



# KING COUNTY

1200 King County Courthouse  
516 Third Avenue  
Seattle, WA 98104

## Signature Report

### Motion 16545

**Proposed No.** 2023-0442.1

**Sponsors** Balducci

1           A MOTION acknowledging receipt of the proviso report on  
2           an e-bike rebate, e-bike lending library, and e-bike  
3           ownership grant pilot program plan required by the 2023-  
4           2024 Biennial Budget Ordinance, Ordinance 19546,  
5           Section 17, as amended by Ordinance 19633, Section 9,  
6           Proviso P6.

7           WHEREAS, the 2023-2024 Biennial Budget Ordinance, Ordinance 19546,  
8           Section 17, as amended by Ordinance 19633, Section 9, Proviso P6, requires the  
9           executive to transmit a report on an e-bike rebate, e-bike lending library, and e-bike  
10          ownership grant pilot program plan, and

11          WHEREAS, the proviso further requires the executive to submit a motion that  
12          acknowledges receipt of the report;

13          NOW, THEREFORE, BE IT MOVED by the Council of King County:

14          The receipt of the report on the progress of the final report providing an e-bike  
15          rebate, e-bike lending library, and e-bike ownership grant pilot program plan, which is  
16          Attachment A to this motion, in compliance with the 2023-2024 Biennial Budget

Motion 16545


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- 17 Ordinance, Ordinance 19546, Section 17, as amended by Ordinance 19633, Section 9,
- 18 Proviso P6, is hereby acknowledged.


Motion 16545 was introduced on 1/9/2024 and passed by the Metropolitan King County Council on 4/2/2024, by the following vote:

Yes: 9 - Balducci, Barón, Dembowski, Dunn, Mosqueda, Perry, Upthegrove, von Reichbauer and Zahilay

KING COUNTY COUNCIL  
KING COUNTY, WASHINGTON

DocuSigned by:  
  
E76CE01F07B14EF...  
Dave Upthegrove, Chair

ATTEST:

DocuSigned by:  
  
8DE1BB375AD3422...

Melani Hay, Clerk of the Council

**Attachments:** A. Electric Bike Proviso Report, December 2023

## Electric Bike Proviso Report

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December 2023



**King County**

**I. Contents**

- II. Proviso Text.....4
- III. Executive Summary .....5
- IV. Background..... 13
- V. Report Requirements .....21
  - A. Summary and assessment of the e-bike rebate program in Denver and other relevant municipalities ..... 21
  - B. Proposal to implement an e-bike rebate pilot program in King County based on income eligibility..... 31
  - C. This section will provide an assessment and plan for administering an e-bike lending library or ownership grant program consistent with requirements of the program established by Engrossed Second Substitute House Bill 1125, Section 310(16). ..... 33
  - D. Staffing and funding analysis to implement the pilot program ..... 37
  - E. Analysis of possible funding sources to implement the pilot program, including, but not limited to, funding from the federal Infrastructure Investment and Jobs Act ..... 40
  - F. A description of desired outcomes and measures for the pilot program, including but not limited to the impact on those communities traditionally underserved with regard to access to transit, as well as other county services ..... 43
  - G. Analysis of any issues that could adversely impact the expansion of the pilot program and potential strategies to address those issues..... 46
- VI. Appendices .....47
  - Appendix A: E-Bike Program Interview List and Key Takeaways..... 47
  - Appendix B: Summary of Other E-Bike Rebate Programs ..... 56
  - Appendix C: Summary of Other Lending Library Programs..... 60
  - Appendix D: Loan-to-Own Program Overview and City of Berkeley Spotlight ..... 64
  - Appendix E: Example of King County Bike Retailer Locations and E-Bike Pricing ..... 66
  - Appendix F: Example Employee Incentive Programs ..... 67
  - Appendix G: Proposal Summary and Alternatives ..... 68
  - Appendix H: Risk Assessment and Mitigation Strategies ..... 71

**Table of Figures**

Figure 1: U.S. Department of Transportation, Federal Highway Administration, National Household Travel Survey, 2017..... 14

Figure 2: E-bikes fall into three classes..... 14

Figure 3: Figure from the National Renewable Energy Lab. .... 15

Figure 4: Bicycle Network Analysis (BNA) of Seattle, WA (score: 62) and Auburn, WA (score: 24). .... 19

Figure 5: Emissions Calculations Based on Trip Purpose and Milage (Source: RadPower Bikes). .... 45

Figure 6: Image from Portland State University TREC ..... 45

**Table of Tables**

Table 1: The City of Denver Rebate Price Ranges ..... 23

Table 2: Summary of E-Bike Rebate Structure Lessons Learned ..... 27

Table 3: Summary of E-Bike Program Structure Lessons Learned ..... 29

Table 4: Summary of Lending Library Lessons Learned ..... 30

Table 5: Program Design Considerations ..... 36

Table 6: E-Bike Rebate Program Funding Ranges ..... 39

Table 7: E-Bike Lending Library Program Funding Ranges ..... 40

Table 9: Summary of E-Bike Rebate Programs Reviewed ..... 59

Table 10: Summary of Lending Library Programs Reviewed ..... 63

Table 11: Example of King County Bike Retailer Locations and E-Bike Pricing ..... 66

Table 12: Example Employee Incentive Programs ..... 67

Table 13: Proposal Summary and Alternatives ..... 70

Table 14: Liability Risk and Mitigation Strategies ..... 72

Table 15: Insurance Risks and Mitigation for Rebate Programs ..... 72

Table 16: Insurance Risk and Mitigation for Lending Library Programs ..... 73

Table 17: Other Financial and Funding Risks and Mitigation Strategy Highlights ..... 74

Table 18: Infrastructure Risks and Mitigation Strategies ..... 77

Table 19: Safety Risk and Mitigation Strategies Highlight ..... 78

Table 20: Education and Knowledge Risk and Mitigation Highlight ..... 79

Table 21: Improving Equity and Normalizing Alternative Transportation Risk and Mitigation Strategies Highlight ..... 81

Table 22: Program Manager and Administrative Management Risks and Mitigation Strategies ..... 82

## II. Proviso Text

Of this appropriation, \$100,000 shall not be expended or encumbered until the executive transmits an e-bike rebate, e-bike lending library, and e-bike ownership grant pilot program plan and a motion that should acknowledge receipt of the plan, and a motion acknowledging the receipt of the plan is passed by the council. The motion should reference the subject matter, the proviso's ordinance number, ordinance section, and proviso number in both the title and body of the motion. The plan shall be developed by the office of performance, strategy and budget in consultation with: community-based organizations, including those representing underserved King County residents; e-bike retailers in King County; Washington state Department of Transportation Active Transportation Division; and any other relevant partners or stakeholders. The plan shall include, but not be limited to, the following:

- A. A summary and assessment of the e-bike rebate program in the city of Denver, as well as of any other relevant e-bike rebate programs in other municipalities or states, including any lessons learned;
- B. A proposal to implement an e-bike rebate pilot program in King County based on income eligibility;
- C. An assessment and plan for administering an e-bike lending library or e-bike ownership program consistent with requirements of the program established by Engrossed Second Substitute House Bill 1125, Section 310(16);
- D. An analysis of the level of staffing, if any, and funding needed to implement the pilot program;
- E. An analysis of possible funding sources that could be used to implement the pilot program, including, but not limited to, funding from the federal Infrastructure Investment and Jobs Act;
- F. A description of desired outcomes and measures for the pilot program, including but not limited to the impact on those communities traditionally underserved with regard to access to transit, as well as other county services; and
- G. An analysis of any issues that could adversely impact the expansion of the pilot to a fully developed program and potential strategies to address those issues.

The executive should electronically file the plan and motion required by this proviso no later than September 1, 2023, with the clerk of the council, who shall retain an electronic copy and provide an electronic copy to all councilmembers, the council chief of staff, and the lead staff for the transportation, economy and environment committee or its successor.

Ordinance 19546, Section 17, as amended by Ordinance 19633, Section 9, Office of Performance, Strategy and Budget, P6 <sup>1</sup>

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<sup>1</sup> Ordinance 19633 [\[LINK\]](#)

### III. Executive Summary

Ordinance 19546, Section 17, as amended by Ordinance 19633, Section 9, calls for a report on e-bike rebate, e-bike lending library, and e-bike ownership grant pilot program and a proposed Motion that acknowledging receipt of the plan.<sup>2</sup> This Proviso response is the outcome of research conducted by the King County Office of Performance, Strategy, and Budget (PSB), through literature review and interviews with subject matter experts (SMEs) in government, education, and retailers with e-bike experience. PSB invited guidance from the King County Office of Climate. Per the Proviso requirement, SME consultation included the City of Denver, community-based organizations (CBOs), e-bike retailers, Washington State Department of Transportation, universities, and other relevant partners.<sup>3</sup>

#### A. A summary and assessment of the e-bike rebate program in the city of Denver, as well as of any other relevant e-bike rebate programs in other municipalities or states, including any lessons learned.

Over 160 e-bike incentive programs exist throughout North America.<sup>4</sup> Programs vary in size and scope, administrator type, incentive amount, program structure, and more.<sup>5</sup> E-bike incentive programs can generally be classified into two categories: a rebate or a lending library program. Rebates (i.e., stipends or vouchers) offer discounts on e-bike purchases during point of sale or post-purchase reimbursement. In contrast, lending libraries are more varied in approach. Some, like commercial Lime bikes,<sup>6</sup> allow check-out for a few hours, while others lend bikes for a few years and allow bike users to keep their bikes at the end of the lending period.<sup>7</sup> Interviews with e-bike experts, rebate program managers, and administrators revealed certain common practices among e-bike rebate programs.<sup>8</sup>

#### E-Bike Rebate and Lending Library Program: Denver, Colorado

Denver's e-bike rebate program was launched in April 2022. To date over 6,000 e-bike rebates have been redeemed, with ownership continuing to grow as the City releases additional vouchers.<sup>9</sup> Funding is distributed from a 2020 voter-approved sales tax (\$0.25) which raises about \$40 million per year for a Climate Protection Fund.<sup>10</sup> Rebate vouchers are released multiple times per year, on a first-come, first-

<sup>2</sup> King County Ordinance 19633

<https://mkcclegisearch.kingcounty.gov/LegislationDetail.aspx?ID=6105990&GUID=DE2B26CF-A417-478E-B44F-3558DB55125F&Options=Advanced&Search=>

<sup>3</sup> See Appendix A for complete list of interviewees for this Proviso response.

<sup>4</sup> University of Portland Transportation Research and Education Center (TREC) Active Database:

[https://docs.google.com/spreadsheets/d/1C-sYcwLrQFsr8r2A6RiAP2RwGsBNwr1BKOF\\_HJvCsVU/edit#gid=0](https://docs.google.com/spreadsheets/d/1C-sYcwLrQFsr8r2A6RiAP2RwGsBNwr1BKOF_HJvCsVU/edit#gid=0)

<sup>5</sup> See Appendix B for summary of e-bike rebate programs reviewed for this Proviso response.

<sup>6</sup> Lime Bikes: <https://www.li.me/vehicles/electric-bike>

<sup>7</sup> See Appendix D for an overview of loan-own-program and City of Berkeley Spotlight.

<sup>8</sup> See [table 2](#) and [table 3](#) of this report.

<sup>9</sup> Electric Bikes (E-Bikes). (2023). *The City and County of Denver*.

<https://www.denvergov.org/Government/Agencies-Departments-Offices/Agencies-Departments-Offices-Directory/Climate-Action-Sustainability-Resiliency/Sustainable-Transportation/Electric-Bikes-E-Bikes-Rebates>

<sup>10</sup> Denver, Colorado, Ballot Measure 2A, Sales Tax to Fund Environmental and Climate-Related Programs and TABOR Spending Limit Increase (November 2020). *Ballotpedia*.

served basis using an online application. The standard rebate amount is \$300, and the income-qualified amount is \$1,200, with additional rebates provided for e-cargo and adaptive e-bikes.<sup>11</sup> Denver experienced overwhelming demand from the onset of their e-bike program.<sup>12</sup> Major takeaways from Denver's first 4,734 voucher users were that the majority of participants were income-qualified, used their cars less frequently, and rode 26 miles/week.<sup>13</sup> Denver also runs four lending bike libraries, which were noted to have challenges that include: storage security, program administration, and finding the right location.<sup>14</sup>

### **E-Bike Rebate and Lending Library: State of Colorado**

During the 2022 Legislative Session, the Colorado legislature passed SB22-193, the Air Quality Improvements Act, which transferred \$12 million from Colorado's General Fund to the Colorado Energy Office (CEO) to create the Community Access to Electric Bicycles Grant and Rebate Program.<sup>15</sup> To facilitate more widespread education about the program and ensure that all individuals and communities can participate, CEO is leveraging existing partnerships.<sup>16</sup> In contrast to Denver, CEO uses a lottery approach to applications, and permits both online and local retailers.<sup>17</sup>

In addition to the rebate program, funding has allowed the State to implement a full-scale version of a previous CanDo Colorado E-bike Pilot Program.<sup>18</sup> Funding was allocated to launch eight new lending library projects across the state, with each project choosing different implementation approaches based on community needs. 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.<sup>19</sup>

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[https://ballotpedia.org/Denver,\\_Colorado,\\_Ballot\\_Measure\\_2A,\\_Sales\\_Tax\\_to\\_Fund\\_Environmental\\_and\\_Climate-Related\\_Programs\\_and\\_TABOR\\_Spending\\_Limit\\_Increase\\_\(November\\_2020\)](https://ballotpedia.org/Denver,_Colorado,_Ballot_Measure_2A,_Sales_Tax_to_Fund_Environmental_and_Climate-Related_Programs_and_TABOR_Spending_Limit_Increase_(November_2020))

<sup>11</sup> City of Denver E-Bikes: <https://denvergov.org/Government/Agencies-Departments-Offices/Agencies-Departments-Offices-Directory/Climate-Action-Sustainability-Resiliency/Sustainable-Transportation/Electric-Bikes-E-Bikes-Rebates>

<sup>12</sup> Interview: Mike Salisbury (2023). City of Denver, Colorado - Office of Climate Action, Sustainability, and Resiliency.

<sup>13</sup> Denver's 2022 Ebike Incentive Program - Results and Recommendations. (2022). *City and County of Denver, PeopleForBikes, Bicycle Colorado, Ride Report, & Rocky Mountain Institute.*

<https://5891093.fs1.hubspotusercontent-na1.net/hubfs/5891093/Denvers%202022%20Ebike%20Incentive%20Program%20Results%20and%20Recommendations.pdf>

<sup>14</sup> Interview: Mike Salisbury (2023). City of Denver, Colorado - Office of Climate Action, Sustainability, and Resiliency.

<sup>15</sup> Senate Bill 22-193: Concerning Measures to Improve Air Quality in the State, and, in connection therewith, Making an Appropriation. [https://leg.colorado.gov/sites/default/files/2022a\\_193\\_signed.pdf](https://leg.colorado.gov/sites/default/files/2022a_193_signed.pdf)

<sup>16</sup> Interview: State of Colorado - Colorado Energy Office/Transportation Fuels & Technology (2023). Two-week retailer reimbursement emerged in several other interviews.

<sup>17</sup> See Appendix B for summary of e-bike rebate programs reviewed for this Proviso response.

<sup>18</sup> Community Access to Electric Bicycles Grant Program. (2023). *Colorado Energy Office.*

<https://energyoffice.colorado.gov/transportation/ebikes/community-access-to-electric-bicycles-grant-program>

<sup>19</sup> Interview: State of Colorado - Colorado Energy Office/Transportation Fuels & Technology (2023). Two-week retailer reimbursement emerged in several other interviews.



## State of Washington

In spring 2023 Washington State passed HB1125, which appropriated \$7 million from the Carbon Emissions Reduction Account to establish statewide e-bike rebate and lending library programs.<sup>20</sup> The Washington State Department of Transportation (WSDOT) is administering the initiative and is currently in the program design stage. The rebate launch is anticipated early 2024.<sup>21</sup>

### E-Bike Program Analysis: Rebate Programs

Analysis finds that there is an overwhelming demand in jurisdictions offering rebate programs that has led to more applicants for rebates than could be funded.<sup>22</sup> Many programs differentiate parameters for a standard and income-qualified voucher, or a standard and cargo/adaptive e-bike voucher. In addition, nearly all jurisdictions interviewed for this Proviso contract with third party administrators to handle operational issues such as determining participant eligibility, voucher distribution, and vendor reimbursement.<sup>23</sup> Some jurisdictions also provide additional voucher funding for e-bike equipment, such as lights and helmets. In addition, all programs define retailer and vender eligibility in their design process. This includes addressing the use of local vendors, chain retailers, or online vendors with a physical presence in the community.<sup>24</sup>

### E-Bike Program Analysis: Lending Libraries and Loan-to-Own

Jurisdictions interviewed for this Proviso and those reviewed in the research have also developed lending libraries, allowing for a ‘check-out’ process for various lengths of time.<sup>25</sup> Funding is usually awarded to community-based organizations (CBOs) or nonprofits through a request for proposal process (RFP), with the number of grant recipients varying by jurisdiction. The State of Vermont, for example, funds one CBO, which operates ten lending library locations throughout the state, including two traveling libraries and one that allows individuals to experience different bikes. In contrast to rebate programs, lending library program administrators are more varied organizationally to include nonprofits, universities, housing authorities, and actual libraries.<sup>26</sup> Loan-to-own programs are an alternative to the traditional lending library. Participants are given an e-bike for a period of time and are required to meet certain program standards such as: submitting bicycling data, participating in safety education, having regular bike maintenance, and sometimes even completing volunteer hours before ownership.<sup>27</sup>

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<sup>20</sup> Engrossed Second Substitute House Bill 1125, Section 310(16).

<https://lawfilesexternal.wa.gov/biennium/2023-24/Pdf/Bills/House%20Passed%20Legislature/1125-S.PL.pdf?q=20230822144820>

<sup>21</sup> WSDOT Blog Post (2023). <https://wsdotblog.blogspot.com/2023/08/hold-onto-your-handlebars-well-soon.html>

<sup>22</sup> Theme that emerged during SME interviews during research for this Proviso response. See Appendix A for complete list of interviewees and key takeaways.

<sup>23</sup> See Appendix A for complete list of interviewees and key takeaways.

<sup>24</sup> See Appendix A for complete list of interviewees and key takeaways. Appendix B for summary of rebate programs reviewed for this Proviso response.

<sup>25</sup> See Appendix C for summary of lending library programs reviewed for this Proviso response.

<sup>26</sup> Ibid.

<sup>27</sup> See Appendix D for an overview of loan-own-program and City of Berkley Spotlight.

## Lessons Learned

Interviews with e-bike experts revealed shared practices for implementing a rebate program:<sup>28</sup>

- Expect program oversubscription; demand will far exceed supply of rebate vouchers.
- Hire a third-party administrator to approve income eligible participants, distribute vouchers, and reimburse retailers.
- Use point-of-sale structure for pre-approved individuals to redeem a voucher in store.
- Reimburse retailers within two weeks to reduce financial burden and encourage participation.
- Establish a minimum age for participants – ages 16 and 18 are the two most common identified.
- Limit voucher distribution to one per household.

In terms of lending libraries, lessons learned include:<sup>29</sup>

- 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 and maintenance, storage, and insurance.

### **B. A proposal to implement an e-bike rebate pilot program in King County based on income eligibility.**

Based on the availability of funding for such a program, the County has an opportunity to develop an e-bike rebate program that aligns with the State of Washington and that potentially supports local jurisdictions and unincorporated areas within the County to adopt e-bike programs. Consistent with the Equity and Social Justice Strategic Plan (2016-2022) strategy to invest where needs are greatest,<sup>30</sup> the proposal put forward in this report is a hybrid model focusing resources on income qualified individuals or households. The recommendation utilizes a lending library approach administered by a grant to CBOs or nonprofits that incorporates funding for rebate vouchers as part of the program. This hybrid approach 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 regard to access to transit, as well as other county services.<sup>31</sup> In addition, it helps build relationships between participants and bike professionals, which is important for ongoing maintenance.<sup>32</sup> Appendix G provides information about other alternative explored during research for this Proviso response.

<sup>28</sup> See [table 2](#) and [table 3](#) of this report.

<sup>29</sup> See [table 4](#) of this report.

<sup>30</sup> King County Equity and Social Justice Strategic Plan (2016-2022):

<https://kingcounty.gov/en/legacy/elected/executive/equity-social-justice/strategic-plan.aspx>

<sup>31</sup> Bennett, C., MacArthur, J., Cherry, C., and Jones, L. (2022). Using E-Bike Purchase Incentive Programs to Expand the Market – North American Trends and Recommended Practices. *Transportation Research and Education Center, Portland State University*. [https://ppms.trec.pdx.edu/media/project\\_files/E-bike\\_Incentive\\_White\\_Paper\\_5\\_6\\_2022.pdf](https://ppms.trec.pdx.edu/media/project_files/E-bike_Incentive_White_Paper_5_6_2022.pdf)

<sup>32</sup> Program design theme that emerged from research for this Proviso response. See Appendix A for complete list of interviewees and key takeaways.

### **C. An assessment and plan for administering an e-bike lending library or e-bike ownership program consistent with requirements of the program established by Engrossed Second Substitute House Bill 1125, Section 310(16).**

The phrase “lending library” primarily refers to community focused programs that are advocating to increase adoption of e-bicycling culture.<sup>33</sup> The hybrid approach proposed in Section B encourages the use of a lending library and integrates a rebate incentive so that individuals or households can explore how this mode can fit into their lifestyle, learn about safety and maintenance, and create a pathway for e-bike ownership.

The program proposed in this report aligns with the intended grant recipients outlined in House Bill 1125 particularly the focus on *nonprofit organizations or tribal governments that serve persons who are low-income or reside in overburdened communities*.<sup>34</sup> In addition, the proposed rebate amount and qualification threshold align with the State for income qualified individuals.

Oversight of such program is recommended by the King County Office of Climate to ensure program alignment in advancing strategic initiatives at the nexus of climate, transportation, and equity. In addition, this office has the positionality to convene other County agencies and external organization to support design elements and partner on locating funding opportunities.

### **D. An analysis of the level of staffing, if any, and funding needed to implement the pilot program**

Based on research for this Proviso, similar programs are managed by a senior staff member working closely with a mayor’s office, city council, or executive on climate related initiatives.<sup>35</sup> Jurisdiction staff are typically responsible for coordinating the design and implementation of a request for proposals (RFP) and take on an oversight role managing contractor(s) and/or grantee(s) once funding is awarded. At King County, the estimated cost for 1 senior FTE in this type of role is around \$195,000 annually (including benefits). This information is based on 2023 data used to inform staffing estimates.<sup>36</sup>

The State of Connecticut is the jurisdiction closest in population size to King County and invested \$1.75 million in a rebate program.<sup>37</sup> Within its ten-day application period, the State of Connecticut received 6,394 applications, with over 5,000 of the applications from income qualified individuals. To help meet the high demand from income qualified applicants, an additional \$250,000 in funding was added to the program, specifically for the first 500 income qualified applicants.<sup>38</sup>

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<sup>33</sup> Terminology understood based on SME interviews. See Appendix A for complete list of interviewees and key takeaways.

<sup>34</sup> Engrossed Second Substitute House Bill 1125, Section 310(16). <https://lawfilesexternal.wa.gov/biennium/2023-24/Pdf/Bills/House%20Passed%20Legislature/1125-S.PL.pdf?q=20230822144820>

<sup>35</sup> See Appendix A for complete list of interviewees and key takeaways.

<sup>36</sup> Staffing estimate supplied by King County Office of Performance, Strategy, and Budget.

<sup>37</sup> King County has a population of just over 2.2 million and the State of Connecticut has a population of just over 3.6 million.

<sup>38</sup> Connecticut Department of Energy and Environmental Protection: <https://portal.ct.gov/DEEP/Air/Mobile-Sources/CHEAPR/Electric-Bicycles>

WSDOT released a [blog post](#) on August 24, 2023 providing updates about its work on establishing the e-bike programs directed by HB1125. Updates included the number of available rebates using approximate funding ranges. With the \$5 million allocation from the 2023 – 2025 budget WSDOT estimates distributing 2,300 rebate vouchers at the \$1,200 level (income-based eligibility) and 6,200 rebate vouchers at the \$300 level (no income eligibility). These estimates consider administrative and research costs.<sup>39</sup>

Lending library investments are more varied compared to rebate programs. The number of bikes in a program, the cost per bike, the type of bike, and administration costs are all factors. Funding ranges were as low as four bikes at \$25,000 total budget (University of Oregon) to 300 bikes at a \$3 million total budget (State of Colorado). Berkeley purchased 50 bikes at \$1,500/each for their ride-to-own program, with a total operating budget of \$250,000.<sup>40</sup>

#### **E. An analysis of possible funding sources that could be used to implement the pilot program, including, but not limited to, funding from the Federal Infrastructure Investment and Jobs Act**

The Federal Infrastructure Investment and Jobs Act (IIJA) via the Congestion Mitigation and Air Quality Improvement Program (CMAQ)<sup>41</sup> has added a new eligibility for shared micromobility, including bike-sharing and shared scooter systems.<sup>42</sup> E-bike promotion programs are eligible recipients of CMAQ funding, which is provided to the State and allocated by WSDOT to four Metropolitan Planning Organizations (MPOs), including the Puget Sound Regional Council (PSRC) of which King County is a member.<sup>43</sup> Exploring CMAQ funding through WSDOT or PSRC for a local e-bike program is one potential opportunity that stems from IIJA.<sup>44</sup> No other active federal grants specific to e-bikes were identified during the writing of this report. However, relevant past grants have been released by both the Environmental Protection Agency (EPA) and Department of Transportation (DOT).<sup>45</sup>

<sup>39</sup> WSDOT Blog Post (2023). <https://wsdotblog.blogspot.com/2023/08/hold-onto-your-handlebars-well-soon.html>

<sup>40</sup> See [table 7](#) this report for more details on lending library funding ranges.

<sup>41</sup> The IIJA Congestion Mitigation and Air Quality Improvement Program (CMAQ) provides flexible funding to state governments for transportation projects and programs to help meet the requirements of the Clean Air Act. Funding is available to reduce congestion and improve air quality for areas that do not meet the National Ambient Air Quality Standards for ozone, carbon monoxide, or particulate matter (nonattainment areas) and for former nonattainment areas that are now in compliance (maintenance areas).<sup>41</sup>

<sup>42</sup> § 11115(1); 23 U.S.C. 149(b)(7) <https://www.congress.gov/117/plaws/publ58/PLAW-117publ58.pdf>

<sup>43</sup> The PSRC consists of the elected leaders of King, Pierce, Snohomish, and Kitsap counties, the region's cities and towns, port districts, transit agencies, and Tribes. An annual General Assembly votes on major decisions, approves the budget, and elects new leadership. Each month, a 36-member Executive Board makes decisions on behalf of the General Assembly with the input of several advisory boards made up of local elected officials and representatives of business, labor, environmental and community interests, as well as input from the public at large.

<sup>44</sup> The region adopted a \$5.4 billion draft Regional Transportation Improvement program (TIP), and also submitted rankings for funding from WSDOT, all administered through their Transportation Policy Board. Approved projects for 2022 are listed on the website. No e-bike or micromobility projects are identified to date.

<sup>45</sup> Drivers and Environmental Impacts of Energy Transitions in Underserved Communities Grants. (2023, August 14). EPA. <https://www.epa.gov/research-grants/drivers-and-environmental-impacts-energy-transitions->

At the State level, the passage of HB1125, which directs WSDOT to establish an e-bike lending library or ownership grant program, creates an opportunity for King County to apply for this competitive grant.<sup>46</sup> 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 necessary infrastructure to support micromobility.<sup>47</sup> 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. Creation of a dedicated climate fund approved by a voter approved tax has been successful in other jurisdictions, including the City of Denver, City of Boulder, and City of Berkeley.

**F. A description of desired outcomes and measures for the pilot program, including but not limited to the impact on those communities traditionally underserved with regard to access to transit, as well as other county services.**

There are numerous benefits related to an e-bike pilot program. Defining program goals is necessary to develop specific measures, but at a high-level the pilot program proposed in this report is guided by equity and climate related goals<sup>48</sup> and has advantages for individuals, the community, and regionally. Specific to traditionally underserved communities with regard to access to transit, benefits include increased access to reliable mobility and reduced transportation costs in comparison to vehicle ownership.<sup>49</sup> Community benefits includes decreased traffic congestion.<sup>50</sup> Regional benefits align to

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[underserved-communities-grants](#) ; View Grant Opportunity: National Pedestrian and Bicycle Information Center. Department of Transportation, DOT Federal Highway Administration. *Grants.gov*.

<https://www.grants.gov/web/grants/view-opportunity.html?opId=337734>

<sup>46</sup> Engrossed Second Substitute House Bill 1125, Section 310(16). <https://lawfilesextra.leg.wa.gov/biennium/2023-24/Pdf/Bills/House%20Passed%20Legislature/1125-S.PL.pdf?q=20230822144820>

<sup>47</sup> Information supplied by King Country Metro for this Proviso response.

<sup>48</sup> King County Equity and Social Justice Strategic Plan (2016-2022):

<https://kingcounty.gov/en/legacy/elected/executive/equity-social-justice/strategic-plan.aspx> ; King County 2020 Strategic Action Climate Plan. (2021 May). *King County*. [your.kingcounty.gov/dnrp/climate/documents/scap-2020-approved/2020-king-county-strategic-climate-action-plan.pdf](https://your.kingcounty.gov/dnrp/climate/documents/scap-2020-approved/2020-king-county-strategic-climate-action-plan.pdf)

<sup>49</sup> Moyer, B. (2022, August 11). Annual Cost of New Car Ownership Crosses \$10K Mark. AAA.

<https://newsroom.aaa.com/2022/08/annual-cost-of-new-car-ownership-crosses-10k-mark/>

<sup>49</sup> Headland, N. (2023, July 3). Small But Mighty: Electric Bicycles Can Bridge Gap in Access to Transportation. *National Renewable Energy Lab*. <https://www.nrel.gov/news/program/2023/small-but-mighty-electric-bicycles-can-bridge-the-gap-in-access-to-transportation.html>

<sup>50</sup> Asensio, O.I., Apablaza, C.Z., Lawson, M.C. et al. (2022). "Impacts of micromobility on car displacement with evidence from a natural experiment and geofencing policy." *Nature Energy* 7, pp. 1100–1108.

<https://doi.org/10.1038/s41560-022-01135-1>.

support reduction in greenhouse gasses, air pollution, and toxic runoff by reducing the need for gas-powered vehicle trips.<sup>51</sup>

The City of Denver is one example jurisdiction with an active e-bike rebate program that has performed GHG emission reduction calculations to-date.<sup>52</sup> Calculations show that in a nine-month period, over 4,000 e-bikes saved 0.94lb CO<sub>2e</sub> per dollar spent, for a total of 2,040 MT CO<sub>2e</sub> avoided emissions per year. While Denver is a smaller jurisdiction (population of ~711,000) than King County (population of 2.2 million), these findings can provide insights into the emission reductions that e-bike usage could produce in King County. E-bike emission reduction calculators have become available for helping individuals determine their own riding impact or for aiding jurisdictions in outlining program scope. Cost of trip efficiency can be measured using Portland State's Transportation Research and Education Center (TREC) Electric Vehicle Incentive Cost and Impact Tool.<sup>53</sup>

### **G. An analysis of any issues that could adversely impact the expansion of the pilot to a fully developed program and potential strategies to address those issues.**

Key categories of risks to be mitigated for in the design and implementation of a successful pilot program for a lending library or e-bike ownership program include (1) legal and financial mitigations such as insurance coverage; (2) bicycle infrastructure and safety impacts such as pedestrian safety and promoting safe battery practices; (3) awareness, knowledge, and experience necessary for adoption; (4) program management and administration such as contract management and fraud prevention.

Jurisdictions interviewed for this Proviso have found successful ways to facilitate both rebate and lending library programs despite challenges.<sup>54</sup> In general, mitigation strategies include (1) careful development of user liability contracts and waivers, (2) informed consideration of infrastructure and selection of eligible e-bikes and equipment, (3) dedicated community outreach and education activities for participants, and (4) intentional co-creation of program design with community, retailers, and CBOs or nonprofits.

### **Conclusion/Next Actions**

Passage of Washington State HB1125 creates an opportunity for King County to align with the direction set forth by the State to continue advancing regional transportation and climate related initiatives.<sup>55</sup> Through a mix of research and interviews with SMEs, this Proviso response proposes utilizing a lending library approach with a rebate program extension to promote engagement with underserved

<sup>51</sup> Michael McQueen, John MacArthur, Christopher Cherry. (2020). "The E-Bike Potential: Estimating regional e-bike impacts on greenhouse gas emissions." *Transportation Research Part D: Transport and Environment*, Volume 87.

<sup>52</sup> Other examples: Fitch-Polse, D., Johnson, N., & Handy, S. (2023). E-bike Incentive Programs Reduce GHGs and Support Recreational Travel. *UC Davis: National Center for Sustainable Transportation*.

<http://dx.doi.org/10.7922/G2V69GW0> Retrieved from <https://escholarship.org/uc/item/0bk6b8j1>

<sup>53</sup> McQueen, M. (2020). The Electric Vehicle Incentive Cost and Impact Tool. *Transportation Research and Education Center, Portland State University*. <https://trec-pdx.shinyapps.io/incentive-impact-tool/>

<sup>54</sup> See Appendix A for complete list of interviewees and key takeaways.

<sup>55</sup> During the 2023 Washington State Legislative Session, HB1125 was passed, making transportation appropriations for the 2023-2025 fiscal biennium, with \$5 million allocated to create an e-bike rebate program, and \$2 million allocated to establish an e-bike lending library and ownership grant program. The Washington State Department of Transportation (WSDOT) was directed to establish these programs and is currently in the process of building out programs.

communities. Areas for further research and discussion include defining specific program goals in alignment with existing County plans; identifying one-time and sustainable funding sources; and pursuing a co-creation model for program design through a steering committee or advisory group to ensure program goals match local context.

## IV. Background

### Department Overview

King County’s Office of Performance, Strategy and Budget (PSB) provides comprehensive planning, management, budgeting, and performance assessment for King County government. PSB’s work is guided by best practices in financial stewardship and performance management, which includes enhancing accountability, transparency, and integrating strategic planning, business planning, resource allocation, and continuous improvement into a systematic approach throughout the County. PSB leads organizational analytics and guides strategy development for Executive Branch departments so that King County delivers quality services, makes informed and transparent decisions, and achieves its goals.

### Context

Electric bicycles, commonly referred to as e-bikes, have become more popular and commonplace in recent years. E-bike sales and use exploded worldwide in 2020 making it known as “the year of the e-bike”.<sup>56</sup> E-bike sales increased 23 percent in Europe in 2020, with projections that 10 million bikes per year are expected to be purchased by 2030.<sup>57</sup> In the United States, e-bike sales grew by 145 percent from 2019 to 2020<sup>58</sup> due to the sale of over 600,000 e-bikes in 2020.<sup>59</sup> Local Seattle retailers, such as Gregg’s Cycles, reported seeing record sales in 2022.<sup>60</sup> Much of these increases were attributed anecdotally to a pandemic boom, and while current sales are still higher than pre-pandemic sales, some local King County retailers are reporting lower e-bike sales in 2023 compared to 2021 or 2022.<sup>61</sup>

Nearly 60 percent of one-way household trips were less than six miles, a distance that is realistically attainable by e-bike.<sup>62</sup> E-cargo bikes are the closest to satisfying ride replacement needs due to their ability to aid with household related trips, such as grocery shopping or childcare drop-offs. Additional

<sup>56</sup> Duckham, J. (2020, December 29). 2020: The Year of the Electric Bike. *Rad Power Bikes*.

<https://www.radpowerbikes.com/blogs/the-scenic-route/2020-the-year-of-the-electric-bike>

<sup>57</sup> Reid, C. (2020, December 2). E-Bike Sales To Grow From 3.7 Million to 17 Million Per Year By 2030, Forecast Industry Experts. *Forbes*. <https://www.forbes.com/sites/carltonreid/2020/12/02/e-bike-sales-to-grow-from-37-million-to-17-million-per-year-by-2030-forecast-industry-experts/?sh=2b6a80e72876>

<sup>58</sup> Fleming, S. (2021, March 12). Electric bike sales grew by 145percentin the US last years – here’s why that matters.” *World Economic Forum*. <https://www.weforum.org/agenda/2021/03/electric-bicycles-sales-growth/>

<sup>59</sup> Toll, M. (2021, June 29). The affordable electric vehicles outselling electric cars around the world. *Electrek*. <https://electrek.co/2021/06/29/the-affordable-electric-vehicles-outselling-electric-cars-around-the-world/>

<sup>60</sup> Fucoloro, Tom. (2022, March 23). Bloomberg: The e-bike boom is back (or maybe never stopped). *Seattle Bike Blog*. <https://www.seattlebikeblog.com/2022/03/23/bloomberg-the-e-bike-boom-is-back-or-maybe-never-stopped/>

<sup>61</sup> See Appendix A for complete list of interviewees and key takeaways.

<sup>62</sup> FOTW #1042, August 13, 2018: In 2017 Nearly 60percent of All Vehicle Trips Were Less than Six Miles. (2018, August 13). *Office of Energy Efficiency & Renewable Energy*. <https://www.energy.gov/eere/vehicles/articles/fotw-1042-august-13-2018-2017-nearly-60-all-vehicle-trips-were-less-six>

categories mirror traditional bicycles and include road, mountain, urban, hybrid, cruiser, and folding bikes.

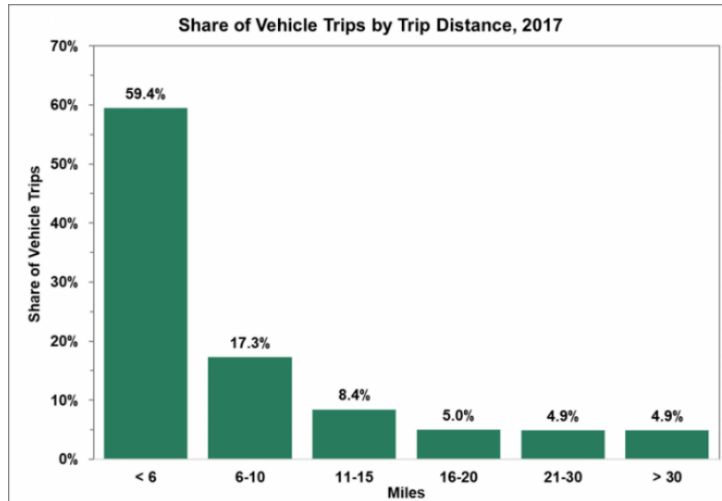


Figure 1: U.S. Department of Transportation, Federal Highway Administration, National Household Travel Survey, 2017.

E-bikes are further categorized by class, with each bike falling into a Class 1, Class 2, or Class 3 level of motor assistance, as detailed in the below image.<sup>63</sup>

	<b>Class 1</b>	<b>Class 2</b>	<b>Class 3</b>
<b>Pedal Assist</b>	Yes	Yes	Yes
<b>Throttle</b>	No	Yes	No
<b>Max Assisted Speed</b>	20 mph	20 mph	28 mph

Figure 2: E-bikes fall into three classes.

Largely determined by the category and class of bike, the average cost of an e-bike ranges from \$1,000 to \$2,000 but can run upwards of \$15,000. For adaptive e-bikes – bikes designed to be accessible to people with disabilities – pricing ranges from \$4,000 to \$10,000,<sup>64</sup> though the adaptive e-bike market is still relatively new. Retailers in King County indicated that the average cost customers spend on e-bikes tends to be higher, sometimes around \$3,000. Insurance is one of the driving factors behind higher e-bike costs; many retailers will often only carry higher quality e-bikes that are more expensive because

<sup>63</sup> How to Choose an Electric Bike. (2023, January 10). REI. <https://www.rei.com/learn/expert-advice/how-to-choose-an-ebike.html>

<sup>64</sup> Electric Bikes (E-bikes). (2023). *The City and County of Denver*. <https://www.denvergov.org/Government/Agencies-Departments-Offices/Agencies-Departments-Offices-Directories/Climate-Action-Sustainability-Resiliency/Sustainable-Transportation/Electric-Bikes-E-Bikes-Rebates>



manufacturers have liability insurance on the e-bike, which provides an additional layer of security for the retailer.<sup>65</sup>

On average, an e-bike battery is expected to last for about 500 to 1,000 charging cycles, which often equates to about two to five years of use, depending on the rider.<sup>66</sup> Batteries are either mounted externally so they are removable or internally, so they are not easily removeable. Both come with advantages and disadvantages, for example: internally mounted batteries lower the risk of theft but are much more difficult to remove for replacement. There are numerous e-bike models utilizing both designs. Lithium-ion batteries are the most common, and 36-volt and 48-volt are the most common types of voltage, compared to 52-volt batteries that are typically used for scooters.<sup>67</sup>

In comparison to gas-powered cars, e-bikes present a significantly lower upfront and lifespan cost. AAA estimates that it costs over \$10,000 per year to own and operate a new gas-powered car.<sup>68</sup> In contrast, bike shops estimate annual e-bike ownership costs range from \$300 to \$800 per year. The National Renewable Energy Lab (NREL) used data from a [two-year e-bike pilot program](#) in Colorado to compare e-bike and gas-powered vehicle costs and usage, as depicted below.<sup>69</sup>

	Cargo e-Bike	Crossover SUV
Typical Fuel Fill-Up Cost	\$0.20 @ \$0.20/kW	\$50.75 @ \$3.50/gal
CO <sub>2</sub> e Emissions/Mile	0 to 3 grams	350 Grams
Annual Ownership Cost	~\$300-500	\$10,728*
Can Carry What You Need?	Usually	Usually
Good Choice for Short Trips?	Yes	Not always

Figure 3: Figure from the National Renewable Energy Lab.

The Transportation Research and Education Center at Portland State University maintains a [database](#) of e-bike incentives in North America.<sup>70</sup> There is no current federal aid for e-bikes; however, Senate bill 2420, the Electric Bicycle Incentive Kickstart for the Environment Act, was introduced in Congress in July

<sup>65</sup> See Appendix A for complete list of interviewees and key takeaways.

<sup>66</sup> Gross, S. (2021, September 13). How long do electric bike batteries last? *Electric Bike Report*.

<https://electricbikereport.com/how-long-do-electric-bike-batteries-last/>

<sup>67</sup> Electric Bike Battery Range: How Far Can I Go? (2022, August 31). *Fatte Bikes*.

<https://fattebikes.com/blogs/news/electric-bike-battery-range-how-far-can-i-go>

<sup>68</sup> Moyer, B. (2022, August 11). Annual Cost of New Car Ownership Crosses \$10K Mark. AAA.

<https://newsroom.aaa.com/2022/08/annual-cost-of-new-car-ownership-crosses-10k-mark/>

<sup>69</sup> Headland, N. (2023, July 3). Small But Mighty: Electric Bicycles Can Bridge Gap in Access to Transportation. *National Renewable Energy Lab*. <https://www.nrel.gov/news/program/2023/small-but-mighty-electric-bicycles-can-bridge-the-gap-in-access-to-transportation.html>

<sup>70</sup> Bennett, C. and MacArthur, J. (2023, August 29). E-bike Incentive Programs of North America Tracker.

*Transportation Research and Education Center, Portland State University*.

[https://docs.google.com/spreadsheets/d/1C-sYcwLrQFsr8r2A6RiAP2RwGsBNwr1BKOF\\_HJvCsVU/edit#gid=0](https://docs.google.com/spreadsheets/d/1C-sYcwLrQFsr8r2A6RiAP2RwGsBNwr1BKOF_HJvCsVU/edit#gid=0)

of 2021. This bill would provide a refundable tax credit, limited to \$1,500 per taxpayer, for 30 percent of the cost of an e-bike. The bill has been assigned to the Senate Committee on Finance but has not made any additional progress.<sup>71</sup> Retailer REI Co-op is currently supporting a “Let’s pass the E-BIKE Act” campaign as a means to spur support for the bill (S.2420).<sup>72</sup>

### *Biking Culture: Equity and Normalizing Mainstream E-Bike Utilization*

Throughout the course of this research, the term “biking culture” was used by SMEs several times when discussing e-bike adoption. At a high level, biking culture can be characterized as the use of bicycles for transportation, sport, or leisure purposes where individuals feel comfortable using a bike in their daily lives. Biking culture can be facilitated through biking groups or clubs, prevalent biking infrastructure, and urban planning that prioritizes biking and cycling initiatives.<sup>73</sup>

Based on this research, two distinct elements appear to underpin the umbrella term “biking culture” and are woven throughout the conversation related to e-bike adoption in this Proviso response:

- Increasing racial, gender, and disability equity in the American bicycling community.<sup>74</sup>
- Normalizing alternative and electric vehicle transportation options to help move beyond the car-dominant culture in the U.S that has historically prioritized planning communities around vehicles.<sup>75</sup>

Related to equity in bicycling among different racial groups, the biking space in America has predominately been dominated by white, male, affluent riders.<sup>76</sup> In 2020, bike racing organization USA Cycling released demographic results from a survey comparing participant (n=7,031) and its member demographics. Results showed that the majority of survey participants and USA Cycling members were male, at 80 percent and 83 percent respectively. Additional survey results showed that the majority of participants were white (86 percent), held higher education degrees (78 percent held bachelor,

<sup>71</sup> S.2420 Electric Bicycle Incentive Kickstart for the Environment Act. (2021-2022).

<https://www.congress.gov/bill/117th-congress/senate-bill/2420>

<sup>72</sup> Let’s Pass the E-BIKE Act. REI. <https://www.rei.com/action/network/campaign/e-bike-act>

<sup>73</sup> Murray, Charlotte. (2023, June 8). “Cycling Across Culture: What Does Riding a Bike Mean to People Across the World?” *Welovecycling*. <https://www.welovecycling.com/wide/2023/06/08/cycling-across-cultures-what-does-riding-a-bike-mean-to-people-across-the-world/>

<sup>74</sup> Cardon, Nathan. (2021, November 16). American Cycling Has a Racism Problem. *The Washington Post*. <https://www.washingtonpost.com/outlook/2021/11/16/american-cycling-has-racism-problem/>; USA Cycling Demographics Survey 2020 Results. (2020). *USA Cycling*. <https://s3.amazonaws.com/usac-craft-uploads-production/documents/Demographics-Report-2020.pdf>; Bennett, C., MacArthur, J., Cherry, C., and Jones, L. (2022). Using E-Bike Purchase Incentive Programs to Expand the Market – North American Trends and Recommended Practices. *Transportation Research and Education Center, Portland State University*. [https://ppms.trec.pdx.edu/media/project\\_files/E-bike\\_Incentive\\_White\\_Paper\\_5\\_6\\_2022.pdf](https://ppms.trec.pdx.edu/media/project_files/E-bike_Incentive_White_Paper_5_6_2022.pdf)

<sup>75</sup> Zivarts, A. (2023 September). “What a Week Without Driving Can Teach.” *Bloomberg, CityLab*. [https://www.bloomberg.com/news/articles/2023-09-18/to-understand-us-car-dependency-go-a-week-without-driving?utm\\_source=website&utm\\_medium=share&utm\\_campaign=copy](https://www.bloomberg.com/news/articles/2023-09-18/to-understand-us-car-dependency-go-a-week-without-driving?utm_source=website&utm_medium=share&utm_campaign=copy)

<sup>76</sup> Cardon, Nathan. (2021, November 16). American Cycling Has a Racism Problem. *The Washington Post*. <https://www.washingtonpost.com/outlook/2021/11/16/american-cycling-has-racism-problem/>; This is a consistent demographic throughout the history of American biking, beginning in the 1890s when biking gained popularity.

graduate, or doctorate degrees), did not have a disability (95 percent), and spoke English at home (99 percent).<sup>77</sup>

In 2021 Disability Rights Washington launched the Week Without Driving challenge that has since spread across the U.S. hosted by over 50 advocacy groups. This invitation allows elected leaders, transportation professionals, and anyone else interested in an intentional experience of getting their transportation and other needs met without driving. Participants are encouraged to use public transportation and other forms of mobility such as: walk, roll, scooter, or bike. Participation in this challenge by elected leaders has led to insights and policy advocacy in transportation connectivity, safety improvements such as lighting, sidewalks, bike lanes, and caregiver transportation such as those with young children. The weight of this challenge intersects the landscape where one lives with personal elements such as: income, race, age, gender, sexuality, disability, immigration status, or caregiving responsibilities.<sup>78</sup> For information about this challenge check out [What a Week Without Driving Can Teach](#).<sup>79</sup>

### Local Context

In 2018 [Washington statute](#) defined e-bikes through the passage of SB 6434.<sup>80</sup> This was the first legislation specific to e-bikes passed in Washington State. Washington's statute is consistent with other jurisdictions, such as the State of Colorado,<sup>81</sup> with e-bikes defined as:

*“Electric-assisted bicycle” means a bicycle with two or three wheels, a saddle, fully operative pedals for human propulsion, and an electric motor. The electric-assisted bicycle’s electric motor must have a power output of no more than seven hundred fifty watts. The electric-assisted bicycle must meet the requirements of one of the following three classifications:*

- (1) “Class 1 electric-assisted bicycle” means an electric-assisted bicycle in which the motor provides assistance only when the rider is pedaling and ceases to provide assistance when the bicycle reaches the speed of twenty miles per hour;*
- (2) “Class 2 electric-assisted bicycle” means an electric-assisted bicycle in which the motor may be used exclusively to propel the bicycle and is not capable of providing assistance when the bicycle reaches the speed of twenty miles per hour; or*
- (3) “Class 3 electric-assisted bicycle” means an electric-assisted bicycle in which the motor provides assistance only when the rider is pedaling and ceases to provide assistance when the bicycle reaches the speed of twenty-eight miles per hour and is equipped with a speedometer.”*

<sup>77</sup> USA Cycling Demographics Survey 2020 Results. (2020). USA Cycling. <https://s3.amazonaws.com/usac-craft-uploads-production/documents/Demographics-Report-2020.pdf>

<sup>78</sup> Zivarts, A. (2023 September). [“What a Week Without Driving Can Teach.”](#) Bloomberg, CityLab. [https://www.bloomberg.com/news/articles/2023-09-18/to-understand-us-car-dependency-go-a-week-without-driving?utm\\_source=website&utm\\_medium=share&utm\\_campaign=copy](https://www.bloomberg.com/news/articles/2023-09-18/to-understand-us-car-dependency-go-a-week-without-driving?utm_source=website&utm_medium=share&utm_campaign=copy)

<sup>79</sup> Zivarts, A. (2023 September). [“What a Week Without Driving Can Teach.”](#) Bloomberg, CityLab. [https://www.bloomberg.com/news/articles/2023-09-18/to-understand-us-car-dependency-go-a-week-without-driving?utm\\_source=website&utm\\_medium=share&utm\\_campaign=copy](https://www.bloomberg.com/news/articles/2023-09-18/to-understand-us-car-dependency-go-a-week-without-driving?utm_source=website&utm_medium=share&utm_campaign=copy)

<sup>80</sup> Engrossed Substitute Senate Bill 6434. 65<sup>th</sup> Legislature, 2018 Regular Session. <https://lawfilesexet.leg.wa.gov/biennium/2017-18/Pdf/Bills/Senate%20Passed%20Legislature/6434-S.PL.pdf?q=20230818083014>

<sup>81</sup> Long, R. (2017 September). Regulation of Electric Bicycles. Colorado Legislative Council Staff. [https://leg.colorado.gov/sites/default/files/images/lcs/issue\\_brief\\_on\\_electric\\_bicycles\\_8232017.pdf](https://leg.colorado.gov/sites/default/files/images/lcs/issue_brief_on_electric_bicycles_8232017.pdf)

E-bikes can play a role in reducing greenhouse gas emissions, which is a potential strategy to support achievement of existing climate related goals. The King County [Strategic Climate Action Plan \(SCAP\)](#)<sup>82</sup> outlines focus and priority areas where King County can target action to address climate change. Overarching goals of the SCAP include reducing greenhouse gas (GHG) emissions, emphasizing climate equity and community-driven policy, and preparing for climate change. Transportation accounts for 36 percent of GHG emissions in King County. Reducing car trips is highlighted as a key part of reducing transportation emissions, and there is an emphasis on fostering partnership with businesses, non-governmental organizations, other governments, community leaders, and county residents. While e-bikes are not explicitly referenced in the SCAP, improving micromobility options and biking access is a consideration of the transportation strategy.<sup>83</sup>

During the 2023 Washington State Legislative Session, HB1125<sup>84</sup> was passed, making transportation appropriations for the 2023-2025 fiscal biennium, with \$5 million allocated to create an e-bike rebate program, and \$2 million allocated to establish an e-bike lending library and ownership grant program. The Washington State Department of Transportation (WSDOT) was directed to establish these programs and is currently in the process of building out the design.

In terms of standardized safety features, there are currently limited regulations, both at federal and state levels. This increases the need for, and reliance on, bicycle experts such as bike retailers and bicycle advocacy groups to provide quality information on e-bike safety.<sup>85</sup> For example, it is important for individuals to understand helmet laws when utilizing an e-bike. Washington State does not have a statewide law requiring helmet use. However, certain cities throughout the state and in King County, including Bellevue, Kent, and Renton, do require helmet use through local laws.<sup>86</sup> Similarly, there are no federal or state statutes requiring safety standards or third-party testing of e-bikes or e-bike batteries. The Setting Consumer Standards for Lithium-Ion Batteries Act (H.R. 1797), was introduced in March of 2023, but the bill has had no movement as of the writing of this report.<sup>87</sup> In December of 2022, the Consumer Product Safety Commission (CPSC) called on over 2,000 manufacturers and importers to comply with voluntary battery safety standards, which can prevent incidents such as battery fires in micromobility devices.<sup>88</sup>

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<sup>82</sup> King County 2020 Strategic Action Climate Plan. (2021 May). *King County*. [your.kingcounty.gov/dnrc/climate/documents/scap-2020-approved/2020-king-county-strategic-climate-action-plan.pdf](https://your.kingcounty.gov/dnrc/climate/documents/scap-2020-approved/2020-king-county-strategic-climate-action-plan.pdf)

<sup>83</sup> King County 2020 Strategic Action Climate Plan. (2021 May). *King County*. [your.kingcounty.gov/dnrc/climate/documents/scap-2020-approved/2020-king-county-strategic-climate-action-plan.pdf](https://your.kingcounty.gov/dnrc/climate/documents/scap-2020-approved/2020-king-county-strategic-climate-action-plan.pdf)

<sup>84</sup> Engrossed Second Substitute House Bill 1125, Section 310(16). <https://lawfilesext.leg.wa.gov/biennium/2023-24/Pdf/Bills/House%20Passed%20Legislature/1125-S.PL.pdf?q=20230822144820>

<sup>85</sup> Theme that emerged from research for this Proviso response. Also see footnotes 60-62.

<sup>86</sup> Bicyclist laws & safety. *Washington State Department of Transportation*. <https://wsdot.wa.gov/travel/bicycling-walking/bicycling-washington/bicyclist-laws-safety>

<sup>87</sup> H.R. 1797 – Setting Consumer Standards for Lithium-Ion Batteries Act. <https://www.congress.gov/bill/118th-congress/house-bill/1797/all-info>

<sup>88</sup> *United States Consumer Product Safety Commission*. (2022, December 2019). <https://www.cpsc.gov/s3fs-public/Important%20Safety%20Information%20Concerning%20Micromobility%20Devices.pdf>.

Biking infrastructure is another important factor surrounding e-biking. PeopleForBikes, a bike advocacy organization, collects and analyzes biking data in over 1,000 cities and towns in the United States. It then scores biking infrastructure in each city and town based on the following criteria:

- *People* (access to parts of the city where residents live)
- *Opportunity* (access to jobs and schools)
- *Core services* (access to places that serve basic needs)
- *Recreation* (access to recreational amenities)
- *Retail* (access to major shopping centers)
- *Transit* (access to major transit hubs)

Using these criteria, each city receives a ranking on a scale of 0 (low) to 100 (high). Six cities in King County were ranked on their bike-ability, as follows: Seattle (62), Issaquah (37), Bellevue (32), Kirkland (30), Redmond (27), and Auburn (24).<sup>89</sup> The below maps depict a comparison of high-stress (red) and low-stress (blue) areas for bicycling in Seattle and Auburn.

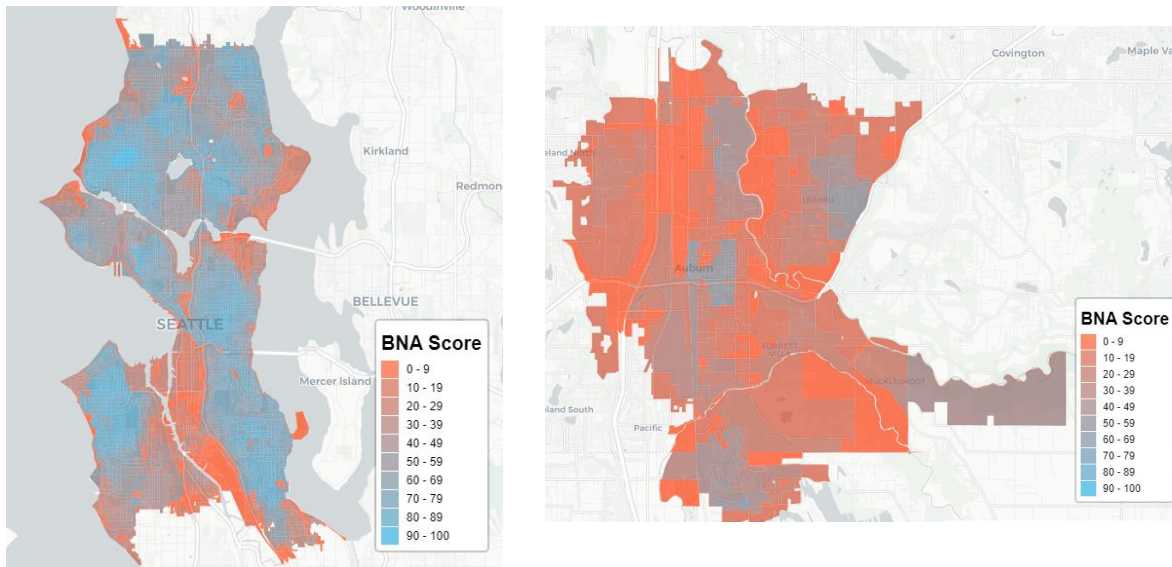


Figure 4: Bicycle Network Analysis (BNA) of Seattle, WA (score: 62) and Auburn, WA (score: 24).<sup>90</sup>

This data intersects with broader discussion within the bicycling community about safe infrastructure and remains a highly visible topic related to e-bike adoption.<sup>91</sup>

For more information on relevant standards in the industry, see Underwriters Laboratories (UL) e-bike standards (e.g., [the UL 2849 standard](#) for an e-bike's overall system, incl. battery, charger, and drivetrain; [the UL 2272 standard](#) for battery packs). Also see UL Press Release: UL Solutions. (2020). "Panasonic Receives UL's First E-Bike Electrical System Safety Certification." <https://www.ul.com/news/panasonic-receives-uls-first-e-bike-electrical-system-safety-certification>.

<sup>89</sup> 2023 Best Places to Bike. (2023). PeopleForBikes. <https://cityratings.peopleforbikes.org/>

<sup>90</sup> Ibid.

<sup>91</sup> Ibid.

## Methodology

This report was developed by Office of Performance, Strategy and Budget (PSB) staff. In addition, staff were consulted in King County Office of Risk Management, Metro Transit, and Department of Natural Resources and Parks.

The general approach for this project was to conduct research through both literature review and interviews with subject matter experts (SMEs) and invite oversight and feedback from the King County Office of Climate and PSB. Per the Proviso requirement, subject matter expert (SME) consultation included the following: the City of Denver and other government agencies with notable e-bike programs, community-based organizations (CBOs), e-bike retailers in King County, Washington State Department of Transportation Active Transportation Division, universities, local retailers, and other relevant partners or stakeholders.<sup>92</sup>

In addition, pertinent federal, state, and regional funding legislation and processes that would have bearing on potential e-bike programs financing in King County were reviewed. This included a review of the 2021 Federal Infrastructure Investment and Jobs Act (IIJA), the 2022 Federal Inflation Reduction Act (IRA), the Congestion Mitigation and Air Quality Improvement Program (CMAQ), Washington State Department of Transportation (WSDOT), and the Puget Sound Regional Council (PSRC) as to their funding streams, eligibility, and project application processes.

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<sup>92</sup> See Appendix A for a complete list of entities and individual consulted.

## V. Report Requirements

This section is organized to align with the proviso where each sub-section of this section matches a section of the proviso. The report will include sub-sections aligning to each requirement of the proviso as listed in below:

- A. A summary and assessment of the e-bike rebate program in the city of Denver, as well as of any other relevant e-bike rebate programs in other municipalities or states, including any lessons learned;*
- B. A proposal to implement an e-bike rebate pilot program in King County based on income eligibility;*
- C. An assessment and plan for administering an e-bike lending library or e-bike ownership program consistent with requirements of the program established by Engrossed Second Substitute House Bill 1125, Section 310(16);*
- D. An analysis of the level of staffing, if any, and funding needed to implement the pilot program;*
- E. An analysis of possible funding sources that could be used to implement the pilot program, including, but not limited to, funding from the federal Infrastructure Investment and Jobs Act;*
- F. A description of desired outcomes and measures for the pilot program, including but not limited to the impact on those communities traditionally underserved with regard to access to transit, as well as other county services; and*
- G. An analysis of any issues that could adversely impact the expansion of the pilot to a fully developed program and potential strategies to address those issues.*

This document identifies one potential proposal for an e-bike pilot program. Notably, implementing such a program whatever the structure requires it to be fully revenue backed by new funds. This is due to King County's financially constrained General Fund.

### A. Summary and assessment of the e-bike rebate program in Denver and other relevant municipalities

This section addresses the proviso requirement to provide a summary and assessment of the e-bike rebate program in the city of Denver, as well as any other relevant e-bike rebate programs in other municipalities or states, including any lessons learned.

#### Background

Over 160 e-bike incentive programs exist throughout North America.<sup>93</sup> Programs vary in size and scope, administrator type, incentive style, and program structure. The University of Portland's Transportation Research and Education Center (TREC) maintains an [active database](https://docs.google.com/spreadsheets/d/1C-sYcwLrQFsr8r2A6RiAP2RwGsBNwr1BKOF_HJvCsVU/edit#gid=0) of all e-bike programs in North America. Due to the extensive catalog of e-bike programs, this Proviso highlights the largest programs, and those perceived as being among the most successful by e-bike and transportation experts.<sup>94</sup>

<sup>93</sup> University of Portland Transportation Research and Education Center (TREC) Active Database: [https://docs.google.com/spreadsheets/d/1C-sYcwLrQFsr8r2A6RiAP2RwGsBNwr1BKOF\\_HJvCsVU/edit#gid=0](https://docs.google.com/spreadsheets/d/1C-sYcwLrQFsr8r2A6RiAP2RwGsBNwr1BKOF_HJvCsVU/edit#gid=0)

<sup>94</sup> University of Portland Transportation Research and Education Center (TREC) Active Database: [https://docs.google.com/spreadsheets/d/1C-sYcwLrQFsr8r2A6RiAP2RwGsBNwr1BKOF\\_HJvCsVU/edit#gid=0](https://docs.google.com/spreadsheets/d/1C-sYcwLrQFsr8r2A6RiAP2RwGsBNwr1BKOF_HJvCsVU/edit#gid=0)

E-bike programs are generally classified into two categories: a rebate program or lending library program. Rebate programs typically offer discounts on e-bike purchases, either for individuals to redeem vouchers during point-of-sale purchases at retailers or for individuals to submit for reimbursement post-purchase. Lending library programs often have a similar overarching goal of trying to increase community use and knowledge of e-bikes. However, program design varies more compared to rebate programs, with models using a wide range of structures to achieve their desired goal.<sup>95</sup> For instance, some programs use a lending approach similar to Lime Bikes,<sup>96</sup> where individuals can check-out a e-bike for a certain period of time, ranging from a few hours to a couple of days. Other programs loan e-bikes to individuals for up to two years, with the option to keep the e-bike at the end of the two-year trial period.<sup>97</sup> Specific program examples are highlighted in more detail below.

## Summary of Denver and Related E-Bike Programs

### The City of Denver

#### Rebate Program

Denver’s e-bike rebate program was launched in April 2022. To date over 6,000 e-bike rebates have been redeemed, with ownership continuing to grow as the City releases additional vouchers.<sup>98</sup> The program operates through the Office of Climate Action, Sustainability and Resiliency. Funding is sourced from the Climate Protection Fund, which was created in 2020 via a voter approved municipal ballot initiative.<sup>99</sup> With 62.34 percent of the vote, voters approved an additional \$0.25 sales tax, which is estimated to raise \$40 million per year to fund climate-related programs, including the e-bike rebate program. Rebates can be used for Class 1, 2, and 3 road, hybrid, and cargo e-bikes; full-suspension mountain bikes are excluded.<sup>100</sup>

Rebate amounts for Denver’s program are detailed in Table 1 below. Due to overwhelming demand from the onset of the program, Denver reduced the standard rebate incentive; initially set at \$400 per standard rebate, this rebate is now \$300, which has not led to a noticeable drop in demand for vouchers.<sup>101</sup>

Rebate Type	Traditional E-Bike Rebate	Cargo E-Bike Rebate
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<sup>95</sup> See Appendix C for summary of lending libraries reviewed for this research.

<sup>96</sup> Lime Bikes: <https://www.li.me/vehicles/electric-bike>

<sup>97</sup> See Appendix D for Loan-to-own program overview and City Berkely Spotlight.

<sup>98</sup> City of Denver E-Bike Rebate Voucher Schedule: <https://denvergov.org/Government/Agencies-Departments-Offices/Agencies-Departments-Offices-Directory/Climate-Action-Sustainability-Resiliency/Sustainable-Transportation/Electric-Bikes-E-Bikes-Rebates>

<sup>99</sup> Denver, Colorado, Ballot Measure 2A, Sales Tax to Fund Environmental and Climate-Related Programs and TABOR Spending Limit Increase (November 2020). *Ballotpedia*. [https://ballotpedia.org/Denver,\\_Colorado,\\_Ballot\\_Measure\\_2A,\\_Sales\\_Tax\\_to\\_Fund\\_Environmental\\_and\\_Climate-Related\\_Programs\\_and\\_TABOR\\_Spending\\_Limit\\_Increase\\_\(November\\_2020\)](https://ballotpedia.org/Denver,_Colorado,_Ballot_Measure_2A,_Sales_Tax_to_Fund_Environmental_and_Climate-Related_Programs_and_TABOR_Spending_Limit_Increase_(November_2020))

<sup>100</sup> Frequently Asked Questions: E-Bikes Incentive Program. (2023). *The City and County of Denver*. <https://denverrebate.azurewebsites.net/Home/FAQ>

<sup>101</sup> Interview: Mike Salisbury (2023). City of Denver, Colorado - Office of Climate Action, Sustainability, and Resiliency.



Standard	\$300	\$500
Income Qualified	\$1,200	\$1,400
Adaptive	\$1,400	-

Table 1: The City of Denver Rebate Price Ranges

Vouchers for rebates are released bi-monthly using a first-come, first-served model and must be redeemed within 60 days of being awarded. The voucher process includes the following:<sup>102</sup>

- Standard and Income Qualified Voucher: Individuals must submit an online application through a portal on the day vouchers are released. Individuals may sign up for email reminders via the Office of Climate Action, Sustainability and Resiliency. The application requires the individual's name, address, contact information, and proof of residency and/or income qualifications.
- Adaptive Voucher: Individuals must email both proof of residency and a letter from a professional verifying the need for an adaptive e-bike.

In addition, retailers must register with the City of Denver to become a participating retailer in Denver's e-bike rebate program. Once approved, individuals who receive a voucher can purchase an eligible e-bike of their choice at a qualifying retail shop.<sup>103</sup> Rebates are given to the individual at point-of-sale and retailers must submit for reimbursement once the purchase is complete. Retailers are then reimbursed within a two-week timeframe. The City contracts a third-party administrator to implement the program, specifically participant eligibility verification and retailer reimbursement.

A 2022 impact study released by the City of Denver and bicycle advocacy groups details the successes of the program.<sup>104</sup> Of the 4,734 Denver residents who purchased an e-bike using a voucher in the first nine months of the program, 1,000 individuals were surveyed. Main takeaways include:

- The reported average weekly ride was 26 miles, which replaced 3.4 car trips per week.
- 71 percent of respondents reported using their gas vehicles less often after purchasing their e-bike.
- 67 percent of the funding went to income qualified residents.
- Income qualified residents were using their e-bikes nearly 50 percent more than standard voucher recipients.
- On a per-mile basis, e-bikes cost 40% less to operate than EVs (electric vehicles) and nearly 75 percent less than ICEVS (internal combustion engine vehicle).
- Denver's e-bike incentive program saved 0.94 lb CO<sub>2e</sub> per dollar spent, for a total of 2,040 MT CO<sub>2e</sub> avoided emissions per year.

<sup>102</sup> Electric Bikes (E-Bikes). (2023). *The City and County of Denver*.

<https://www.denvergov.org/Government/Agencies-Departments-Offices/Agencies-Departments-Offices-Directory/Climate-Action-Sustainability-Resiliency/Sustainable-Transportation/Electric-Bikes-E-Bikes-Rebates>

<sup>103</sup> Ibid.

<sup>104</sup> Denver's 2022 Ebike Incentive Program - Results and Recommendations. (2022). *City and County of Denver, PeopleForBikes, Bicycle Colorado, Ride Report, & Rocky Mountain Institute*.

<https://5891093.fs1.hubspotusercontent-na1.net/hubfs/5891093/Denvers%202022%20Ebike%20Incentive%20Program%20Results%20and%20Recommendations.pdf>

### *Lending Library Program*

In addition to its rebate program, the City of Denver’s Office of Climate Action, Sustainability, and Resiliency also operates a lending library program, with funding also sourced from the Climate Protection Fund. The Lending Library is administered by two nonprofits, Northeast Transportation Connections (NETC) and the West Corridor TMA. Both programs utilize FattE-bikes, a local bike retailer.<sup>105</sup>

NETC’s operates in three locations within Denver, with each location deploying ten e-bikes for community members<sup>106</sup>. Individuals may check out a bike for 24-48 hours, and are provided with a helmet and lock, as well as hands-on training and guidance specific to e-bikes. West Corridor TMA has deployed 40 e-bikes throughout five Denver neighborhoods.

Two key lessons specific to community lending libraries emerged from conversations with the City of Denver. First, bike storage and security presented a significant challenge. Sourcing library locations was a challenging part of the process, as well as balancing how to make e-bikes accessible to community members, but also secure and free from theft. Second, successful program administration requires substantial time and resources. In conversations with the City, it was articulated that partnering with organizations who have the capacity to manage the site, check-out process, and e-bike maintenance is critical to ensuring day-to-day and long-term program success.

## **The State of Colorado**

During the 2022 Legislative Session, the Colorado legislature passed SB22-193, the Air Quality Improvements Act, which transferred \$12 million from Colorado’s General Fund to the Colorado Energy Office (CEO) to create the Community Access to Electric Bicycles Grant and Rebate Program.<sup>107</sup>

### *Community Access to Electric Bicycles Rebate Program*

The Community Access to Electric Bicycles Rebate Program launched in August 2023. This statewide program is similar to Denver’s program, though there are a few key differences. First, CEO approved both in-person and online retailers, in contrast to the City of Denver only approving local brick and mortar retailers. Furthermore, the State program offers rebate vouchers through a two-week application period followed by a randomized lottery approach, a different method from Denver’s first-come first-served application model.

CEO has hired the same third-party administrator as the City of Denver. The administrator, APTIM, runs both the participant eligibility verification process and retailer reimbursement process. This helps streamline the program, ensuring that retailers are reimbursed within a two-week period, which is the

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<sup>105</sup> Interview: Mike Salisbury (2023). City of Denver, Colorado - Office of Climate Action, Sustainability, and Resiliency.

<sup>106</sup> The NETC Bike Libraries. *NETC*. <https://www.nettransportation.org/bike-libraries>

<sup>107</sup> Senate Bill 22-193: Concerning Measures to Improve Air Quality in the State, and, in connection therewith, Making an Appropriation. [https://leg.colorado.gov/sites/default/files/2022a\\_193\\_signed.pdf](https://leg.colorado.gov/sites/default/files/2022a_193_signed.pdf)

accepted length of time retailers indicated they are willing to float the financial burden of a point-of-sale program structure.<sup>108</sup>

To facilitate more widespread education about the program and ensure that all individuals and communities can participate, CEO is leveraging existing partnerships and models. For instance, ongoing electric vehicle programs have established networks throughout the state, which have commonly aligned goals with e-bike program goals, such as reducing greenhouse gas emissions and increasing transportation mobility. As such, these networks are able to help spread the word about CEO's program. This method of outreach allows CEO to focus the majority of funding on e-bikes versus marketing, while still conducting outreach and targeting equity-based messaging.

### *Community Access to Electric Bicycles Grant Program*

The Community Access to Electric Bicycles Grant Program also utilizes funding from SB22-193 and is an extension of a previous e-bike community pilot program, the CanDo Colorado E-bike Pilot Program. Funding will allow the State to implement a full-scale version of the CanDo Colorado Program.

CEO is also administering this program and awarded grants to eight projects throughout Colorado during its 2023 fiscal year. It is expected that a second grant funding opportunity will occur in fiscal year 2024. One million in various grant sizes was allocated to eight grantees to implement a range of community lending libraries.<sup>109</sup> Each grantee is taking a different implementation approach based on the needs of their communities. For instance, multiple grantees chose an ownership model where they selected individuals to use an e-bike for a one-year period, which will be tracked and monitored by the grantees. Another grantee is using a different approach to the ownership model, where low-income individuals can lease e-bikes for a subsidized fee on a monthly basis.

This type of grant program focuses on building community connections and tailoring specific models directly to the communities that will be the ones utilizing the e-bikes. Overall, this program has been reported as successful.<sup>110</sup>

### **State of Washington**

During the 2023 Legislative Session, the Washington Legislature passed HB1125, which appropriated \$7 million from the Carbon Emissions Reduction Account<sup>111</sup> to establish statewide e-bike programs.<sup>112</sup>

Of the total funding, \$5 million was allocated to create an e-bike rebate program. Of this funding, \$3 million is designated for income qualified participants who earn household incomes at or below 80 percent of the county area median income, through rebates of \$1,200. The remaining \$2 million is designated for \$300 rebates available to the general public. Rebates can be used towards the purchase

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<sup>108</sup> Interview: State of Colorado - Colorado Energy Office/Transportation Fuels & Technology (2023). Two-week retailer reimbursement emerged in several other interviews. This theme emerged in several other interview, see Appendix A for list of interviewees and key takeaways.

<sup>109</sup> Community Access to Electric Bicycles Grant Program. (2023). *Colorado Energy Office*.

<https://energyoffice.colorado.gov/transportation/ebikes/community-access-to-electric-bicycles-grant-program>

<sup>110</sup> Interview: Sarah Thorne (2023) State of Colorado - Colorado Energy Office/Transportation Fuels & Technology.

<sup>111</sup> Washington State Legislature. RCW 70A.65.240. <https://app.leg.wa.gov/RCW/default.aspx?cite=70A.65.240>.

<sup>112</sup> Engrossed Second Substitute House Bill 1125, Section 310(16). <https://lawfilesexternal.leg.wa.gov/biennium/2023-24/Pdf/Bills/House%20Passed%20Legislature/1125-S.PL.pdf?q=20230822144820>

of a qualifying e-bike, as designated in RCW 46.04.169, as well as qualifying pieces of equipment including helmets, safety vests, lights, locks, and maintenance. Rebates are limited to one per household and for individuals at least 16 years of age.

In addition, \$2 million in funding was also allocated to create an e-bike lending library or ownership grant program, for which other state entities, local governments, tribes, or nonprofits and tribal governments serving low-income or overburden communities can apply to administer.

The Washington State Department of Transportation (WSDOT) is tasked with establishing both programs and is currently working to determine parameters for an e-bike rebate program which is anticipated to launch in 2024. Additionally, the University of Washington Sustainable Transportation Lab (UW) has been contracted to produce a general policy brief and program evaluation of both the rebate and lending library or ownership grant programs. Total program funding will support this policy research, as well as program administration which is capped at 5 percent for both programs.

### Other Rebate Programs & Lessons Learned

Due to the growing popularity of e-bikes, rebate incentive programs have popped up in many jurisdictions throughout the United States.<sup>113</sup> Many have looked to the City of Denver’s program for guidance, and some have even modeled or proposed rebate programs using a similar program structure to the Community Access to Electric Bicycles Rebate Program. A detailed comparison is included in Appendix B. Programs were selected based on recommendations from e-bike experts, or from an internal literature review.

Although government administration of e-bike programs is relatively new,<sup>114</sup> there are key decision points and common practices emerging among the programs examined for this report related to rebate structure and program structure. Table 1 and Table 2 below provide a summary of key decision points based on programs reviewed for this Proviso.

#### Rebate Structure

Lesson Learned	Key Takeaway
Program oversubscription	Every jurisdiction interviewed for this report identified an overwhelming demand for rebates leading to far more applicants than funding could support. <sup>115</sup>

<sup>113</sup> University of Portland Transportation Research and Education Center (TREC) Active Database: [https://docs.google.com/spreadsheets/d/1C-sYcwLrQFsr8r2A6RiAP2RwGsBNwr1BKOF\\_HJvCsVU/edit#gid=0](https://docs.google.com/spreadsheets/d/1C-sYcwLrQFsr8r2A6RiAP2RwGsBNwr1BKOF_HJvCsVU/edit#gid=0)

<sup>114</sup> In 2018 Washington State passed its first legislation specific to defining e-bikes. Engrossed Substitute Senate Bill 6434. 65th Legislature, 2018 Regular Session. <https://lawfilesexst.leg.wa.gov/biennium/2017-18/Pdf/Bills/Senate%20Passed%20Legislature/6434-S.PL.pdf?q=20230818083014>

<sup>115</sup> See Appendix A for complete list of interviewees and key takeaways.

<b>Lesson Learned</b>	<b>Key Takeaway</b>
Rebate Amount: Standard and Income Qualified	Five jurisdictions reviewed for this Proviso utilize a standard and income-qualified rebate structure, which based on the research for this Proviso responses emerged as a common rebate model practice. <sup>116</sup> the State of Washington, City of Denver, State of Connecticut, City of Boulder, and Washington D.C.. Rebate amounts vary by jurisdiction, though standard rebates range between \$300 - \$750 and income-qualified rebates range between \$1,200 - \$1,500. The State of Colorado utilizes a rebate structure focusing exclusively on low-income and moderate-income households.
Additional Rebates for E-Cargo and/or Adaptive E-Bikes	Programs are further customized by the addition of rebates for e-cargo and/or adaptive e-bikes. For instance, the City of Boulder has a standard e-cargo or adaptive e-bike voucher of \$500 as an alternative option to a standard e-bike voucher of \$300. The State of Colorado provides an additional rebate for e-cargo and adaptive e-bikes on top of existing rebates, a slightly different approach from other jurisdictions that award one voucher to be used towards an e-bike and qualifying equipment in one purchase.
Qualifying Equipment	The State of Colorado, City of Boulder, and Washington D.C. provide additional incentives for specific e-bike equipment. Eligible equipment can include a variety of components, such as helmets, locks, lights, child seats, and batteries. <sup>117</sup> The State of Washington may allow individuals to use vouchers towards the purchase of qualifying equipment. <sup>118</sup> Conversations with King County retailers, including those located in Seattle, Kent, North Bend, Renton, Woodinville, Kirkland, and Redmond, confirmed that individuals frequently buy e-bike equipment with their purchase of an e-bike. Retailers commonly see individuals purchase child seats, bags, racks, locks, and helmets. <sup>119</sup>

Table 2: Summary of E-Bike Rebate Structure Lessons Learned

### Program Structure

<b>Lesson Learned</b>	<b>Key Takeaway</b>
Third-Party Administrator	Many jurisdictions work with a third-party administrator to approve participant eligibility, distribute vouchers, and reimburse retailers. <sup>120</sup> Administrators may be regional administering state and municipal rebate programs as seen in Colorado and New England. <sup>121</sup>

<sup>116</sup> See Appendix B for summary of e-bike rebate programs reviewed for this Proviso response.

<sup>117</sup> See Appendix B for summary of e-bike rebate programs reviewed for this Proviso response.

<sup>118</sup> Nelson, B. and Chamberlain, B. (2023, August 24). Hold onto your handlebars, we'll soon charge ahead with e-bike programs. *Washington State Department of Transportation*. <https://wsdotblog.blogspot.com/2023/08/hold-onto-your-handlebars-well-soon.html>

<sup>119</sup> See this report: [Retailer Lessons Learned](#) (p.31)

<sup>120</sup> See Appendix A for complete list of interviewees and key takeaways; See Appendix B for summary of e-bike rebate programs reviewed for this Proviso response.

<sup>121</sup> Ibid.

<b>Lesson Learned</b>	<b>Key Takeaway</b>
Purchase Structure & Voucher Expiration	Most jurisdictions utilize a point-of-sale structure and require vouchers awarded to individuals to be redeemed within a certain timeframe. <sup>122</sup> Vouchers that are not redeemed in the specified amount of time are then redistributed to other applicants. <sup>123</sup>
Reimbursement Timeline	Based on research for this Proviso response, reimbursing participating retailers within a two-week time frame to reduce the financial burden and encourage participation is a common practice. <sup>124</sup>
Minimum Age	Age range 16 –18-years-old is commonly used to establish minimum participation age. <sup>125</sup>
Voucher Limitations & Distribution	(1) Commonly vouchers are limited to one per household or individual. (2) The State of Colorado and City of Boulder are the only two jurisdictions that utilize a lottery system instead of a first-come, first-served model, with the overarching goal to increase equity. This allows more time for participants to sign-up, especially those who do not have immediate access to a computer when the portal opens. <sup>126</sup> The intent is provide fairer opportunity to participate in the program. <sup>127</sup> In addition, the City of Boulder program provides “in-person office hours” to allow participants to apply for the program in-person, rather than solely online, as the majority of other rebate programs require. <sup>128</sup>
Eligible Bikes	SMEs interviewed for this Proviso encourage creating a list of eligible e-bikes, in addition to outlining e-bike classes and wattage, to prevent the purchase of low-quality e-bikes. <sup>129</sup> Certain jurisdictions, such as the State of Connecticut, have published an explicit list of e-bikes that qualify for rebates.
Income Verification	SMEs interviewed for this Proviso encourage Align eligibility verification for income-qualified participants with existing verification methods, such as SNAP or Medicaid, to streamline the eligibility verification process and ease understanding among participants. <sup>130</sup>
Rebate Stacking	As rebate programs become more commonplace, there have been more conversations about the “stacking” of rebates, which addresses if individuals can utilize multiples rebates, such as from both a city and state with

<sup>122</sup> Ibid.

<sup>123</sup> Ibid.

<sup>124</sup> Ibid.

<sup>125</sup> Ibid.

<sup>126</sup> e.g., non-desk workers or people with no household computer

<sup>127</sup> Interview: Sarah Thorne (2023). State of Colorado - Colorado Energy Office/Transportation Fuels & Technology; See Appendix B for more details on the City of Boulder program.

<sup>128</sup> See Appendix B for more details on the City of Boulder program.

<sup>129</sup> Program design theme that emerged from research for this Proviso response. See Appendix A for complete list of interviewees and key takeaways. Appendix B for summary of e-bike rebate programs.

<sup>130</sup> Ibid ; Interview: Alyson Cummings (2023). Washington State Legislature Joint Transportation Committee. Bennett, C., MacArthur, J., Cherry, C., and Jones, L. (2022). Using E-Bike Purchase Incentive Programs to Expand the Market – North American Trends and Recommended Practices. *Transportation Research and Education Center, Portland State University*. [https://ppms.trec.pdx.edu/media/project\\_files/E-bike\\_Incentive\\_White\\_Paper\\_5\\_6\\_2022.pdf](https://ppms.trec.pdx.edu/media/project_files/E-bike_Incentive_White_Paper_5_6_2022.pdf)

<u>Lesson Learned</u>	<u>Key Takeaway</u>
	concurrent rebate programs towards the purchase of one e-bike. <sup>131</sup> For example, the State of Colorado does not permit stacking with municipal programs such as the City of Denver or City of Boulder. <sup>132</sup>
Retailer Eligibility	Most jurisdictions reviewed for this Proviso require retailers to operate brick and mortar stores to participate in programs. <sup>133</sup> This also helps to verify that the e-bike purchased using a voucher meets programs requirements. In addition, retailers can provide in-person tutorials and resources to participants, helping to increase e-bike knowledge and improve safety outcomes. Exceptions include the State of Colorado and State of California, which allow online retailers to participate (note: California online retailers must have some physical presence in the state, such as office headquarters). <sup>134</sup>
Data Collection	Determine data collection structure from participants and retailers upfront as this is key to understanding program success and incredibly difficult to collect post-purchase. <sup>135</sup>

*Table 3: Summary of E-Bike Program Structure Lessons Learned*

### E-Bike Lending Library Programs & Lessons Learned

Lending libraries are generally geared toward helping individuals gain exposure and familiarity to e-bikes.<sup>136</sup> Interviews and research indicate many different approaches are taken to design lending libraries, in comparison to rebate programs. In addition to the City of Denver and State of Colorado, Appendix C highlights community e-bike lending library programs to show the variation of approaches taken by different jurisdictions.<sup>137</sup> Highlighted programs were selected based on recommendations from e-bike experts and from an internal literature review. Key takeaways from this research are summarized below in Table 3.

<sup>131</sup> Interview: John MacArthur (2023). Portland State University - Transportation Research and Education Center (TREC) indicates this is likely not a major issue for programs that utilize lottery system.

<sup>132</sup> Interview: Mike Salisbury (2023). City of Denver, Colorado - Office of Climate Action, Sustainability, and Resiliency.

<sup>133</sup> See Appendix B for more details on the City of Boulder program.

<sup>134</sup> Interview: Sarah Thorne (2023). State of Colorado - Colorado Energy Office/Transportation Fuels & Technology; Interview: See Appendix A for complete list of interviewees and takeaways; Interview: Shaun Ransom & Sam Gregor (2023). State of California - California Air Resources Board; See also Appendix B for summary of e-bike rebate programs reviewed for this Proviso response.

<sup>135</sup> Program design theme that emerged from research for this Proviso response. See Appendix A for complete list of interviewees and key takeaways. Appendix B for summary of e-bike rebate programs

<sup>136</sup> Program design theme that emerged from research for this Proviso response. See Appendix A for complete list of interviewees and key takeaways; See also, Alyson Cummings (2023) Washington State Legislature Joint Transportation Committee: [Powered Micromobility Device Lending Libraries Final Report](https://leg.wa.gov/JTC/Documents/Studies/PoweredMicromobilityDeviceLendingLibrariesFINALREPORT.pdf) <https://leg.wa.gov/JTC/Documents/Studies/PoweredMicromobilityDeviceLendingLibrariesFINALREPORT.pdf>

<sup>137</sup> Internal research was conducted on two jurisdictions in the State of New York: The City of Buffalo and the City of Niagara Falls. These programs are implemented by community organizations in partnership with SharedMobility and Reddy Bikeshare, using bikes that were gifted from Uber when Uber sold JUMP (Uber's previous micromobility subsidiary). Due to the unique nature of these two programs, they are not included in the below matrix.

Lesson Learned	Takeaway
Program Administration	Based on the research for this Proviso, funding is typically awarded by jurisdictions in the form of a grants to community-based organizations (CBOs) or nonprofits. <sup>138</sup> The number of grant recipients varies by jurisdiction. For example, the City of Denver awarded two grants, the State of Colorado awarded eight, and the State of Vermont awarded one. Grantees are encouraged to develop programs best suited to serve their communities. For instance, the State of Vermont’s grantee, Local Motion, operates ten lending library locations throughout the state, two of which are traveling libraries and one which allows individuals to demo e-bikes. In addition, there are also programs operated by universities, housing authorities, and libraries. <sup>139</sup>
Program Structure	As noted throughout this report, lending libraries are customized to fit the local context. <sup>140</sup> There are a variety of avenues and innovative approaches that can be pursued to determine which type of lending library to implement, such as a traditional lending library or loan-to-own program. <sup>141</sup> Interviewees suggested that traditional lending libraries required more dedicated staff time to administer than expected. <sup>142</sup>

Table 4: Summary of Lending Library Lessons Learned

### Retailer Lessons Learned

Ten retailers selling e-bikes throughout King County were contacted for this Proviso. Retailer locations included Seattle, Kent, North Bend, Renton, Woodinville, Kirkland, and Redmond. Appendix A provides an overview of bike retailers selling e-bikes throughout King County though it is not an exhaustive list. The table in Appendix E includes a sample of retailers who sell e-bikes and the general range of e-bike

<sup>138</sup> See Appendix C for summary of lending library programs reviewed for this Proviso response.

<sup>139</sup> The Housing Authority of Douglas County in Oregon is currently piloting a program at two housing authority locations. The program is designed for low-income individuals and eligibility is determined by housing status, including living in housing run by the Housing Authority of Douglas County. This is a unique approach that likely helps ease the administrative burden of income verification, as eligible individuals already reside in the location of the e-bike lending library. This was also discussed as an innovative approach during interviews with Portland State University’s Transportation Research and Education Center and the UW’s Sustainable Transportation Lab. The University of Oregon administers its own lending library, with four e-bikes available to students and employees 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. E-Bike Lending Library. *University of Oregon*. <https://transportation.uoregon.edu/e-bike>

<sup>140</sup> Program design theme that emerged from research for this Proviso response. See Appendix C summary of lending libraries reviewed for this Proviso response; See also, Alyson Cummings (2023) Washington State Legislature Joint Transportation Committee: [Powered Micromobility Device Lending Libraries Final Report](https://leg.wa.gov/JTC/Documents/Studies/PoweredMicromobilityDeviceLendingLibrariesFINALREPORT.pdf) <https://leg.wa.gov/JTC/Documents/Studies/PoweredMicromobilityDeviceLendingLibrariesFINALREPORT.pdf>

<sup>141</sup> See Appendix C for a summary of lending libraries reviewed for this Proviso response. See also Appendix D for more detailed information for overview of loan-to-own and spotlight on the City of Berkeley’s program.

<sup>142</sup> Program design theme that emerged from research for this Proviso response. See Appendix A for complete list of interviewees and key takeaways; See also Alyson Cummings (2023) Washington State Legislature Joint Transportation Committee: [Powered Micromobility Device Lending Libraries Final Report](https://leg.wa.gov/JTC/Documents/Studies/PoweredMicromobilityDeviceLendingLibrariesFINALREPORT.pdf) <https://leg.wa.gov/JTC/Documents/Studies/PoweredMicromobilityDeviceLendingLibrariesFINALREPORT.pdf>



prices. Brief telephone conversations were conducted to gain further insights from local bike professionals. Key insights from King County retailers include:

- There is public interest in E-bike rebate programs. A retailer relayed conversations with some prospective buyers who have heard about the state rebate program and indicated they will wait to see if they can get a voucher before purchasing an e-bike.
- Individuals are buying accessories with the purchase of their e-bike, with the most common accessories including racks, bags, locks, lights, and child seats. Some retailers indicated child seats are the number one accessory being purchased.
- The biggest customer concerns center around storage, theft, and safety, specifically related to batteries and fires.
- Retailers share concerns around e-bike quality, specifically with ensuring that a rebate program would incentivize the purchases of higher-quality bikes. This is related to the fact that better quality e-bikes can be maintained by their shops and often come with a manufacturer warranty. Sometimes lower quality e-bikes are not fixable for a variety of reasons and do not come with a manufacturer's warranty which increases the insurance liability for the retailer.

## **B. Proposal to implement an e-bike rebate pilot program in King County based on income eligibility.**

Based on the availability of funding for such a program, the County has an opportunity to develop an e-bike rebate program that aligns with the State of Washington and that may support other local jurisdictions and unincorporated areas within the County to adopt e-bike programs.<sup>143</sup> Consistent with the Equity and Social Justice Strategic Plan (2016-2022) strategy to invest where needs are greatest<sup>144</sup> the proposal put forward in this report is a hybrid model focusing resources on income qualified individuals or households. The recommendation utilizes a lending library approach administered by a grant to CBOs or nonprofits that incorporates funding for rebate vouchers as part of the program.

This proposal and alternatives were developed after conducting interviews with jurisdictions with active programs and research on additional programs.<sup>145</sup> Resources, such as [“What Makes a Good Electric Bike Incentive Program”](#)<sup>146</sup> by PeopleForBikes and [“Using E-Bike Purchase Incentive Programs to Expand the Market – North American Trends and Recommended Practices”](#)<sup>147</sup> by Portland State University's

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<sup>143</sup> Engrossed Second Substitute House Bill 1125, Section 310(16).

<https://lawfilesexternal.wa.gov/biennium/2023-24/Pdf/Bills/House%20Passed%20Legislature/1125-S.PL.pdf?q=20230822144820>

<sup>144</sup> King County Equity and Social Justice Strategic Plan (2016-2022):

<https://kingcounty.gov/en/legacy/elected/executive/equity-social-justice/strategic-plan.aspx>

<sup>145</sup> See Appendix G for summary of proposal and alternatives.

<sup>146</sup> Herbert, K. (2022, March 7). What Makes a Good Electric Bike Incentive Program? *PeopleForBikes*.

<https://www.peopleforbikes.org/news/what-makes-a-good-electric-bike-incentive-program>

<sup>147</sup> Bennett, C., MacArthur, J., Cherry, C., and Jones, L. (2022). Using E-Bike Purchase Incentive Programs to Expand the Market – North American Trends and Recommended Practices. *Transportation Research and Education Center, Portland State University*. [https://ppms.trec.pdx.edu/media/project\\_files/E-bike\\_Incentive\\_White\\_Paper\\_5\\_6\\_2022.pdf](https://ppms.trec.pdx.edu/media/project_files/E-bike_Incentive_White_Paper_5_6_2022.pdf)

Transportation Research and Education Center, were also utilized to develop proposals. Appendix G summarizes information about other alternative explored during this research.

### **Proposal: Income-Qualified E-Bike Hybrid Lending Library and Rebate Program**

Pairing a lending library model with a rebate program extension is recommended for the following reasons:

1. This is a unique combination based on research conducted for this Proviso.<sup>148</sup> This model brings value by combing 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 regard to access to transit, as well as other county services.<sup>149</sup> In addition, it helps build relationships between participants and bike professionals, which is important for ongoing maintenance.<sup>150</sup>
2. Proposed administration is by 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.<sup>151</sup>
3. 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 implementation of e-bike programs that match local community context, including the wide range of geographies throughout King County.<sup>152</sup>
4. The focus on expanding the market to income qualified individuals and households is based on research for this Proviso that signals individuals utilizing the low-income rebate vouchers ride more than those utilizing the standard rebate voucher.<sup>153</sup> For example, the City of Denver found that income qualified residents used their e-bikes nearly 50% more than standard voucher

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<sup>148</sup> As of the writing of this report, does not appear to be implemented by other jurisdictions. See Appendix B and Appendix C for summaries of e-bike rebate and lending library programs reviewed for this Proviso response.

<sup>149</sup> Bennett, C., MacArthur, J., Cherry, C., and Jones, L. (2022). Using E-Bike Purchase Incentive Programs to Expand the Market – North American Trends and Recommended Practices. *Transportation Research and Education Center, Portland State University*. [https://ppms.trec.pdx.edu/media/project\\_files/E-bike\\_Incentive\\_White\\_Paper\\_5\\_6\\_2022.pdf](https://ppms.trec.pdx.edu/media/project_files/E-bike_Incentive_White_Paper_5_6_2022.pdf)

<sup>150</sup> Program design theme that emerged from research for this Proviso response. See Appendix A for complete list of interviewees and key takeaways.

<sup>151</sup> Two program administration pathways identified in the research for this Proviso response. See Appendix B and Appendix C for summaries of rebate and lending library programs reviewed for this research; See also, Alyson Cummings (2023) Washington State Legislature Joint Transportation Committee: [Powered Micromobility Device Lending Libraries Final Report](https://leg.wa.gov/JTC/Documents/Studies/PoweredMicromobilityDeviceLendingLibrariesFINALREPORT.pdf)

<sup>152</sup> Anneliese Vance-Sherman, Ph.D., regional labor economist (2022). Employment Security Department. King County Profile: <https://esd.wa.gov/labormarketinfo/county-profiles/king> ; King County Environment (2015). King County Department of Natural Resources and Parks. Natural features by the numbers: <https://kingcounty.gov/en/legacy/about/region/environment/natural-features.aspx#textalt>

<sup>153</sup> Denver's 2022 Ebike Incentive Program - Results and Recommendations. (2022). *City and County of Denver, PeopleForBikes, Bicycle Colorado, Ride Report, & Rocky Mountain Institute*. <https://5891093.fs1.hubspotusercontent-na1.net/hubfs/5891093/Denvers%202022%20Ebike%20Incentive%20Program%20Results%20and%20Recommendations.pdf>

recipients.<sup>154</sup> Anecdotally, This may indicate the difference in intended use between some standard voucher and income qualified recipients (e.g. recreational use versus transportation alternative).

Improving access to reliable transportation in traditionally underserved communities is an important equity consideration for this proposal.<sup>155</sup> In addition, there are large employers in King County that have employee incentive programs to utilize e-bikes for commute trip reduction, which indicate more available transportation opportunities for some individuals who would qualify for a standard rebate option, whereas no known mainstream opportunities exist for low-income individuals outside the upcoming State of Washington program.<sup>156</sup> Appendix F provides examples of local employers offering this incentive. For example, Amazon is one of the most well-known and notable programs. Amazon provides employees with a monthly incentive of \$170 to use towards an e-bike share (i.e., Lime Bike), an e-bike lease (through partnerships with local retailers including Ridepanda, VaMoof, and Riide), bike maintenance (through partnerships with local retailers including Mello Fellos), rideshare, and daily parking.<sup>157</sup> Amazon also provides street-to-stall bike rooms, e-bike charging stalls, and fix-it stations for employees to easily store, charge, and service their bikes.<sup>158</sup>

**C. This section will provide an assessment and plan for administering an e-bike lending library or ownership grant program consistent with requirements of the program established by Engrossed Second Substitute House Bill 1125, [Section 310\(16\)](#).**

During the 2023 Washington State Legislative Session, HB1125 was passed making transportation appropriations for the 2023-2025 fiscal biennium. Specific to e-bike lending libraries and grant ownership programs, the following direction applies based on the legislation:<sup>159</sup>

- *For fiscal year 2025, \$2,000,000 of the carbon emissions reduction account—state appropriation is provided solely for the department to establish an e-bike lending library and ownership grant program.*
- *The department may accept grant applications from other state entities, local governments, and tribes that administer or plan to administer an e-bike lending library or ownership program for their employees for commute trip reduction purposes.*
- *The department may also accept grant applications from nonprofit organizations or tribal governments that serve persons who are low-income or reside in overburdened communities and that administer or plan to administer an e-bike lending library or ownership program for qualifying persons.*

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<sup>154</sup> Ibid.

<sup>155</sup> See this report: [Biking Culture: Equity and Normalizing Mainstream E-Bike Utilization](#)

<sup>156</sup> Engrossed Second Substitute House Bill 1125, Section 310(16).

<https://lawfilesexxt.leg.wa.gov/biennium/2023-24/Pdf/Bills/House%20Passed%20Legislature/1125-S.PL.pdf?q=20230822144820>

<sup>157</sup> <https://www.commuteseattle.com/wp-content/uploads/2023/05/Final-Case-Study-Amazon-1.pdf>

<sup>158</sup> See Appendix F for example of employer provided e-bike incentives.

<sup>159</sup> Engrossed Second Substitute House Bill 1125, Section 310(16).

<https://lawfilesexxt.leg.wa.gov/biennium/2023-24/Pdf/Bills/House%20Passed%20Legislature/1125-S.PL.pdf?q=20230822144820>

- *Grant recipients must report program information and participation data to the University of Washington to inform its report.*

Consistent with the parameters identified in Washington State HB1125<sup>160</sup> this proposal aligns with the intended grant recipients particularly focused on *nonprofit organizations or tribal governments that serve persons who are low-income or reside in overburdened communities and that administer or plan to administer an e-bike lending library or ownership program for qualifying persons.*<sup>161</sup> In addition, the proposed rebate amount and qualification threshold align with the State for income qualified individuals as defined in HB1125.<sup>162</sup>

**Program Administration**

Building on the proposal identified in Section B of this report, the following information provides more detail on a plan for administering the proposed program. The phrase “lending library” primarily refers to community focused programs that are advocating to increase adoption of e-bicycling culture.<sup>163</sup> The hybrid approach proposed in Section B encourages the use of a lending library and integrates a rebate incentive to support individuals or households to explore how this mode could fit into their lifestyle, learn about safety and maintenance, and create a pathway for e-bike ownership.

**Proposal: Income Qualified Hybrid Lending Library + Rebate Program**

The proposal outlined in Section B of this report is intended to be administered through a grant to local CBOs or nonprofits. SME interviews for this Proviso response identified that it took about a year of planning and program design prior to implementing any type of lending library program or releasing funds.<sup>164</sup> Table 5 highlights program design considerations based on information gathered for this Proviso response. Since the proposal calls for a hybrid approach, program design considerations for both a lending library and rebate extension are included.

	<u>Program Design Features</u>	<u>Purpose</u>
<b>Lending Libraries</b>	Define Program Goals	Goals should align with jurisdiction priorities. Example goals related to awareness, education, exposures, and adoption of e-bikes include promoting alternative transportation option, riding safely, bike storage and security, community building. <sup>165</sup>
	Define Program Structure	Determine program structure which could include traditional lending library, loan-to-own, e-bike training course. <sup>166</sup>

<sup>160</sup> Ibid.

<sup>161</sup> Ibid.

<sup>162</sup> Ibid.

<sup>163</sup> Terminology understood based on SME interviews. See Appendix A for complete list of interviewees and key takeaways.

<sup>164</sup> See Appendix for complete list of interviewees and key takeaways.

<sup>165</sup> Ibid.

<sup>166</sup> See Appendix C for summary of lending libraries reviewed for this report and Appendix D for an overview of loan-to-own programs and the City of Berkeley’s application of this model.

	<b><u>Program Design Features</u></b>	<b><u>Purpose</u></b>
	Program Administrator	The proposal in this Proviso response recommends CBO or nonprofit administration. <sup>167</sup>
	Program Investment	Investment varies based on program size ranging from \$250,000 for small scale programs up to nearly \$3.5M for large scale programs. <sup>168</sup>
<b>Rebate Program Extension</b>	Define Program Goals	Example program goals include trip reduction, ride replacement, GHG emission reduction, transportation equity <sup>169</sup>
	Program Administrator	CBO or nonprofit (build voucher into community grant) <sup>170</sup>
	Incentive Amount: E-bike	\$1,200 <sup>171</sup>
	Incentive Amount: Qualifying Equipment	Recommend building in safety equipment into rebate unless addressed differently by CBO or nonprofit. <sup>172</sup> Example includes Helmet, lock, lights, bike rack, saddle bag, child seat. <sup>173</sup>
	Program Participant Eligibility	To be determined by CBO or nonprofit; however, this is an opportunity to align with the State of Washington to determine income eligibility which is at or below 80% AMI. <sup>174</sup>
	Voucher Application and Distribution	Receive voucher from CBO or nonprofit once participant has met established program requirements. Depending on demand, lottery system may end up helping to promote equitable distribution. <sup>175</sup>
	Participant Voucher Redemption Timeframe	Commonly vouchers will expire after 60 days. <sup>176</sup>

<sup>167</sup> See Appendix C for a summary lending library programs reviewed for this Proviso response; See also, Alyson Cummings (2023) Washington State Legislature Joint Transportation Committee: [Powered Micromobility Device Lending Libraries Final Report](#)

<sup>168</sup> See this report, [table 7](#) for summary of funding ranges of lending libraries reviewed for this Proviso response. See also Appendix C for more details on lending libraries reviewed for this Proviso response.

<sup>169</sup> See Appendix B for summary of rebate programs reviewed for this Proviso response.

<sup>170</sup> This pathway for program administration is less common for lending library programs. See Appendix B for summary of rebate programs reviewed for this Proviso response.

<sup>171</sup> \$1,200 is the common income-qualified rebate amount, which tends covers 75percent of the total e-bike cost, excluding tax and accessories. See Appendix B for summary of rebate programs reviewed for this Proviso response.

<sup>172</sup> See [table 2](#) this report.

<sup>173</sup> See this report: [Retailer Lessons Learned](#) (p.31).

<sup>174</sup> Engrossed Second Substitute House Bill 1125, Section 310(16).

<https://lawfilesexternal.wa.gov/biennium/2023-24/Pdf/Bills/House%20Passed%20Legislature/1125-S.PL.pdf?q=20230822144820>

<sup>175</sup> See [table 3](#) this report.

<sup>176</sup> Participant voucher redemption timeframe period typically ranges from 45-180 days. Allowing 60 days is the most common, however, it might be worth exploring a longer timeframe for redemption to improve equity outcomes.

	<b><u>Program Design Features</u></b>	<b><u>Purpose</u></b>
	Reimbursement Timeframe for Retailers	Based on research for this Proviso, 2-weeks is standard timeline for reimbursement. <sup>177</sup>
	Retailer Eligibility	To be determined by King County in partnership with CBO or nonprofit. <sup>178</sup>
	E-bike Eligibility	To be determined by King County in partnership with CBO or nonprofit in alignment with existing policies. For example, Class 3 bikes are prohibited on King County trails <sup>179</sup> and most reviewed in the research for this proviso prohibit mountain bikes. <sup>180</sup> Including Class 3 e-bikes in a County rebate program would add additional complexities because they (1) have higher injury rates compared to Class 1 and Class 2 e-bikes <sup>181</sup> and (2) are typically prohibited on shared-use paths by Washington Legislation. <sup>182</sup>
	Limit	One voucher per individual or one per household is standard practice. <sup>183</sup>
	Age Requirement	Ages 16-18 are the lowest common age limits set for participation. <sup>184</sup>

*Table 5: Program Design Considerations*

The County may wish to consider convening a task force or advisory group that includes local CBOs, advocacy groups, and/or bike retailers to help inform overall program design, rebate incentive options and a list of eligible e-bikes.<sup>185</sup> The purpose of this is to improve adopting by ensure that programs will

<sup>177</sup> See [table 3](#) this report

<sup>178</sup> See [table 3](#) this report

<sup>179</sup> Washington State Legislature RCW 46.61.710.

<sup>180</sup> See Appendix B for summary of e-bike rebate programs reviewed for this Proviso response.

<sup>181</sup> According to U.S. Department of Transportation Federal Highway Administration's (2022) "[The Future of E-Bikes on Public Lands: How to Effectively Manage a Growing Trend](#)," while research suggests that crash risk is similar between Class 3 and Class 1 e-bikes, further research is necessary to study the difference in safety risks between e-bike classifications. Specifically, research could examine whether the presence of a throttle on Class 2 e-bikes has an impact on safety for users.

<sup>182</sup> According to Washington State Legislature RCW 46.61.710 (which includes general requirements and operation of class 1 electric-assisted bicycles, class 2 electric-assisted bicycles, class 3 electric-assisted bicycles), "Class 3 electric-assisted bicycles may not be operated on a shared-use path, except where local jurisdictions may allow the use of class 3 electric-assisted bicycles." Additionally, "... class 1 and class 2 electric-assisted bicycles and motorized foot scooters may be operated on a shared-use path or any part of a highway designated for the use of bicycles, but local jurisdictions or state agencies may restrict or otherwise limit the access of electric-assisted bicycles..." For more information, see <https://app.leg.wa.gov/rcw/default.aspx?cite=46.61.710>.

<sup>183</sup> See Appendix B for summary of e-bike rebate programs reviewed for this Proviso response.

<sup>184</sup> Ibid.

<sup>185</sup> Research encourages community outreach and coordination to improve program adoptions. Bennett, C., MacArthur, J., Cherry, C., and Jones, L. (2022). Using E-Bike Purchase Incentive Programs to Expand the Market – North American Trends and Recommended Practices. *Transportation Research and Education Center, Portland State University*. [https://ppms.trec.pdx.edu/media/project\\_files/E-bike\\_Incentive\\_White\\_Paper\\_5\\_6\\_2022.pdf](https://ppms.trec.pdx.edu/media/project_files/E-bike_Incentive_White_Paper_5_6_2022.pdf) ;

address community needs in an efficient and equitable way. For example, the County could utilize the existing King County Climate Equity Community Task Force to help facilitate a co-creation model.<sup>186</sup>

Oversight of such a program is recommended to be performed by the King County Office of Climate to ensure program alignment in advancing strategic initiatives at the nexus of climate, transportation, and equity. In addition, this office has the positionality to convene other County agencies and external organization to support design elements and partner on locating funding opportunities.

Lastly, Although the primary purpose of the research for this Proviso is focused on community e-bike programs, there are internal applications for e-bike programs focused on King County staff adoption that emerged. Examples of this include: (1) Adding a limited number of e-bikes into King County's general fleet of vehicles for use related to County business.<sup>187</sup> They could also be considered for utilization at different County facilities to help staff move around bases more quickly. (2) Create an employee lending library as a way for staff to try-out e-bikes for personal use for a limited amount of time. Internal application of e-bike programs is out of scope for this research so additional research is needed on this topic.

#### **D. Staffing and funding analysis to implement the pilot program**

This section provides an analysis of the level of staffing and funding needed to implement the pilot program.

##### **Staffing Analysis**

Based on research for this Proviso, similar programs are managed by a senior staff member working closely with a mayor's office, city council, or executive on climate related initiatives.<sup>188</sup> Jurisdiction staff are typically responsible for coordinating the design and implementation of a request for proposals (RFP) and take on an oversight role managing contractor(s) and/or grant(s) once funding is awarded. Depending on the scale, the rebate program and lending library may have different leads, or one lead may have direct reports assisting with oversight. In any case, these individuals are not solely dedicated to managing these programs, but rather these programs nest in a broader portfolio assigned to the staff member. At King County, the estimated cost for one senior FTE in this type of role is around \$195,000 annually (including benefits). This information is based on 2023 data used to inform staffing estimates.<sup>189</sup>

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Alyson Cummings (2023) Washington State Legislature Joint Transportation Committee: [Powered Micromobility Device Lending Libraries Final Report](#)

<sup>186</sup> King County Climate Equity Community Task Force. *King County*.

<https://kingcounty.gov/en/legacy/services/environment/climate/actions-strategies/strategic-climate-action-plan/equity-task-force.aspx>

<sup>187</sup> Information sourced from interviews. See Appendix A for complete list of interviewees and key takeaways. See also, University of Oregon Transportation: <https://transportation.uoregon.edu/e-bike> University of Oregon has introduced a limited number of e-bikes (four e-bikes) into the existing fleet and made available for both students and staff for rental up to two-weeks.

<sup>188</sup> See Appendix A for complete list of interviewees and key takeaways.

<sup>189</sup> Estimate supplied by King County Office of Performance, Strategy, and Budget.

## Funding Analysis

Proving a meaningful funding analysis requires more defined program parameters than are currently available for this assessment. Costs are based on the specific features of each program and jurisdiction priorities for program design. Based on these dependencies, table 6 outlines a range of investment amounts of other jurisdictions and what these investments have or are intended to purchase.

### *E-Bike Rebate Incentive Funding Ranges*

For rebate programs, total program budgets ranged from \$190,000 in the City of Boulder to \$7.5 million for the State of California. The most common e-bike standard and income-qualified rebates seen are approximately \$300 and \$1,200, respectively.<sup>190</sup> For income-qualified e-bike rebates, a common practice that emerged is setting the rebate to cover approximately 75 percent of an e-bike cost – based on the current market this translates to about \$1,200.<sup>191</sup>

For this Proviso response, the State of Connecticut is the jurisdiction closest in size to King County in terms of population and invested \$1.75 million.<sup>192</sup> Within its ten-day application period, the State of Connecticut received 6,394 applications, with over 5,000 of the applications from income qualified individuals. To help meet the high demand from income qualified applicants, an additional \$250,000 in funding was added to the program, specifically for the first 500 income qualified applicants.<sup>193</sup>

WSDOT released a [blog post](#) on August 24, 2023 providing updates about its work on establishing the e-bike programs directed by HB1125. Updates included the number of available rebates using approximate funding ranges. With the \$5 million allocation from the 2023 – 2025 budget WSDOT estimates distributing 2,300 rebate vouchers at the \$1,200 level (income-based eligibility) and 6,200 rebate vouchers at the \$300 level (no income eligibility). These estimates consider administrative and research costs as well.<sup>194</sup>

E-Bike Rebate Program Funding Ranges					
	Jurisdiction Population	Standard Rebate	Income-Qualified Rebate	Total Program Budget	Budget Notes
<b>State of Washington</b>	7.7m	\$300	\$1,000	\$5m	\$2m for standard rebates, \$3m for IQ rebates
<b>City of Denver</b>	711k	\$300 - \$500	\$1,200 - \$1,400	\$4.7m (2022)	Original funding: \$250k
<b>State of Colorado</b>	5.8m	N/A	\$500 - \$1,100	\$6.6m	-
<b>State of Connecticut</b>	3.6m	\$500	\$1,500	\$1.75m	Original funding: \$1.5m

<sup>190</sup> See Appendix B for summary of e-bike rebate programs reviewed for this Proviso response.

<sup>191</sup> Ibid.

<sup>192</sup> King County has a population of just over 2.2 million and the State of Connecticut has a population of just over 3.6 million.

<sup>193</sup> Connecticut Department of Energy and Environmental Protection: <https://portal.ct.gov/DEEP/Air/Mobile-Sources/CHEAPR/Electric-Bicycles>

<sup>194</sup> <https://wsdotblog.blogspot.com/2023/08/hold-onto-your-handlebars-well-soon.html>



<b>State of Vermont</b>	646k	N/A	\$400 - \$800	\$242,500	Original funding: \$92,500
<b>City of Boulder</b>	104k	\$300 - \$500	\$1,200 - \$1,400	\$190,000	79% of funding for income-qualified rebates
<b>City of Ashland</b>	22k	\$300 - \$600	N/A	Information not readily available.	-
<b>State of California</b>	39.4m	N/A	\$1,000	\$7.5m	\$5m for priority (i.e., income qualified) applicants
<b>Washington, D.C.</b>	712k	\$750 - \$1,000	\$1,500 - \$2,000	TBD	50% of funding for income-qualified rebates

Table 6: E-Bike Rebate Program Funding Ranges<sup>195</sup>

### E-Bike Lending Library Funding Ranges

Lending library costs are more varied than rebate programs. The number of bikes in a program, the cost per bike, the type of bike, and administration costs are all factors. Funding ranges were as low as four bikes at \$25,000 total budget (University of Oregon) to 300 bikes at a \$3 million total budget (State of Colorado). Berkeley purchased 50 bikes at \$1,500/each for their ride-to-own program, with a total operating budget of \$250,000.<sup>196</sup>

<b>E-Bike Lending Library Program Funding Ranges</b>			
	<b>Jurisdiction Population</b>	<b>Number of E-bikes</b>	<b>Total Budget</b>
<b>State of Washington</b>	7.7m	TBD	\$2m
<b>State of Colorado</b>	5.8m	300 e-bikes	~\$3m
<b>State of Vermont</b>	646k	20 – 30 e-bikes	Information not readily available online.
<b>City of Denver</b>	711k	40 e-bikes	Information not readily available online.
<b>City of Berkeley</b>	117k	55 e-bikes	\$250,000
<b>City of San Diego<sup>197</sup></b>	1.3m	125 e-bikes	~\$500,000

<sup>195</sup> Ranges within each rebate category (standard or income-qualified) denote if a program includes additional funding for e-cargo or adaptive e-bikes. “Original funding” denotes that a program had high-demand or oversubscribed and added additional funding to supply more e-bike rebates.

<sup>196</sup> See Appendix C for summary of e-bike lending library programs reviewed for this Proviso response.

<sup>197</sup> State of California Air Resources Board (CARB) was not included in this table because their lending libraries are not exclusively related to e-bikes, but include broader micromobility options. According to our interview with CARB staff, CARB has provided funds for communities to develop mobility projects (car sharing, micro transit, e-bike & regular bike sharing): \$75m program allocation – 28 percent used for implementation costs. It is set up as grants. According to our interview with CARB, they currently have 3-4 lending libraries (which may include but are not restricted to e-bikes) that opened in the last 6 months, but there is no current data available. Not much information was available online. However, the e-bike lending library by Peddle Ahead in San Diego is listed in the table here; [Pedal Ahead is expected to launch its statewide expansion program, which will be funded by CARB.](#)

<b>University of Oregon</b>	28k (students + faculty)	4 e-bikes	\$25,000
<b>Housing Authority of Douglas County, OR</b>	112k	3 e-bikes	Information not readily available online.
<b>City of Madison, WI</b>	269k	18 e-bike passes	Information not readily available online.

*Table 7: E-Bike Lending Library Program Funding Ranges*

Individual e-bike pricing is an important consideration in determining both the overall program budget and the type of bike to provide to participants. The City of Berkeley primarily employed [Aventon](#) and [RadPower](#) e-bikes in its loan-to-own e-bike program, with the cost per e-bike averaging \$1,500. At a price point of \$1,500, the City was able to achieve two goals – affordability and quality – which allowed the City to provide 50 high-quality e-bikes to participants. The University of Oregon has four e-bikes in its fleet, with commuter e-bikes pricing around \$1,400 per e-bike and its e-cargo bike pricing closer to \$7,000.<sup>198</sup>

#### **E. Analysis of possible funding sources to implement the pilot program, including, but not limited to, funding from the federal Infrastructure Investment and Jobs Act**

This section provides analysis of possible funding sources that could be used to implement the pilot program.

##### **Federal Infrastructure Investment and Jobs Act**

The federal Infrastructure Investment and Jobs Act (IIJA) – also known as the [Bipartisan Infrastructure Law](#) – funds a wide range of infrastructure projects, including public transportation and environmental remediation.<sup>199</sup> IIJA includes significant funding for roadways, bridges, and other major projects funded by the Federal Highway Administration and the Department of Transportation. At this time, there are no programs that exclusively provide funding support for e-bike projects.<sup>200</sup> However, there are opportunities to support innovative public transportation and pilot programs that reduce transportation emissions or advance nonmotorized forms of transportation. For example, IIJA-funded transportation project is the Congestion Mitigation and Air Quality Improvement Program (CMAQ)<sup>201</sup> has added a new eligibility for shared micromobility, including bike-sharing and shared scooter systems.<sup>202</sup>

<sup>198</sup> Information sourced from interviews. See Appendix A for complete list of interviewees and key takeaways.

<sup>199</sup> <https://www.whitehouse.gov/build/guidebook/>; <https://www.whitehouse.gov/wp-content/uploads/2022/05/BUILDING-A-BETTER-AMERICA-V2.pdf>; <https://www.whitehouse.gov/briefing-room/statements-releases/2021/08/02/updated-fact-sheet-bipartisan-infrastructure-investment-and-jobs-act/>

<sup>200</sup> For an entire list of IIJA funding opportunities, see <https://www.whitehouse.gov/wp-content/uploads/2022/05/BUILDING-A-BETTER-AMERICA-V2.pdf>.

<sup>201</sup> The IIJA Congestion Mitigation and Air Quality Improvement Program (CMAQ) provides flexible funding to state governments for transportation projects and programs to help meet the requirements of the Clean Air Act. Funding is available to reduce congestion and improve air quality for areas that do not meet the National Ambient Air Quality Standards for ozone, carbon monoxide, or particulate matter (nonattainment areas) and for former nonattainment areas that are now in compliance (maintenance areas).<sup>201</sup>

<sup>202</sup> § 11115(1); 23 U.S.C. 149(b)(7) <https://www.congress.gov/117/plaws/publ58/PLAW-117publ58.pdf>

E-bike promotion programs are eligible recipients of CMAQ funding, which is provided to the State and allocated by WSDOT to four Metropolitan Planning Organizations (MPOs), including the Puget Sound Regional Council (PSRC) of which King County is a member.<sup>203</sup> Exploring CMAQ funding through WSDOT or PSRC for a local e-bike program is one potential opportunity that stems from IJJA.<sup>204</sup>

## Other Possible Federal Funding Sources

### *Past Grant Examples*

No active federal grants specific to e-bikes were identified during the writing of this report. However, relevant past grants have been released by both the Environmental Protection Agency (EPA) and Department of Transportation (DOT).

In 2022, the EPA Science to Achieve Results (STAR) Program released a research grant titled “[Drivers and Environmental Impacts of Energy Transitions in Underserved Communities](#).” This grant focused on how energy transitions, including electrifying transportation services, could improve air quality and reduce environmental risks in underserved communities. E-bikes, in addition to other micromobility options such as scooters, were specifically listed as emerging technologies that could contribute to a “more efficient, more affordable, more accessible, and more equitable transportation future.” Eligible recipients included public and private nonprofits, higher education, hospitals, state and local governments, and tribal governments. \$11 million was awarded to 11 institutions, with all but two awardees being higher education institutions.<sup>205</sup>

The Department of Transportation’s (DOT) Federal Highway Administration has released multiple iterations (2016, 2022) of a National Pedestrian and Bicycle Information Center Grant. This grant solicited applications from federal laboratories, state agencies, and more to operate a national Pedestrian and Bicycle Information Center, as well as conduct pedestrian and bicycle research.<sup>206</sup> In the 2022 iteration e-bikes were included as related to emerging needs in the bicycle space.

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<sup>203</sup> The PSRC consists of the elected leaders of King, Pierce, Snohomish, and Kitsap counties, the region’s cities and towns, port districts, transit agencies, and Tribes. An annual General Assembly votes on major decisions, approves the budget, and elects new leadership. Each month, a 36-member Executive Board makes decisions on behalf of the General Assembly with the input of several advisory boards made up of local elected officials and representatives of business, labor, environmental and community interests, as well as input from the public at large.

<sup>204</sup> The region adopted a \$5.4 billion draft Regional Transportation Improvement program (TIP), and also submitted rankings for funding from WSDOT, all administered through their Transportation Policy Board. Approved projects for 2022 are listed on the website. No e-bike or micromobility projects are identified to date.

<sup>205</sup> Drivers and Environmental Impacts of Energy Transitions in Underserved Communities Grants. (2023, August 14). EPA. <https://www.epa.gov/research-grants/drivers-and-environmental-impacts-energy-transitions-underserved-communities-grants>

<sup>206</sup> View Grant Opportunity: National Pedestrian and Bicycle Information Center. Department of Transportation, DOT Federal Highway Administration. *Grants.gov*. <https://www.grants.gov/web/grants/view-opportunity.html?oppld=337734>

## State of Washington

### *WSDOT Program Established by Engrossed Second Substitute House Bill 1125*

Due to the passage of HB1125, which directs WSDOT to establish an e-bike lending library or ownership grant program, there is the potential for King County to apply for a state grant to establish a lending library or ownership program in the county. HB1125 allocated \$2 million in funding to create an e-bike lending library or ownership grant program, for which other state entities, local governments, tribes, or nonprofits and tribal governments serving low-income or overburden communities can apply to administer.<sup>207</sup> As such, King County will likely have the opportunity to apply for this a grant.

## Creation of A Climate Fund

Certain jurisdictions have created climate specific funds or taxes to support the creation of climate programs, including e-bike programs. For example, a voter approved Climate Protection Fund was established in the City of Denver in 2020. This fund is estimated to raise \$40 million per year to fund climate-related programs, including the City's e-bike rebate program and four lending libraries.<sup>208</sup> Voters in the City of Boulder approved a Climate Tax in 2022, which is projected to raise \$6.5 million per year to support a variety of initiatives, including the City's rebate program.<sup>209</sup> The City of Berkeley's City Council approved a 2021 resolution to create a Climate Equity Fund Pilot Program to reduce greenhouse gas emission and the impacts of climate change on low-income residents. \$250,000 was allocated to the program administrator, Waterside Workshops, to create an e-bike program to achieve this goal.<sup>210</sup> Based on this precedent, a long-term opportunity to create more sustainable funding could be for King County, in partnership with the State and local jurisdictions, to explore the possibility of creating a climate fund either through voter approved or Council resolution.

## King County Metro

King County Metro has been involved over the years in various bicycle-related initiatives, they have largely been funded by the state or federal government.<sup>211</sup> This includes managing the grant-supported Green Bike Program in 2008 and supporting the Pronto bike share system from 2014-17. Metro also contributes to safe bike, walk, and roll infrastructure on public rights-of-way through the Safe Routes to Transit Investment Program, as well as through major projects such as RapidRide, provides secure bike parking at 27 locations and has outfitted its entire fleet with front-mounted bike racks.

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<sup>207</sup> Engrossed Second Substitute House Bill 1125, Section 310(16). <https://lawfilesext.leg.wa.gov/biennium/2023-24/Pdf/Bills/House%20Passed%20Legislature/1125-S.PL.pdf?q=20230822144820>

<sup>208</sup> Denver, Colorado, Ballot Measure 2A, Sales Tax to Fund Environmental and Climate-Related Programs and TABOR Spending Limit Increase (November 2020). *Ballotpedia*. [https://ballotpedia.org/Denver,\\_Colorado,\\_Ballot\\_Measure\\_2A,\\_Sales\\_Tax\\_to\\_Fund\\_Environmental\\_and\\_Climate-Related\\_Programs\\_and\\_TABOR\\_Spending\\_Limit\\_Increase\\_\(November\\_2020\)](https://ballotpedia.org/Denver,_Colorado,_Ballot_Measure_2A,_Sales_Tax_to_Fund_Environmental_and_Climate-Related_Programs_and_TABOR_Spending_Limit_Increase_(November_2020))

<sup>209</sup> Boulder Colorado E-Bike Funding <https://bouldercolorado.gov/projects/funding-city-climate-work>

<sup>210</sup> Berkely California E-Bike Funding <https://berkeleyca.gov/sites/default/files/2022-04/2022-04-26%20Item%2015%20Contracts%20Association%20for%20Energy%20Affordability.pdf>

<sup>211</sup> Information supplied by King Country Metro for this Proviso response.

Direction to use local transit funding to support a new e-bike program may be justifiable under Metro’s existing policy guidance<sup>212</sup> but would divert investment that otherwise would support Metro’s fixed route service and other existing modes. Metro is in the process of updating its long-term financial assumptions to reflect growing costs in other areas, including labor costs, electrification infrastructure, and federally mandated paratransit service.

Although local transit funding is largely committed, Metro could play an important role as a strategic partner in program design and support seeking external funding opportunities through the state, federal government, and philanthropy. In addition, Metro could play an important role in the broader discussion around necessary infrastructure to support micromobility.

#### **F. A description of desired outcomes and measures for the pilot program, including but not limited to the impact on those communities traditionally underserved with regard to access to transit, as well as other county services**

This section provides a description of desired outcomes and measures for the pilot program, including but not limited to the impact on those communities traditionally underserved with regard to access to transit, as well as other county services.

#### **General Benefits of Electric Bike Adoption and Utilization**

There are numerous benefits related to an e-bike pilot program. Defining program goals is necessary to develop specific measures, but at a high-level the pilot program proposed in this report is guided by equity and climate related goals<sup>213</sup> and has advantages for individuals, the community, and regionally.

- Individual benefits include increased access to reliable mobility and reduced transportation costs in comparison to vehicle ownership.<sup>214</sup> In addition, there are also personal health benefits to e-bike utilization.<sup>215</sup>

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<sup>212</sup> In fact, there are multiple Metro policies supporting bicycling as transportation to advance King County’s goals for mobility, safety, climate, and health, including [Metro Connects](#), Metro’s [Strategic Plan for Public Transportation, Service Guidelines](#), and the [Mobility Framework](#). The Mobility Framework speaks specifically to Metro adapting in an equitable and sustainable way to the changing transportation system, including “new technologies, services, apps, and innovations—from shared e-scooters to driverless delivery pods, ride-hailing, ride-sharing, and more” (p. 4-2). For more information, see <https://kingcounty.gov/en/legacy/depts/transportation/metro/about/policies.aspx>.

<sup>213</sup> King County Equity and Social Justice Strategic Plan (2016-2022): <https://kingcounty.gov/en/legacy/elected/executive/equity-social-justice/strategic-plan.aspx> ; King County 2020 Strategic Action Climate Plan. (2021 May). *King County*. [your.kingcounty.gov/dnrp/climate/documents/scap-2020-approved/2020-king-county-strategic-climate-action-plan.pdf](https://your.kingcounty.gov/dnrp/climate/documents/scap-2020-approved/2020-king-county-strategic-climate-action-plan.pdf)

<sup>214</sup> Moyer, B. (2022, August 11). Annual Cost of New Car Ownership Crosses \$10K Mark. *AAA*. <https://newsroom.aaa.com/2022/08/annual-cost-of-new-car-ownership-crosses-10k-mark/> ; Headland, N. (2023, July 3). Small But Mighty: Electric Bicycles Can Bridge Gap in Access to Transportation. *National Renewable Energy Lab*. <https://www.nrel.gov/news/program/2023/small-but-mighty-electric-bicycles-can-bridge-the-gap-in-access-to-transportation.html>

<sup>215</sup> Alessio et al. (2021) study published in *Translational Journal* concluded that “compared with a regular bicycle, riding an e-bike for a simulated 3-mile commute resulted in lower metabolic, cardiovascular, and perceived effort that nevertheless met the intensity level associated with healthy physical activity recommended by the World

- Community benefits includes decreased traffic congestion<sup>216</sup> and reduce the demand for larger vehicle parking spaces. Also, increased adoption signals the need to advance local infrastructure to support safe e-bikes usage.
- Regional benefits align to support reduction in greenhouse gasses, air pollution, toxic runoff by reducing the need for gas-powered vehicle trips.<sup>217</sup>

### Vehicle Trip Reduction Potential

Numerous studies have shown that e-bikes can replace the need for gas-powered vehicles. A 2020 study conducted in Sacramento, California found that a substantial number of residents were utilizing bike-share services in lieu of car trips and walking,<sup>218</sup> and multiple studies conducted in Europe, such as Sweden and the United Kingdom, found positive relationships between e-biking and vehicle miles traveled.<sup>219</sup>

As e-bike popularity and incentive programs increase, more case studies are being conducted to determine the impact on emissions reduction. A 2020 case study conducted in Portland, Oregon showcased significant results e-bike contribution to reduced greenhouse gas emissions. For instance, it was found that “an individual e-bike could provide an average reduction of 225kg CO<sub>2</sub> per year” and bike share options where individuals replaced miles traveled with e-bikes by 15 percent “resulted in a 12 percent decrease in CO<sub>2</sub> emissions, from 8,079 metric tons per day to 7,088 metric tons per day.” Influencing factors include land use density, biking infrastructure, and climate.<sup>220</sup> Results from a 2022 Denver report about the city’s E-bike Incentive Program found that “Denver’s e-bike incentive program saved 0.94lb CO<sub>2e</sub> per dollar spent, for a total of 2,040 MT CO<sub>2e</sub> avoided emissions per year” (n=4,734).<sup>221</sup>

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Health Organization and the American College of Sports Medicine” and found “qualitative analyses included perceptions of commuting with an e-bike as ‘easier’ and ‘fun,’ among other positive terms” (p. 5)

Alessio, Helaine M.; Reiman, Timothy; Kemper, Brett; von Carlowitz, Winston; Bailer, A. John; Timmerman, Kyle L. (2021). “Metabolic and Cardiovascular Responses to a Simulated Commute on an E-Bike.” *Translational Journal of the ACSM* 6(2), Spring 2021. DOI: 10.1249/TJX.0000000000000155

<sup>216</sup> Asensio, O.I., Apablaza, C.Z., Lawson, M.C. et al. (2022). “Impacts of micromobility on car displacement with evidence from a natural experiment and geofencing policy.” *Nature Energy* 7, pp. 1100–1108.

<https://doi.org/10.1038/s41560-022-01135-1>.

<sup>217</sup> See this report: [Vehicle Trip Reduction Potential](#) (p.44)

<sup>218</sup> Fitch, D., Mohiuddin, H., & Handy, S. (2020). Electric Bike-share in the Sacramento Region is Replacing Car Trips and Supporting More Favorable Attitudes Towards Bicycling. UC Office of the President: University of California Institute of Transportation Studies. <http://dx.doi.org/10.7922/G27W69GQ> Retrieved from <https://escholarship.org/uc/item/8gm3w9qp>

<sup>219</sup> Fitch, D. (2019). Electric Assisted Bikes (E-bikes) Show Promise in Getting People out of Cars. UC Office of the President: University of California Institute of Transportation Studies. Retrieved from <https://escholarship.org/uc/item/3mm040km>

<sup>220</sup> Michael McQueen, John MacArthur, Christopher Cherry. (2020). “The E-Bike Potential: Estimating regional e-bike impacts on greenhouse gas emissions.” *Transportation Research Part D: Transport and Environment*, Volume 87. <https://www.sciencedirect.com/science/article/pii/S1361920920306696>

<sup>221</sup> Denver’s 2022 Ebike Incentive Program - Results and Recommendations. (2022). *City and County of Denver, PeopleForBikes, Bicycle Colorado, Ride Report, & Rocky Mountain Institute*. <https://5891093.fs1.hubspotusercontent-na1.net/hubfs/5891093/Denvers%202022%20Ebike%20Incentive%20Program%20Results%20and%20Recommendations.pdf>

*Tools to Calculate Impact*

E-bike emission reduction calculators have also become a more commonplace tool to help individuals determine the impact of riding an e-bike instead of driving. Rad Power Bikes allows individuals to customize their emissions calculations based on trip purpose and milage.<sup>222</sup>

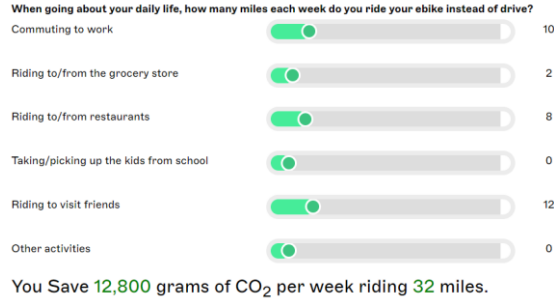


Figure 5: Emissions Calculations Based on Trip Purpose and Milage (Source: RadPower Bikes).<sup>223</sup>

Portland State University’s Transportation Research and Education Center has an [Electric Vehicle Incentive Cost and Impact Tool](#) that estimates the cost per kg of CO<sub>2</sub> avoided by specific transportation options over the course of one year. This tool allows users to customize inputs to determine cost efficiency, as well as how many vehicles or e-bikes would need to be incentivized at certain incentive levels to achieve desired GHG emission reductions.



Figure 6: Image from Portland State University TREC<sup>224</sup>

<sup>222</sup> Rad Power Bikes Emissions Calculator (2022). <https://www.radpowerbikes.com/blogs/the-scenic-route/electric-bike-emissions-calculator>

<sup>223</sup> Duckham, J. (2022, April 20). Curious How Ebikes Help The Planet? Try our Emissions Calculator. *Rad Power Bikes*. <https://www.radpowerbikes.com/blogs/the-scenic-route/electric-bike-emissions-calculator>

<sup>224</sup> McQueen, M. (2020). The Electric Vehicle Incentive Cost and Impact Tool. *Transportation Research and Education Center, Portland State University*. <https://trec-pdx.shinyapps.io/incentive-impact-tool/>

## G. Analysis of any issues that could adversely impact the expansion of the pilot program and potential strategies to address those issues

This section provides an analysis of any issues that could adversely impact the expansion of the pilot to a fully developed program and potential strategies to address those issues.

### Risk Assessment Overview

An e-bike pilot program offers many benefits for County residents. Some challenges identified by both a literature review and stakeholder interviews include:<sup>225</sup>

- **Legal and Financial**, including insurance coverage and costs, the risk of personal injury lawsuits, equipment maintenance costs, infrastructure and road investments, equipment safety requirements, competition with other agencies or businesses (e.g., Lime), retailer's price structures, and material losses of e-bikes.
- **Bicycle Infrastructure and Safety Impacts**, promoting safe battery practices to prevent fires, manufacturer quality, safe use on roads and road etiquette, pedestrian safety, investing and improving in surrounding infrastructure and road investments such as separated bike lanes and storage facilities, and recommended use of available safety equipment (e.g., lights, high visibility vests, and helmets).
- **Adoption**, including *awareness, knowledge, and experience* factors – such as awareness and knowledge of biking terminology, routes, maintenance, and general best practices. Training and orientation to e-bike operations, and public discussion of e-bike program features – which include addressing topics of equity in the bicycling community and positioning e-bikes as a viable form of vehicle replacement (elements of *Biking Culture*<sup>226</sup>).
- **Program Management and Administration Considerations**, including the cost of program operations, equipment storage, quality reviews, contract management, fraud prevention, and policy development.

Appendix H highlight key concerns and potential strategies to address issues in greater detail. In general, mitigation strategies include (1) careful development of user liability contracts and waivers, (2) informed selection of eligible e-bikes and equipment, (3) dedicated community outreach and education activities for participants, and (4) intentional co-creation of program design with community, retailers, and CBOs.

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<sup>225</sup> Appendix H highlight key concerns and potential strategies to address issues in greater detail.

<sup>226</sup> See this report: [Biking Culture: Equity and Normalizing Mainstream E-Bike Utilization](#) for more information.



## VI. Appendices

### Appendix A: E-Bike Program Interview List and Key Takeaways

In total, 23 subject matter experts and related organizations were interviewed for this Proviso response regarding their relevant e-bike rebate or lending library programs experiences and lessons learned. The entities consulted were identified through the literature review process, referrals made during interviews, and additional recommendations from council staff. Interviews occurred between 07/13/23 and 09/18/23.<sup>227</sup>

Interviews were semi-structured with tailored questions determined through the examination of public facing websites and reports. For each contacted organization, interviews were conducted with relevant senior organization staff and/or project managers. The data gathered through the literature review and interview process inform the analyses, findings, and recommendations included in this report. The entities interviewed for this report were well versed on the topic of e-bikes and micromobility, provided their insights, and gave of their time with no compensation.

#### *Summary of Interviewees*

information about the entities interviewed for this report, including:

- Government agencies: Washington State Department of Transportation; the City of Denver, CO; State of Colorado Energy Office; the City of Berkeley, CA; the City of Ashland, OR; State of California Air Resources Board; Washington State Legislature Joint Transportation Committee.
- Educational institutions: Portland State’s Transportation Research and Education Center; University of Washington’s Sustainable Transportation Lab; University of Oregon.
- CBOs: Move Redmond [Washington]; Commute Seattle [Washington], Waterside Workshops [Berkeley, CA].
- Various local e-bike retailers: G&O Family Cyclery [Seattle, WA]; Gregg’s Cycles [Seattle, WA]; Northwest Tri & Bike [Kent, WA]; Singletrack Cycles [North Bend, WA]; Edge & Spoke [Redmond, WA]; Mello Fellos Bike Shop [Seattle, WA]; Dandelion Bikes [Seattle, WA]; Center Cycle [Renton, WA]; Kirkland Bicycle [Kirkland, WA]; Woodinville Bicycle [Woodinville, WA].

#### *Detailed List of Interviewees*

The following list includes the organization name, person of contact, type of organization, interview date, agency website or direct e-bike program link, and key takeaways. The list is organized by interview date in ascending order.

Organization: **State of Colorado - Colorado Energy Office/Transportation Fuels & Technology**

Contact: Sarah Thorne

Type of Organization: Government

Interview Date: July 13, 2023

Website: <https://energyoffice.colorado.gov/transportation/e-bikes>

Key Takeaways:

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<sup>227</sup> Interviews are referenced throughout this report in relevant footnotes using the contact’s name(s) and interview date.

- Two programs: 1. E-bike Mini Pilot Rebate Program for low-income essential workers and 2. Support for SB193 legislation, funding broader rebates and grant programs.
- Pilot showed high use, substantial emission savings, mode shifts (viable mode of transportation).
- Very high administrative costs in both rebate pilot and Community Access E-bike grant program
- CBOs determination of best model for their community and relationship with local vendor-best practice.
- Must balance appropriate amount of rebate to ensure e-bikes are affordable.
- E-cargo bike commercial delivery pilot-very difficult to operationalize.

Organization: **Move Redmond [Redmond, WA]**

Contacts: Kelli Refer, Maritza Ortega, Michael Leach

Type of Organization: CBO

Interview Date: July 14, 2023

Website: <https://moveredmond.org/>

Key Takeaways:

- Redmond has lending library for city employees-high demand.
- Lending libraries break down reluctance to use e-bikes, how they can fit into a life.
- Focused on vendor support, educational events, variety of bike options, engagement of large employers (i.e., Microsoft).
- Aligned with e-bike advocacy groups and outdoor partnerships.

Organization: **Washington State Legislature Joint Transportation Committee**

Contact: Alyson Cummings

Type of Organization: Government

Interview Date: July 17, 2023

Website: <https://leg.wa.gov/JTC/Pages/micromobility.aspx>

Note: The Joint Transportation Committee (JTC) is a bipartisan, bicameral legislative agency that conducts transportation related studies and other activities to inform state and local government policymakers, including legislators and associated staff. This interview related to their recent [Powered Micromobility Device Lending Libraries Final Report](#).<sup>228</sup>

Key Takeaways:

- Biking and e-biking are different cultures; ambassadors are needed to teach/inform non-biking community about this transportation option.
- Lending libraries do best when small, have adequate administrative support (costly), targeted audience. Storage, bike type, expert partnerships, user training, eligibility documentation issues.
- Liability for injury must be resolved upfront; better to make user the owner.

Organization: **City of Denver, Colorado - Office of Climate Action, Sustainability, and Resiliency**

Contacts: Mike Salisbury

Type of Organization: Government

Interview Date: July 18, 2023

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<sup>228</sup> <https://leg.wa.gov/JTC/Documents/Studies/PoweredMicromobilityDeviceLendingLibrariesFINALREPORT.pdf>

Website: <https://denver.prelive.opencities.com/Government/Agencies-Departments-Offices/Agencies-Departments-Offices-Directory/Climate-Action-Sustainability-Resiliency/Sustainable-Transportation/Electric-Bikes-E-Bikes-Rebates>

Key Takeaways:

- Demand for e-bike vouchers (stipends) very high, even when lowered to modest \$300.
- Started with voucher programs, administered to income qualified people through CBO approach.
- Shifted later to lending libraries, using partners to help train, support first e-bike experience.
- Data collection is critical: how do we tell the story of a life improved through e-bike change?
- Both rebate and lending library require administrator, high overhead; secure storage critical.

Organization: **State of California - California Air Resources Board**

Contacts: Shaun Ransom, Sam Gregor

Type of Organization: Government

Interview Date: July 19, 2023

Website: <https://ww2.arb.ca.gov/resources/fact-sheets/california-e-bike-incentive-project>

Key Takeaways:

- The California E-bike Incentive Project funds point-of-sale voucher incentives for the purchase of electric bicycles (e-bikes), including cargo e-bikes and adaptive e-bikes. Residents 18 years or older with an annual household income at or below 300 percent of the Federal Poverty Level (FPL) are eligible for funds. Additional incentives are available for those in a disadvantaged or low-income community, or who have an annual household income at or below 225 percent of FPL.
- Community outreach ahead of soft launch: public work groups, bike advocates, CBOs, essential partners involved in process plan.
- Very organized planning & design process-guidelines, administrator, incentive testing.

Organization: **City of Ashland, Oregon**

Contact: Chad Woodward

Type of Organization: Government

Interview Date: July 19, 2023

Contact: Chad Woodward

Website: <https://ashlandor.org/climate-energy/find-resources/transportation/>

Key Takeaways:

- Zero Emission Vehicle Incentive Program: 157 E-bikes rebates/vouchers given, of \$300-open to all utility users.
- Popular, growing demand; issue with bike parking noted.
- Not doing lending library.

Organization: **Washington State Department of Transportation (WSDOT) - Active Transportation Division**

Contacts: Barb Chamberlain, Brooke Nelson

Type of Organization: Government

Interview Date: July 20, 2023

[Electric Bike Proviso](#)

Website: <https://wsdot.wa.gov/>

Key Takeaways:

- WA State Active Transportation Division developing 1. rebate program, 2. employee-based lending library, and 3. tribal/nonprofit organization lending libraries to LI people.
- Looking to 'stack' State and Federal incentives.
- Must build programs that support entire state.

Organization: **University of Washington (UW) - Sustainable Transportation Lab**

Contacts: Don MacKenzie, Daniel Malarkey

Type of Organization: Education

Interview Date: July 24, 2023

Website: <https://sites.uw.edu/stlab/about-us/>

Key Takeaways:

- Electric is game changing for the micromobility space.
- It's likely the statewide rebate program will be oversubscribed. A pilot program might help address the oversubscription challenge.
- It might be worth exploring how a county rebate program could pair with the state program, especially to help reduce confusion among participants and retailers. This would benefit program evaluations as well.
- There are potential funding opportunities from the federal government.

Organization: **Portland State University - Transportation Research and Education Center (TREC)  
[Portland, Oregon]**

Contact: John MacArthur

Type of Organization: Education

Interview Date: July 25, 2023

Website: <https://trec.pdx.edu/>

Key Takeaways:

- E-bikes help break down barriers in the biking community and rebates help break down barriers to e-bike adoption.
- Goal setting is critical. Having a mix of incentives can address multiple goals, such as encouraging modal switch and addressing climate goals.
- Local outreach and connections (i.e., local bike shops) are key in low-income communities in terms of ensuring long-term program success and shifting "biking culture."
- Doesn't anticipate that rebate stacking will be an issue as it will be difficult for people to obtain multiple rebates due to high demand.
- Lending libraries can have more value if paired with a rebate program because they can allow people to test ride e-bikes prior to purchasing, specifically in low-income neighborhoods where bike shops are not available for test riding.
- Safety and education are evolving conversations and areas that need to be addressed.
- Predetermining evaluation goals is important to ensure evidence that the program is achieving desired outcomes is produced.

Organization: **Commute Seattle [Seattle, WA]**

Contacts: Kirk Hovenkotter, Noah An

Type of Organization: CBO

Interview Date: July 28, 2023

Website: <https://www.commuteseattle.com/>

Key Takeaways:

- E-bikes are one of the most effective ways to reduce miles traveled in the near-term. E-bikes can also help address the first-mile, last-mile issue.
- The simpler the rebate program, the better.
- A successful rebate program will require more biking infrastructure (i.e., e-bike storage/parking at grocery stores or childcare centers).
- Separate subsidies, rebates, or tax exemptions for accessories could help address affordability and safety issues.
- Focus on how e-bikes can support families/childcare trips. A common trend is that people with children are more likely to drive, so targeting incentives to family-oriented e-cargo bikes (which can run upwards of \$5,500) can help address this.
- Large employers (ex: Amazon, Seattle Childrens) are building out their own e-bike programs, but small/medium employers are not and may be interested in partaking in a rebate program.

Organization: **City of Berkeley, California – E-Bike Equity Project**

Contact: Sarah Moore

Type of Organization: Government

Interview Date: August 2, 2023

Website: <https://berkeleyca.gov/community-recreation/news/low-income-residents-can-apply-e-bike-lottery>

Key Takeaways:

- Prior to receiving funding for the loan-to-own program, had conversations with CBOs to understand community needs.
- Contracted with a third-party administrator, Waterside Workshops, to run the program. Waterside Workshops submitted a unique application – tied in existing youth program with loan-to-own program.
- Received an overwhelming number of applications via a lottery system. E-bikes were originally intended to serve one application, but due to demand and household needs, e-bikes were permitted to be shared within households.
- Had a conversation around quality versus quantity of e-bikes. Decided on middle of the road e-bikes priced around \$1,500.
- The program has been very successful thus far. It is a unique model, much easier than a traditional lending library. Sees this program as touching fewer people, but making more lasting changes and impacting mobility.

Organization: **G&O Family Cyclery [Seattle, WA]**

Type of Organization: Retailer

Interview Date: August 16, 2023

Website: <https://familycyclery.com/>

Key Takeaways:

- Aware and knowledgeable about the statewide rebate program, published a [blog post](#). Have had potential customers say they will wait to purchase an e-bike until they find out more about the state rebate program.
- The most common accessory purchased with an e-bike is a child seat.
- In relation to a rebate program, concerned with what e-bikes are being incentivized; have heard of programs limiting e-bikes to a \$3,000 price point, which is limiting and sometimes unsafe
- Most customers spend between \$6,000 - \$10,000 per e-bike. However, expensive e-bikes don't necessarily equate to luxury.
- Point-of-sale is not necessarily the favorite program design because will have to wait for reimbursement. Unsure how the rebate will fit into purchases timing wise – there is often a queue where customers put down a 50 percent deposit to hold an e-bike, then pays the rest when they pick up the e-bike (sometimes two months later).

Organization: **Edge & Spoke [Redmond, WA]**

Type of Organization: Retailer

Interview Date: August 16, 2023

Website: <https://www.edgeandspoke.com/>

Key Takeaways:

- E-bike sales are “going off,” folks are very interested in test riding and purchasing e-bikes, the store is carrying more to meet demand.
- Frequently has individuals who previously bought an inexpensive & low-quality e-bike come into the store to get it serviced, realize it's unfixable due to low-quality, and then purchase a higher-quality (typically more expensive) e-bike.

Organization: **Gregg's Cycles [Seattle, WA]**

Type of Organization: Retailer

Interview Date: August 16, 2023

Website: <https://www.greggscycles.com/>

Key Takeaways:

- E-bikes, specifically hybrid e-bikes, are the most popular purchase.
- Also see a lot of individuals purchasing child seats and bags. E-bikes typically come with fenders and bags, but if not, then individuals will typically purchase these as well.

Organization: **Northwest Tri & Bike [Kent, WA]**

Type of Organization: Retailer

Interview Date: August 16, 2023

Website: <https://www.northwesttriandbike.com/>

Key Takeaways:

- Is not very involved in the e-bike space, but does see a lot of interest in e-bikes from folks (mostly older individuals).
- Battery care is the biggest reason why individuals bring in their e-bikes for service. In general, most people don't understand best practices (i.e., not charging batteries overnight).

Organization: **Singletrack Cycles [North Bend, WA]**

Type of Organization: Retailer

Interview Date: August 16, 2023

Website: <https://www.stcycles.com/>

Key Takeaways:

- Sees e-bikes as the fastest growing segment of the biking world currently; have seen a greater interest in e-bikes in the past few years.
- Concern with inexpensive e-bikes on the market; working to educate folks about quality e-bikes.
- Won't sell or service e-bikes that don't come with manufacture liability because if an e-bike doesn't have insurance then the shop will become liable.

Organization: **Dandelion Bikes [Seattle, WA]**

Type of Organization: Retailer

Interview Date: August 18, 2023

Website: <https://www.dandelion.bike/>

Key Takeaways:

- Relayed that a good number of customers (mostly those already into biking) have heard about the statewide rebate program and are very excited.
- Shop saw an e-bike sales boom in the pandemic, sales are down from last year, but still doing okay. Have heard similar trends from other bike shops.
- The biggest customer concerns around e-bikes are related to safety (specifically battery fires), theft, and storage.

Organization: **Mello Fellos Bike Shop [Seattle, WA]**

Type of Organization: Retailer

Website: <https://www.mbrbikes.com/>

Interview Date: August 18, 2023

Key Takeaways:

- Not a huge e-bike dealer, sells just a few e-bike brands.
- Has seen a spike in e-bike ridership, but gets more questions about servicing e-bikes than purchasing a new e-bike.
- Emphasized the need for biking infrastructure changes due to the increasing number of e-bikes on the road, as current infrastructure is not built to support regular bikes and e-bikes.
- Partners with Amazon, Meta, Seattle Childrens, and Fred Hutch to provide maintenance on employee bikes. Services more regular bikes, but have been seeing an increasing number of e-bikes come in in the past few years.

Organization: **University of Oregon [Eugene, OR]**

Contact: Logan DeVack

Type of Organization: Education

Interview Date: August 25, 2023

Website: <https://transportation.uoregon.edu/e-bike>

Key Takeaways:

- The program is incredibly popular, mostly among staff & faculty, and there is an enormous waiting list. It's difficult to rent to students because they often live in dorms and don't have access to secure storage.
- Almost every person checking out a bike is interested in test riding to decide if they want to invest in one personally.
- All e-bikes were purchased from a local store with warranty to ensure the fleet had high quality e-bikes that could be serviced by the shop in the case of electric maintenance needs.
- On campus bike shop provides maintenance to the e-bikes. Having an electric bike stand is essential due to the heavy weight of e-bikes (50 – 60 pounds per e-bike).

Organization: **Cycle Center [Renton, WA]**

Type of Organization: Retailer

Interview Date: August 30, 2023

Website: <https://www.centercycle.com/>

Key Takeaways:

- Majority of e-bike sales are by seniors who are using e-bikes to get back into cycling.
- Average e-bike price point is around \$5,000. Carries Trek, Specialized, and Santa Cruz e-bikes.
- There is a common misconception that e-bikes are for older, lazy people, but this is not the case. E-bikes require similar effort to regular bikes.
- Not all e-bikes are created equal – there are a lot of knock-off brands that create a misconception that e-bikes should be cheap. Need to educate people about e-bikes in general and what high-quality e-bikes mean.

Organization: **Kirkland Bicycle [Kirkland, WA]**

Type of Organization: Retailer

Interview Date: August 30, 2023

Website: <https://www.kirklandbikes.com/>

Key Takeaways:

- E-bike popularity and sales have been growing year-over-year. The e-bike market is currently in a tough place because e-bikes were overproduced during the pandemic and there are now lots of sales to address the overproduction.
- Selling mostly Class 1 e-bikes, do sell some Class 3 e-bikes. Don't currently sell e-bikes with throttles, but likely will in the future due to growing interest from customers.
- Customers are generally purchasing accessories with their e-bikes, typically helmets, gloves, bells, lights, and sometimes child seats.
- Has been servicing an increasing number of low-quality, "dangerous" e-bikes. Highlighted the importance of having regulations and high-quality e-bikes.

Organization: **Woodinville Bicycle [Woodinville, WA]**

Type of Organization: Retailer

Interview Date: August 30, 2023

Website: <https://www.woodinvillebicycle.com/>

Key Takeaways:



- Demand is high for e-bikes. The biggest barriers include price and uncertainty where e-bikes can be ridden, specifically on park trails.
- People are purchasing accessories with their e-bikes. Many folks are coming from a car perspective and want to keep some points of comfort (ex: cup or phone holders).
- There is a need for people to learn how to ride e-bikes on the road.

Organization: **Waterside Workshops [Berkeley, CA]**

Contact: Neil Larsen (former Executive Director of Waterside Workshops)

Type of Organization: CBO

Interview Date: September 18, 2023

Website: <https://watersideworkshops.org/street-level-cycles/berkeley-e-bike-equity-project/>

Key Takeaways:

- E-bikes are a cost-effective climate solution; this is an exciting time in the e-bike policy space.
- Waterside Workshops developed an e-bike program that could equitably distribute a reliable method of transportation in communities where e-bikes did not have a strong presence.
- E-bike pricing ranged from \$600 (commuter e-bikes) to \$1,800 (e-cargo bikes); these ranges balance e-bike quality and price.
- Key program considerations include setting program goals, e-bike storage, and e-bike education (i.e., understanding e-bike weight, determining bike routes).

**Appendix B: Summary of Other E-Bike Rebate Programs**

Below is a summary of e-bike rebate programs reviewed for this proviso response.

	<a href="#">State of Washington</a>	<a href="#">City of Denver</a>	<a href="#">State of Colorado</a>	<a href="#">State of Connecticut</a>	<a href="#">State of Vermont</a>	<a href="#">City of Boulder</a>	<a href="#">City of Ashland</a>	<a href="#">State of California (CARB)</a>	<a href="#">Washington DC</a>
<b>Information Source</b>	<i>Interview</i>	<i>Interview</i>	<i>Interview</i>	<i>Literature Review</i>	<i>Literature Review</i>	<i>Literature Review</i>	<i>Interview</i>	<i>Interview</i>	<i>Literature Review</i>
<b>Status</b>	<i>In development</i>	<i>Active</i>	<i>Active</i>	<i>Active</i>	<i>Active</i>	<i>Active</i>	<i>Active</i>	<i>In development</i>	<i>Proposed</i>
<b>Population</b>	7.7m	711k	5.8m	3.6m	646k	104k	22k	39.24m	712k
<b>Program Administrator</b>	Third party (TBD)	Third party (APTIM)	Third party (APTIM)	Third Party (Center for Sustainable Energy)	Third Party (Center for Sustainable Energy)	Third Party (APTIM) + Community Partner (Community Cycles)	In-house	Third party (Pedal Ahead)	TBD
<b>Program Administration Cost Cap</b>	5%	Information not readily available online.	9%	Information not readily available online.	15 %	Information not readily available online.	N/A	21 %	Information not readily available online.
<b>Rebate Program Structure</b>	Standard + Income Qualified	Standard + Income Qualified	Low Income + Moderate Income	Standard + Income Qualified	Income Qualified	Standard + Income Qualified	Standard	Income Qualified	Preferred + Other
<b>Rebate Amount: E-bike</b>	<i>Standard: \$300 IQ: \$1,200</i>	<i>Standard: \$300 Standard E-cargo: \$500 IQ: \$1,200 IQ E-cargo: \$1,400 Adaptive: \$1,400</i>	<i>Low income: \$1,100 Low-income e-cargo: +\$300 Low income adaptive: +\$250 Moderate income: \$500 Moderate income e-cargo: +\$300 Moderate income adaptive: +\$250</i>	<i>Standard: \$500 Income Qualified: \$1,500</i>	<i>Standard E-bike: \$400 E-cargo Bike: \$800 Adaptive E-bike: \$800</i>	<i>Standard E-bike: \$300 Standard E-cargo or adaptive e-bike: \$500 IQ E-bike: \$1,200 IQ e-cargo or adaptive e-bike: \$1,400</i>	<i>E-bike: \$300 E-cargo bike: \$600</i>	<i>IQ: \$1,000 E-cargo: +\$750 225% FPL: +\$250</i>	<i>Preferred Applicants E-bike: \$1,500 Preferred Applicants E-cargo bike: \$2,000 Other Applicants E-bike: \$750 Other Applicants E-cargo bike: \$1,000</i>

	<a href="#">State of Washington</a>	<a href="#">City of Denver</a>	<a href="#">State of Colorado</a>	<a href="#">State of Connecticut</a>	<a href="#">State of Vermont</a>	<a href="#">City of Boulder</a>	<a href="#">City of Ashland</a>	<a href="#">State of California (CARB)</a>	<a href="#">Washington DC</a>
<b>Rebate Amount: Qualifying Equipment</b>	Built into rebate – includes helmet, safety vest, bicycle light, bicycle lock, maintenance	Not included	<i>Low income: \$100 Moderate income: \$100</i>	Not included	Not included	<i>Income Qualified: \$200 starter kit voucher for safety accessories (helmet, lock, lights, child seats)</i>	Not included	Not included	<i>Low income: \$300 battery, \$250 maintenance, \$250 disability equipment, \$150 lock Standard: \$150 battery, \$125 maintenance, \$125 disability equipment, \$75 lock</i>
<b>Rebate Allocation</b>	Likely lottery	First-come, first-served voucher	Lottery	First-come, first-served voucher	First-come, first-served voucher	Lottery	N/A	First-come, first-served voucher	First-come, first-served voucher
<b>Rebate Voucher Application Process</b>	TBD	Apply online, receive voucher by email	Apply online, receive voucher by email	Apply online, receive voucher by email	Apply online, prepaid debit card emailed and mailed	Apply online or attend in-person office hours, receive voucher by email/phone	Individual submits for reimbursement	Likely online	TBD
<b>Rebate Structure</b>	POS	POS	POS	POS	POS	POS	Post-sale	POS	POS
<b>Rebate Reimbursement Timeframe</b>	30 days	2 weeks	Likely 2 weeks	Information not readily available online.	Information not readily available online.	Likely 2 weeks	30 days	2 weeks	TBD
<b>Rebate Redemption Timeframe Requirement</b>	TBD	60 days	60 days	90 days	60 days	45 days	180 days	TBD	TBD

	<a href="#">State of Washington</a>	<a href="#">City of Denver</a>	<a href="#">State of Colorado</a>	<a href="#">State of Connecticut</a>	<a href="#">State of Vermont</a>	<a href="#">City of Boulder</a>	<a href="#">City of Ashland</a>	<a href="#">State of California (CARB)</a>	<a href="#">Washington DC</a>
<b>Retailer Eligibility</b>	Local, online not explicitly prohibited	Local	Local + online	Local	Local	Local	Local	Local + online (with physical state presence)	Local  *\$50,000 available to open up local bike shops in disadvantaged Wards
<b>Rebate Stacking</b>	Not explicitly prohibited	No stacking with statewide program	No stacking with City of Denver or Boulder	No stacking within household	Stacking allowed with utility incentives	No stacking with statewide program	Will allow with state program	Information not readily available online.	N/A
<b>Income Eligibility</b>	At or below 80% AMI	<i>Income Qualified:</i> income 60 % below state median income or 200% below FPL or 80% AMI	<i>Low income:</i> household income below 80 % of AMI <i>Moderate income:</i> household income between 80-100% of AMI	Reside in an environmental justice community or distressed municipality; participate in a state or federal income-qualifying program; have an income less than 300 % of the FPL	Individual AGI <\$60k, Individual AGI <\$75k, Married Couple AGI <\$90k	<i>Income Qualified:</i> Household income below 80 % AMI	N/A  *Note: participant must have an active account with the City of Ashland Electric Utility	Live in disadvantaged or low-income community, have an income of 300 % or 225% of FPL or less, participate in 1 or more of public assistance programs on Clean Vehicle Rebate Project eligibility list	Must be enrolled in TANF, SNAP, DC Medicaid, or DC Healthcare Alliance
<b>E-bike Eligibility</b>	Class 1, Class 2, Class 3, mountain bikes prohibited	Class 1, Class 2, Class 3, motor is 750 watts or less, full suspension mountain bikes not eligible	Class 1, Class 2, Class 3, motor is 750 watts or less, full suspension mountain bikes not eligible	Class 1, Class 2, Class 3 + specific list with e-bikes less than \$3,000	UL 2849 and/or EN 15194 standards, batter with 750 watts of power or less, 1 year warranty on electric	Class 1 and Class 2 road, hybrid, e-cargo, adaptive; motor is 750 watts or less Used e-bikes,	Class 1, Class 2, Class 3, new e-bikes only (no used), full-suspension mountain bikes and e-bike	Class 1, Class 2, Class 3 + 1 year warranty on electric components	TBD

	<a href="#">State of Washington</a>	<a href="#">City of Denver</a>	<a href="#">State of Colorado</a>	<a href="#">State of Connecticut</a>	<a href="#">State of Vermont</a>	<a href="#">City of Boulder</a>	<a href="#">City of Ashland</a>	<a href="#">State of California (CARB)</a>	<a href="#">Washington DC</a>
					components, MSRP requirements	class 3 e-bikes, and mountain bikes are not eligible	conversion kits prohibited		
<b>Age Requirement</b>	16 years old	16 years old	18 years old	18 years old	16 years old	18 years old	16 years old	TBD	18 years old
<b>Voucher Limit</b>	1 per household	1 per applicant	1 per applicant	1 per applicant	1 per applicant	1 per applicant	1 per utility account	TBD	TBD
<b>Budget</b>	Total: \$5m - \$2m for standard rebates - \$3m for IQ rebates	2022 funding: \$4.7m  *Note: original funding totaled \$250,000 *Note: equity mandate for 50 % of funding	Total: \$6.6m	Total: \$1.75m  *Note: original funding was \$1.5m, \$250k was added after receiving an overwhelming number of applications	Total: \$242,500  *1 <sup>st</sup> round of funding: \$92,500 *2 <sup>nd</sup> round of funding: \$150,000	First round: \$190,000  *200 vouchers evenly split between 4 voucher types (79 % of funding for IQ, 21% for standard) *2 <sup>nd</sup> round of vouchers will go live in Sept.	Information not readily available online.	Total: \$7.5m  *The first \$2.5m is open to all eligible applicants *The remaining \$5m is limited to priority applicants	*Note: 50 % of total funding must go to preferred applicants
<b>Funding Source</b>	Carbon Emissions Reduction Account	Climate Protection Fund	General Fund	Connecticut Clean Air Act	State transportation funds	City of Boulder Climate Tax	Clean Fuel Program	General Fund	TBD
<b>E-bikes purchased</b>	N/A	To date: 6,118	*Anticipating 1,000 e-bikes purchased per month	*6,394 applications received (no data on vouchers redeemed yet)	2022: ~280	To date: received 1,200 applications for 200 vouchers	To date: 157	N/A	N/A

Table 8: Summary of E-Bike Rebate Programs Reviewed

## Appendix C: Summary of Other Lending Library Programs

Below is a summary of e-bike lending library programs reviewed this proviso response.

	<a href="#">State of Washington</a>	<a href="#">State of Colorado</a>	<a href="#">State of Vermont</a>	<a href="#">City of Denver</a>	<a href="#">City of Berkeley</a>	<a href="#">City of San Diego</a>	<a href="#">University of Oregon</a>	<a href="#">Housing Authority of Douglas County, Oregon</a>	<a href="#">City of Madison WI</a>
<b>Information Source</b>	<i>Interview</i>	<i>Interview</i>	<i>Literature Review</i>	<i>Interview</i>	<i>Interview</i>	<i>Literature Review</i>	<i>Literature Review</i>	<i>Literature Review</i>	
<b>Population</b>	<i>7.7m</i>	<i>5.8m</i>	<i>646k</i>	<i>711k</i>	<i>117k</i>	<i>1.3m</i>	<i>28k</i>	<i>112k</i>	<i>269k</i>
<b>Status</b>	<i>In development</i>	<i>Active</i>	<i>Active</i>	<i>Active</i>	<i>Active</i>	<i>Active</i>	<i>Active</i>	<i>Active</i>	<i>Active</i>
<b>Program Structure</b>	Lending Library and/or Ownership Grant Program	Ownership or Bike Share Program	Community Lending Library	Community Lending Library	Loan-to-Own	Loan-to-Own	University Lending Library	Lending Library Pilot	Community Lending Library
<b>Program Participant Eligibility</b>	Employees and low-income/overburdened communities	Low- and moderate-income individuals  Prioritize programs offered in disproportionately impacted communities or nonattainment areas	Resident of Vermont & library location	Engagement focused on disadvantaged and priority communities	Household income of less than 80% of AMI or currently participate in an income-qualified program (i.e., SNAP, PG&E CARE, Medicaid)	Prioritize individuals with low-income, unreliable transportation, and lack of available nutritional food sources	University of Oregon student or employee/faculty	Individuals who live in public housing or have a Section 8 housing voucher	Must be a library card holder
<b>Program Participant Requirements</b>	TBD	N/A	N/A	N/A	To achieve ownership: attend e-bike safety class, share monthly odometer readings, maintenance bike with nonprofit	N/A	N/A	N/A	N/A

	<a href="#">State of Washington</a>	<a href="#">State of Colorado</a>	<a href="#">State of Vermont</a>	<a href="#">City of Denver</a>	<a href="#">City of Berkeley</a>	<a href="#">City of San Diego</a>	<a href="#">University of Oregon</a>	<a href="#">Housing Authority of Douglas County, Oregon</a>	<a href="#">City of Madison WI</a>
					every 3 months, complete 4 course surveys  Must pay a \$100 security deposit				
<b>Program Administrator</b>	<i>Employee program:</i> state entities, local government, tribes  <i>Low-income or overburdened communities:</i> nonprofit organizations, tribal governments	Local government, tribal government, nonprofit organization, third party contractor	Third Party (Local Motion)	Nonprofits (Northeast Transportation Connections and West Corridor TMA)	Nonprofit Partnership (Waterside Workshops)	Third Party (Pedal Ahead)	In-house (University of Oregon)	In House (Housing Authority)	Madison Public Library Foundation and Madison Bicycle
<b>Program Administration Cost Cap</b>	5 %	9 %	Information not readily available online.	Information not readily available online.	Information not readily available online.	Information not readily available online.	N/A	Information not readily available online.	Information not readily available online.
<b>Number of Grantees</b>	TBD	8	1	2	1	N/A	N/A	1	1
<b>Number of Locations</b>	TBD	8	10  *2 are traveling libraries and one is an e-bike demo location	4	N/A	N/A	1	2	<i>Community Pass:</i> 9 (Madison Public Libraries)

	<a href="#">State of Washington</a>	<a href="#">State of Colorado</a>	<a href="#">State of Vermont</a>	<a href="#">City of Denver</a>	<a href="#">City of Berkeley</a>	<a href="#">City of San Diego</a>	<a href="#">University of Oregon</a>	<a href="#">Housing Authority of Douglas County, Oregon</a>	<a href="#">City of Madison WI</a>
<b>Number of Bikes</b>	TBD	300 bikes total, distribution is location dependent	20 – 30 (2 – 3 e-bikes per location)	40 (10 e-bikes per location)	55	125	4	3	<i>Community passes: 18 (2 per library)</i>  <i>Available e-bikes in fleet: 350</i>
<b>Loan Period</b>	TBD	Location dependent	Location dependent, ranges from 1 – 10 days	<i>NETC:</i> 48 hours	1 year, then ownership	2 years, then ownership	2 weeks	3 hours	1 week
<b>Equipment</b>	TBD	Information not readily available online.	Location dependent, can include child seat, helmet, lock	<i>NETC:</i> helmet, lock	Helmet, lock, lighting, training	Front and rear lights, helmet, high visibility vest, lock	Lights, fenders, panniers, locks, helmets	Lock	Helmet
<b>Age Requirement</b>	TBD	Information not readily available online.	Local dependent, typically 16 or 18 years old	Information not readily available online.	18 years old	18 years old	N/A	18 years old	18 years old
<b>Check out mechanism</b>	TBD	Information not readily available online.	Location dependent, typically library card	Information not readily available online.	N/A	N/A	Online reservation	Online reservation	In-person, check out a “community pass” to unlock access to e-bikes via a mobile app



	<a href="#">State of Washington</a>	<a href="#">State of Colorado</a>	<a href="#">State of Vermont</a>	<a href="#">City of Denver</a>	<a href="#">City of Berkeley</a>	<a href="#">City of San Diego</a>	<a href="#">University of Oregon</a>	<a href="#">Housing Authority of Douglas County, Oregon</a>	<a href="#">City of Madison WI</a>
<b>Insurance Requirement</b>	TBD	Information not readily available online.	Information not readily available online.	Information not readily available online.	Contractor must maintain minimum of \$2m general liability insurance	Individual personal bicycle insurance	N/A	Recommends, but does not require insurance, does not provide insurance for participants	Information not readily available online.
<b>Budget</b>	Total: \$2m	Total: ~\$3.4m (\$1m allocated to-date)	Information not readily available online.	Information not readily available online.	\$250,000	<a href="#">~\$500,000</a>	\$25,000	Information not readily available online.	Information not readily available online.
<b>Funding Source</b>	Carbon Emissions Reduction Account	General Fund	State grant	Climate Protection Fund	Climate Equity Fund *Some additional funding from the UC Berkeley Chancellor's Community Partnership Fund	California Climate Investments (cap and trade funded)	Eugene Water & Electric Board Electric Mobility Grant Program	Transportation Options Micro-grant (Oregon Department of Transportation) and Umpqua Transportation Electrification Team	Madison Public Library Foundation
<b>Additional Notes</b>		Local government or nonprofit must match a 10 % of funding.  This is an extension of the CanDo Colorado Pilot Program.	<a href="#">3 types of e-bikes are provided</a>		Purchased Aventon & RadPower e-bikes (avg. price of \$1,500)			Individuals may register online or in-person; participants must complete an orientation	Leveraging existing e-bike program, 279 passes checked out in March – Dec 2022

Table 9: Summary of Lending Library Programs Reviewed

## Appendix D: Loan-to-Own Program Overview and City of Berkeley Spotlight

### *Loan-to-Own Program Overview*

#### Background

Loan-to-own, also referred to as ride-to-own or earn-a-bike, programs have emerged as an alternative to traditional lending libraries. These programs are typically geared towards income-qualified individuals and select participants through an application process. Once selected, individuals are given an e-bike, sometimes with a required small deposit, to use over a one- or two-year period. Participating individuals may be required to share e-bike data, such as trip reports, over the designated time frame, and if participants comply with program requirements and are satisfied with their e-bike they may keep the e-bike at no cost.

This model offers a more specialized and personalized approach where CBOs and/or retailers can customize e-bikes to meet participant needs, such as installing a child seat to the e-bike, as well as provide education and tips about how to best use and maintain an e-bike. This reduces education and bike culture barriers, while also building relationships between local community organizations and individuals.<sup>229</sup>

Two of the nine programs in the community library matrix use a loan-to-own program model, both with varying participation requirements. For instance, the City of San Diego requires participants to ride 100 miles per month over a two-year period to achieve ownership, whereas the City of Berkeley requires participants to attend safety classes, share monthly odometer readings, take e-bikes in for maintenance every three months, and complete four surveys over the course of one year.

#### The City of Berkeley Spotlight

In February 2023, the City of Berkeley (City) launched its loan-to-own e-bike program. Participants range in age from around twenty years old to eighty years old, with individuals bringing varying levels of biking knowledge to the program. Participants received a fully equipped e-bike and are required to submit odometer readings.<sup>230</sup> Data collected to date indicates that there is variety in the amount of e-bike usage, with some individuals reporting biking over 200 miles in just a few months and others reporting less.

Conversations with the City's Sustainability Program Manager revealed that part of this program's success is attributed to engaging with community-based organizations (CBOs) prior to receiving funding for a program. This allowed the City to understand need and where funding would be most relevant. Once Waterside Workshops, a Berkeley CBO, was contracted through an RFP process, the City also designated a year to develop the program and spread the word to community members. The application process was opened for six weeks, yielding over 600 applications for 50 participant slots. After participants were selected, it was soon learned that there was interest in e-bikes serving households, rather than one individual. As such, the program was modified to allow e-bikes to be utilized by household members. Allowing sufficient time for development, implementation, and program modifications was noted as a key element in program launch.

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<sup>229</sup> See this report: [Biking Culture: Equity and Normalizing Mainstream E-Bike Utilization](#).

<sup>230</sup> A unique feature of the Berkeley programs is that households fully equipped and customized bikes. For example, some participants received child seats and other racks or large baskets depending on the intended household use for the e-bike. All bikes came with the standard safety and security equipment such as locks and helmets.

As a local organization, Waterside Workshops has utilized its existing programs and community connections to build relationships with program participants. This includes integrating a biking curriculum developed by its ongoing youth internship program into the loan-to-own program. With this integration, participants are able to build up their biking knowledge and receive maintenance throughout the duration of their participation in the program.

The City highlighted that this is a unique program that has eliminated many of the logistics and barriers commonly associated with traditional lending libraries. While there are fewer riding bikes with this model compared to a lending library, the City stated it views the loan-to-own program as creating a lasting impact on mobility options for Berkeley residents.

### Appendix E: Example of King County Bike Retailer Locations and E-Bike Pricing

Below is an example list of King County bike retailers and price ranges for e-bikes. This is not an exhaustive list of bike retailers in King County nor an exhaustive list of bike retailers that sell e-bikes. Information was collected online, and e-bike pricing and availability is subject to change. This table is intended to provide general insights into King County's e-bike market.

Retail Shops in King County that Sell E-bikes		
Location	Retailer	E-bike Price Range
Bothell	Amped Adventure	\$1,200 - \$5,200
Issaquah	Trek	\$1,900 - \$9,000
Issaquah	Gerk's Ski & Cycle	\$2,800 - \$13,000
Issaquah	Ride Bicycles	\$3,000 - \$11,000
Kent	Northwest Tri & Bike	\$1,900 - \$2,700
Kirkland	Kirkland Bicycle	\$2,100 - \$11,000
North Bend	The Line	\$2,000 - \$10,000
North Bend	Singletrack Cycles	\$1,600 - \$14,000
Redmond	Propella Electric Bikes	\$700 - \$1,100
Redmond	Edge & Spoke	\$2,000 - \$15,000
Redmond	Trek	\$1,600 - \$9,200
Renton	Go Huck Yourself	\$3,200 - \$12,500
Renton	Center Cycle	\$2,800 - \$14,000
Seattle	Angle Lake Cyclery	\$3,000 - \$4,500
Seattle	Seattle E-bike	\$1,675 - \$14,000
Seattle	Westside Bicycle	\$3,250 - \$15,000
Seattle	Hilltopper	\$1,700
Seattle	Dandelion Bike	\$2,700 - \$8,350
Seattle	Mello Fellos	\$1,500 - \$1,700
Seattle	BikeSwift	\$2,500 - \$10,000
Seattle	Montlake Bicycle Shop	\$1,675 - \$15,000
Seattle	RodBikes	\$8,800
Seattle	(Mend)Bicycles	\$2,750 - \$14,000
Seattle	Gregg's Cycles	\$1,500 - \$14,000
Seattle	Seattle Electric Bike	\$1,280 - \$14,000
Seattle	JRA Bike Shop	\$2,000 - \$3,330
Seattle	G&O Family Cyclery	\$3,000 - \$9,650
Seattle	Ride Bicycles	\$3,000 - \$11,000
Tukwila	Trek	\$1,900 - \$11,000
Woodinville	Woodinville Bicycle	\$3,250 - \$15,000

Table 10: Example of King County Bike Retailer Locations and E-Bike Pricing

## Appendix F: Example Employee Incentive Programs

There are several large employers in King County that have employee incentive programs to utilize e-bikes for commute trip reduction. This appendix contains an example of two local employers offering this incentive. This is not an exhaustive list of employers in King County offering e-bike incentive programs.

Employee Incentive E-bike Programs in King County		
	<a href="#">Amazon</a> <sup>231</sup>	Seattle Children's Hospital
<b>Information Source</b>	Interview, Literature Review	Interview, Literature Review
<b>Status</b>	Active	Active
<b>Program Structure</b>	Bike/E-bike Share + Lease	Bike Share
<b>Benefit</b>	\$170/month per employee for e-bike share, e-bike lease, or bike maintenance	<i>Option 1:</i> Free bike (+ lights, lock, helmet, fenders, rack) if employee uses it 2x/week  <i>Option 2:</i> 10 "errand bikes" available for short-term use
<b>Community Partners</b>	<i>E-bike lease partners:</i> Ridepanda, VanMoof, Riide  <i>Commuter Maintenance:</i> Mello Fellos	Mello Fellos, (mend)Bicycles
<b>Additional Benefits</b>	Street-to-stall bike room access, fix-it stations, e-bike charging stalls	2 free tune ups per year at Mello Fellos
<b>Data</b>	<i>E-bike leases:</i> 2,500 employees with  <i>E-bike stalls:</i> 300	<i>Option 1 (free bikes):</i> 200+ bikes, 733 employees have participated since 2008

Table 11: Example Employee Incentive Programs

<sup>231</sup> Commute Seattle (2023) *Active Transportation at Amazon*: <https://www.commuteseattle.com/wp-content/uploads/2023/05/Final-Case-Study-Amazon-1.pdf>

### Appendix G: Proposal Summary and Alternatives

Below is a description of the proposal discussed in Section B and alternative proposals based on research for this Proviso response. Descriptions are high-level and include, key takeaways, program goals, opportunities, and challenges.

<u>Proposal</u>	<u>Description</u>	<u>Highlights</u>	<u>Potential Program Goals</u>	<u>Opportunities</u>	<u>Challenges</u>
Alternative Proposal: Income Qualified Rebate Program	Provides a \$1,200 point-of-sale rebate for income qualified individuals/households to purchase qualifying e-bike.	<ul style="list-style-type: none"> <li>Point-of-sale rebate managed by a third-party administrator.</li> <li>Rebate covers roughly 75% of the cost of an e-bike.</li> </ul>	<ul style="list-style-type: none"> <li>Trip reduction</li> <li>GHG emission reduction</li> <li>Equity</li> </ul>	<ul style="list-style-type: none"> <li>Good method to increase the number of e-bikes on the road in a short amount of time.</li> <li>Ability to replace car trips and reduce GHG emissions.</li> <li>Reaches underserved or non-traditional biking communities.</li> </ul>	<ul style="list-style-type: none"> <li>Reduced ability to provide detailed resources and thorough e-bike education to participants.</li> <li>Less likely to make connections between CBOs, retailers, and participants.</li> <li>Participant data collection post purchase likely difficult.</li> </ul>
<p><b>Proposal:</b> Income Qualified Hybrid Lending Library &amp; Rebate Program Extension</p> <p><i>Recommended Proposal</i></p>	This hybrid program pairs the deep community outreach/engagement the lending library model with the buying power of an income qualified rebate program.	<ul style="list-style-type: none"> <li>Combines purchasing potential with the opportunity for deeper community outreach to individuals or households who are income qualified</li> <li>Administered by local CBOs through a grant process, which will consolidate program administration costs.</li> </ul>	<ul style="list-style-type: none"> <li>Trip reduction</li> <li>Ride replacement</li> <li>GHG emission reduction</li> <li>Transportation equity</li> <li>Education and awareness</li> <li>Community building</li> </ul>	<ul style="list-style-type: none"> <li>Helps to promote long-term e-bike adoption by a more personalized experience.</li> <li>Fosters connections between CBOs, retailers, and participants.</li> <li>Reaches underserved or non-traditional biking communities.</li> <li>Scalable based on funding and local partnerships</li> <li>Ability to reduce and replace car trips and reduces GHG emissions.</li> </ul>	<ul style="list-style-type: none"> <li>Requires clear program parameter and strong partnership with administering organizations to effectively deliver program.</li> </ul>

<u>Proposal</u>	<u>Description</u>	<u>Highlights</u>	<u>Potential Program Goals</u>	<u>Opportunities</u>	<u>Challenges</u>
Alternative Proposal: Income Qualified Community Lending Library	CBO or nonprofit administered traditional lending library for community members to “check-out” an e-bike for a designated amount of time.	<ul style="list-style-type: none"> <li>· Administered by CBO or nonprofits that determine program parameters.</li> <li>· Creates opportunity for community educates and outreach related to e-bikes</li> </ul>	<ul style="list-style-type: none"> <li>· Trip reduction</li> <li>· GHG emission reduction</li> <li>· Transportation equity</li> <li>· Education</li> <li>· Community building</li> </ul>	<ul style="list-style-type: none"> <li>· Allows participants to familiarize themselves with e-bikes and determine if e-bikes fit their lifestyle.</li> <li>· Reaches underserved or non-traditional biking communities.</li> <li>· Ability to replace car trips and reduce GHG emissions.</li> </ul>	<ul style="list-style-type: none"> <li>· Lack of ability to substantially increase e-bike ownership.</li> </ul>
Alternative Proposal: Income Qualified Loan/Ride-to-Own Program	Qualifying individuals are gifted e-bikes for a certain period of time and upon successful program completion gain ownership of the e-bike.	<ul style="list-style-type: none"> <li>· Administered by a CBO that determines program parameters, such as eligible e-bikes and data collection methods.</li> <li>· Timeframe is usually a one- or two-year period.</li> <li>· Data analysis is a large goal and program requirements typically include e-bike rider data sharing.</li> </ul>	<ul style="list-style-type: none"> <li>· Ride replacement</li> <li>· GHG emission reduction</li> <li>· Transportation equity</li> <li>· Education</li> <li>· Community building</li> </ul>	<ul style="list-style-type: none"> <li>· Allows participants to familiarize themselves with e-bikes before committing to ownership bike.</li> <li>· Customize e-bikes to participants’ specific needs.</li> <li>· Provide more thorough training and education.</li> <li>· Drastically reduce or eliminate the e-bike cost barrier.</li> <li>· Reaches underserved or non-traditional biking communities.</li> <li>· Ability to replace car trips and reduce GHG emissions.</li> </ul>	<ul style="list-style-type: none"> <li>· Requires partnering with a highly knowledgeable organization with capacity to provide customized e-bike training and maintenance.</li> <li>· Likely fewer e-bikes on the road initially compared to a traditional lending library or rebate program.</li> </ul>

<u>Proposal</u>	<u>Description</u>	<u>Highlights</u>	<u>Potential Program Goals</u>	<u>Opportunities</u>	<u>Challenges</u>
Honorable Mention 1: King County Employee Incentive	Offer a monthly or yearly monetary incentive for King County employees to purchase, lease, or maintain an e-bike.	· Incentive use determined by employee.	· Commute trip reduction · GHG emission reduction · Ride replacement · Employee benefits	· Provides a customizable approach for employees to fill the gap in their transportation needs. · Unique employee benefit for staff.	· Does not directly impact King County residents.
Honorable Mention 2: King County Fleet Addition	Pilot an internal library of 1-3 e-bikes within King County fleet's portfolio for employees to utilize in their course of work.	· Employees can use e-bikes for official business or large bases	· Fleet electrification · GHG emission reduction	· Helps meet internal SCAP goals. · Allows for faster transportation in urgent/emergency situations. · Allows employees to familiarize themselves with e-bikes.	· Does not directly impact King County residents.

*Table 12: Proposal Summary and Alternatives*



## Appendix H: Risk Assessment and Mitigation Strategies

### *Legal and Financial Obstacles*

#### *Liability Concerns*

While some research points to e-bike safety as similar to regular bikes,<sup>232</sup> e-bike liability concerns can be a real challenge for governmental agencies involved in their promotion. E-bikes add speed to a bicycle without any additional safety equipment or licensing required before use. According to collision data, teenagers, who are more likely to use them too fast, and older adults, who have been high consumers of e-bikes, are vulnerable to injury.<sup>233</sup> Riders themselves may not have obtained any safety instruction, and in Washington State are not required to wear helmets; children riders may not be secured appropriately with safety straps. States, such as Washington, which have defined a three-tier classification system for e-bikes, “typically exempt an e-bike from registration, licensure, and insurance requirements to differentiate between e-bikes and other motorized vehicles such as mopeds and scooters.”<sup>234</sup> As such, there are multiple safety-related facets and liability considerations when developing e-bike rebates, grants, or lending programs. Mitigation strategies should include strong user education, user contracts for safety behaviors, and legal mechanisms to shift liability to the users. Legislative support for stronger tort liability caps for public entities in Washington may also be considered.

In the case of incorporating e-bikes into the County or department fleet, the potential liability for someone injured from another person on an e-bike would remain consistent with existing policy (agency would still be liable for capped damages), but the scenarios where such injury might occur changes (i.e., trails or sidewalks with more pedestrians). Any injury to the employee in the course and scope of their employment would be covered by worker’s compensation programs (WC), King County has a retention of \$2M, meaning the County would be responsible for the first \$2M of each WC claim. In addition, the employee and government agency could still face a lawsuit from any parties injured by an employee’s use of e-bikes while on the job – similar to vehicle usage.

In the case where governments provide contracts to insured community-based organizations (CBOs) to distribute funds/subsidies to prospective e-bike owners or to manage a community lending library, the County could still potentially be at the end of the lawsuit chain. General liability and worker’s compensation aside, e-bike losses by a CBO could ultimately lead to funding losses. Colorado mitigates this risk with a tort liability cap for public entities,<sup>235</sup> which is not applicable in Washington. Some public

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<sup>232</sup> Langford, Brian Casey. (2013). "A comparative health and safety analysis of electric-assist and regular bicycles in an on-campus bicycle sharing system." PhD diss., University of Tennessee.

[https://trace.tennessee.edu/utk\\_graddiss/2445](https://trace.tennessee.edu/utk_graddiss/2445)

<sup>233</sup> Goodman, Laura F. et al. (2023, August). “Electric bicycles (e-bikes) are an increasingly common pediatric public health problem.” *Surgery Open Science*, Volume 14, pp. 46-51. <https://doi.org/10.1016/j.sopen.2023.06.004>;

MacArthur, John, Christopher Cherry, Michael Harpool and Daniel Schepke. (2018). *A North American Survey of Electric Bicycle Owners*. NITC-RR-1041. Portland, OR: Transportation Research and Education Center (TREC). [https://ppms.trec.pdx.edu/media/project\\_files/NITC\\_RR\\_1041\\_North\\_American\\_Survey\\_Electric\\_Bicycle\\_Owners.pdf](https://ppms.trec.pdx.edu/media/project_files/NITC_RR_1041_North_American_Survey_Electric_Bicycle_Owners.pdf).

DiMaggio, C.J. et al. (2020). "Injuries associated with electric-powered bikes and scooters: analysis of US consumer product data." *Injury Prevention*, 26(6), pp. 524-528 <http://dx.doi.org/10.1136/injuryprev-2019-043418>.

<sup>234</sup> NCSL. (2021, February). “State Electric Bicycle Laws: A Legislative Primer.” *NCSL*.

<https://www.ncsl.org/transportation/state-electric-bicycle-laws-a-legislative-primer>.

<sup>235</sup> According to one interview, Colorado has a statewide cap on liability; \$424,000 per individual and \$1,195,000 per incident.

institutions, such as the Oregon Housing Authority of Douglas County, (which developed an e-bike lending program in 2021) established an 11-page “rental agreement and liability waiver” contract with their e-bike users to limit future legal action against their organization.<sup>236</sup>

Liability Risk	Mitigation Strategy
<p><b>Bike Ownership Liability and Personal Injury Lawsuits</b>  <b>Potential:</b> Liability is more direct for the program agency, not the user. King County would likely be held liable for injuries, open to lawsuits, and insurance rates are exponentially priced.</p>	<p><b>Mitigation Strategy #1: Strong user contracts for safe behavior.</b>                      Explore the possibility of providing rental insurance in addition to, or in lieu, participants providing their own proof of personal insurance and/or sign user liability contracts. This user contract will shift liability to users and any contractors. For example, Oregon-style liability contracts with borrowers or those receiving rebates.</p> <p><b>Mitigation Strategy #2: Strong user safety education.</b></p>

Table 13: Liability Risk and Mitigation Strategies

Higher Insurance Premiums

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. Lemonade,<sup>237</sup> a rental and homeowner insurance company, recently began offering select e-bike coverage as “scheduled personal property” amendments to traditional personal property insurance, against accidental loss (disappearance of bike) or accidental damage. Insurance premiums must be calculated into an e-bike program budget, adding to administrative costs.

Insurance is one of the driving factors behind higher e-bike costs; many retailers will often only carry higher quality and more expensive e-bikes because manufacturers have liability insurance on the e-bike, which provides an additional layer of security for the retailer.

Insurance Risks for Rebate Programs	Mitigation Strategy
<p>Expensive liability insurance costs</p>	<p><b>Mitigation Strategy #1:</b> Restrict the list of eligible e-bikes to those that come with manufacturer liability.</p> <p><b>Mitigation Strategy #2:</b> Explore the possibility of providing rental insurance in addition to, or in lieu of, participants providing their own proof of personal insurance and/or sign user liability contracts. Developing a strong user contract that will shift liability to users and any contractors.</p>

Table 14: Insurance Risks and Mitigation for Rebate Programs

Traditional lending libraries where e-bikes can be checked out by community members present higher insurance requirements for program administrators. The newness of the e-bike market in an already

<sup>236</sup> Interview: Cummings, 2023

<sup>237</sup> [www.lemonade.com](http://www.lemonade.com)

challenging insurance environment can make obtaining coverage difficult and costly; CBOs that administer lending libraries will need to build in necessary insurance coverage into the grant. Insurance requirements will need to be carefully considered as a shared risk between CBO grantees and the jurisdiction.

Insurance Risks for Lending Library Programs	Mitigation Strategy
<p>Higher insurance premium cost: Higher potential insurance liability risks associated with community lending libraries.</p> <ul style="list-style-type: none"> <li>Insurance liability is more direct for the program agency, not the user. King County could be held liable for injuries, open to expensive lawsuits.</li> </ul>	<p><b>Mitigation Strategy #1:</b> Alternatively, 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. See “Proposal 4” for more information.</p> <p><b>Mitigation Strategy #2:</b> 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.</p> <p><b>Mitigation Strategy #3:</b> Develop an employee lending library instead of a community lending library. One option is to add e-bikes to the County’s vehicle <a href="#">fleet</a>. It’s a form of a lending library, but goes outside of what is traditionally thought of because it’s internal.</p> <ul style="list-style-type: none"> <li>If used in the course and scope of their work, injuries to employees are covered by worker’s compensation in the event of an employee lending library.</li> <li>See “Honorable Mention 2” and “Honorable Mention 1” for more information about employee-focused proposals</li> </ul>

*Table 15: Insurance Risk and Mitigation for Lending Library Programs*

#### Other Financial, Funding, and Insurance Considerations

High administrative costs were identified in many interviews. The Denver pilots, for example, stated they used up to 30 percent of their funding to help educate participants about e-bike use, routes, and safety.<sup>238</sup> Lending libraries are more expensive than subsidies for ownership, due to staffing needs, time, and storage requirements. Administrative needs of rebate programs were also high, at 8 percent of each rebate redeemed.<sup>239</sup> According to an interview with Washington State Legislature Joint Transportation Committee staff, Berkeley’s loan-to-own program was deemed easier to administer than a lending library, which is more logistically and administratively complicated.<sup>240</sup> Additionally, the uniqueness of grant program design impacts cost. When CBOs are encouraged to select the best model for e-bike distribution (i.e., ownership, ride-to-own, shared mobility, income qualified), start-up costs are higher

<sup>238</sup> Interview: Thorne, Colorado Energy Office, Transportation Fuels and Technology, 07/13/23

<sup>239</sup> Interview: Thorne, Colorado Energy Office, 7/13/23

<sup>240</sup> Interview: Cummings (July 17, 2023)

compared to programs that have consistent objectives and rules of operation. An example of this is Colorado’s Community Access E-Bike Grant Program, which allocated \$1 million to 8 grant coordination groups; six chose “ownership” models, one organized a shared micro-mobility program for low-income residents, and one CBO chose a hybrid approach (ownership or one-year free e-bike pass).<sup>241</sup>

Interviewees also noted that funding obstacles arose from e-bike pricing changes, rebate inadequacy, or vendor participation. For example, low yield to investment occurred in Denver: After allocating \$1 million to its Community Access Electric Bicycle Grant Program, it only produced 300 bikes (compared to a population of 715,000 within city limits). One contributing factor could be rebate redemption rates running far less than those approved; One program was at 60 percent redemption while other programs rates were much lower. It is unclear how much of the lagging rebate use could be contributed to competition from the presence and influence of current commercial bikeshare operations (e.g., Lime Bike). Another potential obstacle is price domination of the rebate market by major distributors (e.g., RadPower) bypassing other smaller vendors, and controlling availability of bikes.<sup>242</sup>

Finally, rebates were sometimes inadequate to ensure e-bike affordability. In Denver, the rebate was \$1,200 on the sale of an e-bike or up to \$1,400 on the sale of an e-cargo bike, and over 6,000 e-bikes were purchased using the rebate.<sup>243</sup> Other regions found the rebate was unable to adequately offset the high purchase prices (ranging from \$1000-\$3000). Commute Seattle, a local bicycle advocacy non-profit, recommends larger rebates than those currently offered by the state in order to make e-bike ownership more accessible. In contrast, some programs noted that even small incentives (e.g., \$300) were in high demand. Rebate values will need to be carefully aligned to average e-bike costs and expected demand, with awareness of the issues users face when following through to purchase.

Other Financial and Funding Risks	Mitigation Strategy
High administrative costs, particularly for lending libraries.	<b>Mitigation Strategy:</b> Careful program design that includes: budget estimates and planning, considering costs of storage, staffing, maintenance, marketing, and operational factors.
Unstable market, changing e-bike costs, rebate adequacy, competition for lending services.	<b>Mitigation Strategy:</b> Market and economic factor awareness, through user and vendor surveys, to find rebate rate or library use estimates.

Table 16: Other Financial and Funding Risks and Mitigation Strategy Highlights

<sup>241</sup> Interview: Thorne, Colorado Energy Office, 7/13/23

<sup>242</sup> Interview: Thorne, Colorado Energy Office, Transportation Fuels and Technology, 07/13, 2023; Salisbury, E-bike Mini Pilot Program 07/18/23

<sup>243</sup> Electric Bikes (E-Bikes). (2023). *The City and County of Denver*.

<https://www.denvergov.org/Government/Agencies-Departments-Offices/Agencies-Departments-Offices-Directories/Climate-Action-Sustainability-Resiliency/Sustainable-Transportation/Electric-Bikes-E-Bikes-Rebates>

## *Bicycle Infrastructure and Safety Impacts*

### Infrastructure

E-bikes may require both the development of new transportation infrastructure and the adaptation of current transportation infrastructure to support adoption.<sup>244</sup> For example, separated bicycle lanes do not exist consistently throughout streets across the County. Although bike lanes and roadway system designs are improving, optimal conditions for sharing the road with different transportation modes are not universal.<sup>245</sup> This can and has presented a risk of e-bike riding on pedestrian sidewalks, rather than street lanes, which puts both riders and pedestrians at risk.<sup>246</sup> There is also a lack of secure storage facilities for e-bikes, leaving e-bikes vulnerable to theft. In the case of a lending library, the contracted CBO must provide a safe, reliable storage facility for e-bikes.

Commute Seattle suggested that the first mile/last-mile problem with public transportation (*how does one move from home to bus/bus to office?*) could be addressed by attracting e-bike users to utilize the bus system.<sup>247</sup> However, investments must be made to develop and provide safe storage options that would help people take the bus, especially with it being difficult to lift e-bikes (which are far heavier than traditional bikes) onto bus mounted bike racks.

In addition, the quality and type of e-bikes and e-bike accessories chosen for program inclusion is important. Crash risk is similar between Class 1 and Class 3; however, injury severity tends to be higher among Class 3 e-bikers.<sup>248</sup> To mitigate this, rebate programs often develop a list of eligible e-bikes, such

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<sup>244</sup> There is substantial research and general consensus regarding the need to repair and reconstruct infrastructure with a focus on climate change mitigation, resilience, equity, and safety for all users. In fact, such investments account for a substantial amount of available Infrastructure Investment and Jobs Act funds. Additionally, according to Asensio et al. (2022), "To accelerate the adoption of micromobility and achieve its associated sustainability benefits, we argue that cities will need to make additional investments in both physical and digital infrastructure. For physical infrastructure, land use and space allocation will require longer-term planning such as converting lanes usually reserved for cars into bike lanes that can be used for micromobility." Reference: Asensio, O.I., Apablaza, C.Z., Lawson, M.C. et al. (2022). "Impacts of micromobility on car displacement with evidence from a natural experiment and geofencing policy." *Nature Energy* 7, pp. 1100–1108. <https://doi.org/10.1038/s41560-022-01135-1>.

<sup>245</sup> National Transportation Safety Board. (2022, November 14). *Micromobility: Data Challenges Associated with Assessing the Prevalence and Risk of Electric Scooter and Electric Bicycle Fatalities and Injuries*. Safety Research Report SRR-22-01. <https://www.nts.gov/safety/safety-studies/Documents/SRR2201.pdf>. National Safety Council. (2018). *Position/Policy Statement Vulnerable Road Users NSC Policy/Position #147*. <https://www.nsc.org/getattachment/d5babee6-582d-4e66-804f-8d06f9b021a4/t-vulnerable-road-users-147>.

<sup>246</sup> Zhong Z, Lin Z, Li L, Wang X. (2022, April). "Risk Factors for Road-Traffic Injuries Associated with E-Bike: Case-Control and Case-Crossover Study." *Int J Environ Res Public Health*, 19(9). doi: 10.3390/ijerph19095186 ; Gitelman, Korchatov, and Carmel. (2022). "Safety-related behaviours of e-cyclists on urban streets." *Transportation Research Procedia*, 60, pp. 609–616. <https://doi.org/10.1016/j.trpro.2021.12.079>; Huang J, Song Z, Xie L, Lin Z, Li L. (2023 Mar 31). "Analysis of Risky Riding Behavior Characteristics of the Related Road Traffic Injuries of Electric Bicycle Riders." *Int J Environ Res Public Health*, 20(7). <https://doi.org/10.3390/ijerph20075352>

<sup>247</sup> Interview: Commute Seattle, 07/28/23

<sup>248</sup> According to U.S. Department of Transportation Federal Highway Administration's (2022) "[The Future of E-Bikes on Public Lands: How to Effectively Manage a Growing Trend](#)," while research suggests that crash risk is similar between Class 3 and Class 1 e-bikes, further research is necessary to study the difference in safety risks between e-

as the [State of Connecticut](#), and lending libraries that only offer certain e-bikes, such as [Vermont's Local Motion](#). To determine eligible e-bikes, jurisdictions or program administrators sometimes consult with local retailers. Eligibility should also consider local rules for e-bike usage in parks and on regional trails. As such, King County should follow legislative guidance ([RCW 46.61.710](#)) in determining eligible e-bike classes for any relevant pilot program; Including Class 3 e-bikes in a County rebate program would add additional complexities because they (1) have higher injury rates compared to Class 1 and Class 2 e-bikes and (2) are typically prohibited on shared-use paths by Washington Legislation.<sup>249</sup>

Additionally, promoting safe lithium battery and e-bike storage practices are recommended to reduce the risk of fires, particularly inside residential properties.<sup>250</sup> It is often the lower-quality e-bikes, which do not typically have liability insurance and are mostly available online, that have experienced safety issues such as battery fires.<sup>251</sup> Nevertheless, it is important to note that electric vehicle (EV) battery fires are far less common compared to gas combustion fires.<sup>252</sup> EV fires are also less common than e-bike fires due having a more advanced cooling and storage system. E-bike batteries are more exposed to the elements and lack the temperature regulators and manufacturer quality control<sup>253</sup> that protect electric car batteries; as such, even minor manufacturing flaws can lead to severe problems.<sup>254</sup> Mitigation includes arranging initial purchases through eligible local retailers only. Compiling a document of program approved e-bikes and e-bike accessory brands would also help participants better understand the market and make informed purchases in the future.

A final obstacle may be availability to low-income users. One interviewee suggested that e-bike retailers are frequently concentrated in wealthier neighborhoods; This leads to consumers purchasing substandard e-bikes online because they have limited local options.<sup>255</sup> Buyers are possibly purchasing inadequate e-bikes online due to lack of local vendors or expensive alternatives offered by local retailers. Mitigation strategies include arranging partnerships with local vendors to serve more distant customers.

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bike classifications. Specifically, research could examine whether the presence of a throttle on Class 2 e-bikes has an impact on safety for users.

<sup>249</sup> According to Washington State Legislature RCW 46.61.710 (which includes general requirements and operation of class 1 electric-assisted bicycles, class 2 electric-assisted bicycles, class 3 electric-assisted bicycles), "Class 3 electric-assisted bicycles may not be operated on a shared-use path, except where local jurisdictions may allow the use of class 3 electric-assisted bicycles." Additionally, "... class 1 and class 2 electric-assisted bicycles and motorized foot scooters may be operated on a shared-use path or any part of a highway designated for the use of bicycles, but local jurisdictions or state agencies may restrict or otherwise limit the access of electric-assisted bicycles..." For more information, see <https://app.leg.wa.gov/rcw/default.aspx?cite=46.61.710>.

<sup>250</sup> Nguyen, Nicole. (2023, July 30). "E-Bike Battery Fires Can Be Deadly. Here's How to Prevent One in Your Home." *The Wall Street Journal*. <https://www.wsj.com/articles/e-bike-scooter-battery-fire-safety-5db87ea6>.

<sup>251</sup> *ibid*.

<sup>252</sup> Doll, Scooter. (2022, January 12). "Government data show gasoline vehicles are up to 100x more prone to fires than EVs." *Electrek*. <https://electrek.co/2022/01/12/government-data-shows-gasoline-vehicles-are-significantly-more-prone-to-fires-than-evs/>.

<sup>253</sup> Any electric car battery replacement most likely takes place through an authorized service dealer or facility, whereas e-bike battery replacements do not tend to have the same level of quality control and consistent standards.

<sup>254</sup> Nguyen, Nicole. (2023, July 30). "E-Bike Battery Fires Can Be Deadly. Here's How to Prevent One in Your Home." *The Wall Street Journal*. <https://www.wsj.com/articles/e-bike-scooter-battery-fire-safety-5db87ea6>.

<sup>255</sup> Interview: Commute Seattle, 07/28/23

Infrastructure Risk	Mitigation Strategy
Lack of secure e-bike storage	<p><b>Mitigation Strategy #1:</b> Provide a list of recommended locks and storage accessories for participants.</p> <p><b>Mitigation Strategy #2:</b> Develop new and improved bicycle storage infrastructure for the public.</p> <p><b>Mitigation Strategy #3:</b> Bolster engagement in biking infrastructure advocacy and partnerships.</p>
Lack of official quality standards for e-bikes and e-bike accessories (e.g., batteries)	<p><b>Mitigation Strategy #1:</b> Determine the e-bike classes and brands that will be eligible for pilot participation. Recommend prohibiting Class 3 e-bikes from program eligibility. Develop a list of eligible brands (and retailers) with the assistance of retailers, CBOs, and other subject matter experts.</p>
Buyer possibly purchasing online due to inadequate access to local vendors or expensive alternatives offered by local retailers.	<p><b>Mitigation Strategy #1:</b> Arrange partnerships with local vendors to serve more distant customers.</p>

*Table 17: Infrastructure Risks and Mitigation Strategies*

### Safety Considerations and Opportunities

E-bike riders – like bicyclists, electric scooter riders, motorcyclists, and pedestrians – are considered vulnerable road users.<sup>256</sup> E-bikes have the potential for being involved in accidents, similar to standard bicycles. According to the Federal Lands Highway Research Study<sup>257</sup> however, the injuries with e-bikes tend to be more severe, involving older people, with a higher incidence of traumatic brain injury, even when noting that e-bikers tended to wear helmets more than bicyclists. Older riders are thought to have slower reaction times and less control over e-bikes and thus may require customized training to promote safe riding practices.

E-bikes are three times more likely to involve a pedestrian collision compared to pedal bicycles or powered scooters.<sup>258</sup> By various measures, the risks of serious injury and death rise sharply at 20 mph or

<sup>256</sup> According to the National Transportation Safety Board, “the term vulnerable road user refers to those travelers who lack an external structure to protect them when crashes occur. Vulnerable road users include pedestrians, bicyclists, motorcyclists, wheelchair users, and others that use an unenclosed means of transportation. Because vulnerable road users lack substantive protection, they are more likely to suffer a serious injury or even death” ([Safety Research Report SRR-22-01](#)).

<sup>257</sup> U.S. Department of Transportation Federal Highway Administration. (November 2022). "The Future of E-Bikes on Public Lands: How to Effectively Manage a Growing Trend." <https://highways.dot.gov/sites/fhwa.dot.gov/files/wfl-e-bike-final-report.pdf>

<sup>258</sup> DiMaggio CJ, Bukur M, Wall SP, Frangos SG, Wen AY. (2020, Dec). Injuries associated with electric-powered bikes and scooters: analysis of US consumer product data. *Inj Prev*, 26(6):524-528. doi: 10.1136/injuryprev-2019-043418; Huang, Jiayu, Ziyi Song, Linlin Xie, Zeting Lin, and Liping Li. 2023. "Analysis of Risky Riding Behavior Characteristics of the Related Road Traffic Injuries of Electric Bicycle Riders" *International Journal of Environmental Research and Public Health* 20, no. 7: 5352. <https://doi.org/10.3390/ijerph20075352>.

faster, particularly between cars and pedestrians. Emerging research indicates that Class 1 e-bikes, which travel marginally faster than regular bikes and are capped at 20 mph, have slightly more injury severity than regular bike injuries, while Class 3 e-bikes, which travel twice as fast as regular bikes and can obtain speeds of 28 mph, have slightly higher rates of injury than Class 1. The conditions which lead to injury include slippery roads, riding too quickly for one's ability to control the bike in changing conditions, and inability to keep one's balance. Illegal turning, speeding, running red lights, and riding against the law of traffic all contribute to e-bike crashes.<sup>259</sup>

Research into bike safety on public land is translatable to general e-bike safety interventions: demonstrations of safe practice, peer communication at bike shops and signage at outdoor trails/roadways, and instruction on safe, courteous, and reasonable bike use is essential for e-bike users of all ages.<sup>260</sup>

Finally, an additional incentive is recommended to encourage purchase of safety accessories (e.g., lights, helmets, high visibility vests) particularly in the case of family bikes and safety straps for small children. A risk mitigation strategy to target safe riding habits would be to incentivize helmet wearing<sup>261</sup> through extra rebate funding for qualifying equipment.

Safety Risk	Mitigation Strategy
Risk of injuries and accidents to e-bike riders, pedestrians, and other individuals.	<p><b>Mitigation Strategy #1:</b> Require safety education for each new participant, encourage safety accessory purchases, and develop a user safety contract for participants.</p> <p><b>Mitigation Strategy #2:</b> Restrict e-bike eligibility to only Class 1 and Class 2 e-bikes, which have speeds capped at 20 mph. Exclude Class 3 e-bikes from pilot program eligibility because they can obtain speeds of up to 28 mph.</p> <p><b>Mitigation Strategy #3:</b> Provide an additional incentive to encourage purchase of safety accessories (e.g., lights, helmets, high visibility vests), particularly in the case of family bikes and safety straps for small children.</p>

*Table 18: Safety Risk and Mitigation Strategies Highlight*

### Adoption

#### Education: Awareness, Knowledge, and Experience Factors

According to Colorado's e-bike CanDo Pilot Program findings, the initial lack of public understanding about e-bikes (what they are, how they can be used, etc.) is a barrier to e-bike program success. Colorado mitigates this risk by working with community partners to conduct widespread education,

<sup>259</sup> Huang J, Song Z, Xie L, Lin Z, Li L. (2023 Mar 31). "Analysis of Risky Riding Behavior Characteristics of the Related Road Traffic Injuries of Electric Bicycle Riders." *Int J Environ Res Public Health*, 20(7).

<https://doi.org/10.3390/ijerph20075352>

<sup>260</sup> <https://highways.dot.gov/sites/fhwa.dot.gov/files/wfl-e-bike-final-report.pdf>

<sup>261</sup> Helmet usage helps prevent serious brain and facial injuries.



particularly in under-reached neighborhoods. Eventually, the program became so popular that additional educational outreach was no longer required as a means to generate interest in incentives.

Risk mitigation may require an initial level of instruction and education for new e-bike owners or lendees about how to operate an e-bike. For example, Berkeley’s loan-to-own program required strict ownership participation in e-bike safety classes, shared monthly odometer readings, records of maintenance with the non-profit administrator (Waterside Workshops), and completion of several surveys.<sup>262</sup>

Education and Knowledge Risk	Mitigation Strategy
<p><b>Lack of public understanding about e-bikes.</b> This includes the initial instruction on how to ride an e-bike as well as education about general safety and operations.</p>	<p><b>Mitigation Strategy #1:</b> Work with local retailers and CBOs to educate program participants and conduct community outreach.<sup>263</sup></p> <p><b>Mitigation Strategy #2:</b> Develop an e-bike education curriculum required for program participants or leverage existing resources.</p> <p><b>Mitigation Strategy #3:</b> Allow CBOs to submit unique proposals for education plans as part of the RFP process</p>

Table 19: Education and Knowledge Risk and Mitigation Highlight

[Biking Culture: The Intersectionality Between Equity and Normalizing Mainstream E-Bike Utilization](#) Research and interviews with local advocacy groups reaffirmed the barrier of biking culture,<sup>264</sup> specifically in getting more e-bikes on the road. Many communities are not familiar with bicycling in general, or do not have the resources to integrate biking into daily routines; thus, lack of knowledge and familiarity<sup>265</sup> with e-bikes adds an even larger barrier to the adoption of e-bikes and e-bike programs.

This research team has come to understand two distinct elements that underpin the umbrella term “biking culture” and that are woven throughout the conversation related to e-bike adoption:

<sup>262</sup> Interview: Cummings, 2023

<sup>263</sup> For example: Fyhri, Heinen, Fearnley, and Sundfør’s (2017) research suggests that “people are unaware of benefits associated with e-bikes.... spread of knowledge and letting people try an e-bike can be an effective strategy to get more people to buy them, and subsequently to get more people to use bicycles on their daily travels.”

Reference: Fyhri, Aslak; Heinen, Eva; Fearnley, Nils; Sundfør, Hanne Beate. (2017). “A push to cycling—exploring the e-bike’s role in overcoming barriers to bicycle use with a survey and an intervention study.” *International Journal of Sustainable Transportation*, 11(9), pp. 681-695. <https://doi.org/10.1080/15568318.2017.1302526>.

<sup>264</sup> At a high level, in this report, biking culture can be characterized as the use of bicycles for transportation, sport, or leisure purposes where individuals feel comfortable using a bike in their daily lives. Biking culture can be facilitated through biking groups or clubs, prevalent biking infrastructure and urban planning that prioritizes biking, and cycling initiatives. Pursuing equity and overcoming car-dominant society are critical elements of improving e-bike adoption in the region. See this report: *Biking Culture: Equity and Normalizing Mainstream E-Bike Utilization Historical Considerations*, for more information.

<sup>265</sup> This includes potentially not growing up riding bikes and/or knowing anyone else who already bikes.

- Increasing racial, gender, and disability equity in the American bicycling community.
- Normalizing alternative, and electric vehicle, transportation options to help move beyond the car-dominant culture in the U.S that has often historically prioritized planning communities around vehicles.

Studies have also found that women and racial minorities are underrepresented in biking communities.<sup>266</sup> In considering representation in bicycling among different racial groups, the biking space in America has predominately been dominated by white, male, affluent riders. This is a consistent demographic throughout the history of American biking, beginning in the 1890s when biking gained popularity.<sup>267</sup> Participants in one survey conducted in Portland, Oregon conveyed that biking in public spaces caused feelings of anxiety around experiencing racism and racial profiling, harassment, and discrimination. Participants also highlighted discrimination issues within bike shops and the general biking community. These concerns are relevant to the larger biking community and present barriers to increasing e-bike adoption within communities of color and among women. Interventions, such as increasing safety measures like bike lanes and street lighting, providing education, and training programs can help address some concerns.<sup>268</sup> An additional concern raised by women is related to the inability to transport children on bikes.<sup>269</sup> E-bikes, and specifically e-cargo bikes, have the potential to reduce this barrier in the cycling community, however this will also require raising awareness and in-depth education about how to safely use an e-bike and secure children’s seats. Participants (n=7,600) from the 2022 Washington Department of Natural Resources and Washington Department of Fish and Wildlife survey also indicated the need for more clear public information and education about e-bikes and their use on trails.<sup>270</sup>

Experts stressed that biking culture should not be discounted and rather needs to be strongly considered in any biking or e-bike program. Raising awareness through local community partnerships was identified that a key strategy to mitigate concerns and promote more equitable access to the biking community.

Pursing Equity and Normalizing E-Bike Utilization	Mitigation Strategy
<ul style="list-style-type: none"> <li>• Many communities are unfamiliar with biking, or do not have the resources to integrate biking into</li> </ul>	<p><b>Mitigation Strategy #1:</b> Strategic community-based outreach to low-income and/or historically underrepresented populations to increase adoption</p>

<sup>266</sup> USA Cycling Demographics Survey 2020 Results. (2020). *USA Cycling*. <https://s3.amazonaws.com/usac-craft-uploads-production/documents/Demographics-Report-2020.pdf>

<sup>267</sup> Cardon, Nathan. (2021, November 16). American Cycling Has a Racism Problem. *The Washington Post*. <https://www.washingtonpost.com/outlook/2021/11/16/american-cycling-has-racism-problem/>

<sup>268</sup> Barriers to Biking for Women and Minorities. (2017, May). *National Institute for Transportation and Communities*. [https://ppms.trec.pdx.edu/media/project\\_files/Friedly\\_994\\_Marginalized\\_Cyclists.pdf](https://ppms.trec.pdx.edu/media/project_files/Friedly_994_Marginalized_Cyclists.pdf)

<sup>269</sup> Lubitow, A. (2017, May). Narratives of Marginalized Cyclists: Understanding Obstacles to Utilitarian Cycling Among Women and Minorities in Portland, OR. *National Institute for Transportation and Communities*. [https://ppms.trec.pdx.edu/media/project\\_files/NITC\\_994\\_Narratives\\_of\\_Marginalized\\_Cyclists.pdf](https://ppms.trec.pdx.edu/media/project_files/NITC_994_Narratives_of_Marginalized_Cyclists.pdf).

<sup>270</sup> E-Bike Use on DNR- and WDFW-Managed Lands. (2022, September 30). *Washington Department of Fish and Wildlife*. <https://wdfw.wa.gov/sites/default/files/publications/02340/wdfw02340.pdf>.

<p>daily routines. Studies have shown that women and people of color are underrepresented in biking communities.</p> <ul style="list-style-type: none"> <li>• Lack of awareness or trust in the biking community. Lack of knowledge or familiarity with biking terminology, routes, maintenance, and general best practices.</li> <li>• Overcoming infrastructure barriers related to alternative modes of transportation.</li> </ul>	<p>and advocacy that promotes safe biking infrastructure.</p> <p><b>Mitigation Strategy #2:</b> Partner with or engage local bike advocacy groups to host customized e-bike workshops or related activities in low-income and/or historically underrepresented communities.</p> <p><b>Mitigation Strategy #3:</b> Connect individuals/participants with local biking organizations and retail shops. Raise awareness of e-bike program through local community partnerships. Consider creating community e-bike role models or local ambassadors.</p>
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*Table 20: Improving Equity and Normalizing Alternative Transportation Risk and Mitigation Strategies Highlight*

*Program Management and Administration Considerations*

Programmatic goal setting is critical, according to the Transportation Research and Education Center; if the goal is to reduce climate change, parking, or urban congestion, then a program would want to incentivize a general population. This research is proposing that King County incorporate the goal of making low-cost transportation, such as e-bikes, available to low-income individuals as a method of supporting equitable adoption and transportation alternative. Pilot program process design needs to reflect the issues relevant to the communities they are nested within. In addition, these programs are notoriously oversubscribed by the public. Goal clarity and scale are important for making sure the public’s expectations for this program are clear. From a customer service perspective this clarity can help prevent citizens who have limited or neutral feelings toward government from turning negative if they are unable to access this program.

One vital governmental role involves how to ensure that the disenfranchised, moderate to low-income individuals, or those who live in transportation deserts have equitable access to e-bikes. In order to advance transportation justice, it is important to create equal and equitable access for all people to receive the transportation they need in a way that is affordable, reliable, safe, and connected.<sup>271</sup> Only 25 percent of current government-based e-bike programs have identified low-income status as a component of eligibility. The California Air Resources Board, which administers their state e-bike rebate program, has set the criteria for voucher incentives to prioritize consumers who have a household income at or below 300 percent of Federal Poverty Level (FPL). Additionally, consumers who have a household income at or below 225 percent of FPL, or residents of a low-income or disadvantaged community will receive extra funding towards the purchase of an eligible e-bike. The Colorado CBO multi-community approach, which tailored a lending library to the specific needs of unique community issues, would seem a useful option for King County as well.

<sup>271</sup> Leahy, A., Dartnell, C., & Gross, N. (2023) Equitably Entering the E-Bike Era. <https://www.kittelson.com/ideas/equitably-entering-the-e-bike-era/>

Externally, new partnerships, outreach, and forms of revenue may be required to overcome agency constraints in the development of e-bike programs.<sup>272</sup> Broad public and private networking to identify funding coalitions, for example, may be required; campaigns to shift the current view that e-bikes are more for entertainment than serious methods for commuting, general transportation, and reducing greenhouse gas emissions may also be needed. For example, Colorado hired six coaches to conduct outreach in different parts of the state. Quality data collection is also required to assure demographics, redemption rates based on geography, manufacturer and retail data, and other components of the process are on point with targets and program expectations. This role is potentially part of the program administration duties and/or is contracted through local learning institutions as part of larger program evaluation efforts.

Internally, cross-department planning for e-bike program would be useful. The King County Office of Climate is uniquely positioned to convene an interdepartmental team to support program design elements and help with risk mitigation. This office also has the necessary community connections to build a network for co-creating a successful program that matches the local context.

<b>Program Planning and Management Risks</b>	<b>Mitigation Strategy</b>
Goal of e-bike pilot program unclear and too broad.	<b>Mitigation Strategy:</b> Define primary population recipients and program targets clearly, establishing evaluation criteria and measurement processes, funding, and outreach tactics based on needs assessments.
Internal agency silos can slow progress towards program development and implementation.	<b>Mitigation Strategy:</b> Adopt agency wide goal and inter-departmental team to resolve internal obstacles. The King County Office of Climate is in a position to lead this type of effort.
Potential weak community buy-in and partnerships	<b>Mitigation Strategy:</b> Establish needs assessment, community and business outreach, and coalition options.

*Table 21: Program Manager and Administrative Management Risks and Mitigation Strategies*

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<sup>272</sup> The City of Berkeley Ride-to-Own program that is implemented by Waterside Workshop is the closest model of partnering with a philanthropic organization located in this research.

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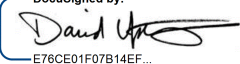
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You may contact us to let us know of your changes as to how we may contact you electronically, to request paper copies of certain information from us, and to withdraw your prior consent to receive notices and disclosures electronically as follows:

To contact us by email send messages to: [cipriano.dacanay@kingcounty.gov](mailto:cipriano.dacanay@kingcounty.gov)

### **To advise King County-Department of 02 of your new email address**

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- i. decline to sign a document from within your signing session, and on the subsequent page, select the check-box indicating you wish to withdraw your consent, or you may;
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- Until or unless you notify King County-Department of 02 as described above, you consent to receive exclusively through electronic means all notices, disclosures, authorizations, acknowledgements, and other documents that are required to be provided or made available to you by King County-Department of 02 during the course of your relationship with King County-Department of 02.