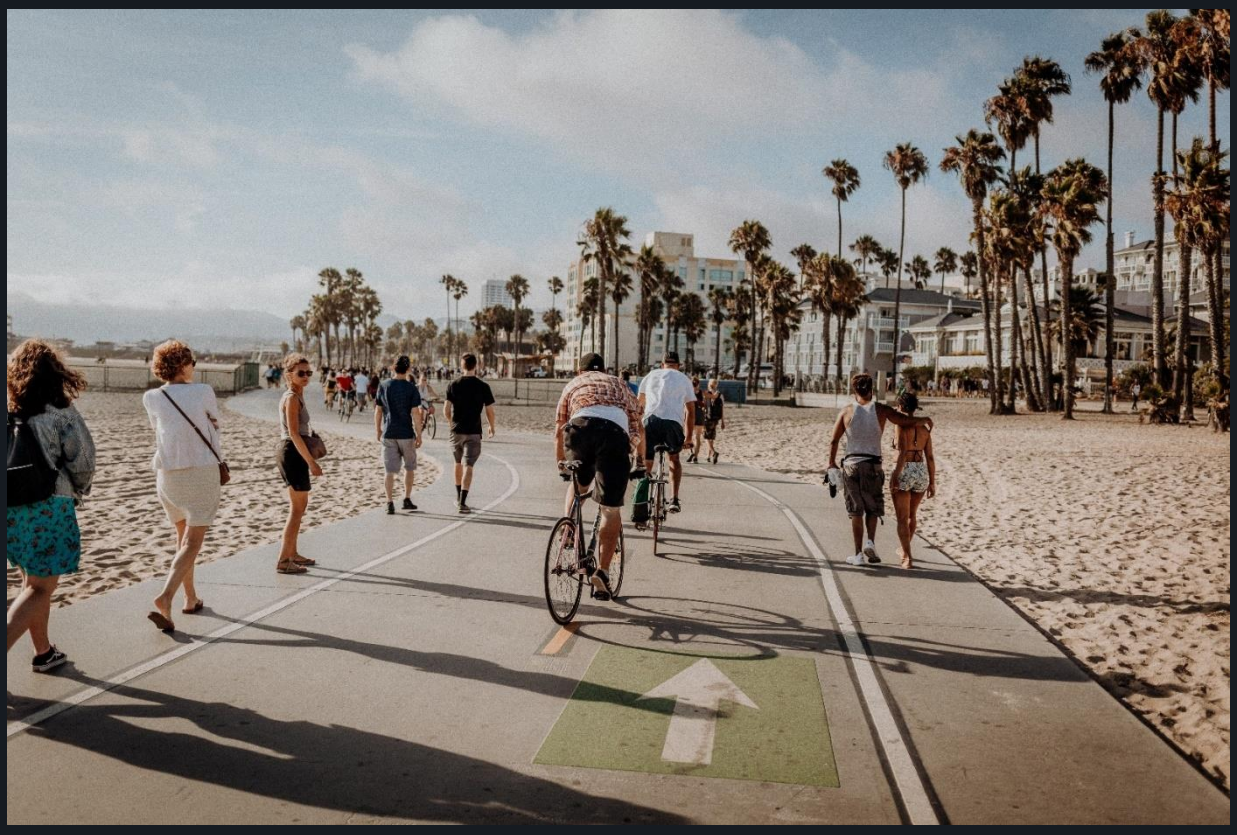
Sustainable Financing Tools and Strategies for Equitable, Community-Based Mobility and Transportation Solutions



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White Paper

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Sustainable Financing Tools and Strategies for Equitable, Community-Based Mobility and Transportation Solutions

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1 Abstract

The California Air Resources Board (CARB) leads the state of California's efforts to reduce air pollution and greenhouse gas emissions in response to the global climate crisis. As part of their mission, CARB provides funding to shared mobility programs that offer zero-emission and near-zero emission mobility options to disadvantaged and low-income communities throughout the state, helping to advance California's ambitious climate initiatives while addressing critical barriers to access for disadvantaged users. These shared mobility programs, however, encounter an array of unique funding challenges: user fees and revenues often may not fully cover operating and capital costs and many programs struggle to attract private finance. As a result, state funding sources are not sufficient to provide communities with means to implement complex, long-term projects.

This study evaluated 30 innovative funding and financing tools and strategies, drawn from the transportation and other sectors, as possible solutions to CARB-specific use cases. The evaluation demonstrated that contextual factors strongly influence the success of funding and financing strategies, but there is no one-size-fits-all solution. Shared mobility programs need to employ a combination of strategies to achieve long-term sustainability, close funding gaps, and lower overall project risks making investment more attractive to private financiers.

Governments and agencies, like CARB, should explore policy measures that offer long-term funding sources and opportunities to package these programs within broader transportation measures that have dedicated funding sources. CARB can support these efforts by using grant programs to cover expensive capital costs, demonstrate proof of concept, and mitigate project risks making programs more attractive to private investors. Overall, shared mobility programs that serve rural and low-income communities deliver economic, health and social benefits beyond their direct users that should be reflected in funding contributions from both the public and private sector.

Table 1-1 Summary of Funding and Financing Strategies

Strategy	Category (Sub-Category)	Cost to Implement Strategy	Types of Costs Covered by Strategy	Length of Time Costs Can Be Covered	Ability to Support Non-Revenue Generating Programs	Purpose of Funding / Financing	Key Partners
Community Benefits Agreements	Policies / Public Initiatives (Developer-targeted Initiatives)	High	Capital, Operating	Varies	Yes	New Source of Funds	Local Government, Local Agencies
Development Impact Fees (Mobility Fees)	Policies / Public Initiatives (Developer-targeted Initiatives)	Low	Capital, Operating	Continuous	Yes	New Source of Funds	Local Government
Low Carbon Fuel Standard (LCFS) Holdback Credits	Policies / Public Initiatives (CARB Policy)	High	Varies	Continuous	Yes	New Source of Funds	CARB
Local Transportation Sales Tax Measures (e.g.., Half-cent sales tax)	Policies / Public Initiatives (Tax Policies)	High	Capital, Operating	Continuous	Yes	New Source of Funds	Local Government
Qualified Opportunity Fund (Tax Incentives)	Policies / Public Initiatives (Tax Policies)	Low	Capital, Operating	Varies	No	New Source of Funds	Various
Regulation Credits/Incentives for Private Investment	Policies / Public Initiatives (CARB Policy)	High	Capital	Varies	Yes	New Source of Funds	Public Agencies

Strategy	Category (Sub-Category)	Cost to Implement Strategy	Types of Costs Covered by Strategy	Length of Time Costs Can Be Covered	Ability to Support Non-Revenue Generating Programs	Purpose of Funding / Financing	Key Partners
Tax Increment Financing (TIF), Enhanced Infrastructure Financing Districts (EIFD)	Policies / Public Initiatives (Tax Policies)	High	Capital, Operating	Continuous	Yes	New Source of Funds	Local Governments, Agencies
Transportation/ Road Pricing	Policies / Public Initiatives (Tax Policies)	High	Capital	Varies	Yes	New Source of Funds	Local or Regional Governments
VMT-based Impact Fees, Mitigation Banks, Mitigation Exchanges	Policies / Public Initiatives (Developer-targeted Initiatives)	High	Capital, Operating	Varies	Yes	New Source of Funds	Local Governments
Bundled Transit, Employer-Based Programs, Other	Operating Model-Based Strategies (Revenue Strategies)	Medium	Operating	Continuous	No	New Source of Funds	Employers, Transportation Agency, Transportation Management Associations, Business Improvement Districts
Cooperatively Owned: Community Owned	Operating Model-Based Strategies (Governance Strategies)	Medium	Capital, Operating	Continuous	No	Cost Savings, Risk Sharing	Various
Cooperatively Owned: Worker-Owned	Operating Model-Based Strategies (Governance Strategies)	Low	Capital, Operating	Continuous	No	Cost Savings, Risk Sharing	Mobility Service Employees

Strategy	Category (Sub-Category)	Cost to Implement Strategy	Types of Costs Covered by Strategy	Length of Time Costs Can Be Covered	Ability to Support Non-Revenue Generating Programs	Purpose of Funding / Financing	Key Partners
Corporate Sponsorship	Operating Model-Based Strategies (Revenue Strategies)	Low	Capital, Operating	Varies	Yes	New Source of Funds	Private Companies
Licensing Agreements	Operating Model-Based Strategies (Revenue Strategies)	Low	Operating	Varies	Yes	New Source of Funds	Various Public and Private Entities
Community Choice Aggregators	Utility-Based Strategies (Utility)	Low	Operating	Varies	Yes	New Source of Capital Funds	Local Governments
Power Utility Companies - Privately-Owned	Utility-Based Strategies (Utility)	Medium	Capital	Varies	Varies	New Source of Capital Funds	Private Utilities
Power Utility Companies - Publicly-Owned	Utility-Based Strategies (Utility)	Medium	Capital	Varies	Yes	New Source of Capital Funds	Public Utilities
Community Development Financial Institution	Financing (Microfinancing)	Medium	Capital, Operating	Varies	Varies	Delay Funding Need	Financial Institutions
Green Banks	Financing (Concessional Financing)	High	Capital	Varies	No	Lower Finance Cost	Financial Institutions
Green Bonds	Financing (Concessional Financing)	Medium	Capital	Limited	No	Lower Finance Cost	Financial Institutions

Strategy	Category (Sub-Category)	Cost to Implement Strategy	Types of Costs Covered by Strategy	Length of Time Costs Can Be Covered	Ability to Support Non-Revenue Generating Programs	Purpose of Funding / Financing	Key Partners
Outcomes-Based Contract	Financing (Concessional Financing)	Low	Capital, Operating	Limited	Varies	Performance-Based Contract	Lender (Financial Institution, Government, Agency)
Private Debt Financing with First Loss/Loss Reserves	Financing (Credit Enhancement)	Medium	Capital	Varies	No	Leverage Public Funds	Government, Agency
Private Debt Financing: Co-op Finance/Group Lending/Grameen Bank (Bangladesh)	Financing (Microfinancing)	Low	Capital, Operating	Limited	No	Lower Finance Cost	Government, Agency, Financial Institution
Public-Private Partnership Financing	Financing (Partnerships)	High	Capital, Operating	Varies	Varies	Delay Funding Need	Private Company/ Operator
Revolving Loan Fund	Financing (Credit Enhancement)	Medium	Capital	Continuous	No	Delay Funding Need	Utilities, Governments

2 Executive Summary

Background

The California Air Resources Board (CARB) sets regulations, provides funding, and develops programs to help the state of California meet targets for greenhouse gas emissions reductions required to achieve an ambitious set of goals in response to the global climate crisis. Many of these programs are funded through California Climate Investments (CCI), a statewide initiative that allocates billions of Cap-and-Trade auction proceeds to reduce greenhouse gas emissions, strengthen the economy, and improve public health and the environment in disadvantaged communities. The Sustainable Transportation Equity Program (STEP), Clean Mobility Options Voucher Pilot Program (CMO) and other grant programs provide funding for shared mobility programs that serve disadvantaged and low-income communities helping to overcome barriers to access clean mobility options in historically disadvantaged areas throughout California. Many of these programs, however, struggle to secure sustained non-grant funding sources. This white paper provides a review of innovative funding and financing tools and strategies to help CARB and other state agencies, program managers, local communities and community-based organizations identify potential tools and strategies that can fund or supplement state funding for these mobility programs, given the high degree of demonstrated need for them and the limited nature of California state funding.

Objectives and Methods

The purpose of this white paper is to explore, identify and assess innovative funding tools and strategies from the transportation sector and other sectors that could support and sustain zero and near-zero emission, shared mobility programs to close funding gaps, increase commercial viability, and meet community need for critical mobility services. The goals of the research are to understand the tools and strategies with the most promise for delivering long-term impact across different contexts and the key factors involved in the successful application of those strategies. The shared mobility services considered in this white paper include carshare, carpool and vanpool, micromobility (bikeshare and-scooters), and microtransit (on-demand transit).

The research team initiated the project by identifying a long list of shared mobility programs for best practice research. In alignment with CARB's clean mobility investments objectives, all the identified programs offer a zero or near-zero emission service located in a disadvantaged or low-income community. This included examples within California, across the United States, and abroad. In collaboration with CARB and key stakeholders, the research team refined the list of use cases that informed the next phases of the project, helping to identify both specific strategies to be analyzed during the evaluation and providing valuable context for how those strategies could be deployed by CARB funded programs going forward. As part of this process, the team conducted five interviews with program administrators to understand the specific challenges and opportunities these programs encountered serving rural and low-income communities. The information gathered was compiled into several use cases.

Building on this, the research team developed a long list of funding and financing mechanisms to be considered, drawing from strategies already used in the transportation sector as well as innovative methods from other sectors such as economic development, healthcare, and energy. The list of strategies was refined and structured into categories related to operating models, financing, public policy initiatives, and utilities. In collaboration with CARB and key

stakeholders, the research team designed an evaluation framework with 26 criteria to assess performance of each strategy such as scalability, flexibility, costs, benefits, and other important factors that influence successful program outcomes. Each criterion had a ranking of low (1) to high risk (3), which served to flag the degree of challenges associated with the strategy. The strategies with the fewest challenges were generally considered the most broadly applicable. A high score does not mean the strategy is not without merit, but it does indicate that certain measures should be used to maximize the benefits of that strategy.

Results

The evaluation determined that there are no "best" strategies that perform well across all use cases; instead, combinations of multiple strategies will be necessary to address current funding challenges. These should be applied to different areas of need based on local demographics, density (e.g., rural, suburban, urban), governance, economy, and other contextual factors. Importantly, financing strategies alone are unlikely to succeed in low-income and disadvantaged communities without additional direct funding strategies other than user revenue as they rely on the service becoming financially self-sustaining/profit making in the future. Other important considerations include the timing of the strategy implementation within the lifecycle of the project (development stage, operating stage, expansion stage) and the purpose or need for the funding (e.g., to build supportive infrastructure, or cover up front capital costs). Additionally, strategies should be adaptable and right-sized to changes in technology, demand, community context, and program objectives.

Conclusions

Based on the results of the analysis, shared mobility programs should seek first to address funding gaps by supplementing grant sources with other sources. Policy measures, such as tax policies, developer fees, and VMT-mitigation fees, that are linked to broader transportation investments have the potential to deliver sustained funding sources, but do require collaboration among program administrators, local governments, and agencies to be successful. Shared mobility programs that help low-income and disadvantaged communities access clean mobility options offer direct benefits to users as well as indirect benefits to local governments and businesses. Indirect beneficiaries can support these programs through various policy mechanisms aimed at the local and regional level. CARB can play an important role in advancing these approaches by using grant funds to demonstrate proof of concept, cover expensive capital costs early in the project lifecycle, and minimize risk to the private sector thereby encouraging more private investment. Grant funding should be prioritized for programs that have the greatest viability for long-term success, and technical support to ensure grantees are able to deliver on their desired outcomes is necessary.

3 Introduction

Background

The State of California has set ambitious climate goals to reduce greenhouse gas emissions by more than 70 percent and reach carbon neutrality by 2045.[1] This target can only be achieved with significant emissions reductions in the transportation sector, which accounted for 50 percent of total state emissions in 2019.[2]

The California Air Resources Board (CARB) is responsible for leading the state's efforts to reduce air pollution and fight climate change with regulations and programs aimed at reducing vehicle miles traveled, single occupancy vehicle use, and reducing greenhouse gas emissions. In addition, CARB recognizes that many California residents face barriers to accessing clean mobility options. Shared mobility services in general represent an emerging market and without proven business models the private sector has been reluctant to fund or finance mobility programs in low-income, disadvantaged, and rural communities[3]. These communities often lack density and a population of users that can support the cost burden of some shared mobility services that perform better in dense areas (e.g., micromobility), making them financially unattractive for traditional private business models.[4]

The CARB Sustainable Transportation Equity Projects (STEP) and Clean Mobility Options Voucher Pilot Program (CMO) programs are competitive grant programs aimed at addressing these disparities by funding zero- and near-zero emission mobility programs that serve low-income and disadvantaged communities. These programs, however, are heavily oversubscribed. Present grant funding sources cannot meet the demand. In addition, even programs that do receive initial grant funding struggle to sustain funding beyond an initial pilot period. Table 3-1 presents an overview of challenges to be explored further in the evaluation.

Table 3-1 Summary of Funding Problems Encountered by Shared Mobility Programs

Funding Problems	
Limited Grant Funds	• Funding need greatly exceeds available grant funding sources, and state funding sources alone do not provide communities with the continuity and level of flexibility they need to implement complex, long-term projects. • CARB's community-based programs including the Clean Mobility Options Voucher Pilot Program (CMO) and the Sustainable Transportation Equity Project (STEP) are significantly oversubscribed.

[1] https://ww2.arb.ca.gov/news/california-releases-final-2022-climate-scoping-plan-proposal

[2] https://ww2.arb.ca.gov/sites/default/files/2022-12/2022-sp.pdf (page 201)

[3] https://livingcities.org/wp-content/uploads/2021/03/Executive-Summary_-Can-Shared-Mobility-Help-Low-Income-People-Access-Opportunity_.pdf

[4] "Financing Mechanisms for Sustainable Mobility", World Business Council for Sustainable Development, Sustainable Mobility Project 2.0 (SMP2.0), 2015.

Funding Problems	
Managing Cost Burden to Users	• Shared mobility programs that serve low-income communities cannot easily transfer the cost burden to users or implement business models that private companies use in other markets. Affordability is often a critical component of the service. • Community-based mobility initiatives may involve complex arrangements among multiple partners, including non-profits, private companies, local governments, and other agencies to acquire assets and implement the program. Any of these parties may be grant recipients, which may create challenges directing the benefits of those grants to targeted user groups.
Barriers to Private Finance	• Shared mobility programs in low-income and disadvantaged communities face substantial barriers in access to private finance. • Rural areas have unique challenges that could limit potential financing and funding sources, including a lack of a dense user base and governance structures that may limit public revenue collection avenues and private sector interest.

Goals and Objectives of the Study

The purpose of this research is to review, identify, and assess existing and possible future financing tools and strategies for creating, supporting, and sustaining projects and programs that provide zero and near-zero emission and community-scale mobility solutions to residents living in low-income and disadvantaged communities throughout California. The shared mobility services considered in this study include carshare, carpool and vanpool, micromobility (bikeshare and-scooters), and microtransit (on-demand transit).

This white paper is intended to help CARB and other state agencies, local communities and community-based organizations identify potential tools and strategies that can fund or supplement state funding for these mobility projects, given the high degree of demonstrated need for them and the limited, uncertain nature of California state funding.

This white paper considers existing financing tools that have been applied to community-scale mobility projects in low-income and disadvantaged areas and also explores new opportunities for funding and financing strategies from other sectors not yet applied to mobility project contexts.

4 Methods

Overview

This research was designed to explore existing conditions, focus on the challenges of providing sustainable support for mobility programs, and deliver implementable recommendations for funding and financing solutions that can scale and adapt to the mobility program needs of different communities.

Project Approach

Identify challenges and best practice approaches to funding and financing

In the first phase of the project, the research team developed a long list of shared mobility programs for best practice research. A stakeholder working group consisting of CARB staff and external agencies worked with the research team to select and interview five use cases. Programs selected for research and interviewed (Table 4-1) all employed non-grant funding sources, often paired with grant funds, to cover capital and operating costs. The research team conducted five semi-structured interviews with senior program administrators to understand the operation and financial structures of these programs with a focus on:

- Identification of best practices of shared mobility services funded by sources other than direct grants;
- Potential for selected shared mobility services to connect with low-income and disadvantaged communities; and
- Perspectives on how specific funding and financing mechanisms could be deployed to support community mobility options in a context sensitive manner.

Table 4-1 Programs Reviewed for Use Cases

Program Name	Mode Type	Fleet Fuel Type	Funding Structure
AcoTÉ	Carpooling	Conventional and electric mix	Co-funded model (CEE funds)
Miocar	Carsharing (round trip)	Electric	Public co-funding
StratosShare	Carsharing (round trip)	Hydrogen	Business-to-consumer
Nice Ride	Micromobility (hybrid docked/dockless)	Pedal and electric mix	Public co-funding
Green Raiteros	Ridesharing	Electric	Public co-funding
CARTS (Capital Area Rural Transportation System)	Microtransit (ADA)	Electric	Public co-funding
Indigenous Clean Energy - Charge Up	EV infrastructure development	Electric	Public co-funding, Public-Private partnership
Modo	Carsharing (round trip)	Conventional and electric mix	Cooperatively owned
BATA Link On-Demand Pilot	Microtransit (ADA)	Conventional	Public co-funding

Program Name	Mode Type	Fleet Fuel Type	Funding Structure
The Drivers Cooperative	Ridesharing	Conventional and electric mix (most likely)	Worker-owned

Table 4-2 Programs Selected for Interviews

Program Name and Location	Mode/Role	Description	Funding Sources
Drivers Cooperative, New York City, NY	Ridesharing	The Driver's Cooperative is worker owned ridesharing cooperative that provides non-taxi, non-unionized for-hire vehicle trips. It was started as a response to the lower compensation that drivers working for major rideshare companies receive, and the lack of input drivers had in the operations and judicial procedures of these major companies.	Operating costs supported by user fees and mission-oriented crowdfunding (wefunder.com/driverscoop). The worker cooperative governance structure enables drivers to earn higher hourly wages while keeping the overall commission lower than other ride-sharing apps, making it more affordable to users.
Electric Cab of North America, Bastrop, TX	Microtransit (ADA)	Electric Cab of North America (ECNA) is a micro transit service that deploys low-speed electric shuttles in Austin and Dallas, Texas. This case study focuses on an expansion of service to Bastrop, a rural town of less than 10,000 people southeast of Austin. The operator intended to demonstrate the program for low-speed electric shuttles in a rural city with sufficient density to support a commercial center. The program launched in January 2021 with service budgeted on its grant through November 2022. The initial fleet included one ADA-adapted and one non-ADA eCab.	Privately operated with public grant support. The eCabs program in Bastrop was made possible through funding agreements and partnerships between eCab, CARTS, Lone Star Clean Fuels Alliance, the Texas Department of Transportation, and the U.S. Department of Energy. Although currently supported by a DOE grant and limited user revenue, it intends to contract with the City of Bastrop and other rural communities. Evidence of the initial program's success through ridership data and community feedback has enabled the development of these public-sector contracts.
Miocar, San Joaquin Valley	Carsharing (round trip)	Miocar provides electric (or hybrid) shared mobility options targeted towards low-income Latino farmworkers that may not have reliable access to a personal vehicle. One of its main objectives is ensuring that that the program is accessible to all community members, regardless of immigration status, language skills, familiarity with EVs, or	Received in-kind services and support from partners such as CA Vanpool Authority, EV infrastructure providers, and community development/housing organizations. Supplements some costs through revenue earned from user fees. Currently seeking a partnership with a private entity to help with vehicle operation and maintenance and seeking EV

Program Name and Location	Mode/Role	Description	Funding Sources
		income levels. Community ownership and input is also important, as indicated by the program's bylaws that require majority board participation to come from riders and the process of utilizing input from community member focus groups to develop the program's name, fare structure, and operating structure.	infrastructure grants to assist with EV expansion.
Nice Ride, Minneapolis, MN	Micromobility (hybrid docked/ dockless bikeshare)	Nice Ride is a bikeshare program located in Minnesota that strives to offer affordable, accessible, and fun transportation options to any user regardless of income. Its main equity program, Nice Ride for All, allows those who qualify for certain state or federal assistance programs to receive discounted rides.	Began as a public-private partnership funded in part by federal grants and corporate sponsor and was acquired by Lyft. User revenue supported a significant portion of operating costs but was never sufficient to fully cover such costs.
Indigenous Clean Energy: Charge Up, Canada	EV infrastructure development	Founded in 2016 as a "Facebook for Indigenous clean energy projects" and formalized as an organization in 2018, ICE programs are intended to build workforce capacity and local revenue sources for renewable energy projects. ICE's ChargeUp program was launched in March 2022 with the goal of expanding EV charging infrastructure to Indigenous communities, building a "national Indigenous electric highway." ChargeUp supports the expansion of EV infrastructure by funding up to 50% of the cost of the project, with the remainder funded by the host community.	The initial grant that launched this program came from Natural Resources Canada (NRCan), a Canadian federal agency that funds renewable energy projects, among other roles. ChargeUp acts as a liaison between NRCan and Canada's Indigenous communities in distributing funds.

Identify innovative financing tools and strategies

The research team next identified a list of new funding and financing strategies for evaluation from the transportation sector and other sectors that could provide new tools and solutions to shared mobility programs. The research sought to leverage diverse business models and emphasize programs that support equitable access.

The initial list of potential strategies for evaluation was extensive, therefore the research team refined the long list of strategies to focus on the most relevant to programs in the CARB context by:

- Identifying key attributes and potential categories and subcategories (e.g., financing, sponsorship, policy, public/tax incentive, etc.)
- Assessing applicability to areas of interest including the shared mobility sector and low income, disadvantaged communities in California.

The team developed a matrix of final strategies for evaluation that included advantages and disadvantages of each with respect to funding, project costs, risk reward and access to finance. This preliminary analysis informed the identification of key criteria to be used in the evaluation framework.

Evaluate innovative financing tools and strategies across multiple criteria

In partnership with CARB and key stakeholders, the research team developed a custom evaluation framework with 26 criteria related to the following high-level considerations:

- Scale adaptability – ability of strategy to provide adequate funding, and change scale to allow for flexibility in response to project lifecycle, level of utilization, coverage, etc.
- Flexibility – ability of a strategy to serve different project types in different geographies
- Continuity – length of time a funding source is available and ability to cover both capital and operating costs
- Application – issues related to application barriers (application costs, deadlines)
- Benefits – type of benefit such as monetary support or reduction in project costs
- Costs – whether a strategy incurs additional costs on a project or user group
- Predictability and Certainty – sensitivity of a strategy to external pressures and unreliability
- Flexibility on Self-Sufficiency – can mechanism be used regardless of whether projects generate sufficient revenue to cover project costs
- Mechanism – additional miscellaneous criteria related to application of the strategy in the California context, including implementation hurdles
- Information – level of information and transparency available for a particular mechanism, to reduce adverse impacts or misalignment of goals
- Risks – whether a strategy involves specific risks to operator, community, and other parties
- CARB Goals – whether a strategy aligns with CARB environmental and equity goals

The evaluation also employed a "stoplight" ranking system of low risk (1) to high risk (3) to identify level of issues or risks associated with each criterion. Key questions associated with each criterion are intentionally sensitive to project context and are not intended to indicate overall best versus worst strategies. **Error! Not a valid bookmark self-reference.**Table 4-3 presents the questions asked and the ranking system applied for each of the 26 criteria.

Table 4-3 Evaluation Criteria and Ranking Scale

Criteria	Key Questions	Risk: Low (1), Medium (2), High (3)
Scale adaptability - Project Lifecycle	To what extent does the mechanism allow projects to scale, from concept to pilot, from pilot to initial size service, from initial size service to full size service (i.e., may permit possible, larger future rounds of funding)?	(1) Stage of project does not matter (2) Cannot be used for every project stage (i.e., used for any stage except from concept to pilot) (3) Can only be used for a certain stage of project (i.e., from concept to pilot)
Scale adaptability - Project Size and Funding Amount	To what extent can the mechanism be applied to a range of project sizes and funding levels needed (i.e., acquire 10 bikes, acquire 10,000 bikes)?	(1) Size of project does not matter as the funding level can highly vary (2) Is not used for a certain size of project as there is a limit in funding amount (3) Only used for a certain size of project as the funding amount is highly limited
Flexibility - Project Types	To what extent can the mechanism support different types of projects and operators? (i.e., micromobility, electric vehicle charging stations, etc.)	(1) The type of project, mode or operator does not matter (2) Cannot be used for a certain type of project, mode, or operator (3) Can only be used for one type of project, mode, or operator
Flexibility - Geography	To what extent can the mechanism be successful in any geographical location or community size?	(1) The geographical location or community size does not matter (2) The mechanism may work better in one geography or size of community than another (3) The mechanism only works in one specific geography or size of community
Continuity - Length of Time	To what extent does the mechanism fund costs for an initial set of years (i.e., 3 years) versus an indefinite set of years?	(1) Continuous funding is guaranteed beyond limited contract terms (2) The number of years is based off the success of the program (3) The number of years is always limited
Continuity - Type of Costs	To what extent may the mechanism fund capital costs versus operating costs?	(1) Is used regularly for the funding of both capital and operating costs (2) Is not usually used for one type of costs, but can be (3) Can only fund one of either capital or operating costs
Application - Barriers to Entry	What level of documentation and effort is needed by the operator to receive funding from this mechanism? (i.e., amount of paperwork, past experience, insurance requirements, overall amount of complexity)	(1) Very low barriers, high level of applicant acceptance (2) Moderate barriers, moderate level of applicant acceptance (3) Very high barriers, low level of applicant acceptance

Criteria	Key Questions	Risk: Low (1), Medium (2), High (3)
Application - Deadlines	Is the application for funding time sensitive? Is there a deadline? (A quicker deadline may reduce the thoroughness of due diligence by the operator, increasing their level of risk)	(1) There is typically no deadline for applications (2) There are usually deadlines for applications (3) There are always deadlines for applications
Application - Limited Funding	Does the mechanism usually have a limited pot of funding or ability to deliver funding? (This may incentivize the operator to apply sooner, which also may reduce the thoroughness of their due diligence, increasing their level of risk)	(1) Unlimited amount of funding can be delivered, regardless of the status of other factors (2) Usually a limited pot of funding, but depends on other factors (3) Always a limited pot of funding, regardless of the status of other factors
Benefits - Non-Monetary Administrative Support	To what extent with the mechanism may the operator receive non-monetary in-kind support, improving their likelihood to receive funding in their initial application or be successful in operation after receiving funding?	(1) Applicants always receive non-monetary support with this mechanism (2) Applicants may receive non-monetary support, depending on benefactor (3) Applicants never receive non-monetary support with this mechanism, regardless of benefactor
Benefits - Monetary Administrative Support	To what extent may the mechanism deliver new funding to the operator/public sector staff that will help administer the program (as compared to if the mechanism was not used)?	(1) Provides a new source of funding (2) Mechanism may provide a new source of funding (3) Does not provide a new source of administrative funding
Benefits - Cost Reduction for Operators & Users	To what extent may the mechanism be used to reduce project lifecycle costs (as compared to if the mechanism was not used)?	(1) The mechanism can result in lower costs for the operators/users (2) The costs will usually not change for the operators/users (3) The mechanism will always result in higher costs for the operator/users
Costs - Financing	To what extent may there be financing costs for the operator as a result of the mechanism? (i.e., interest payments)	(1) There is never a financing cost associated (2) Sometimes there is a financing cost associated (3) There is always a financing cost associated
Costs – User Charges (Equity Impacts)	Does the mechanism rely on user fees that disproportionately affect low-income households?	(1) User charges are not used or do not negatively affect low-income households (2) *Potentially* user charges are used, but may not negatively affect low-income households (3) User charges are used and will negatively affect low-income households

Criteria	Key Questions	Risk: Low (1), Medium (2), High (3)
Predictability and Certainty	To what extent in the mechanism is there certainty that the funding will be delivered as agreed upon between the benefactor and operator? Does this remain true under changing market or political conditions (i.e., recession, rising interest rates)? To what extent is there predictability about changes?	(1) Funding is highly predictable into the future and will continue regardless of external conditions (2) Funding is somewhat predictable into the future, but may also be influenced by external conditions (3) Funding is highly unpredictable
Flexibility on Self-Sufficiency	To what extent can the mechanism support projects that do not generate revenue?	(1) Can support projects regardless of whether they generate revenue or not (2) Can support projects regardless, but will prioritize projects that generate revenue (3) Can only support revenue-generating projects
Mechanism - Implementation Cost	What is needed to start and implement the mechanism from the mechanism administrator's perspective? Start-up funding? Organizational effort? Political capital? Legislative/regulatory change? Level of complexity? Community acceptance?	(1) No start-up costs, political capital and regulatory change is needed (2) Low level of start-up costs. No political capital or regulatory change is needed (3) High level of initial funding, political capital and regulatory change is needed
Mechanism - California Context	To what extent has this mechanism already been implemented in California? Are there legislative/regulatory barriers in place preventing implementation? Do existing bodies have the authority to implement the mechanism?	(1) The mechanism is already widespread in California (2) The mechanism has been implemented in California, but is not widespread (3) The mechanism has never been used in California
Mechanism - Operating/financing Cost	To what extent are there operating and financing costs for the mechanism/benefactor?	(1) No cost of operating the mechanism (2) Low to moderate cost to operate the mechanism (3) High cost to operate the mechanism
Mechanism - Self-Sustaining	To what extent can the mechanism earn revenue in return that may allow the mechanism to be self-sustaining? (i.e., interest rate return)	(1) Revenue-neutral or -positive (2) Longevity through some earned revenue or combination of other sources but does not pay for itself (3) Recovers no revenue self-sustain the mechanism

Criteria	Key Questions	Risk: Low (1), Medium (2), High (3)
Mechanism – Benefactor's incentives	To what extent is there a risk that the incentives of the benefactor will not align with the incentives of the operator/community OR CARB's objectives?	(1) The benefactor's incentives are directly aligned with those of CARB (2) The benefactor has environmental and/or equity incentives, some of which align with CARB (3) The benefactor only has a financial motivation and will be incentivized to maximize revenue generation
Information - Transparency & Accountability	To what extent is it transparent as to which operators receive funding from the mechanism, why they received that amount and what conditions may be attached to that funding?	(1) Transparent for the public, users, operator, and benefactor (2) Transparent only for the select operator and benefactor (3) Not transparent to the public, users, and operator
Risks - Community Acceptance/Reputation	To what extent may the mechanism encounter pushback by the community or public? Does the mechanism present inherent political, economic, and other risks?	(1) Little to no risk (2) Moderate risk (3) High risk
Risks - On Operator, Community and Users	To what extent may the risk of using the mechanism fall to the operator, users, and community project fails?	(1) Little to no risk for operator, users, and community (all risk on benefactor) (2) Relatively equal risk for both the benefactor and operator (3) Most if not all risk is for the operator, users, and community (no risk for benefactor)
CARB Goals - Environmental	To what extent has this mechanism been used to target mobility projects that have positive environmental impacts? (i.e., development of cleaner and healthier transportation modes, strategies that decrease transport pollutants, etc.)	(1) The mechanism has an extensive history of being used for this purpose (2) The mechanism has somewhat of a history of being used for this purpose (3) The mechanism has never been used for this purpose
CARB Goals – Low-Income and Disadvantaged Communities	To what extent has this mechanism been used to support low-income and disadvantaged communities?	(1) The mechanism has an extensive history of being used for this purpose (2) The mechanism has somewhat of a history of being used for this purpose (3) The mechanism has never been used for this purpose

5 Results and Discussion

Innovative Tools and Strategies

This research evaluated 30 funding and financing tools and strategies to determine their applicability for shared mobility programs. The following section presents an overview of the results of this analysis, beginning with a conceptual framework for understanding how different types of strategies support commercial viability and overall project success.

Although each strategy was evaluated individually to determine its performance across different criteria, all the case studies used a combination of funding mechanisms, often pairing different mechanisms implemented in the pre-revenue development stages with others in the operational and expansion phases.

Funding and financing strategies work in different ways to improve program performance. Some strategies provide direct access to funding and financing opportunities by generating funding streams (such as sales tax revenue) or lowering the cost of borrowing. Other strategies influence commercial viability indirectly, by reducing project costs or redistributing risk. For example, governance strategies, such as community- or worker-owned cooperatives, aim to advance equitable working practices, but may also provide opportunities for negotiating larger purchases thereby reducing overall program costs. The tools and strategies considered in the evaluation were grouped into five categories and ten subcategories shown in Table 5-1.

Table 5-1 Overview of Strategies by Category and Subcategory

Category	Subcategory	Description of Subcategory
Operating Model	Governance Strategies	These strategies aim to create a more equitable governance framework, benefiting program workers and program users. Although not guaranteed, in some cases, they can also enhance the commercial viability by lowering project costs through bulk purchasing/agreements and incentivizing workers to act in the best interest of the organization.
Operating Model	Revenue Strategies	These strategies can be used by program operators to augment the revenue gathered from program operations or directly decrease program costs.
Financing	Concessional Financing	Concessional financing is both a sub-category and specific strategy that provides loans and guarantees with flexible repayment terms compared with commercial or market loans.
Financing	Credit Enhancement	Government/financial institutions provide credit enhancements to improve the risk profile of a project and encourage private investment. They can provide subordinated debt or guarantees to lessen credit and default risk. Forms of assistance could include direct lines of credit, letters of credit, bond insurance and loan guarantees, finance purchase/lease agreements for transit projects or other guarantees like first loss loans. In the case of first loss instruments, a third-party agrees to cover some loss for private investors (decreasing risk) -- in the event a project fails, the issuer of first loss loans would be the last to be repaid.
Financing	Microfinancing	Microfinance refers to micro-small loans by dedicated microfinancing institutions, or even not for profit organizations.

Category	Subcategory	Description of Subcategory
		These loans are usually meant to serve the under-served/ low-income communities to increase access to finance. This strategy has been deployed to help individuals purchase vehicles for peer-to-peer carshare services (e.g., Turo).
Financing	Partnerships	These partnerships involve contractual agreements between public and private entities and are underpinned by some form of financing, procurement, and risk and revenue sharing. There are diverse applications of public-private partnerships (P3s) in microtransit and mobility programs (e.g., Mobility-On-Demand).
Policies/ Public initiatives	Developer-targeted Initiatives	Some strategies require developers pay fees or make investments in the community in exchange for being allowed to establish developments.
Policies/ Public initiatives	Tax Policies	These strategies utilize tax policies to collect revenue to use for mobility-related projects and/or act as an incentive to attract developers or reduce vehicle miles traveled.
Policies/ Public initiatives	CARB Policies	These strategies/mechanisms already exist and are administered by CARB.
Utilities	EV Infrastructure	These strategies utilize utilities as a partner or a project sponsor through direct funding, redistribution strategies or in-kind infrastructure/services.

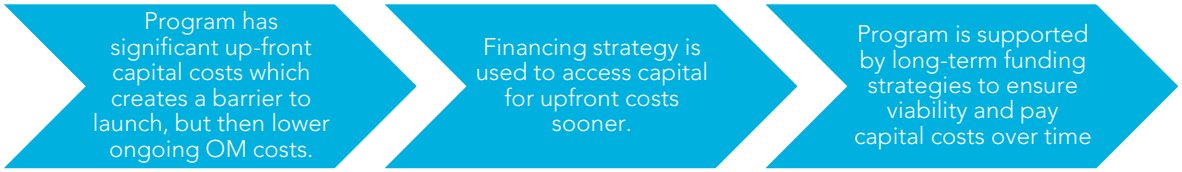
Funding vs. Financing

The application of funding or financing strategies (or some combination of both) depends on the specific problem that a program is trying to address and the contextual factors that contribute to that problem or constrain solutions. The following section describes how funding and financing tools and strategies work to address problems in specific ways that benefit shared mobility programs.

Funding strategies pay the cost of the program, including capital and operating expenses. Funding sources can include users of the service, public agencies, communities, or other parties who benefit directly or indirectly from the program. New sources of non-grant funding are crucial for shared mobility programs that aim to keep user fees low and therefore are less likely to earn enough revenue to cover capital or operating costs. Reliable funding sources are also required to repay loans and cover the costs of financing.

Financing strategies, which offer temporary solutions, will not solve a funding shortage in the long term, but have targeted value and uses depending on the phase of program development. In the proper context, financing tools can be used to lower the cost of borrowing or make loan payback terms more flexible by spreading out costs, accelerating projects, redistributing risk, and generally stretching funding dollars further. Financing spreads the burden of upfront costs across a longer period. This allows administrators to spread costs into periods where programs can repay those costs via revenue generation or via new grant funding, when available. Financing strategies ultimately must be repaid either through ongoing revenue sources or other funding, therefore the total amount of funds available for program expenses won't increase with financing.

Figure 5-1 Example of How Funding and Financing Can Support Programs.



Funding and financing strategies and tools generally work in five different ways to address specific problems.

1. Provide new sources of funding to address shortfalls. Most of the strategies evaluated include public policy initiatives that provide new sources of non-revenue and non-grant funding from Developer-Targeted Initiatives and Tax Policies.
2. Provide performance-based funding, which is repayable. Outcomes-based contracts or repayable grants provide funding to programs which is repayable if the program meets performance goals in the future, allowing grant-funding agencies to recoup some of their investment.
3. Leverage public funds to cover program risks and attract ("crowd in") private investment.
4. Reduce financing costs. Some financing strategies are designed to lower the cost of borrowing, making financing options more accessible/affordable to programs.
5. Delay funding needs. Spreads out costs over a longer period.

Fundamentally, the successful application of each strategy or combination of strategies, depends on commercial viability or the ability of the program to cover its costs (capital, operating) at the start or in the future. The following table presents five ways in which funding and financing mechanisms work to benefit shared mobility programs and includes specific examples reviewed during the evaluation. These can be thought of as a progression from funding strategies used to address shortfalls to those which help make financing more accessible to programs that demonstrate long-term sustainable funding sources.

Table 5-2 Applying Funding and Financing Strategies

Strategy Type	Problem	How Strategy Works
New funding sources	Program is not commercially viable and cannot cover operating costs now or in the future.	New sources of funds from public or private entities with mandates that align with program's equity goals. Direct beneficiaries (users) and indirect beneficiaries (local governments, employers, and communities) can provide new sources of funds. **Examples**: Development Targeted Initiatives, Tax Policies, Corporate Sponsorship
Performance-based funding	Project is not commercially viable but there is potential to lower costs or boost revenues in the future.	CARB can structure grants or loans such that they become repayable depending on project performance. Performance-based funding incentivizes commercial viability via outcomes-based contracts. Funding is either dependent on achieving specific targets or is repayable once a program has achieved a specific scale of revenue. **Examples**: Repayable Grants, Outcomes-based Grants

Leveraging public funds	Project is commercial, but there is a significant risk which materially threatens the commerciality of the project and reduces lender appetite.	CARB can fund a portion through loans or grants of the project corresponding to risk and take on first loss. This helps "crowd in" private investment. **Examples**: Credit Enhancements, Debt Financing with First Lost Reserves
Lower Finance Costs	Project is almost commercial, but the cost of financing is too much. For example, private institutions perceive a project as risky and interest rates are too high.	CARB can provide a better interest rate, assume off-market risk. **Examples**: Green Bonds, Green Banks, Concessional Financing, Private Debt
Delay Funding Need	Project is commercial but funding is not available when needed.	Providers can borrow to cover project costs (for example capital) and repay when they can realize operational savings. Requires that project demonstrate ability to repay loan from future funding sources. **Examples**: Tax Increment Financing (TIF)

Funding Strategies

Shared mobility programs that rely on grant funding sources can supplement current grant funds with additional sources from public and private sources. The following section provides an overview of funding strategies that include policies and public initiatives, operating model-based strategies, and utility-based strategies.

Policies and Public Initiatives

Shared mobility programs can work with local, state, and federal jurisdictions to identify policy measures to create more long-term funding sources. Examples of policy-based funding sources include sales and/or transportation tax measures, developer-targeted initiatives, and congestion/road pricing. Table 5-3 provides a description of these strategies. Depending on the scale of the program involved, these strategies may involve collaboration of multiple local governments or agencies.

While many of these strategies present new opportunities for sustained funding, there are risks associated that can present challenges. For example, new taxes and congesting pricing systems may be unpopular with local constituents, making them less politically feasible. Also, use of developer-targeted initiatives like VMT-based impact fees avoid levying new taxes but may be viewed as a disincentive to residential and commercial development. Further study may also be required to determine that policy mechanisms do not produce disbenefits to disadvantaged communities and that funds are distributed equitably.

Table 5-3 Policy-based Funding Sources

Strategy	Description
Community Benefits Agreements[5]	A community benefits agreement (CBA) is a contract between private or public developers and local community organizations that ensures that in exchange for allowing development, the development will result in benefits for community members. These benefits vary, but commonly include guaranteed minimums for local hiring, development of affordable housing units, and local community improvements such as new parks/transit support. Some localities have community benefit policies that could require developers to negotiate CBAs.
Development Impact Fees (Mobility Fees)[6]	One-time fee assessed by local governments on new developments (e.g., real estate) to offset impact of increased traffic congestion and use of public infrastructure. These impact fees can also be applied to projects that involve substantial changes or additions to existing buildings (e.g., additions to the building envelope).
LCFS Holdback Credits[7]	EV Fleets and EV charging operators can generate credits each quarter for use of fuels with carbon intensities less than a State-set benchmark. Credits can be sold to entities that generate deficits each quarter by producing fuels with carbon intensities higher than the benchmark. Electric utilities, which are issued credits based on estimated residential charging within their service area, must use a portion of these credits to fund a Clean Fuel Rewards rebate program that rewards California residents for buying/leasing EVs. The remainder of the LCFS credit proceeds ("holdback credits") is used to support transportation electrification programs, a percentage of which must be targeted toward equity communities through seven project types, one of which is "investment in electric mobility solutions, such as EV sharing and ride hailing programs." CARB is the lead agency for administering credits and for approving and auditing holdback credit projects developed by utilities.
Local Transportation Sales Tax Measures (e.g., Half-cent sales tax)[8]	Can be used by local jurisdictions to fund regional transportation programs. San Diego County's TransNet program, for example, uses the one-half cent sales tax to support regional transportation programs and provide funding for major corridor capital projects. Extended by voters to 2048, the tax has proven to be a sustainable funding source over the long run. Other examples of jurisdictions with successful outcomes implementing a sales tax include the City of Vallejo, CA. When new sales tax measures are created or reauthorized, specific transportation projects are selected/ identified for that funding, which could include community-based mobility programs.
Qualified Opportunity Fund (Tax Incentives)[9]	A Qualified Opportunity Fund (QOF) targets predefined opportunity zones in the US, which are low-income, economically distressed communities that have historically lacked sufficient investment. QOFs are based on tax incentives that

[5] 1) Partnership for Working Families and Community Benefits Law Center, "Effective Community Benefits Agreements," Dato, January 2016, 2) Furmancenter.org 3) Tulane.edu
[6] 1) Elkind, Lamm, and Prather (2018), 2) FHA (2022)
[7] U.S. Department of Housing and Urban Development, "Opportunity Zones Phase 2 Community Toolkit," U.S. Department of Housing and Urban Development, May,2020,
[8] 1) Remix, "What You Need to Know About the 2020 Transportation Ballot Measures That Passed," Via, November 16, 2020, 2) California Tax Foundation, "Local Tax Trends in California," California Taxpayers Association, September 1, 2021.

[9] Scott Eastman, "Measuring Opportunity Zone Success", Tax Foundation, May 29, 2019, https://taxfoundation.org/measuring-opportunity-zone-success/

Strategy	Description
	encourage the deployment of capital gains from successful investments into new, sustainable investments within opportunity zones. Structured as a corporation or private partnership, QOFs serve as investment vehicles for the private sector to direct qualifying investments into opportunity zones in exchange for tax incentives (tax deferments and reductions in capital gains taxes).
Regulation Credits/Incentives for Private Investment[10]	Several clean air policies administered by CARB include private or public incentives for investments in active transportation, transit usage, and facilitating EV usage. In exchange, organizations subject to CARB's policies can earn "credits" that can be used in lieu of other actions to help them meet emission/fleet targets required by CARB. For example, the Advanced Clean Cars Regulation II has provisions for automakers to fund projects such as carsharing in disadvantaged/low-income communities in lieu of meeting some of the ZEV regulation requirements.[11]
Tax Increment Financing (TIF), Enhanced Infrastructure Financing Districts (EIFD)[12]	A joint-powers authority can be formed by cooperating local jurisdictions with the legal authority to use tax increment financing (TIF) to repay bond debt or fund various projects. This strategy emerged from the High-Speed Rail Value Capture toolbox. Through this process, cooperating governments may collect additional tax revenue as property values appreciate. TIF funds are typically paired with other sources to completely fund projects. Assembly Bill 313 is the most recent state legislation authorizing EIFDs to use TIF for a variety of infrastructure projects, including projects that implement a sustainable communities strategy, water collection and treatment facilities, sewage treatment, and arterial streets and transit facilities, among others. The City of Placentia, CA has an EIFD.
Transportation/Road Pricing[13]	Road pricing programs are means to directly charge for road usage. They often increase the financial costs of driving and can be used as an avenue to collect revenue for transportation-related projects. There are several kinds of road pricing strategies, including flat tolls (charging a flat fee for road use), congestion pricing (charging a different but pre-scheduled fee that changes based upon congestion or emission levels), vehicle miles traveled (VMT) fees (fees per distance driven), and dynamic pricing (real-time changes to congestion pricing based on the current congestion/emissions).

[10] 1) Clean Miles Standard, 2) ICTRT Guidance, 3) 2019 ICT implementation guidance

[11] https://ww2.arb.ca.gov/our-work/programs/advanced-clean-cars-program/advanced-clean-cars-ii

[12] Kosmont Companies and SCAG. "City of Placentia Enhanced Infrastructure Financing District." Placentia, California, July 2019

[13] 1) Bipartisanolicy.org, 2) CGA.CT.gov, 3) ULI.org, 4) FHWA, 5) Streetsblog

Strategy	Description
VMT-based Impact Fees, Mitigation Banks, Mitigation Exchanges[14]	**VMT-based Impact Fees**: This strategy can be used to support statewide or local goals of reducing vehicle miles traveled (VMT), including those by automobiles, trucks, and buses. A nexus analysis would estimate the relationships between planned development projects and projected changes in VMT. In the context of California, the nexus would also be a VMT reduction goal that is consistent with the CEQA mitigation threshold established by a lead agency for SB 743 purposes. Collections from a VMT-based impact fee program could then be used to fund mobility capital improvement projects. **Mitigation Banks**: Developers may purchase VMT reduction credits for projects. The money from the sale of these credits can be applied to local, regional, or state VMT reduction projects. **Mitigation Exchanges**: Developers are required to implement a predetermined VMT reduction project that matches their VMT/GHG impact. These projects can be within or outside the community of development. This is based on pre-determined projects rather than just general funds like the mitigation banks' focus.

Operating Model-Based Strategies

Additional funding strategies may secure support from outside the public sector. Employer-based programs, for example, can support mobility options for employees in their commute to work, which is known to improve health, well-being, and productivity for businesses.[15] Corporate sponsorships may also provide funding support if the goals and values of the shared mobility program align with the corporate mission. The Nice Ride bikeshare program in Minnesota exemplifies both strategies. Blue Cross Blue Shield provides funding for operating costs, station expansion, equity programs, and several offshoot programs as a core program sponsor. In addition, Move Minneapolis, a local transportation management organization, supports Nice Ride with in-kind marketing and community engagement efforts.

Table 5-4 Operating Model-based Strategies

Strategy	Description
Bundled Transit, Employer-Based Programs, Other[16]	Bundled Transit is a mean of facilitating more mobility opportunities through partnerships with common transportation destinations that have an incentive to improve mobility options to their destination. One common example of bundled transit is employer-based programs in which one or multiple employers help fund a mobility option for employees. This benefits the employer by improving employee morale, productivity, and the range from which employees can live and saving employers money through tax benefits and reduced parking expenses. Employees benefit from additional commuting options, such as vanpool, subsidized transit passes, bikeshare, and telecommute. Programs offer employees greater accessibility to different modes and cost savings. Another type of bundled transit is through partnerships with health organizations, which allows patients who often are unable to drive to/from health appointments to receive free or discounted rides to such appointments. This improves the no-show rate for

[14] Ethan Elkind, Ted Lamm, and Eric Prather, "Implementing SB 743," Institute of Transportation Studies, Berkeley, October 2018.
[15] Winters, Philip L. & Sara J. Hendricks, *Quantifying the business benefits of TDM.*
[16] 1) Shared Use Mobility Center, 2) Escholarship.org, 3) Mass.gov

Strategy	Description
	important medical appointments, helping medical organizations avoid costly cancellations and bettering the health outcomes of patients who otherwise wouldn't have a means of getting to their appointment on time. Another bundled transit use is for entertainment-based entities, who are incentivized to encourage customers to travel via non-single occupancy vehicle options by sponsoring alternative mobility options for travelers to use to/from events. Other potential bundled transit partners could include businesses (for customers), election venues, disability service providers, etc.
Cooperatively Owned: Community Owned[17]	Community-owned co-ops are mobility options that are collectively owned by the users. Co-ops vary in size but can provide greater market power to consumers as they collectively purchase from wholesalers in bulk. In addition, as resources may be shared between members, costs are spread, enabling mobility options at a much lower fixed cost for users.
Cooperatively Owned: Worker - Owned[18]	Worker-owned cooperatives are organizations in which at least the majority of workers owns 100% of the equity of the organization and have significant input in decision-making processes. In this type of model, the goals ensure workers are more closely aligned in the goals of the organization, and therefore workers tend to earn higher wages, organizations have less turnover and better labor practices, and eventually workers can earn a share of the profits. Worker-owned cooperatives can take many forms in the shared mobility space, but often this type of model can be applied to service-driven shared mobility options (i.e., rideshare) where drivers are included in the cooperative membership.
Corporate Sponsorship[19]	Corporations or non-profits (often those that support healthy or green initiatives) could agree to sponsor aspects of a mobility program which serves as an advertising medium for them and a means of enhancing their local reputation. The nature of these contracts varies substantially. In some cases, sponsorship is contingent upon additional public funding, and in other cases, such as Citibike, sponsors will take on the majority of operating costs.
Licensing Agreements[20]	A licensing agreement allows one party (the licensee) to use and/or earn revenue from the property of the owner (the licensor). For transportation providers, this can include licensing access to data, platforms, services, or facilities to a licensee in return for a source of revenue. The model is often used for shared e-scooter programs.

Utility-Based Strategies

Shared mobility providers with capital infrastructure needs may benefit from utility-based strategies that provide access to electrical vehicle charging infrastructure.

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[17] 1) Oakland Carshare, 2) https://gigcarshare.com/about/, 3) https://www.carsharecoop.ca/why-carshare/about-the-coop/, 4) https://www.gov.mb.ca/jec/busdev/coop/pdf/rib01s23.pdf, 5) Shared Use Mobility Center, 6) Center for Mobility Management

[18] 1) https://www.cccd.coop/co-op-info/co-op-types/worker-co-ops, 2) https://greengarageblog.org/10-pros-and-cons-of-cooperatives, 3) Interview with Ken Lewis (Drivers Cooperative) from Task 1

[19] Shared Use Mobility Center. Shared Mobility Funding Strategies., 2) Nice Ride. Nice Ride Five Year Assessment. May, 2015

[20] Shared Use Mobility Center

Table 5-5 Utility-based Strategies

Strategy	Description
Community Choice Aggregators[21]	Community Choice Aggregators allow local governments to procure power on behalf of their residents, businesses, and municipal accounts from an alternative supplier while still receiving transmission and distribution service from their existing utility provider. Through CCA's, ratepayer benefits can be provided to disadvantaged communities, which may come in the form of credit towards mobility services (i.e., voucher for e-bikes).
Power Utility Companies - Publicly or Privately-Owned[22]	Power utility companies are a potential partner in shared mobility projects, specifically those with an electrification component. Utility companies can cut across public and private funding infrastructure depending on if they are publicly or privately owned. They can act as a project sponsor, offer direct funding, offer incentives for vehicle purchasing, or offer in-kind services to help pay for infrastructure, such as electric vehicle charging equipment. Private and public utilities may have different concerns about risk and return on investment and therefore were evaluated as independent strategies.

Financing Strategies

Private financing strategies alone are unlikely to succeed in low-income and disadvantaged communities without additional direct funding strategies other than user revenue. Affordable shared mobility programs in low-income and disadvantaged communities typically struggle to attract private investment because of a higher-risk profile and inability to produce a sufficient return-on-investment (ROI), or ability to repay loans. For example, traditional shared mobility programs depend on user fees to generate revenue. However, multiple programs funded through CARB grants serve rural areas with low densities; present demand cannot generate enough revenue to cover operating costs. In addition, some programs are not designed to be commercially viable and intentionally offer free or reduced-fee services to members.

For projects that do achieve commercial viability or secure reliable sources of long-term funding, and therefore demonstrate the ability to pay back loans, strategies such as those shown in

Table 5-6 can help programs lower project risks and access more affordable financing options.

Table 5-6 Financing Mechanisms

Strategy	Description
Community Development Financial	CDFIs are dedicated to promoting community development in distressed urban and rural communities by increasing the availability of credit, investment capital and financial services available. Federal agency within Treasury Department, formed through a legislative act, allocates funds from Community Development Financial Fund to CDFIs. CDFIs include community development banks and credit unions and non-regulated institutions such as non-profit loan funds or venture capital funds. The credit is sector agnostic and is made available to small

[21] https://www.pressdemocrat.com/article/lifestyle/why-e-bikes-are-becoming-more-popular-during-the-pandemic-in-sonoma-county/

[22] 1)Shared Use Mobility Center 2) LPDD.org

Strategy	Description
Institution (CDFI)[23]	and microbusinesses, consumers, affordable housing, etc. Additionally, CDFI also has multiple programs through which it makes financial services available to the targeted communities. There are numerous CDFIs operational in California. Institutions must register at www.cdfi.org.
Concessional Financing[24]	Concessional financing provides loans and guarantees with flexible repayment terms compared with commercial or market loans. With concessional financing, borrowers may receive below-market interest rates, longer repayment periods and loan deferments. This instrument can be used to reduce the overall cost of capital for shared mobility programs. It is more commonly used by Development Banks and Institutions to support environmental and sustainability projects (e.g., renewable energy technologies) in developing nations.
Credit Enhancement[25]	Government/financial institutions provide credit enhancements to improve the risk profile of a project and encourage private investment. They can provide subordinated debt or guarantees to lessen credit and default risk. Forms of assistance could include direct lines of credit, letters of credit, bond insurance and loan guarantees, finance purchase/lease agreements for transit projects or other guarantees like first loss loans. In the case of first loss instruments, a third-party agrees to cover some loss for private investors (decreasing risk) -- in the event a project fails, the issuer of first loss loans would be the last to be repaid.
Green Banks[26]	Green banks are public or non-profit financial institutions with the primary purpose of fighting climate change through grant funding and private sector investments. They offer various financial solutions (loans) to support sustainability, renewable energy, or shared mobility programs over the long run depending on their specific institutional mission. Shared mobility programs could approach existing Green Banks for financing support. Theoretically, CARB could work with other state institutions to develop a Green Bank for the purpose of supporting shared mobility programs.
Green Bonds[27]	Green bonds are fixed interest loans that can be issued by either government or private actors of various sizes (from communities to commercial banks/financial institutions/corporations). They must be used to fund projects with environmental or sustainability benefits. The primary investors are often large

[23] US Department of Treasury, "Community Development Financial Institutions Fund," Community Development Financial Institutions Fund, accessed December 21, 2022

[24] BloombergNEF, "The Clean Technology Fund and Concessional Finance," BloombergNEF, February 2019. 2) Transport Scotland, "ZE Bus Financing: Information and Ideas Pack," Transport Scotland, March 2021

[25] 1) Federal Highway Administration, "State Infrastructure Banks (SIBs)," Federal Highway Administration, accessed December 21, 2022, 2) World Business Council for Sustainable Development, "Financing Mechanisms for Sustainable Mobility," World Business Council for Sustainable Development, October 2015.

[26] Ella Nilsen, "Biden's jobs plan includes a proposal to create 'green banks.' Here's how they work," Vox, June 1, 2021,. 2) J. Frech, J. Lou, S. Yu, J. Song, and N. Hultman, "Public-Private Partnership & Clean Energy Finance: The Green Bank Model," Center for Global Sustainability, University of Maryland, College Park, MD, 2020, 49 pp

[27] 1) "The Road Forward, ""Cost-Effective Policy Measures to Decrease Emissions from Passenger Land Transport,"" DTU Orbit, accessed December 21, 2022, 2) ""Green Bonds,"" Better Buildings Solution Center, U.S. Department of Energy, accessed December 21, 2022, 3) Leaseplan and Carbon Trust, ""Green Bond Impact Assessment: Final Report,"" Leaseplan, April 2021

Strategy	Description
	funds such as pension funds, sovereign wealth funds, and insurance companies. Individual investors can then purchase into these funds.
Outcomes-Based Contract[28]	Outcomes-based contracting is a means of linking payment for services with achievement of pre-determined outcomes, rather than paying directly for inputs. The investor is repaid only if these outcomes are achieved. Theoretically, an outcome-based contract is cited as being beneficial compared to traditional input- or output-based contracting structures because it: 1. Aligns the objectives of all parties/stakeholders affected by the contract and all parties stand to benefit the most if desired outcomes are achieved; 2. Increases the flexibility and potential cost-effectiveness of achieving such outcomes since contracted organizations have more flexibility to find the best or lowest cost approach to achieve the agreed upon outcome; and 3. Transfers risk to investor/agency providing the upfront financing or funding rather than the operator who often is in a subordinate financial position.
Private Debt Financing with First Loss/Loss Reserves[29]	This is a funding strategy whereby a lending institution when funding to a high-risk borrower (individual/ business) is backed by a cushion of "loss reserves" in case of a default. This is a risk mitigating mechanism. This can be a sector agnostic mechanism to meet a certain goal/ objective. For example, a social investment firm Kresge Foundation aims to promote sustainable and resilient energy practices in low-income, urban communities in New York. It aims to finance solar storage systems in new and existing buildings in these communities. The foundation has partnered with the New York City Early Education Centers (NYCEEC), a local green bank that provides loans for energy efficiency and clean energy projects in New York City and throughout the Northeast and Mid-Atlantic regions. The Kresge Foundation is providing a $650,000 guarantee in the form of First Loss reserve to NYCEEC to provide loans for increasing the installation of solar storage systems in multifamily, affordable housing, elderly housing, other supportive housing, mixed-use facilities, and community.
Private Debt Financing: Co-op Finance/Group Lending/Grameen Bank (Bangladesh)[30]	Grameen Bank is a dedicated microlending institution with the objective to serve the poor and rural communities in Bangladesh. One key type of lending that made Grameen Bank popular was that they provide group/ "solidarity" lending--whereby small groups borrow funds collectively from the bank. In return, the group members help one another in repaying the loan. This increases accountability and reduced default on loans. Other features include loans that are collateral-free, have simple interest charges, and are located in rural communities for ease of access. The banking system is also known for giving higher priority to women borrowers.

[28] Do-the-benefits-outweigh-the-costs-of-impact-bonds-FINAL.pdf (brookings.edu), 2) https://www.nber.org/system/files/working_papers/w27527/w27527.pdf, 3) https://golab.bsg.ox.ac.uk/knowledge-bank/case-studies/cameroon-cataract-bond/

[29] The Kresge Foundation, "NYCEEC Social Investment Case Study," NYCEEC, accessed December 21, 2022.

[30] Indian Tiger, "Ways Grameen Banking Differs from Conventional Banking," Indian Tiger, accessed December 21, 2022.

Strategy	Description
Private Debt Financing: Microfinance[31]	Microfinance refers to micro-small loans by dedicated microfinancing institutions or even not-for-profit organizations. These loans are usually meant to serve under-served/ low-income communities to increase access to finance. In low-income countries, microloans/ microfinance is a very popular means of providing access to finance to low-income communities through dedicated microfinance institutions. These include personal loans, consumer loans, and even business loans. (Grameen Bank/ group lending- above is also a type of microfinance).
Public-Private Partnership Financing[32]	Public-Private Partnerships (P3s) have been used to finance transit and local government capital projects of varying sizes and operational complexities. Broadly, these partnerships involve contractual agreements between public and private entities and are underpinned by some form of financing, procurement, and risk and revenue sharing based on the partnership's owner/operator agreement. The diverse applications of P3s in microtransit and mobility programs (e.g., Mobility-On-Demand) demonstrate that new P3 financing solutions could be explored further to support the financing of shared mobility programs.
Revolving Loan Fund[33]	The public sector can incentivize energy or utility providers to invest in energy efficient and clean energy programs. Savings from existing local energy and infrastructure projects can be used to establish a revolving loan fund that is focused on financing particular mobility program goals (EV fleet acquisition or infrastructure improvement). A city's micro-grid project, for example, can provide annual energy efficiency savings that is used to initiate a revolving loan fund for community mobility projects. Revolving loan funds are mission-oriented, and they can be designed to serve specific needs in low-income, disadvantaged communities. It is most common for these funds to invest in projects within the same sector (i.e., savings from electric vehicles being used to fund charging facilities), however, depending on the mission of the fund, it may be expanded to other uses (i.e., being used to fund e-bike programs).

Approaches to Maximize Value of Funding Sources

The following approaches can help to maximize value from these funding sources and achieve longer-term success by enlisting support from indirect beneficiaries, connecting shared mobility programs to wider transportation investments, reducing funding needs through efficiencies, and prioritizing the programs most likely to succeed.

Enlist support from indirect beneficiaries

Many of the shared mobility programs considered in the use cases, and analyzed as part of the evaluation, designed their programs to be affordable to low-income users and therefore intentionally offered reduced fee or free services to members. In this case, the cost of the

[31] Diana Mitlin, "Migration, urbanisation and sustainable development," International Institute for Environment and Development, accessed December 21, 2022.

[32] William J. Mallett, "Public-Private Partnerships (P3s) in Transportation", Congressional Research Service, March 26, 2021, https://sgp.fas.org/crs/misc/R45010.pdf

[33] 1) US Department of Energy, "Revolving Loan Funds," US Department of Energy, accessed December 21, 2022, 2) Economic Development Administration, "Revolving Loan Fund Program Fact Sheet," Economic Development Administration, accessed December 21, 2022, 3) Zero Emission Bus Financing Ideas Pack, Transport Scotland, March 2021.

program exceeds revenues generated from the direct beneficiaries (users) of the program. However, other parties may be achieving indirect benefits from these programs and could be compelled to fund some of the cost through a variety of mechanisms.

Even in circumstances where shared mobility programs cannot cover capital or operating costs through user fees (direct beneficiaries), there is a social value to these programs. Indirect beneficiaries can therefore play an important role in funding these programs. Indirect beneficiaries can include local governments, developers, and employers who benefit from mobility services offered to residents and employees whether it be through economic development, transportation amenities, improved mobility and access to jobs or essential non-work destinations, reduced congestion or parking demand, assistance meeting regulations, or better employee retention.

CARB can play a role in advancing these projects by using grant funds to demonstrate proof of concept with the expectation of transfer of responsibility to the shared mobility programs and key partners beyond the grant horizon.

Connect project to a larger transportation program

A second approach can be to connect the project to a larger program of transportation improvements. For example, measures dedicated to transit expansion could include set-asides for shared mobility programs that help to provide critical first/last mile connections. A shared mobility program could be a relatively small-scale investment that works as a first/last mile solution helping to boost ridership and overall success of the transit program (e.g., microtransit) programs can provide flexible routes to train stations). Shared mobility programs could also be incorporated into transportation demand management programs aimed at offering diverse travel options to residents and employees through their housing development or workplace.

Reduce funding need by identifying efficiencies

A similar strategy would be to combine projects with a range of efficiencies and values to improve the overall efficiency of the project portfolio. Commercially successful programs could help cross-subsidize important but less efficient programs. For example, if a funded or revenue-generating rail service investment was integrated with carshare or micromobility programs under one multimodal program, the more profitable service (in this case, rail) could cross subsidize the less commercially viable programs that also help to drive transit ridership. By combining programs there are also opportunities to find efficiencies, such as shared staff, combined marketing, integrated ticketing, and combined data collection and performance monitoring.

Prioritize projects most likely to succeed in meeting CARB objectives

CARB and similar grant-funding agencies can modify their eligibility criteria to identify and prioritize funding the projects most likely to succeed. Beyond commercial viability, this could also include applications that have demonstrated use of strategies to connect the program to other local and regional health and climate initiatives and have secured partnerships that will work on achieving additional policy-based solutions such as with private companies/ employers, local agencies, and educational institutions. CARB can also focus on connecting projects with any needed technical assistance, including financial/business planning support, to give grantees the best possible tools to succeed.

Understanding the Local Context

The local context of mobility programs and factors including density, local governance, and demographics can facilitate or hinder the use of specific strategies. The following table presents some of the key factors and local considerations:

Table 5-7 Factors that Influence Funding Tools and Strategies

Factor	Considerations
Demographics	Information about the existing community should be used to inform program design. Factors like income, race, age, current travel behavior (e.g., trip origins and destinations) and mode use, presence of a vehicle in the household, number and types of trips made by residents will all be important in designing a program that responds to local user needs. For example, understanding income is essential to setting prices and will also influence a program's ability to fund itself, influencing what type of funding or financing mechanisms are selected.
Density	Denser areas or areas with a mix of income levels may be able to produce a higher ROI from user revenue, enabling them to access strategies that rely upon repayment to financier. Road pricing strategies could be ideal for capturing revenue in areas with high-traffic levels that are more likely to experience air quality issues. Density will also influence the type of mobility service provided (e.g., micromobility, microtransit, carshare.)
Economy	Some strategies (e.g., developer targeted strategies) can only succeed in areas with high levels of developer interest. Communities with large employers (such as stadiums, event centers, casinos, office parks, hospitals, universities/colleges) and areas with many businesses (such as downtowns or commercial corridors) could bundle transit options. Additionally, it's important to ensure that strategies do not negatively impact other local economic goals (e.g., development/impact fees do not deter development).
Governance	Some rural areas are unincorporated, which may preclude them from being able to implement the policy-based strategies. Additionally, for strategies that cross jurisdictional boundaries (e.g., VMT Impact Fees), governance structures which support distribution of investment/revenue across different jurisdictions will be essential. CARB can take a direct role in supporting conversations around governance for jurisdictions.
Timescales	Timing of strategy implementation (development stage, operating stage, expansion stage) is an important consideration, especially when combining different strategies. For projects that demonstrate the ability to repay loans, financing strategies can be used in early phases of the project, as it gives more support to project development/capital procurement to get projects off the ground. This can lead to additional funding if the project can meet eligibility requirements of new funding sources. Alternatively, the role of the public sector can be explored as a seed funding provider to pilot programs/projects. Once proven to be successful, the pilots can encourage private financiers to step in to provide growth funding.
Adaptability	Changes in technology, demand expectations, community context, and program objectives are likely. Strategies should be flexible and adaptable to such changes. Chosen strategies for specific contexts should be able to transition over time to accommodate these changes. Some strategies are short-term allowing this type of turnover to easily occur.

Applying Strategies Based on Use Case Scenarios

The evaluation revealed that there are no "best strategies" for every use case scenario. The successful application of innovative funding and financing tools and strategies depends on an understanding of local context and program goals and building a customized approach for that use case. The following section describes how shared mobility programs can use the information in the evaluation framework to customize a set of funding solutions to a use case, by understanding both local context and program goals. Two distinct use cases provide an example of how different funding solutions could be deployed to support carshare programs with similar challenges.

Table 5-8 Steps for Applying the Evaluation Framework to Identify Funding Solutions

Step	Key Questions	Rationale
Understand Context	• What are the most important contextual factors that influence program outcomes? (For example, demographics, density (e.g., rural, suburban, and urban)). • What is the value of the service and to whom is that value provided? • Is the program commercially viable (do revenues generated cover expenses)? • If not, will there be opportunities to increase revenues or cost savings in the future to make the program more commercial?	• Contextual factors influence the outcome of specific funding mechanisms. If a program is unlikely to be commercially viable, programs should consider an array of longer-term policy-led initiatives for sustained funding sources. • Consider creative ways to involve additional public and private sector partners based on who benefits indirectly from the service.
Articulate Program Goals	• What problem does the project aim to solve (expand service, reduce reliance on grant funding)? • Can the program access private financing (can the project demonstrate an ability to repay loans)? • What is the goal for financing (lower costs of borrowing, reduce risks that make it unattractive to lenders, or access funds up-front)?	• Program goals also influence program outcomes. If the program is struggling to secure private financing, public dollars could cover more costly or risky capital investments. • Financing strategies have specific uses and generally only apply to projects that can demonstrate an ability to cover cost of borrowing long-term.
Customize the Approach	• Is there a funding shortfall? • How well do the tools and strategies align with context and goals? • What are the risks and benefits of each strategy? • Can strategies be combined to address key issues/risks?	• Refine the potential list of funding and financing solutions to address context and program goals. • Then review each strategies' risks and benefits.

Scenario 1: New funding sources in rural areas

Context

A shared mobility service operates a near-zero emission and zero-emission carshare in rural, low-income areas helping to fill gaps in mobility. The service area spans multiple counties and local jurisdictions. The program is administered by a non-profit with fees priced to be affordable to users. The program does not currently generate enough revenue from user fees to cover capital and operating costs. Overall utilization dropped due to Covid-19 disruption and is recovering slowly. In addition, there are significant capital costs for acquiring hybrid and fully electric vehicles for its mixed fleet as well as the charging infrastructure required to support the vehicles.

Goal: To reduce reliance on grants and ensure longer-term sustainability without raising user fees.

Potential Strategies

This program has a funding shortfall; therefore, it is recommended that program administrators primarily explore new funding sources. Depending on the success of securing more reliable funding streams, financing strategies may be combined to cover up-front capital costs.

- **VMT-based impact fees/mitigation bank.** Public policy initiatives such as a VMT-mitigation bank could provide a source of funding. This would require collaboration with multiple government and agency partners as the service spans several jurisdictions. Fees are typically linked to the size/scale of development and therefore may be best suited to discrete capital costs. With the proper structure, fees could be used to fund programs in areas outside of the development (rural areas).
- **Community Benefits Agreement**. These agreements are typically involved in larger, regional infrastructure investments such as State Rail Plan projects or High-Speed Rail investment. An agreement could involve set-asides for community-based mobility projects that support ridership on the broader transit network.
- **LCFS Holdback Credits**. EV Fleets and EV charging operators can generate credits for mitigating pollution and monetize them by selling them to companies that need credits under bilateral contracts.
- **Concessional Financing/CalCAP EVCS Financing Program.** If reliable funding sources are secured, or the program is able to generate more revenues as usage recovers, concessional financing could be an affordable way to access funds for electric vehicle and infrastructure costs.

Role for CARB

CARB can provide support structuring VMT mitigation bank administration across multiple jurisdictions and help identify local or regional projects that might be suitable for community benefits agreement by engaging with key stakeholders. CARB can continue to operate the LCFS program and provide credits that support projects that reduce GHGs.

Scenario 2: Tap into local sources of funding

Context

A second shared mobility program offers carshare services to low-income users in an urban geography. The service is free to city residents who register and is one of several transportation options, including dial-a-ride service and transit subsidies, to help people access mobility options. The carshare services are also capital intensive made more difficult by the rising cost of fully electric vehicles.

Goal: To provide a free mobility service to residents while supporting broader mobility goals in the city and region.

Potential Strategies

Carshare provides direct benefits to the local government and employers by providing mobility options to residents and employees and serving as a first/last mile connection. Therefore, program administrators should explore a range of local funding options.

- **Development Impact Fees (Mobility Fees).** Local government could provide path for long-term funding by allocating developer fees towards capital costs for this program.
- **Local Transportation Sales Tax.** Local or regional sales tax proceeds could also be directed towards the program.
- **Community Benefits Agreements** As with the previous example, carshare services could be linked to broader infrastructure investments in the region through Community Benefits Agreements.
- **Bundled Transit, Employer Based Programs.** Policy tools (such as a Transportation Demand Management program) could require employers to fund mobility programs which help their employees access worksites using non-drive-alone modes.

Role for CARB

CARB grant funding can provide proof of concept to local governments and employers, demonstrating the social and economic value of the program and assisting with up-front capital costs. CARB can also help identify broader transportation investments that might be supported by community mobility options and therefore suitable for community benefits agreement.

6 Conclusion

Shared mobility programs that serve low-income users play an important role in providing clean mobility options in disadvantaged communities, while helping the state to reduce greenhouse gas emissions associated with single-occupancy vehicles. These programs also serve an important function providing wider economic and social benefits to local governments, businesses, and communities. Yet, they often struggle to secure long-term funding sources. Many depend on state or federal grant programs, such as the CARB STEP and CMO programs, which are heavily oversubscribed. Programs that do not achieve commercial viability by the time the grant term ends fail to extend beyond the pilot period.

This white paper explores innovative tools and strategies employed in the transportation and other sectors to address funding shortfalls and unlock private financing opportunities. This involved the development of a custom evaluation and conceptual framework to help program administrators and policymakers refine and identify potential funding solutions based on their specific program needs, goals, and contexts. Importantly, the evaluation revealed that contextual factors influence outcomes. There is no one-size-fits-all approach for every use case.

Policy measures that are linked to broader transportation investments have the potential to deliver sustained funding sources, but do require collaboration among program administrators, local governments, and agencies to be successful. Private financing strategies alone are unlikely to succeed in disadvantaged communities without additional direct funding strategies other than user revenue. Affordable shared mobility programs in disadvantaged or low-income communities typically struggle to attract private investment because of a higher-risk profile and inability to produce a sufficient return-on-investment. Therefore, successful shared mobility programs will need to employ a range of strategies to improve commercial viability and/or achieve long-term sustainability. Generally, these strategies work in five different ways to address funding and financing challenges:

1. **Provide new funding sources to cover capital and operating expenses and address gaps in revenue and costs**. The most promising strategies to address a funding shortage are public policy initiatives designed to generate more sustainable non-grant funding streams, such as tax policies, developer-targeted initiatives, and VMT-based mitigation fees.
2. **Structure funding sources to be repayable based on future project performance.** This benefits the funder who has the potential to recover some of their investment if the project increases revenue or reduces costs in the future.
3. **Leverage public funding sources to cover project risks that are otherwise unattractive to private investment.** CARB can fund a portion through loans or grants of the project corresponding to risk and take on first loss. This helps "crowd in" private investment.
4. **Reduce the cost of borrowing by deploying concessional financing strategies**. For example, CARB can provide loans at affordable interest rates, assuming off-market risk.
5. Delay funding needs with traditional financing strategies to access money up front. Programs have the ability to pay back loans over longer period.

The evaluation matrix can be used to further review individual strategies for benefits and risks in respect to their unique goals and context, eliminating those that cannot be alleviated by pairing with other strategies or seeking out partnerships.

Maximize Funding Dollars

In addition, shared mobility programs that work with local agencies and governments can employ the following approaches to maximize the value of public and private investments to deliver community mobility solutions:

1. Enlist support from indirect beneficiaries, which can include other agencies, local governments, and employers.
2. Connect the project to larger transportation initiatives, for example by incorporating shared mobility programs into transit projects as first/last mile solutions.
3. Reduce funding need by identifying efficiencies and revenue-generating projects that might be able to cross-subsidize shared mobility services with less commercial viability.
4. Prioritize projects that are most like to succeed in achieving commercial viability or delivering equity and sustainability outcomes in alignment with CARB's goals and objectives.

Next Steps for Shared Mobility Programs

The next step for shared mobility programs is to assess the key problems and contextual factors influencing those programs. CARB and technical support providers should work directly with existing and planned shared mobility services to develop funding and financing plans that incorporate one or more strategies tailored to specific challenges. Table 6-1 provides an overview of next steps and key questions to guide shared mobility programs in their business planning.

Table 6-1 Questions to Guide Next Steps for Shared Mobility Programs

Next Step	Key Questions
Define the problem and understand the program context.	• What is the value of the program and to whom? • Is the program commercially viable or does it have potential to be?
Identify strategies aligned with program goals.	• If the problem if funding, what types of strategies might deliver more reliable funding streams? • If financing is an option, what are the obstacles?
Enlist support from suitable partners.	• Can other agencies/ governments/ indirect beneficiaries provide support? • How do shared mobility programs align with local or regional transportation investments?
Emphasize accountability.	• Do programs have right level of technical support (including financial advisors)? • Are programs achieving desired outcomes (social, environmental)? • Do programs have a plan to self-sustain beyond the CARB grant horizon?

Recommendations for CARB and Questions to Guide Future Research

As the state agency responsible for meeting California's ambitious climate action goals, CARB plays an important role in the deployment of a zero-emission strategy. CARB also recognizes that low-income and disadvantaged communities experience significant barriers to accessing clean mobility solutions. CARB can therefore support better shared mobility program outcomes by using grant funds to:

1. **Demonstrate proof of concept**. CARB can help fund shared mobility programs in disadvantaged and low-income communities to demonstrate to stakeholders how these efforts lead to desired social and/or environmental outcomes. Communities may experience significant benefits even if the service itself does not achieve commercial viability.
2. **Cover expensive capital costs early in the project lifecycle**. For example, CARB can use state funding to invest in charging infrastructure and electric vehicle procurement, leaving other funding and financing tools and strategies to assist with operating costs. This can lead to better efficiencies in both capital and operating expenditures. This may require prioritizing projects which demonstrate ability to achieve commercial viability or secure other long-term funding sources.
3. **Use public dollars to make financing strategies more accessible** to projects that otherwise demonstrate long-term financial sustainability by minimizing risk to the private sector or offering more affordable financing options.

CARB can also lead in helping to shape the goals and objectives of the California Climate Investments program to meet ambitious greenhouse gas reduction targets and improve access to mobility options in disadvantaged communities. An important component to this effort will be to help build partnerships among public and private entities which will ultimately enable development of public policy initiatives to fund and support programs long-term.

Table 6-2 provides an overview of recommendations for CARB and key questions to guide areas of future study.

Table 6-2 Recommendations for CARB and Areas of Future Research

Recommendation	Areas of Future Research	Key Questions to Guide Future Study
Review and refresh CARB's mandate.	• Assess CARB's social and environmental goals and objectives. • Evaluate how projects have been performing against current objectives.	• How has CARB interpreted its legislative mandate? • Are funded programs achieving social and environmental goals?
Build proactive partnerships.	• Partner with agencies that have similar social/equity goals (e.g., Caltrans, GoBiz). • Develop profile of projects CARB would like to fund. • Explore how CARB might apply new funding sources and financing mechanisms through these partnerships (e.g., GHG mitigation banks).	• Which agencies share a similar set of goal and objectives? • What types of projects would advance shared goals and objectives? • What other entities might benefit indirectly from the service and be able to fund mobility and circulation projects (e.g., business improvement districts)?
Prioritize and allocate funding to projects that demonstrate longevity or deliver most social benefits.	• Require applicants to demonstrate longevity, if not commerciality at the application phase.	• Can CMO and STEP programs be restructured to fund priority programs? • How can eligibility criteria be changed to place more

Recommendation	Areas of Future Research	Key Questions to Guide Future Study
	• Invest in sectors (microtransit, e-bus) and refine eligibility criteria by project type. • Find experienced technical advisors with financial expertise to support programs.	responsibility on the applicants? • What are the specific challenges for those programs (e.g., commerciality, risks, cost of lending, timing)?
Focus on access to sustainable modes in disadvantaged communities more broadly.	• Focus on sustainable modes more broadly (transit, microtransit). • Support state transportation goals (statewide bus network, mobility hubs). • Advance electrification with focus on vehicles and EV infrastructure.	• Can CARB introduce caps on specific program types (for example carshare)? • Is market sounding required to understand willingness of private sector to participate (operations)?

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A Summary Tables

Table A-1 Funding Strategies Advantages and Disadvantages by Category

Broader Category	Sub-Category	Name of Strategy	Advantages	Disadvantages
Policies / Public Initiatives	CARB Policy	LCFS Holdback Credits	• Can provide funding for proof of concept. • Can be applied to small-scale projects serving disadvantaged communities	• Funding levels are relatively small • Grant period is limited (2-4 years) • Public agencies bear most risk including costs of administration • Amount of funding is reliant on external programs
Policies / Public Initiatives	CARB Policy	Regulation Credits/Incentives for Private Investment	• Can lower project costs and make investment more attractive to private institutions	• Distributes risk to mobility providers • Funding sources may be limited based on pool of participating agencies.
Policies / Public Initiatives	Developer-targeted Initiatives	Community Benefits Agreements	• Can be used to fund local initiatives • Developers are more likely to receive public and community support for their projects • Ensures specific benefits to community	• Risk of investing in benefits is primarily carried by private/public developer.
Policies / Public Initiatives	Developer-targeted Initiatives	Development Impact Fees (Mobility Fees)	• Can generate funds in proportion to new development's impact • Co-benefits to developers and community from reduced traffic congestion	• Eligibility varies across cities and jurisdictions • Funds from impact fees can only scale with community • Time delays as impact fees require legislative processes and political support • May disincentivize development • Zoning laws are designed for long-term needs, may be a mismatch between present and future needs

Broader Category	Sub-Category	Name of Strategy	Advantages	Disadvantages
Policies / Public Initiatives	Developer-targeted Initiatives	VMT-based Impact Fees, Mitigation Banks, Mitigation Exchanges	• Can augment other funding sources and banks can be structured to permit the aggregation of funds for large scale projects • Reduced risk to public sector since funding comes from private developers with no requirement for the public sector to repay. • VMT exchanges provide increased community visibility of how the projects are funded, reduced legal concerns, increased appeal for developers (since they can choose exactly where their development credits go), and reduced the time delays between development and project. • Places a greater cost burden on development projects that will have higher cost on road infrastructure (i.e., higher levels of VMT)	• Reliability issues as funding is tied to external factors. For mitigation banks, funding depends on design of bank. For mitigation exchanges, funding is more directly tied to projects and funding can be accessed quicker but may not last as long. • Implementation requires government/policy expertise. Safeguards for protecting the interests of low-income, disadvantaged communities may require nexus studies, more stringent standards or a limit to region covered by exchange could be implemented to ensure that developments in those communities directly funds the community. • Risk of political pushback if developers decide to relocate because of this bank or if projects don't directly impact the areas of development.
Policies / Public Initiatives	Tax Policies	Local Transportation Sales Tax Measures (e.g., Half-cent sales tax)	• Can provide a large and stable source of funding over several years/decades • Typically limited to no cost of borrowing • Less risk to the receiver or transportation provider	• Sales taxes must be approved by the general public in a ballot measure, incurs political risks, start-up costs and time delays • Funding may need to be dedicated to pre-determined plan, project, or suite of projects

Broader Category	Sub-Category	Name of Strategy	Advantages	Disadvantages
Policies / Public Initiatives	Tax Policies	Qualified Opportunity Fund (Tax Incentives)	• Provides direct funding to programs and projects that are in qualifying opportunity zones. • Can be used to augment existing funds • No cost of borrowing • High reward for communities in need with little/no investment in program. Risk is primarily carried by private investor.	• May not be sustainable over the long run as private investors meet their tax reduction targets • Complex transaction for QOF investors, requiring expertise in capital/financial markets and regulations • Might disbenefit areas or projects that have greater need within opportunity zones if investors target real estate projects, benefitting developers mostly.
Policies / Public Initiatives	Tax Policies	Tax Increment Financing (TIF), Enhanced Infrastructure Financing Districts (EIFD)	• Scalable, usually paired with other sources to fund projects. • Low-cost investment as appreciation in property values is a function of regional economics - does not take significant investment outside of setting up legislative program to enable TIF. • AB 313 authorizes EIFDs to use TIF to support a variety of infrastructure projects. • Depending on program design, TIF funds may allow for flexible use of spending. Joint-powers authorities can be formed by cooperating local jurisdictions with the legal authority to use TIF to repay bond debt or fund various projects.	• Local government must administer tip, incurs political, implementation, and administration costs especially for projects that rely on impact fee strategies. • Relies upon appreciation of property values. • Restrictions in eligible use for TIF funds can be a risk, including local jurisdiction's policy framing and what is included in projects eligible to be funded by TIF. • Differences in how property values increase across different jurisdictions could imply inequitable outcomes of TIF-based program support; low-income, disadvantaged, and rural communities may experience slower appreciation in property values.

Broader Category	Sub-Category	Name of Strategy	Advantages	Disadvantages
Policies / Public Initiatives	Tax Policies	Transportation/Road Pricing	• Could provide direct funding to programs and projects in which net road pricing revenues are apportioned. • No cost of borrowing. • High reward for all transportation users (both users of shared-mobility programs and all other travelers) - high reward to drivers as peak congestion reduces, high reward to transit users as transit time prediction accuracy improves, high reward to community members in which theoretically, congestion would be reduced leading to local environmental benefits. Could reduce risk of funding shortages since funding is tied to road usage, which can be a more reliable source of revenue than other more directly political based strategies).	• Unpredictable declines in revenue due to unforeseen events (i.e., COVID and work from home) could diminish revenue sources. • May increase the costs of driving for vehicle based shared mobility programs. • When compared to gas taxes, road pricing tends to be more costly for EV drivers. • Might distribute risk to political officials who may receive pushback if their constituents feel as if it is unfair to suddenly be charged for road usage.
Operating Model	Governance Strategies	Cooperatively Owned: Community Owned	• May enable certain cost reductions, as the community becoming a single buyer, can improve their negotiating or market power over potential suppliers. • Co-ops allow risk and costs to be pooled among community members, enabling larger investments to be undertaken than a single community member could undertake.	• Does not necessarily lead to greater funding or financing. • Co-op would still depend on pursuing funding or financing through some means.

Broader Category	Sub-Category	Name of Strategy	Advantages	Disadvantages
Operating Model	Governance Strategies	Cooperatively Owned: Worker - Owned	• Project costs are often shared by workers. In some cases, this can reduce overall costs as bulk purchases/agreements are made (i.e.: all workers agree to use the same credit union in exchange for low interest rates). Also, there tends to be less turnover in worker owned cooperatives which can in turn reduce project costs. Also, workers co-ops generally pay less in taxes. • Rewards and risks of the organization are shared among workers. This incentivizes workers to act in the best interest of the organization. • May attract socially conscious investors and crowdsourced loans.	• Workers may collectively decide to focus on priorities other than program growth. Additionally, workers may decide to cash out of their shares instead of allowing the profits to be reinvested into the company. • Costs for operating the program could be greater since workers' input is prioritized. Therefore, the costs of labor and working conditions may be higher. • Since there is not one individual responsible for finances, supervision, or performance - worker co-ops may lose access to financing opportunities.
Operating Model	Revenue Strategies	Bundled Transit, Employer Based Programs, Other	• These strategies are ideal for smaller programs. • Funding can be directly scalable with demand. • In some cases, lowers costs for some bundled transit mobility options due to marketing/communications and operational infrastructure. • Risk is distributed to funding partners instead of the mobility provider taking on all the risk. • By guaranteeing streams of revenue, may make the shared mobility program more attractive to potential investors or financiers.	• Funding size is limited to the size of the funding partner's user base. • Typically covers operational costs and not upfront costs to build the technological platform/infrastructure necessary for these programs.

Broader Category	Sub-Category	Name of Strategy	Advantages	Disadvantages
Operating Model	Revenue Strategies	Corporate Sponsorship	• Provides funding that can be scaled with company growth. • Programs with a title sponsor have an advantage in that they don't have to constantly spend senior staff time soliciting new sponsors every year. • Private Sponsor shares some of the risk. • Can provide direct funding to mobility program service providers/operators in disadvantaged communities. These providers would otherwise find it difficult to raise funds from traditional funding sources or from the private sector.	• Lacks sustainability: sponsorship contract lengths vary greatly, but many are renewed on an annual basis. Some sponsorships require renewal of public funding. • Private company's purpose or mission may not align with project goals or community's best interest. • Reputational risk is inherent for projects receiving sponsorship funding -- the private company's public image can impact the project's success. • Program Operator could lose future public and private support if initial performance is not successful. Projects that rely on single or primary title sponsors risk being discontinued if sponsor does not renew contract.
Operating Model	Revenue Strategies	Licensing agreements	• Can provide a new alternative source of revenue, which can indirectly sustain mobility providers servicing disadvantaged communities.	• May pose a risk to users (i.e., data privacy) or impede on the objectives of the licensor to serve the public in some way (i.e., reduce public access at certain times for higher revenue-generating private access)
Utilities	Utility	Community Choice Aggregators (CCA)	• Criteria for benefiting from a CCA program (i.e., e-bike vouchers) could be linked to existing rate-payer assistance programs.	• The cost of the credit/program may be solely borne by the CCA. • As a voucher program, there may be unreliable usage data to monitor program performance (i.e., usage of e-bikes that were obtained through an e-bike voucher).

Broader Category	Sub-Category	Name of Strategy	Advantages	Disadvantages
Utilities	Utility	Power Utility Companies – (Privately and Publicly-Owned)	• Depending on the Utility and the partnership, they may be able to provide funding towards capital and operating expenses. • In-kind services offered by a Utility may reduce the overall cost for a project, as these services would otherwise need to be purchased. • Utility-involved programs tend to have several partners. This can help reduce the risk for any one partner. • May offer level of technical expertise with regards to infrastructure. This expertise might not be available from other partners.	• May improve the viability of a project, but this may be subject to the willingness of the utility to get involved. There may be a higher level of revenue/profit seeking from the private utility than there would be from a public utility. • While risk may be reduced due to high number of partners, this may increase the cost and complexity of developing and maintaining a program. • Public utility may be subject to more traditional, jurisdictional, or political limitations in what it can offer.

Table A-2 Financing Strategies Advantages and Disadvantages by Category

Broader Category	Sub-Category	Name of Strategy	Advantages	Disadvantages
Financing	Microfinancing	Community Development Financial Institution	• Provides credit, investment capital and financial services. • Numerous CDFIs are operational in California.	• Support may only be offered to revenue-generating programs
Financing	Concessional Financing	Green Banks	• Provides favorable lending terms, helping significantly lower the cost of borrowing • Reduces risk for private investors as public sector incurs most of the risk through loan guarantees, accepting the subordinated debt position, etc. • Encourages investment in programs in disadvantaged communities, and can improve the attractiveness to investors of projects in typically non-profitable markets	• Support may only be offered to revenue-generating programs as loans are still expected to be repaid. Providers may be incentivized to target operations towards more profitable communities or increase user fees. • Legislation is needed to enable governments to fund green banks
Financing	Concessional Financing	Green Bonds	• Fixed interest loans reduce the cost of borrowing. • Funding is geared towards supporting environmental and sustainability benefits. • Equity is not included in the Green Bond principles and is therefore not of primary interest to Green Bond investors.	• Potentially high cost of borrowing due to complex transaction and capital market fees. • Bond issuer incurs risk of program default.
Financing	Concessional Financing	Outcomes-Based Contract	• Improves funding availability as funding is often provided upfront or in tranches, giving service providers the liquidity to deliver services and the ability to innovate. • Improves access to private investment for programs with social goals, such as equity, that are aligned with investor interests/targets.	• Potentially high cost of borrowing due to complex transaction and capital market fees. • Bond issuer incurs risk of program default. • Private financing favors projects that generate revenues as returns

Broader Category	Sub-Category	Name of Strategy	Advantages	Disadvantages
Financing	Credit Enhancement	Private Debt Financing with First Loss/Loss Reserves	• A dedicated cushion for debt defaults reduces the risk for the financial institute extending the loan. • Increased access to finance for targeted low-income communities	• Since first loss reserves back specific project loans, there is still an inherent risk of the project failure and the first loss reserves to outrun the loan defaults.
Financing	Microfinancing	Private Debt Financing: Co-op Finance/Group Lending/Grameen Bank (Bangladesh)	• Since microfinance institutions are dedicated to serve selected communities, they provide financing at costs relatively affordable to the target community. • Gives access to finance in low-income communities that typically may not receive it.	• Support may only be offered to revenue-generating programs
Financing	Partnerships	Public-Private Partnership Financing	• Project financing should demonstrate sustainability. Typically, user transaction revenues are projected to cover debt obligation under various stress scenarios for debt service period. • Agreements between public and private entities allow for risk mitigation and support the project's commercial viability. Distributed risk among investors, and reduced risk for original/default public or private sponsor.	• Project funding level would depend upon the P3 agreement/ arrangement between the public and private entity. • Requires capital markets expertise, legislative support, and has significant barriers to access and facilitate transactions.

Broader Category	Sub-Category	Name of Strategy	Advantages	Disadvantages
Financing	Credit Enhancement	Revolving Loan Fund	• Lower upfront costs, interest rates and relatively flexible repayment terms may bring the cost of borrowing and overall project costs down. • Little/no risk for shared mobility provider, while benefiting from concessional financing. • Most RLFs are specialized to support eligible projects that would otherwise have difficulty accessing banking or credit.	• RLFs that stem from direct public funding, and no private capital, can be limited in being able to provide quick access to capital. • Mechanism could require high set up and fund management costs. Further, maintain program eligibility for specialized RLFs (e.g., EDA's EAA RLF) might be costly. • Program default remains a risk -- programs requirements may include collateral for securing loans.

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