

# REGIONAL PILOT INITIATIVE (RPI) PROGRAM DEVELOPMENT FRAMEWORK

Final Report

REVISED AND APPROVED  
JULY 2023

# EXECUTIVE SUMMARY

The Southern California Association of Governments (SCAG) is the nation’s largest metropolitan planning organization (MPO), representing six counties, 191 cities, and more than 19 million residents. SCAG undertakes a variety of planning and policy initiatives to support their goals of a more sustainable Southern California now and in the future. [Connect SoCal, the 2020-2024 Regional Transportation Plan/Sustainable Communities Strategy \(RTP/SCS\)](#), documents these goals and objectives, many of which relate to the nexus of housing and transportation.

This report focuses on the development of **SCAG’s Regional Pilot Initiatives (RPI)** program, which is designed to accelerate the region’s ability to bring key strategies from Connect SoCal 2020 to life. This Program Development Framework documents and explains the work done to define, develop, vet, and track the RPI program, setting up SCAG to successfully deploy individual projects. It chronicles the process of outreach and research that led SCAG to six program areas, explores their consistency with REAP 2.0 goals and constraints, and outlines next steps to further develop projects and collaborative partnerships. **This process is not complete and will be refined and updated after the Regional Council approves the framework and prospective key partners provide input on the program.**

## EQUITY COMMITMENT

In July 2020 SCAG’s Regional Council adopted Resolution No. 20-623-2, affirming its commitment to advancing justice, equity, diversity, and inclusion throughout Southern California.

As part of this Racial Equity Early Action Plan, SCAG committed to bring equity into SCAG’s regional planning functions.

SCAG’s working definition of equity is:

As central to SCAG’s work, racial equity describes the actions, policies, and practices that eliminate bias and barriers that have historically and systemically marginalized communities of color, to ensure all people can be healthy, prosperous, and participate fully in civic life.

The RPI program is built around this framework and seeks to center racial equity in regional planning & policy.



The RPI program is part of the State of California’s Regional Early Action Planning Grants of 2021 (REAP 2.0) program that allocates funds directly to MPOs in California for the purpose of making significant investments in housing and transportation. REAP 2.0 aims to integrate housing, mobility, and climate goals together, meeting multiple objectives for the state while simultaneously funding local and regional efforts. SCAG has designed the program to align with the REAP 2.0 goals of reducing vehicle miles traveled (VMT) by single-occupant vehicles (SOV); accelerating infill development that facilitates housing supply, choice, and affordability; and Affirmatively Furthering Fair Housing (AFFH).

The RPI program builds on previous and current SCAG work at the intersection of innovation and transportation equity. SCAG efforts foundational to this program include [Connect SoCal 2020](#), [Racial Equity Early Action Plan](#), [Mobility as a Service Feasibility White Paper](#), [Curb Space Management Study](#), [Transportation Demand Management Strategic Plan and Final Report](#), and [Regional Dedicated Transit Lanes Study](#).

SCAG uses many strategies to guide the region towards a more equitable, sustainable, and prosperous future. Traditionally, these strategies include convening the region around key issues, planning, policymaking, and data management and analysis. With RPI, SCAG aims to build on the emerging practice of providing implementation support to local jurisdictions through partnerships. By supporting scalable implementation pilots, SCAG can help streamline approaches and align local practices, provide resources and opportunities to smaller and under-resourced jurisdictions, and expand capacity throughout the region.

Through RPI, SCAG will engage with public and private partners to develop and deploy pilot projects. Keeping equity as its top priority, SCAG seeks to test new technologies and innovative models that have the potential to scale regionally to achieve transformative impact. RPI builds on the successes of the [Future Communities Pilot Program](#), which in 2019 awarded grants totaling \$2.7 million dollars to eight jurisdictions across the SCAG region to implement new technology and data solutions while also reducing VMT and achieving RTP/SCS objectives.

**Figure 1: RPI Program Phases**



SCAG sees implementation support activities, such as technical assistance, project development management, and procurement, as critical to helping the region meet its ambitious goals. From the Last Mile Freight Program to the Go Human program, SCAG has experience assisting public and private partners with implementation and will further explore and expand these methods and models through RPI.

**PROGRAM DEVELOPMENT PROCESS**

**Figure 2: Defining Transformative Projects**



The RPI program consists of three main phases: Define, Develop, and Deploy (Figure 1). This report falls between phases two and three.

To **define** the program (December 2022 to February 2023), SCAG conducted background research, reviewed literature, and conducted informal fact-finding interviews with over 30 experts from non-profits, public, and private sector.

To **develop** the program (February 2023 – June 2023), SCAG procured a consultant team, led by Cambridge Systematics, who undertook five main activities:

1. [Market Research](#), which included six additional formal interviews and a stakeholder survey.
2. [Program Framework](#), which included creating prioritization criteria, narrowing down the Program Areas, and writing case studies to highlight relevant example projects.
3. [Performance Measures](#), including outlining a performance management approach for the program, developing program-level Key Performance Indicators (KPIs) and developing indicative KPIs to demonstrate how each Program Area can be measured against each REAP 2.0 goal.
4. [Promising Practices](#), which hone in on specific strategies by Program Area that can be deployed, evaluated, and scaled in the SCAG region to achieve SCAG and REAP 2.0 goals. Additionally, Promising Practices were an opportunity to explore keys to success in implementation across urban, suburban, and rural environments.
5. [Private Sector Opportunities](#), which help SCAG understand the potential partners and models necessary to pursue projects within each program area.






Each of these program development activities helped SCAG better understand and build its RPI Program and is detailed in the full report. The develop phase culminates with Regional Council approval.


Finally, to **deploy** the program (July 2023 – January 2026), SCAG and the consultant team will detail project execution in a Program Development Report, and will include details on project selection, risk assessment, methods of selecting/procuring partners, project roles and responsibilities, program evaluation, and more. Calls for projects and partners will start in 2023 and program evaluation needs to conclude by 2026.

## PROGRAM AREAS

During the development phase, SCAG was able to narrow from twelve to six program areas: **Accelerating Active Transportation, Big Data Research, Curb Space Management, Mobility Hubs, TDM Technology, and Mobility Wallets/Universal Basic Mobility.** These program areas align with REAP 2.0, present opportunities to implement Connect SoCal, build on existing SCAG studies, spurred enthusiasm during outreach, and can be translated into projects that are feasible within the program budget and timeline. Additional details on each Program Area are provided in the table below and the full report.

**Table 1: Final Program Areas**

PROGRAM AREA	DESCRIPTION
 <p><b>Accelerating Active Transportation</b></p>	<p>Innovative active transportation projects will employ new processes to achieve outcomes such as efficient delivery of complete, connected, and safe pedestrian and bicycle route networks; and use that is responsive to community needs and contexts. Pilot projects may include electric bike (e-bike) programs that subsidize and distribute e-bikes to users and quick-build active transportation networks that demonstrate the effectiveness of scalable infrastructure.</p>
 <p><b>Big Data Research</b></p>	<p>Big Data Research projects will work with small and underserved local jurisdictions to identify and research key transportation planning and policy questions using powerful analytical tools like the StreetLight Big Data Platform, also funded by REAP 2.0. These projects will drive usage of existing big data platform contracts, build capacity for the use of tools and data-driven decision-making, and will have the flexibility to tailor the work to specific local community needs and contexts.</p>
 <p><b>Curb Space Management</b></p>	<p>Curb Space Management pilot projects may explore new technologies and innovations, including dynamic curbing pricing, curbing use designations, and other operational strategies. Pilots may include designating areas for loading and street parking, reallocating space for bicycle parking, shared-used mobility and parklets, technology for bus stop and bus lane enforcement, and technology to map and track curbing use.</p>
 <p><b>Mobility Hubs</b></p>	<p>Mobility Hubs serve as community anchors that enable travelers of all backgrounds to access at least two or three transportation options that can include transit, bikeshare, carshare, and other shared-mobility options. SCAG's mobility hub pilot projects will see partnerships with public sector agencies to create or enhance mobility hubs through interventions such as placemaking and signage, amenities, and co-location of modes. Projects will have the flexibility to adjust the number of hubs, typologies, and types of investments selected to be responsive to local needs and contexts.</p>
 <p><b>TDM Technology</b></p>	<p>TDM Technology focuses on innovative programs or projects that reduce the demand for solo vehicle trips. Examples of pilots may include convening regional forums designed for TDM policymakers and implementers; creating a regional TDM data clearinghouse, including supports for cities, employers, and agencies transitioning to reporting more on Vehicle Miles Traveled (VMT); piloting residential TDM programs where tenants gain access to more travel options; and/or piloting innovative TDM software that facilitates access and use of TDM-related services.</p>

PROGRAM AREA	DESCRIPTION
 <p><b>Mobility Wallets/Universal Basic Mobility</b></p>	<p>Mobility Wallets and Universal Basic Mobility pilot projects will focus on actions that make modes other than driving alone more seamless, accessible, and integrated. SCAG’s pilot projects will explore how customer experience improvements, incentives and subsidies, and coordination to expand access and improve mobility will affect travel behavior in the region and reduce VMT.</p>

To determine the types of projects that could be implemented in these Program Areas, the consultant team developed six case studies based on these Program Areas. The case study research further defined the Program Areas and will provide best practice information on how SCAG can successfully implement projects in these Program Areas. Promising Practices further explore keys to success within these program areas; Performance Measures demonstrates how projects can be measured to ensure alignment with REAP 2.0 and track progress against outcomes; and Private Sector Opportunities highlight key considerations in forging partnerships and potential partner types.

### NEXT STEPS

This project is still evolving. SCAG presented [a summary](#) of this Program Development Framework to Regional Council on July 6, 2023, which the Council approved. It provided the Regional Council an opportunity to provide executive feedback on the proposed Program Areas for which SCAG intends to issue RPI Program funding before SCAG begins the Program Execution phase. SCAG will incorporate any feedback collected into the final Program Development Framework and the Program Deployment Report.

The Deployment Report will add another layer to this information and provide a comprehensive blueprint for how SCAG plans to move forward with the RPI program. SCAG will incorporate any feedback collected into the final Program Development Framework and the Program Deployment Report.



# REGIONAL PILOT INITIATIVE (RPI) PROGRAM DEVELOPMENT FRAMEWORK

PUBLISH DATE: JUNE 29, 2023

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## ABOUT SCAG

SCAG is the nation's largest metropolitan planning organization (MPO), representing six counties, 191 cities and more than 19 million residents. SCAG undertakes a variety of planning and policy initiatives to encourage a more sustainable Southern California now and in the future.

## VISION

Southern California's Catalyst for a Brighter Future

## MISSION

To foster innovative regional solutions that improve the lives of Southern Californians through inclusive collaboration, visionary planning, regional advocacy, information sharing, and promoting best practices.

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## INTRODUCTION

The Southern California Association of Governments (SCAG) is the nation's largest metropolitan planning organization (MPO), representing six counties, 191 cities, and more than 19 million residents. SCAG undertakes a variety of planning and policy initiatives to encourage a more sustainable Southern California now and in the future. Many of the agency's regional goals and objectives are intrinsically connected to the transportation network. Connect SoCal, the 2020-2024 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), documents these goals and objectives, many of which relate to the nexus of housing and transportation.

This report focuses on the development of SCAG's **Regional Pilot Initiatives (RPI)** program, which is designed to accelerate the region's ability to bring key strategies from Connect SoCal 2020 to life.

The RPI program is part of the State of California's Regional Early Action Planning Grants of 2021 (REAP 2.0) program that allocates funds directly to MPOs in California for the purpose of making significant investments in housing and transportation. REAP 2.0 aims to integrate housing, mobility, and climate goals together, meeting multiple objectives for the state while simultaneously funding local and regional efforts. SCAG has designed the program to align with the REAP 2.0 goals of reducing vehicle miles traveled (VMT) by single-occupant vehicles (SOV); accelerating infill development that facilitates housing supply, choice, and affordability; and Affirmatively Furthering Fair Housing (AFFH).

Through RPI, SCAG will identify, evaluate, and award funding for regional or local pilots and projects. This program launches a \$15 million transformative regional transportation program to implement innovative pilot projects and programs across the region. REAP 2.0 funding will help CTCs, transit agencies, and local jurisdictions make the transformative changes needed to improve market conditions and shift travel modes spurring equitable development within infill areas.

Through RPI, SCAG will engage with public and private partners to develop and implement transformative pilot projects. SCAG seeks to test new technologies and innovative models that have the potential to scale regionally to achieve transformative impact. It builds on previous and current SCAG work at the intersection of innovation and transportation equity.

RPI is one of two components that SCAG is developing for implementing REAP 2.0 transportation initiatives. The second is the **County Transportation Commission (CTC) Partnership Program**. This program establishes robust partnerships between SCAG and CTCs to pass through funding for county-specific pilots and projects that help achieve regional transportation goals and objectives. The CTC Partnership Program does this by funding a \$80 million competitive call for projects with the CTCs to advance high-impact and transformative concepts consistent with Key Connection strategies in Connect SoCal.

The CTC Partnership and RPI Programs target investments towards critical infrastructure that will improve mobility, quality of life, and economic potential for the people who call this region home and the 3.7 million new residents projected by 2045.

## EQUITY COMMITMENT

In July 2020 SCAG's Regional Council adopted Resolution No. 20-623-2, affirming its commitment to advancing justice, equity, diversity, and inclusion throughout Southern California.

As part of this Racial Equity Early Action Plan, SCAG committed to bring equity into SCAG's regional planning functions.

SCAG's working definition of equity is:

As central to SCAG's work, racial equity describes the actions, policies, and practices that eliminate bias and barriers that have historically and systemically marginalized communities of color, to ensure all people can be healthy, prosperous, and participate fully in civic life.

The RPI program is built around this framework and seeks to center racial equity in regional planning & policy.





# INTRODUCTION TO THE REAP 2.0 PROGRAM

The principal goal of REAP 2.0 is to make funding available to MPOs and other regional entities for transformative planning and implementation activities that meet housing and equity goals, reduce vehicle miles traveled (VMT) per capita, and advance implementation of SCS. REAP 2.0 is a key part of California’s strategic investments toward a more sustainable, resilient, and inclusive future. REAP 2.0 builds on the success of REAP 2019 (or REAP 1.0), but expands the program focus by integrating housing and climate goals and allowing for broader planning and implementation investments (including infrastructural investments that support infill development which facilitates housing supply, choice, and affordability). REAP 2.0 seeks to accelerate infill housing development, reduce VMT, increase housing supply at all affordability levels, Affirmatively Further Fair Housing (AFFH), and facilitate the implementation

of adopted regional and local plans to achieve these goals. REAP 2.0 will be administered by the California Department of Housing and Community Development (HCD) in collaboration with the Governor’s Office of Planning and Research (OPR), the Strategic Growth Council (SGC), and the California Air Resources Board (CARB).

Achieving the REAP 2.0 objectives (as shown in 3) and goals of the SCS requires upending decades old patterns of development that prioritize the ability of travelers to conveniently travel long distances by car in favor of development patterns that reconcile traveler need and preference with ecological impact. To make the healthier, safer, more equitable, and more sustainable travel choices – such as walking, biking, and transit – as fast, convenient, reliable, and secure as driving requires large-scale, intentional, and sustained investment. These investments must recognize the nexus of transportation and land use to create a mutually reinforcing relationship.

**Figure 3: REAP 2.0 Objectives and Eligible Uses**



## REAP 2.0 ELIGIBLE USES

- > Accelerating infill housing development
- > Realizing multimodal communities
- > Shifting travel behavior by reducing driving
- > Increasing transit ridership

**Source: California Department of Housing and Community Development**

Projects funded under REAP 2.0 will be constrained by eligible uses of funding and by REAP 2.0 Program timelines. Key milestone dates are listed in Table 2. For SCAG to have the data necessary to develop the REAP 2.0 final close out report, RPI projects need to have six to twelve months of performance data collected by January 2026.

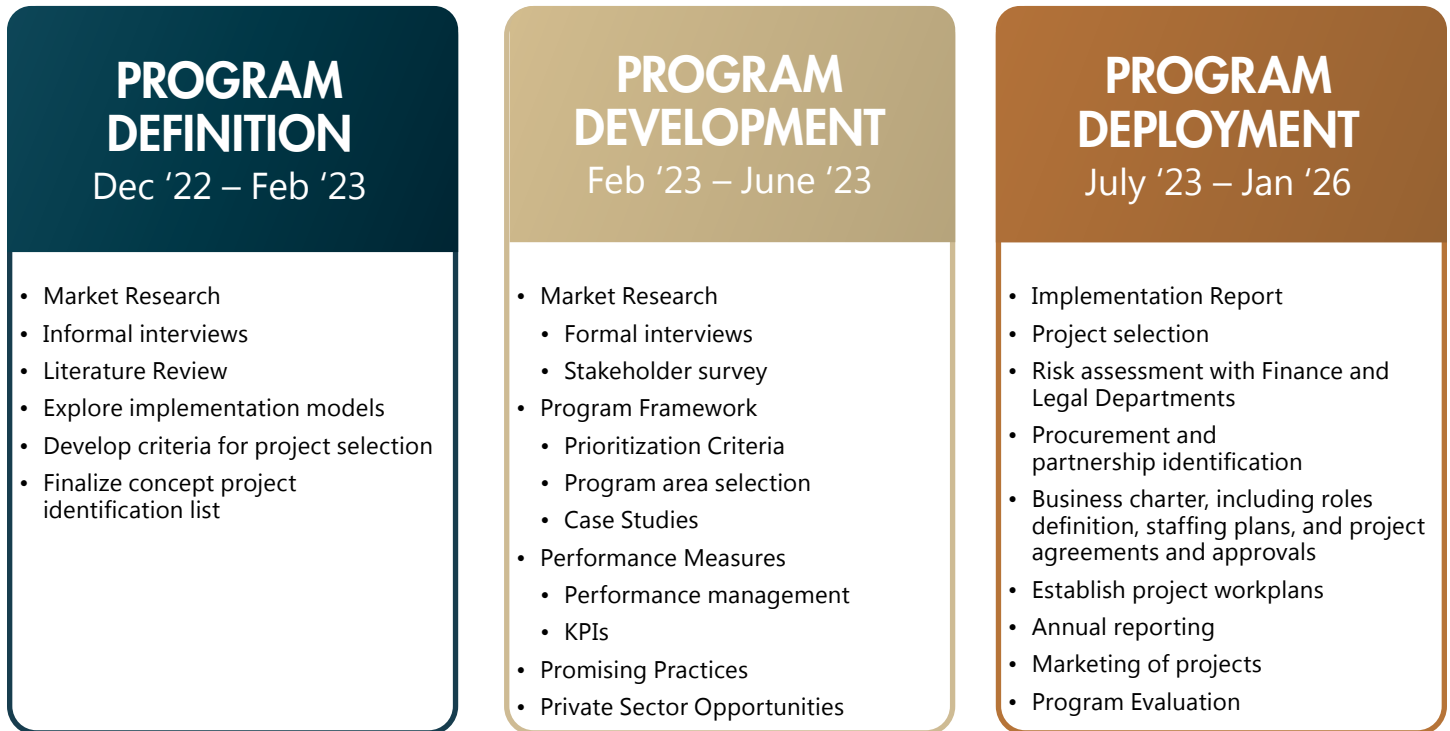
**Table 2: Key Milestone Dates**

MILESTONE	DATE
RPI Project Funding Awards	June 2024
RPI Project Implementation Completion	January 2026
RPI Project Expenditure Deadline	June 30, 2026
REAP 2.0 Final Close Out Report	June 30, 2026

# RPI PROGRAM DEVELOPMENT PROCESS

The RPI program consists of three main phases: Define, Develop, and Deploy (Figure 4). This report falls between phases two and three.

**Figure 4: RPI Program Phases**



The focus of this Program Development Framework is to detail the five strategic program development efforts (Market Research, Program Framework, Performance Measures, Promising Practices, and Private Sector Partnerships) described in detail below. These efforts were conducted iteratively, and will continue to further define the RPI program in the coming months.

Both the RPI and CTC Partnership programs seek to make more destinations and daily services accessible by transit, walking, bicycling, and through shared modes, while also prioritizing infill areas. **The RPI Program seeks to accelerate innovative, next generation pilot projects which are real-world manifestations of policy concepts that cannot yield outcomes until they are implemented at scale and cannot be implemented at scale until they are piloted, refined, and proven on the ground.**

The RPI Program gives SCAG the opportunity to advance projects with a broader set of public sector partners than the CTC Partnership Program. Intended to bring the Key Connection Strategies of the SCS to life, it presents opportunities to build upon existing SCAG work products around transformative and innovative concepts. One main differentiator of this program compared to other SCAG programs is the role that SCAG intends to play in the implementation of selected projects.

The level of investment made by the state, and the level of transformation to reach regional goals, necessitates a consistent voice and presence by SCAG throughout implementation to ensure that objectives translate to outcomes. While this is a newer step for SCAG, it is not without precedent within the agency, nor among MPOs generally. In fact, SCAG has brought on implementation managers to work hand in hand with their policy managers and legal/financial

advisors to drive effective and efficient delivery of results while retaining a spirit of innovation and discovery synonymous with pilot projects.

In addition SCAG can ensure that projects are implemented in an equitable manner through the distribution of funds to disadvantaged and historically underserved communities. As the MPO, SCAG has relationships with each community in their region, in addition to funding resources. In recent years, SCAG has built up its project implementation expertise, complementing their team of experienced project managers and legal/financial advisors. SCAG has also hired seasoned project managers who are available to provide technical expertise and work with staff from local municipalities to deliver important pilot projects. SCAG's wide-ranging skillsets and resources can be leveraged by communities who lack resources to dedicate to accelerated implementation projects while also giving SCAG opportunities to ensure that projects are implemented with consideration for the region as a whole (e.g., standardization, scalability potential, data collection, etc.). For the RPI Program to be successful, coordination and focus on the customer-centered experience is critical.

The RPI program projects reflect SCAG's understanding that this new vision of development requires consumers to change their behavior and travelers to exercise choice constantly in their daily travel. RPI projects allow SCAG to deploy, test, understand, and refine products and services that must take shape in the real world if program goals are to be achieved.

SCAG has procured a technical support services consultant team led by Cambridge Systematics to aid in the development and implementation of the RPI Program. Prior to RPI Program project procurement, the SCAG team conducted market research such as stakeholder and industry interviews,

the preparation of program area case studies, and the dissemination a stakeholder opinion survey as part of the program definition phase. The consultant's efforts during the program development phase will culminate in a **Program Development Framework** as well as the identification of **Promising Practices** (i.e., more detailed potential strategies stemming from the proposed program areas). Using the results from the survey, the consultant team will then determine candidate private sector partners for proposed projects.

As part of the program deployment phase, a **Program Implementation Report** will be developed that will prioritize and finalize the RPI Program projects and recommend strategies for successful implementation and future expansion.

The RPI Program procurement process will take place over the following 6 to 10 months, leveraging guidance provided in the Program Implementation Report. Each step of this development process is intended to help SCAG identify feasible candidate projects that align with the REAP 2.0 objectives and help SCAG implement our Connect SoCal Plan. Figure 4 outlines the three main program development phases: Program Definition, Program Development, and Program Deployment.

## PURPOSE OF THE PROGRAM DEVELOPMENT FRAMEWORK

SCAG presented [a summary](#) of this Program Development Framework to Regional Council on July 6, 2023, which the Council approved. It provided the Regional Council an opportunity to provide executive feedback on the proposed Program Areas for which SCAG intends to issue RPI Program funding before SCAG begins the Program Execution phase. SCAG will incorporate any feedback collected into the final Program Development Framework and the Program Deployment Report.

Included in the Program Development Framework are the following sections:

- 1. Market Research Overview and Findings** – This section highlights prior efforts conducted by SCAG in the program definition phase, as well as market research findings from the consultant team, and key takeaways from stakeholder and industry interviews and survey.
- 2. Program Development Framework** – This section outlines the identification processes that resulted in the six proposed Program Areas.
- 3. Overview of Performance Measures** – This section introduces the performance metrics required for REAP 2.0 Program reporting as well internal SCAG reporting and lists potential key performance indicators (KPIs) for each of the proposed Program Areas. For each program area, this section includes example KPIs for each of the REAP 2.0 Goals.
- 4. Overview of Promising Practices** – This section outlines the identification process that resulted in the 12 proposed Promising Practices.
- 5. Overview of Private Sector Partnership Opportunities** – This section provides an overview of potential private sector partnerships, leading practices and lessons learned in the successful implementation of partnerships, and considerations of funding and financing sources for such partnerships.
- 6. Next Steps** – This section highlights survey efforts that are already underway and provides a preview of the anticipated content for the upcoming Program Deployment Report.





## 2. MARKET RESEARCH

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The purpose of conducting broad market research on the landscape of transformative transportation initiatives is to identify a set of potential Program Areas that align with both REAP 2.0 objectives and goals of the SCS, in addition to demonstrated success elsewhere. As part of RPI Program definition and development phases, market research was conducted through complementary engagement and outreach efforts by SCAG and the consultant team.

## PRIOR EFFORTS FROM SCAG

For the development of the RPI Program, SCAG staff conducted numerous informal industry briefings to better understand the technology landscape specific to the potential for development and implementation of various transformative transportation strategies. SCAG staff used the responses to help formulate the initial groundwork necessary to support the RPI Program. The projects funded through the RPI Program will be developed from SCAG's prior research and feasibility studies, all of which have included outreach across the region, including to disadvantaged communities. By design, RPI projects will be developed using the goals of the SCS and Racial Equity Early Action Plan.

In addition to the informal industry briefings, SCAG met with potential partners including transit agencies, local jurisdictions, and county agencies in the development of the RPI Program. SCAG used this outreach to share REAP 2.0 objectives and discuss candidate projects, many of which have had significant associated outreach efforts of their own.

The RPI Program builds on previous and current work at the intersection of innovation and transportation equity. For example, SCAG's Mobility Innovations Program initiative focused on the potential equity implications of road pricing and other innovative transportation policies in the six-county SCAG region. The study centered on input and information gathered during a series of workshops SCAG hosted in partnership with Community Based Organizations (CBOs) to better understand the barriers experienced by people in these communities.

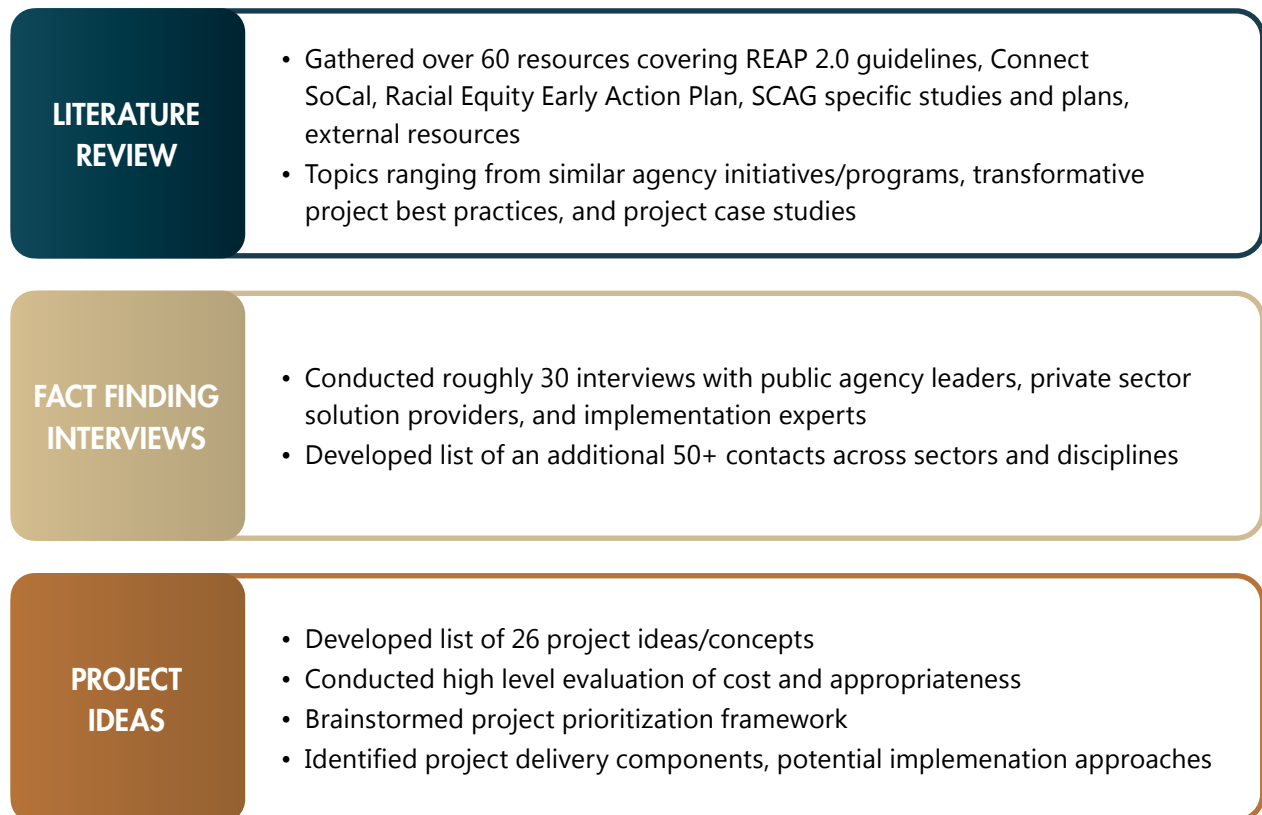
Partner CBOs represented multiple underrepresented communities, including but not limited to transit users, BIPOC populations, and older adults. SCAG continues to build relationships with CBOs to facilitate the participation of underserved communities in the transportation planning process and is also planning to expand on this research through a series of focus groups further targeting low-income communities not often represented by advocacy organizations.

More recently, to better understand the impact of the COVID-19 pandemic on mobility in the region, SCAG partnered with the University of California, Davis to deploy a survey to investigate the evolving nature of the impacts of the pandemic on transportation. Initial findings from this research highlight the inequitable impacts of the pandemic on mobility, particularly related to remote work, and serve to further highlight that innovative policies and mobility strategies must elevate equity considerations as a key touchstone in planning to address fundamental travel challenges for underserved communities.

Another example is the Future Communities Pilot Projects (2019) – aimed to implement innovative projects that reduce VMT through data analytics and technology by giving jurisdictions resources to invest directly in these ideas. Goals included promoting replicable pilot projects that support new policy development, improve processes for government service provision, and pilot innovative engagement practices with private sector mobility providers

Figure 5 summarizes the prior efforts from SCAG to date, all of which is used to inform the development of the RPI Program and provide context for the consultant team.

**Figure 5: Summary of SCAG Progress to Date**



## RESEARCH/MATERIALS PROVIDED BY SCAG

The program definition work elements were initiated with a review of the materials provided by SCAG. This included previous research performed by SCAG and its consultants, as well as position papers, information on earlier projects, demographic information, and other reports. Concurrently with this review, the team interviewed six representative stakeholders and initiated the development of six case studies in the areas of interest, and conducted a survey.

A sampling of reports and program reviewed by SCAG staff are shown in Table 3.

**Table 3: SCAG Reports and Programs Informing RPI Development**

TITLE	YEAR	LEARN MORE
Connect SoCal 2020	2020	<a href="https://scag.ca.gov/connect-socal">scag.ca.gov/connect-socal</a>
Racial Equity Early Action Plan	2022	<a href="https://scag.ca.gov/sites/main/files/file-attachments/reeap_final.pdf?1620325603">scag.ca.gov/sites/main/files/file-attachments/reeap_final.pdf?1620325603</a>
Mobility as a Service Feasibility White Paper	2022	<a href="https://scag.ca.gov/post/mobility-service-maas-feasibility-white-paper-final-report">scag.ca.gov/post/mobility-service-maas-feasibility-white-paper-final-report</a>
Curb Space Management Study	2022	<a href="https://scag.ca.gov/curb-space-management-study">scag.ca.gov/curb-space-management-study</a>
Transportation Demand Management Strategic Plan and Final Report	2019	<a href="https://scag.ca.gov/tdm">scag.ca.gov/tdm</a>
Transit Priority Best Practices: Regional Dedicated Transit Lanes Study	2022	<a href="https://scag.ca.gov/transit-presentations-reports-guidelines">scag.ca.gov/transit-presentations-reports-guidelines</a>
Regional Dedicated Transit Lanes Study	2023	<a href="https://scag.ca.gov/post/regional-dedicated-transit-lanes-study-0">scag.ca.gov/post/regional-dedicated-transit-lanes-study-0</a>
Active Transportation Toolkit	NA	<a href="https://scag.ca.gov/active-transportation">scag.ca.gov/active-transportation</a>
Future Communities Initiative	2019	<a href="https://scag.ca.gov/sites/main/files/file-attachments/final_scagfuturecommunitiesframework.pdf?1604269152">scag.ca.gov/sites/main/files/file-attachments/final_scagfuturecommunitiesframework.pdf?1604269152</a>

Figure 6 lists the key players identified at a RPI program level and RPI project level. State partners and SCAG are categorized as program level, while public and private partners are categorized as project level. Partnerships for Innovative Deployment and the consultant team fall under both the program and project levels.

**Figure 6: RPI Program and Project Level Key Players**

## KEY PLAYERS

RPI PROJECT LEVEL

- **State Partners**
  - Departments within the State of California responsible for designing and overseeing the REAP 2.0 program
  - Includes Housing and Community Development, CARB, Office of Planning & Research, Strategic Growth Council
- **Southern California Association of Governments (SCAG)**
  - Metropolitan Planning Organization allocated REAP 2.0 funds by the State
- **Partnerships for Innovative Deployment**
  - Department within SCAG's Transportation Subdivision responsible for the REAP 2.0 Transportation Partnership Programs, including the Regional Pilot Initiatives program
- **SCAG Subject Matter Experts**
  - SCAG staff, primarily from the Transportation Subdivision, will be involved in the program design and ongoing evaluation
- **Consultant**
  - Cambridge Systematics will report to PID and help develop and execute the RPI program
- **Public Partner**
  - Jurisdiction, agency, special purpose entities, etc. who partner with SCAG to implement an RPI project
- **Private Partner**
  - Vendor who provides products or services to SCAG and public partner to achieve an RPI project

RPI PROGRAM LEVEL

## INDUSTRY LEADER INTERVIEWS

Based on the landscape scan of emerging transportation solutions that reduce VMT and support fair and equitable infill housing, the consultant team worked collaboratively with SCAG staff to develop a shortlist of six candidates for formal interviews. These engagements were used to fill in gaps from the literature review, particularly to learn about barriers, opportunities, and unique characteristics of various jurisdictions in implementing innovative transportation projects; better understand the role SCAG can play and the support it can provide in supporting jurisdictions with innovative transportation projects; and identify any synergies with project/program expansion in the region that align with the REAP 2.0 program.

The project team conducted a total of six interviews with industry leaders (5). General interview questions used to guide the conversation are in **Appendix A**.

## INTERVIEW LEARNING OBJECTIVES

- > Learn about barriers, opportunities, and unique characteristics of various jurisdictions in implementing innovative transportation projects.
- > Better understand the role SCAG can play and the support it can provide in supporting jurisdictions with innovative transportation projects.
- > Identify any synergies with project/program expansion in the region that align with the REAP 2.0 program (promote infill housing development, reduce VMT, and affirmatively further fair housing).

**Table 4: Industry Leader Interviewees**

NAME(S)	ORGANIZATION	COUNTY	ISSUE AREA(S)
Jazmin Joyce Jose Jimenez	Active SGV	Los Angeles	<ul style="list-style-type: none"> <li>• Active Transportation</li> <li>• Electric Bike share</li> </ul>
Diana Kotler	Anaheim Transit Network (ATN)	Orange County	<ul style="list-style-type: none"> <li>• Transit</li> <li>• Mobility Hubs</li> </ul>
Georgina Landecho	CalVans	Statewide	<ul style="list-style-type: none"> <li>• TDM</li> <li>• Mobility Hubs</li> </ul>
Carlos Hernandez	City of San Fernando	Los Angeles	<ul style="list-style-type: none"> <li>• Active Transportation</li> </ul>
Naria Kiani	Koukuey Design Initiative	Los Angeles, Riverside	<ul style="list-style-type: none"> <li>• Active Transportation</li> <li>• Gender Equity</li> </ul>
Anna Jaiswal Jeremiah Bryant Victor Cuate	OmniTrans	San Bernardino	<ul style="list-style-type: none"> <li>• Transit</li> </ul>

## INTERVIEW TAKEAWAYS

The following takeaways were gleaned from the interviews and organized based on recurring themes related to the following: (1) promising concepts, (2) potential project pipelines, (3) equity considerations, (4) barriers and challenges, and (5) potential roles for SCAG.

### BIG DATA AND SMART TECHNOLOGY

Cities and organizations would like access to the latest data for use in planning capital projects and operations, as well as for integrating fixed route and on-demand transportation options on a single platform. The types of data being collected were highlighted as well – increased gender- and race-disaggregated data would help inform transportation planning for vulnerable groups. They would like assistance in deploying smart technology / applications, as well as guidance on using real-time data in service planning and operations. They would like better technology for tracking e-bikes and other active transportation services. Expertise and staffing to process data are also needed.

### PLANNED OR ONGOING INNOVATIVE PROJECTS

Cities and organizations are looking for partnerships to implement programmatic and quick-build projects. Agencies are considering micro-transit and Bus Rapid Transit (BRT) services, mobility hubs, and mobility wallet pilot programs, including integrating fares with local entertainment/leisure offerings. Long-term fiscal sustainability is also a concern, with one existing e-bike lending program currently operating at a loss.

### COMMUNITY SUPPORT/ENGAGEMENT/EQUITY CONSIDERATIONS

Cities and organizations emphasized the need for continued community engagement with trusted partners. Partnerships and coordination within government agencies are critical for better interagency collaboration. Personal safety, reduced exposure to traffic violence, and safe transit and active transportation are high priorities. This is especially true for e-bikes, requiring educational/safety campaigns and infrastructure investments in addition to the actual e-bikes. The system needs to be safer for the youth to travel alone, and for mobility solutions to be responsive to community preferences. Residents would like easier access to nature. There is a need to utilize mobility hubs as locations for wrap-around social infrastructure and services, while making them feel safe and welcoming. Technology access and language barriers can impact mobility options.

## REGIONAL PARTNERSHIPS

MPO, local and regional government partnerships are critical, as there are benefits to scale and information sharing. However, such partnerships will require clear expectations, objectives, and roadmaps for implementation. Various government agencies are responsible to different constituencies, and collaboration requires resources and building trust over a sustained period.

## BARRIERS AND CHALLENGES

Innovative concepts need to be clearly articulated, both in terms of how they work and how they will benefit the community. Engagement within social networks is resource-intensive and requires trust-building, but is necessary to ensure programs and projects meet community needs. Funding sources for innovative programs (both capital and operations), long lead times for vehicles, and the lack of relevant references or best practices can be barriers for developing creative programs that meet local needs. Partnerships, and the management thereof, with transportation network companies (TNCs) can be a challenge in high-demand areas. Finally, there is a need to meet the baseline transportation and transit infrastructure needs in communities before developing other innovative programs, including creating safe infrastructure for active transportation.

## POTENTIAL WAYS SCAG CAN SUPPORT

Cities and organizations would like to see SCAG provide technical assistance on various innovative projects, including mobility hubs, curb management, and mobility wallet pilots. They would like to see additional funding to address safety concerns, vanpool programs, and operating costs for e-bike programs. The team has identified several roles SCAG could play:

**Data Access & Analysis:** Several interviewees noted that access to big data coupled with technical assistance to collect, analyze, and interpret data would be a useful role for SCAG to play.

**Convening & Matchmaking:** Several respondents noted that SCAG could play a critical role in supporting partnership formation and matchmaking. For example, pairing transit agencies with local jurisdictions could support integrated land use, transportation, transit, and active transportation integration.

**Technical Assistance & Support for Community Outreach:** Respondents noted that SCAG could play a valuable role in providing technical assistance to under-resourced communities.

Interviewees also noted that SCAG could play a role in supporting community outreach that incorporates the voices of vulnerable road users although this is resource intensive and a persistent need.

## STAKEHOLDER SURVEY

SCAG conducted a stakeholder survey to help develop the RPI framework and understand the level of stakeholder interests in partnering on RPI projects. The survey was distributed to over 500 public sector stakeholders across 26 organizations in communities covering the entire SCAG region.

Over half of the organizations were located in LA County, a few organizations were based in Riverside or San Bernardino Counties, while some agencies operated across counties. Since Ventura and Imperial counties did not have any representation, future outreach activities can focus on engaging organizations in those counties. SCAG and the consultant team may conduct additional outreach to ensure that survey responses reflect a true representation of the region, with a concentrated focus on disadvantaged communities.

Respondents were asked to rank the RPI goals, determine the types of project areas that may be applicable to their community, share ongoing efforts and challenges to implement programs, and identify the support that SCAG can provide. The full list of questions is attached as Appendix B.

The survey respondents were introduced to six project concepts that may be funded through the RPI: accelerated active transportation, mobility hubs, TDM technology, curbside management, mobility wallets and universal basic mobility, and big data research. Among the respondents surveyed, most expressed interest in accelerated active transportation and mobility hubs projects. While transit projects are not included in the list of project concepts, several organizations were interested in projects such as bus lanes, bus lane/stop enforcement, and circulator routes. LA City Council representatives shared that transit services would connect visitors to key tourist attractions. Other areas of interest include supporting zero emissions people and goods movement, bridge funding, pre-development funding, and increasing housing supply.

When respondents were asked to rank the REAP 2.0 goals in order of importance, reducing vehicle miles traveled emerged as the most important goal. Respondents were split between promoting infill housing development and Affirmatively Furthering Fair Housing (AFFH). A summary of the prioritization results is presented in Table 5.

**Table 5: Summary of RPI Prioritization Ranking Results**

	PROMOTE INFILL HOUSING DEVELOPMENT	REDUCE VEHICLE MILES TRAVELED	AFFIRMATIVELY FURTHER FAIR HOUSING
<b>Very Important</b>	8	19	8
<b>Important</b>	14	5	13
<b>Less Important</b>	4	2	5



Respondents were asked about ongoing projects related to the key project areas. Several organizations were at different stages of implementing active transportation, mobility hubs, and TDM projects. Cities and agencies across Los Angeles, Riverside, and San Bernardino counties are looking to implement active transportation projects. Agencies in Los Angeles and San Bernardino counties are planning for TDM projects. Several organizations such as the City of Rancho Cucamonga, LA Council, LA Metro, and LADOT have mobility hub projects in the pipeline.

When asked about their interest in the project areas, several public organizations said they were looking to advance active transportation projects. The City of Santa Monica, Culver City, and Rancho Cucamonga were interested in transit projects, while several organizations including LADOT, City of Desert Hot Springs, and City of Long Beach were considering curb management projects. The City of Long Beach participated in SCAG’s Curb Management Study and wants to pursue this concept. The City of Santa Monica wants to advance bus stop enforcement cameras. Table 6 presents a summary of the votes collected for each project area.

**Table 6: Survey Respondents’ Votes by Program Area**

PROGRAM AREA	# INTEREST
Accelerated Active Transportation	21
Mobility Hubs	16
TDM Technology	16
Curbside Management	16
Mobility Wallets and Universal Basic Mobility	16
Big Data Research	16
Other (please specify)	16

A few organizations shared their concerns with some project areas in the survey. A representative from the City of Long Beach shared that several agencies have already integrated the mobility hubs concept into their planning process. While identifying spaces for the mobility hubs is challenging in built-out areas, several agencies have successfully co-located transit with scooters and bike share stations. Another representative shared that while mobility wallets are an exciting concept, it would only be viable if SCAG or LA Metro spearheaded the program.

Despite their interest in advancing these projects, agencies pointed to the lack of funding and limited staff capacity and resources to engage the community on project ideas as some of the main barriers. To move these projects forward, SCAG can provide funding, planning, technical, and design assistance to these organizations. Providing access to regional datasets and tools would allow for more informed decision-making. Convening stakeholders to discuss regional challenges, such as bus stop enforcement, would ensure policy consistency across the region. To maximize resources, SCAG can take a portfolio approach to program management. By having a mix of projects and highlighting the lessons learned, agencies can work together to refine their implementation plans.



### 3. PROGRAM DEVELOPMENT FRAMEWORK

The purpose of the RPI Development Framework was to define six program areas for SCAG to focus the program’s efforts. These program areas had to meet the region’s needs while also fitting into the ambitious timeline for the RPI program. Calls for projects and partners will start in 2023 and program evaluation will end by 2026.

The RPI Program Areas were developed to build on existing studies and plans developed by SCAG, align with REAP 2.0 Goals and Objectives, and bring the Key Connection Strategies from Connect SoCal 2020 to life. Existing studies that informed the project areas include the Mobility as a Service White Paper, Regional Dedicated Transit Lanes Study, and Curb Space Management Study.

the purpose of the Program Development Framework is to identify and prioritize potential transformative Program Areas that the RPI projects will fit under. Program Areas are defined as broad project categories that advance SCAG and State objectives in an innovative way by targeting investments towards critical infrastructure. These Program Areas were used to define potential strategies discussed in the Promising Practices chapter.

#### OVERVIEW OF POTENTIAL PROGRAM AREAS

Many of the anticipated RPI programs build on existing studies and plans developed by SCAG, including the SCS, Racial Equity Early Action Plan, Mobility as a Service Feasibility White Paper, Regional Dedicated Transit Lanes Study, and Curb Space Management Study. The anticipated projects will make more alternatives to driving available; incentivize their use; and improve their quality, customer experience, and ease of combined use. These intended outcomes help create a regional

transportation system that meets the needs of individual users and the societal goals of equity, economy, and the environment.

To assist in the program development and deployment phases, SCAG procured the services of a team led by Cambridge Systematics along with Estolano Advisors and InfraStrategies.

#### PROCESS FOR IDENTIFICATION

Potential Program Areas were identified based on information gathered during the industry leader interviews, expertise of the consultant team, and project ideas highlighted in regional studies and plans.

Figure 7 showcases SCAG’s definition of transformative projects used to develop potential Program Areas that would yield the most fruitful results.

Figure 7: Defining Transformative Projects

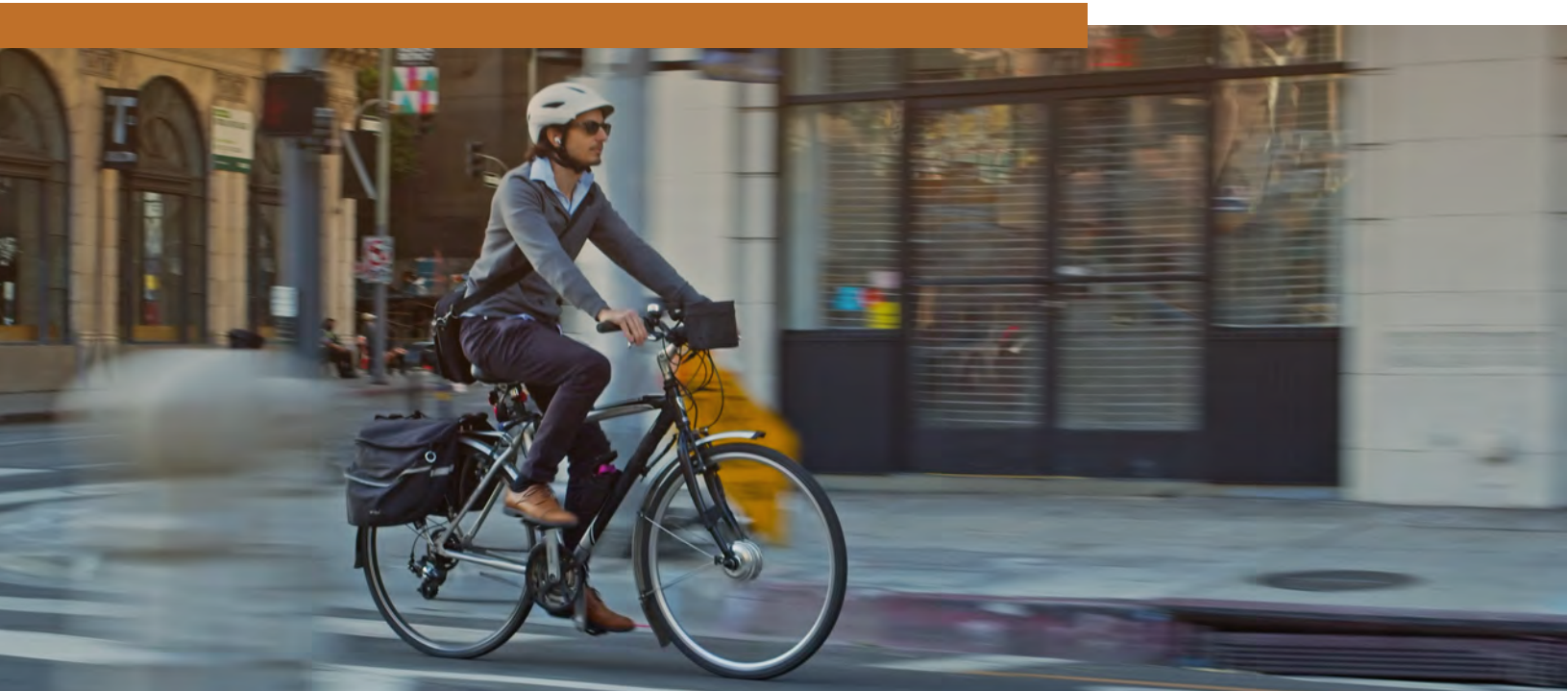


Table 7 represents the twelve potential Program Areas considered by SCAG that were based on prior SCAG studies, literature review, best practices research, and industry interviews.

**Table 7: Overview of Potential Program Areas**



POTENTIAL PROGRAM AREA	DESCRIPTION	PROJECT EXAMPLE
<b>Big Data Research</b>	Big data analytics can be a useful tool to understand travel patterns, assess demand across different travel modes, and offer more fine-grained local travel data. These analytical tools use “travel behavior data from GPS data sources such as smart phones and car navigation systems to reveal how actual commuters are using the transportation system.	<ul style="list-style-type: none"> <li>Evaluate existing travel patterns compared to publicly offered services</li> <li>Demographic analysis of travel patterns to evaluate equity</li> <li>Partnerships for data sharing (San Bernardino County Transportation Authority)</li> <li>Trip planning data (GTFS/Cal-ITP)</li> <li>TDM Data Standard (recent SCAG project)</li> <li>Leverage 5-year StreetLight contract</li> </ul>
<b>Accelerating Active Transportation</b>	Active transportation, including cycling, and particularly the use of e-bikes, has the potential to significantly reduce the VMT due to the e-bike’s ability to facilitate longer trips, ease of riding uphill with pedal assist or throttle, and appeal to a wide range of age groups.	<ul style="list-style-type: none"> <li>E-bike deployment/e-bike subsidy</li> <li>Protected active transportation lane projects</li> <li>Electric bike share (Active SGV)</li> <li>Art in the public right-of-way/Go Human</li> <li>Quick-build bike network</li> </ul>
<b>Mobility Hubs</b>	Mobility hubs are transportation locations that integrate different travel options, infrastructure and amenities for seamless and more efficient travel.	<ul style="list-style-type: none"> <li>First/last mile pilots with partnerships with local operators, micro-mobility, etc.</li> <li>Signage &amp; wayfinding redesigns</li> <li>Design and build new mobility hub</li> <li>Increase mobility options at existing mobility hubs</li> <li>Develop a mobility hub strategy with a focus on expanding access to transit in low-income communities</li> </ul>
<b>Mobility Wallets/ Universal Basic Mobility (UBM)</b>	Mobility wallets and universal basic mobility initiatives facilitate access to diverse mobility options, resulting in a reduction of private-vehicle travel dependency.	<ul style="list-style-type: none"> <li>Mobility wallet technology and user behavior</li> </ul>
<b>Parking Management</b>	Managing parking to optimize the use of parking facilities, minimize congestion, and VMTs by leveraging technology like parking sensors and mobile apps, and exploring variable pricing options based on demand and time of day.	<ul style="list-style-type: none"> <li>Districtwide parking approaches to encourage infill housing development</li> <li>Developer incentives/city policies to encourage building of more infill housing</li> </ul>
<b>Curb Space Management</b>	Curb space management strategies seek to “inventory, optimize, allocate, and manage” curb space for a variety of users. In many locales, management strategies are aimed at increasing access, reducing barriers to mobility, and enhancing safety for diverse road users.	<ul style="list-style-type: none"> <li>Adaptive/flex curb pilot</li> <li>Standardized technology approach across multiple cities</li> </ul>
<b>TDM Technology</b>	Technology-driven services and solutions tailored specifically to TDM incorporate powerful demand management tools and promote behavior change to help agencies and organizations reach their trip reduction and other TDM goals. The TDM-oriented software products such as commuter management platforms, include sophisticated one-stop shops to manage trips to/from a site, leverage incentives to change behavior, and use data generated by employees for reporting and to inform future TDM programming.	<ul style="list-style-type: none"> <li>Regional TDM data clearinghouse to measure outcomes and impact of TDM programs</li> <li>Commuter management platforms to drive behavior change and reduce the number of SOV trips</li> <li>Using a digital trip tracker to track non-SOV trips and distribute TDM incentives for sustainable commute trips or off-peak travel</li> </ul>

POTENTIAL PROGRAM AREA	DESCRIPTION	PROJECT EXAMPLE
<b>TDM Incentives</b>	Research shows that offering incentives is a powerful motivator for behavior change. Incentives	<ul style="list-style-type: none"> <li>• Increase enrollment in shared mobility options (bike share, scooter-share, etc.)</li> <li>• Increase public transit ridership (individualized marketing, subsidized ride passes, etc.)</li> <li>• Try new modes (carpooling, vanpooling, biking, teleworking, etc.)</li> </ul>
<b>Policies</b>	Policy can be leveraged to enforce existing requirements or to enact new requirements, including those that remove real or perceived barriers to more sustainable development, equitable transportation and improve access to transit.	<ul style="list-style-type: none"> <li>• A commuter benefits policy to expand access to IRS-approved pre-tax commuter benefits for low-income individuals or employees who typically work outside of the regular 9 to 5 schedule</li> <li>• A parking cash-out to curb induced demand</li> <li>• A policy for existing/new development to bundle parking from leases/reducing parking minimums</li> </ul>
<b>Procurements to Support Regional Goals</b>	SCAG is in a unique position to address transportation challenges in the region. By procuring support or services that a number of stakeholders can use, SCAG would streamline the availability of and access to a practical application/solution, eliminate the need for several entities to do the same type of procurement (time and cost savings), and help transit agencies and TDM program implementers to one tried and proven service/strategy/technology.	<ul style="list-style-type: none"> <li>• Procure a regional trip planner for use by all counties</li> <li>• Procure a regional rideshare app and consolidate all ride requests/ride matches on one platform</li> <li>• Regional data sharing database</li> </ul>

## RECOMMENDED PROGRAM AREAS

The six program areas that showed the most potential to benefit the region and for SCAG to play a key role in providing technical assistance and a regional perspective are shown in Table 8.

**Table 8: Prioritized Program Areas**

POTENTIAL PROGRAM AREA	DESCRIPTION	RELEVANT PRIOR SCAG WORK
 <p><b>Accelerating Active Transportation</b></p>	Innovative active transportation projects will employ new processes to achieve outcomes such as efficient delivery of complete, connected, and safe pedestrian and bicycle route networks; and use that is responsive to community needs and contexts. Pilot projects may include electric bike (e-bike) programs that subsidize and distribute e-bikes to users and quick-build active transportation networks that demonstrate the effectiveness of scalable infrastructure.	<ul style="list-style-type: none"> <li>• SoCal Transportation Safety Resource Hub</li> <li>• Disadvantaged Communities Active Transportation Planning Initiative &amp; Toolkit</li> <li>• Bike Share in Los Angeles County (2019)</li> </ul>
 <p><b>Big Data Research</b></p>	Big Data Research projects will work with small and underserved local jurisdictions to identify and research key transportation planning and policy questions using powerful analytical tools like the StreetLight Big Data Platform. These projects will drive usage of existing big data platform contracts, build capacity for the use of tools and data-driven decision-making, and will have the flexibility to tailor the work to specific local community needs.	<ul style="list-style-type: none"> <li>• Future Communities Initiative</li> <li>• Regional Data Platform</li> </ul>

POTENTIAL PROGRAM AREA	DESCRIPTION	RELEVANT PRIOR SCAG WORK
 <p><b>Curb Space Management</b></p>	<p>Curb Space Management pilot projects may explore new technologies and innovations, including dynamic curb pricing and curb use designations. Pilots may include designating areas for loading and street parking, reallocating space for bicycle parking, shared-used mobility and parklets, technology for bus stop and bus lane enforcement, and technology to map and track curb use..</p>	<ul style="list-style-type: none"> <li>• Curb Space Management Study (2021)</li> <li>• Transit Priority Best Practices: Regional Dedicated Transit Lanes Study (2021)</li> </ul>
 <p><b>Mobility Hubs</b></p>	<p>Mobility Hubs serve as community anchors that enable travelers of all backgrounds to access at least two or three transportation options that can include transit, bikeshare, carshare, and other shared-mobility options. SCAG’s mobility hub pilot projects will see partnerships with public sector agencies to create or enhance mobility hubs through interventions such as placemaking and signage, amenities, and co-location of modes. Projects will have the flexibility to adjust the number of hubs, typologies, and types of investments selected to be responsive to local needs and contexts.</p>	<ul style="list-style-type: none"> <li>• Regional Data Platform</li> </ul>
 <p><b>TDM Technology</b></p>	<p>Transportation Demand Management (TDM) &amp; Technology focuses on innovative programs or projects that reduce the demand for solo vehicle trips. Examples of pilots may include convening regional forums designed for TDM policymakers and implementers; creating a regional TDM data clearinghouse, including supports for cities, employers, and agencies transitioning to reporting more on Vehicle Miles Traveled (VMT); piloting residential TDM programs where tenants gain access to more travel options; and/or piloting innovative TDM software that facilitates access and use of TDM-related services.</p>	<ul style="list-style-type: none"> <li>• Transportation Demand Management Strategic Plan and Final Report (2019)</li> <li>• Regional Data Platform</li> </ul>
 <p><b>Mobility Wallets/ Universal Basic Mobility</b></p>	<p>Mobility Wallets and Universal Basic Mobility pilot projects will focus on actions that make modes other than driving alone more seamless, accessible, and integrated. SCAG’s pilot projects will explore how customer experience improvements, incentives and subsidies, and coordination to expand access and improve mobility will affect travel behavior in the region and reduce VMT.</p>	<ul style="list-style-type: none"> <li>• Mobility as a Service Feasibility White Paper</li> </ul>

## CASE STUDIES

Six case studies were developed on areas of interest in order to examine how different projects could help achieve SCAG and REAP goals of reducing VMT; accelerating infill development that facilitates housing supply, choice, and affordability; and Affirmatively Furthering Fair Housing (AFFH). A short description of each case study is below, to read more and explore SCAG's role in potential projects, see the full case studies in [Appendix C](#).

### [Accelerating Active Transportation: E-bike Deployment, E-bike Subsidy, and Quick-Build Bike Networks](#)

This case study explores three project types—an e-bike subsidy in Denver, an e-bike subscription program in the San Gabriel Valley, and a quick build bike network in Seville, Spain—to show how SCAG could accelerate active transportation in the region by creating safer infrastructure, providing a cost-effective and reliable travel option, and making e-bikes more affordable.

### [Big Data Research](#)

This case study highlights how the StreetLight Insight platform, a sophisticated data analytics software product for transportation planning currently used by SCAG, can be used by cities and agencies in the SCAG region. It describes three different use cases in the Bay Area, Pittsburgh, and Northern Alameda County to showcase the wide-ranging potential of big data. By providing access to StreetLight's tools in the region to SCAG can work in partnership with local governments to better plan for integrated land use and transportation strategies that reduce VMT and address the travel needs of populations that may not be fully accounted for in traditional travel modeling.

### [Mobility Hubs in Affordable Housing Sites Pilot Project](#)

This case study focuses on the Metropolitan Transportation Commission's (MTC) Mobility Hubs in Affordable Housing Sites, which looked at how mobility hubs could better meet the needs of residents of affordable housing sites. As the MPO for the San Francisco Bay Area, the MTC's program could offer lessons for SCAG. The project features the first in-depth needs assessment of mobility hubs funded by CARB and offers a blueprint that other areas can replicate. A potential role for SCAG in projects such as these is to offer technical assistance to conduct community needs assessments in disadvantaged communities and at affordable housing sites.

### [Transportation Demand Management \(TDM\) Technology: Seattle Children's Hospital](#)

This case study showcases how the Seattle Children's hospital successfully leveraged TDM technology to reduce SOV trips to and from their site. It shows a potential role for SCAG in TDM technology could include procuring a commuter management platform software/service for CTCs, TMAs/TMOs, developers, and employers in the region to use for the purpose of reducing trips and having access to easy, high quality, and uniform data reporting. SCAG can also identify transportation disadvantaged communities, including employers/industries that traditionally have more low wage employees such as the retail and restaurant industries, and incorporate regional TDM with the information technologies listed to improve commute experience.

### [Mobility Wallet/Universal Basic Mobility \(UBM\)](#)

This case study spotlights a UBM program that was implemented in Oakland, CA by the Oakland Department of Transportation (OakDOT) with funding from the Alameda County Transportation Commission. It shows how Mobility

Wallets and UBM projects can be a way to increase accessibility to reliable, safe, and affordable modes of transportation. Mobility wallets and universal basic mobility initiatives facilitate access to diverse mobility options, resulting in a reduction of private-vehicle travel dependency.

### [Curb Space Management in Washington D.C.](#)

This case study looks at a curb space management program in Washington, D.C. where the District Department of Transportation (DDOT) formed the Parking and Ground Transportation Division (PGTD) created in 2017. Sidewalks and the roadway immediately adjacent to the curb have faced increased pressure to accommodate a widening variety of users. Commercial deliveries, ride-hailing services, shared micro-mobility services, vending, vehicle parking, transit, and parklets all compete for limited space. This case study explores how to use curb space management to meet SCAG's mobility goals.





## 4. PERFORMANCE MEASURES

SCAG is developing and will track KPIs to demonstrate that the RPI Program is achieving measurable outcomes to advance REAP 2.0 and SCAG goals. According to the REAP 2.0 final guidelines for MPOs issued in July 2022, SCAG shall submit annual reports for the REAP 2.0 Program by April 1 of the year following the receipt of those funds, and annually thereafter until those funds are expended. The annual reports will contain the following information:

- The status of the Proposed Uses and expenditures listed in the Eligible Entity's application for funding and the corresponding impact, including, but not limited to:
  - Housing units accelerated;
  - Reductions in VMT per capita;
  - Location of investment; and
  - Socioeconomic statistics about the impacted geography
  - Explanation of regional impact

Performance management will be critical to the success of the RPI program. Below is a list of indicative KPIs that demonstrate how the RPI program and its portfolio of projects could be measured. This list is intended to be generative, the actual KPIs for each project will be determined and finalized as project scopes are developed and refined. Each project will have measurable KPIs that will align with, and eventually show progress toward, SCAG and REAP 2.0 goal.

With that in mind, the next two sections will provide an overview of KPIs that are needed for REAP 2.0 and internal SCAG reporting, as well as specific KPIs for the six program areas which will evolve into pilot projects.

## KPIs NEEDED FOR REAP 2.0 AND INTERNAL SCAG REPORTING

While the majority of KPIs will be measured at the project level, a set of program level KPIs is critical to understanding the alignment and impact of the overall program rather than its component parts. Program-level KPIs will help SCAG report its progress internally as well as to the State Partners, and so these KPIs must be geared towards demonstrating compliance, aligning with the overarching goals of REAP, and demonstrating that all necessary program components are in effect.

As a state grant program, KPIs must be established to meet the following core components of REAP 2.0, including:

- General Project Management (adherence to REAP timeline, budget, and reporting)
- Accelerating Infill Development that Facilitates Housing Supply, Choice, and Affordability
- Reducing Vehicle Miles Travelled
- Affirmatively Furthering Fair Housing (AFFH)

The RPI program can also help achieve SCAG's seven core agency objectives, specifically the items **underlined** below:

1. **Produce innovative solutions that improve the quality of life for Southern Californians.**
2. Advance Southern California's policy interests and planning priorities through regional, statewide, and national engagement and advocacy.
3. **Be the foremost data information hub for the region.**
4. **Provide innovative information and value-added services to enhance member agencies' planning and operations and promote regional collaboration.**
5. Recruit, support, and develop a world-class workforce and be the workplace of choice.
6. Deploy strategic communications to further agency priorities and foster public understanding of long-range regional planning.
7. **Secure funding to support agency priorities to effectively and efficiently deliver work products.**

Advancing these objectives can be achieved through the implementation of pilot projects through the KPI program across the region and through local jurisdictions making the transformative changes needed to improve market conditions and shift travel modes, spurring equitable development within infill areas. Relevant KPIs, as noted in the following sections, are needed for SCAG to evaluate the effectiveness of the RPI program.

The RPI program is one way for SCAG to achieve goals identified in its Regional Transportation Plan, Connect SoCal 2020. The plan explicitly lays out goals related to housing, transportation technologies, equity, and resilience to adequately reflect the increasing importance of these topics in the region. Through partnerships with public partners, RPI can help realize projects and project benefits. Many Connect SoCal goals have corresponding performance measures and targets that will be incorporated as project-level KPIs.

The RPI program supports Connect SoCal goals 2, 4, 5, 6, 8, and 9 (**underlined** in the list below). The projects that will come out of the RPI program will need to have KPIs that can indicate how effectively the project or program progresses towards those goals.



1. Encourage regional economic prosperity and global competitiveness
2. **Improve mobility, accessibility, reliability, and travel safety for people and goods**
3. Enhance the preservation, security, and resilience of the regional transportation system
4. **Increase person and goods movement and travel choices within the transportation system**
5. **Reduce greenhouse gas emissions and improve air quality**
6. **Support healthy and equitable communities**
7. **Adapt to a changing climate and support an integrated regional development pattern and transportation network**
8. **Leverage new transportation technologies and data-driven solutions that result in more efficient travel**
9. **Encourage development of diverse housing types in areas that are supported by multiple transportation options**
10. Promote conservation of natural and agricultural lands and restoration of habitats

Additionally, the RPI Program can support other related SCAG efforts. It can leverage and augment the Connect SoCal Implementation Strategy, support 6th cycle Regional Housing Needs Assessment (RHNA) goals, support VMT reduction, demonstrate consistency with SCAG's Racial Equity Early Action Plan, and promote infill development in Connect SoCal-identified PGAs.

To effectively implement, manage, and evaluate the RPI program, SCAG will need to internally track progress on the administration of the program through internal reporting required by the State. This includes managing and tracking performance at both the program and project levels. Once projects are defined, SCAG will define project-specific metrics and dashboards. SCAG expects to use consultants to help measure performance on an ongoing basis.



Table 9 shows the REAP 2.0 program-level KPIs.

**Table 9: REAP Program and Project Level KPIs**

AREA	KPIs
SCAG internal reporting – Program level	<ul style="list-style-type: none"> <li>• 100% of state reports submitted on-time</li> <li>• 100% of funds encumbered by encumbrance date</li> <li>• 100% of funds expended by expend-by date</li> </ul>
Portfolio Breadth	<ul style="list-style-type: none"> <li>• Advance at least 3 unique concept ideas</li> <li>• Sign at least 3–5 partnership agreements</li> <li>• At least 1 project based on SCAG research outlined in Connect SoCal</li> </ul>
Geographic Diversity	<ul style="list-style-type: none"> <li>• Partnerships in at least x% of the six counties</li> <li>• At least 3 partnerships in a PGA and 1 in a DAC; all partnerships should be in infill communities</li> <li>• Deploy at least one partnership in at least two different contexts</li> <li>• Multiple types/methods of partnership</li> </ul>
Outreach and Engagement	<ul style="list-style-type: none"> <li>• # of people interviewed</li> <li>• # of cities represented in interviews</li> <li>• # of people surveyed</li> <li>• Periodic reassessment of engagement process, with new methods added to address gaps</li> </ul>
Example KPIs for reporting on REAP 2.0 (can be reported on at a program and/or project level)	<ul style="list-style-type: none"> <li>• Infill: \$ of total capital investment supporting housing development</li> <li>• AFFH: # of new or enhanced public services and community assets in disadvantaged communities, or in high-resource communities targeted at disadvantaged populations</li> <li>• AFFH: \$ of total investment within disadvantaged communities</li> <li>• AFFH: \$ of total investment in resources serving disadvantaged communities</li> <li>• VMT: % actual or anticipated reduction of VMT per capita Equity: # of jobs accessible via public transit for both day- and night-shift workers</li> <li>• Equity: # of jobs within a thirty-minute commute using a weighted combination of the traffic-adjusted drive time (for the share of people in the block group who commute via car) and the public transit time (for the share of people in the block group who commute via public transit)</li> </ul>

Once the RPI Program has defined projects and partners, SCAG will implement a performance management plan, including the development and management of KPIs. This will help the project team analyze trends using data; identify needs or challenges in relation to REAP 2.0 and SCAG goals; and help to communicate to partners, stakeholders, and the State where progress has been made. It is imperative that KPIs reflect the goals of SCAG and its Connect SoCal Plan and the goals of REAP, as well as administrative compliance with the REAP 2.0 guidelines.

## POTENTIAL KPIS FOR EACH PROPOSED PROGRAM AREA

Performance management will be critical to the success of the RPI program. Below is a list of indicative KPIs that demonstrate how the RPI program and its portfolio of projects could be measured. This list intended to be generative, the actual KPIs for each project will be determined and finalized as project scopes are developed and refined. Each project will have measurable KPIs for each REAP 2.0 goal.

Recommended KPIs for the six RPI Program Areas align with the REAP goals but vary slightly based on the program and potential data available (Table 10). Some sources for data for these project KPIs include the REAP 2.0 Indicator Mapping Tool, which identifies Priority Growth Areas (PGAs), including High Quality Transit Areas, Transit Priority Areas, Neighborhood Mobility Areas, Job Centers, and Livable Corridors, and much more..

**Table 10: Potential Program Area KPIs**

REAP GOALS	EXAMPLE KPIs
	<b>Program Area: Big Data Research</b>
<b>VMT reduction</b>	<ul style="list-style-type: none"> <li>• # of lane miles studied or improved</li> <li>• # of intersections studied or improved</li> <li>• # of lane miles of high-injury network studied or addressed</li> <li>• % of Priority Growth Area population within half-mile of new transit or active transportation service</li> <li>• % actual or anticipated change in pedestrian and cyclist volume</li> </ul>
<b>Affirmatively Furthering Fair Housing</b>	<ul style="list-style-type: none"> <li>• # of Priority Growth Areas evaluated with research study</li> <li>• % of Priority Growth Area population in disadvantaged communities within half-mile of new transit or active transportation service</li> </ul>

REAP GOALS	EXAMPLE KPIs
<b>Accelerating Infill Development that Facilitates Housing Supply, Choice, and Affordability</b>	<ul style="list-style-type: none"> <li># of capital investments studied</li> <li>\$ of total capital investments</li> <li># of digital land-use and building permits issued</li> </ul>
<b>Equity</b>	<ul style="list-style-type: none"> <li># of equity areas evaluated with research study</li> <li>% of Priority Growth Area population in disadvantaged communities within half-mile of new transit or active transportation service</li> </ul>
<b>Program Area: Accelerating Active Transportation</b>	
<b>VMT reduction</b>	<ul style="list-style-type: none"> <li># of lane miles improved</li> <li># of intersections improved</li> <li># of lane miles of high-injury network addressed</li> <li>% change in mode usage for program participants</li> <li>% actual or anticipated change in pedestrian or cyclist crashes</li> <li>% change in active transportation volume (including pedestrians, cyclists, and people riding scooters)</li> </ul>
<b>Affirmatively Furthering Fair Housing</b>	<ul style="list-style-type: none"> <li># of lane miles in disadvantaged communities improved</li> <li># of intersections in disadvantaged communities improved</li> <li># of lane miles of high-injury network in disadvantaged communities addressed</li> <li>% change in mode usage in disadvantaged communities for program participants</li> </ul>
<b>Accelerating Infill Development that Facilitates Housing Supply, Choice, and Affordability</b>	<ul style="list-style-type: none"> <li># of housing units within half-mile of infrastructure improvements</li> <li># of sites developable for future housing within half-mile of infrastructure improvements</li> <li># of housing starts within half-mile of infrastructure improvements</li> <li># of lane miles in Priority Growth Areas improved</li> <li># of intersections in Priority Growth Areas improved</li> </ul>
<b>Equity</b>	<ul style="list-style-type: none"> <li># of lane miles in disadvantaged communities improved</li> <li># of intersections in disadvantaged communities improved</li> <li># of lane miles of high-injury network in disadvantaged communities addressed</li> <li>% change in mode usage in disadvantaged communities for program participants</li> </ul>
<b>Program Area: Mobility Hubs</b>	
<b>VMT reduction</b>	<ul style="list-style-type: none"> <li>% change in mode usage for program participants</li> <li>% change in access to job centers within 30 minutes via transit or active transportation</li> </ul>
<b>Affirmatively Furthering Fair Housing</b>	<ul style="list-style-type: none"> <li>% change in mode usage in disadvantaged communities for program participants</li> <li>% change in access to job centers from disadvantaged communities by 30-minute transit or active transportation trip</li> <li># of affordable housing complexes within half-mile of mobility hub</li> </ul>
<b>Accelerating Infill Development that Facilitates Housing Supply, Choice, and Affordability</b>	<ul style="list-style-type: none"> <li># of housing starts within half-mile of mobility hub</li> <li># of planned housing units within half-mile of mobility hub</li> <li>\$ of total value for commercial projects constructed within past five years within half-mile of mobility hub</li> <li># of supported affordable housing units created per year within half-mile of mobility hub:</li> <li>% of households that pay 30% or more of income on housing within half-mile of mobility hub</li> </ul>
<b>Equity</b>	<ul style="list-style-type: none"> <li>% change in mode usage in disadvantaged communities for program participants</li> <li>% change in access to job centers from disadvantaged communities within 30 minutes via transit or active transportation</li> <li># changes and access to quality of services available to Environmental Justice or Disadvantaged Communities</li> </ul>
<b>Program Area: Mobility Wallets and Universal Basic Mobility</b>	
<b>VMT reduction</b>	<ul style="list-style-type: none"> <li># of agencies and services with interoperable payment systems</li> <li># of agencies and services with integrated schedule information</li> <li># of intermodal connections</li> <li># of participants who increased use of transit or active transportation modes</li> <li># of connections to community resources stops</li> <li>% change in frequency of alternate mode utilization</li> </ul>

REAP GOALS	EXAMPLE KPIs
<b>Affirmatively Furthering Fair Housing</b>	<ul style="list-style-type: none"> <li>• # of intermodal connections in disadvantaged communities</li> <li>• # of connections to community resources stops in disadvantaged communities</li> <li>• # of program participants in disadvantaged communities</li> </ul>
<b>Accelerating Infill Development that Facilitates Housing Supply, Choice, and Affordability</b>	<ul style="list-style-type: none"> <li>• # of sites developable for future housing</li> <li>• # of program participants in Priority Growth Areas</li> </ul>
<b>Equity</b>	<ul style="list-style-type: none"> <li>• # of intermodal connections in disadvantaged communities</li> <li>• # of connections to community resources stops in disadvantaged communities</li> </ul>
<b>Program Area: Curb Space Management</b>	
<b>VMT reduction</b>	<ul style="list-style-type: none"> <li>• # of new parking spaces for bicycles</li> <li>• % decrease in bike lane blockages</li> <li>• # of new parking spaces for shared mobility devices</li> <li>• # of parking spaces improved with Curb Space management technologies</li> <li>• Reduction in circulation (“cruising for parking”) when looking for parking, loading, or staging areas</li> </ul>
<b>Affirmatively Furthering Fair Housing</b>	<ul style="list-style-type: none"> <li>• # of new parking spaces for bicycles serving disadvantaged communities</li> <li>• # of new parking spaces for bicycles in job centers in high-resource communities</li> <li>• # of new parking spaces for shared mobility devices serving disadvantaged communities</li> <li>• # of new parking spaces for shared mobility devices in job centers in high-resource communities</li> </ul>
<b>Accelerating Infill Development that Facilitates Housing Supply, Choice, and Affordability</b>	<ul style="list-style-type: none"> <li>• # of housing units planned in Curb Space management study area</li> <li>• # of new parking spaces for bicycles in Priority Growth Areas</li> <li>• # of new parking spaces for bicycles near major destinations, hospitals, event centers, or job centers</li> </ul>
<b>Equity</b>	<ul style="list-style-type: none"> <li>• # of new parking spaces for bicycles serving disadvantaged communities</li> <li>• # of new parking spaces for shared mobility devices serving disadvantaged communities</li> </ul>
<b>Program Area: TDM Technolog</b>	
<b>VMT reduction</b>	<ul style="list-style-type: none"> <li>• # of organizations sharing TDM data</li> <li>• # of private transportation service providers sharing TDM data</li> <li>• % change in mode usage for program participants</li> <li>• % change in average miles traveled by affected vehicles per trip (may be 1-way, round trip, or fixed route)</li> <li>• % change in distance traveled over time</li> <li>• % change in number of round trips taken by affected vehicles</li> </ul>
<b>Affirmatively Furthering Fair Housing</b>	<ul style="list-style-type: none"> <li>• % change in mode usage in disadvantaged communities for program participants</li> </ul>
<b>Accelerating Infill Development that Facilitates Housing Supply, Choice, and Affordability</b>	<ul style="list-style-type: none"> <li>• % change in mix of land uses near project location</li> <li>• \$ of total capital investments in project</li> <li>• % change in land use intensity near project location</li> </ul>
<b>Equity</b>	<ul style="list-style-type: none"> <li>• % change in mode usage in disadvantaged communities for program participants</li> </ul>



## 5. PROMISING PRACTICES

The purpose of developing Promising Practices is to hone in on specific strategies by Program Area that can be deployed, evaluated, and scaled in the SCAG region to achieve SCAG and REAP 2.0 goals. Using insights gleaned from market research, a review of existing SCAG plans and studies, and the group's collective expertise, the consultant team developed promising practices that can be deployed across urban, suburban, and rural environments. A focus on REAP-aligned strategies that support the sixth cycle Regional Housing Needs Allocation (RHNA) goals of creating more affordable housing stock in the region is evident across the board. This report devotes particular attention to REAP-aligned mobility strategies that remove barriers to building infill housing. This includes strategies that reduce the number of trips to a site, provide a suite of non-SOV travel options as public amenities for new developments, and promote equitable access to mobility options through financial incentives toward the purchase of electric bicycles and other means of transportation .

The promising practices are dynamic in nature. The list of promising practices in this chapter can be shared with potential partners who can incorporate or propose similar project ideas that meet REAP 2.0 goals. The twelve topics below have the potential to generate substantial impact, be completed within the two-year REAP 2.0 timeframe, and test innovative concepts. Realistically, the impact of standalone pilot projects can fluctuate drastically depending on the resources (financial and manpower), local political/regulatory context, and the public's perception or attitudes toward new projects. Therefore, the impact of projects such as those to create more infill housing units or reducing VMTs per capita can vary widely across cities and jurisdictions. However, these pilot projects can still be used to demonstrate the potential success of a strategy in different environments and which factors could make it impactful when scaled region wide.

### PROCESS FOR IDENTIFICATION

The criteria for developing REAP-aligned promising practices included the potential for achieving SCAG and REAP 2.0 goals, cost effectiveness and scalability, and potential roles for SCAG. Using the market research findings and results of the program evaluation framework, the consultant team developed a broad menu of impact-driven REAP-aligned promising practices to consider as pilot projects for the RPI Program. Critical to the development of these Promising Practices was the review of SCAG's own prior research and feasibility studies, ensuring that outcomes are aligned with SCAG's initiatives and priorities. The consultant team also reviewed materials from SCAG's internal research process including federal, state, regional and local analyses and reports, informational materials, design guidelines, playbooks, travel trends and demographics, best practices, case studies, and feasibility studies. Over the course of several meetings and discussions with the consultant team and SCAG, the group came to consensus and narrowed down the potential list of promising practices (Appendix D) to a total of twelve, or two promising practices per program area.

## PRIORITIZED PROMISING PRACTICES

Table 11 provides a high-level overview of each of the final twelve Promising Practices. For more detailed information, refer to the Task 2.4 Promising Practices Review report. That report contains a more in-depth analysis of each Promising Practice including a detailed description of the idea, potential for achieving specific SCAG and REAP 2.0 goals, cost effectiveness and scalability potential, potential deployment challenges and opportunities, potential deployment areas in the SCAG region, policy implications, and governance tradeoffs with a specific focus on potential roles for SCAG.

**Table 11: High-Level Overview of Prioritized Promising Practices**

PROGRAM AREA	PROMISING PRACTICE	DESCRIPTION	IMPACTS TO SCAG/REAP GOALS	COST-EFFECTIVENESS AND SCALABILITY	POLICY AND GOVERNANCE
<b>Big Data Research</b>	<b>Evaluate existing travel patterns compared to publicly offered services</b>	This analysis would enable an under-resourced community to determine how well their existing services compare to existing travel demand, and potentially make recommendations for adjustments.	Potential to positively impact VMT reduction, infill housing, disadvantaged communities, and climate goals as data can be used to drive effective decision-making.	Highly cost-effective.  Scalability will depend on willingness of jurisdictions to accept technical assistance from SCAG.	SCAG will play a role in determining how/when to work with interested jurisdictions. But will also need partners' buy-in to participate.
<b>Big Data Research</b>	<b>Demographic analysis of travel patterns to evaluate equity</b>	If equity is a concern for an under-resourced community, this analysis could help indicate which members of a community are facing the greatest mobility challenges by evaluating existing services based on how well they serve communities of concern.	Support VMT reduction and infill housing by using data to understand where disadvantaged communities are located and whether there is a lack of non-SOV travel options.	Generally cost-effective.  High scalability, as SCAG will be able to use additional datasets to run same/similar demographic analyses.	SCAG can make this promising practice more effective by standardizing which and how data is analyzed to benefit disadvantaged communities.
<b>Accelerating Active Transportation</b>	<b>E-bike rebate/exchange program</b>	Many communities across the world have been experimenting with e-bike giveaways or rebates that can help accelerate the acquisition of e-bikes for people for whom they might be too expensive. Will also consider related items such as training, helmets, maintenance, etc.	Support VMT reduction and infill housing by using data to understand where disadvantaged communities are located and whether there is a lack of non-SOV travel options.	Highly cost-effective, especially for GHG reduction. Exact value will depend on the ability to track and measure usage.  High level of scalability as there are many proven examples; continuous funding may be biggest impediment.	Managing any concerns about increased e-bikes in public space from the public will be crucial. SCAG can plan several critical roles including communicating the impact and benefits of e-bikes, rider safety considerations, and sharing lessons learned across jurisdictions to preserve institutional knowledge about any bike rebate programs in the region.

PROGRAM AREA	PROMISING PRACTICE	DESCRIPTION	IMPACTS TO SCAG/REAP GOALS	COST-EFFECTIVENESS AND SCALABILITY	POLICY AND GOVERNANCE
<b>Accelerating Active Transportation</b>	<b>Active transportation protected lane network pilots</b>	While permanent changes with protected lanes often face resistance, pilot projects with temporary barriers often prove more acceptable and could provide a path to a permanent lane. Emphasis on complete networks where possible.	High impact on disadvantaged communities as protected lanes have the ability to improve accessibility and connectivity.  Likely impact on VMTs, GHGs, and infill housing.	Medium to high cost-effectiveness, especially as compared to other transportation infrastructure investments.  Scalability will vary greatly, smaller projects (a few blocks long) may be easier to implement.	SCAG can help add capacity in procurement and project management and marketing and community engagement for cities that may not have that expertise on staff.
<b>Mobility Hubs</b>	<b>Signage &amp; wayfinding redesigns</b>	Many transit or transfer hubs suffer from poor signage/wayfinding that makes them challenging to use. This would offer a redesign of one or more hubs in a way that is more user-friendly.	Difficult to measure impact on VMTs, building of infill housing, or effects on disadvantaged communities. However, we can safely say that having better signage and wayfinding will contribute to these goals as signage and wayfinding have shown to make places more pedestrian-friendly and help people to navigate a place.	Cost-effective as small investments can substantially improve wayfinding.  Highly scalable as wayfinding projects tend to not draw criticism/opposition.	SCAG can play a role in setting standards for wayfinding.
<b>Mobility Hubs</b>	<b>First/last mile pilots with partnerships with local operators, micro-mobility, etc.</b>	Mobility hubs in the SCAG region can sometimes be challenging to access due to land use patterns. This would be a way to test various strategies that can help people access these hubs without parking. Emphasis on relationships and partnering. Scalable beyond main hubs.	Likely higher impact on disadvantaged communities since they tend to be more dependent on transit.  Moderate impact on VMT depending on which first/last mile modes are supported.	Cost-effectiveness can vary depending on program structure (per ride subsidy) and mode (micro-transit vs. biking or walking).  Scalability is highly variable depending on program types. However, small improvements to first/last miles in several locations can add up to substantial network benefits.	Rather than having each city develop a separate contract with each private mobility provider, SCAG can serve as the coordinating body either by providing contract templates or acting as the direct procurer of services.
<b>Mobility Wallet/ Universal Basic Mobility</b>	<b>UBM pilots</b>	This would pilot the UBM concept by providing “mobility cash” to a select group of low-income individuals to see if it substantially improves their accessibility. Consider partnering with affordable housing developers.	Potential for VMT reduction.  Supports building of infill housing by reducing parking demand and enabling car-free lifestyle.  Greatest benefit for disadvantaged communities, improves access to jobs and services.	Highly cost-effective as capital investments are not needed.  UBM programs are scalable once administrative and technical hurdles are overcome; funding UMB programs long-term could be a challenge.	UBM is a program that makes sense for SCAG to operate directly rather than delegate to grantees, as this will make it easier to ensure program consistency and participation requirements.

PROGRAM AREA	PROMISING PRACTICE	DESCRIPTION	IMPACTS TO SCAG/REAP GOALS	COST-EFFECTIVENESS AND SCALABILITY	POLICY AND GOVERNANCE
<b>Mobility Wallet/ Universal Basic Mobility</b>	<b>Service Coordination</b>	While private automobile drivers typically enjoy door-to-door transportation experiences that are relatively seamless, everyone else often faces a more challenging experience. Daily commutes by non-SOV modes can be relatively straightforward, but in the post-pandemic world those trips have greatly declined as a share of overall trips. As more people use non-SOV modes sporadically and for different trip types, providing a seamless experience becomes more critical.	Positive long-term impact on VMTs, GHG reduction, and tangential impact on infill housing.  Likely to improve customer service experience and encourage mode shift for disadvantaged communities.	Moderate cost-effectiveness, ability to offer regionwide cost savings and reduce redundancy.  Moderate scalability, SCAG can offer incentives to partners to participate and scale projects of this nature.	SCAG can play a critical role as a neutral planner, arbiter, and funder. Participating jurisdictions are likely to look at one another with skepticism and have concerns that they will lose their services, funding, or both.
		When bus stops are being occupied by personal vehicles, they are far less useful and efficient. Piloting automated bus stop enforcement could be a way of testing whether it improves bus travel times and experiences. May need to be part of bus lane enforcement.	Ability to reduce VMTs and GHG emissions by improving travel time and encouraging more people to ride buses.  Ability to improve access to infill housing where traffic congestion is particularly acute.	The cost-effectiveness of this program will depend on the regulatory structure and enforcement mechanisms that are developed by public partners, especially the enforcing entity.  Scalability will depend on the local context. There may be an overall resistance from the community related to enforcement and concerns regarding privacy related to camera usage, so the broader the benefits the better.	SCAG can play a pivotal role in this issue by providing the upfront capital support for transit agencies to take this issue on and using that funding as a carrot to encourage the outcomes desired.
<b>Curb Space Management</b>	<b>Bus stop enforcement</b>				

PROGRAM AREA	PROMISING PRACTICE	DESCRIPTION	IMPACTS TO SCAG/REAP GOALS	COST-EFFECTIVENESS AND SCALABILITY	POLICY AND GOVERNANCE
<b>Curb Space Management</b>	<b>Pricing the curb</b>	This strategy will look at piloting mechanisms for improving curb pricing, including parking pricing and enforcement concepts, and considering dynamic and variable curbs. Identifying the role SCAG will play is key.	<p>VMT reductions by reducing double parking and congestion and improving travel time reliability.</p> <p>Ability to improve appeal of infill housing by reimagining public space at the site.</p>	<p>Potential for cost-effectiveness and ability to generate revenue through curb access fees.</p> <p>Scalability could be a challenge given the local regulatory environment.</p>	SCAG can play a pivotal role in the outcome of this strategy. Curb pricing is a challenging undertaking, and SCAG can provide the incentives to move it forward through an initial pilot program. Also, SCAG can set potentially standards that many areas will accept as unbiased.
<b>TDM Technology</b>	<b>Commuter incentives</b>	This strategy involves working with specifically identified businesses to provide incentives to their workers to use non-SOV modes using a TDM dashboard.	<p>Highly effective for reducing VMTs and GHG emissions, especially when disincentivizing parking.</p> <p>Provides benefits to disadvantaged communities and infill housing by reducing SOV trips.</p>	<p>Potential for high cost-effectiveness depending on density and congestion levels.</p> <p>Strong opportunity for scalability as technology is available but enrolling employers to participate in TDM technology and set aside continued funding for incentives might be challenging.</p>	SCAG can play a pivotal role in the outcome of this strategy, given the Agency's previous study and interest in this area.
<b>TDM Technology</b>	<b>TDM Data Clearinghouse</b>	This strategy will build on the research by SCAG into developing air quality reporting efficiencies for businesses and making it easier to meet the reporting requirements.	<p>Potential to reduce VMT and GHG emissions because it visualizes data collection and data-driven analysis, which could lead to more tailored and specific policy outcomes.</p> <p>Ability to help disadvantaged communities and support infill housing by pinpointing neighborhoods with bad air quality and gaps in TDM services.</p>	<p>Highly cost-effective strategy because it begins the process of enabling a culture of data-driven decision-making and streamline monitoring and data reporting processes.</p> <p>Scaling this investment depends on SCAG's approach and how SCAG chooses to ensure data is reported and monitored with uniformity.</p>	SCAG will likely need to play a pivotal role in the development of this strategy, rather than delegate to grantees, as it will likely be the lead agency in setting objective parameters for receiving data, train businesses on these reporting mechanisms, and the development, operation, and maintenance of a TDM data clearinghouse.



## SUMMARY OF EACH PROMISING PRACTICE AND STRATEGY

The twelve final strategies for the Promising Practices are summarized in this section, with a focus on potential impacts to SCAG as well as a high-level overview of potential implementation approaches.

### BIG DATA RESEARCH

#### Evaluate Existing Travel Patterns Compared to Publicly Offered Services

The idea of data-driven decision making is often suggested as a better method of creating policy solutions. In practice, however, one of the primary barriers to data-driven decisions is a lack of upfront investment in data. When the data required is unavailable or expensive to maintain, leaders must make decisions quickly and often need to make them without useful data. This is especially true in under-resourced communities.

One strategy for addressing this issue is to make upfront investments in data. While this might seem counterproductive in that a government entity might wind up purchasing data that they do not need, there are certain data components that any entity may find useful ahead of any policy changes. This strategy enables these governments to obtain and analyze data regarding travel patterns that will be critical for future decisions about services.

Participating entities will purchase this data and be able to determine a baseline of travel patterns in their areas. These patterns can then be analyzed to see where there may be a market for changes that could achieve SCAG goals, such as new micro-mobility offerings, transit services, or even infrastructure improvements.

If SCAG takes the lead in procuring the data (such as utilizing the Streetlight data) and provides the resources to analyze it, this could be a more effective approach. It will avoid cities having to expend their own resources to analyze the data and allow the program to scale more effectively. The question is whether localities will accept this approach. If SCAG instead gives grants to areas to procure their own data sets, this will empower localities to do their own analysis and draw their own conclusions but will make scaling and interoperability a challenge.

#### Demographic Analysis of Travel Patterns to Evaluate Equity

The concept of equity in mobility is often cited as a reason for specific policy actions. However, it is often cited without any clear data as evidence. This can lead to perverse outcomes, where actions are taken in the name of equity that can be inequitable or increase the gaps in services.

This idea for improving equity begins with the concept of looking at the data first. By purchasing and using demographic data to evaluate equity in travel patterns, localities can develop policy actions that are data-driven and ground-up, rather than speculative and top-down. This can create great potential for improving equity in mobility in a community.

There is an inherent role for SCAG in standardizing the data used to evaluate equity. By setting standards for its use, minimum levels of responsiveness, and transparency, SCAG can make this program more effective. Moreover, from a governance standpoint it makes sense for SCAG to procure the data and then allow other jurisdictions to tap into it. SCAG can then grant the use of the data for specific analyses to be conducted or overseen by SCAG to ensure it meets appropriate standards.

## ACCELERATING ACTIVE TRANSPORTATION

### E-bike Rebate Program

The adoption of e-bikes offers substantial potential for achieving several SCAG goals. The landscape in Southern California is often hilly or even mountainous, and the sprawling auto-oriented nature of much of the built environment often makes distances between destinations challenging to navigate on foot or a conventional bicycle. However, the mild climate and challenges with traffic and parking can make e-bikes an efficient means of getting around, providing a faster and more direct mode of transportation that takes up less space and consumes less energy than automobiles. E-bikes make it easier to bike up hills and long distances, which substantially improves the attractiveness of the mode. It also allows current bike users and people with different physical abilities to bike longer distances and continue biking as they age.

One of the primary barriers to e-bike adoption is cost. With prices for e-bikes often in the range of \$1,500 or more, they are far more expensive than conventional bicycles. Many localities around the world have begun offering e-bike rebates as a mechanism for making e-bikes more affordable and encouraging their adoption. These programs have proven popular and have likely improved mobility for a fraction of the cost of new infrastructure or other alternatives.

The fundamental design of such a program is simple – REAP 2.0 funds would be used to subsidize e-bike purchases in furtherance of the goals of the program. Some funds would need to be directed towards program administration and assisting retailers to ensure a smooth customer experience. It would also be helpful to ensure some consistency across the technology of the bikes purchased in the usage of the bikes (not specific destinations but VMT) can be recorded automatically. Additional funds for securing e-bikes – which face higher theft rates than regular bikes – will also be necessary.

The role SCAG could play in this program would necessarily vary by jurisdiction, as it would depend in part on what any individual area could or would want to do. The primary benefit SCAG can offer to communities in assisting with implementation is to work out some of the kinks in the program by being responsible for administering it. That way, any lessons learned by SCAG in one area can be easily transferred to another. Another critical role for SCAG will be with public relations: analyzing the data from the results of the program from the start and ensuring public transparency will ensure that any challenges or issues are clearly identified early on and are addressed quickly. SCAG and the grantees will need to collectively share the potential risks of the program.

### Protected Active Transportation Lane Pilots

Cities around the world are adding bicycle facilities to their existing transportation networks to enhance and encourage active transportation use and improve public health outcomes. Investing in networks of protected bicycle lanes has significant potential to reduce GHG emissions, lower transport costs, prevent road fatalities, and improve the quality of life for people in cities around the globe. Where there are gaps in a network, protected active transportation pilot programs and temporary pop-up projects have become increasingly utilized to help accelerate network growth and connectivity, increase user safety, allow greater access to opportunity, and enhance the quality of life in a community overall. Often beginning as quick-build projects using temporary, non-stationary items as barriers like safety cones or planters, these pop-up projects can become permanent facilities when they achieve a city or

region's articulated goals for active transportation.

REAP 2.0 funds could be used to create a plan and for project implementation. Successful active transportation lane pilot programs would serve as the starting point for further investment in other transformative transportation activity, such as greater first/last mile connections, the introduction of new and emerging mobility options to a community, and investment in individually owned active transportation vehicles.

While the design and land use patterns of each SCAG community are unique and nuanced, active transportation lane pilot programs should build upon guidance provided in the National Association of City Transportation Officials' (NACTO) Urban Bikeway Design Guide, and should offer supplemental policies, procedures, and guidelines unique to SCAG communities.

SCAG can help add capacity in procurement and project management for cities that may not have that expertise on staff. The role SCAG could play in this program would therefore vary by jurisdiction. At a minimum, SCAG can advise and/or require best practices to ensure that the desired benefits are achieved, as well as monitor to ensure compliance and results. That way, any lessons learned by SCAG in one area can be easily transferred to another. In some cases, SCAG can play a stronger role in the design process, potentially contracting with the designer as appropriate.

## MOBILITY HUBS

### Signage and Wayfinding Redesigns

Mobility hubs are places in a community that physically bring together public transit, car sharing, ride hailing, and other shared mobility modes (that are often privately owned and operated) for people to get where they want to go without a private vehicle. Mobility hubs can also include EV charging areas and other amenities that work in tandem with sustainable transportation. The hubs can be located around high-capacity transit areas or in communities and locations where transportation is currently inadequate.

Every transit stop ideally should include information about routes in a clear and legible manner that is intuitive and makes the process as easy as possible for first-time or even frequent users. Unfortunately, many do not, and signage can often be an afterthought in the design process. As mobility hubs would integrate a variety of sustainable transportation options into one location, robust signage and integrated wayfinding will be even more critical. Providing clear and simple information makes all non-SOV modes more attractive, simpler to use, improves rider customer satisfaction, and gives people confidence that they can get where they are going without relying on a personal vehicle.

REAP 2.0 funds would be used to fund signage and wayfinding designs in keeping with the program's goals. The funds would not just create a plan for high quality, consistent signage, but also allow for implementation of said plan at mobility hubs, with the specific goal of improving wayfinding in selected locations. The specific design of the program can be flexible and tailored depending on the state of existing wayfinding and signage in a community. An updated wayfinding and signage program should build upon guidance provided in the Manual of Uniform Traffic Control Devices and should offer supplemental policies, procedures, and guidelines unique to SCAG communities.

SCAG has a critical role to play in setting standards for wayfinding and design for grantees. While each community or hub may have its own character, SCAG can advise

and/or require best practices to ensure that the desired benefits are achieved.

SCAG can also help oversee the design plans, potentially even being the ones to contract with the designer where that makes sense.

### First/Last Mile Pilots

Many transit stations and other publicly owned spaces in the SCAG region can be challenging to access by means other than a private vehicle due to land use patterns. Partnerships between local operators and the private sector can facilitate access to these areas. These partnerships can take the form of incentives for bike share or scooter share, reduced costs or preferred access for car share, rideshare or carpools, and better coordination with local DOTs or public transit providers.

One way to structure a first/last mile partnership within the limits of eligibility for REAP funds could be to create incentives for private operators to meet REAP goals in their service of a specific area. This could mean creating safe spaces for shares bikes or scooters at a transit station, or subsidizing trips to and from transit stations on any mode. However, first/last mile improvements can also be made by working with other public agencies. For example, higher frequencies or better-timed connections can improve first/last mile services. Infrastructure improvements that provide safer spaces for active transportation or bus lanes can also be part of such partnerships.

A first/last mile program through REAP could effectively target VMT by providing incentives either to people or providers to reduce cost and increase demand. Providing incentives directly to potential users is likely to have a more direct VMT benefit. For example, SCAG could help local agencies provide mobility cash to be used to help access transit stations using micro-mobility or micro-transit services. Alternatively, SCAG could help provide funds that improve walking or biking access to stations, thus reducing the number of people who drive or use rideshare, and possibly increasing total use of transit. While these VMT may be small, when scaled they could create real benefits for emissions reduction.

## MOBILITY WALLET / UNIVERSAL BASIC MOBILITY

### UBM Pilots

As a renewed focus on equity in transportation has emerged, the concept of UBM has grown in popularity. The idea is that everyone in society has a right to a minimum level of mobility access, just as one might argue they have a right to health care or education. In a society where the automobile dominates, and the cost of car ownership and maintenance is high, there tends to be a bifurcated system wherein those with cars enjoy far greater access to all that regions have to offer. This places an even greater burden on the poorest members of society, as a lack of access to a vehicle makes it more challenging and time-consuming for them to accomplish basic tasks including gainful employment.

UBM is a method of remedying this situation by funding or subsidizing mobility options for low-income individuals. One of the most direct methods of doing this is to provide "mobility cash" directly to people. This "cash" can only be used on transportation, but a wide variety of options can theoretically be put on the table including but not limited to public transportation, micro-mobility, car share, ride share, vanpool, and carpooling. The cash can be provided electronically if agreements can be reached with the various providers to accept these payments, however, it may be easier to simply

provide direct cash and ask participants to track usage. A process is also required to determine eligibility for the program.

The benefits of UBM can be powerful because it not only helps those most in need of better transportation options, but also creates new demand for those options. By indirectly subsidizing the use of public transportation and bike sharing, for example, the program can create greater demand for those services. This greater demand can in turn create better service for those already using those modes, such as increased security or higher frequencies.

UBM is a program that makes sense for SCAG to operate directly rather than delegate to grantees. SCAG can set up the partnerships with providers, the technology, and the administrative effort and any grantee can join in based on their REAP funds. Giving authority to each grantee risks creating a diverse array of incompatible programs, which would make scaling far more challenging. SCAG can still provide flexibility to grantees to shape the programs for their communities. But the program would be most effective as a SCAG program.

### Service Coordination

While private automobile drivers typically enjoy door-to-door transportation experiences that are relatively seamless, everyone else often faces a more challenging experience. While daily commutes by non-SOV modes might be relatively straightforward, in the post-pandemic world those trips have greatly declined as a share of overall trips. As more people use non-SOV modes sporadically and for different trip types, providing a seamless experience becomes more critical.

Unfortunately, most non-SOV travel in Southern California remains clunky and uncoordinated. Even among public transit agencies, coordination can often be lacking as agencies are responsive to differing constituencies. Coordination and integration are more challenging when considering the array of other options now available, including private mobility providers, government agencies not directly associated with providing mobility services (such as local DOTs), and navigation applications.

Providing greater coordination in this area is a role that is likely to fall to government agencies. If encouraged and done effectively, it can substantially improve the customer experience, potentially attracting more people to non-SOV modes and improving accessibility for those who rely on them. SCAG can potentially provide incentive funding for agencies that agree to more effectively coordinate services amongst themselves and private providers.

This is an area where SCAG can play a critical role as a neutral planner, arbiter, and funder. Participating jurisdictions are likely to look at one another with skepticism and have concerns that they will lose their services, funding, or both. SCAG will need to mediate these discussions as a neutral party focused on planning services that benefit customers. With the power of the purse, SCAG can have some authority as that arbiter to implement what is eventually decided.

## CURB SPACE MANAGEMENT

### Bus Lane Enforcement

Analog methods of curb and lane management such as signage, and parking enforcement officers have been in place for decades. These tools still largely represent the current lane management and regulatory framework for these pieces of a city or region's infrastructure system. Bus stops and lanes are located next to the curb. Many places have seen increased demand for access to this space by other uses that get in the way of transit movements.

While all road users experience the negative impacts of congested conditions when bus stops or lanes are occupied, the effect on public transit tends to be more significant. When a bus stop is occupied, this can not only increase boarding and alighting time, but it can place passengers in danger. When a bus lane is blocked, this greatly impacts bus travel times and, in turn, the rider's experience. It also increases costs for transit agencies, who may have to provide more buses and operators to compensate.

New technologies and methods to manage curb space and idling vehicles at bus stops and directly within bus lanes are now available. These new technologies and methods have strong potential to produce benefits in line with REAP goals. California now has established legislation that enables bus lane camera enforcement. However, partnerships between local regulators, participating agencies, and community stakeholders will be needed to facilitate the roll out of a program that will allow for fair and equitable bus lane enforcement practices. In turn, such practices and initiatives will have the potential to reduce congestion, reduce illegal road activity, and increase transit travel time reliability.

The use of REAP 2.0 funds would likely be towards launching pilots with relevant agencies and setting the parameters to create an effective automated bus lane and bus stop enforcement program and procurement of infrastructure and digital tools.

SCAG can play a pivotal role in this issue by providing the upfront capital support for transit agencies to take this issue on and using that funding as a carrot to encourage the outcomes desired. SCAG can also help convene the various jurisdictions involved to negotiate agreements over roles, responsibilities, and revenue. These are all likely to be dicey issues requiring delicate negotiations, but as a neutral party SCAG has the potential to play a critical role.

### Pricing the Curb

Analog methods of curb management such as signage, parking meters, and parking enforcement officers have been in place for decades and still largely represent the current paradigm of curb management. Within the past ten years, curb space has become more crowded as new users and transportation services require access to it. These new users and services include, but are not limited to, micro-mobility vehicle parking, food and goods delivery services, app-based ride hailing services, parklets, and pedestrian access. Curb space must be more flexible, dynamic, and responsive to these changing dynamics in the transportation landscape and continued urban growth.

New technologies and methods to manage curb space are now available and have strong potential to produce benefits in line with REAP goals. These digital forms of curb management work to support and develop regulation to ensure that these often-competing curb access needs and users are working in concert. Therefore, partnerships between the private sector and local regulators will be needed to facilitate the roll out of technology that will allow for fair and equitable curb pricing and management practices.

The use of REAP funds could be towards seeding the funding and setting the parameters to create an effective curb pricing pilot program. This might also mean procurement of curb pricing software and digital tools. SCAG could also consider assisting other jurisdictions with planning, funding, and evaluating curb pricing pilots.

SCAG can play a pivotal role in the outcome of this strategy. Curb pricing is a challenging undertaking, and SCAG can provide the incentives to move it forward through an initial

pilot program. Even better, SCAG can potentially set standards that many areas will accept as unbiased. SCAG will need to be clear that revenue is not the goal, and that their interest lies in developing curb pricing schemes that communities want because of the benefits they can produce. SCAG can then use incentive fundings to move the idea forward and assist with planning and evaluation of any pilot.

## TDM TECHNOLOGY

### Commuter Incentives

TDM strategies work to inform and encourage travelers to maximize the efficiency of a transportation system and provide alternative, concrete options for commuters. In turn, commuter incentives and other TDM strategies can materially reduce traffic congestion, improve public health and safety, connect people to jobs, and support economic activity.

A region, business or campus can offer their target population commuter incentives to reduce single occupancy vehicle commuting. Employers can play a strategic role in transportation demand management by developing TDM programs that provide incentives for employees to use alternate modes of commuting including riding public transit, ridesharing, carpooling, commuting off-peak hours, or even working from home for a percentage of the work week. Technology-driven services and solutions tailored specifically to TDM have grown in the last fifteen years, incorporating powerful demand management tools and promoting behavior change to help agencies and organizations reach their trip reduction and other TDM goals.

SCAG can play a pivotal role in the outcome of this strategy, given the Agency's previous study and interest in this area. As mentioned above, if SCAG takes the lead in procuring specific technology-driven services and solutions for agencies and organizations, this could be an effective approach to streamline services and reduce VMTs. It will avoid agencies and organizations having to expend their own resources to procure a similar service (like a commuter management platform) and, instead, the agency's funds could be used for supplemental

outreach or offering financial incentives to drive program participation. The question is whether partner companies will accept this approach, and how long SCAG will be able to provide the software at little to no cost.

If SCAG instead gives grants to areas to procure their own tools, this will have the benefit of empowering agencies and organizations to do their own analysis and draw their own conclusions but will make scaling and interoperability more of a challenge.

### TDM Data Clearinghouse

Data collected from TDM interventions can be used to aid in decision making processes, including developing a baseline understanding of existing conditions, how a strategy is meeting articulated goals, and how a strategy can be adjusted accordingly. This strategy will build on the research prepared by SCAG into developing air quality reporting efficiencies for businesses and further drive TDM programming so that participating businesses can meet reporting requirements. To advance any significant policy changes, SCAG will need to ensure that there is some uniformity in monitoring processes and data reporting. Technology-driven services and solutions tailored specifically to TDM will utilize data that will ultimately promote behavior change to help agencies and organizations reach their trip reduction and other TDM goals.

SCAG will need to play a pivotal role in the development of this strategy, rather than delegate to grantees, as it will likely be the lead agency in setting objective parameters for receiving data, train businesses on these reporting mechanisms, and the development, operation, and maintenance of a TDM data clearinghouse. SCAG can set up the partnerships with providers, the technology, and the administrative effort and any grantee can join in based on their REAP funds. This will provide economies of scale and greater alignment with policy decisions across the region.



## 6. PARTNERSHIP OPPORTUNITIES

RPI will involve partnering with the public and private sectors throughout the region to develop and implement pilots across the program areas. This section focuses on potential partnerships that will allow SCAG to innovate in the procurement and implementation process to create a critical mass of important RPI projects. The following sections provide a short overview of potential partnerships by program area and guidance for how to bring them to life.

### IDENTIFYING PARTNERSHIPS

Securing and identifying partners will be key to the success of the RPI program. This section covers potential partners by program area (Table 12) and how these partnerships might be structured.

**Table 12: Potential Partnerships by Program Type\***

PROGRAM AREA	PUBLIC PARTNERS	PRIVATE PARTNERS
<b>Accelerating Active Transportation</b>	City departments of transportation (DOT), Nonprofit Bike/Bike Advocacy Organizations, Universities/schools,	Bike shops, Local program implementation firms
<b>Big Data Research</b>	SCAG, City DOTs, CTCs, TMAs/TMOs	Data aggregation and analysis firms (like Streetlight, Tom Tom, Geotab, Wejo)
<b>Curb Space Management</b>	Cities, Traffic enforcement departments, Central Business Districts (CBDs)	Big data firms (like Streetlight), TNCs (like Uber/Lyft), Delivery Companies (FedEx, USPS, UPS, Amazon), Curb management software companies (like CurbIQ, Curbivore, and Populus)
<b>TDM Technology</b>	SCAG, Air Quality Management District, TMAs/TMOs, Transit Agencies, Cities with TDM Ordinances, Zoning Administrators/Agencies	Large employers (Hospitals, Universities, Factories), Developers, New/Existing Developments, Large event holders/venues (Convention Centers, stadiums, private Universities), TDM Tech Companies (like Luum, RideAmigos, Commutifi, etc.)
<b>Mobility Hubs</b>	Transit Agencies, Central Business Districts (CBDs), Utilities, City DOTs	Micro-Mobility firms (like Lyft, Uber, Lime, Bird), Mobility companies (like Via, RideCo), Vanpooling Companies (Enterprise), EV Charging Infrastructure Companies, Consulting Firms (for the design/layout of mobility hubs)
<b>Mobility Wallets/ Universal Basic Mobility</b>	Transit Agencies, City DOTs, CBOs, AARP	Fare payment services (like TAP, ApplePay), Prepaid debit cards (like Blackhawk Network, Visa), housing developers

*\*This is an indicative list of potential partners and partner types. It is not meant to be exhaustive. Specific project partners have not yet been selected.*

## PARTNERSHIP TYPES

Any project structure with two or more parties involved is a partnership. SCAG envisions that some RPI projects will require partnerships between public and private players, while others may just involve coordination between public agencies.

Projects that would need to attract private partners to provide mobility amenities may require more elaborate structures to ensure compliance with public sector policies while respecting private company interests. The public sector can partner with the private sector in the form of a true Public-Private-Partnership (P3) or in more of a standard vendor-client partnership. A true P3 can have solely an O&M (Operate and Maintain) agreement, or include all project phases such as Design, Build, Finance, Operate, and Maintain (DBFOM). Because RPI projects are envisioned initially as small-scale pilots, some standard partnership agreements (for example Memorandums of Understanding) that define the private sector's role in these projects, can offer flexibility while keeping all parties accountable for their deliverables. Given the timeline and intent of the RPI program, these types of partnerships are the most viable.

For example, implementing a mobility hub, which brings together a variety of transportation options and amenities to facilitate more seamless trip planning and streamlined connections to transit, will require extensive coordination across the private and public sectors. Several partnerships will be needed in this context to get the mobility hub implemented and operating, including partnerships with the private sector like micro-mobility companies to add scooters and bike share, partnering with the Business Improvement District (BID) or Transportation Management Associations or organizations to maintain the look/appeal of the hub, and hiring consulting firms for site design of the hub which may also include the appropriate Curb Space management design to accommodate the myriad demands for curb space.

## COLLABORATING ACROSS JURISDICTIONS AND PROGRAM TYPES

SCAG envisions the projects working in tandem to meet its goals. Key to this is capitalizing on opportunities to collaborate across jurisdictions and program types. It will hopefully reduce timelines and ramp-up periods and provide a more cohesive user-experience to people as they move around the region.

### COLLABORATING ACROSS JURISDICTIONS

While the SCAG region is vast and diverse, there are many jurisdictions facing similar challenges in politics, typology, and funding. The implementation of many of these programs lends itself to forming cross-jurisdictional partnerships.

For example, in the Accelerating Active Transportation program area, finding public partners interested in piloting a bike subsidy for their residents would be an effective approach to expand the availability of a financial incentive to purchase e-bikes across jurisdictions and create the impression of a uniform transportation decision that supports residents' travel needs. The group of partners can receive technical expertise and support from SCAG and move from program design and development to deployment as a cohort. In this way, SCAG can try out and scale a project more efficiently across different jurisdictions and learn about the impact of a bike subsidy on a variety of communities in the SCAG region.

## COLLABORATING ACROSS PROGRAM TYPES

All the program types could theoretically provide positive impact when implemented in tandem with one another. For example, a bike share program would provide better access to a mobility hub and may increase participation in a TDM technology pilot. By the same measure, a big data project could inform station siting of bike share, mobility hubs, and Curb Space management projects. The RPI Program will look for areas to adopt the 'dig once' attitude and look for ways to leverage efforts across program types.

The collective effort of these partnerships across sectors and agencies will feed into the SCAG and REAP 2.0 goals and objectives by creating a more robust transportation ecosystem that offers viable transportation alternatives for the immediate and surrounding communities.

## MAKING PARTNERSHIPS WORK

Successful partnerships execute projects amidst ongoing obstacles and challenges, some known and anticipated while other hurdles catch managers off guard and require immediate real-time solutions. These partnership types will be further defined in the deployment report; it will include these considerations (also described briefly here): data sharing, regionwide opportunities, financing, risk, innovation, and roles and responsibilities.

### WORKING WITH PUBLIC PARTNERS

Identifying public and private partners requires robust coordination across all levels of public sector governments to liaise with officials in local, state, and federal offices across different ranks amidst managing challenges like political turnover. Both public and private partners must understand leveraging strong public leadership armed with public trust helps gain citizen support behind projects bringing innovative and unfamiliar concepts like bikeshare to new communities. Private partners especially must be patient and persistent as governmental hurdles arise to calmly welcome and address each level of administrative control to deliver a successful project.

### DATA-SHARING

Unique legal and information-sharing concerns arise with each project as intellectual property concerns must also be managed and addressed to keep the project moving smoothly (further addressed in the Report on Data Sharing Agreements). Legislative revisions are often required to execute new concepts coming with a project like changes to zoning laws or traffic patterns. Understanding these revisions takes time and multiple iterations also means keeping the public abreast of all updates and changes as they occur. Public buy-in must be maintained throughout the course of a project and can easily be lost from a lack of information.

## REGIONWIDE OPPORTUNITIES

Scaling projects across multiple jurisdictions requires honest communication and the utmost transparency, which are key to a successful partnership as all partners must trust each other, openly sharing information so all involved can make well-informed decisions. SCAG could approach projects as a kit of parts where critical components are the base model and jurisdictions can customize to meet their unique needs. Some regional initiatives may require only one public partner while others necessitate multiple, depending on what is being tested and/or evaluated. As within Mobility Hubs, testing different typologies across different use cases and/or geographies requires a unique understanding of each case. This could establish a framework for creating mobility hubs that can be used as a blueprint for creating them across the region.

## MARKETING AND OUTREACH BUDGET

A project's budget should be holistic and include line items for infrastructure, operations, maintenance as well as outreach and marketing. Ongoing marketing keeps citizens informed of project developments as well as offers multiple opportunities for public input throughout project development. Many promising projects end up failing when they procure all necessary infrastructure or assets without also accounting for funds needed to support strong ongoing marketing and outreach to educate the public about their project or service.

## INNOVATION

Innovative project delivery inherently comes from open trust and communication with the belief and understanding each partner is working towards a common goal of delivering the project. Revenue-sharing agreements through advertising and/or concessions arrangements, developer-type partnering arrangements like owner-operator connections, and challenge-based procurements such as requiring ongoing maintenance pledges can help deliver all different types of innovative projects each bringing new challenges and opportunities.

## ROLES AND RESPONSIBILITIES

Roles and responsibilities can change throughout a project as a project develops while the partnership inherently remains the same. Partners can evolve into different positions with new authority and power, which is where SCAG brings strong capacity as a neutral force multiplier working with other partners open to concept innovation and project delivery. As the developer, SCAG is openly aware these other partners are needed to be the owner and/or operator of infrastructure built within respective corridors in individual jurisdictions.

## CHALLENGES

Ongoing challenges arise as external and internal circumstances evolve, and keeping the understanding that public leaders usually change throughout the course of a project means ongoing patience to bring new leaders up to speed as well as incorporating new external developments as they arise. Keeping the public informed of all developments and partner roles is necessary to retain public support as projects are developed because even with financing secured, losing public buy-in can halt any project.





## 7. NEXT STEPS

This project is still evolving. SCAG presented [a summary](#) of this Program Development Framework to Regional Council on July 6, 2023, which the Council approved. It provided the Regional Council an opportunity to provide executive feedback on the proposed Program Areas for which SCAG intends to issue RPI Program funding before SCAG begins the Program Execution phase. SCAG will incorporate any feedback collected into the final Program Development Framework and the Program Deployment Report.

### PROGRAM DEPLOYMENT REPORT

The Program Deployment Report will be the foundational document supporting the “deploy” phase of the RPI Program. This report will prioritize projects that address significant disparities in access to housing, jobs, and opportunity; create balanced and integrated communities with improved infrastructure and increased access to schools, employment, parks, transportation, and other community amenities; and make transportation safer and transportation to health care more accessible. Once the Program Deployment Report is completed, SCAG will provide program updates at future Regional Council meetings.

Once the projects to be funded under the RPI Program are finalized, the consultant team will document key strategies for the successful deployment of the top priority projects with consideration for possible regional deployment of each pilot project type and the opportunities for future replication. For example, this may involve refinement of the project scope to realistically implement the project within the REAP 2.0 Program schedule, with a plan for future phases to expand the initial project (geographic scaling or feature enhancement).

The project team will also analyze which performance metrics are most appropriate for REAP 2.0 Program reporting and measuring KPIs of interest to SCAG (e.g., to inform future investment decisions). It will be critical to incorporate the full list of KPIs that each project team will be responsible for into each team’s formal funding agreement. This report will also provide insights into contract types (e.g., data sharing) SCAG will need to set up in the procurement phase.

The Program Deployment Report will add another layer to this document and provide a comprehensive blueprint for how SCAG plans to move forward with the RPI program. The next report will include:

- Specific projects for SCAG to include in the RPI program
- Viable public and private partners for these efforts
- Contract types that will be needed to make the relationships work
- Refinement of the KPIs to ensure the programs are measurable



## APPENDIX A: GENERAL INTERVIEW QUESTIONS

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Questions were tailored based on interviewee's expertise and applicable project/program implementation status.

1. If your jurisdiction/agency is in the process of implementing a project, beyond providing funding, how can SCAG best support you and your jurisdiction/agency through the Regional Pilot Initiatives (e.g., research/case study/data support, coordinating convenings, providing technical assistance, expanding the program to other jurisdictions, etc.)?
  - a. Is there potential for this project to be implemented with other partners and communities in Southern California?
  - b. Does your jurisdiction have experience using big data to inform transportation or mobility planning? If so, is there an opportunity for SCAG to support these efforts? If not, is there an opportunity to collaborate with SCAG to gain access to datasets?
2. Which one of these innovation concepts is most applicable to your jurisdiction? Tell us about the project you are implementing/depending on what stage.
3. What conditions need to be met for your jurisdiction to successfully implement innovative transportation concepts/projects/programs?
4. What type of community engagement process would be appropriate to advance these types of projects in your community?
5. What barriers do you face in implementing these transportation projects/programs?
6. What unique characteristics could affect the implementation of these transportation projects?
  - a. What innovative transportation projects will not work in your community and why?
7. If you have implemented an innovative transportation project or in the process, what are some key equity considerations raised by the communities you serve?
  - a. How can these innovations address community-identified transportation priorities?
  - b. How do they support underserved populations and/or priority populations (e.g., low-income communities of color, women and female-headed households, carless households, individuals with access and functional needs, communities with limited English proficiency, youth, older adults)?
  - c. What opportunities exist in collaborating/engaging with the community early on?
8. What are some key lessons learned during the implementation phase of the project?
  - a. Staffing
  - b. Outreach/engagement
  - c. Coordination with private sector partners
  - d. Data sharing
  - e. Program evaluation
9. Who else should SCAG talk to?
10. Do you know any other promising case studies that we should look into?

## APPENDIX B: SURVEY QUESTIONS

Figure 8 showcases the stakeholder survey that focuses mostly on gathering more qualitative inputs. The survey was distributed to over 500 public sector stakeholders in communities covering the entire SCAG region. Recipients will have several weeks to provide responses. Additional outreach may be conducted in order to ensure that survey responses reflect a true representation of the region, with a concentrated focus on disadvantaged communities.

Once the survey has received a significant number of responses, the project team will compile a memorandum that highlights sentiments towards Program Area implementation broken down by region and demographic segments and provides recommendations based on geography and community type. The detailed findings from the survey will be included in the Program Implementation Report.

### Figure 8: SCAG Regional Pilot Initiatives Survey 2023

### SCAG Regional Pilot Initiatives Survey

The Southern California Association of Governments (SCAG) is seeking input on their forthcoming Regional Pilot Initiatives (RPI) Program. Your response to this survey will help SCAG develop the RPI framework, which will establish parameters for future partnerships and funding.

The RPI Program is focused on demonstrating innovative, next generation technologies and models of regional significance, specifically those with the potential to change transportation and housing paradigms towards building more sustainable communities. The RPI Partnerships program is funded by the State through the Regional Early Action Planning (REAP) 2.0 program.

The program's objectives are to promote infill housing development, reduce vehicle miles traveled, and affirmatively further fair housing in California. The affirmatively further fair housing objective would be advanced by projects that overcome patterns of segregation, promote fair housing choice, eliminate disparities in opportunities, and foster inclusive communities free from discrimination. REAP 2.0 funds must be expended by June 30, 2026.

1. Name (First Last), Affiliation

Your answer \_\_\_\_\_

2. Email and/or Phone (optional)

Please provide your contact information if you'd be interested in potentially partnering with SCAG as your community plans, designs, or implements any related project concepts.

Your answer \_\_\_\_\_

3. Where does your organization operate (select all that apply)?

- Imperial County
- Los Angeles County
- Orange County
- Riverside County
- San Bernardino County
- Ventura County

4. Keeping in mind the communities you serve, please rank the Regional Pilot Initiative goals in order of importance. \*

	Less Important	Important	Very Important
Promote infill housing development	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reduce vehicle miles traveled	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Affirmatively further fair housing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Next

Clear form

### Project Concepts

Below is a list of project concepts that may be funded through RPI. SCAG's goal is to target investments towards critical infrastructure that improve mobility, quality of life, and economic potential for the 19 million people who call the SCAG region home and the 3.7 million new residents projected by 2045. Your responses will help SCAG prioritize existing project concepts and identify other areas of exploration.

**Mobility Hubs** serve as community anchors that enable travelers of all backgrounds to access multiple transportation options and supportive amenities. Typically, mobility hubs provide access to at least two or three transportation options that can include transit, bikeshare, carshare, and other shared-mobility options. Mobility hub projects will build on research and create mobility hubs through interventions such as placemaking and signage, amenities, and co-location of modes. Projects will have the flexibility to adjust the number of hubs, typologies, and types of investments selected.

**Mobility Wallets and Universal Basic Mobility** projects will focus on digital multi-modal mobility as a service (MaaS) actions that make modes other than driving alone more accessible and integrated. These models will use pricing, incentives, customer experience improvements, and subsidies to influence consumer choice and will be paired with research to understand traveler preferences. One example of this work is the California Integrated Travel Project (Cal-ITP) to pilot and scale improved real time arrival information and expanded payment options to include folks who do not have access to a bank account or credit card. Due to the complexity of setting up a MaaS, the project may need to be one phase of a Mobility Wallet/UBM system.

**Big Data Research** projects will work with small and underserved local jurisdictions to identify and research key transportation planning and policy questions using powerful analytical tools like the [StreetLight Big Data Platform](#). These projects will drive usage of existing big data platform contracts, build capacity for the use of tools and data-driven decision-making, and will have the flexibility to tailor the work to specific local community needs.

**Active Transportation** refers to human-powered transportation, and low-speed electronic assist devices. Innovative active transportation projects employ new or novel processes to achieve the following: (1) context-specific community engagement and project development; (2) devising processes to deliver complete, connected, and safe pedestrian and bicycle route networks quickly and efficiently); and/or (3) enabling communities to use active transportation in a way that is responsive to local demographic, socioeconomic, and physical contexts. Examples include electric bike (e-bike) programs that subsidize and distribute e-bikes to users, quick-build active transportation networks, and ["stroads" to roads treatments](#).

**Transportation Demand Management (TDM) & Technology** focuses on innovative programs or projects that reduce the demand for solo car trips. Options for pilots may include the following: (1) hosting a convening for jurisdictions coordinating TDM programs and policies, (2) creating a regional dashboard that provides aggregated TDM data from employers, (3) piloting residential TDM programs where tenants gain access to transit and bike share services, and/or (4) piloting innovative TDM software that facilitates shared employer shuttle service and carpooling.

**Curbside Management** may incorporate several treatments, including dynamic curb pricing and curb use designations. Pilots may include designating areas for loading and street parking, as well as reallocating space for bicycle parking, shared-used mobility, parklets, and/or piloting technology to map and track curb use.

5. Which of the project concepts seem most applicable to your community? \*

- Curbside Management
- Active Transportation
- Mobility Wallets & Universal Basic Mobility Projects
- Mobility Hubs
- Transportation Demand Management & Technology
- Big Data Research
- Other: \_\_\_\_\_

6. Is your organization currently planning, designing, or implementing projects that fall into the categories listed above? If so, please provide a short description.

Your answer \_\_\_\_\_

7. Are there barriers or local conditions that limit your community's ability to plan for or implement the project concepts listed above?

Your answer \_\_\_\_\_

8. How can SCAG help support project development or implementation to serve your community (e.g., by providing funding, technical assistance, access to data, convening stakeholders, etc.)? Are there areas where SCAG *should not* be involved?

Your answer \_\_\_\_\_

9. Is your organization interested in advancing one of the project concepts? Please describe your project concept and any barriers in the planning or implementation process.

Your answer \_\_\_\_\_

10. Do you have additional feedback for SCAG?

Your answer \_\_\_\_\_

[Back](#)

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**Table 13: Survey Respondents**

**LOS ANGELES COUNTY**

- City of Burbank
- City of Culver City
- City of Hermosa Beach
- City of Long Beach
- City of San Fernando
- City of Santa Monica
- City of Santa Monica – Big Blue Bus
- City of Sierra Madre
- LA City Council
- LA Metro
- LADOT

UCLA Institute of Transportation studies

**LOS ANGELES COUNTY / ORANGE COUNTY**

Asian Americans for Housing and Environmental Justice

**LOS ANGELES COUNTY / ORANGE COUNTY / RIVERSIDE COUNTY / SAN BERNARDINO COUNTY**

STV Incorporated

**LOS ANGELES COUNTY/ORANGE COUNTY/VENTURA COUNTY**

LACI

**RIVERSIDE COUNTY**

- City of Desert Hot Springs
- Coachella Valley Association of Governments

**SAN BERNADINO COUNTY**

- City of Colton
- City of Rancho Cucamonga
- SBCTA



## APPENDIX C: CASE STUDIES

SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS

### SCAG REAP 2.0 Transportation Initiatives



# ACCELERATING ACTIVE TRANSPORTATION E-BIKE DEPLOYMENT, E-BIKE SUBSIDY, AND QUICK-BUILD BIKE NETWORKS

## INTRODUCTION

Active transportation, including cycling, and particularly the use of e-bikes, has the potential to significantly reduce vehicle miles traveled (VMT) due to the e-bike's ability to facilitate longer trips, ease of riding uphill with pedal assist or throttle, and appeal to a wide range of age groups. This case study examines the interplay of three types of bike-related projects to achieve the Southern California Association of Governments (SCAG) and Regional Early Action Planning grant (REAP) goals of reducing VMT; accelerating infill development that facilitates housing supply, choice, and affordability; and Affirmatively Furthering Fair Housing (AFFH).

The three project types explored in this case study — an e-bike subsidy in Denver, an e-bike subscription program in the San Gabriel Valley, and a quick-build bike network in Seville, Spain — support active transportation by creating a safer environment, providing a cost-effective and reliable travel option, and making e-bikes more affordable.

As of June 2022, there were 48 e-bike subsidy/funding programs throughout the US.<sup>1</sup> Denver was a pioneer in this space and recently published a summary report of its successful e-bike subsidy program. Currently, there are 35 bike lending libraries<sup>2</sup> in the United States, an increasing number of cities are implementing quick-build bike networks as stand-alone projects or incorporating them into existing infrastructure projects as part of other planning and vision zero efforts. A significant barrier to biking is concern about personal safety, including the need for high-quality infrastructure (fully protected and separate bike lanes, and traffic calmed neighborhood walking and biking routes). Together, an e-bike program and safe bicycle infrastructure may encourage more people to use e-bikes.

In the San Gabriel Valley, ActiveSGV offers monthly e-bike subscriptions as part of their lending program. An excellent example of a quick-build complete bike network is Seville, Spain, which built over 50 miles of protected bike lanes in less than two years and has continued to grow to an active transportation network of 112 miles.<sup>3</sup> For comparison, the City of Los Angeles, with four times the population, currently has about 20 miles of protected bike facilities.<sup>4</sup>

Figure 1 includes a summary of the three highlighted active transportation-focused projects.

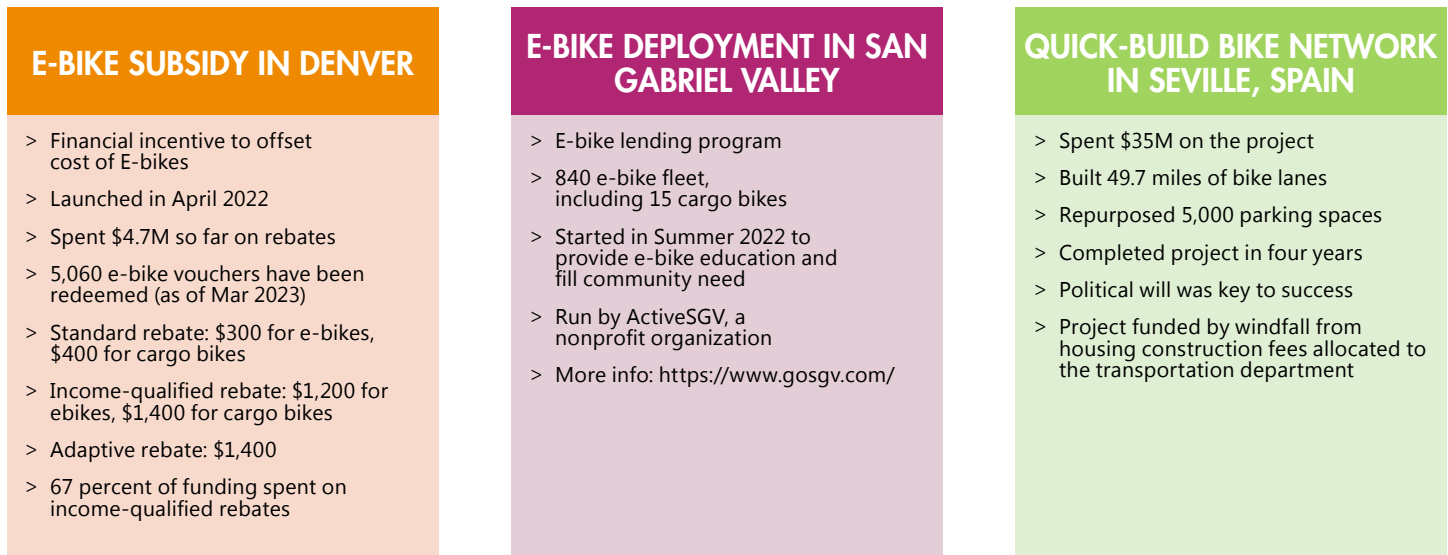
<sup>1</sup> <https://www.juicedbikes.com/blogs/news/state-guide-electric-bike-rebate-and-tax-credit>

<sup>2</sup> <https://airtable.com/shrOAAIPh1NJ9N8pW/tbl5IUMUgRGMQQHLLG>

<sup>3</sup> <https://medium.com/vision-zero-cities-journal/how-seville-became-a-city-of-cyclists-fba864b4be66>

<sup>4</sup> <https://la.streetsblog.org/2019/12/19/where-all-of-l-a-s-protected-bike-lanes-are/>

**Figure 1**  
Bike Project Summaries



## EXPLANATION OF THE PROBLEM OR CHALLENGE

All three projects took shape as a means to address mobility challenges for the local community or city. The e-bike subsidy program and e-bike lending library are great examples of two different approaches to increase the number of e-bikes in circulation. The former cannot keep up with demand for e-bike subsidy vouchers and the latter has a surplus of idling e-bikes waiting to be lent out due to needing more resources for advertising, engagement, and outreach. The quick-build bike network in Seville, Spain was a unique project that proposed a proven solution on a large scale and required the buy-in of the city's leadership and the public.

### E-BIKE SUBSIDY IN DENVER

The e-bike rebate program in Denver has multiple objectives including reducing GHG emissions from the transportation sector, improving air quality, and promoting active transportation. The program offers a financial incentive in the form of a rebate for purchasing an e-bike ranging from \$300 to \$1,400 depending on income. The incentive rebate was designed to deploy more e-bikes in the city and help residents choose biking over driving for shorter trips, and increase the mode share for biking.

### E-BIKE DEPLOYMENT: E-BIKE LENDING LIBRARY

ActiveSGV is a non-profit organization with a focus on creating a sustainable, equitable and livable San Gabriel Valley. Educating the public about biking, offering e-bike test rides, and operating an e-bike lending program called GoSGV are core programming components for the organization. ActiveSGV saw an opportunity to step up and address the shortage of access to affordable e-bikes in their community. They secured a capital funding grant from SGVCOG to purchase e-bikes and started their e-bike lending program in the summer of 2022.

### QUICK-BUILD BIKE NETWORK IN SEVILLE, SPAIN

Improved economic prospects and the corresponding increase in traffic congestion prompted the ruling party in Seville to propose an unconventional approach to solving the growing traffic congestion problem: a high quality bike network. City leadership understood that gaining public support for a quick-build bike network would be a crucial step to realize this vision. In a randomized public survey of 800 residents, 90 percent of the people said they supported more bike infrastructure in the city.<sup>5</sup> With this overwhelming public support for more bike infrastructure in Seville, city leadership was confident that their bike plan was the right approach and began to build out the network. Rather than build a couple of bike lanes over a decade, they planned for and built a high quality complete active transportation network in less than two years.

<sup>5</sup> [https://drive.google.com/file/d/0B8tOk7\\_upXv5azZQM2RBV1FweldVSUhRbG9WWnU2cUw0NVVn/view?resourcekey=0-tNtPTRz8CuzCY0fbSJdg](https://drive.google.com/file/d/0B8tOk7_upXv5azZQM2RBV1FweldVSUhRbG9WWnU2cUw0NVVn/view?resourcekey=0-tNtPTRz8CuzCY0fbSJdg)

# DESCRIPTION OF THE PROJECTS AND LESSONS LEARNED

## E-BIKE SUBSIDY IN DENVER

The e-bike subsidy program in Denver was the result of extensive collaboration between government, the advocacy community, and other stakeholders to create an initiative that offered a rebate at the point of sale, and was priced appropriately to allow meaningful participation by low- and moderate-income residents. In 2019, Denver became a participating city of the American Cities Climate Challenge, funded by Bloomberg, and received technical assistance from the Natural Resources Defense Council (NRDC). Building on that work, the Mayor’s Office created a Denver Mayor’s Climate Action Task Force tasked with producing a final report to address climate change in the city. The recommendations included several key bicycle-specific actions including “expanding bike share options, prioritizing the buildout of the bike lane network, and establishing e-bike and e-cargo bike programs with an emphasis on accessibility for low-income residents. A primary recommendation of the Task Force was the creation of a dedicated sales tax effort to fund purchase incentive programs.”<sup>1</sup>

In 2020, a \$0.25 sales tax with 62 percent support was approved by Denver voters to create the Climate Protection Fund and ensure continuous funding for climate-related projects, which now includes the e-bike subsidy. The Denver Office of Climate Action, Sustainability and Resiliency (CASR) was created to manage and evaluate the projects and work of the Climate Protection Fund. Denver leveraged the support through the American Cities Climate Challenge and the Climate Protection fund to convene a network of experts and advocates to further research e-bike incentives. The network was comprised of staff from NRDC, Bicycle Colorado, Northeast Transportation Connections (NETC), Colorado Energy Office (CEO), and National Renewable Energy Laboratory (NREL). Later in 2020, they launched the Can Do Colorado eBike Mini Pilot to test out the program design and provide e-bikes to essential workers during the pandemic.

Following the successful demonstration of the pilot project, the bike coalition reconvened and designed an e-bike incentive program based on lessons learned from the pilot project for essential workers, interviews with other e-bike incentive project managers across the country, and insights from bike shops. With the first pilot project and the subsequent planning for the citywide e-bike subsidy, it took the City and County of Denver about two years to begin offering the current version of the e-bike incentive. The resulting e-bike incentive program was launched on Earth Day in 2022.

**Role for MPO:** Offer technical assistance to support the development and planning of an e-bike subsidy, partner with local jurisdictions to roll out the program, assist with securing funding to maintain the e-bike subsidy, help with outreach, and monitoring and measuring success.

**Table 1**

**Roles and Responsibilities for the E-bike Subsidy in Denver**

Roles	Responsibilities
Program Implementor: City and County of Denver	Administers the e-bike subsidy program through a contractor to process applications and vouchers.
Funding Source: Climate Protection Fund	Voters approved a \$0.25 sales tax increase that goes into a fund for various types of climate protection projects.
Partners: Bike Shops	Collect and redeem vouchers at point of sale.

## E-BIKE DEPLOYMENT: E-BIKE LENDING PROGRAM IN SAN GABRIEL VALLEY

ActiveSGV operates a fleet of 840 e-bikes including 15 cargo e-bikes, 120 e-bikes are currently on loan to residents in the San Gabriel Valley and 8 of those e-bikes have been lent out to low-income individuals. Operating cost, including maintaining sufficient staffing levels and a full-time bike mechanic, is a constant challenge as well as recovering stolen or lost bicycles. The program staff believe that the e-bike lending model can become self-sustaining in the long-run. In the meantime, ActiveSGV is in need of financial support to conduct more robust outreach to the communities in San Gabriel Valley and promote the e-bike lending program to potential customers.

**Role for MPO:** Support nonprofit e-bike lending programs by providing resources to conduct more robust outreach and marketing as well as sharing best practices/examples of other program types.

<sup>6</sup> City and County of Denver, et al. (2022). *Denver’s 2022 ebike Incentive Program Results and Recommendations*.



# DESCRIPTION OF THE PROJECTS AND LESSONS LEARNED

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**Role for MPO:** Support nonprofit e-bike lending programs by providing resources to conduct more robust outreach and marketing as well as sharing best practices/examples of other program types.

<sup>6</sup> City and County of Denver, et al. (2022). *Denver’s 2022 ebike Incentive Program Results and Recommendations*.

**Table 2****Roles and Responsibilities for the E-bike Lending Program in San Gabriel Valley**

Roles	Responsibilities
Program Implementor: ActiveSGV	Stand up and operate the program.
Funding Source: SGVCOG	Local MPO that provided access to funding.

**QUICK-BUILD BIKE NETWORK IN SEVILLE, SPAIN**

The quick-build bike network project in Seville, Spain illustrated the importance of commitment and political leadership from the city government to realize the plan. In addition to focusing on bike infrastructure, the bike plan also included plans for a bike share system, traffic-calming measures, and public outreach campaigns. Even though the project was built in less than two years, the city government proactively engaged with communities and stakeholders throughout both the planning and implementation of the bike network.

**Role for MPO:** Convening stakeholders and building political support for redistributing public space (and parking spaces) to shepherd large-scale projects through the approval process.

**Table 3****Roles and Responsibilities for the Quick-Build Bike Network in Seville, Spain**

Roles	Responsibilities
Program Implementor: Transportation Department of Seville, Spain	Build out the network.
Funding Source: Construction Fee	The initial \$35 million for the buildout of the bike network came from construction fees.
Decision-makers: Mayor and Coalition	A commitment from city leadership as part of a coalition made the project possible.

**ANALYSIS OF THE OUTCOMES****E-BIKE SUBSIDY IN DENVER**

The e-bike subsidy in Denver has been extremely successful in achieving its original goals of replacing car trips with bike trips, reducing GHG emissions, providing e-bikes to low-/moderate-income residents, and affecting mode shift. The impact is astounding: in a survey for voucher recipients, respondents reported riding their e-bikes 26 miles and replacing 3.4 car trips on a weekly basis, equating to a reduction in 100,000 VMTs each week. Income qualified voucher recipients reported riding their e-bikes 32 miles per week and are riding their e-bikes 50% more than standard rebate recipients. Most impressively, 29% of respondents reported being new bike riders.<sup>1</sup> The Rocky Mountain Institute (RMI), a partner for the cited Denver e-bike subsidy report, calculated that Denver's program saved 0.94 lb of CO2 emissions per dollar spent.

**Table 4****Comparison of Per Mile Cost and Emissions Across ICE Vehicles, EVs, and E-Bikes**

Category	Internal Combustion Engine (ICE) Vehicles	Electric Vehicles (EV)	E-bikes
Fuel (\$/mile)	\$0.15	\$0.05	\$0.001
Maintenance (\$/mile)	\$0.10	\$0.07	\$0.07
Total (\$/mile)	\$0.25	\$0.12	\$0.07
Total Emissions per Vehicle (MT CO2e)	0.54	0.19	0.01

Source: Denver's 2022 Ebike Incentive Program Results and Recommendations

<sup>7</sup> City and County of Denver, et al. (2022). *Denver's 2022 Ebike Incentive Program Results and Recommendations*.

## E-BIKE DEPLOYMENT: E-BIKE LENDING PROGRAM IN SAN GABRIEL VALLEY

ActiveSGV has an exit survey for departing members and collects information about member experience, trip purpose, riding frequency, and other relevant information. Since the program is less than a year old, SGV has not conducted a data analysis yet. However, ActiveSGV reported that they are offering a valuable community service by providing access to e-bike education, test rides, and a new rent-to-own program that enables individuals to keep their e-bikes after 36 months of renting. One of ActiveSGVs biggest challenges to renting more of the remaining 705 e-bikes in their fleet of 840 e-bikes is a lack of resources (funding, staff, and time) to target and reach people in the San Gabriel Valley with information of their e-bike lending program.

## QUICK-BUILD BIKE NETWORK IN SEVILLE, SPAIN

The bike network in Seville, Spain has grown from practically zero miles to 50 miles between 2006 and 2008, and then to 74.5 miles by 2017. Bike trips have also grown exponentially from 6,000 trips to 70,000 trips per day (as of 2017). During the initial 50 miles of the quick-build bike network, leadership in Seville learned that, while the public agreed that bike infrastructure was needed, opposition started to form during the build out of the network. People grew restless from the construction equipment and barriers impeding movement. However, once the first phase of the bike network was completed and the construction equipment and barriers were removed, public sentiment calmed and people started using the network. The mode share for biking grew from 0.6% to 10% (as of 2019).

## EQUITY CONSIDERATIONS

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Bike-focused programs have a unique opportunity to reach low-income and disenfranchised communities by designing incentives that make the purchase of e-bikes feasible. Studies indicate that low-income individuals are more likely to reside farther away from public transportation than their higher-earning counterparts. Providing an e-bike to a person in need can help overcome barriers to using public transportation, while also facilitating access to critical services and employment opportunities. In addition to offering financial incentives for the purchase of an e-bike, it is important to understand whether the person or group in question has access to mobile phones or credit cards, and how any barriers to buying an e-bike can be addressed. Additionally, it is necessary to consider whether they have the financial means to purchase accessories such as a bike lock, helmet, child seat, rain gear, or other items required for biking or commuting, as well as safe storage options for their e-bikes. Finally, conducting outreach in low-income communities and having a regular presence to share information and enroll residents in a e-bike subsidy or e-bike lending program can boost participation.

**Role for MPO:** Partner with a nonprofit/resource-constrained organization to help host community outreach events and develop marketing collateral.



## SCAG REAP 2.0 Transportation Initiatives



# CURBSIDE MANAGEMENT IN WASHINGTON D.C.

## INTRODUCTION

Curbside management “is the deliberate design, organization, and governance of the curb space – the space on the street that is closest to the curb.”<sup>1</sup> In many locales, management strategies are aimed at increasing access, reducing barriers to mobility, and enhancing safety for diverse road users. The strategies and interventions that municipalities deploy to address growing competition for curb space must be highly tailored to meet the unique user needs, curbside typologies, and local goals for implementing jurisdictions.<sup>2</sup>

Southern California Association of Governments (SCAG) looks to implement its Regional Early Action Planning grant (REAP 2.0) program, they see curbside management as a way to achieve their goals of increasing affordable housing supply; reducing vehicle miles traveled (VMT); and promoting a balanced, multi-modal, and human-centered transportation system.

This case study looks at a program in Washington, D.C. where the District Department of Transportation (DDOT) formed the Parking and Ground Transportation Division (PGTD). Created in 2017, it establishes “priorities for uses of the curb based on the type of neighborhood and adjacent land uses.”<sup>3</sup>

## EXPLANATION OF THE PROBLEM OR CHALLENGE

Where the roadway meets the sidewalk, curbs are contested spaces that play an important role in our transportation system. On both sides, curbs have faced increased pressure to accommodate a widening variety of modes and uses. Commercial deliveries, ride-hailing services, shared micro-mobility services, vending, vehicle parking, transit, and parklets all compete for limited space. This competition can present conflicts and safety risks, as vehicles block transit lanes, bicycle lanes, crosswalks, or travel lanes to facilitate loading and unloading of passengers and goods. Likewise, suboptimal use of curb space can create inefficiencies and incentivize more driving, leading to increased greenhouse gas emissions and exacerbating congestion. Finally, jurisdictions seeking to manage curb space must have institutional capacity

<sup>1</sup> Southern California Association of Governments (2022). “Curbspace Management Study.” Retrieved from: <https://scag.ca.gov/sites/main/files/file-attachments/scag-curb-space-management-study-final.pdf?1663907789>

<sup>2</sup> Southern California Association of Governments (2022). “Curbspace Management Study.” Retrieved from: <https://scag.ca.gov/sites/main/files/file-attachments/scag-curb-space-management-study-final.pdf?1663907789>

<sup>3</sup> District Department of Transportation (2021). Move D.C.: 2021 Update. “Curbside Management.” Retrieved from: <https://movedc.dc.gov/pages/curbside-management>

to inventory, plan for, and implementing curbside management strategies. In scenarios where on-street parking is not properly priced, the amount of parking turnover is low, limiting options for other vehicles to use high-demand spaces. Better curbside management practices can help set appropriate pricing, based on demand, and create opportunities to generate revenues that finance other transportation improvements or municipal services. Likewise, these interventions can expand and improve access to more mobility options. To address these issues, D.C.'s Parking and Ground Transportation Division has created a suite of curbside management programs; the interventions include managing parking, establishing pick-up and drop-off zones for ride-hailing services, designating motorcoach parking, and testing a pilot to better manage commercial deliveries.<sup>1,2</sup>

## PROJECT DESCRIPTION

Washington D.C. underwent a comprehensive curbside management study in 2014 that identified local curbside typologies, surfaced promising technologies, and outlined regulatory next steps for the establishment of a District-wide curb management program.<sup>3</sup> The District Department of Transportation's Parking and Ground Transportation Division launched in 2017 to house D.C.'s suite of curbside management initiatives. The division manages the following programs:

- > **ParkDC**, which broadly manages the District's parking and curbside assets, including establishing pricing, mobile payments, permits, and school parking.<sup>4</sup>
- > **Pick-Up/Drop-Off (PUDO) Zones** designate areas "that are dedicated full-time for passenger pick-up and drop-off and commercial loading."<sup>5</sup> This program was launched in 2017 and expanded in 2018. A three-month study, undertaken in conjunction with curbFlow, examined the efficacy of reservable commercial loading spaces in nine high-volume locations.<sup>6</sup>
- > **Motorcoach Parking** created on-street metered parking zones for tour buses in areas with heavy tourist activity.<sup>7</sup> This program was launched in 2018.
- > **Performance Parking Zones** designate areas with high parking activity and "use demand-based parking rates to drive parking turnover."<sup>8</sup>
- > **Off-Sidewalk Parking Corrals** designate spaces – primarily on-street – to store private and shared e-scooters as well as bicycles.<sup>9</sup>

These programs are intended to meet safety goals by reducing the need for vehicles to double park, block travel lanes, crosswalks, bicycle lanes, or transit-only lanes. They also aid in reducing congestion by establishing responsive parking pricing and they support shifts to non-automotive uses by providing designated parking for bicycles and scooters.

**Role for MPO:** Supporting curbside management initiatives in several ways, including the following: (1) providing seed funding for pilot initiatives; (2) working with implementing agencies to define potential pilot areas that have the most potential to support infill development, equity, and GHG reduction goals; (3) connecting implementing agencies with private sector vendors; and (4) working with implementing agencies to develop evaluation mechanisms and key performance indicators. Typologies, recommendations, outreach and engagement strategies, site selection methodologies, inventories, and frameworks articulated in the agency's Curbside Management

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<sup>4</sup> The Traffic Group (2019). "Curb Management in Washington D.C." Retrieved from: <https://trafficgroup.com/newsroom/blog/other/curb-management-in-washington-dc>

<sup>5</sup> District Department of Transportation (2021). Move D.C.: 2021 Update. "Curbside Management." Retrieved from: <https://movedc.dc.gov/pages/curbside-management>

<sup>6</sup> The District Department of Transportation (2014). "District Department of Transportation Curbside Management Study." Retrieved from: <https://dctgov.app.box.com/v/curbside-management-study-2014>

<sup>7</sup> The District Department of Transportation (2020). "ParkDC." Retrieved from: <https://www.parkdc.com/>

<sup>8</sup> The District Department of Transportation (2020). "Programs." Retrieved from: [https://www.parkdc.com/pages/programs#pick-up\\_drop-off\\_zones](https://www.parkdc.com/pages/programs#pick-up_drop-off_zones)

<sup>9</sup> Pérez et al (2021). "Dynamic Curbside Management in the Age of New Mobility and e-Commerce: Case Studies from Columbus, OH and Washington, DC." Retrieved from: [shortened link](#)

<sup>7</sup> The District Department of Transportation (2020). "Motorcoach Parking and Commercial Vehicles." Retrieved from: [https://www.parkdc.com/pages/commercial-vehicles#motorcoach\\_parking](https://www.parkdc.com/pages/commercial-vehicles#motorcoach_parking)

<sup>8</sup> The District Department of Transportation (2020). "Meters." Retrieved from: [https://www.parkdc.com/pages/meters#performance\\_parking\\_zones](https://www.parkdc.com/pages/meters#performance_parking_zones)

<sup>9</sup> District Department of Transportation (2021). Move D.C.: 2021 Update. "Curbside Management." Retrieved from: <https://movedc.dc.gov/pages/curbside-management>

Study could be used as the guiding document to outline potential partnership roles and responsibilities.

Roles	Responsibilities
Program Implementor: District Department of Transportation	Plan, launch, and implement pilots, coordinate with the private sector and other local jurisdictions.
Funding Sources: Local, Federal, and Special Purpose Funds	Programs are funded by a mix of local funds, federal grant funding, and special purposed funds.
Decision-makers: Mayor, Council of the District of Columbia, and U.S. Congress	The Mayor submits a budget to the Council for consideration, then the Council-adopted budget goes to Congress for final approval.
Private Sector Partner: curbFlow	Coordinated with the District to launch a pilot that examined strategies to better manage commercial deliveries and rideshare pickups.

## OUTCOMES

Overall, studies evaluating D.C.'s dynamic pricing initiatives and technologies to facilitate commercial loading and unloading showed promising results. A study evaluating the efficacy of a dynamic pricing pilot in Chinatown found that customers reported a 7-minute decline in time spent searching for parking. Likewise, double parking declined by 43 percent. The Department noted that the time that cars spent cruising for parking decreased by as much as 15 percent, with congestion reduced by 5 percent while travel time reliability increased by 5 percent.<sup>1</sup> DDOT also conducted a three-month research study undertaken with curbFlow, a mobility company that coordinates with commercial operators in PUDO zones. The study removed parking spaces to create reservable loading zones in nine high-volume locations. The spaces could be reserved using an app and were open to commercial vehicles as well as private vehicles “operating in a commercial capacity,” such as online order delivery (i.e., on-demand delivery). It found that, within designated zones, double parking and illegal U-turns decreased by 64 percent. On-demand deliveries constituted the most frequent users of the designated areas, followed by freight and parcel deliveries.<sup>2</sup>

## LESSONS LEARNED

DDOT's curbside management program follows many of the national and international best practices, including deploying a multi-pronged approach to address the varying needs of different neighborhoods, communities, and typologies. Installing technology to support dynamic pricing systems does come with challenges, including the temporary closure of on-street parking to install devices, and ensuring that mapping data precisely locates sensors so that consumers and agencies are fed accurate data. For DDOT, they noted that all programs must anticipate a degree of flexibility to adapt to changing demands. Likewise, implementing agencies must plan for how special events alter curbside demands and create systems to be responsive. Finally, agencies should budget to adapt the relevant technology, including budgeting for sensor relocation, expanding access to mobile apps, and developing transition plans to move from pilots to permanent programs. For curbside management systems that require access through a mobile app (e.g., curbFlow), users noted that the requirement to use an app to reserve or access spaces served as an impediment. Users noted the limited geographic footprint of the pilot and the hesitancy for some commercial operators to require drivers to use mobile apps.<sup>3</sup>

## EQUITY CONSIDERATIONS

While proactive and tech-enabled management of curb space to accommodate a variety of modes and uses constitutes a relatively new trend, curb space being governed and not managed is not new. Any system, new or existing, that monetizes access to curb space (e.g., dynamic pricing, loading zone management, etc.) has the potential to negatively affect lower-income households. Likewise, many pilots deploying technology require travelers to use a dedicated mobile app to access payments or reserve spaces, limiting the ability for populations without smartphones and mobile devices to access services. Retaining dedicated curbside space so that people with

<sup>1</sup> District Department of Transportation (2019). “parkDC: Penn Quarter/Chinatown Parking Pricing Pilot.” Retrieved from: [shortened link](#)

<sup>2</sup> District Department of Transportation (2019). “DDOT, curbFlow Research Project Finds High Demand for Pickup, Dropoff Zones.” Retrieved from: <https://ddot.dc.gov/release/ddot-curbflow-research-project-finds-high-demand-pickup-dropoff-zones>

<sup>3</sup> curbFlow (2020). “Loading Management Zones.” Retrieved from: <https://www.columbus.gov/publicservice/parking/curbFlow-Final-Report-June-2020/>

disabilities can maintain easy, safe, and dignified access to transportation options, public spaces, and businesses is also pivotal.<sup>1</sup> Lastly, projects should evaluate which users accrue benefits and which are harmed. Ideally, vulnerable road users (e.g., people walking, bicycling, using transit and/or mobility devices) see net benefits either through safety improvements, reduced travel times, and/or increased access to mobility options.

**Role for MPO:** Consider working with implementing jurisdictions to clearly identify equity concerns, plan for mitigation measures, and developing evaluation frameworks to track equity outcomes. This process may involve working with jurisdictions during the pre-application phase to define priority populations, developing outreach strategies to garner input from said populations, and providing key performance indicators to assess outcomes.

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<sup>1</sup> Hutchings & Perry (2021). "Ensuring curb equity is a complex undertaking, filled with stakeholders and considerations." Mobility Magazine. Retrieved from: <https://www.parking-mobility.org/2021/07/03/ensuring-curb-equity/>



## SCAG REAP 2.0 Transportation Initiatives

# SCAG™



# BIG DATA ANALYTICS

## INTRODUCTION

Big data analytics can be a useful tool to understand travel patterns, assess demand across different travel modes, and offer more fine-grained local travel insights. These analytical tools use “travel behavior data from GPS data sources such as smart phones and car navigation systems to reveal how actual commuters are using the transportation system.”<sup>1</sup> The Southern California Association of Governments (SCAG) has partnered with StreetLight to make big data analytical tools available to jurisdictions throughout the region. Big data analytics is of interest to SCAG as it looks to implement its Regional Early Action Planning grant (REAP 2.0) program which aims to reduce vehicle miles traveled (VMT) by single-occupant vehicles (SOV); accelerate infill development that facilitates housing supply, choice, and affordability; and Affirmatively Further Fair Housing (AFFH).

This case study highlights how the StreetLight Insight platform, a sophisticated data analytics software product for transportation planning, can be used by cities and agencies in the SCAG region. It spotlights three different use cases in the Bay Area, Pittsburgh, and Northern Alameda County to showcase the wide ranging potential of big data.

## EXPLANATION OF THE PROBLEM OR CHALLENGE

Traditional travel demand modeling and forecasting provides valuable inputs for transportation planners, informing roadway network development, transit planning, signal timing, and active transportation design. However, producing accurate travel demand models is resource-intensive, and even sophisticated models may contain gaps that do not account for specific populations, trip types, or road users. By using aggregated, recent, travel-related data from third parties, big data can help jurisdictions validate model outputs, collect more fine-grained data, and inform mobility planning for specific populations. In addition, big data analytics can help local governments better meet greenhouse gas (GHG) and VMT reduction goals, by using advances in data collection to quantify reductions in driving. As SCAG looks to work in partnership with jurisdictions to pursue reduction targets set forth in Connect SoCal, “the availability of reliable and accurate local VMT and travel data become increasingly important to assess the success of various land use/transportation strategies in achieving the greenhouse gas emission reduction goals.”<sup>2</sup> Access to Big Data also has equity implications for under-resourced communities that may not

<sup>1</sup>Linscott, Law & Greenspan Engineers (n.d.). “Big Data Analytics.” Retrieved from <https://www.llgengineers.com/big-data-analytics/>

<sup>2</sup>Baek, S. (2022). “A Guide to Navigating Existing and Emerging Sources of Local Vehicle-Miles-Traveled (VMT) and Travel Data.” Retrieved from <https://transweb.sjsu.edu/mctm/research/utc/Guide-Navigating-Existing-and-Emerging-Sources-Local-Vehicle-Miles-Traveled-VMT-and-Travel-Data>



have staffing to support robust data analytics. With the prospect of state-mandated use of big data, SCAG is looking to ensure that these jurisdictions can employ these data effectively.

## SUMMARY OF AVAILABLE DATA/METRICS

StreetLight gives users access to several travel metrics by collecting anonymized location data from private and public sources. Users can use these datasets to understand trip origins, destinations, and routes. The analytics can also help ascertain turning movement counts, estimate VMT, calculate vehicle hours of delay (VHD), run demographic analyses, infer trip purpose, and determine aggregated metrics on trip speed, travel time, and length.<sup>1</sup> The technology applies machine learning algorithms to these datasets to present analyses that can be used to provide more granular travel forecasts, correct known under-sampling errors, and provide a more robust picture of local travel dynamics.<sup>2</sup> The summaries below exemplify how big data analytics may be deployed to pursue regional goals.

## TRANSIT PLANNING IN AN ERA OF CHANGING COMMUTE PATTERNS

In the Bay Area, SamTrans “needed to understand the behavior of commuters on an express bus route. They used StreetLight to analyze vehicle demand to determine how the pandemic affected commutes.”<sup>3</sup> One of the agency’s key challenges was understanding how to adjust to the pandemic-induced telecommuting shifts that cratered ridership for one of its most popular lines. A rider survey would have helped planning efforts, but it would only capture the sentiments of folks still using the bus routes, not those who had shifted their travel. StreetLight data enabled the agency to understand that hybrid in-office/work-from-home commute patterns meant that fewer workers were spending a full day at their workplace. Instead, riders wanted more frequent pick-up and drop-offs to accommodate more flexible schedules. Accordingly, the agency shifted bus schedules to account for this shift and saw ridership increase by 30 percent.<sup>4</sup>

## PLANNING FOR PEOPLE BICYCLING AND WALKING

The City of Pittsburgh was looking to identify corridors and intersections that posed serious risks for people bicycling and walking. While the Department of Mobility and Infrastructure had information on vehicle crashes, it lacked similar data for bicycle and pedestrian incidents. Big data enabled the City to estimate bicycle and pedestrian miles traveled, provide projections at the neighborhood level, and identify corridors with the highest crash rates. The analysis found that high use walking and bicycling corridors were not associated with more severe crashes; instead, nearly half of all fatal pedestrian crashes and 51 percent of all pedestrian crashes “occurred in neighborhoods with low pedestrian activity.”<sup>5</sup> Likewise, half of all fatal bike crashes and 31 percent of all bicycle crashes occurred in areas “with little or no bike infrastructure, and low bike trip activity.”<sup>6</sup> Based on these findings, the City prioritized residential streets that would receive traffic calming interventions, and increased bicycle parking availability in areas with high levels of bicycle traffic.<sup>7</sup>

## UNDERSTANDING THE EFFECTS OF TRUCK ROUTES ON COMMUNITIES

In Northern Alameda County, truck traffic was deviating from designated truck routes and traveling through residential communities, creating conflicts with people walking and bicycling. Caltrans worked with StreetLight to understand what was causing the diversions and to devise solutions. Typically, a driver survey would help inform the analysis, but collecting this information is resource intensive and since it relies on human recollection, it often leads to incomplete or inaccurate data. By using big data analytics, Caltrans was able to pinpoint where most freight trips were occurring, identify congested corridors that were prompting drivers to cut through residential neighborhoods, and identify the origins of the freight trips. Caltrans shared the analysis with the Metropolitan Transportation Commission, the Bay Area Air Quality Management District, and affected jurisdictions to inform freight corridor planning efforts.<sup>8</sup> This analysis could also be a valuable tool to understand how freight traffic affects vulnerable communities that live along designated (and unofficial) freight corridors.

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1 StreetLight Data (n.d.). “Essential Metrics for Everyday Traffic Analysis.” Retrieved from <https://www.streetlightdata.com/transportation-metrics/#demographics>

2 Pettit, M. (2020). “StreetLight and SB 743” Retrieved from [https://scag.ca.gov/sites/main/files/file-attachments/mtf092320\\_streetlight.pdf?1602910685](https://scag.ca.gov/sites/main/files/file-attachments/mtf092320_streetlight.pdf?1602910685)

3 StreetLight (n.d.). “Optimizing Bus Schedules to Best Serve Changing Commuting Patterns.” Retrieved from [shortened link](#)

4 StreetLight (n.d.). “Optimizing Bus Schedules to Best Serve Changing Commuting Patterns.” Retrieved from [shortened link](#)

5 StreetLight (n.d.). “Bike and Pedestrian Safety for an Equitable City.” Retrieved from [shortened link](#)

6 StreetLight (n.d.). “Bike and Pedestrian Safety for an Equitable City.” Retrieved from [shortened link](#)

7 Pekow, C. (2022). “Pittsburgh Targets Bike, Pedestrian Infrastructure Spending Using Traffic and Crash Data Analysis.” Smart Cities Dive. Retrieved from <https://www.smartcitiesdive.com/news/pittsburgh-targets-bike-pedestrian-infrastructure-spending-using-traffic-a/624467/>

8 StreetLight (n.d.). “How Comprehensive Truck Traffic Data Enables Safer, More Efficient Routing.” Retrieved from [shortened link](#)

**Roles for MPO:** Some local jurisdictions rely on MPOs to provide VMT and travel data. By providing access to StreetLight’s tools and technical assistance, SCAG can work in partnership with local governments to better plan for integrated land use and transportation strategies that reduce VMT and address the travel needs of populations that may not be fully accounted for in traditional travel modeling. This includes using demographic indicators coupled with origin and destination data to create travel personas to better understand the needs of underrepresented travelers (e.g., seniors, women, low-income households, etc.). It can also be used to identify sensitive populations and potentially harmful uses (e.g., estimating heavy duty truck travel patterns in sensitive communities near the ports and along freight corridors). As an cross-county organization SCAG can help jurisdictions identify regional travel patterns with local impacts. Likewise, the agency can play a critical role in providing ongoing data access and technical assistance to inform decision-making throughout the lifecycle of a project, including conceptualization, planning, implementation, and evaluation. Finally, SCAG can deploy this data to help jurisdictions understand how travel pattern shifts (e.g., pre- vs. post-pandemic) may inform future mobility to support VMT reduction goals.

**Table 1**  
**Roles and Responsibilities**

Roles	Responsibilities
Program Implementor: Departments of Transportation (municipal and state), Transit Providers, Metropolitan Planning Organizations	Secure big data analytics, define problem statement/research question.
Funding Sources: Municipal, state, and regional organization budgets	Projects were generally funded using a subscription or fee-for-service model.
Decision-makers: Local Jurisdictions, State Departments of Transportation	Local, state, or regional officials generally secure a big data analytics provider.
Private Sector Partners: StreetLight, Transportation Planning Firms	StreetLight often works in coordination with transportation/mobility consulting firms or directly with jurisdictions.

## OUTCOMES

Overall, big data analytics has been a helpful tool to help estimate VMT, conduct demographically- and user-specific travel modeling, and validate existing travel modeling data. It is also an effective tool to quickly gather data that might otherwise require more resource-intensive survey work. For example, a Sacramento Area Council of Governments (SACOG) study to understand regional trip patterns saw efficiency gains and a larger sample size using big data. The survey they used in 2018 tracked respondent travel patterns for seven days over two calendar months; StreetLight’s 2019 analysis was able to capture 365 days of travel patterns. Likewise, by using big data, the analysis captured over 16 million trips (versus the survey sample of 146,000); using StreetLight’s tool took about a day to compile the data, versus seven months for the survey.<sup>1</sup>

## LESSONS LEARNED

While big data analytic tools can be helpful in supporting mobility planning and travel modeling, jurisdictions using these platforms should understand that any data analysis has the potential to introduce bias. These tools can be most effectively used if they are paired with existing travel modeling data and demographic data that can be used to verify outcomes. In one example, census data was coupled with anonymized mobile location data and spending data at local destinations (e.g., supermarkets, restaurants) to “generate a representative population that is statistically equivalent to the census population.”<sup>2</sup> However, before these data were used to inform planning, the implementing agency (SACOG) validated the data “against Caltrans traffic data, population data, and data from local agencies and found it to be good for a variety of applications.”<sup>3</sup> Understanding that the efficacy of these big data tools relies on robust, valid, and representative inputs is key for any jurisdiction looking to use their services.

<sup>1</sup> Pettit, M. (2020). “StreetLight and SB 743” Retrieved from [https://scag.ca.gov/sites/main/files/file-attachments/mtf092320\\_streetlight.pdf?1602910685](https://scag.ca.gov/sites/main/files/file-attachments/mtf092320_streetlight.pdf?1602910685)

<sup>2</sup> Sacramento Area Council of Governments (n.d.). “Big Data In, Travel Insights Out: Big Data-Powered Machine Learning Reveals Where People Go and Why.” Retrieved from: <https://www.sacog.org/news/big-data-travel-insights-out>

<sup>3</sup> Sacramento Area Council of Governments (n.d.). “Big Data In, Travel Insights Out: Big Data-Powered Machine Learning Reveals Where People Go and Why.” Retrieved from: <https://www.sacog.org/news/big-data-travel-insights-out>

## EQUITY CONSIDERATIONS

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Big data analytics can be a powerful tool to advance equitable mobility planning. However, users should understand that the datasets – most notably the heavy reliance on data from mobile devices – raises the question of how well it actually reflects travel patterns of the general population. One study noted that higher-wealth individuals tended to be overrepresented, “with the richest 20 percent contributing over 50 percent of all recorded trips, substantially skewing the datasets.”<sup>1</sup> In response to these documented biases, planners and data managers have adopted a suite of interventions to help mitigate biases that may lead to inequitable outcomes. They include identifying oversampling biases (e.g., of wealthier users), connecting different datasets that create more holistic sampling of the general population, deploying methods to reach under-sampled populations (e.g., surveys), and clearly articulating the limitations of relevant datasets and/or artificial intelligence technologies.<sup>2</sup>

**Role for MPO:** SCAG should work with jurisdictions to identify priority populations and clearly define the goals of any data analysis. The MPO can then work closely with the jurisdiction and big data vendors to identify potential sampling biases, alternative datasets, and verification methodologies to ensure that relevant analyses account for potential biases. SCAG as the regional planning agency with staff modeling expertise is uniquely positioned to validate big data research with historic and current data. SCAG can also play a role in working with jurisdictions to identify alternative data-gathering methods (e.g., by facilitating partnerships with community-based organizations) to gather inputs and feedback from populations that may not be meaningfully represented in existing datasets.

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<sup>1</sup> Schlosser, F. et al (2021). “Biases in Human Mobility Data Impact Epidemic Modeling.” Retrieved from: <https://arxiv.org/abs/2112.12521>

<sup>2</sup> Ann Arbor SPARK (2020). “Strategies for Tackling Bias in Mobility Data.” Retrieved from <https://annarborusa.org/news/strategies-for-tackling-bias-in-mobility-data/>



## SCAG REAP 2.0 Transportation Initiatives



# MOBILITY HUBS IN AFFORDABLE HOUSING SITES PILOT PROJECT

## INTRODUCTION

Mobility hubs are transportation locations that integrate different travel options, infrastructure, and amenities for seamless and more efficient travel. This case study focuses on the Metropolitan Transportation Commission's (MTC) Mobility Hubs in Affordable Housing Sites, which looked at how mobility hubs could better meet the needs of residents in affordable housing sites. As the Metropolitan Planning Organization (MPO) for the San Francisco Bay Area, the MTC's program could offer lessons for the Southern California Association of Governments (SCAG) as it looks to implement its Regional Early Action Planning grant (REAP 2.0) program which aims to reduce vehicle miles traveled (VMT) by single-occupant vehicles (SOV); accelerate infill development that facilitates housing supply, choice, and affordability; and Affirmatively Further Fair Housing (AFFH).

With funding from the California Air Resources Board (CARB), MTC, in partnership with TransForm, aimed to introduce new mobility options to three mobility hubs at affordable housing developments in Richmond, Oakland, and San Jose.

## EXPLANATION OF THE PROBLEM OR CHALLENGE

MTC's existing mobility hubs provide access to a variety of mobility options such as electric vehicle (EV) car sharing, bike share, and e-scooter share; and customer service-minded conveniences like purchasing transit passes and helping with planning a trip. With almost half of all car trips under three miles long, residents can reduce greenhouse gas (GHG) emissions when they have access to green transportation options like biking, scooting, and riding public transit. However, low-income communities and communities of color have the least access to clean and affordable mobility options. By tailoring mobility options and amenities to the needs of low-income families in affordable housing sites, the project aims to increase access to economic opportunities and



Source: Oakland Housing Authority

amenities, provide clean mobility options that meet residents' needs, reduce emissions and VMT, lower transportation costs, gather data to inform cities on right-sized parking and mobility options for affordable housing developments, and create a mobility program for affordable homes patterned after other transportation demand management (TDM) programs.<sup>1</sup> The pilot project is part of MTC's broader Mobility Hubs Program which is a critical component of the Climate Initiative Strategy from its long-range transportation plan.<sup>2</sup>

## DESCRIPTION OF THE PROJECT

### PROJECT PARTNERS AND FUNDING

In 2017, MTC received a \$2.25 million grant from CARB to design and implement three mobility hubs. The grant is funded by California Climate Investments (CCI), an initiative that invests cap-and-trade money to initiatives that reduce GHG emissions.<sup>3</sup> In 2018, MTC partnered with TransForm, a nonprofit that advocates for smarter transportation policies, to conduct a needs assessment and ensure that the mobility hubs are tailored to each community. The community needs assessment was completed in 2019, after several rounds of surveys and focus group discussions. With information gathered from the residents, the project team is currently focused on implementation efforts. To support continued outreach activities, the grant agreement was amended in 2021 to increase the award to \$3 million and extend the term by three years through March 2025.

MTC administers the project and oversees the budget, while TransForm spearheads project implementation which includes program design, outreach, and coordination with other project partners. Shared-Use Mobility Center (SUMC) supports activities around community needs assessments, EV procurement, and mobility operator partnership development. The project also has an advisory committee, comprised of nonprofit organizations and transit agencies in the Bay Area, that provides guidance on project design and financial sustainability.

**Role for MPO:** Provide funding, planning, and technical assistance to community partners to support access to/from affordable housing sites in the region.

**Table 1**  
Roles and Responsibilities

Category	Organization	Responsibilities
<b>Program Implementors</b>	Metropolitan Transportation Commission (MTC)	Administers the project, oversees the budget, and coordinates with CARB for reporting and compliance.
	TransForm	Leads project implementation which includes program design, outreach, and coordination with other project partners.
	Shared-Use Mobility Center (SUMC)	Supports activities around community needs assessments, electric vehicle procurement, and mobility operator partnership development.
<b>Advisory Committee</b>	AC Transit, Bay Area Air Quality Management District (BAAQMD), Bay Area Rapid Transit (BART), The Greenlining Institute, GRID Alternatives, The City of Oakland, The City of San Jose, The Santa Clara Valley Transportation Authority (VTA)	Provides high-level guidance on project design and implementation, and the financial sustainability of the project beyond the pilot program.

<sup>1</sup> TransForm (2020). Car Sharing and Mobility Hubs in Affordable Housing Pilot Project. Community Transformation Needs Assessment Process, Results, and Lessons Learned. Retrieved from: <https://drive.google.com/file/d/1ckmhOlewTss5ZnFiE110dKjr0ElzfFP2/view?pli=1>

<sup>2</sup> Metropolitan Transportation Commission (2021). Bay Area Regional Mobility Hubs – Mobility Hub Implementation Playbook. Retrieved from: [https://mtc.ca.gov/sites/default/files/Intro\\_MTC%20Mobility%20Hub%20Implementation%20Playbook\\_4-30-21.pdf](https://mtc.ca.gov/sites/default/files/Intro_MTC%20Mobility%20Hub%20Implementation%20Playbook_4-30-21.pdf)

<sup>3</sup> MTC Memorandum Amending the Grant and Funding Agreement

Category	Organization	Responsibilities
<b>Community Partners</b>	East Bay Asian Local Development Corporation (EBALDC), Related Companies, Richmond Community Foundation, City of Richmond, First Community Housing (FCH)	Host the mobility hub, provide staffing support for project implementation, facilitate the community needs assessment, assist in outreach and educational events, provide access for installation of equipment.
<b>Funding Source</b>	California Air Resources Board (CARB)	Provided grant funding through its Clean Mobility Options Program.

## SITE SELECTION

The three sites represent urban and suburban developments that were selected from areas with a CalEnviroScreen 2.0 value of at least 75.<sup>1</sup> MTC worked with TransForm to identify affordable housing developments in the Bay Area that have expressed interest in alternative transportation solutions and agreed to be included in the grant proposal.

**Table 2**  
Overview of the Project Sites

City	Name	Description	Population	Partners
Oakland	Lion Creek Crossings	A multifamily property for families and seniors owned by the EBALDC, Related Companies, and the Oakland Housing Authority. Residents have access to a number of AC Transit bus lines and BART's Coliseum station.	567 units, 1,607 residents	East Bay Asian Local Development Corporation (EBALDC), Related Companies
Richmond	Nystrom Neighborhood	The neighborhood is the site of a comprehensive revitalization effort and is centered around Nystrom Elementary School and the Martin Luther King Jr. Park. Several AC Transit bus routes serve the area and the Richmond BART Station is a 15-minute walk away.	1,158 units, 3,999 residents	Richmond Community Foundation, City of Richmond
San Jose	Betty Ann Gardens	A multifamily property owned by FCH. Residents receive free transit passes from VTA. The site is served by VTA bus lines and is a short distance from the future Berryessa/North San Jose BART Station.	76 units, 265 residents	First Community Housing (FCH)

Source: *Community Transportation Needs Assessment Report (2020)*.

## COMMUNITY NEEDS ASSESSMENT

Drawing on lessons from CARB's Low-income Barriers Study,<sup>2</sup> conducting a community needs assessment was an important first step in understanding residents' travel behavior and transportation needs and challenges. Since 2018, the project team organized several meetings and conducted surveys in the project sites to assess community needs. Each mobility hub had site level teams (SLT) which were comprised of 10 residents. The SLTs, together with the site coordinators, played an important role in shaping the project design and building community trust. The needs assessment took longer than planned to complete, since during the process the project team identified additional work that needed to be conducted to maintain a project process and community engagement that was rigorous and

<sup>1</sup> CalEnviroScreen is a screening tool that can help identify communities disproportionately burdened by pollution. Each census tract receives a score for several indicators of environmental, public health, and socioeconomic conditions. An area with a higher score indicates more exposure to multiple sources of pollution.

<sup>2</sup> California Air Resources Board (2018). Low-income Barriers Study, Part B: Overcoming Barriers to Clean Transportation Access for Low-income Residents. Retrieved from: [https://ww2.arb.ca.gov/sites/default/files/2018-08/sb350\\_final\\_guidance\\_document\\_022118.pdf](https://ww2.arb.ca.gov/sites/default/files/2018-08/sb350_final_guidance_document_022118.pdf)

comprehensive. Some of the lessons learned from the needs assessment process include allocating enough budget to cover translation, paper surveys, and staff time to ensure a high response rate, taking an iterative approach to survey development, conducting an in-person survey outreach, and providing language interpretation to reduce barriers to participation.

## OUTCOMES

A total of 583 residents across the sites were surveyed and randomly selected respondents were chosen to join focus group discussions. The needs assessment revealed that most residents do not own cars and rely on transit as their main transportation mode. Residents were interested in transit passes and rideshare credits but were less interested in bike and e-scooter sharing, although this could be attributed to their unfamiliarity with these services. Several residents were not aware of discounted transit programs and personal safety is an important concern, especially for those walking, biking, and taking transit. The project team used these results to craft an implementation plan for the mobility hubs. The project also presented an opportunity to increase the residents' awareness about other mobility options.



Source: TransForm

To date, the program has funded two new light-duty zero-emission vehicle (ZEV) Envoy car share vehicles, three KIGT EV chargers, one Duogard bike cage, and one TransitScreen real-time display.<sup>1</sup> The project team continues to engage with the site level teams to roll out initiatives such as introducing electric vehicle car share including dedicated parking spaces, transit discounts, rideshare credits, and e-bikes and docking stations.<sup>2,3</sup>

**Table 3**  
Ongoing initiatives in the Project Sites

Name	Electric Car Share	Electric Bikes and Scooters	Transit	Rideshare
<b>Lion Creek Crossings</b>	-	-	AC Transit Easy pass, Clipper START	Lyft Ride Credits
<b>Nystrom Neighborhood</b>	3 KIGT electric vehicle chargers installed <sup>4</sup>	-	Clipper START	Lyft Ride Credits
<b>Betty Ann Gardens</b>	2 Envoy car share vehicles to be launched this year 1 TransitScreen real-time display	LINK-Up E-Scooter Reduced Fare Program 1 Duogard bike cage installed	VTA Smartpass, Clipper START	Lyft Ride Credits

## ANALYSIS OF THE OUTCOMES

The project is the first in-depth needs assessment of mobility hubs funded by CARB and offers a blueprint that other areas can replicate. Conducting a needs assessment encourages residents to influence the transportation investments in their communities. Through this

<sup>1</sup> E-mail correspondence with Krute Singa, Principal Regional Planner of MTC

<sup>2</sup> City of Richmond Agenda Report (2021). Approval of Grant-funded Agreement with TransForm. Retrieved from: <http://sireweb.ci.richmond.ca.us/sirepub/cache/2/auipcrwffhuda54yzsmtgbvz/63007104272023123748938.PDF>

<sup>3</sup> Residents can sign up for transportation discount programs and EV car share programs through this website: <https://www.mobilityhubspilot.org/>.

<sup>4</sup> According to MTC, the EV chargers were immediately vandalized and are currently inoperable, delaying car share deployment.

process, the project team was able to understand how residents use various mobility options, identify their needs, get feedback on their interest in using a new shared mobility option, and collect data to measure the project's progress. Since the project team is still focused on implementation efforts, data on the quantifiable benefits of the project has not been made available.<sup>1</sup>

## EQUITY CONSIDERATIONS

The program primarily targets low-income residents who live in disadvantaged communities. While the project initially had a top-down approach, the project goals were adjusted to be more aligned with community needs. For example, the project originally targeted to deploy 24 electric car sharing vehicles, but after consulting with the community, alternative mobility options such as transit passes were considered. Residents have been involved in shaping the program through the mobility needs assessments.<sup>2</sup>

**MPO Role:** Offer technical assistance to conduct community needs assessments in disadvantaged communities/affordable housing sites.

## OTHER PROJECTS

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Other cities across the country have piloted their own mobility hub programs. The City of Minneapolis launched its first multi-site mobility hub pilot in 2019 to increase access to low carbon options including transit, shared scooters and bikes. Sixty-four percent of users shared that the pilot improvements made them more likely to use the transportation options at the hub.<sup>3</sup> In 2021, the City of Boston launched GoHubs!, neighborhood mobility hubs where different transportation options, information, and placemaking elements intersect. As part of the pilot program, 3 Blubikes bike share stations, 14 bicycle parking racks, 14 car share spaces, and 4 smart benches were added in 8 locations in east Boston.<sup>4</sup> In July 2021, the City of Pittsburgh piloted MovePGH, a public, private, and community partnership that connects residents to various mobility options. The program is also the first e-scooter share in Pennsylvania. In its first year of operations, 35 percent of users said that scooter trips have replaced private vehicle trips, reducing 257,000 VMT.<sup>5</sup> The San Diego Association of Governments (SANDAG) developed their region's mobility hub strategy, which establishes the framework for the region's thirty mobility hubs. Although no mobility hubs have been constructed to date, in 2021, SANDAG received funding to initiate the San Ysidro Mobility Hub, introducing pedestrian infrastructure improvements and enhancing the capacity of the multimodal network.<sup>6</sup>

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<sup>1</sup> TransForm has not responded to our data request.

<sup>2</sup> The Greenlining Institute (2021). Clean Mobility Equity: A Playbook. Retrieved from: <https://greenlining.org/wp-content/uploads/2021/03/Clean-Mobility-Equity-A-Playbook-Greenlining-Report-2021.pdf>

<sup>3</sup> Minneapolis Public Works (2021). 2019 Minneapolis Mobility Hubs Pilot. Retrieved from: <https://www.minneapolismn.gov/media/-/www-content-assets/documents/Mobility-Hubs-Pilot-2019.pdf>

<sup>4</sup> The City of Boston (2022). GoHubs! Pilot Program. Retrieved from: <https://www.boston.gov/departments/transportation/gohubs>

<sup>5</sup> The City of Pittsburgh (2022). Move PGH Mid-Pilot Report. Retrieved from: [https://apps.pittsburghpa.gov/redtail/images/19169\\_Move\\_PGH\\_Mid\\_Pilot\\_Report\\_\[FINAL\]\\_v2.pdf](https://apps.pittsburghpa.gov/redtail/images/19169_Move_PGH_Mid_Pilot_Report_[FINAL]_v2.pdf)

<sup>6</sup> SANDAG (2020). San Ysidro Mobility Hub. Retrieved from: <https://www.sandag.org/-/media/SANDAG/Documents/PDF/projects-and-programs/innovative-mobility/mobility-hubs/san-ysidro-mobility-hub/fact-sheet-san-ysidro-mobility-hub-2023-01-03.pdf>





## SCAG REAP 2.0 Transportation Initiatives



# TRANSPORTATION DEMAND MANAGEMENT TECHNOLOGY: SEATTLE CHILDREN'S HOSPITAL

## INTRODUCTION

Transportation Demand Management (TDM) is the practice of managing travel volumes and infrastructure needs by encouraging people to travel in different ways. Typically this practice aims to encourage people to reduce the number of trips where they drive alone in a vehicle and encourage them to use other modes or shift their trips to off-peak hours. TDM has a robust toolbox with strategies, policies, technology/software, and practices that can be adapted and tailored to create a customized TDM program. TDM programs are implemented successfully to reduce Single-Occupant Vehicle (SOV) trips in a number of different environments and destinations including multi-family housing/development projects, employers, schools/universities, downtowns, visitors, stadiums and other land use types that generate vehicle trips to/from a site. Employers, in particular, can play a strategic role in TDM.

This case study showcases a technology designed to help large employers implement TDM strategies to reduce SOV trips to and from their site. Technology-driven services and solutions tailored specifically to TDM have grown in the last fifteen years, incorporating powerful demand management tools and promoting behavior change to help agencies and organizations reach their trip reduction and other TDM goals. TDM-oriented software products, such as commuter management platforms, include sophisticated one-stop shops to manage trips to/from a site, leverage incentives to change behavior, and use data generated by employees for reporting and to inform future TDM programming. TDM technology is of interest to the Southern California Association of Governments (SCAG) as it looks to implement its Regional Early Action Planning grant (REAP 2.0) program which aims to reduce vehicle miles traveled (VMT); accelerate infill development that facilitates housing supply, choice, and affordability; and Affirmatively Furthering Fair Housing (AFFH).

Seattle Children's Hospital used a commuter management platform to transform the way their employees travel to work.

**Commuter management platforms** provide a seamless integration between an employer's transportation benefits offerings, the human resources service/portal, and parking management to track clean commuting, incentivize employees to switch to non-single occupant vehicle modes, and reduce VMT. Participating employees have access to an employee dashboard from which an individual can plan commutes, track incentives, and manage payments – all connected to the employer-side benefits systems (such as Payroll or Human Resources). Employers can track employee commute metrics and assess how well trip reduction strategies are working, develop and test strategies to improve employee access to alternative modes of transportation, and deliver a better overall commute experience to employees. The success of these platforms derives from ease of implementation on the employer side, ease of use on the employee side, and targeted commute strategies to change commute behavior and perceptions about walking, biking, ridesharing, and riding public transit.

# EXPLANATION OF THE PROBLEM OR CHALLENGE

Seattle Children’s Hospital, located in the Laurelhurst neighborhood of Seattle, is recognized nationally for their trip reduction program. Using a commuter management platform has played a key part in their success in reducing SOV trips. As parking demand outpaced capacity in the mid-1990s, the hospital commissioned a digital commuter management platform, and later adopted a third-party service, that was leveraged to implement a wide-ranging TDM program to reduce SOV trips to/from the hospital.

# DESCRIPTION OF THE PROJECT

In 1995, the State of Washington and the City of Seattle introduced trip reduction legislation and targets to reduce SOV trips. Around the same time, the hospital was experiencing parking shortages where the vast majority of patients and staff, approximately 90 percent, were required to park off-site. While it was within the hospital’s capacity to build additional on-site parking, the \$20+ million price tag to build additional parking was not in alignment with the hospital’s broader goals. The hospital instead opted to introduce a multifaceted TDM program to manage employee commutes. In 2004, the hospital migrated the program into their fully integrated commuter management platform. In 2012 the hospital adopted Luum as their official commute management software.

The goals of the TDM program were created to address the challenges and desires of the organization, including:

- > Solve the immediate issue of a growing business with limited parking by reducing the number of people driving alone to work in perpetuity;
- > Become compliant with the local and state SOV commute share regulations;
- > Achieve 30 percent SOV mode share by 2030 to satisfy commitments made for approval of the development of additional clinic space;
- > Promote greener commutes to improve the health and wellbeing of the community through reduced air pollution; and
- > Use space for purposes other than parking

To meet these goals, the hospital created a commuter management platform that grew over time to promote alternative commute options, track employee commute choices, pay employee incentives, charge for parking, plan commute trips, track shuttle services, identify carpool opportunities, subsidize transit trips, share promotional information, and connect with employees to create a community with a shared goal within the hospital as an organization. Now, employees select their mode of travel on their unique login secured employee dashboard, then scan badges at specific thresholds and the system automatically applies the corresponding record updates. The program specifically includes the following commuter management programs:

**Table 1**  
TDM Program Components and Strategies

TDM Program	Strategy Details
<b>Parking</b>	Eliminated free parking and monthly passes Introduced daily only parking fees with variable peak-hour rates (between \$3.25 and \$11.50 for the day dependent on arrival time)
<b>Mode Incentives</b>	Non-SOV commute bonuses of \$4.50 per day
<b>Transit</b>	Fully or partially subsidized transit fares
<b>Carpool and Vanpool</b>	Premium pay-to-park spots on-site with alternative mode incentive
<b>Bicycle</b>	Free commuter bikes, services, amenities, and promotions
<b>Emergency Rides</b>	Emergency rides for alternative mode employees
<b>Management Support</b>	Workplace policies and amenities that align with trip reduction

In addition to providing a dashboard where employees can plan and track commutes and commute incentives, the commuter management platform itself is integrated across the hospital’s human resources and payroll platforms to create a seamless benefits package that automatically updates records and applies the corresponding incentive payments or parking fee deductions. The platform also incorporates report templates and tracks commuter behavior, environmental impacts, parking utilization, return on investment and other pertinent metrics for tracking progress toward goals. These data are available to management via secure administrator login.

**Role for MPO:** Consider procuring a commuter management platform software/service for CTCs, TMAs/TMOs, developers, and employers in the region to use for the purpose of reducing trips and having access to easy, high quality, and uniform data reporting.

## KEY PLAYERS AND FUNDING SOURCES

The key players were limited in scope since this was a first of its kind approach at the time of integration, but included the State of Washington, the City of Seattle, ORCA<sup>1</sup> and King County Metro, the Seattle Children’s Hospital organization, and the employees of the hospital. Their roles included:

**Table 2**  
Involved Organizations and their Roles

Organization	Role
<b>State of Washington and City of Seattle</b>	Provided the legal and regulatory framework that defined the desired regional outcomes. Also developed SOV share thresholds as requirements for permitting development on campus.
<b>King County Metro and ORCA</b>	Transit partner. The hospital is located in a largely residential area which had traditionally limited transit availability and frequency. The agency worked with the hospital to increase frequency and add stops.
<b>Seattle Children’s Hospital</b>	The hospital was the developer of the TDM plan and had commissioned the development of their first commuter management platform. They have since adopted Luum to provide a secure, connected commuter resource. Additionally, the hospital currently provides a shuttle service to and from transit hubs to lighten the transit commuter share of the total cost (formerly paid for the increased transit frequency and the full transit fare).
<b>Seattle Children’s Hospital Employees</b>	The employees were the first adopters of the program. Whether voluntarily or by compulsion, the free parking that was traditionally offered at the hospital was removed to alter commute work patterns.
<b>Luum</b>	Third-party commuter management software that developed a fee-based service with a proven approach to make TDM programs more effective. Luum’s software allows an employer to connect their HR system/payroll with parking management and apply disincentives and incentives for daily commuting.

The TDM program is stated to cost “several million dollars annually” with the majority of the cost associated with the commute bonuses and shuttle program. Approximately one third of the program’s annual operating budget comes from parking revenues, the remainder is budgeted into the administrative services as an investment provided by the hospital.

## ANALYSIS OF THE OUTCOMES

Many of the goal areas targeted a reduction in the share of people driving alone to work. In 1995, SOV commute share was 73 percent, nearly three quarters of commuter trips. By 2017, the SOV commute share had plummeted to 33 percent, a 40-point improvement. Additionally, each employee was taking almost half as many SOV commutes on average. While the SOV commute share was not yet 30 percent, the goal was to achieve that share by 2030 suggesting the program is a massive success to date in achieving the goal. Additionally, the program has reduced the per-commute air pollution footprint of the hospital dramatically by transitioning to a majority non-SOV commuter workforce. The program has been so successful and user-friendly that it has attracted quality workers with shared commute goals, has improved workforce retention, and created an organizational community.

The hospital credits much of the successes to the implementation of the commuter management platform. The platform provided the ease of adoption component required to execute the TDM program. They acknowledge the implementation of no free on-campus parking as a significant motivator for alternative commuting but recognize the key behavioral impact the commuter management platform has had on employees and their ability to continually engage with them.

<sup>1</sup> ORCA, or One Regional Card for All, is the contactless, stored-value smart card system used to pay for public transit in the region

## LESSONS LEARNED

The largest barrier was the development of an integrated commuter management tool that made it easy for employees to adopt the commuter management strategies. When the commuter management plan was first being implemented, comprehensive commute management tools did not exist as they do today. Ensuring the employee experience was as seamless as possible was a huge component of wide-spread adoption.

Additionally, in the case of Seattle Children's Hospital, the public entities played a critical role driving businesses to adopt bold strategies to reducing single occupant vehicle commute share. The State and City both set ambitious SOV reduction goals, so the hospital needed to work closely with public officials to ensure the services necessary to meet the goals were available. King County Metro was a critical partner in providing transportation alternatives that were attractive to hospital commuters.

## EQUITY CONSIDERATIONS

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One of the opportunities TDM technologies present is a highly targeted, data-driven approach to transportation demand management. Equitable transportation management requires data to develop an understanding of how people travel, where they are going, why they make trips, and how their quality of life can be improved. TDM-tailored technology not only provides data to planners but can be leveraged to bring information directly to the public. Utilization of public messaging boards and dynamic message signs can make travelers aware of the alternatives available to them and promote modes that align with the regional strategy.

**Role for MPO:** Identify transportation disadvantaged communities, including employers/industries that traditionally have more low wage employees such as the retail and restaurant industries, and incorporate regional TDM with the information technologies listed to improve commute experience. Additionally, working to bring jobs closer to residences can support a wider range of commute alternatives.

## OTHER PROJECTS AND EXAMPLES

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Luum was a key player in the Seattle Children's Hospital case study, but there are many other such companies including: RideAmigos, which provide a similar commuter management platform as Luum to easily integrate into existing systems and effectively adopt by employees; Communifi, which uses data driven commute solutions and offers municipality level TDM services; OneCommute, which provides both commuter management solutions and corporate real estate community experience services; SHARE Mobility, which provides third-party mobility solutions and services to reduce the need for single occupant vehicles and connect workers with workplaces; TripSpark which provides rideshare management and fixed route software to match commuters with commute alternatives and optimize fixed route services using real time data; Flexigo which allows a client to create a mini commuter ecosystem by adding shuttles, carpooling, vanpooling, and nudge users to these modes based on their needs and behavior; and Rideshark which allows users to view, match, and book their car share trip in one place.



## SCAG REAP 2.0 Transportation Initiatives



# MOBILITY WALLET/UNIVERSAL BASIC MOBILITY (UBM)

## INTRODUCTION

Mobility Wallets and Universal Basic Mobility (UBM) projects create more travel choices which can lead to more reliable, safe, accessible, and affordable modes of transportation. With a focus on Mobility-as-a-Service (MaaS), mobility wallets and universal basic mobility initiatives facilitate access to diverse mobility options, resulting in a reduction of private-vehicle travel dependency. Mobility Wallets and UBM projects are of interest to the Southern California Association of Governments (SCAG) as it looks to implement its Regional Early Action Planning grant (REAP 2.0) program which aims to reduce vehicle miles traveled (VMT) by single-occupant vehicles (SOV); accelerate infill development that facilitates housing supply, choice, and affordability; and Affirmatively Further Fair Housing (AFFH). This case study spotlights a UBM program that was implemented in Oakland.

In November of 2020, with over \$200,000 in funding from the Alameda County Transportation Commission (ACTC), the Oakland Department of Transportation (OakDOT) launched a year-long universal basic mobility project in East Oakland. The project provided 500 prepaid debit cards to program participants to reduce barriers to transportation. The \$300 restricted cards could be used to pay for trips or passes on public transportation, bike share, or e-scooters.

## EXPLANATION OF THE PROBLEM OR CHALLENGE

The East Oakland area has a long history of disinvestment that has resulted in inequitable access to public transportation. The area also has elevated levels of pollution, partly because of the disproportionate volume of truck traffic and fossil fuel emissions.<sup>1</sup> According to the pre-program survey, most participants from East Oakland identify as Hispanic/Latino or Black/African American and the majority cannot afford their preferred transportation modes.

Quinn Wallace, a transportation planner at the OakDOT, stated that as part of the UBM pilot program they aimed to prioritize equity by selecting a sample of participants that represented the program area based on race and household income.<sup>2</sup> Planning for the program also took place during the start of the COVID-19 pandemic so it was necessary to incorporate the unique transportation challenges that arose from changes in ridership, travel patterns, and health risks. The overall goal of the program was to “increase transit, walking, biking, and shared

<sup>1</sup> <https://www.edf.org/airqualitymaps/oakland/air-pollution-and-health-east-oakland>

<sup>2</sup> <https://www.smartcitiesdive.com/news/universal-basic-mobility-program-in-oakland-california-provided-lessons-i/621673/>

mobility trips while reducing SOV trips.”<sup>1</sup> The pilot also aimed to retain existing public transit riders, reduce the financial burden of all riders, and bring in new users.

## OAKLAND UNIVERSAL BASIC MOBILITY PILOT CASE STUDY

### PROJECT DESCRIPTION

The project was funded largely by a \$215,000 grant from Alameda County Transportation Commission. The grant term began in 2017 and ended in 2021; the pilot evaluation period occurred in 2022. The pilot program was initially proposed to complement the newly inaugurated AC Transit Tempo service. The Tempo line opened in 2020 and is the agency’s bus rapid transit line that services the East Bay. With riders facing acute financial hardships from the early stages of the COVID-19 pandemic, OakDOT chose to expand the project area to provide 500 program participants with \$300 prepaid cards and minimal fees to recipients. The prepaid cards were restricted to transportation expenses, but participants could use the funds to purchase trips on public transit, bike shares, and e-scooters. People applied for the program and then the cards were mailed out to participants. Personalized marketing for the pilot included flyer at transit stations, tabling at community events/libraries, newsletter promotions, community bike rides, and a project website. Partners for the pilot included AC Transit, Clipper, BART, Amtrak, Lime, San Francisco Bay Ferry, as well as engagement with over 30 organizations. Wallace emphasized the role of community partners and community-based organizations in the program process, highlighting their importance in a successful pilot and laying the groundwork for any future pilots.

**Role for MPO:** Coordinate with a local jurisdiction to provide match funding and connect implementing agencies. Offering to facilitate these connections would allow jurisdictions launching their pilots to access institutional knowledge from places that have completed pilots as well as those that are currently underway. Co-design the program with implementing jurisdictions and provide analytics related to outcomes and changes in travel behavior.

**Table 1**  
Roles and Responsibilities

Roles	Responsibilities
Program Implementor: Oakland Department of Transportation	Plan, launch, and implement pilot.
Funding Sources: Alameda Transportation Commission Grant (\$215k) and City of Oakland match (\$28k)	The majority of the budget was grant funded by ACTC.
Decision-makers: Oakland City Council	Oakland’s City Council authorized the City’s Department of Transportation to launch the pilot.
Transportation Service Providers: AC Transit, Bay Area Rapid Transit (BART), Clipper, Amtrak, Lime, San Francisco Bay Ferry	Coordinated with the pilot to accept payments and fares.

### OUTCOMES

Overall, the results from the pilot demonstrate positive evidence of the success of UBM projects; results show that the pilot made progress towards its initial goal of increasing transit, walking, biking, and shared mobility trips. Most funds from the prepaid cards were used on transit. Although there is no data on transactions once the cards were loaded with fares or credits, 80 percent of funds were used to load Clipper cards/BART and 9 percent on AC Transit. Only 7 percent of funds were used on e-scooters and 2 percent on bike share. A program survey found that two-thirds of participants used the card to pay for trips to work or school while 23 percent used it for errands and grocery shopping trips. The survey also showed that 40 percent of participants changed the way they travel and 23 percent drove alone less since receiving the card. Only about 30 percent of people who were mailed cards ended up activating them and using the funds.

<sup>1</sup> <https://www.oaklandca.gov/topics/universal-basic-mobility-pilot-evaluation>

## LESSONS LEARNED

OakDOT staff highlighted the need to work through existing community channels to have successful engagement and outreach for the pilot program. They stressed the importance of not waiting until implementation to include community partners but to make sure their input is also incorporated in the program planning phase. Although it was not clear if it was successful, their lessons learned reflect the importance of outreaching to both existing riders and vehicle riders to have a bigger potential impact on mode shifts.

Their process also revealed possible logistical challenges that could be prevented by considering participant needs. If an in-person online survey is required, then it is important that outreach staff has a tablet or other device ready for participants who may not have a smartphone. Staff also encountered some issues with mailing the cards directly to participants; this method of delivery contributed to an overall activation rate of only about 30 percent. Their recommendation for future pilots is to set up in-person pick-ups to ensure that participants receive cards and are successfully able to activate them.

## EQUITY CONSIDERATIONS

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Universal Basic Mobility and Mobility Wallet projects have the potential to reduce mobility barriers for communities that cope with legacies of underinvestment as well as racial and economic marginalization. Increasing mobility can lead to improvements in health, productivity, economic well-being, and a deeper sense of community. To ensure that projects are prioritizing equity, it is important that pilots or early versions of programs select participants that reflect a representative sample of target communities. Additionally, it is necessary to involve community-based organizations and partners in both the planning and implementation of projects to ensure trusted voices are present.

**Role for MPO:** if funding the project, MPOs can set clear equity-related performance indicators and a formal evaluation period to gauge success. This includes ensuring that benefit recipients are representative of the demographics within a community (versus first come, first served) and requiring grant recipients to partner with institutions and organizations that already have established community connections (e.g., libraries, community-based organizations)

## APPENDIX D: POTENTIAL PROMISING PRACTICES

The following table captures all of the promising practices explored by Program area.

**Table 14: Potential Promising Practices That Were Considered by Program Area**

PROGRAM AREA	POTENTIAL PROMISING PRACTICE CONSIDERED	FINAL PROMISING PRACTICE STUDIED
<b>Big Data Research</b>	Evaluate existing travel patterns compared to publicly offered services. This would enable SCAG to work with a community to determine how well their existing services compare to existing travel demand, and potentially make recommendations for adjustments.	Evaluate existing travel patterns compared to publicly offered services. This basic analysis would enable an under-resourced community to determine how well their existing services compare to existing travel demand, and potentially make recommendations for adjustments.
	Demographic analysis of travel patterns to evaluate equity. If equity is a concern for a community, this analysis could help indicate which members of a community are facing the greatest mobility challenges by evaluating existing services based on how well they serve communities of concern.	Demographic analysis of travel patterns to evaluate equity. This analysis could help indicate which members of a community are facing the greatest mobility challenges by evaluating existing services based on how well they serve communities of concern.
	Travel comparisons between pre and post pandemic. Many areas might be trying to rethink their offerings as new travel patterns have been accelerated by the pandemic. These comparisons could offer potential recommendations for new service changes.	Big data firms (like Streetlight), TNCs (like Uber/Lyft), Delivery Companies (FedEx, USPS, UPS, Amazon), Curb management software companies (like CurbIQ, Curbivore, and Populus)
<b>Accelerating Active Transportation</b>	E-bike rebate/exchange program. Many communities across the world have been experimenting with e-bike giveaways or rebates that can help accelerate the acquisition of e-bikes for people for whom they might be too expensive.	E-bike rebate program. Many communities across the world have been experimenting with e-bike giveaways or rebates that can help accelerate the acquisition of e-bikes for people for whom they might be too expensive. Will also consider related items such as training, helmets, maintenance, etc.
	Micro-mobility subsidies for equity purposes. Lower income communities often are the least profitable to service for private mobility providers. This idea would explore and analyze regulatory and subsidy ideas that could encourage greater deployment and usage in these communities.  Protected active transportation lane pilots. While permanent changes with protected lanes often face resistance, pilot projects with temporary barriers often prove more acceptable and could provide a path to a permanent lane.	Protected active transportation lane pilots. While permanent changes with protected lanes often face resistance, pilot projects with temporary barriers often prove more acceptable and could provide a path to a permanent lane. Emphasis on complete networks where possible.
<b>Mobility Hubs</b>	Signage redesigns. Many transit or transfer hubs suffer from poor signage that makes them challenging to use. This would offer a redesign of one or more hubs in a way that is more user-friendly.	Signage & wayfinding redesigns. Many transit or transfer hubs suffer from poor signage or wayfinding that makes them challenging to use. This would offer a redesign of one or more hubs in a way that is more user-friendly.
	First/last mile pilots. Mobility hubs in the SCAG region can sometimes be challenging to access due to land use patterns. This would be a way to test various strategies that can help people access these hubs without parking.	First/last mile pilots with partnerships with local operators, micro-mobility, etc. Mobility hubs in the SCAG region can sometimes be challenging to access due to land use patterns. This would be a way to test various strategies that can help people access these hubs without parking. Emphasis on relationships and partnering. Scalable beyond main hubs.



PROGRAM AREA	POTENTIAL PROMISING PRACTICE CONSIDERED	FINAL PROMISING PRACTICE STUDIED
<p><b>Mobility Wallet / Universal Basic Mobility (UBM)</b></p>	<p>UBM pilots. This would pilot the UBM concept by providing “mobility cash” to a select group of low-income individuals to see if it substantially improves their accessibility.</p> <p>Application integration. Too many apps can make using different modes challenging – this would allow experimentation with app integrations that improve the customer experience for users.</p> <p>Incentives for non-SOV travel. This would enable people to sign up for a mobility wallet that tracks their travel and provides rewards when they do not use a single-occupancy-vehicles.</p>	<p>UBM pilots. This would pilot the UBM concept by providing “mobility cash” to a select group of low-income individuals to see if it substantially improves their accessibility. Consider partnering with affordable housing developers.</p> <p>Service Coordination. Provide greater coordination to improve customer experience, potentially attracting more people to non-SOV modes and improving accessibility. Explore incentive funding for agencies that agree to more effectively coordinate services amongst themselves and private providers</p>
<p><b>Curb Space Management</b></p>	<p>Bus stop enforcement. When bus stops are being occupied by personal vehicles, they are far less useful and efficient. This idea will pilot automated bus stop enforcement to see if it improves bus travel times and experiences.</p> <p>Pricing the curb. This strategy will look at piloting mechanisms for improving curb pricing, including parking pricing and enforcement concepts.</p>	<p>Bus stop enforcement. When bus stops are being occupied by personal vehicles, they are far less useful and efficient. Piloting automated bus stop enforcement could be a way of testing whether it improves bus travel times and experiences. May need to be part of bus lane enforcement.</p> <p>Pricing the curb. This strategy will look at piloting mechanisms for improving curb pricing, including parking pricing and enforcement concepts, and considering dynamic and variable curbs. Identifying the role SCAG will play is key.</p>
<p><b>TDM Technology</b></p>	<p>Commuter incentives. This strategy involves working with businesses to provide incentives to their workers to use non-SOV modes using modern applications.</p> <p>Micro-Mobility Contracting. Exploring regulatory mechanisms to improve private micro-mobility services and encourage use where most beneficial for the region.</p>	<p>Commuter incentives. This strategy involves working with specifically identified businesses to provide incentives to their workers to use non-SOV modes using modern applications, pulling information gathered in the Flexigo pilot.</p> <p>TDM Data Clearinghouse. This strategy will build on the research by SCAG into developing air quality reporting efficiencies for businesses, and making it easier to meet the reporting requirements.</p>

## APPENDIX E: TERMS

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**Active Transportation** A mode of transportation that includes human powered transportation and low-speed electronic assist devices. Examples include but are not limited to: walking (includes any person walking, skateboarding and using a wheelchair or other personal mobility device), use of a bicycle, electric bicycle (e-bike), tricycle, scooter, skates, push scooter, trailer, and hand cart.

**Bike Share** A service that provides users with on-demand access to bicycles at a variety of pick-up and drop-off locations for one-way (point-to-point) or roundtrip travel. Bike sharing fleets are commonly deployed in a network within a metropolitan region, city, neighborhood, employment center, and/ or university campus.

**Bikeway** Common term for any designated bicycle facility, such as a bicycle path, bicycle lane, bicycle route, sharrow, bicycle boulevard, or cycle-track.

**Car Share** An integrated network of passenger vehicles available for short-term rental in heavily urbanized areas. Car share can take the form of return systems in which a vehicle must be returned to the parking space from which it was rented. Alternatively, it can take the form of point-to-point systems in which the car can be returned to another space, or left anywhere within a pre-determined geographic zone. Peer-to-peer car sharing is an app-based system that allows people to rent out their own private vehicles, and is return based.

**CB** Commuter Bus – Fixed-route bus systems that primarily connect outlying areas with a central city through bus service that operates with at least five miles of continuous closed-door service. This service typically operates using motorcoaches (“over-the-road” buses), and usually features peak scheduling, multiple-trip tickets, and multiple stops in outlying areas with limited stops in the central city.

**CBO** Community Based Organization – Public or private non-profit group that work at a local level to address community needs.

**E-scooter** An e-scooter is an electric-powered two-wheeled device that has handlebars, a floorboard designed to be stood upon when riding, and is sized to accommodate most adults. State law allows e-scooters to travel no faster than 15 miles per hour.

**EV** Electric Vehicle – A vehicle fully or partially powered by an electric engine. In common use it is synonymous with Plug-In Electric Vehicle (PEV), however hydrogen fuel cell vehicles are also electric vehicles.

**EV Charging Station** A location where a vehicle can be parked and the electric storage or battery can be recharged. EV charging stations can be private or publicly accessible and can be free to the user or used for a fee.

**First-Last Mile** Strategies designed to increase transit usage by making it more convenient and safe to walk or bicycle to and from transit stations. Strategies include wayfinding, bikeways, station amenities, new crosswalks, sidewalk improvements, shared mobility services and bike share.

**GHG** Greenhouse Gases – Components of the atmosphere that contribute to the greenhouse effect. The principal greenhouse gases that enter the atmosphere because of human activities are carbon dioxide, methane, nitrous oxide, and fluorinated gases.

**Home-Based Work Trips** Trips between home and work, either directly or with an intermediate stop. Home-based work trips include telecommuting, working at home, and non-motorized transportation work trips.

**Infill** New development on vacant, underutilized or undeveloped land within an existing community that is enclosed by other types of development.

**MaaS** Mobility as a Service – Please see “Shared Mobility Services.”

**Market Incentives** Measures designed to encourage certain actions or behaviors. These include inducements for the use of carpools, buses, and other HOVs in place of single-occupant automobile travel. Examples include HOV lanes, preferential parking, and financial incentives.

**Micro-mobility** Personal vehicles which typically are designed to carry one passenger. Devices include but are not limited to bicycles, electric bicycles (e-bikes) and electric scooters (e-scooters). Micro-mobility is often linked to bike and scooter sharing.

**Mixed Use Development** A type of urban development that blends residential, commercial, cultural, institutional or industrial uses, where those functions are physically and functionally integrated, and that provides pedestrian connections.

**Mode Split** The proportion of total person trips using various specified modes of transportation.

**Mode** A particular form of travel (e.g., walking, traveling by automobile, traveling by bus, or traveling by train).

**Multi-Family Residential** Multi-family units include attached residences, apartments, condominiums, and townhouses. Multi-family residences are usually served by all utilities, are on paved streets, and are provided with or have access to all urban facilities such as schools, parks, police and fire stations. Senior citizen apartment buildings are included in these classes. Also included are off-campus university owned housing and off-campus fraternity/sorority houses.

**Multimodal** A mixture of the several modes of transportation, such as transit, highways, non-motorized, etc.

**New Mobility** The integration of various forms of transportation services into a single service accessible on demand. Please also see "Shared Mobility Services."

**Parking Subsidy** The difference between the out-of-pocket amount paid by an employer on a regular basis to secure the availability of an employee parking space not owned by the employer and the price, if any, charged to an employee for use of that space.

**Person Trip** A trip made by a person by any mode or combination of modes for any purpose.

**PEV** Plug-in Electric Vehicle – Refers to all vehicles that can be plugged into an external source of electricity to recharge an on-board battery which will provide some or all power to an electric engine.

**PHEV** Plug-in Hybrid Electric Vehicle – A vehicle powertrain that combines an electric engine with a traditional internal combustion engine. The two engines can operate in parallel with the electric engine operating at certain speeds, or the engines can operate sequentially, with all power being provided by the electric engine until the battery power is exhausted.

**PPP** Public-Private Partnership – Contractual agreements formed between a public agency and private-sector entity that allow for greater private-sector participation in the delivery of transportation projects.

**Ride-hailing** A generic term to describe booking rides and paying for car service through a smartphone app with a transportation network company (TNC) such as Uber or Lyft. The term "ridesharing" has been used to describe TNCs, but it has been widely argued to be inaccurate, and hence the ride-hailing term was introduced.

**Rideshare** Please see "Ride-hailing."

**Scooter Share** Scooter sharing allows individuals access to scooters by joining an organization that maintains a fleet of scooters at various locations. Scooter sharing models can include a variety of motorized and non-motorized scooter types. The scooter service provider typically provides gasoline or charge (in the case of motorized scooters), maintenance, and may include parking as part of the service. Users typically pay a fee each time they use a scooter. Trips can be roundtrip or one way.

**Shared Mobility Services** Refers to a wide variety of new mobility services and encompasses bike share, scooters, car share, app-based transit services, and ride-hailing. This term refers to the way in which these modes are offered as services brokered by a mobile application, and each vehicle is shared amongst multiple users. Another common term used to describe this type of transportation service is Mobility as a Service (MaaS).

**Shared Parking** A tool in parking management which allows different land uses with different periods of parking demand to share a common parking facility and thereby limit the need to provide additional parking. Shared parking policies do not treat the parking supply as individual units specific to particular businesses or uses, but rather emphasize the efficient use of the parking supply by including as many spaces as possible in a common pool of shared, publicly available spaces.

**Smart Parking** Smart parking management techniques include real-time identification of open parking spaces, active wayfinding, adaptive pricing, and consumer facing apps for information and payment of parking. These management techniques pertain to on-street as well as public off-street parking.

**SOV** Single-Occupant Vehicle – Privately operated vehicle that contains only one driver or occupant.

**TDM** Transportation Demand Management – Strategies that result in more efficient use of transportation resources, such as ridesharing, telecommuting, park-and-ride programs, pedestrian improvements, and alternative work schedules.

**VMT** Vehicle Miles Traveled – On roadways, a measurement of the total miles traveled by all vehicles in the area for a specified time period. It is calculated by the number of vehicles times the miles traveled in a given area or on a given roadway during the time period. In transit, the number of vehicle miles operated on a given route or line or network during a specified time period.

**ZEV** Zero Emissions Vehicles – Vehicles that produce no tailpipe emissions of criteria pollutants. Generally, ZEVs feature electric powertrains. Technically, ZEVs are still responsible for some greenhouse gas emissions, as the GHG content from the electricity generation must be accounted for. ZEVs include battery electric vehicles (BEV), plug-in electric hybrids (PHEV) when powered by the electric engine, and hydrogen fuel cell vehicles (FCV).



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