Community resource libraries prioritize providing free or low-cost e-bikes as shared transportation assets, often targeting underserved populations. **Ride-to-purchase** programs focus on encouraging eventual e-bike purchases by offering users the chance to test various models and explore financial incentives, such as rebates. Long-term access programs, often subsidized by grants, lease e-bikes at below-market rates to community members, enabling them to integrate e-bikes into their daily routines over extended periods. These programs vary in scale, ranging from small initiatives run by local libraries to multi-community efforts supported by non-profits, local organizations, and state agencies.

Program Scan Findings

This program scan identified 54 e-bike lending libraries in the United States. These libraries were categorized into four main models: community resource (unrestricted), community resource (restricted), ride-to-purchase, and long-term access. Of the 54 e-bike libraries, 39 were active, 7 were temporarily closed, and 8 were proposed or funded but not yet operational as of December 2024. Community resource programs were the most common, comprising 28 libraries, while ride-to-purchase programs accounted for 17 and long-term access programs totaled 9.

E-bike lending libraries are designed to achieve six overarching goals: sustainability, equity, ownership, utility, recreation, and economic vitality. Sustainability and equity are among the most common objectives, with programs aiming to reduce emissions by replacing car trips and increasing access to clean transportation for low-income and underserved communities. Ownership-focused libraries provide extended e-bike trials to help users envision how an e-bike could meet their transportation needs and encourage eventual purchase. Utility-oriented programs emphasize e-bikes as practical tools for errands and cargo transport, while recreational programs promote e-bikes as a form of leisure and physical activity.

Most programs address multiple goals, with sustainability, equity, and ownership being the most prevalent. Surveys and case studies have demonstrated that e-bike lending programs can

effectively shift travel behaviors, increase e-bike purchases, and build public awareness. For example, programs such as Vermont's Local Motion and Denver's Northeast Transportation Connections (NETC) highlight the dual focus on environmental impact and community accessibility. Additionally, these programs often incorporate elements like educational workshops, infrastructure support, and partnerships with local organizations to increase outreach and effectiveness.

Program administration varies but is largely led by non-profits and local government entities, which collectively account for over 75% of programs. These programs are often collaborative, with non-profits partnering with local governments to secure funding and deliver services. Other administrators include public libraries, bike shops, universities, and private employers. Bike shops, for example, can offer ride-to-own models that allow users to test bikes and transition to ownership, while also providing ongoing maintenance.

Funding and Administration

Funding for e-bike lending libraries comes from diverse sources, including state and local grants, utility-sponsored programs, and private donations. Out of the 54 lending libraries found in the scan, we could determine funding for 43 libraries. Thirty-six (36) libraries received funding from a public grant and 5 received funding from donations. The rest received funding from sponsorships or private funds. Many programs are supported by a wide range of sustainability and transportation-focused initiatives from state, city, and utility funds, such as Colorado's Community Access to Electric Bicycles Grant Program, Oregon's Innovative Mobility Program, and Portland General Electric's Drive Change Fund. Federal programs like the Congestion Mitigation and Air Quality Improvement (CMAQ) program and the Transportation Alternatives Program (TAP) can also provide funding if the programs align with active transportation goals.

Administration models vary widely, with most libraries operated by non-profits, local governments, or community-based organizations. Partnerships with bike shops and community organizations are critical for program success, providing technical expertise, outreach support, and maintenance services. However, challenges such as high startup and operational costs, insurance requirements, and the need for safe cycling infrastructure often limit program scalability. Addressing these challenges requires robust planning, sustainable funding models, and community-centered approaches.

Program Elements of E-bike Lending Libraries

Successful e-bike lending libraries incorporate essential programmatic, administrative, and operational elements. Identifying the program's target population and goals—whether promoting ownership or enhancing community transportation access—is critical for determining the library's model and structure. Community-centered approaches, such as locating libraries within accessible community spaces or hosting mobile pop-ups, ensure greater participation and visibility.

The Program Elements section outlines critical considerations for establishing and operating an e-bike lending library, categorized into programmatic, administrative, and operational components.

Programmatic Considerations

Defining Objectives and Target Populations: Establishing a library's primary goals (e.g., equity, sustainability, ownership) and target demographics (e.g., low-income communities, commuters) is essential. These choices influence the library model, such as a community resource library for underserved groups or neighborhoods or a try-before-you-buy program aimed at promoting ownership.

Community-Centered Approaches: Successful programs are rooted in local contexts. Libraries should be located in accessible areas, such as community centers or housing complexes, to serve the intended population effectively. Mobile libraries or pop-ups can address gaps in underserved areas lacking bike shops or rebate programs.

Partnerships: Collaborations with bike shops and local organizations provide technical expertise, maintenance, outreach, and trusted community connections. Examples include partnerships between Denver's Northeast Transportation Connections (NETC) and local bike shops, which enhanced service delivery and community trust.

Administrative Considerations

Costs and Funding: Libraries face high startup and operational costs, including e-bike procurement, staffing, insurance, and maintenance. Funding sources include grants, donations, and partnerships. State programs, such as Vermont's Mobility and Transportation Innovation (MTI) grants, and private foundations often subsidize these expenses.

Payment Systems: Many libraries offer free services, but some charge nominal fees or require refundable deposits. Programs aimed at equity must carefully balance affordability with operational sustainability. For instance, sliding-scale fees or free services with optional donations can reduce financial barriers.

Insurance: Insurance is a significant challenge for many libraries. Programs often integrate with existing insurance policies of host organizations (e.g., municipalities or universities). Smaller programs struggle with high premiums, sometimes exceeding $20,000 annually, creating barriers to operation.

Operational Considerations

Bike Models and Accessories: Libraries should provide diverse e-bike models to meet varied user needs, including step-through frames, cargo bikes, and adaptive options. Accessories like, helmets, lights, safety vests, child seats, and panniers enhance usability for specific trip purposes.

Outreach, Education, and Training: Marketing efforts, such as pop-up demonstrations, community rides, and targeted advertisements, are critical for engagement. Programs like Vermont's Local Motion highlight the importance of showcasing e-bike benefits through hands-on experiences.

User Agreements: Libraries must establish comprehensive user agreements outlining responsibilities for bike care, usage rules, and return policies. This ensures accountability and minimizes misuse. User agreements should include clauses on liability, highlighting what the library covers and what users are responsible for (e.g., theft, damage).

Maintenance: Maintenance of e-bikes can take specific expertise and can take significant staff time and additional costs. Partnerships with bike shops or dedicated staff with e-bike expertise can streamline repairs and upkeep, minimizing downtime.

Training: Library staff should receive training in e-bike handling, basic maintenance, and customer service to support users effectively. Offering training sessions or guides for users on safe riding practices, e-bike features, and maintenance basics enhances user confidence and satisfaction. Hosting events like group rides and e-bike safety demonstrations can engage the community and promote safe, consistent usage.

By addressing these elements thoughtfully, e-bike lending libraries can overcome challenges, foster community engagement, and achieve their goals of promoting sustainable, equitable, and active transportation options.

Conclusion

E-bike lending libraries have proven to be powerful tools for advancing sustainable transportation and mobility equity. By addressing key barriers to e-bike adoption, these programs empower individuals to integrate e-bikes into their daily lives, reduce car dependency, and contribute to climate and public health goals. With strategic funding, community engagement, and infrastructure improvements, e-bike lending libraries can expand their reach and impact, transforming transportation systems across the United States.

E-bike lending libraries address multiple goals simultaneously and can serve as valuable tools for cities to meet climate, equity, and transportation objectives. By providing access to e-bikes, these programs reduce reliance on cars, promote active transportation, and expand mobility options for people of all incomes and abilities. They also foster awareness of e-bikes as viable, cost-effective alternatives to traditional bicycles or vehicles, particularly for users who face physical, economic, or geographic barriers to mobility. Ultimately, the success of e-bike lending libraries lies in their ability to balance community needs, sustainability goals, and innovative program models that increase access to clean transportation options.

Introduction

E-bikes have been growing in popularity and local and state policymakers have been looking at ways to make the use and purchasing easier for anyone interested (Bennett et al., 2022). People usually purchase e-bikes precisely because they address many of the barriers to bicycling for transportation. They allow users to overcome the barriers of commuting or errand distances that might be too far or take too long by conventional bike, hills, arriving to work sweaty or physically exhausted, and cargo carrying (Bennett 2024, McQueen et al., 2020). Giving people the opportunity to borrow e-bikes for multiple days at a time gives them time to try the e-bike for everyday use, such as school drop off and pick up, work commute, or a trip to the grocery store, which is not possible through a shop demo or rental. As the effects of the climate crisis intensify, it is increasingly necessary to provide more sustainable transportation options. The current rate of greenhouse gas emissions produced by the United States, totaling 6,340 million metric tons of carbon dioxide equivalents (EPA 2024), has negative implications for both human health and climate change. According to the United States Environmental Protection Agency, light-duty vehicles account for just under 17% of all greenhouse gas emissions in the United States. Encouraging the adoption of e-bikes can be an effective strategy to reduce single occupancy vehicles (SOV) and vehicle miles traveled (VMT) (McQueen et al., 2020).

The concept of a “library” that offers objects other than books has been growing in popularity in recent years. Many traditional book libraries have begun to complement their services with the addition of a “tool library” or a “library of things” to provide the community with shared resources or assets. Objects typically offered by these libraries are often cumbersome to store, which people may use once or very occasionally, or that people may want to try before they purchase them for themselves. These items can include electronics, tools, craft supplies, and instruments. Some public book libraries allow patrons to borrow bikes or electric bicycles (e-bikes).

An e-bike library is a shared mobility service put in place to provide alternative transportation to a community and reduce barriers to e-bike ownership. Typically, users check out an e-bike for periods of time, anywhere from a day to several months. It effectively provides a riding experience to users, showing them how e-bikes can be incorporated into their lives. Often, the objective of a library is to familiarize users with e-bikes so that they can purchase their own. Because the cost of purchasing an e-bike can prevent many people from participating in cycling, some libraries offer their services to low-income communities or combine them with an incentive or rebate program. Others include community-led events and educational workshops to increase engagement and community self-sufficiency. E-bike libraries are being operated through local libraries, universities, statewide initiatives, and non-profit organizations. When used effectively, e-bike libraries have the potential to increase a community’s familiarity with e-bikes, thus leading to higher ownership and potentially a reduction in trips by car.

A “library of things” organized and maintained by a public book library that contains e-bikes in its catalog is not the only kind of system being considered in this white paper. While this system certainly can be effective, e-bike lending libraries are not exclusively being offered through existing public libraries. In the report, we generally **define an e-bike lending library as any**

program or system that allows individuals to check out an e-bike for low to no cost for a period of time. Figure 1 outlines various models for e-bike lending libraries, which include selling e-bikes "try before you buy", providing a "community resource" of shared assets, and e-bikes "for hire, including bike share or rentals. We have excluded "for hire" (traditional bike share and rental) programs from the analysis of this report because of the general purpose of these programs and cost structures. Although bike and e-bike lending libraries are much less widespread than bike share systems and rental locations, they have a similar potential to bring e-bike ridership access to populations who otherwise may not have the opportunity. These models are discussed in further detail in the Background section of the report.

Figure 1: E-bike Lending Library Models

Background

An electric bicycle (e-bike) differs from a conventional bicycle in that it is equipped with a rechargeable electric battery and an electric motor that provides pedal assistance to the rider. In the United States, federal law classifies "low-speed electric bicycles" as vehicles with two or three wheels, fully operable pedals, electric motors of less than 750 watts, and a maximum speed of 20 mph using just the motor (16 CFR 1512.2(a)). They do not fall into the same category as electric scooters or motorcycles; e-bikes are bicycles with motors that augment human power rather than replace it. Led by the bicycle advocacy organization, PeopleforBikes, as of 2024 forty-one (41) states have adopted the three-class definition for e-bikes (PeopleforBikes n.d. and n.d.a.). In 2025, Oregon joined the other states in adopting the three-class definition when HB4013 was signed by Governor Kotek (Figure 2) (Oregon House Bill 4103).

Vehicle Type	Assist Type	Maximum Mooter-assisted Speed (MPH)	Minimum Age (years)	Driver's License	Insurance/ Registration	Helmet
BICYCLE 	Pedal	N/A	N/A	No	No	<16
CLASS 1 E-BIKE 	Pedal	20	16	No	No	No
CLASS 2 E-BIKE 	Pedal/ Throttle	20	16	No	No	No
CLASS 3 E-BIKE 	Pedal	28 w/ speedometer	16	No	No	No

Figure 2: Oregon E-bike Classification (2024 HB 4103 – went into effect January 1, 2025)

These three classes of e-bikes are grouped by the level and type of motor assistance. Class 1, the most common type of e-bike, is a pedal-assist that goes up to 20 mph. The motor engages when the pedal is pushed down by the rider, providing a range of power depending on the motor and the level of assistance that the rider chooses. Past 20 mph, the motor disengages, and riders must accelerate purely with human power. Class 2 incorporates a throttle as well as pedal assistance. To fall under the classification of "low-speed electric bicycles," e-bike throttles have a maximum speed of 20 mph, and pedal assistance is disengaged when the e-bike is pedaled faster than that speed. Class 3 e-bikes are similar to Class 1 e-bikes in that they are only pedal-assist; however, they can reach speeds up to 28 mph.

Currently, there is no license, registration, or insurance required for e-bike use, and in most states, e-bikes can be ridden in the same locations as conventional bikes. Electric bicycles offer several advantages to riders, namely greater mobility (making hills and headwinds less challenging), more speed for less effort, and the ability to travel farther distances than with a conventional bicycle.

E-bikes come in various form factors, ranging in size, shape, dimensions, and accessories for use. Figure 3 shows four basic models: standard step-through, long-tail cargo, front loader cargo, and trike. Often, e-bike lending libraries try to provide a range of models and sizes, which will be discussed later in the report, but they try to balance universal fit with the functional needs of individuals using the bikes. For example, many e-bike libraries will choose a step-through model that does not have a top bar to allow more people to feel comfortable getting on and off

the bike. Depending on the manufacturer, all these models of e-bikes may be either Class 1, 2, or 3.

Figure 3: Types of E-bike Models

Current e-bike market in the US and e-bike incentive programs

In the United States, e-bikes have been steadily gaining popularity among the general public. The pandemic played a significant role in this increase; from 2019 to 2020, e-bike sales in the US grew 145% (Surico 2021). As people looked for forms of outdoor recreation and commuting to avoid the spread of disease, transit ridership decreased and e-bike use skyrocketed. The spike in gas prices in 2021 may have also contributed to more e-bike sales as people look for more affordable means of transportation. As e-bikes become more mainstream, they have become the electric vehicle of choice for many Americans. Sales of e-bikes outpaced electric cars and trucks in the past three years. In 2022, just under 810,000 electric vehicles were purchased, while it was estimated that over 1 million electric bikes were purchased (Torchinsky 2023). E-bikes now represent approximately 20% of the bicycle market (Vosper 2024). Additionally, cities increased accessibility to e-bikes by introducing them into their bike share systems, and cities like Portland, OR adopted all-electric fleets. The introduction of e-bikes into bike share systems contributed to a jump in bike share usage (Glusac 2021, Plotch 2004, Kuntzman 2023).

Although e-bikes have been gaining traction in the US, several barriers prevent many people from owning one. In addition to poor infrastructure and a lack of knowledge or experience with e-bikes, the initial cost of purchasing an e-bike is a deciding factor in e-bike ownership for many.

Most e-bikes cost between $1,000 and $4,000, which is expensive when compared to the $200 to $1,500 that people generally spend on conventional bikes (Bennett et al. 2022). According to Circana, the average selling price of an e-bike through independent bicycle dealers (IBDs) is $3,055, compared to $669 for the rest of the market channels (e.g., big box, sporting goods stores, etc.) (The Nerd Collective 2024).

In comparison to the average cost to purchase and own a car or other light-duty vehicle, electric bikes are considerably less expensive and therefore have the potential to increase transportation equity. If the barriers to e-bike adoption are reduced or eliminated, the e-bike can be a viable alternative to car ownership and vehicle commute trips. In 2023, the average price paid for a new non-luxury vehicle was just over $47,000 (Krisher 2024). With an average yearly cost of over $12,000 to own and operate an automobile in 2024, compared to just $450 to own and operate an e-bike, many people may elect to purchase an electric bike instead of an automobile (Moye 2024). The e-bike has the additional benefits of requiring less maintenance and less room for storage and parking.

However, there is still limited knowledge and experience with e-bikes by the general public and a lack of consideration that e-bikes are for more than recreational purposes. Many bike shops that sell e-bikes allow customers to test ride their e-bikes but may require a credit card or a form of identification. Additionally, purchasing an e-bike for $1,000 to $4,000 may be prohibitively expensive, especially for low-income individuals. An e-bike library is a system that can address these issues by providing participants with access to an e-bike without the usual barrier to entry of a high initial purchase price. Pairing an e-bike library with a purchase incentive can be a powerful mechanism to build knowledge within a community and increase e-bike adoption.

History of bike and e-bike libraries

While the origins of the bike share system can be traced back to Amsterdam in the late 1960s, bike and e-bike libraries began much more recently. One of the first successful bike library systems began in Denmark. Concerned about falling cycling rates in Copenhagen, Bicycle Innovation Lab opened the Cykelbiblioteket (The Bicycle Library) in November 2011 (Barth 2011). Intended for local use, the library used refundable deposits and an online booking system. The goal of the library was to allow users to experiment with different kinds of bikes in everyday life (essentially a “try before you buy” system). Cargo and electric bikes were just a few of the various types that were provided to the community, and users could check out a bike for three to four days. Although smaller and more localized initiatives likely existed before the Cykelbiblioteket, its innovative approach and expansive services helped it stand out as a pioneer in the bicycle lending library concept. The library served as a model to communities around the world wanting to increase cycling as a form of transport.

In the US, e-bike lending libraries started cropping up in the last several years (Bliss 2021, Janzer 2022). An early leader in e-bike lending libraries is Local Motion, a Vermont-based non-profit organization that currently manages seven permanent e-bike libraries and a statewide traveling library. Local Motion’s first bike lending library started in 2014 with a long-tail cargo bike, which they loaned out from their Burlington, Vermont office. Another notable program is

Shared Mobility Inc. (SMI) based out of Buffalo, New York. In 2020, SMI received a donation of more than 3,000 e-bikes from the mobility service provider Uber Technologies Inc. With these e-bikes, the nonprofit began establishing e-bike libraries for low-income individuals, working-class residents, and communities of color by partnering with local community groups. In this way, communities have been able to design the library to suit their specific needs. SMI includes community events centered around e-bikes as a part of its services. Beginning in Western New York in 2021, SMI established two libraries in collaboration with the East Side Bike Club and the Create a Healthier Niagara Falls Collaborative. In the summer of 2022, they launched the Electro-Bici program in San Fernando Valley, California in partnership with Pacoima Beautiful (Pacoima Beautiful 2023).

Since the pandemic, communities in Vermont and New Hampshire have established a multitude of e-bike library services. In addition to Local Motion efforts, Vital Communities, a nonprofit organization working with towns and cities across both states, launched the Upper Valley E-Bike Lending Library in 2020. Traveling to different locations throughout the year, the library provides users with a selection of four e-bike models of different styles during one- and two-week residencies in towns and workplaces throughout the Upper Valley. While the e-bike library is stationed at a particular lending location, people can try multiple bikes at “Demo Days” or sign up to borrow a single bike overnight. In 2022, they brought their services to 14 locations and two workplaces and traveled to over a dozen locations in 2023 and 2024. In addition to e-bikes, the program offered a free e-bike consultation service for Vermont residents. Since 2020, survey data found that more than 65% of users had bought or were planning to buy an e-bike after taking part in the services offered by Vital Communities (Vital Communities n.d.). More recently, locations across the country, such as Washington, DC, Los Angeles, Oakland, and Denver, have started e-bike lending libraries with funding from local and/or state funding.

Several studies and programs have shown that e-bike lending services have the potential to decrease VMT and increase the sales of e-bikes. In 2010, a campaign in Odense, Denmark to reduce commutes by car gave 100 e-bikes to car drivers. The results showed that half of the participants used the e-bike four to five days a week. Three months after the campaign ended, two-thirds of participants said they preferred to use a bike or e-bike instead of a car. A study conducted in Norway found that when participants were given access to an e-bike for a few weeks, they were more willing to pay for an e-bike (Fyhri et al. 2017). The study concluded that price reduction, education, and programs providing e-bike experience can be effective strategies for increasing e-bike use. In 2015, Google designed a bike/e-bike lending service with the goal of shifting single-occupancy vehicle (SOV) commuters to bike commuters (Fitch et al. 2022). Along with providing a free bike or e-bike for six months to 2,663 employees from 2015 to 2019, Google provided several amenities such as free bike maintenance, showers and changing rooms, and purchase incentives. Bike commutes increased from 1.7 to 2.3 days per week as a result of the program. When the program ended, bicycle commutes were still higher than baseline, with an increase of 1.3 to 1.9 days per week. Google estimates that SOV commuting dropped by 2.4 days per week on average. These programs indicate that providing an e-bike experience free of charge, especially in combination with other services, is an

effective way to increase e-bike purchases and ridership. A table of e-bike lending library literature is located in Appendix A.

E-bike lending library models

Through our review of the literature and previous and existing lending libraries, we have classified lending libraries into 3 types. Figure 4 outlines these various models for e-bike lending libraries, which include selling e-bikes "try before you buy", providing a "community resource" of shared assets, and e-bikes "for hire, including bike share or rentals. It is important to distinguish e-bike libraries from bike share and rental programs. Bike and e-bike lending libraries are much less widespread than bike share and rental systems but have a similar potential to bring e-bike ridership access to populations who otherwise may not have the opportunity. These utility-based lending libraries allow users to check out bikes for several hours to several months. Lending library program administrators vary widely from nonprofits, universities, housing authorities, employers, bike shops, and actual libraries. Although individual bikes from lending libraries can get less frequent usage than those of traditional bike share systems, they provide constant access and a sense of familiarity to the community user.

Individuals often lack experience riding e-bikes, coupled with the high initial purchase cost, act as barriers to the mainstream adoption of the e-bike. E-bike libraries seek to eliminate these barriers. With the "try before you buy" system, people can explore different models of e-bikes at low to no cost. As a result, individuals can make informed decisions when purchasing one. Additionally, all types of e-bike libraries provide access to an affordable mode of transportation for daily errands, commute trips, and recreational travel, effectively reducing VMT.

E-bike libraries typically offer their services for no cost, a refundable deposit, or a small fee. Some libraries only have one or two e-bike models to choose from, while others offer a wide variety, including e-cargo bikes. We found that in general, a library's objective is to either allow patrons to try before buying their own e-bike or to provide a free community-shared asset that is an affordable alternative to light-duty vehicle ownership. These library models are discussed in more depth below.

Figure 4: E-bike Lending Library Models

For Hire

Probably the most well-known of the three models, bike-sharing systems are made up of fleets of identical bikes, which are often placed in the public right-of-way. In a “dock” system, users are required to pick up and return bikes to specialized bike racks, or “docks,” that are located throughout an urban area. Alternatively, a “dockless” system is node-free, meaning that users can leave the bikes throughout the city. Because fees are based on minutes of travel time, trips generally take under thirty minutes, and the bikes are used to get from point A to point B. Bike share systems have become increasingly common in urban centers since the mid-2000s, and many cities deployed electric fleets during the pandemic. Many bike share programs do have low-discount or free memberships for low-income residents, which can provide an invaluable mobility option for underserved communities (NABSA 2024). In Madison, Wisconsin, the Madison Public Library Foundation funds a Community Pass Program that allows library cardholders to check out a BCycle pass and helmet once a month for 7 days and access to 350 Madison BCycle electric-assist bikes around the city (Madison Public Library n.d.). Another version is peer-to-peer (P2P) e-bike sharing systems. These systems, like Spinlister, connect bike owners with renters through a digital platform, such as an app or website, where users can list their bicycles for short-term or long-term rental. The model decentralizes traditional bike-sharing programs by enabling private ownership and direct transactions between users.

Similar to bike share systems, individuals have always been able to rent bikes for use. Bike rental systems typically lend bikes for longer periods of time than bike share systems, anywhere from a few hours to a few days. After letting customers choose from a variety of makes and models (often including e-bikes), rental programs give users access to a single bicycle to use during the lending period. In some markets there may be specific stations to pick up and drop off the bike; otherwise, users return the bike to the original location. Rental programs are usually operated out of a bike shop or a store specializing in rental services. Customers are usually tourists or recreational riders. Both these “for hire” models usually require the individual to pay market rate for the use of a bike.

Community Resource

We define “community resource” libraries as e-bike lending programs with the main priority being to provide affordable or free shared assets as a community transportation option. These libraries typically lend e-bikes to community members for a few days or weeks, for free or a small nominal cost. Many libraries of this type offer various sizes and models of e-bikes to cater to different user needs, such as errands, commuting, or leisure. Most programs of this type seek to increase equity or provide an alternative means of transportation for low-income communities. For example, some library members live in transitional housing and cannot store an e-bike long-term, but they can still benefit from using one for shorter periods. These programs may also have the stated objectives of promoting physical activity or reducing carbon emissions.

Unrestricted or Open Community Resource

Community resource programs were further divided into two categories: unrestricted and restricted. Unrestricted community resources generally exist to serve any member of the community who would like to borrow or use an e-bike. This most often entailed requiring users to provide proof of address within a specific city, neighborhood, ZIP code, county, or municipality that the lending library intended to serve. Some unrestricted community resource lending libraries have no such residency requirement and will loan an e-bike to any person who fulfills the other requirements, which vary by program. These programs are similar to public book or tool libraries. Some public libraries, such as in Avon, OH, have been loaning standard bicycles to people in the public for years.

Unrestricted Community Resource Model

Shared Mobility, Inc. (SMI) WNY E-Bike Library initiative works with community partners in Buffalo and Niagara Falls to provide freely available pedal-assist e-bikes to residents and include free group rides to build a community around e-bike riding. Recently, SMI partnered with The Tool Library in Buffalo to provide e-bikes as part of their offerings to the community.

Restricted or Closed Community Resource

Restricted community resource programs function generally to serve the same purpose as unrestricted community resource programs but to a more limited body of potential users. User access is often limited by residency (e.g., lending libraries open only to residents of a certain housing complex) or by affiliation (e.g., lending libraries open only to students and faculty of a particular university, employer, or member of a local organization). There are a couple of examples across the country of campus e-bike lending libraries, either at universities or large employers. The University of Oregon (UO) administers a lending library to students and

employees through the on-site UO Transportation Services bike shop, with seven e-bikes and an e-cargo bike available for up to two weeks at a time, though employees are the main users of the program. E-bikes are available to reserve through an online reservation process and come equipped with lights, fenders, panniers, locks, and helmets for all riders. Transportation Services is partnering with UO researchers to understand peoples' experiences participating in the program but there are no findings as of yet.

Restricted Community Resource Model
Forth Mobility worked with Helping Hands Reentry Outreach Centers to launch a 30 e-bike library for community members of Bybee Lakes Hope Center, a transitional housing facility to support Portland Metro's community experiencing homelessness. The e-bikes help individuals expand their transportation options.

Try Before You Buy

In the "Try Before You Buy" model, individuals are provided with the opportunity to borrow an e-bike for a limited period of time, similar to a community resource library, creating a pathway to ownership. However, the main difference is that these libraries offer their services to support users in making a purchasing decision. For the purpose of this study, we have broken this model into two categories: Ride-to-Purchase and Long-Term Access.

Community E-bike Test Rides and Demos

E-bike test rides and demos are a valuable tool for local agencies to partner with local bike shops and community members to let people experience e-bikes in a low-pressure, safe environment. These events can be used to educate people about e-bikes and how they can improve recreational and mobility options. PeopleforBikes created a 4-step guide to plan demos to plan, market, execute, and analyze demo events, which can be found here: https://www.peopleforbikes.org/electric-bikes/policies-and-laws

The lending library organizer or sponsor often partners with a local bike shop or a manufacturer to offer a range of e-bikes for the participants to try. These libraries aim to reduce barriers that prevent many from purchasing an e-bike, such as a lack of riding experience, unfamiliarity with the wide variety of e-bikes and gear available, and high purchase costs. Most of these programs have the stated goal of helping users envision how an e-bike might fit into their daily lives, and thus motivating them to purchase their own. Ride-to-purchase lending libraries are often accompanied by information on available rebates and other financial incentives for e-bike purchases to further motivate users to purchase their own e-bikes. Pairing these programs with incentive programs can be an effective means of outreach and encouragement (Bennett et al. 2022). For example, the Boston Bikes team hosts free “Try an E-Bike" and bike shop showcase events, where eligible residents can test different bikes and receive help filling out their e-bike rebate applications. With a $250,000 grant from the Sacramento Area Council of Governments, the City of Elk Grove, CA purchased e-bikes and e-trikes that residents can check out for free for up to three weeks and then return to City Hall. Residents can then receive a voucher code and can go to any of the three bike shops to purchase a new e-bike and receive an instant rebate or discount on their purchase. Other experience-based campaigns include test ride events held by private e-bike dealers at community locations (such as grocery store parking lots in Portland) and large-scale events such as the Electric Bike Expo, which was held annually in several cities around the United States.

Long-Term Access lending libraries identified were categorized as leasing models or subscription-based models. While these programs are the most similar to rental programs, they are distinct in that they do not function for profit. While they do include a regular fee to participate, the subsidization of these programs from government or foundation grants allows income-qualified users to lease e-bikes far below market rates. These leasing programs exist to serve community members who might otherwise be restricted from transportation options due to financial constraints. There are some "loaner or ride-to-own" programs, such as the Berkeley E-Bike Equity Project (BEEP) or Portland's StreetTrust Ride2Own program, that are an alternative to the traditional leasing program. Participants are given an e-bike for an extended period but are required to meet certain program requirements, such as participating in safety education and orientation, group rides, and providing travel data and surveys. In exchange for participating in the program, they get to keep the bike.

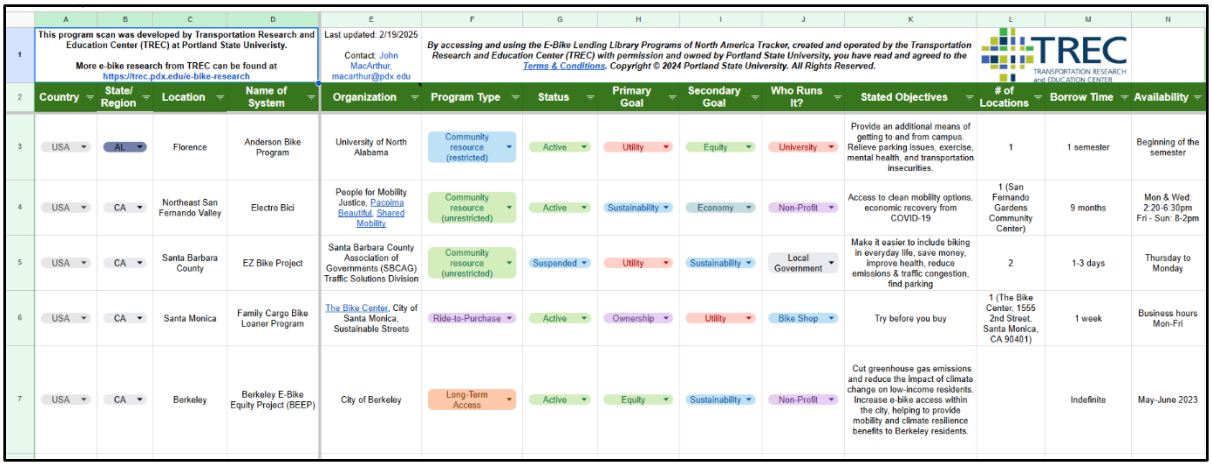
Program Scan

Methodology

Literature Review and Program Scan

A scan of the current state of e-bike lending libraries in the US was conducted in the spring of 2024. The initial list of libraries was built from some previous reports and news articles and augmented with additional web searches (Cummings 2023, Climate Action Center n.d., White, G. 2022). Information on these studies and programs was organized to determine significant characteristics and program elements. As a part of this scan, program details such as bike types, additional accessories and resources provided to participants, funding, limitations and requirements for library participation, and borrow time were collected. Web searches, academic databases, and Google news alerts were used to obtain studies and program information concerning e-bike libraries. A Google Sheet Tracker was developed to collect, organize, and share data on e-bike lending libraries (Community Resource and Try Before You Buy models). The tracker does not include For Hire (rental or bike share) programs. The information collected was sent to all programs via email contacts for staff or representatives to verify the accuracy, along with additional questions about program goals, operational aspects, and challenges. The results of the e-bike lending library program scan are available for public use on a Google Sheet maintained by TREC.[1] The table of e-bike lending library programs based on the Tracker is located in Appendix B.

[1] TREC U.S. E-bike Lending Library Tracker: https://docs.google.com/spreadsheets/d/1VVrR8UyueZL3j5DZJgPMM-cM3XEhnMlpUKf-uwuHwzo/edit?gid=1724787057#gid=1724787057



This program scan was developed by Transportation Research and Education Center (TREC) at Portland State University.

More e-bike research from TREC can be found at https://trec.pdx.edu/e-bike-research

Last updated: 2/19/2025

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Country	State/ Region	Location	Name of System	Organization	Program Type	Status	Primary Goal	Secondary Goal	Who Runs It?	Stated Objectives	# of Locations	Borrow Time	Availability
USA	AL	Florence	Anderson Bike Program	University of North Alabama	Community resource (restricted)	Active	Utility	Equity	University	Provide an additional means of getting to and from campus. Relieve parking issues, exercise, mental health, and transportation insecurities.	1	1 semester	Beginning of the semester
USA	CA	Northeast San Fernando Valley	Electro Bici	People for Mobility Justice, Pacoima Beautiful, Shared Mobility	Community resource (unrestricted)	Active	Sustainability	Economy	Non-Profit	Access to clean mobility options, economic recovery from COVID-19	1 (San Fernando Gardens Community Center)	9 months	Mon & Wed: 2:20-6:30pm Fri - Sun: 8-2pm
USA	CA	Santa Barbara County	EZ Bike Project	Santa Barbara County Association of Governments (SBCAG) Traffic Solutions Division	Community resource (unrestricted)	Suspended	Utility	Sustainability	Local Government	Make it easier to include biking in everyday life, save money, improve health, reduce emissions & traffic congestion, find parking	2	1-3 days	Thursday to Monday
USA	CA	Santa Monica	Family Cargo Bike Loaner Program	The Bike Center, City of Santa Monica, Sustainable Streets	Ride-to-Purchase	Active	Ownership	Utility	Bike Shop	Try before you buy	1 (The Bike Center, 1555 2nd Street, Santa Monica, CA 90401)	1 week	Business hours Mon-Fri
USA	CA	Berkeley	Berkeley E-Bike Equity Project (BEEP)	City of Berkeley	Long-Term Access	Active	Equity	Sustainability	Non-Profit	Cut greenhouse gas emissions and reduce the impact of climate change on low-income residents. Increase e-bike access within the city, helping to provide mobility and climate resilience benefits to Berkeley residents.		Indefinite	May-June 2023

Figure 5: Screenshot of the E-bike Lending Library Tracker

Interviews and Surveys

Once a variety of e-bike lending libraries were compiled into the tracker, publicly available contacts for each program were sent information about this project from TREC. This information included a short description of the project and its goals, a link to a publicly available version of the tracker, a request to provide information to TREC to update the tracker with any missing or incorrect information, and a link to a Google Form (Appendix C) with several questions about the process of operating an e-bike lending library. Several programs of interest were also interviewed throughout the spring and summer of 2024 to gain more insight into specific aspects of those programs. In total, of the 54 e-bike lending libraries identified in the US, we were able to send emails to 45 programs and received 18 responses, including 11 responses to the Google Form. In addition, the project team conducted 13 interviews with program staff of libraries and two funding organizations.

Overview of US Lending Libraries

Program Type

During our initial program scan, we found 68 total lending library programs in the US. Seventeen (17) programs had only fleets of standard (non-electric) bicycles. 54 programs included e-bikes as part of the fleet. In most cases, the non-electric bike lending programs were housed out of a local library and bicycles could be checked out using a library card. These programs represent a community resource (unrestricted) model. In an interview with one of the libraries in Ohio, the representative stated they were interested in including e-bikes in their fleet but had not made any current plans to do so. In addition, these programs tend to allow for daily checkouts and tend to be used for recreation purposes. We have removed the non-electric lending library programs from the rest of the analysis.

The e-bike lending libraries found in our program scan were grouped into four main categories: “ride-to-purchase,” “community resource (unrestricted),” “community resource (restricted),” and “long-term access.” Although the lines among the different models are sometimes blurred,

certain elements are unique to each, as described above. Of the 54 libraries, 28 were categorized as Community Resource libraries, and 26 were categorized as Try Before You Buy libraries. Of the e-bike lending libraries (54), 39 are currently active, 7 are currently closed or suspended, and 8 are proposed or funded but not yet operational. Of the four sub-category types of lending libraries identified in the scan, community resource programs were the most common, with 13 unrestricted and 15 restricted lending libraries. Ride-to-Purchase programs were also popular with 17 identified programs, 14 of which were currently active. There were 9 Long-Term Access Programs. These long-term access programs tended to be set up to collect individuals' behavior over longer periods, from 1 month to 1 year.

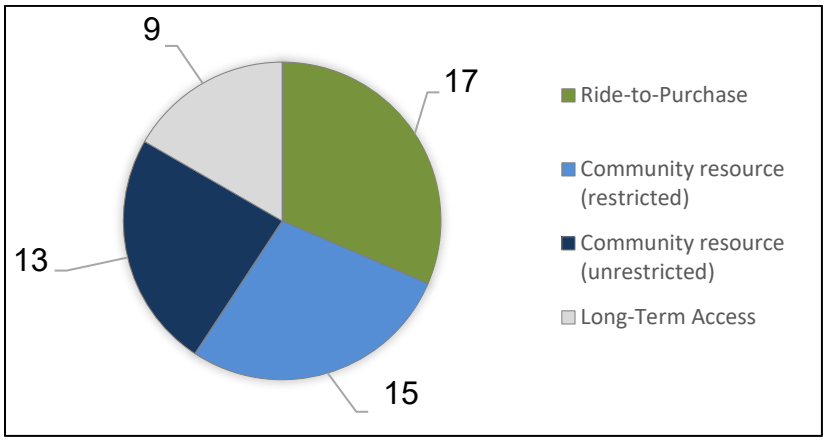


Figure 6: Type of E-bike Lending Library Program (n=number programs)

Program Goals

Each program was also categorized by 6 overarching program goals: economy, equity, ownership, recreational, sustainability, and utility. In general, these programs are trying to promote alternative active transportation to provide more mobility options in a community and reduce vehicle trips.

Economy

This goal focused on the economic vitality of the lending library service area. Programs that focused on an economic goal aimed to do so by helping people explore certain parts of the city, increasing tourism and local business activity, or providing e-bikes to employees that could use them for work (i.e., food delivery employees).

Equity (Expanding access)

Equity considerations mostly focused on a version of transportation justice. These programs often aimed to provide e-bikes to communities that have historically been underserved by transportation options and/or might otherwise be financially prohibited from trying or using e-bikes. These programs often gave particular consideration or priority to users below a certain income level or were located in communities with low rates of active transportation use to increase physical activity and overall well-being.

Ownership

Programs with this goal operated to provide users the opportunity to see how an e-bike could fit into their daily lives. Given the relatively recent increase in their popularity and their significant financial barriers, many adults in the US have simply not had the opportunity to ever even ride an e-bike. These lending libraries aim to break through those barriers by not only allowing users to ride e-bikes for no or very little cost, they also allow users to take the e-bikes home to better understand the experience of owning an e-bike. The end goal of these programs is to convince users to eventually purchase their own e-bikes to create a mode shift away from private vehicles. As a result, many of these programs are paired with information about rebates and other financial incentives available to users for the purchase of new e-bikes.

Recreational

This goal related to riding e-bikes as a recreational activity community members could participate in for personal enjoyment. Programs with this goal often focused on e-bikes as a way for users to get exercise during nice weather and as an opportunity for residents to experience new parts of their community in a different way. These programs emphasized the lending libraries as a cheap or free way to spend a day, attracting local residents and tourists.

Sustainability

Programs with the goal of sustainability emphasized e-bikes as a zero-emission form of transportation. Most of these programs had the specific goal of reducing greenhouse gas emissions, reducing single-occupancy vehicle trips, and increasing the mode-share of biking in the service area. These programs often advertised e-bikes as a convenient alternative to driving, highlighting the savings on fuel costs and the avoidance of car congestion and parking issues.

Utility

This goal focuses on e-bikes as a viable and convenient transportation alternative to private vehicles. Programs with this goal often focused on areas with limited transportation options (similar to the equity goal, but not necessarily with considerations of historical injustices). Many of these programs were specifically oriented around cargo e-bikes as an effective way for businesses to transport and deliver goods and as a way for residents to perform errands such as grocery shopping.

Most of the lending libraries reviewed address several goals simultaneously, so they are categorized by primary and secondary goals, each categorized from the six listed above. Every goal appeared at least once as both a primary and secondary goal but with varying frequencies. In general, sustainability (30), equity (23), and ownership (21) were the most common primary and secondary goals. The most common primary goal was “ownership,” with 19 programs stated as such, followed by sustainability, with 12 programs, and equity with 11 programs. Utility was listed as the secondary goal for 17 programs. Notably, several lending libraries in the tracker are labeled as being “equity-focused” because the program is either in an underserved

community or has a specific focus on low-income households but does not have equity listed as a primary or secondary goal.

Table 1: Primary and Secondary Goals of E-bike Lending Libraries

Type of Goal	Primary	Secondary
Economy	1	1
Equity	11	12
Recreation	2	3
Sustainability	12	18
Ownership	19	2
Utility	9	17
Not determined yet	*1*	*1*

Most lending libraries had an overarching goal of simply promoting knowledge and awareness about e-bikes. Specifically, several programs aimed to propose e-bikes as a previously unconsidered alternative to traditional bicycles. As regularly addressed in program responses and interviews, many people have rejected traditional cycling for its physical difficulty, while many more are simply prohibited from riding a traditional bicycle due to physical limitations. Many e-bike lending libraries offer a wide variety of bikes, including some adaptive e-bikes, to accommodate a wide range of physical capabilities and to encourage those who might have been alienated from cycling in the past to consider the use of an e-bike.

In deciding the goals of an e-bike lending library, it is important to consider how the purported goals will be interpreted by the community the lending library is intended to serve. In their interview, the representative from Traffic Solutions (Santa Barbara, CA) mentioned that a lending library without the goal of having the user purchase their own e-bike seemed to allow for more community engagement because people didn't feel like they were being "sold something." Especially in communities that have experienced a history of economic exploitation, it is important to emphasize the goals as they relate to an improvement for the community. For programs with a "ride to purchase" goal operating in these types of communities, it was important to provide the financial incentives available for e-bike purchases and that the lending libraries did not themselves operate to generate financial profit.

The chosen goals of an e-bike lending library are also closely related to the target populations of the library. Of the 54 lending libraries identified, 30 libraries have some type of equity focus, such as low-income requirements, being located in an underserved neighborhood, or being focused on people with limited transportation options. Eight libraries have specific income requirements, offering e-bikes only to certain residents whose income is below a predetermined level. Several lending libraries focus specifically on individuals with limited transportation options, with 3 programs requiring all participants to demonstrate this limitation (i.e., through distance away from their place of study or work, or a lack of a driver's license). Many programs do not have strict requirements for determining an individual's income status or a lack of transportation options but have chosen to be located in communities that have historically faced such challenges. This is particularly the case for libraries located in affordable housing

communities, such as Tigard and Roseburg, Oregon. Many of the 30 equity-focused programs have chosen to address equity concerns without potentially excluding residents who would not fall within the target populations. For example, many of the libraries are located in a specific neighborhood, and as long as you live in the neighborhood, the individual can use the e-bikes. This is not the case for many e-bike rebate programs, which require the submittal of an application and proof of income status to participate (Bennett et al. 2022).

Program Administration

Through the program scan, a variety of types of entities that run the lending libraries were identified and categorized as non-profits, community-based organizations (CBO), community centers, local bike shops, public libraries, universities, local governments, private companies/employers, and individuals/volunteers. More than half of the programs identified (29 of 54) were run by non-profit or community-based organizations, with an additional 13 programs being administered by local governmental entities. These two categories represent the majority of the lending libraries in the US, as most programs were supported in some way by local governments and were administered by those same entities or by non-profits in collaboration with those local governments. The other 12 were administered by bike shops, libraries, universities, or community centers. Some of these programs often served more niche purposes, such as with universities offering e-bikes only to their students and faculty or with private companies only offering e-bikes to their employees.

There are a couple of libraries managed by or run out of bike shops to create a program that allows community members to try e-bikes for free. This type of program can offer benefits to the community, but also increase business for the bike shop and increase sales of e-bikes. This type of program is best suited for a ride-to-own model. An additional benefit is the bike shop can easily maintain the bikes in the program. One example of this form of e-bike library is the Family Cargo Bike Loaner Program operated by The Bike Center in Santa Monica, California. They offer three types of e-cargo bikes to customers. A representative mentioned that they decided that one week was the ideal borrow time. If they extended the borrowing time to two or more weeks, they found that people were more likely to return a damaged e-bike, return it late, or request to keep it past when they agreed to borrow it. If an incentive program is paired with this type of program, interested individuals can easily transition to owning a bike after trying different models. This type of program can have several drawbacks, however. Because bike shops are businesses, they may prioritize people who are more likely to buy their bikes and exclude others from using the loaner bikes in the first place. Additionally, many underserved communities do not have local bike shops within their community and might need to travel long distances to utilize this type of program.

Pilot Studies

Some lending libraries started as a pilot study to learn from people using e-bikes, intended to function only for a limited period with a limited number of participants. Some of the programs are set up as a “loaner” or “ride-to-own” program to encourage the use of e-bikes and to provide ownership of the e-bike at the end of the pilot program. Many pilots funded by Colorado’s Community Access to Electric Bicycles Grant and Rebate Program are set up to provide a

specific community with a number of e-bikes to distribute to individuals who qualify for the program. These programs are often aimed at increasing e-bike use in an area by providing visibility and awareness of e-bikes as a viable form of transportation or providing e-bikes to a specific group of people, such as Pueblo's e-Cycle-to-Own that provides e-bikes to income-approved essential workers.

StreetTrust, based in Portland, Oregon, administers the Ride2Own program, which is a yearlong pilot that provides a pathway to free e-bike ownership. In addition to accessing a free e-bike, participants receive free safety gear essentials, free maintenance and tune-ups, community building and collaborative miles challenges, and the opportunity to inform decision-making for future transit and street infrastructure investments (StreetTrust n.d.). The first Ride2Own pilot launched in Portland's Portsmouth neighborhood in October 2023, and the second Ride2Own pilot launched in Spring 2024 in Hillsboro, Milwaukie, and Parkrose. Portland pilots are funded by Portland General Electric's Drive Change Fund. The program has enrolled 86 individuals, who are asked to provide travel data and survey responses to help determine the impacts of the program.

Most pilot studies have the goal of transitioning into full, indefinitely running lending libraries and are using the limited time scope as a "proof of concept" to procure more funding, while others simply aim to promote e-bikes and introduce them into the public consciousness (perhaps with goals similar to the ride to purchase programs).

In Washington, DC, in 2023, the Department of Energy and Environment (DOEE) solicited an RFP to create an e-bike program to reduce transportation barriers for low-income District residents through access to a clean transportation alternative and reduce transportation barriers that exist for many residents. The first pilot grant provided 10 District residents with a pedal-assist e-bike to see if it helped increase the residents' access to jobs, training opportunities, community resources, and recreation. The pilot results helped DOEE decide to provide a small grant (around $60,000 for 2 years) for an e-bike and cargo e-bike lending library, which was granted to the SW Business Improvement District (SWBID) to operate. The ride-to-purchase program provides e-bikes and e-cargo bikes to residents and SWBID employees for short-term use of up to a week for commuting or recreation.

Policy and Funding

As e-bike lending library programs are becoming more popular, communities across the country are looking for ways to fund these programs. Out of the 54 lending libraries found in the scan, we could determine funding for 43 libraries. Thirty-six (36) libraries received funding from a grant and 5 received funding from donations. The rest received funding from sponsorships or private funds. The grants received by lending libraries were from an equal mix of local and state government and utilities. Berkeley purchased 50 bikes at $1,500/each for their ride-to-own program, with a total operating budget of $250,000. State grant programs vary in size. Colorado has spent approximately $3 million over its last three years of funding, whereas Vermont has provided approximately $212,000 in grants. The creation of a dedicated climate fund approved by a voter-approved tax has been successful in local jurisdictions, including Boulder (CO),

Denver (CO), Berkeley (CA), and Portland (OR). These cities have used funds to invest in e-bike ownership through rebates and e-bike lending libraries.

At the federal level, there are no active federal grants specifically for e-bike lending libraries. However, both the Environmental Protection Agency (EPA) and the US Department of Transportation (DOT) have had grant programs that can be applied to community-based programs to address transportation needs. Currently, the FHWA Carbon Reduction Program is a federal competitive grant program created by the 2021 Bipartisan Infrastructure Law. The program provides states with over $6 billion in funding over five years to fund projects that reduce greenhouse gas emissions from transportation. Each state is required to develop a carbon reduction strategy that will guide the distribution of project funds.

The 2021 Infrastructure Investment and Jobs Act (IIJA), through the Congestion Mitigation and Air Quality Improvement Program (CMAQ), has added new eligibility for bike—and scooter-share capital projects and operations (Infrastructure Investment and Jobs Act IIJA, 23 U.S.C. 149). It should be noted that only air quality non-attainment and maintenance areas are eligible for CMAQ funding. E-bike education and promotion programs are eligible recipients of CMAQ funding. These funds are allocated by state DOTs to metropolitan planning organizations (MPOs). Though there are specific constraints to this funding, there are opportunities to fund part of an e-bike library's activities and operations.

The Transportation Alternatives Program (TAP) could also potentially fund e-bike lending libraries, but the eligibility depends on how the program is structured and aligned with TAP's focus areas. TAP is a federal funding program administered by state DOTs and MPOs that supports projects aimed at enhancing non-motorized transportation, improving access to active transportation, and reducing environmental impacts. While TAP primarily funds infrastructure projects like bike lanes, multi-use trails, and pedestrian facilities, it can also support non-infrastructure projects such as educational programs, bike-sharing initiatives, and efforts that promote safe and equitable active transportation. If an e-bike lending library is integrated into a broader active transportation plan—such as providing first-mile/last-mile solutions, connecting to bike trails, or improving community access—it may be eligible for TAP funding. The US Department of Transportation (DOT) has developed a list of pedestrian and bicycle funding opportunities for local government, MPOs, state DOTs, and transit agencies. This table indicates potential eligibility for pedestrian and bicycle projects under U.S. DOT surface transportation funding programs.[2] Though this table focuses broadly on pedestrian and bicycle funding, some programs can fund bicycle equipment, storage, and outreach and education campaigns that could be used for lending library programs.
At the state level, funding often comes from transportation, climate, or environmental justice initiatives. Programs like California’s Clean Mobility Options Voucher Program or Colorado’s Community Access to Electric Bicycles Rebate Program support equitable access to e-bikes, particularly in underserved communities. States with cap-and-trade or carbon pricing systems,

[2] Pedestrian and Bicycle Funding Opportunities: U.S. Department of Transportation Highway, Transit, and Safety Funds https://www.fhwa.dot.gov/environment/bicycle_pedestrian/funding/

such as Washington or Oregon, may also allocate greenhouse gas reduction funds to these programs, emphasizing their role in lowering transportation-related emissions.

Local and regional opportunities can further supplement funding. Metropolitan Planning Organizations (MPOs) often manage transportation improvement funds that prioritize bike and pedestrian infrastructure, which can include e-bike lending programs. Partnerships with utility companies, as part of their clean energy or emissions reduction goals, and public-private collaborations can also provide valuable funding or in-kind support. By aligning with broader goals like climate action, equity, and active transportation, e-bike lending libraries can tap into diverse funding streams to advance sustainable mobility solutions.

The next sections discuss the policies and funding opportunities for Oregon and Washington. These two states are both active in supporting e-bike lending libraries but with different approaches and mechanisms to fund programs.

Oregon

Funding for e-bike lending libraries in Oregon has come in various forms, and most programs have a mixture of funding sources. The Oregon Department of Transportation (ODOT) has funded one program through the Innovative Mobility grant program. HADCO received $5,000 from an Innovative Mobility micro-grant from ODOT. In 2022, ODOT created the Innovative Mobility Program to improve access to public and active transportation in historically underserved communities (ODOT n.d.). The program can fund many transportation-related activities, including pedal and electric bike lending libraries and bike shares, carpools and vanpools, bike parking, outreach activities, and training. In fall 2024, the first solicitation will open for Study and Assessment Grants and Pilot Grants, and in spring 2025, a solicitation for Service Expansion and Capital and Equipment grants will open (ODOT n.d.a.).

An additional funding opportunity is through Oregon's Carbon Reduction Program. Oregon will have $82 million over five years to fund Carbon Reduction Strategy projects that reduce greenhouse gas emissions from transportation. The Carbon Reduction Program will support a statewide E-Micro-mobility Pilot Program, which will provide capital funding for electric micromobility lending libraries in 4-6 communities with limited or no access to shared micromobility systems (ODOT n.d.). In September 2023, ODOT announced approximately $12.5 million for 15 projects in 11 counties and two Tribes. The first round of funding awarded $203,891 to Hood River County Transportation District for the Hood River County Rural Mobility Project to provide e-bike lending options at 3 transit mobility hubs in the City of Hood River. However, the District, which operates under the name Columbia Area Transit (CAT), had to cancel the project due to challenges with insurance coverage. The Special Districts Insurance Services (SDIS), which is a self-insured Trust under the Special Districts Association of Oregon (SDAO), has not traditionally included e-bike lending libraries within its coverage. This barrier shows a need to work through insurance coverage for this type of funding program to be successful for e-bike lending libraries (ODOT n.d.b.).

Another source of funding is through Oregon Department of Environmental Quality's Clean Fuels Program which provides funding to utilities to advance transportation electrification. Both Eugene Water and Electric Board (EWEB) and Portland General Electric have used the funds to support e-bike libraries in their territories (EWEB n.d., PGE n.d.). Other utilities have used the program funds to provide e-bike rebates or free e-bikes to residents of affordable housing communities (Pacific Power n.d.).

Similar to cities like Denver, Boulder, and Berkeley, Portland has created a dedicated climate fund called the Portland Clean Energy Community Benefits Fund (PCEF). Starting in 2025, PCEF will dedicate $20 million over five years to support Strategic Program 6: Comprehensive E-bike Access and Support (SP 6), which will fund rebates for income-qualified households for new e-bike and cargo e-bike purchases to be redeemed at local bike retailers (City of Portland, n.d.a.). Part of the strategy will be supporting community e-bike lending libraries, e-bike charging at multi-family housing, and training 50 e-bike mechanics.

Washington

In spring 2023, Washington State passed HB 1125, which appropriated $7 million from the Carbon Emissions Reduction Account to establish statewide e-bike rebates and lending library programs (King County Council n.d.). The Washington State Department of Transportation (WSDOT) will be administering the initiative and is currently in the program design stage for the e-bike rebates (Malarkey et al. 2024). The budget sets aside $2 million for WSDOT to establish an e-bike lending library and ownership grant program. The bill allows for programs for employees of state entities, local governments, and tribes for commute trip reduction purposes and for nonprofit organizations or tribal governments that serve low-income individuals or reside in overburdened communities. In the Powered Micromobility Device Lending Libraries policy paper from the Washington Joint Transportation Committee, a powered micromobility device lending library (PMDLL) framework for a statewide program is discussed (Cummings 2023). A state grant program should address three overarching elements: supportive administration, community-centered, and flexibility. The policy paper also describes elements of PMDLL programs, such as program goals, liability insurance, devices for programs, staffing, and user agreements.

Aligning with HB1125, the King County (WA) Council included a budget proviso request in the 2023-2024 Biennial Budget (King County Council n.d.). The Electric Proviso report was developed to explore an e-bike rebate, e-bike lending library, and e-bike ownership grant pilot program plan for King County (King County Council 2023). Though the report mostly focused on rebate programs, it highlights King County staff recommendations to a range of questions related to administrating and funding a lending library program. The report highlights lessons learned from programs they reviewed, such as:

- "Programs are best administered by local CBOs or retailers with a non-profit extension.
- Allow community partners flexibility in customizing the program to meet the needs of the communities they serve.

- Anticipate CBOs or nonprofits will have higher administrative costs to operate the program and build in necessary contingencies into the grant. Overhead and staffing costs tend to go towards community education, bike management, maintenance, storage, and insurance."

The Electric Proviso report found that lending library costs varied based on the number of bikes in a program, the cost per bike, the type of bike, and administration costs. This report found funding ranges from small programs ($25,000) to large programs ($250,000) total budget. Additional costs vary depending if the program is a ride-to-own model or a community resources program.

Locally, funding an e-bike program could be a permissible use of King County General Fund revenues, however, the General Fund is deeply constrained and facing continued reductions in the years ahead. King County Metro has been involved over the years in various bicycle-related initiatives, which have largely been funded by the state or federal government. Although local transit funding is largely committed, Metro could be a strategic partner in program design and support seeking external funding opportunities through the state, federal government, and philanthropy. In addition, Metro could participate in the broader discussion around the necessary infrastructure to support micromobility. Finally, a long-term opportunity to create sustainable funding would be for King County, in partnership with the State and local jurisdictions, to explore the possibility of creating a voter-approved tax that dedicates funding for climate initiatives.

The Electric Proviso report also provides two program-related recommendations. For program administration, community-based organizations (CBOs) or nonprofits should administer the programs as they are best suited to serve their communities but it may be appropriate to be operated by schools/universities, housing authorities, and libraries. Depending on available partners and the library model, it may make sense to award multiple smaller grants to individual organizations, like in Colorado and Denver, or as in Vermont having one organization, Local Motion, administer many programs across the state. For program structure, lending libraries are customized to fit the local context and the needs of the community with the goal of creating awareness, exposure, and adoption of e-bikes. King County suggests supporting of range of libraries, such as a traditional lending library or a ride-to-own program, to allow a variety of innovative approaches that best suit the needs of the communities and applications.

The report suggests pairing an income-qualified e-bike hybrid lending library and a rebate program. This model brings value by combining purchasing potential with the opportunity for community outreach to individuals or households who are income-qualified and who potentially reside in communities traditionally underserved with access to transit, as well as other county services (Bennett 2022). In addition, it helps build relationships between participants and bike professionals, which is important for ongoing maintenance. The proposed administration should be local CBOs or nonprofits through a grant process, which will consolidate program administration costs. This is over the alternative of establishing a separate rebate program managed by a third-party administrator. There is potential to scale this approach throughout King County based on available funding and interest from local jurisdictions and unincorporated

areas within the County to partner on the implementation of e-bike programs that match the local community context.

Highlighted Programs

The program scan highlighted many programs and lending libraries around the country. Below are four locations (Denver, CO, the State of Colorado, the State of Oregon, and the State of Vermont) that have developed a range of e-bike lending libraries.

Denver, Colorado

The Denver Climate Protection Fund (CPF), a 2020 voter-approved 0.25% sales tax that raises about $40 million per year, funds the e-bike rebate program and the Denver Mobility Incentive Program. The Mobility Incentive Program offers grants of up to $100,000 to nonprofits and other organizations to install bike storage lockers, places to plug in, and e-bike libraries. Since the launch of Denver's e-bike rebate program in 2022, over 8,000 e-bike rebates have been redeemed, of which nearly 50% have gone to low-income applicants (PeopleforBikes 2022, City of Denver n.d.). Rebate vouchers are released multiple times per year through an online application with the standard rebate amount of $300 and the income-qualified amount of $1,200, with additional rebates provided for e-cargo and adaptive e-bikes. Denver highlights the importance of Try Before You Buy lending libraries to provide people the opportunity to use e-bikes before purchasing and connecting people to the rebate program.

Based on the results of the Colorado Energy Office's "Can Do Colorado E-bike" pilot program in 2021-22, which provided e-bikes to low-income essential workers, the Denver Climate Action, Sustainability & Resiliency Office (CASR) funded three e-bike libraries with $225,000 from the CPF (NREL 2023). Northeast Transportation Connections (NETC), a transportation management association, was awarded a three-year contract to operate and maintain the e-bike libraries, focusing on residents who have limited access to safe transportation and transit options. NETC has also operated a neighborhood bicycle library since 2012 and used the new CASR and CPF funding to expand the existing system with e-bikes and additional services. With programs in Globeville, Elyria, and Swansea, NETC manages a fleet of 30 e-bikes as well as 8-10 traditional bicycles available at three pickup sites, each one located at a community partner organization. These community partners are organizations that provide community support services and training (NETC n.d.). In addition to lending e-bikes for up to a week at a time, the library also provides a helmet, bike lock, and battery charger to riders. NETC also offers rider support, such as bike maintenance and bike safety training for new members, leading introductory rides in the neighborhood to help riders find safer and lower-stress routes, map out key locations like parks and grocery stores, and become more comfortable and confident traveling by bike. In an FHWA case study on the Denver libraries, challenges in running the program were related to storage security, program administration, and finding the right location for the library. The case study also provides insights into bicycle selection, balancing rider support and staffing, and the importance of partnerships (FHWA 2024). These insights are described in further detail in the Program Elements section of this report.

Figure 7: NETC Library (https://www.netransportation.org/bike-libraries)

In May 2022, the Denver City Council voted to approve $830,000 for the Montbello Organizing Committee (MOC) to operate a community electric shuttle and charging station and an e-bike library with 10 bikes over 3 years in the Montbello neighborhood, a transportation desert. The program launched in May 2024 and is housed in a solar-powered storage container at the local community center. To further encourage and reward riders, MOC has implemented the Pedal and Win Program. This program allows residents to earn $1 for every mile they ride on their e-bikes, with the opportunity to earn up to a maximum of $500. The MOC will also help individuals interested in applying for the Denver e-bike rebate program.

State of Colorado

In 2022, the Colorado legislature passed SB22-193, creating the Community Access to Electric Bicycles Grant and Rebate Program with $12 million in funding to be administered by the Colorado Energy Office (CEO) (State of Colorado n.d.). In addition to the creation of the e-bike rebate program, funding has allowed the CEO to continue the "Can Do Colorado E-bike" pilot program (Colorado Energy Office 2023). This type of grant structure focuses on building local connections and tailoring specific models directly to the communities that will be utilizing the e-bikes. In 2021, the CEO awarded five organizations (4CORE in Durango, City of Fort Collins, Community Cycles in Boulder, Pueblo County, and Smart Commute Metro-North) funding for various types of e-bike loaning and library-type programs. The funding varied from $25,000 to $150,000. FY2023 funding was allocated to launch another eight e-bike projects across the state, with each project choosing different implementation approaches based on community needs. These programs are mostly focused on providing e-bikes directly to around 50 low-income, older adults or essential workers in each of the locations in a ride-to-own or leasing pilot model:

- E-Bike to Work Ownership Program; City of Grand Junction
- eBikeThere Garfield County, Clean Energy Economy for the Region (CLEER)
- Cortez 55+, Four Corners Office for Resource Efficiency (4CORE)

- E-Bike Match Program, Routt County Riders
- Fort Morgan E-Bike Access Program, City of Fort Morgan
- Choose Your Ride, Shift Your Ride, City of Fort Collins
- Earn-a-Bike, Community Cycles
- PikeRide For All, PikeRide.

State of Oregon

Oregon has a range of e-bike library programs from non-profits, local government, and university-based programs. In 2023, the Housing Authority of Douglas County (HADCO) in Roseburg, Oregon started piloting a program at two housing authority locations (HADCO n.d.). The program is designed to support individuals living in housing managed by the HADCO or low-income individuals served by their programs. The program was proposed by the HADCO Resident Advisory Board with the goal of expanding access to electric vehicles in the Roseburg area and promoting the benefits of electrification. The program is funded by a $5,000 ODOT Innovative Mobility Program (IMP) microgrant from the Oregon Department of Transportation and an additional grant from the Umpqua Transportation Electrification Team (UTET). The program currently houses 1 e-bike and 2 trikes across two HADCO locations for use by residents. Currently, the bikes are seeing low usage by residents even though they received early interest from people. One major concern highlighted by staff and residents is the availability of safe bike infrastructure near the locations. The HADCO team is working to do more outreach and education with residents. In the meantime, one of the trikes is being used by Umpqua Health for homeless outreach and engagement.

Power to the Pedal is a fare-free, closed-access e-bike share program currently operating at two privately owned income-restricted multi-family communities in Tigard, Oregon. The program was developed by the City of Tigard in collaboration with local affordable housing provider Community Partners for Affordable Housing (CPAH) as an equitable e-mobility access project. The initial funding came from a Portland General Electric Drive Change Fund grant to the City of Tigard. The program aims to increase access to electric micromobility options in underserved communities. The program opened in September 2023 with a fleet of six Tern bikes. The bikes are housed in a bike room at one location, and at the second location, they are stored outside in a custom-built secured locker designed to fit inside a single parking spot. Of the 38 users across both locations, six residents use the bikes very frequently, while the rest of the residents only sporadically use the e-bikes. As of May 2024, users have taken a total of 494 trips and accumulated 1,735 miles on Power to the Pedal bikes (Del Valle Tonoian 2024). Power to the Pedal was operated by Westside Transportation Alliance (WTA), a local Transportation Management Association (TMA), but is now managed by the City of Tigard.

Residents view Power to the Pedal as a valuable asset in their community. However, it appears to be underutilized due to numerous barriers. WTA staff interviewed users and residents on how they could improve the lending library experience. The users suggested improving the e-bikes by adding baskets, trailers, and child seats, increasing community awareness, and revising instructional and marketing materials to be clearer. Residents did state that a significant barrier to using the program is the existing infrastructure around the housing units and the local places

where people would like to go. Despite the availability of on-street bike lanes on the infrastructure surrounding these communities, residents still indicate they feel like it is unsafe to ride a bike in their neighborhood, with many opting to use sidewalks instead.

Figure 8: Power to the Pedal Storage Unit (Tigard, OR)

State of Vermont

Enabled by the Legislature with the passage of the 2020 Transportation Bill (Act 121), the Vermont Agency of Transportation's Mobility and Transportation Innovation (MTI) program is designed to support innovative strategies and projects that improve mobility and access to services for transit-dependent Vermonters, reduce the use of single occupancy vehicles, and reduce greenhouse gas emissions (State of Vermont n.d.). Since the beginning of the MTI program, $212,533 has been distributed to organizations to support e-bike lending libraries and bike access initiatives.

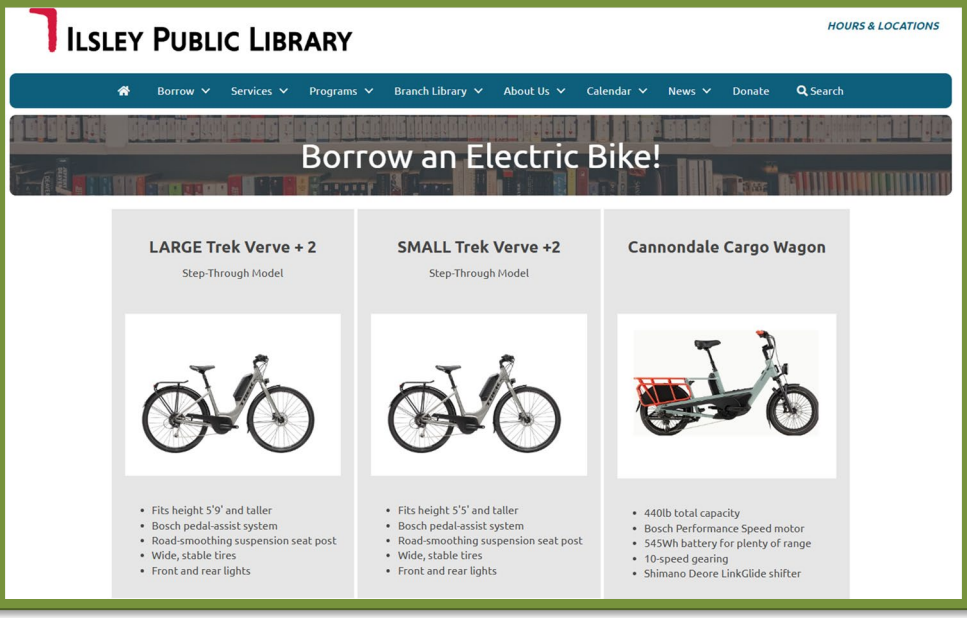
Local Motion's first bike lending library started in 2014 with a long-tail cargo bike that they put an electric motor on and loaned out from their Burlington office to anyone interested for about a week. The goal of Local Motion's E-bike Lending Library program is for participants to gain an understanding of how an e-bike can meet their daily transportation needs and reduce greenhouse gas emissions by providing free, multi-day e-bike loans and shorter e-bike demonstrations. In 2017, the Burlington Electric Department (BED) launched one of the country's first e-bike rebate incentives. Recognizing that people might want to try out an e-bike for longer than a test ride before purchasing, BED and Local Motion partnered to expand their lending library fleet so that people could try out e-bikes from local bike shops for multiple days at a time to see how they would fit into their daily transportation needs, before making a purchase (Local Motion n.d.). The early Local Motion program saw 106 week-long e-bike loans in a 9-

month period, with a 6 to 12-month post-loan e-bike 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.”

Since 2019, with funding from the Vermont Agency of Transportation’s MTI program and a grant from the Chittenden County Regional Planning Commission, Local Motion has set up and managed lending libraries in Burlington, Brattleboro, Rutland, Middlebury, Montpelier, and Springfield, and partners with Vital Communities for the Upper Valley library. Local Motion has a traveling e-bike lending library, which now has a fleet of three e-bikes that move between 5 or 6 communities around the state in one season (spring-fall). Local Motion realized that it was important to bring e-bikes to small communities around the state and educate people about the state and utility e-bike rebate programs. Local Motion partners with bike shops, energy committees, and community organizations in different parts of the state that host the fleet for a few weeks to a couple of months at a time and lend the e-bikes out to people in their communities. Local Motion helps run the program in each community for the first year and then gradually transitions those programs and their e-bike fleets to be owned and run by organizations in their communities.

Local Motion's E-bike Lending Library

"The goal of Local Motion's E-bike Lending Library program is for participants to gain an understanding of how an e-bike can meet their daily transportation needs by providing free, multi-day e-bike loans and shorter e-bike demonstrations. People usually purchase e-bikes precisely because they address many of the barriers to bicycling for transportation: they allow users to overcome the barriers of commute or errand distances that might be too far or take too long by conventional bike, hills, arriving to work sweaty or physically exhausted, and cargo carrying. Giving people the opportunity to borrow e-bikes for multiple days at a time gives them time to try the school drop off and pick up, work commute, or a trip to the grocery store, which is not possible through a shop demo or rental."



Program Elements

Based on the review of programs, this section details the specific program elements that should be considered when establishing an e-bike lending library. The program elements are grouped into three broad categories: programmatic, administrative, and operational. Each section contains specific recommendations and feedback from reviewing existing e-bike lending libraries through literature review, program scans, interviews, emails, and Google Form responses.

Programmatic

Identifying the objective of the library and the population it is serving is important when developing the framework for an e-bike library. These choices will determine the model that best suits the objectives. For example, if the goal is to provide low-income communities with an affordable means of transportation, a community resource model could be established at a

community organization to provide e-bikes and other services for free. If the goal is to encourage low-income community members to purchase their own e-bikes, the library could partner with a local bike shop to provide a range of e-bike models for test rides. To provide additional benefits, combining with an e-bike purchase rebate program that covers the majority of the cost of the e-bike can add additional ownership in the communities.

Community-centered Approach

Organizations developing e-bike libraries see the importance of providing people with the opportunity to experience and use an e-bike because they address many of the barriers to bicycling for transportation. E-bikes allow users to overcome the barriers of commuting or errand distances that might be too far or take too long by conventional bike, hills, arriving to work sweaty or physically exhausted, and cargo carrying (MacArthur et al. 2018). Giving people the opportunity to borrow e-bikes for multiple days at a time gives them time to try the school drop off and pick up, work commute, or a trip to the grocery store, which is not possible for many people through a shop demo or rental.

As described above, there are different models of lending libraries and these models often have goals promoting alternative active transportation to provide more mobility options in a community and reduce vehicle trips. The success of the program in achieving specific goals depends on how the library is set up and administered. It is important to understand the community's needs and develop a library model that best suits the needs of the community and the program goals.

For both the try-before-you-buy and community resource models, locating the library in the community is crucial for success. For community resource libraries, placing the library in a community center, host organization’s office, a local bike shop, or a resident building is an important element. It should be noted that the location of these types of libraries can determine the community that is being served and the catchment area of that community. There is no information or evidence of the distance someone is willing to travel to retrieve a bike from a library, especially to use for a specific daily task or trip purpose. General planning for bike share systems tends to be a quarter mile for station locations. There are programs like the Adaptive Biketown program in Portland, which is based out of a bike shop in the southeast central business district, where people will travel a long distance to check out an adaptive bicycle for recreational trips (City of Portland n.d.).

The try-before-you-buy models vary in how they serve the goals of the program and the community. These libraries are set up to provide people the opportunity to experience an e-bike for shorter periods with the ultimate purpose of selling e-bikes. These libraries can be placed in permanent locations or be mobile, moving to different temporary locations, pop-ups, or community events. From the scan, many of these test-ride types of libraries have an equity focus of serving underserved communities, so it is important to place these libraries in communities they hope to serve and minimize travel. The host organization can be based in the community or provide a mobile library that can be set up for events or short-term pop-up

locations. These types of libraries can be very valuable if the community has access to a rebate program but doesn't have a local bike shop.

Partnerships

Repeatedly emphasized throughout our correspondence with various lending libraries was the importance of strategic partnerships. The most highly recommended partnership was with a local bike shop. Local Motion, Los Angeles DOT, and Northeast Transportation Connections (NETC) specifically emphasized how essential their partnerships with bike shops were for expertise on e-bike procurement, repair, and maintenance. This partnership allows those administering the lending library to focus on the logistical aspects of running the program rather than requiring those administrators to also become technical experts on e-bikes. This partnership is also valuable in spreading information about the lending library and even gaining the trust of community members when partnering with a locally-owned, well-respected bike shop. For example, NETC partnered with both Focus Points Family Resource Center and Prodigy Coffeehouse to host their lending libraries in the Denver area.

These programs recommend partnering with trusted local businesses and community organizations to increase awareness about the program and connect to potential community members in specific target populations.

Partnering with Community Organizations

In April 2024, the Los Angeles Cleantech Incubator (LACI), in partnership with LADOT and community organizations, with funding from the California Air Resources Board (CARB), officially launched an e-bike lending library pilot in South Central Los Angeles, entitled “South Central Power Up,” to expand access to sustainable transportation. The library will be deploying 250 e-bikes, available to rent for a month at a time at 7 different locations in the community. This program is a result of over a year of collaboration, outreach, and organizing from the community organizations that will serve as hubs to rent e-bikes and provide training to all participants, including People for Mobility Justice, Ride On! Bike Shop, RideWitUs, SCOPE, T.R.U.S.T South LA, Esperanza Community Housing, Mercado La Paloma, Labor Community Strategy Center, and Community Services Unlimited (www.southcentralpowerup.com). @sc_powerup @laincubator

Costs & Funding

High administrative costs related to staffing, operational time, insurance, and storage and security were identified in many responses and interviews. Organizations also mentioned the high start-up cost, especially if the organization is using new space or is not an existing bike-related shop. Interviewees also noted challenges from recent e-bike costs and the potential of

price increases due to tariffs, finding vendors and insurance programs, and meeting partner expectations of resource and time commitment. Due to the cost of e-bikes, libraries may be constrained by the number of e-bikes, especially cargo bikes, that are available to be part of the library. Some of the Colorado programs use up to 30 percent of their funding on staffing and training programs to educate users about e-bike use safety. Due to staffing, maintenance, and storage requirements, lending libraries are more expensive than long-term access programs, which lend out e-bikes for long periods of time to a single user.

Based on the responses from individual lending libraries, annual operating costs for these programs can range from approximately $3,000 - $5,000 (using an existing program) to over $100,000 (larger programs with multiple locations and educational and outreach programs). The wide variety of costs mostly depends on the size and scope of lending libraries, as well as whether they are established alongside existing programs or are created as standalone entities. The least expensive lending libraries tended to be those created under existing university programs, such as the University of Oregon program being managed by the pre-existing UO Outdoor program, or through a public library, such as with the Athens County Public Libraries program, or existing community organization that focuses on biking, such as Boulder Community Cycles. These types of programs were able to capitalize on existing infrastructure and systems in place to manage the reservation and loaning of physical items and, therefore did not need to build any of these elements from scratch.

Most programs identified (at least 35 of the 54) were funded, at least in part, by state and local government grants. These funds often came from programs specifically created to target sustainability efforts, such as the California Air Resources Board (CARB) providing almost $3 million for the South Central Power Up library in Los Angeles, or the Denver Climate Protection fund providing $225,000 to Northeast Transportation Connections for their libraries in the Denver area. Local Motion has been successful in building its programs through multiple years of funding from the Vermont Agency of Transportation's Mobility and Transportation Innovation Grant Program. At least one set of programs (the future WSDOT lending libraries) will have their funding from a dedicated state DOT budget (Malarkey et al. 2024). This funding was officially approved in May 2023, and while this dedicated funding source is unique at the moment, other states might likely follow a similar funding model once Washington's lending libraries open for use. The Colorado CEO has also funded lending libraries and ride-to-own programs through the Community Access to Electric Bicycles Grant and Rebate Program. Similarly, Vermont's MTI program has granted $212,533 to support e-bike lending library programs. These grant-funding programs vary in size but are flexible in how the funds may be used from purchasing e-bikes and accessories to administrative and operational support. Several (at least 5) of the programs were supported primarily through donations or sponsorships from private companies, foundations, or individuals. These programs were often smaller ones, run by local bike shops (e.g., The Bike Center's Family Cargo Bike Loaner Program), universities (e.g., University of North Alabama's Anderson Bike Program), or groups of volunteers (e.g., Community E-Bike Lending Library).

Outreach & Education

Most responses from the lending libraries highlighted the importance of promotional materials relating to the programs. Common tactics to increase the visibility of lending libraries include pop-up demonstrations in busy public spaces and scheduled community rides. Both types of events provide potential users with the opportunity to try out the variety of e-bikes available before committing to a several-day (or longer) loan. Forth's Portland E-Cargo Bike Educational Lot (PEBEL) program includes 5 cargo bikes that are used in coordination with Metropolitan Family Service (MFS) and their new Portland Electric's Ways to Work program, which provides $500 rebates on e-bikes, to provide outreach and test rides at MFS events. Local Motion, the non-profit organization with several e-bike lending libraries across Vermont, specifically recommended both pop-up demonstrations and scheduled community ride events to increase community interest and engagement.

A variety of advertisement-like promotional materials can also be useful in spreading awareness about an e-bike lending library. Active San Gabriel Valley (SGV) (Richmond, CA) recommended some traditional means of advertising, such as billboards, bus ads, and social media presence, to increase the visibility of the program. Several programs also pointed out the need to demonstrate why a potential user should want to take advantage of an e-bike lending library, such as highlighting e-bikes' ease of use, increased carrying capacity compared to typical bikes, the low or no cost of the program, and the potential enjoyment of biking compared to other forms of transportation. The task of marketing an e-bike lending library was often more intensive than many programs originally planned for, so much so that the Bike Center (Santa Monica) recommended creating a dedicated role within the program to focus on outreach or partnering with a local community organization.

Administrative

Payment systems

The payment systems found in the program scan used three main types of payment systems; they either offered the bikes completely for free, for a refundable deposit, or for a minimal fee or nonrefundable deposit. Though libraries are predominately free to users, it is important to explain why the latter two should be considered. Most people view libraries as programs that loan objects and services completely for free. However, the reason traditional book libraries typically do not require refundable deposits or fees to check out books is that they are funded by various reliable sources, such as property or sales taxes, funds from the federal government, and various grants and donations. Since e-bike libraries are an emerging concept, they may not have a steady stream of income to rely on. Some programs choose to lend e-bikes for low or nominal rates. For example, checking out an e-bike for one month from Westside Rides in Washington County, OR costs $25. In comparison, renting an electric bike in the US can cost anywhere from $10-$20 per hour or $30-$100 per day. Additionally, electric bike shares, which are typically used to get from point A to point B, can cost from $0.15 - $0.45 per minute to use. For these reasons, while bike shares have lower rates than rental programs, they are not as affordable as e-bike libraries. The South Central Power Up program allows people to check out

bikes for 1 month with the opportunity to renew indefinitely. This program is free for the first 6 months of the program until September 2024. After this date, a low-cost pricing model will be introduced.

While some form of payment may be necessary for the continued operation of a library, there may be several drawbacks to participants. If the objective of the program is to increase equity and accessibility to e-bikes for low-income communities, then a fee or even a refundable deposit may be prohibitively expensive. A few programs addressed this by including a sliding scale based on the income of the participant (Cortez E-bike Program in Durango, Colorado), or by providing services for free while encouraging a $20 donation (Electro Bici in Northeast San Fernando Valley, California).

A few libraries do require users to provide a credit or debit card to cover incidentals or potential replacement costs in the event of loss or theft of the e-bike. Though this may be important to protect the assets of the library, this could be a barrier for some potential users, especially low-income and unbanked individuals. Of the interviews, none of the programs mentioned issues about users not returning or losing the e-bikes. Programs did mention e-bikes coming back needing basic maintenance or repair, but these were expected costs.

Insurance

One of the most substantial hurdles to establishing an e-bike lending library is securing the appropriate insurance at an affordable cost. Many of the e-bike programs interviewed discussed the high cost of insurance both for individuals and an agency. Obtaining individual e-bike insurance has been difficult and expensive. New programs warned that insurance premiums should be considered in an e-bike program budget during the startup phase or when applying for grants. A couple of smaller non-profit programs mentioned that they were only able to find one company to provide insurance with very limited coverage and restrictions on the use of e-bikes.

The Upper Valley E-Bike Lending Library stated that they very nearly had to permanently close their otherwise successful program because of the difficulty of finding an insurance solution. After several iterations, this program was able to secure a partnership with the City of Lebanon, New Hampshire, through Lebanon Public Libraries. This partnership allowed the lending library to be included in the city's insurance contract, which was only possible because the city coverage was already broad enough to allow the program to fold into the existing contract. Many existing lending libraries have followed the path of being included within existing insurance contracts from partner institutions. Many of the programs that receive funding from and/or are partnered with local government agencies are included in the insurance contracts held by those agencies. Community-based libraries such as universities or housing communities have an easier time finding insurance because they restrict users to their existing residents. The University of Oregon lending library is associated with the university's Outdoor program, which already had insurance specifically for the outdoor equipment it loans to its students. Many non-profit organizations, such as Active SGV (Richmond, CA), have existing insurance contracts that can be easily amended to also include property for an e-bike lending library. If a new,

standalone insurance policy is needed, some insurance companies specialize in brokering/underwriting outdoor sports equipment, which was recommended by the Bike Center in Santa Monica.

Smaller programs are having a more difficult time finding insurance and liability coverage for their libraries. Often there are limited insurance companies in their communities willing to take on coverage. Some of the organizations interviewed received estimates of $20,000-$40,000 per year depending on location, type of program, and the number of bikes. In many cases, the cost of insurance can be a significant cost related to the overall funding received by these organizations. HADCO, for instance, does not provide insurance for loss, theft, or damage. If a HADCO e-bike is lost, stolen, or damaged while the e-bike is checked out, the user may be liable for the cost of the repair or replacement. HADCO also does not provide insurance of any kind, including property damage, liability, personal injury, injury to others, damages, penalties, fines, and losses. HADCO recommends that library participants purchase their own insurance policy to provide appropriate coverage when using a HADCO e-bike. NETC has a General Liability Endorsement covering its library program, a Mobile Property Policy covering the equipment, and a Participant Accidental Injury Policy covering underinsured participants in the event of an accident. They estimate this cost to be approximately $3,000 per year for this coverage through a nonprofit insurance organization, HUB International.

In the King Country (Washington) Electric Proviso report, there is a lengthy discussion on legal and financial concerns related to funding and operating e-bike lending libraries (King County Council 2023). The report highlights liability concerns, which can be a real challenge for governmental agencies, and suggests mitigation strategies related to user education, user contracts for safety behaviors, and legal mechanisms to shift liability to the users. The report also describes legal concerns about incorporating e-bikes into the county or departmental fleets and what might be covered by insurance, general liability, and worker's compensation programs. As a potential funder of libraries, the report discusses higher potential insurance liability risks associated with community lending libraries and being held liable for injuries and open to expensive lawsuits. To mitigate the liability, the authors suggest the following strategies:

- Pilot a loan-to-own (also known as ride-to-own) program that would then have similar insurance considerations as a rebate program, as opposed to the higher insurance requirements of a lending library.
- Participants must have proof of personal insurance and/or sign user liability contracts. Explore the possibility of providing rental insurance in addition to, or in lieu of, participants providing their own proof of personal insurance. Developing a strong user contract that will shift liability for safe behavior will shift liability (and insurance coverage requirements) to users and any contractors.
- Develop employee lending libraries instead of community lending libraries. The liability would be on the organizations to manage (King County Council 2023).

User Agreements

Most lending libraries identified require users to sign some version of a waiver or user agreement before renting an electric bike. User agreements and liability waiver agreements

outline the responsibilities and obligations of the user during the rental period. These documents typically state that the administrators of the lending library are not responsible for the users' safety during the lending period, as well as outlining any potential charges for damaged e-bikes beyond normal wear and tear. User agreements will also outline fees or charges and will contain release disclaimers, limitation of liability, and assumption of risk. Programs interviewed related that either their organization or the funder had legal representatives develop the user agreement to ensure protection for the organization.

To address safety concerns, many programs (such as the NETC libraries, the HADCO lending library, and Forth's PEBEL project) require users to complete safety training before borrowing an e-bike. These trainings often consist of a mixture of written and video resources, as well as test rides with program employees to ensure the user can operate the e-bike comfortably and safely. In addition to these requirements, many programs have systems in place to reduce the likelihood of theft of the e-bikes, such as presenting a government ID at checkout for details to be recorded, or even placing a refundable hold on the user's credit card (e.g., the Bike Center's Family Cargo Bike Loaner Program).

Operational

Online / Ahead-of-Time Reservations

Most lending libraries have systems in place to allow users to reserve e-bikes in advance. Most of these systems implement a user-friendly online scheduling interface (e.g., Google Forms or Calendly) or a form of direct digital contact (e.g., email or contact form on the website). However, some programs, such as Colonial Heights Library's E-trike lending library, do not accept any form of reservation. While providing ahead-of-time reservations might allow users to plan ahead for e-bike use, reservations can also pose a barrier to accessibility. In their interview, the representative from Local Motion stated that their online reservations filled extremely quickly after opening, sometimes within just a few hours. Given that Local Motion's programs, like so many others, are focused on providing access to e-bikes to those who have limited transportation options, these quickly filling reservations raised questions about their usefulness. Some options to prevent a select few from monopolizing online reservations are to prevent an individual from creating more than one reservation simultaneously, only opening reservations a set amount of time in advance, or simply not accepting reservations.

Check-In / Out Procedures

One of the most important administrative decisions relating to an e-bike lending library is how to structure the check-out and check-in processes of the bikes. The University of Oregon emphasized the importance of having a specific plan before opening a lending library for public use. The Bike Center (Santa Monica) recommended employing a single point-person in charge of check-outs and check-ins to streamline the process and more easily keep track of the e-bikes. NETC, operating even larger lending libraries than the Bike Center, recommended hiring several staff dedicated to check-outs and check-ins to add redundancy to the process and accommodate a larger fleet. Many libraries have online applications that users must fill out

before using an e-bike, which includes a user agreement, waivers, safety and use information, contact information, and a credit card or ID deposit. Some of the libraries, such HADCO (Roseburg) and Montbello (Denver), require formal or informal training or informational sessions by library staff before use. These programs feel it is important to show how the e-bike works, discuss battery charging, expectations of use, and securing the e-bike, and answer any questions. Based on interviews with programs, users tend to have no previous experience with e-bikes or even cycling as adults. The information sessions should be designed to provide simple guidance, demonstrate proper use, and support for riders of all skill levels.

Type & Number of E-Bikes

Most e-bike lending libraries offer some variety in the type of e-bike to serve a variety of needs and users. Often, this entails the same model of bikes in different sizes or one model of commuter e-bike and one model of cargo e-bike. However, some programs go beyond this, allowing users to try a number of different styles, brands, and sizes (e.g., Traffic Solutions' EZ Bike Project (Santa Barbara) offered 17 unique models of e-bike) (SBCAG n.d.). Providing more models of e-bikes increases the number of potential users by serving a wider variety of abilities. One particular strength of e-bikes over traditional bicycles is their ability to be more easily adapted to users with certain disabilities. By offering some types of adaptive e-bikes, a lending library could provide a new transportation option to those whose mobility is often most limited. A larger collection of models can also increase general interest in a program. As the representative from Active SGV stated, they believe that their current lending library is rather limited, with only two e-bike models offered. They surmise that a wider offering of e-bikes would not only increase general participation but also encourage return users by providing them with new experiences.

While offering more models of e-bikes can potentially serve a wider population, it also presents unique challenges to a lending library. Maintenance of e-bikes was a common hurdle for existing lending libraries, and performing necessary maintenance becomes increasingly difficult when trying to accommodate more styles and brands of e-bikes. Additionally, many e-bikes require proprietary tools, parts, and chargers, so the more brands of e-bikes a lending library offers, the more resources and accessories it will need to maintain them. Finally, while offering more models of e-bikes might seem like a reliable way to serve more users, this might not always be the case. The University of Oregon lending library currently offers 6 different types of e-bikes, and they recommended opting instead for just 2 models (a standard e-bike and a cargo e-bike). Their library currently only has one of each style of e-bike, and their users sometimes end up waiting several months to reserve the model of their choice. By offering the same number of e-bikes but in fewer models, the program felt that they could reduce wait times and, therefore serve more users. In discussions with Power to the Pedal (Tigard, OR), a library for affordable housing residents, users provided feedback to equip the bikes with a better way to carry cargo, rather than relying on the user to provide baskets or panniers themselves (King County Council 2023). To address the barrier riders face when traveling with children, the Power to the Pedal program should consider implementing a library of accessories, like child seats or trailers.

The NETC libraries (Denver, CO) provide two models of e-bikes, a standard crossbar frame and a step-through frame that allow riders of different ages and abilities to more easily mount and dismount the bike. NETC is also considering expanding the fleet to include a cargo e-bike model to support additional utilitarian trips. The library updated its loaner fleet from the initial offering after learning what bike equipment best served its riders for a better overall fleet composition. NETC staff also considered tradeoffs with bicycle hardware in their selection criteria. In the FHWA case on their program, they highlighted the following decisions and suggestions related to bicycle hardware:

- Rear Hub motor vs Mid-Drive motor: It is easier for staff and users to change flat tires with a mid-drive motor instead of a rear hub motor that sits on the back wheel.
- Throttle vs Pedal Assist: NETC strongly recommends using a Class 1 pedal assist e-bike versus Class 2 models that have throttles based on safety concerns.
- Fat Tire vs Regular Tire: Though fat-tire bikes (60–90 millimeter wheel rims) are more stable, have a lower impact for riders, and perform better in weather, NETC found that larger wheels are incompatible with front-loading bike racks on Denver's bus system and suggest narrower width wheel rim (23-28 millimeters).
- Battery Safety: All purchased e-bikes should use UL-certified batteries and chargers from reputable manufacturers to mitigate the risk of lithium-ion battery fires.
- Bike Tracking: NETC currently uses GPS units with a six-month battery life that connects to a smartphone app and allows for better accuracy for recovering bikes.
- Quality Bikes: NETC found that higher-end components need fewer adjustments, less maintenance, and fewer tune-ups over time. NETC recommends hydraulic brakes for fleet applications (FHWA 2024).

The bicycle selection decisions will depend on the manufacturer represented in the area or community and the available models. Often, libraries worked directly with local bike shops and their bicycle manufacturers. It is important to note that many bike shops have specific relationships with manufacturers and often only maintain e-bikes from specific brands, as mentioned below in the maintenance and repair section. Though no e-bike lending library mentioned having or concerns with Class 3 e-bikes, issues with local regulations related to the use of Class 3 e-bikes and safety concerns with the speed of Class 3 e-bikes (up to 28 mph) might make administrators of the program reluctant to include these bikes in the fleets.

Given the budget of the program, what e-bike models are chosen and the e-bike pricing is an important consideration. The City of Berkeley and its partner Grid Alternatives looked to balance affordability and quality when choosing the e-bikes for their program, going with Aventon and RadPower e-bikes with an average cost of $1,500. A few libraries mentioned the ability to get volume discounts when buying a large number of e-bikes. The University of Oregon has four e-bikes in its fleet, with commuter e-bike pricing around $1,400 per e-bike and its e-cargo bike pricing closer to $6,000. Depending on the model of the e-cargo bike, pricing can vary from $3,500 to $7,000.

Figure 9: Rutland Library E-bike Fleet https://www.rutlandrec.com/ebikes

Accessories

Most lending libraries provide their users with basic bike accessories they might not otherwise own, such as a lock and helmet. Locks were the most common accessory offered, as a high-quality lock can significantly reduce the chances of bike theft, which is particularly important considering the high cost of e-bikes. Providing helmets is an easy way to encourage helmet use while riding, and they are relatively inexpensive to replace if they become damaged or lost. Some programs offered other safety accessories relating to visibility, such as rechargeable lights and reflective vests for night riding. Accessories to increase convenience for riders were sometimes also provided, such as panniers to transport cargo and a water bottle to be mounted on the e-bike. A few lending libraries, such as Pueblo County's e-Cycle-to-Own, even provide users with flat tire patch kits and spare tubes for users to perform emergency flat fixes. Tigard's Power to Pedal users and residents suggested improvements to the e-bike by including baskets, trailers, and child seats to make the bikes more inclusive and useable to more potential users. Two libraries (Power to the Pedal and Bybee Lakes) equip bikes with GPS tracking, both to know where bikes are at all times and to collect data on the use of the bikes for program evaluation.

Figure 10: Mobility Innovation District (MID) in Washington, DC provides e-cargo bikes to residents and employees

Maintenance & Repair

As reiterated throughout many responses from lending libraries, partnerships with bike shops were incredibly useful, especially for e-bike repair and maintenance. Most lending libraries purchased their entire fleet from a local bike shop to ensure easy access to nearby experts to provide service. Several lending libraries specifically mentioned the importance of factoring in maintenance costs to the overall budget, as the costs will be relatively regular and absolutely essential to the operation of a lending library. In relation to charging the e-bikes, most lending libraries provided chargers for participants to use at home, but not every program followed this model. In fact, Pacoima Beautiful recommended requiring users to return to the physical location of the lending library to swap a dead battery for a charged one. In doing this, the administrators were able to interface with users more often throughout the loan period. It also provided them the opportunity to check the e-bikes and their condition and to gauge their levels of usage. One major downside of this system was that this potentially made the program less convenient for users who live far away and have limited transportation options, which is a specific population the lending library is intended to target. In Denver, NETC regularly services the bikes as they come through the library so flat tires or other mechanical issues do not become persistent, unfixed problems. The Power of the Pedal program (Tigard, OR) estimated around $100 per bike tune-up performed by a local bike shop. In addition, they paid approximately $30 per flat tire on an as-needed basis. The staff originally scheduled four tune-ups a year but went down to three due to lower need. The recently launched Bybee Lakes Health Center (Portland, OR) library worked with their local supplier to support bi-annual maintenance. The original budget of the project also included the purchase of extra tubes,

lights, grips, and some other bike parts. It was important for the center to have a maintenance partner because of the amount of use the bikes are expected to get.

Staffing

Staffing depends highly on the type of library model being implemented, the size of the library, and the length of time e-bikes are allowed to be borrowed. Hands-on support is important for building rapport with new members and getting them knowledgeable and comfortable with using an e-bike. Programs like Local Motion in Vermont, which manage bicycle supply and operations across multiple locations and a mobile library, require significant staff time. Almost all the programs require orientation and safety training for using the e-bike, which includes battery charging and operating the e-bike, and bicycle safe riding orientation, which includes rules of the road, local bicycle routes, etc. These trainings can take significant staff time depending on the type of lending library, the number of bikes, and how long people check the bikes out. Many of the programs mentioned the amount of staff time needed to launch a new bike library or expand existing programs, especially with writing grants, working with community partners, and administrative needs of establishing a website, user agreements, and scheduling procedures, which are often time-consuming and might not be covered by grant funding. Additionally, programs need to determine what level of bike maintenance will be done by in-house staff versus a partner bike shop. Though bikes will only need minor maintenance within the first year, some programs do safety checks before any bike is released to any user, which requires staff to be available during check-in/out procedures.

NETC originally hired a Bike Library Manager who worked 16 hours per week but found that it was not sufficient to keep up with user interactions and maintenance needs and determined it needed additional funding to bring the Bike Library Manager on full-time (FHWA 2024). Often there are many potential program elements an e-bike library could implement, depending on users' needs and the organization's capacity. To increase the use of the Power to Pedal e-bike, staff learned that users wanted additional promotional materials, including translation services for members, route planning advice, responsive maintenance, and additional bike accessories. The staff currently spends roughly 8 to 10 hours per week managing the program, interacting with the property management, and planning for and delivering outreach efforts.

Library Location

Many lending libraries have a single location to pick up e-bikes, often at the local bike shop the program has partnered with or at the physical headquarters of the non-profit organization administering the program. However, some libraries branched out to secure more partnerships that could provide physical venues, often with specific consideration given to the target populations of the program. For example, NETC partnered with three organizations across the Denver area that offer services to the lending library's target population: Prodigy Coffeehouse, Focus Points Family Resource Center, and Beloved Community Village. The Prodigy Coffeehouse is a popular cafe and non-profit organization that employs young adults who have struggled to find employment elsewhere. Focus Points Family Resource Center is a non-profit organization providing educational and family support services to low-income families in the northeast Denver area. Beloved Community Village is a complex providing temporary housing in

tiny homes for those experiencing homelessness in the Denver area. All of these partners serve low-income, marginalized residents of the Denver area, so NETC can easily connect with potential users who might benefit considerably from the lending libraries. The South Central Power Up program covers 17 zip codes in South Central Los Angeles with 8 community partner hub site locations.

While offering e-bikes at several different locations might allow a lending library to serve more users, it also certainly complicates its operation. More locations generally require more staff to monitor check-outs and -ins, and spreading a fleet across several locations might require users to wait longer to reserve a specific model of their choice. To provide more access to the program, Upper Valley provides a mobile library of four e-bikes of assorted styles and retail costs that has one- and two-week residencies in towns and workplaces throughout their region. While the e-bike library is stationed at a particular location, people can try multiple bikes at "Demo Days" or sign up to borrow a single bike overnight.

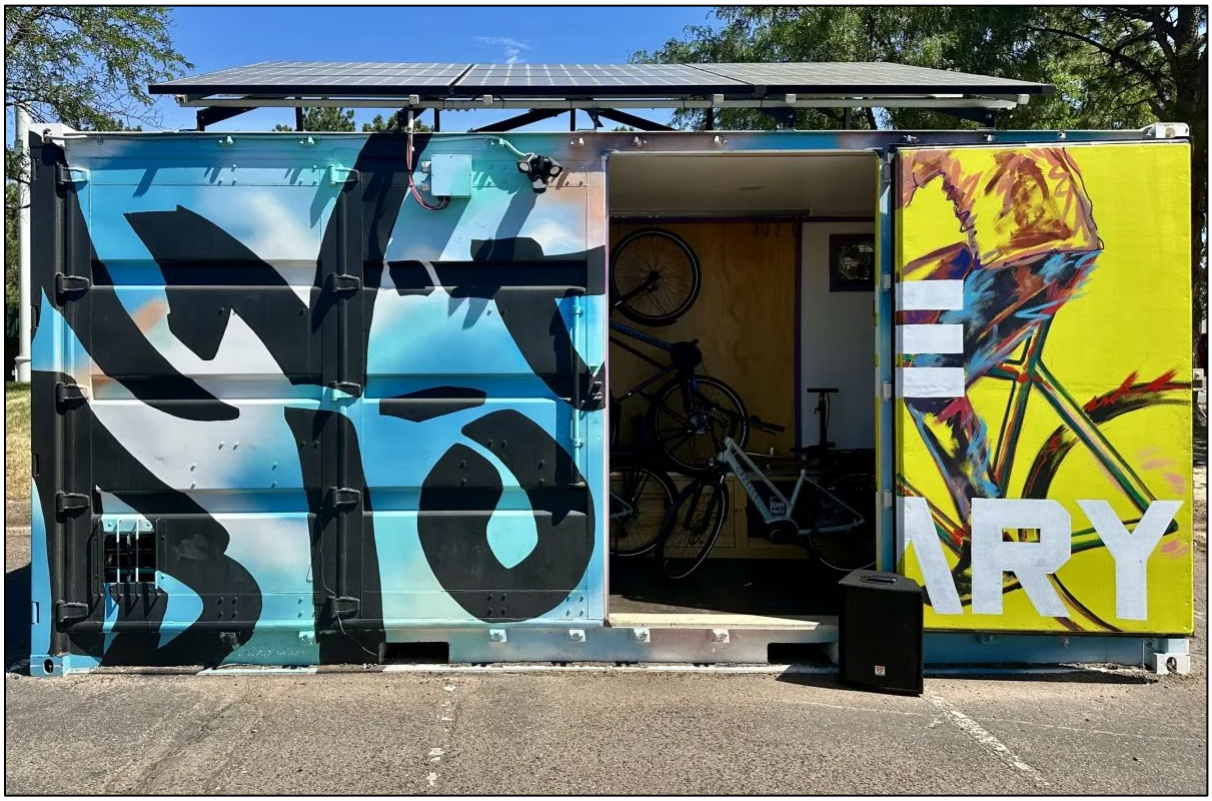


Figure 11: Denver's E-bike Storage Container Located in Montbello Neighborhood (Photo credit: Aidan Sloan)

Training and Services

Many lending libraries provide users with a variety of services, including bike maps and route planning, e-bike training and consultation, and group bike rides. Educational services and information, especially those related to commuting and safety, can be particularly helpful for

those who have little or no experience with commuting by bike in their neighborhood. Pacoima Beautiful highly recommends administrators provide live training to users at check-out to ensure the users are fully aware of the functionality of the e-bikes. They also recommended streamlining this process as much as possible and providing training videos that could be referenced by users at a later time. Pacoima Beautiful also spoke very highly of group bike rides as a way to increase visibility and simply provide a fun way for users to utilize their e-bikes. Group rides can also encourage potential users who might not be confident riders or those with safety concerns about riding a bike in their neighborhood. Traffic Solutions (Santa Barbara, CA) “EZ Bike Project” utilized their fleet of e-bikes to run weekly group rides.

E-bike lending libraries, especially Try Before You Buy models, are often paired with outreach and education events related to incentive programs. Many states in the US have recently created a number of incentive programs to encourage the purchase of new e-bikes. These programs aim to make e-bikes a more attractive form of transportation and decrease the financial barriers they pose, but they might not be well-publicized to users who might otherwise benefit from them. E-bike lending libraries present the opportunity to spread awareness of these programs and allow test rides to people who might be most limited by the financial barriers of e-bike ownership. As Local Motion pointed out in their interview, information about these incentive programs is critical for the success of ride-to-purchase programs, as they often encourage users to commit to purchasing their own e-bike. In addition to information about these incentive programs, some libraries offer information on other transportation options available in the area, such as bike education, bike share memberships, and public transit passes, both of which often have discounts for income-qualified users.

Some of Pacoima Beautiful’s Electro-Bici members in Northeast San Fernando Valley lack previous experience riding a bicycle or riding it on the road. There is also a recognition of insufficient cycling infrastructure within the surrounding community. To address these concerns, Pacoima Beautiful adopted several strategies. First, they require their members to complete extensive online and in-person training sessions. They acquire their online courses from the League of American Bicyclists, where participants are taught the basics of cycling and essential street skills. In-person educational training is outsourced to People for Mobility Justice, a local community partner. Second, when members are cleared to check out an e-bike, they are provided with safety gear such as helmets, bike locks, reflective vests, and bike lights.

Figure 12: Local bike shop staff conducting e-bike training in Portland, OR

Borrow Time

Average borrow times for an e-bike typically ranged from several days to one week, but some programs allowed users to borrow an e-bike for a month or more (e.g., the University of North Alabama's Anderson Bike Program allows users to borrow an e-bike for an entire academic semester). A few programs specifically limited cargo e-bike lending to 1 day (e.g., Community Cycles's eCargo Bike Reservation), with the assumption that cargo bike reservations would be made primarily for their utility to accomplish a specific task. Some other programs, such as the Athens County Public Libraries, offer even shorter lending times of only a few hours. In the case of Athens County Public Libraries, their primary goal is recreation for the users, so a short loan period is reasonable for their program, as users do not intend to bring the e-bikes home.

NETC noted that community members who need help with reliable transportation will most likely need the e-bike week after week, which turns into a long-term rental vs a short-term. They highlight the importance of getting "super users" their own e-bike and, if possible, helping them apply for rebate programs. In the evaluation of the Power to the Pedal, six of the 38 residents used an e-bike very frequently. Because of the structure of the program, users can check an e-bike for as long as they need. At least one resident uses the e-bike to commute to work, where the bike might sit unused for the day. Though the utilization of the Power to the Pedal library does not require constraints on the length of time a bike can be borrowed, in many ways, a community resource lending library is not the best use for someone's daily use for commuting. Other programs, such as DC's Mobility Innovation District lending library, allow users to check out bikes for 1 week at a time. This system is great for building experience with e-bikes, but once the bike is returned, the user also loses the mobility that the bike provided them.

Several ride-to-purchase programs warned against loaning e-bikes for longer than one week. The Bike Center in Santa Monica used to loan e-bikes to users for two weeks but decided to shorten the loan period to one week. In their interview, the representative from the Bike Center stated that, because their program is a ride-to-purchase model, users did not need more than a week to determine if the e-bike filled a need in their daily lives. In loaning the e-bikes for two weeks, the Bike Center found that some users wanted to keep them indefinitely or returned them in poor condition. The representative from Local Motion recommended a borrow time of 3 to 6 days as ideal. Through a variety of experiences, Local Motion views this timeframe as a balance between shortening the borrowed time enough to allow more people to try the e-bikes and providing each user with enough time to try the e-bike in a variety of settings.

Discussion

E-bike directly supports city climate goals by reducing vehicle miles traveled (VMT) and promoting sustainable transportation. E-bikes, especially in urban areas, are a low-carbon alternative to car trips, particularly for short to medium distances. Studies have shown that e-bike users are more likely to replace car trips compared to traditional bike users, which can significantly reduce transportation-related emissions. By integrating e-bikes into local transportation systems, cities can advance their greenhouse gas reduction targets while addressing congestion and improving overall urban mobility.

E-bike lending libraries can potentially help encourage people to purchase an e-bike or can be a valuable community resource for residents. These programs often prioritize affordability, allowing low-income individuals and households to access e-bikes without the upfront cost of purchasing one. For people living in areas with limited public transit or long commutes, e-bikes provide an efficient, cost-effective way to travel to work, school, or other destinations. By offering flexibility, affordability, and access, e-bike lending libraries can help bridge transportation gaps, improve mobility equity, and support the broader adoption of active and sustainable modes of travel.

Our program scan identified 54 e-bike lending library programs in the US. The e-bike lending programs were further categorized into four models: “ride-to-purchase,” “community resource (unrestricted),” “community resource (restricted),” and “long-term access.” Most programs (39) are currently active, with others either proposed, funded, or temporarily closed. The most common models were community resource programs (28 total), followed by 17 ride-to-purchase programs and 9 long-term access programs. Each program typically aligns with one or more goals, such as promoting sustainability, equity, ownership, recreational use, utility, or local economic development.

Program goals drive the design and implementation of e-bike lending libraries. Sustainability, equity, and ownership are the most frequently cited goals. Sustainability-focused programs aim to reduce greenhouse gas emissions and promote e-bikes as zero-emission transportation alternatives. Equity-oriented programs prioritize access for underserved and low-income

communities, helping to address transportation barriers. Ownership-based programs focus on allowing users to try e-bikes over time, breaking financial and knowledge barriers with the hope of encouraging eventual e-bike ownership. Other programs target recreation, utility for errands or cargo delivery, and economic vitality by supporting tourism and local businesses. Notably, some equity-focused programs serve disadvantaged communities without requiring income verification, ensuring broad access while addressing historic transportation inequities.

Program administration varies but is largely led by nonprofits and local government entities, which collectively account for over 75% of programs. These programs are often collaborative, with non-profits partnering with local governments to secure funding and deliver services. Other administrators include public libraries, bike shops, universities, and private employers. Bike shops, for example, can offer ride-to-own models that allow users to test bikes and transition to ownership while also providing ongoing maintenance. However, this model can face challenges, such as limited access in underserved areas. Localized and flexible administration models are key to ensuring that programs are tailored to community needs and priorities.

E-bike libraries found in our program scan typically have one of two objectives. The most common is to provide community members access to a form of affordable, reliable transportation. These programs tend to cater to low-income individuals, essential workers, employees, or community members. The second is to help individuals gain exposure and familiarity with e-bikes and ultimately encourage people to purchase an e-bike and reduce car trips. Depending on which goal an e-bike library is attempting to achieve, a program administrator would use slightly different strategies.

If the program's objective is to encourage ownership and ultimately reduce vehicle miles driven, several strategies can be adopted. These types of programs target individuals who may already own a car, whose commute or daily trip is under five miles, and who take frequent, short car trips. A ride-to-purchase program should provide a diverse fleet of bikes, including different types, sizes, makes, and models. This allows a wide range of individuals the ability to test ride and choose the best bike that suits their needs. Studies show that someone who has more knowledge about e-bikes is more likely to purchase one for themselves than someone who has never ridden one before (Simsekogiu 2019). Providing users with a variety of bikes to choose from allows them to select the e-bike they believe will best suit their needs. In a similar vein, it is important to allow users to try out multiple bikes over a period of time (though you can impose restrictions if demand is too high). This way, they can compare multiple e-bikes and may be more likely to find one that works for them.

For community resources models offered to low-income communities, employees of an organization, transit-dependent individuals, and essential workers are often important to create access to mobility options and increase transportation equity. Additionally, contrary to our recommendation for the first objective, it can be more effective to have a limited fleet of bikes with one or two makes or models. For example, Electro Bici located in San Fernando Valley, CA, has a fleet of 100 repurposed Uber Jump e-bikes, or Forth's Bybee Lakes Hope Center

program purchased 30 VVolt cargo bikes. The standardization of e-bikes allows for easier maintenance, lower costs, and less variety of expertise.

E-bike lending libraries address multiple goals simultaneously and can serve as valuable tools for cities to meet climate, equity, and transportation objectives. By providing access to e-bikes, these programs reduce reliance on cars, promote active transportation, and expand mobility options for people of all incomes and abilities. They also foster awareness of e-bikes as viable, cost-effective alternatives to traditional bicycles or vehicles, particularly for users who face physical, economic, or geographic barriers to mobility. Ultimately, the success of e-bike lending libraries lies in their ability to balance community needs, sustainability goals, and innovative program models that increase access to clean transportation options.

Because many of these programs have been pilots or recently established, there has not been a lot of data collected on the efficacy of these programs. In addition, since many of the programs have been operational for short periods, the organizations have not been able to understand the true cost and financial constraints of managing a program, such as maintenance costs and staffing needs. Particularly for community resource programs, initial funding has typically been for the purchase of e-bikes. These programs need to rely on or use organizational staff to manage the fleet, use requests, and maintenance needs. Understanding the life cycle cost of the programs is important to ensure these programs can be available and sustained for the community over a long period.

Guiding Questions in Developing an E-bike Lending Library

When establishing an e-bike lending library, it's crucial to ask programmatic, administrative, and operational guiding questions to ensure that the program is well-designed, sustainable, and equitable. Below in Tables 2 to 4 are some key questions that can help guide the planning and implementation of Ride-to-Purchase and Community Resource libraries.

Table 2: Programmatic Guiding Questions

Ride-to-Purchase	Community Resource
• Who is the target audience for the test rides? What demographic groups will benefit the most from trying an e-bike? • How will you raise awareness of the test ride program? • How will the program fit into the larger goal of promoting e-bike adoption, such as rebate programs? • How can the program be scaled or improved over time?	• Who is the target community? Is this an open or a restricted access program? • What is the long-term vision for the program? • Where will the e-bikes be located in the community? • How will equitable access be ensured? • How will the e-bike lending library be funded? What is the financial model for providing bikes for free? • What partnerships are needed? What will be their roles?

Ride-to-Purchase	Community Resource
• How will the program be funded? • Is there a cost for the test ride program (e.g., a refundable deposit or nominal rental fee)? • What partnerships are needed? What will be their roles? • What types of e-bikes will be available for use? • What metrics will be used to evaluate success?	• If a pilot, how can the program be scaled or expanded? • What strategies will be used to ensure the program's sustainability over time? • How will the community be involved in the program's development? • What types of e-bikes will be available for use? • How will the program be marketed to ensure widespread awareness and adoption? • How can the program be scaled or improved over time? • What metrics will be used to evaluate success?

Table 3: Administrative Guiding Questions

Ride-to-Purchase	Community Resource
• Who is responsible for administrating the program? • How will the program handle liability? What type of insurance and user agreements are needed? • What waiver or consent forms will be required? • What safety guidelines and protocols will users need to follow?	• Who is responsible for administrating the program? • How will the program handle liability? What type of insurance and user agreements are needed? • What waiver or consent forms will be required? • What safety guidelines and protocols will users need to follow? • What are the policies for bike usage? • How will the program meet safety and accessibility needs? • How will users be educated on bike safety and proper use?

Table 4: Operational Guiding Questions

Ride-to-Purchase	Community Resource
• Where will the test rides take place? What is the duration of a test ride? • What will be the process of reserving and checking out an e-bike? • How will users be able to pick the type of e-bike they want to test (e.g., different models, sizes, or features)? • What safety measures will be implemented? Will there be helmets, safety training, and rules about proper use? • How will the e-bike library be staffed? What training will the staff need? • How will bikes be maintained between test rides? • What kind of feedback will be collected from test riders? How will feedback be used to improve the program?	• Who will operate the e-bike lending library? • Where will the bikes be stored and distributed? • How will the e-bike lending process work? • What type of e-bikes will be used? How will bikes be maintained? • What safety measures will be implemented? Will there be helmets, safety training, and rules about proper use? • How will the e-bike library be staffed? What training will the staff need? • What kind of feedback will be collected from test riders? How will feedback be used to improve the program?

Role of State and Local Government

State and local governments can play a pivotal role in advancing e-bike lending libraries by leveraging their expertise, resources, and partnerships.

As **policymakers**, state and local agencies can develop policies and programs that enable and promote e-bike lending libraries. This includes creating policies that recognize e-bikes as important forms of transportation, integrating them into broader transportation and climate action plans, securing funding, and supporting the development of bike-friendly infrastructure, such as parking and protected bike lanes. Agencies can also prioritize equity-focused policies that ensure e-bike programs serve low-income and historically underserved communities. Local agencies can also advocate for and administer e-bike rebate programs, which can be linked with lending library programs. By establishing clear guidelines and incentives, local agencies help legitimize e-bike lending libraries as a sustainable, accessible, and essential part of the transportation system.

State or local government agencies play a key role as **partners and conveners** in supporting e-bike lending libraries by bringing together diverse stakeholders to collaborate and align on shared goals. These agencies can facilitate partnerships between municipalities, non-profits, advocacy organizations, community organizations, and private entities, such as bike shops or electric utilities. Acting as a neutral convener, they can organize workshops, forums, and pilot programs to identify community needs, share best practices, and ensure equitable access to e-bike lending opportunities. By fostering collaboration, agencies help create a coordinated

approach that leverages resources and expertise across sectors, ultimately increasing the effectiveness and reach of e-bike lending programs.

Government agencies also serve as **funders**, providing financial resources to establish, expand, and sustain e-bike lending programs. State and local agencies can allocate funds from transportation budgets, climate programs, or federal grants like the Congestion Mitigation and Air Quality (CMAQ) and the Transportation Alternatives Program (TAP) programs. They can also create their own funding mechanisms, such as rebate programs, matching grants, or subsidies, to reduce program costs and make e-bike access more affordable. Prioritizing funding for equity-focused initiatives ensures that underserved communities benefit from the programs, creating more inclusive and widespread access to clean, affordable transportation.

Lastly, agencies act as **technical resources and data stewards** by providing expertise, tools, and data to help design and optimize e-bike lending programs. This includes offering technical assistance in planning e-bike infrastructure, integrating programs with public transit, and developing safety and education initiatives. Agencies can also collect, analyze, and share data on e-bike usage patterns, emissions reductions, and user demographics to measure program success and identify opportunities for improvement. By serving as trusted data stewards, agencies ensure that programs are data-driven and responsive to community needs, enhancing their long-term viability and effectiveness.

Conclusion

This report has outlined a comprehensive scan of e-bike lending libraries across the US. We provided a thorough examination of the current landscape of e-bike lending libraries, highlighting different lending library models, existing challenges, and key trends across the country. Understanding the structure of these systems sets the foundation for designing effective and scalable models tailored to diverse community needs. We describe detailed program elements that serve as a guide for creating efficient, user-friendly e-bike lending libraries. These elements address essential components such as programmatic, administrative, and operational strategies, ensuring that lending libraries are both functional and sustainable in the long term. We have an overview of current practices and recommendations to assist organizations in navigating the complexities of establishing and maintaining a successful lending system that is accessible to community members. This report emphasizes the highlights of current practices and shows the importance of local community involvement in the planning and operation of e-bike lending libraries. Lastly, the report presents guiding questions to help plan and implement Ride-to-Purchase and Community Resource programs.

In conclusion, the implementation of e-bike lending libraries is a critical step toward increasing the adoption of e-bikes and biking in general, which can help transform urban transportation and reduce dependence on fossil fuels. By addressing the needs of all stakeholders—state, city, local organizations, and users—this report provides an overview to create a robust e-bike lending library system that promotes sustainability, accessibility, and mobility for urban populations.

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Appendix A: Literature Related to E-bike Lending Libraries

Title	Date	Authors	Location	Study Objectives	Citation Link
Estimating Vehicle-miles traveled reduced from Dock-less E-bike-share: Evidence from Sacramento, California	2023	Tatsuya Fukushige, Dillon T. Fitch, Susan Handy	Sacramento, CA	Estimate vehicle miles reduced from the introduction of bike-share service	Transportation Research Part D: Transport and Environment Volume 117, April 2023, 103671: doi.org/10.1016/j.trd.2023.103671
Effectiveness of Free Bikes and E-Bikes for Commute Mode Shift: The Case of Google's Lending Program	2022	Dillon T. Fitch, Zeyu Gao, Lucy Noble, Terry Mac	Mountain View & Sunnyvale, CA	Analyze the effectiveness of Google's e-bike lending and incentives at increasing weekly bike commutes	Frontiers in Future Transportation 18 May 2022, Sec. Connected Mobility and Automation, Volume 3 – 2022: doi.org/10.3389/ffutr.2022.886760
Sharing within the gig economy: The use of shared e-bikes by on-demand platform-based instant meal delivery workers in Paris	2022	Camille Krier, Laetitia Dablanc, Anne Aguiléra, Nicolas Louvet	Paris, France	Explore delivery riders' mobility practices in Paris	Case Studies on Transport Policy Volume 10, Issue 4, December 2022, Pages 2280-2289: doi.org/10.1016/j.cstp.2022.10.012
Examining the Effects of a Bike and E-Bike Lending Program on Commuting Behavior	2022	Dillon T. Fitch, Zeyu Gao, Lucy Noble, Terry Mac	Mountain View, Sunnyvale, CA	Evaluate the effectiveness of an e-bike lending program at changing travel behavior to Google campuses	Mineta Transportation Institute (2022): doi.org/10.31979/mti.2022.2051

Title	Date	Authors	Location	Study Objectives	Citation Link
Transportation Transformation: Is Micromobility Making a Macro Impact on Sustainability?	2021	Mike McQueen, Gabby Abou-Zeid, John MacArthur & Kelly Clifton	General focus	This article focuses on the role of these new modes in the efforts to cultivate a more sustainable transportation system by reducing greenhouse gas emissions, providing a reliable and equitable transportation service, and enhancing the human experience.	Journal of Planning Literature Volume 36(1), 46–61: doi.org/10.1177/0885412220972696
Cargo Bike Library Evaluability Assessment	2021	Nai Rui Chng, Peter Craig, Paul McCrorie	Glasgow, UK	Develop a monitoring and evaluation plan for U. of Glasgow's Cargo Bike Library, by conducting an evaluability assessment	The MRC/CSO Social and Public Health Sciences Unit, the University of Glasgow. https://www.gla.ac.uk/media/Media_812887_smxx.pdf
A review on bike-sharing: The factors affecting bike-sharing demand	2020	Ezgi Eren, Volkan Emre Uz	Overview of many programs	Address the need for a comprehensive review of the factors affecting bike-sharing demand	Sustainable Cities and Society Volume 54, March 2020, 101882: doi.org/10.1016/j.scs.2019.101882
Can an e-bike share system increase awareness and consideration of e-bikes as a commute mode? Results from a natural experiment	2020	Susan L. Handy, Dillon T. Fitch	UC Davis, CA	Examine the impact of the implementation of an e-bike share system in Davis, CA	International Journal of Sustainable Transportation Volume 16, 2022 - Issue 1 doi.org/10.1080/15568318.2020.1847370

Title	Date	Authors	Location	Study Objectives	Citation Link
Flexible Mobile Hub for E-Bike Sharing and Cruise Tourism: A Case Study	2019	Andrea Bardi, Luca Mantecchini, Denis Grasso, Filippo Paganelli, Caterina Malandri	Ravennaport, Italy	Investigation of the potential scope of application of e-bike sharing solutions for cruise tourism; reduce pollution at cruise ports	Sustainability 2019, 11(19), 5462; doi.org/10.3390/su11195462
Development of an Electric Bicycle Incentive Program for Victoria	2019	Saki Aono, Alexander Bigazzi, Elmira Berjisian	Victoria, BC, Canada	Study the deployment of e-bike sharing stations and determine their capacities	Networks and Spatial Economics Volume 20, pages 99–136, (2020) doi.org/10.1007/s11067-019-09469-2
Electric Assisted Bikes (E-bikes) Show Promise in Getting People out of Cars	2019	Dillon Fitch	CA	Summarizes the existing evidence on the effects e-bicycling has on car travel, characteristics of e-bike incentive programs, and opportunities for increasing e-bicycling in California	Institute of Transportation Studies, University of California, Davis. https://escholarship.org/uc/item/3mm040km
E-Bicycling for Short Distance Commutes: What Will It Take For Drivers To Switch?	2019	Dillon T. Fitch, Susan L. Handy	UC Davis, CA	Explore factors influencing the likelihood of people shifting from driving to e-bicycling	TRB 98th Annual Meeting (2019). https://trid.trb.org/view/1572887
Bike Kitchens – Spaces for convivial tools	2018	Karin Bradley	Malmö, Sweden	Explore the phenomenon of 'Bike Kitchens'	Journal of Cleaner Production Volume 197, Part 2, 1 October 2018, Pages 1676-1683: doi.org/10.1016/j.jclepro.2016.09.208

Title	Date	Authors	Location	Study Objectives	Citation Link
Addressing the Barriers to Bicycling: A Bike Access Program in Lewiston and Auburn, ME	2018	Benjamin Berger, Matthew Reback, & Sadie Mae Palmatier	Lewiston, Auburn, ME	Identify barriers to biking in the towns of Lewiston and Auburn; determine a strategy to overcome these barriers in the form of a bike access program	Bates College. Community Engaged Research Reports. 46. https://scarab.bates.edu/community_engaged_research/46/
A push to cycling—exploring the e-bike's role in overcoming barriers to bicycle use with a survey and an intervention study	2017	Fyhri, A., Heinen, E., Fearnley, N., & Sundfør, H. B.	Norway	Determine deterrents of cycling in Norway in general, and in particular how the purchase of an e-bike could be stimulated	International Journal of Sustainable Transportation 11(9), 681–695. doi.org/10.1080/15568318.2017.1302526
Effects of e-bikes on bicycle use and mode share	2015	Aslak Fyhri, Nils Fearnly	Norway	Examine the potential of the e-bike in reducing motorized travel	Transportation Research Part D-transport and Environment 36, 45–52. doi.org/10.1016/j.trd.2015.02.005
E-bikes and urban transportation: emerging issues and unresolved questions	2011	Geoffrey Rose	General focus	Explore the potential role of E-bikes as an urban mobility option	Transportation Vol. 39, Issue. 1, (Jan 2012): 81-96: doi.org/10.1007/s11116-011-9328-y
General Resources					
How — and Why — To Start a Neighborhood E-Bike Library	2024	Kea Wilson	US	List of e-bike lending libraries	StreetsBlog USA https://usa.streetsblog.org/2024/03/18/ how-and-why-to-start-a-neighborhood-e-bike-library
E-Bike Lending Libraries Offer Free Access to a New Mode	2024	Diana Ionescu	US	List of e-bike lending libraries	Planetizen https://www.planetizen.com/news/2024/03/ 127912-e-bike-lending-libraries-offer-free-access-new-mode
E-bike Incentive Programs	2024	PlanRVA	US	List of e-bike lending libraries	Richmond Regional Planning District Commission https://experience.arcgis.com/experience/ 7e989e69157141a4beef6db53293a77d/page/Home/?org=PlanRVA

Appendix B: E-bike Lending Libraries in the United States

For more information about this program, visit the TREC tracker at *https://docs.google.com/spreadsheets/d/1eRNRPNgTsBDSN0qfPqtFQk_Z9HFO5ihJrxLUZ2ioC9Q/edit?gid=1724787057#gid=1724787057*

State	Location	Name of System	Program Type	Status	Primary Goal	Secondary Goal	Who Runs It?	Funding Amount	Funding Source
AL	Florence	Anderson Bike Program	Community resource (restricted)	Active	Utility	Equity	University	$100,000	The Joel R. Anderson Family Foundation
CA	Northeast San Fernando Valley	Electro Bici	Community resource (unrestricted)	Active	Sustainability	Economy	Non-Profit	$500,000 (plus bikes donated by Uber)	LA Department of Water & Power
CA	Santa Barbara County	EZ Bike Project	Community resource (unrestricted)	Suspended	Utility	Sustainability	Local Government		Santa Barbara County Association of Governments (SBCAG) / TREK (donated 5 bikes)
CA	Santa Monica	Family Cargo Bike Loaner Program	Ride-to-Purchase	Active	Ownership	Utility	Bike Shop	$15,000/year operation cost	
CA	Berkeley	Berkeley E-Bike Equity Project (BEEP)	Long-Term Access	Active	Equity	Sustainability	Non-Profit	$250,000	Climate Equity Action Fund
CA	Los Angeles	South Central Power Up	Community resource (restricted)	Active	Sustainability	Utility	Non-Profit	"nearly $3 million"	California Climate Investments, California Air

State	Location	Name of System	Program Type	Status	Primary Goal	Secondary Goal	Who Runs It?	Funding Amount	Funding Source
									Resources Board (CARB)
CA	Long Beach	Electric Bicycle Lending Library	Ride-to-Purchase	Active	Ownership	Equity	Local Government	$350,000	Long Beach Recovery Act (LBRA)
CA	San Francisco	E-Bike Delivery Pilot	Long-Term Access	Closed	Economy	Sustainability	Local Government	$2.4 million	California Energy Commission / Phase 2: US DOE
CA	San Pedro	Good2Go Bikes	Community resource (restricted)	Active	Utility	Sustainability	Non-Profit	$1 million	California Climate Investments Clean Mobility Options Voucher Pilot Program, the Los Angeles Cleantech Incubator (LACI), Housing Authority of the City of Los Angeles (HACLA), and Pedal Movement
CA	Richmond	E-Bike Lending Library	Community resource (unrestricted)	Funded (Not Yet Active)	Equity	Recreation	Non-Profit	$3 million (part of a larger program)	California Strategic Growth Council
CA	Oakland	E-Bike Lending Pilot Program	Ride-to-Purchase	Funded (Not Yet Active)	Sustainability	Equity	Local Government	$1.5 million	Clean Mobility Options (CMO) Voucher Program

State	Location	Name of System	Program Type	Status	Primary Goal	Secondary Goal	Who Runs It?	Funding Amount	Funding Source
CA	Florence	Regional Electric Bike Share Program	Long-Term Access	Active	Sustainability	Utility	Local Government		Caltrans Active Transportation Program
CA	East Bay (Alameda County, Tracy, Stockton)	e-Bike lending program	Community resource (unrestricted)	Funded (Not Yet Active)	Sustainability	Equity	Local Government	$10 million (total budget for lending library and purchase incentives)	Ava Community Energy
CA	Sacramento	E-Trikes	Community resource (unrestricted)	Active	Recreation	Utility	Public Library		California Energy Commission
CA	Elk Grove	E-Bike Lending Library	Ride-to-Purchase	Active	Ownership	Sustainability	Local Government	$250,000	Sacramento Area Council of Governments
CO	Denver (Globeville, Elyria-Swansea neighborhoods)	The NETC Bike Libraries	Community resource (restricted)	Active	Utility	Equity	Non-Profit	$225000 / $130,000 (storage)	Denver Climate Protection Fund (CPF) and Colorado Energy Office
CO	Denver (Montbello)	Montbello Moves	Community resource (restricted)	Active	Utility	Sustainability	Non-Profit	$828,904 (not all for the e-bikes)	City of Denver
CO	Colorado Springs	PikeRide For All	Long-Term Access	Active	Equity	Utility	Non-Profit	$500,000	Colorado Energy Office
CO	Boulder	eCargo Bike Reservation	Community resource (restricted)	Active	Utility	Ownership	Bike Shop	$35,000	Colorado Energy Office
CO	Denver	Sun Valley Youth Center E-bike Library	Community resource (unrestricted)	Active	Utility	Recreation	Community Center	$99,000	Colorado Energy Office
CO	Pueblo	e-Cycle-to-Own	Long-Term Access	Funded (Not Yet Active)	Equity	Utility	Local Government	$140,000	Colorado Energy Office

State	Location	Name of System	Program Type	Status	Primary Goal	Secondary Goal	Who Runs It?	Funding Amount	Funding Source
IL	Chicago	Go Hub	Community resource (restricted)	Funded (Not Yet Active)	Equity	Utility	Non-Profit		
MA	Boston (Camberville and Roslindale)	Community E-Bike Lending Library	Ride-to-Purchase	Active	Ownership	Utility	Non-Profit		individual donations, organizational donations (of e-bikes)
MA	Worcester	MassBike E-Bike Programs	Long-Term Access	Active	Equity	Sustainability	Non-Profit		Massachusetts Clean Energy Center's Accelerating Clean Transportation for All
NC	Durham	The Bull E-Bike Pilot	Long-Term Access	Closed	Sustainability	Equity	Local Government	########	2018 Bloomberg Mayors Challenge
NY	Buffalo	East Side Bike Club E-Bike Library	Community resource (restricted)	Active	Equity	Recreation	Non-Profit		Clean Mobility Buffalo initiative, Shared Mobility, The Community Foundation for Greater Buffalo
NY	Niagara Falls	WNY E-bike Library	Community resource (unrestricted)	Active	Sustainability	Equity	Non-Profit	$150,000	Independent Health
NY	Cities of Binghamton, Beacon, Newburgh, Buffalo, Potsdam/St	Accelerating Clean Communities With E-Bike Systems	Community resource (unrestricted)	Funded (Not Yet Active)	Sustainability	Equity	Private Company	"up to $200,000"	Clean Neighborhoods Challenge Grand Prize Winner

State	Location	Name of System	Program Type	Status	Primary Goal	Secondary Goal	Who Runs It?	Funding Amount	Funding Source
	Lawrence County								
OH	Athens County	Book-a-Bike	Community resource (unrestricted)	Active	Recreation	Sustainability	Public Library	$6,000 (approx. annual opperating cost)	O'Bleness Foundation, Athens City-County Health Department's Creating Healthy Communities program, Athens County Foundation
OR	Douglas County, Roseburg	HADCO eBike Lending Library	Community resource (restricted)	Active	Equity	Sustainability	Local Government	$5000 (ODOT)	Oregon DOT (Transportation Options grant), Oregon Environmental Council, Umpqua Transportation Electrification Team
OR	Eugene	University of Oregon E-bike lending library	Community resource (restricted)	Active	Ownership	Utility	University	$20,000	Eugene Water and Electric Board Electric Mobility Grant
OR	Hood River	Hood River County Rural Mobility Project	Community resource (unrestricted)	Funded (Not Yet Active)	Utility	Sustainability	Local Government		ODOT Carbon Reduction Program
OR	Portland	The Community Electric Bike Project	Community resource (restricted)	Closed	Equity	Utility	Non-Profit	$25,000 and 10 donated bikes	Schmidt Family Foundation (money), GenZe (bikes)

State	Location	Name of System	Program Type	Status	Primary Goal	Secondary Goal	Who Runs It?	Funding Amount	Funding Source
OR	Portland	Bybee Lakes Hope Center E-Bike Library	Community resource (restricted)	Active	Equity	Utility	Non-Profit	$83,544	Portland Clean Energy Fund
OR	Portland	The PEBEL (Portland Electric Bike Educational Lot) program	Community resource (restricted)	Active	Ownership	Equity	Non-Profit	$15,000	Metro Regional Travel Options
OR	Washington County	Westside Transportation Alliance	Ride-to-Purchase	Active	Ownership	Utility	Non-Profit		
OR	Tigard	Power to the Pedal	Community resource (restricted)	Active	Equity	Utility	Non-Profit	$105,800	Portland General Electric Drive Change Fund
OR	Portland	Kaiser Permanente E-bike Pilot Study	Long-Term Access	Closed	Sustainability	Ownership	Private Company		Metro, Regional Travel Options
OR	Portland	Ride2Own	Long-Term Access	Active	Sustainability	Equity	Non-Profit		PGE's Drive Change Fund
VA	Charlottesville	Charlottesville E-bike Lending Library	Ride-to-Purchase	Active	Ownership	Equity	Volunteers	N/A	personal bikes/ donated bikes
VT	Brattleboro	Brooks Memorial Library E-Bikes	Community resource (unrestricted)	Active	Ownership	Utility	Non-Profit		
VT	Brattleboro	Vbikes Take it Home Program	Ride-to-Purchase	Suspended	Ownership	Utility	Non-Profit		
VT	Burlington	Burlington E-Bike Lending Library	Ride-to-Purchase	Active	Ownership	Sustainability	Non-Profit		
VT	Chittenden County	Chittenden County	Ride-to-Purchase	Active	Ownership	Sustainability	Non-Profit		

State	Location	Name of System	Program Type	Status	Primary Goal	Secondary Goal	Who Runs It?	Funding Amount	Funding Source
		Traveling E-Bike Lending Library							
VT	Middlebury	Ilsley Public Library: Library of Things	Community resource (unrestricted)	Active	Ownership	Sustainability	Non-Profit	$2,000 (initial funding)	Vermont Council on Rural Development, Climate Catalysts Innovation Fund
VT	Montpelier	Montpelier E-bike Lending Library	Ride-to-Purchase	Active	Ownership	Sustainability	Non-Profit		VT Agency of Transportation, Net Zero Vermont
VT	Rutland	Rutland E-bike Lending Library	Ride-to-Purchase	Active	Ownership	Sustainability	Local Government		
VT	Springfield	Springfield E-Bike Lending Library	Ride-to-Purchase	Active	Ownership	Sustainability	Non-Profit		
VT	Statewide	Statewide Traveling E-bike Library	Ride-to-Purchase	Active	Ownership	Sustainability	Non-Profit		
VT, NH	Upper Valley	Upper Valley E-Bike Lending Library	Ride-to-Purchase	Active	Ownership	Equity	Non-Profit		VT Agency of Transportation and donations
WA	Bellingham	Viking eBike Pilot Project	Community resource (restricted)	Closed	Sustainability	Utility	University		
WA	Statewide	E-Bike Lending Libraries	Ride-to-Purchase	Funded (Not Yet Active)	Unsure	Unsure	Local Government	$2 million (statewide)	Washington State Transportation Budget
WI	Madison	Madison Bcycle	Community resource (unrestricted)	Active	Sustainability	Utility	Public Library		Madison Public Library Foundation

State	Location	Name of System	Program Type	Status	Primary Goal	Secondary Goal	Who Runs It?	Funding Amount	Funding Source
DC	Washington DC	Mobility Innovation District E-bike Library	Ride-to-Purchase	Active	Utility	Sustainability	Non-Profit	$94,400 over 2 fiscal years	District Department of Energy & Environment

Appendix C: E-bike Lending Library Data Collection

The research team collected data from e-bike lending library programs by contacting them through email. Programs were asked to review information collected in the tracker and to answer questions in the Google Form.

Google form questions

Portland State University is developing a white paper on e-bike lending libraries. We would like to gather some information about your program and experiences with your program.

1. What is the name and location of the e-bike lending library?
2. What was the goal of your program when it was proposed? Has that goal changed since the program's inception? Has the program met its goal?
3. How does your program get its funding? Is the funding ongoing?
4. Approximately, what is the annual operating cost of the library, including maintenance, staffing, outreach, etc.?
5. Who are your key partners for the lending library?
6. Does your program have liability insurance to cover the equipment and program participants? If so, what does it cover, how much does it cost and was it difficult to obtain?
7. Do you require a waiver to be signed by people using your e-bikes? If so, what does the waiver cover?
8. How did your organization choose the types of e-bikes (make, model, type) to include in the library?
9. Based on your experience and lessons learned, would you change anything about your program? If so, what would it be?
10. What advice would you give to an organization looking to create its own e-bike library? What do you wish you had known when you started?
11. Anything we didn't cover that you would like to mention?

North American database categories

- Name of System
- Organization
- Program Type
- Status
- Stated Objectives
- # of Locations
- Borrow Time
- Availability
- # of Bikes
- # of Models
- Cargo Bikes?
- Accessories / Resources Limitations / Requirements
- Cost

- Funding Amount
- Funding Source
- Funding Type
- Equity Focused?
- Additional Info
- Weblink
- Additional Resources
- Contact